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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1205 O.G. 4, on December 2, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1997, and were announced in the *Official Gazette* at 1201 O.G. 63, on August 19, 1997.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1998, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	105.00
— Confirmation fee	52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	490.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	750.00
— Additional examination fee, per additional invention (payable only upon invitation)	270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	49.00	98.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	360.00	720.00
USPTO was ISA but not IPEA	395.00	790.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	535.00	1070.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	465.00	930.00
Other National fees		
— For each independent claim in excess of 3	41.00	82.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	135.00	270.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

Nov. 10, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 15, 1995 for which maintenance fees due at 3 years

and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,440,760 through 5,442,814
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 13, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,038,407 through 5,040,242
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 11, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,685,151 through 4,686,709
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $525.00
By other than a small entity $1,050.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,050.00
By other than a small entity $2,100.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,580.00
By other than a small entity $3,160.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $700.00
(2) unintentional $1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 10, 1998 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,729	07/031,950	08/09/88
(4,593,797)	(06/631,454)	(06/10/86)
4,593,416	06/679,224	06/10/86
4,593,422	06/518,641	06/10/86
4,593,425	06/782,599	06/10/86
4,593,427	06/642,083	06/10/86
4,593,436	06/773,092	06/10/86
4,593,445	06/670,774	06/10/86
4,593,446	06/601,770	06/10/86
4,593,447	06/766,769	06/10/86
4,593,448	06/711,362	06/10/86
4,593,451	06/477,027	06/10/86
4,593,452	06/705,596	06/10/86
4,593,456	06/721,750	06/10/86
4,593,459	06/687,409	06/10/86
4,593,465	06/669,454	06/10/86
4,593,467	06/725,104	06/10/86
4,593,474	06/668,479	06/10/86
4,593,477	06/691,339	06/10/86
4,593,483	06/555,555	06/10/86
4,593,487	06/716,731	06/10/86
4,593,492	06/644,937	06/10/86
4,593,495	06/674,663	06/10/86
4,593,499	06/674,086	06/10/86
4,593,506	06/517,366	06/10/86
4,593,507	06/669,074	06/10/86
4,593,516	06/697,984	06/10/86
4,593,517	06/726,104	06/10/86
4,593,529	06/677,740	06/10/86
4,593,530	06/598,622	06/10/86
4,593,532	06/669,327	06/10/86
4,593,535	06/686,877	06/10/86
4,593,542	06/518,448	06/10/86
4,593,544	06/447,100	06/10/86
4,593,558	06/704,582	06/10/86
4,593,560	06/725,955	06/10/86
4,593,565	06/521,325	06/10/86
4,593,568	06/691,002	06/10/86
4,593,591	06/557,185	06/10/86
4,593,593	06/684,276	06/10/86
4,593,594	06/633,858	06/10/86
4,593,595	06/659,690	06/10/86
4,593,596	06/695,437	06/10/86
4,593,608	06/605,782	06/10/86
4,593,617	06/701,570	06/10/86
4,593,623	06/598,847	06/10/86
4,593,625	06/521,549	06/10/86
4,593,632	06/635,585	06/10/86
4,593,641	06/638,393	06/10/86
4,593,648	06/602,725	06/10/86
4,593,650	06/704,874	06/10/86
4,593,652	06/684,500	06/10/86
4,593,660	06/478,284	06/10/86
4,593,662	06/774,443	06/10/86
4,593,667	06/713,534	06/10/86
4,593,680	06/678,336	06/10/86
4,593,682	06/653,705	06/10/86
4,593,690	06/625,822	06/10/86
4,593,693	06/727,546	06/10/86
4,593,697	06/701,177	06/10/86

Patent Number	Serial Number	Issue Date
4,593,698	06/673,668	06/10/86
4,593,701	06/643,291	06/10/86
4,593,708	06/597,950	06/10/86
4,593,712	06/664,314	06/10/86
4,593,717	06/522,563	06/10/86
4,593,722	06/676,619	06/10/86
4,593,728	06/626,856	06/10/86
4,593,729	06/662,620	06/10/86
4,593,734	06/646,440	06/10/86
4,593,735	06/477,881	06/10/86
4,593,736	06/689,975	06/10/86
4,593,748	06/633,183	06/10/86
4,593,776	06/744,826	06/10/86
4,593,777	06/578,183	06/10/86
4,593,779	06/745,060	06/10/86
4,593,781	06/681,492	06/10/86
4,593,784	06/606,471	06/10/86
4,593,794	06/602,829	06/10/86
4,593,796	06/732,804	06/10/86
4,593,798	06/490,710	06/10/86
4,593,799	06/587,111	06/10/86
4,593,805	06/671,559	06/10/86
4,593,806	06/539,931	06/10/86
4,593,817	06/721,763	06/10/86
4,593,831	06/675,465	06/10/86
4,593,833	06/780,208	06/10/86
4,593,844	06/526,947	06/10/86
4,593,847	06/729,422	06/10/86
4,593,859	06/611,069	06/10/86
4,593,864	06/694,118	06/10/86
4,593,868	06/540,713	06/10/86
4,593,869	06/660,422	06/10/86
4,593,888	06/729,307	06/10/86
4,593,893	06/717,986	06/10/86
4,593,913	06/622,787	06/10/86
4,593,914	06/531,642	06/10/86
4,593,916	06/741,256	06/10/86
4,593,922	06/637,490	06/10/86
4,593,923	06/729,926	06/10/86
4,593,926	06/639,728	06/10/86
4,593,933	06/573,052	06/10/86
4,593,935	06/644,901	06/10/86
4,593,936	06/586,857	06/10/86
4,593,945	06/589,596	06/10/86
4,593,949	06/655,075	06/10/86
4,593,950	06/489,482	06/10/86
4,593,951	06/668,307	06/10/86
4,593,960	06/716,715	06/10/86
4,593,961	06/683,849	06/10/86
4,593,973	06/507,643	06/10/86
4,593,994	06/712,646	06/10/86
4,593,997	06/623,068	06/10/86
4,594,000	06/481,987	06/10/86
4,594,007	06/571,550	06/10/86
4,594,011	06/561,730	06/10/86
4,594,013	06/616,146	06/10/86
4,594,018	06/638,966	06/10/86
4,594,026	06/613,983	06/10/86
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4,594,113	06/738,598	06/10/86
4,594,133	06/776,195	06/10/86
4,594,135	06/703,581	06/10/86
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4,594,176	06/744,398	06/10/86
4,594,180	06/657,266	06/10/86
4,594,184	06/737,293	06/10/86
4,594,187	06/680,460	06/10/86
4,594,192	06/713,941	06/10/86
4,594,203	06/588,963	06/10/86
4,594,218	06/744,490	06/10/86
4,594,220	06/685,678	06/10/86
4,594,222	06/356,637	06/10/86
4,594,226	06/583,042	06/10/86
4,594,227	06/530,298	06/10/86
4,594,230	06/697,661	06/10/86
4,594,239	06/589,595	06/10/86
4,594,240	06/530,070	06/10/86
4,594,246	06/564,901	06/10/86
4,594,248	06/712,294	06/10/86
4,594,256	06/710,332	06/10/86
4,594,257	06/710,348	06/10/86
4,594,258	06/710,761	06/10/86
4,594,264	06/673,467	06/10/86
4,594,271	06/787,408	06/10/86
4,594,273	06/672,518	06/10/86
4,594,275	06/633,585	06/10/86
4,594,278	06/718,235	06/10/86
4,594,281	06/714,324	06/10/86
4,594,289	06/635,778	06/10/86
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4,594,326	06/492,705	06/10/86
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4,594,333	06/646,200	06/10/86
4,594,334	06/703,071	06/10/86
4,594,335	06/609,381	06/10/86
4,594,345	06/507,692	06/10/86
4,594,348	06/698,653	06/10/86
4,594,352	06/601,923	06/10/86
4,594,353	06/593,278	06/10/86
4,594,362	06/793,166	06/10/86
4,594,364	06/691,321	06/10/86
4,594,366	06/679,611	06/10/86
4,594,374	06/706,672	06/10/86
4,594,377	06/740,661	06/10/86
4,594,381	06/741,410	06/10/86
4,594,385	06/411,137	06/10/86
4,594,391	06/786,137	06/10/86
4,594,392	06/794,313	06/10/86
4,594,393	06/665,595	06/10/86
4,594,394	06/711,931	06/10/86
4,594,399	06/709,995	06/10/86
4,594,400	06/652,683	06/10/86
4,594,403	06/744,206	06/10/86
4,594,405	06/572,036	06/10/86
4,594,408	06/754,700	06/10/86
4,594,418	06/781,629	06/10/86
4,594,420	06/588,541	06/10/86
4,594,422	06/710,262	06/10/86
4,594,426	06/225,820	06/10/86
4,594,434	06/668,597	06/10/86
4,594,436	06/707,037	06/10/86
4,594,447	06/657,292	06/10/86
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4,594,472	06/546,579	06/10/86
4,594,474	06/697,736	06/10/86
4,594,475	06/637,373	06/10/86
4,594,483	06/611,304	06/10/86
4,594,484	06/713,267	06/10/86
4,594,485	06/719,877	06/10/86
4,594,486	06/701,549	06/10/86
4,594,493	06/517,190	06/10/86

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4,594,494	06/698,785	06/10/86
4,594,497	06/736,691	06/10/86
4,594,528	06/532,977	06/10/86
4,594,531	06/633,756	06/10/86
4,594,537	06/566,004	06/10/86
4,594,549	06/609,906	06/10/86
4,594,552	06/511,413	06/10/86
4,594,557	06/754,059	06/10/86
4,594,564	06/619,096	06/10/86
4,594,566	06/646,370	06/10/86
4,594,572	06/445,427	06/10/86
4,594,578	06/643,210	06/10/86
4,594,581	06/572,425	06/10/86
4,594,588	06/472,778	06/10/86
4,594,590	06/548,791	06/10/86
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4,931,901	07/354,183	06/05/90
4,931,906	07/173,370	06/05/90
4,931,912	07/331,324	06/05/90
4,931,918	07/377,517	06/05/90
4,931,919	07/218,876	06/05/90
4,931,923	07/025,499	06/05/90
4,931,928	07/269,135	06/05/90
4,931,933	07/308,220	06/05/90
4,931,950	07/223,499	06/05/90
4,931,951	07/190,060	06/05/90
4,931,955	07/187,389	06/05/90
4,931,957	07/141,770	06/05/90
4,931,958	07/135,325	06/05/90
4,931,960	07/077,417	06/05/90
4,931,968	07/199,839	06/05/90
4,931,970	07/297,639	06/05/90
4,931,971	07/297,170	06/05/90
4,931,980	07/225,493	06/05/90
4,931,987	07/134,031	06/05/90
4,931,989	07/038,556	06/05/90
4,931,991	07/289,089	06/05/90
4,932,004	07/140,919	06/05/90
4,932,005	07/173,197	06/05/90
4,932,009	07/321,774	06/05/90
4,932,011	07/432,016	06/05/90
4,932,015	07/050,427	06/05/90
4,932,029	07/223,948	06/05/90
4,932,038	07/262,696	06/05/90
4,932,039	07/364,048	06/05/90
4,932,044	07/267,222	06/05/90
4,932,047	07/092,346	06/05/90
4,932,052	07/449,400	06/05/90
4,932,058	07/393,497	06/05/90
5,317,789	07/844,863	06/07/94
5,318,035	07/983,713	06/07/94

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 06/12/98

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,821,809	06/632,279	07/20/84	04/18/89	06/12/98
4,834,523	07/027,009	03/17/87	05/30/89	06/12/98
4,866,627	07/062,663	06/16/87	09/12/89	06/12/98
4,871,337	07/078,415	07/27/87	10/03/89	06/12/98
4,896,689	07/270,315	11/14/88	01/30/90	06/12/98
5,109,103	07/667,214	01/22/91	04/28/92	06/17/98
5,188,314	07/681,931	04/08/91	02/23/93	06/12/98
5,227,791	07/804,582	12/10/91	07/13/93	06/16/98
5,252,822	07/951,907	09/28/92	10/12/93	06/17/98
5,259,381	07/377,722	07/10/89	11/09/93	06/17/98
5,271,141	07/819,112	01/10/92	12/21/93	06/12/98
5,286,860	07/975,409	11/12/92	02/15/94	06/12/98

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,715,393, Re. S.N. 09/112,169, Jul. 8, 1998, Cl. 137/007, FLUID DISPERSING CHECKVALVE, Gary D. Newton, Owner of Record: *Inventor,* Attorney or Agent: Lee G. Meyer, Ex. Gp.: 3753

4,911,577, Re. S.N. 08/999,304, Dec. 29, 1997, Cl. 405/132, MINE DOOR SYSTEM, William R. Kennedy, et. al., Owner of Record: *Jack Kennedy Metal Products and Building, St. Louis, Mo.,* Attorney or Agent: Michael E. Godar, Ex. Gp.: 3501

5,031,403, Re. S.N. 08/829,792, Apr. 30, 1997, Cl. 454/60, AXLE DRIVING APPARATUS, Hideaki Okada, Owner of Record: *Inventor,* Attorney or Agent: Tracy-Gene G. Durkin, Ex. Gp.: 3401

5,139,278, Re. S.N. 08/647,878, May 13, 1996, Cl. 280/47.26, VERSATILE FUEL CONTAINER, Lewis J. Vlasicak, Owner of Record: *Inventor,* Attorney or Agent: Jerald E. Nage, Ex. Gp.: 3611

5,178,433, Re. S.N. 09/028,033, Feb. 24, 1998, Cl. 296/035.100, VEHICLE BODY MOUNT, Frank Wagner, Owner of Record: *Inventor,* Attorney or Agent: John Benefiel, Ex. Gp.: 3102

5,465,999, Re. S.N. 08/970,827, Nov. 14, 1997, Cl. 280/733, INFLATABLE SEATBELT HAVING DEFINED SHAPE, Yoshihiko Tanaka, et. al., Owner of Record: *Takata Corp., Tokyo, Japan,* Attorney or Agent: George E. Quillin, Ex. Gp.: 3611

5,490,891, Re. S.N. 09/023,780, Feb. 13, 1998, Cl. 156/73.100, METHOD OF MANUFACTURING A MEMORY CARD PACKAGE, Jim Farquhar, et. al., Owner of Record: *Duel Systems, San Jose, Calif.,* Attorney or Agent: Robert M. Barrett, Ex. Gp.: 1301

5,498,565, Re. S.N. 09/041,275, Mar. 12, 1998, Cl. 437/67, METHOD OF FORMING TRENCH ISOLATION HAVING POLISHING STEP AND METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE, Tetsuo Gocho, Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Steven H. Noll, Ex. Gp.: 1107

5,513,599, Re. S.N. 09/073,062, May 6, 1998, Cl. 122/004, PRESSURIZED INTERNAL CIRCULATING FLUIDIZED-BED BOILER, Shuichi Nagato, et. al., Owner of Record: *Ebara Corp., Tokyo, Japan,* Attorney or Agent: Jeffrey Nolton, Ex. Gp.: 3742

5,538,762, Re. S.N. 09/112,219, Jul. 9, 1998, Cl. 427/503, METHOD OF MANUFACTURING A FLUOROCARBON-BASED COATING FILM, Kazufumi Ogawa, et. al., Owner of Record: *Matsushita Electric Industrial Co., Osaka, Japan,* Attorney or Agent: Richard D. Jordan, Ex. Gp.: 1762

5,547,732, Re. S.N. 08/979,972, Nov. 26, 1997, Cl. 428/085, METHOD AND APPARATUS FOR MAKING A PILE ARTICLE AND THE PRODUCTS THEREOF, Donald William Edwards, et. al., Owner of Record: *E. I. Du Pont De Nemours Co., Wilmington, Del.,* Attorney or Agent: George M. Medwick, Ex. Gp.: 1314

5,547,861, Re. S.N. 09/082,247, May 20, 1998, Cl. 435/091.200, METHOD FOR DETECTING A TARGET NUCLEIC ACID, James G. Nadeau, et. al., Owner of Record: *Becton Dickinson and Co., Becton, Ill.,* Attorney or Agent: David W. Highet, Ex. Gp.: 1807

5,581,838, Re. S.N. 09/041,465, Mar. 12, 1998, Cl. 015/110, ARTICULATING TOOTHBRUSH ASSEMBLY, Anthony C. Rocco, Owner of Record: *Inventor,* Attorney or Agent: Raymond E. Farrell, Ex. Gp.: 1744

5,595,247, Re. S.N. 09/113,176, Jul. 10, 1998, Cl. 166/297, RETRIEVABLE THROUGH TUBING TOOL AND METHOD, Britt O. Braddick, Owner of Record: *TIW Corp., Houston, Tex.,* Attorney or Agent: Loren G. Helmreich, Ex. Gp.: 3616

5,600,737, Re. S.N. 09/095,900, Jun. 11, 1998, Cl. 382/232, MOTION COMPENSATION PREDICTING ENCODER METHOD AND APPARATUS, Tokumichi Murakami, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Michael K. Mutter, Ex. Gp.: 2616

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,726,193, Re. S.N. 09/005,021, Jun. 22, 1998, Cl. 062/457.7, TEMPERATURE CONTROLLED PICNIC BOX, Edward J. Burke, et. al., Owner of Record: *Marlow Industries, Inc., Dallas, Tex.,* Attorney or Agent: Jack A. Kanz, Richardson, Tex., Ex. Gp.: 3744, Requester: Sidley and Austin, Dallas, Tex.

4,816,333, Re. S.N. 09/005,019, Jun. 16, 1998, Cl. 428/331, SILICA COATING, Roger W. Lange, et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., Saint Paul, Minn.,*

Attorney or Agent: Ann M. Mueting, Mueting Rasch and Gebhardt, Minneapolis, Minn., Ex. Gp.: 1773, Requester: Owner

5,456,665, Re. S.N. 09/005,022, Jun. 22, 1998, Cl. 604/096, INTRA-AORTIC BALLOON CATHETER, Susan J. Postell, et. al., Owner of Record: Arrow International Investment Corp., Wilmington, Del., Attorney or Agent: Neal L. Rosenberg, Amster Rothstein and Ebenstein, New York, N.Y., Ex. Gp.: 3734, Requester: Owner

5,475,919, Re. S.N. 09/005,018, Jun. 15, 1998, Cl. 029/841, PCMCIA CARD MANUFACTURING PROCESS, Michael Wu, et. al., Owner of Record: *3 View Technology Co. Ltd., Hsin Chu, Taiwan,* Attorney or Agent: Eugene Mar, Bacon and Thomas, Alexandria, Va., Ex. Gp.: 3726, Requester: Paula J. Kelly, Arlington, Va.

5,528,408, Re. S.N. 09/005,020, Jun. 16, 1998, Cl. 359/152, SMALL FOOTPRINT OPTOELECTRONIC TRANSCEIVER WITH LASER, James W. McGinley, et. al., Owner of Record: *Methode Electronics, Inc., Chicago, Ill.,* Attorney or Agent: Robert M. Barrett, Hill and Simpson, Chicago, Ill., Ex. Gp.: 2733, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED June 29, 1998 DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
118,628	71/103,497	09/25/1917
350,168	71/380,714	09/21/1937
350,170	71/381,907	09/21/1937
350,182	71/388,792	09/21/1937
350,235	71/391,871	09/21/1937
350,236	71/391,873	09/21/1937
350,239	71/391,927	09/21/1937
350,253	71/392,108	09/21/1937
350,292	71/392,976	09/21/1937
350,295	71/393,009	09/21/1937
627,630	71/698,315	05/29/1956
646,006	72/016,367	05/28/1957
651,867	72/008,468	09/24/1957
651,869	72/019,941	09/24/1957
651,876	72/021,133	09/24/1957
651,877	72/021,171	09/24/1957
651,879	72/023,033	09/24/1957
651,880	72/008,284	09/24/1957
651,885	71/697,952	09/24/1957
651,894	72/007,268	09/24/1957
651,896	72/011,100	09/24/1957
651,902	72/016,078	09/24/1957
651,905	72/020,020	09/24/1957
651,906	72/021,217	09/24/1957
651,911	72/025,078	09/24/1957
651,912	72/025,314	09/24/1957
651,918	72/021,164	09/24/1957
651,921	71/655,593	09/24/1957
651,927	72/005,917	09/24/1957
651,940	72/021,762	09/24/1957
651,941	72/021,822	09/24/1957
651,947	72/023,292	09/24/1957
651,948	72/023,469	09/24/1957
651,949	72/023,506	09/24/1957
651,956	72/013,252	09/24/1957
651,961	72/016,611	09/24/1957
651,962	72/020,821	09/24/1957
651,969	72/020,822	09/24/1957
651,971	72/022,791	09/24/1957
651,976	72/023,279	09/24/1957
651,978	72/023,377	09/24/1957
651,981	72/023,432	09/24/1957
652,004	72/021,229	09/24/1957
652,013	72/025,515	09/24/1957
652,014	71/695,086	09/24/1957
652,017	72/010,083	09/24/1957
652,023	72/012,974	09/24/1957
652,025	72/018,160	09/24/1957
652,028	72/020,515	09/24/1957
652,033	72/024,144	09/24/1957
652,041	72/017,998	09/24/1957
652,049	72/025,742	09/24/1957
652,051	72/026,170	09/24/1957
652,052	72/001,443	09/24/1957
652,054	72/022,650	09/24/1957
652,058	72/011,609	09/24/1957
652,059	72/011,675	09/24/1957
652,065	72/017,362	09/24/1957
652,066	72/018,989	09/24/1957
652,069	72/021,431	09/24/1957
652,071	71/698,660	09/24/1957
652,072	72/019,978	09/24/1957
652,073	72/020,315	09/24/1957
652,075	72/022,887	09/24/1957
652,076	72/022,895	09/24/1957
652,088	72/016,480	09/24/1957
652,091	72/019,519	09/24/1957
652,092	72/020,132	09/24/1957
652,094	72/020,945	09/24/1957
652,097	72/021,524	09/24/1957
652,102	72/022,661	09/24/1957
652,106	72/010,615	09/24/1957
652,118	72/021,591	09/24/1957
652,121	72/022,419	09/24/1957
652,128	72/018,069	09/24/1957
652,129	72/018,644	09/24/1957
652,132	72/011,672	09/24/1957
652,139	71/673,640	09/24/1957
652,141	71/687,459	09/24/1957
652,147	72/009,048	09/24/1957
652,149	72/011,123	09/24/1957
652,152	72/013,709	09/24/1957
652,157	72/016,905	09/24/1957
652,162	72/018,743	09/24/1957
652,166	72/021,626	09/24/1957
652,172	71/675,897	09/24/1957
652,182	72/011,849	09/24/1957
652,187	72/017,787	09/24/1957
652,191	72/020,978	09/24/1957
652,193	72/014,047	09/24/1957
652,200	71/629,338	09/24/1957
652,207	72/012,027	09/24/1957
652,216	72/017,256	09/24/1957
1,069,848	73/092,712	07/19/1977
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1,071,575	73/089,529	08/16/1977
1,073,411	73/086,087	09/20/1977
1,073,412	73/087,893	09/20/1977
1,073,413	73/095,202	09/20/1977
1,073,417	73/113,014	09/20/1977
1,073,419	73/089,178	09/20/1977
1,073,422	73/113,753	09/20/1977
1,073,423	73/114,084	09/20/1977
1,073,429	73/114,251	09/20/1977
1,073,431	73/114,383	09/20/1977
1,073,433	73/115,310	09/20/1977
1,073,434	73/115,313	09/20/1977
1,073,436	73/086,832	09/20/1977
1,073,440	73/099,726	09/20/1977
1,073,441	73/109,904	09/20/1977

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1,073,443	73/113,980	09/20/1977
1,073,445	73/114,235	09/20/1977
1,073,450	73/115,272	09/20/1977
1,073,451	73/115,300	09/20/1977
1,073,453	73/115,650	09/20/1977
1,073,454	73/115,791	09/20/1977
1,073,455	73/070,836	09/20/1977
1,073,459	73/041,842	09/20/1977
1,073,463	73/066,027	09/20/1977
1,073,466	73/079,901	09/20/1977
1,073,471	73/095,780	09/20/1977
1,073,473	73/103,458	09/20/1977
1,073,476	73/108,805	09/20/1977
1,073,479	73/109,386	09/20/1977
1,073,482	73/111,184	09/20/1977
1,073,485	73/100,770	09/20/1977
1,073,486	73/108,804	09/20/1977
1,073,487	73/108,979	09/20/1977
1,073,489	73/109,480	09/20/1977
1,073,498	73/068,949	09/20/1977
1,073,502	73/078,894	09/20/1977
1,073,503	73/083,000	09/20/1977
1,073,505	73/083,442	09/20/1977
1,073,507	73/083,945	09/20/1977
1,073,509	73/088,595	09/20/1977
1,073,513	73/089,532	09/20/1977
1,073,519	73/091,033	09/20/1977
1,073,528	73/109,032	09/20/1977
1,073,531	73/110,129	09/20/1977
1,073,538	73/030,890	09/20/1977
1,073,541	73/083,731	09/20/1977
1,073,546	73/084,548	09/20/1977
1,073,550	73/106,695	09/20/1977
1,073,551	73/110,943	09/20/1977
1,073,554	73/067,896	09/20/1977
1,073,560	73/109,891	09/20/1977
1,073,563	73/110,921	09/20/1977
1,073,564	73/110,940	09/20/1977
1,073,566	73/049,714	09/20/1977
1,073,570	73/090,331	09/20/1977
1,073,574	73/114,744	09/20/1977
1,073,583	73/057,763	09/20/1977
1,073,587	73/064,896	09/20/1977
1,073,589	73/072,771	09/20/1977
1,073,596	73/088,762	09/20/1977
1,073,597	73/091,277	09/20/1977
1,073,603	73/100,318	09/20/1977
1,073,608	73/105,341	09/20/1977
1,073,621	73/109,312	09/20/1977
1,073,622	73/114,637	09/20/1977
1,073,625	73/080,304	09/20/1977
1,073,626	73/090,506	09/20/1977
1,073,627	73/110,756	09/20/1977
1,073,629	73/110,758	09/20/1977
1,073,631	73/113,905	09/20/1977
1,073,632	73/114,148	09/20/1977
1,073,634	73/071,431	09/20/1977
1,073,635	73/076,923	09/20/1977
1,073,636	73/077,390	09/20/1977
1,073,638	73/111,288	09/20/1977
1,073,650	73/066,319	09/20/1977
1,073,651	73/066,324	09/20/1977
1,073,655	73/112,610	09/20/1977
1,073,659	73/085,691	09/20/1977
1,073,660	73/101,376	09/20/1977
1,073,661	73/108,933	09/20/1977
1,073,663	73/098,789	09/20/1977
1,073,669	73/099,231	09/20/1977
1,073,673	73/073,121	09/20/1977
1,073,674	73/073,358	09/20/1977
1,073,676	73/104,904	09/20/1977
1,073,679	73/108,476	09/20/1977
1,073,680	73/108,684	09/20/1977
1,073,681	73/108,685	09/20/1977
1,073,687	73/112,890	09/20/1977
1,073,689	73/112,892	09/20/1977
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1,073,720	73/109,800	09/20/1977
1,073,722	73/114,617	09/20/1977
1,073,724	73/049,347	09/20/1977
1,073,726	73/079,918	09/20/1977
1,073,728	73/088,908	09/20/1977
1,073,730	73/091,453	09/20/1977
1,073,734	73/097,827	09/20/1977
1,073,735	73/099,758	09/20/1977
1,073,736	73/107,678	09/20/1977
1,073,738	73/112,559	09/20/1977
1,073,741	73/114,227	09/20/1977
1,073,748	73/114,451	09/20/1977
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1,073,753	73/072,543	09/20/1977
1,073,754	73/082,936	09/20/1977
1,073,755	73/082,937	09/20/1977
1,073,756	73/082,938	09/20/1977
1,073,760	73/110,218	09/20/1977
1,073,763	73/078,816	09/20/1977
1,073,765	73/080,500	09/20/1977
1,073,766	73/081,804	09/20/1977
1,073,767	73/087,153	09/20/1977
1,073,768	73/089,894	09/20/1977
1,073,769	73/089,989	09/20/1977
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1,073,774	73/105,699	09/20/1977
1,073,780	73/091,706	09/20/1977
1,073,782	73/114,944	09/20/1977
1,073,783	73/087,568	09/20/1977
1,073,786	73/096,461	09/20/1977
1,073,787	73/065,919	09/20/1977
1,073,788	73/065,965	09/20/1977
1,073,790	73/087,567	09/20/1977
1,073,792	73/094,928	09/20/1977
1,073,797	73/113,175	09/20/1977
1,073,798	73/116,118	09/20/1977
1,073,800	73/081,621	09/20/1977
1,073,805	73/093,111	09/20/1977
1,073,806	73/096,462	09/20/1977
1,073,809	73/101,721	09/20/1977
1,073,810	73/103,033	09/20/1977
1,073,817	73/108,743	09/20/1977
1,073,818	73/109,473	09/20/1977
1,073,820	73/112,228	09/20/1977
1,073,825	73/075,977	09/20/1977
1,073,829	72/454,821	09/20/1977
1,073,830	72/460,556	09/20/1977
1,073,833	73/102,864	09/20/1977
1,073,837	73/063,787	09/20/1977
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Notice Regarding Technical Center Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

March 11, 1998

NICHOLAS P. GODICI
Deputy Assistant Commissioner for Patents (Acting)

37 CFR § 1.47 Notice by Publication

Notice is hereby given of the filing of the following applications with a petition under 37 CFR § 1.47 requesting the acceptance of the application without the signature of all inventors or, if the inventor is deceased, the legal representative of the deceased inventor. The petition in each application has been granted. A notice has been sent to the last known address of the non-signing inventor or legal representative. The inventors or legal representatives whose signatures are missing may join in the application by promptly filing an oath or declaration complying with 37 CFR § 1.63.

Application No.	Filing Date	Non-Signing Inventor(s) or Legal Representative(s)	Title of Invention
08/855,621	May 13, 1997	Joseph S. Christie Jean M. Christie	System and Method for Transporting a Call
08/855,910	May 14, 1997	Russel V. Yu	Enterococcal Aminoacyl-tRNA Synthetase Proteins, Nucleic Acids and Strains Comprising Same
08/856,133	May 14, 1997	Anna Byra	Liposomal Antineoplaston Therapies with Markedly Improved Antineoplastic Activity
08/865,819	May 30, 1997	Varadarajan Srinivasan	Priority Encoder for a Content Addressable Memory System
08/874,448	June 16, 1997	Puran Khan Bair	In-Vessel Composting
08/874,615	June 13, 1997	Pradeep B. Deshpande	Low Cost, Easy to Use Automatic Test System Software
08/889,476	July 8, 1997	Yong-Kwon KIM	Sensing Device and Method of Leveling a Semiconductor Wafer
08/890,106	July 9, 1997	Joseph Biran	Electrostatic Discharge (ESD) Protection Circuit with Reduced Node Capacitance
08/901,250	July 28, 1997	Wuudiann Ke	Apparatus and Method for Hybrid Pin Control of Boundary Scan Applications
08/916,994	Aug. 21, 1997	Hua Zheng	Method and Voltage Generating Circuit for Packaged Part Testing of Semiconductor Integrating Circuits
08/918,656	Aug. 22, 1997	Fan Ho	Cancellation of Redundant Elements with a Cancel Bank
08/951,121	Oct. 16, 1997	Nicholas J. Arnone	Remote Reporting System for Digital Transmission Line Elements
08/962,226	Oct. 31, 1997	Stanley R. Merrill	Rotatable Dewiring Apparatus and Method
08/962,419	Oct. 31, 1997	David Scott	Integrated Circuit Tester Having Pattern Generator Controlled Data Bus
08/968,508	Nov. 12, 1997	James Rogers	Portable Refrigerated Storage Unit
08/994,478	Dec. 19, 1997	Robert J. Budesa	Apparatus for Supporting a Workpiece
09/001,398	Jan. 7, 1998	Ming-yi Hwang	Method and Apparatus for Controlling Scanning of an Ablating Laser Beam
09/010,274	Jan. 21, 1998	David J. Parrish	Fuel Dispensing Nozzle with Fuel Shut-Off
09/012,778	Jan. 23, 1998	Lewis Kuo	Lanthanum Manganite-Based Air Electrode For Solid Oxide Fuel Cells
09/016,915	Feb. 2, 1998	John A. Bibaeff	Novel Water Treatment Device and Method
09/019,131	Feb. 5, 1998	Elaine Ham Young	Denture Storage Receptacle

37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of an national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (David J. Patterson) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.497. The international application number is PCT/GB95/01250 and was filed on 31 May 1995, in the names of Peter Robert Flux and David John Patterson for the invention entitled Universal Attachment Link. The national stage application number is 08/750,549 and has a 35 U.S.C. 371(c) date of 08 April 1997.

Notice is hereby given of the filing of an national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Kiyoshi Ando) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.497. The international application number is PCT/JP95/02316 and was filed on 14 November 1995, in the names of Tamiyuki Eguchi, Kiyoshi Ando, and Yasuo Shimizu for the invention entitled HYDROPHILIC MEMBRANE AND METHOD FOR PRODUCING SAME. The national stage application number is 08/836,049 and has a 35 U.S.C. 371(c) date of 23 December 1997.

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Auburn Farms, Inc., Sacramento, Calif., Reg. No. 1,463,786, for the mark "NON STOP", Canc. No. 26,772.

Awaken Products Corp., New York, N.Y., Reg. No. 1,783,187, for the mark "AWAKEN", Canc. No. 27,074.

KATRINA PETERSON
Supervisory Legal Assistant
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Pilot Project on Telephone Disposition of Interlocutory Matters in Inter Partes Cases Before the Trademark Trial and Appeal Board

The Trademark Trial and Appeal Board is inaugurating, with this notice, a pilot project in which a group of three of its staff attorneys will hear arguments on, and dispose of, pending interlocutory motions and related matters by telephone. The pilot project will last six months or until the Board has collected enough data to decide whether the expanded use of the telephone is an effective means for managing TTAB cases.

In 1997, the Patent and Trademark Office published a notice of proposed rulemaking. Many of the proposed rules were intended to stem perceived abuses of the existing rules, to promote more expeditious prosecution and defense of cases, and to help reduce the Board's backlog of pending motions and cases ready for final decision. The PTO solicited written comments on the various proposals and held a public hearing to receive oral comments. A number of responses from attorneys and professional organizations suggested that the Board make increased use of the telephone to both hear arguments on interlocutory matters and dispose of pending motions.

Trademark Rule 2.120(i) already provides for telephone conferences on motions, but that provision is part of the Board's rule on discovery and, therefore, might be viewed as limiting telephone conferences to matters related to discovery. This notice discusses broader use of telephone conferences and standardizes practice.

Though there will be no strict limits on the types of matters which can be handled through telephone conferences, participating Board attorneys will retain discretion to decide whether any particular matter can be heard or disposed of by telephone. A decision may even be made during a telephone conference to adjourn the conference and require submission of written briefs, if it appears during the conference that its continuation is not practicable. On the other hand, a conference arranged for consideration of a particular motion will not necessarily be limited to that motion and may be expanded to consider collateral matters which arise during the conference.

Patent and Trademark Rule 1.2 (37 CFR §1.2), which requires all business with the PTO be transacted in writing, and Trademark Rule 2.119(b) (37 CFR §2.119(b)), which specifies the acceptable methods for forwarding service copies of papers filed with the Board, are waived for cases within the pilot project. Participating Board attorneys, however, retain the option of requiring written submissions and service of copies of written submissions, as necessary.

Participation in the pilot project is not elective for parties or their attorneys. [In the remainder of this notice, any reference to the "parties" to a Board case includes attorneys representing parties to a Board case.] Any opposition or cancellation proceeding that is on the docket of one of the participating Board attorneys will be included in the project, whether the case is already in existence when the pilot project begins or is instituted after the project begins. Participating Board attorneys will be Linda McLeod, Gerard Rogers, and Jyll Smith.

To alert parties that a newly instituted case is covered by the project, the Board will include an appropriate notice with the notice of institution, i.e., the notice setting the defendant's time to file an answer or other response to the plaintiff's complaint. The notice will also include the name and telephone number of the Board attorney responsible for the case. No special notice will be mailed to parties for covered cases already in existence when the pilot project begins. When, however, the Board must issue an order for any such case after the commencement of the project, the order may include a reference to commencement of the pilot project and how to obtain a copy of this announcement.

When the Board consolidates pilot project and non-pilot project cases, the consolidation order will inform the parties whether the consolidated cases will be within the ambit of the project. Generally, if the parent case, i.e., the first-filed of the consolidated cases, was already within the pilot project, then the consolidated cases will all be within the pilot project.

Included below are discussions of (1) illustrative, non-exclusive examples of interlocutory matters which are or are not suitable for telephone conferences; (2) how a telephone conference may be initiated (e.g., by the Board attorney or by a party); and (3) the mechanics of participation and issuance of rulings.

The Board's Chief Administrative Trademark Judge or Board attorneys participating in the pilot project periodically will seek comments on the merits of the project from bar groups or other organizations representing the interests of parties in Board cases, from the Public Advisory Committee for Trademark Affairs, and from parties in project cases. Comments received during the pendency of the project may result in interim changes to the provisions set forth below.

I. SUITABILITY OF VARIOUS INTERLOCUTORY MATTERS FOR TELEPHONE CONFERENCING OR TELEPHONE DISPOSITION

The Board will neither insist that certain types of motions always be decided by telephone conference, nor automatically preclude particular matters from being considered by telephone; however, the Board will not decide by telephone conference any motion which, if granted, would be dispositive of the proceeding.

Many motions, whether in the pleading phase, discovery phase or trial phase of a Board case, will be suitable for telephone conferencing. *Examples include:*

- a dispute about whether a set of interrogatories is within the Board's limit;
- most motions to extend or suspend;
- a motion to compel attendance of a witness at a discovery deposition;
- a motion to quash a notice of deposition; and
- a motion to compel which focuses narrowly on a small number of specific interrogatories or document requests.

In addition, parties might wish to consider requesting a conference, or the Board may initiate a conference, for interlocutory matters which do not involve motions but where the parties might benefit from a better understanding of Board practice. *For example:*

- Parties sometimes wrongly assume that the party which serves discovery first in a Board case is entitled to obtain responses first; these disputes regarding a supposed "right of priority" to obtain discovery would be particularly suited to resolution by telephone conference.
- Where a significant number of specific discovery requests are in dispute and the Board finds it impractical to decide a motion to compel or a motion for protective order by telephone conference, the parties still might find it helpful to participate in a conference focusing more generally on the areas of permissible discovery.
- Misunderstandings as to Board practice sometimes threaten to derail a discovery deposition. A telephone conference may be used to clarify Board practice when problematic issues arise during the taking of a discovery or testimony deposition and threaten its progress or completion.

Although many types of motions will be suitable for resolution by telephone conference, certain motions will not. A motion which is potentially dispositive, i.e., a motion which, if granted, would dispose of a Board proceeding, cannot be decided by a Board attorney. *See* 37 CFR §2.127(c). Consideration of such a motion by telephone conference would require participation of a panel of three Board judges, which is not contemplated by this pilot project. Accordingly, potentially dispositive motions will not be considered in telephone conferences. *Examples of potentially dispositive motions which will not be considered include the following:*

- a motion for entry of default judgment

[**however**, a motion by a defendant to accept a late answer or to reopen the time for answering would be suitable for a telephone conference];

- a motion to dismiss under Federal Rule 12(b)(6);
- a motion for judgment on the pleadings under Federal Rule 12(c);
- a motion for summary judgment

[**however**, a motion to strike a motion for summary judgment as untimely could be considered in a telephone conference]; and

- a motion for entry of judgment against a plaintiff for failure to prosecute, under Trademark Rule 2.132.

Certain motions require review of large written records and, therefore, are not suitable for resolution by telephone conference. *For example:*

- A motion to compel involving a significant number of disputed discovery requests may require the Board attorney handling the case to sift through discovery requests, responses, and the parties' arguments on the sufficiency of the responses.

[**However**, a motion to compel always must include a showing that the parties have made a good faith attempt to resolve their discovery dispute prior to the filing of the motion, see 37 CFR §2.120(e), and the Board may very well hold a telephone conference on this threshold issue.]

II. INITIATION AND PARTICIPATION

Use of the telephone conference procedure is discretionary with the Board. The Board may schedule a conference (1) following the Board's granting of a party's request for a conference, or (2) following the Board's approval of a stipulation of the parties to participate in a conference, or (3) upon the Board's own initiative. Procedures for framing the issues for the conference and convening the conference will vary, depending on how the telephone conference is initiated and, if initiated by a party for the purpose of deciding a motion, whether the party is a movant or non-movant.

Contacting the Appropriate Board Attorney

If a party wishes to request a telephone conference, or if the parties wish to stipulate to convening of a conference, the party or parties must contact the appropriate Board attorney by telephone or fax. If a request made by fax is not acknowledged by a Board attorney, the party or parties will need to follow up with a telephone call to confirm receipt of the fax. Initial contact will be limited to a simple statement of the nature of the issues proposed to be decided by telephone conference, with no discussion of the merits of any issues.

During initial telephone contact, the Board attorney will decide whether any party must file a motion or brief to frame the issues for the conference and will issue instructions for the filling and service of copies of such motions or briefs. If all parties to a case make a joint request, by telephone rather than fax, for a conference, they should not expect to have the conference begin on initial contact.

Denial of a request for a telephone conference is without prejudice to the merits of the motion or other matter sought to be heard by telephone. If a request is denied, the Board attorney will provide instructions to the party or parties regarding requirements for filing of necessary motions or briefs.

Time for Requesting Conference

A party that intends to file a motion may request a telephone conference before it files the motion. A party that has been served with a written motion may request a telephone conference to dispose of the motion, but that party must contact the Board attorney soon after it receives the service copy of the motion. A party will not be able to request a telephone conference at or near the end of its time for responding to a motion, so as to avoid or delay responding to the motion.

A party that files and serves a written motion without first requesting a telephone conference should have no need to later request a conference on that motion, absent special circumstances. *For example*, if a party's motion results in a cross-motion and the party that filed the initial motion then wishes to request a telephone conference, it may do so.

Responsibility for Arranging Conference

When the Board grants a party's request for a telephone conference, the party has the responsibility for scheduling it for a time agreeable to all parties and the Board attorney. The party must arrange the conference call.

When parties stipulate to a telephone conference, they should also decide which of them will arrange the conference, if the stipulation is approved.

Initiation by the Board

Upon review of a case file or a motion pending in a case file, the reviewing Board attorney may determine that a telephone conference is appropriate. In such a case, the Board attorney will contact the parties to arrange an appropriate time for the

conference. If the conference is being arranged to decide a pending motion, and the non-moving party has not yet filed a response, the Board will inform the non-moving party that it should be prepared to make an oral response to the motion during the telephone conference. Any other instructions regarding filing of briefs or serving of copies will be provided. The Board will arrange any conference call it initiates.

III. CONDUCT OF CONFERENCE AND ISSUANCE OF RULINGS

Participation

When a written motion is filed and a telephone conference is scheduled, either on request of the non-movant or on the Board's initiative, the subject motion may be denied with prejudice if the party that filed the motion fails to participate in the telephone conference.

When the Board grants a moving party's request for a telephone conference on a motion, failure of the non-movant to participate may result in the motion being treated as conceded. See 37 CFR §2.127(a).

The Board retains the discretion to reconsider the grant or denial of a motion that results from a party's failure to participate.

Conduct of Conference

As a general rule, the telephone conference will be limited to the issues defined by the Board prior to, or at the commencement of, the conference. There may be instances in which the Board attorney determines, during a telephone conference, that the motion or matter in issue should be decided on a written record. In such cases, the Board attorney may halt the telephone conference and direct the filing of a motion, or response to a motion, or both.

Parties must conduct themselves with appropriate decorum. Interruptions are to be avoided. The Board attorney conducting the conference generally will signal that a party may make an argument or presentation by inviting the party to do so or by inviting a response to an argument or presentation made by another.

The Board will not record the contents of a telephone conference, stenographically or by audio tape. Participating parties are not permitted to record the contents of a telephone conference.

Issuance of Rulings

The Board attorney may make rulings at the conclusion of a telephone conference or may take the parties' arguments under advisement. In every instance, after the resolution of a motion or matter by telephone conference, the Board attorney will issue a written order containing all rulings. In most instances, the Board's written order will consist of only a brief summary of the issues and the resulting decision; generally, the order will not include a recitation of the parties' arguments. The decision will be forwarded to the parties by fax or mail.

Neither the filing, under 37 CFR §2.127(b), of a request for reconsideration or modification of a decision on a motion or matter decided after a telephone conference, nor the filing, under 37 CFR §2.146(e)(2), of a petition to the Commissioner, will, in the usual case, result in a stay of proceedings. Any discovery, trial dates or other deadlines set by the Board will ordinarily remain as set, notwithstanding the request for reconsideration or petition. The Board may, however, reset dates, as appropriate, if a request for reconsideration is granted or if a petition to the Commissioner is granted.

July 20, 1998

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Department of Commerce
Patent and Trademark Office

37 CFR Part 1
[Docket No. 980713170-8170-01]
RIN 0651-AA96

Revision of Patent Fees for Fiscal Year 1999

Agency: Patent and Trademark Office, Commerce.

Action: Final Rule.

Summary: The Patent and Trademark Office (PTO) is amending the rules of practice in patent cases, to adjust patent statutory fee amounts to reflect the expiration of the surcharge established by the Omnibus Reconciliation Act of 1990, as amended, and fluctuations in the Consumer Price Index (CPI). Also, a few fees that track statutory fees asr being correspondingly adjusted, and a non-statutory fee is being reduced to recover cost.

Patent statutory fees consist of a fee amount pursuant to title 35, United States Code; annual adjustments to reflect fluctuations in the CPI; and a surcharge, established by the Omnibus Budget Reconciliation Act of 1990, as amended. The intent of the surcharge was to finance the cost of operating the PTO from user fees, rather than from taxes paid to the general fund of the United States Treasury. In fiscal year 1998, the surcharge will raise $119,000,000. The surcharge will expire at the end of fiscal year 1998. To replace the surcharge and to ensure continued user-fee funding of PTO's operations, legislation has been introduced in the Congress, namely, H.R. 3989 and H.R. 3723. Should either legislation or an alternative be enacted, the PTO will publish a document in the *Federal Register* to ensure that this final rule and the fees established will not take effect.

This final rule assumes that no legislative change to patent fees will take place before October 1, 1998. This final rule adjusts patent fees to reflect the expiration of the surcharge established by the Omnibus Budget Reconciliation Act of 1990, as amended, and to reflect fluctuations in the CPI over the previous twelve months.

Effective Date: October 1, 1998.

For Further Information Contact: Matthew Lee by telephone at (703) 305-8051, fax at (703) 305-8007, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Office of Finance, Crystal Park 1, Suite 802, Washington, D.C. 20231.

Supplementary Information: This final rule adjusts PTO fees in accordance with the applicable provisions of title 35, United States Code, and the Patent and Trademark Office Authorization Act of 1991 (Public Law 102-204).

Legislation has been introduced in the Congress, namely H.R. 3989 and H.R. 3723, to replace the surcharge and to ensure continued user-fee funding of PTO's operations. H.R. 3989 would re-establish patent statutory fees at the fiscal year 1998 fee levels. For patent customers, H.R. 3989 would not change fee levels; it would simply include the current surcharge and previous years' annual inflation adjustments within the statutory fees, in accordance with the President's budget. The President's budget further proposes to rescind $66,342,000 of PTO's fiscal year 1998 budget authority, and an additional $50,000,000 in fees collected in fiscal year 1999, for a total recission of $116,342,000.

H.R. 3723 would re-establish patent statutory fees below the levels proposed in H.R. 3989. The total amount collected under H.R. 3723 is expected to be $50,000,000 less than would be collected under H.R. 3989. H.R. 3723 does not assume recission of PTO budget authority from fees collected in fiscal year 1999. (A comparison of fee amounts for fiscal year 1998, this final rule for fiscal year 1999, H.R. 3723, and H.R. 3989 is included as an Appendix to this final rule.)

In the absence of the enactment of these bills, or any other positive action by the Congress before October 1, 1998, certain patent fees will revert to their statutory levels, as adjusted for previous years' annual fluctuations in the CPI. Should this occur, and PTO not increase fees by CPI fiscal year 1999, PTO fee collections in fiscal year 1999 would be $182,000,000 less than would be collected under H.R. 3989 and the President's budget proposal, and $132,000,000 less than would be collected under H.R. 3723.

This final rule assumes that these bills- and any other statutory change to patent fees-will not be enacted before October 1, 1998. This final rule adjusts patent fees to reflect the expiration of the surcharge established by the Omnibus Budget Reconciliation Act of 1990, as amended, and to reflect fluctuations in the CPI over the previous twelve months. Fees collected under this final rule in fiscal year 1999 would be $171,000,000 less than would be collected under H.R. 3723.

Patent customers should be aware that legislative changes to patent fees superceding this final rule may occur. If such changes occur, the PTO will publish a document in the *Federal Register* to ensure that this final rule and the fees established herein will not take effect. Patent customers may wish to refer to the official PTO wbsite (www.uspto.gov) for the most current fee amounts. Official notices of any fee changes will appear in the *Federal Register* and the *Official Gazette of the Patent and Trademark Office*.

Background:

Statutory Provisions

Patent fees are authorized by 35 U.S.C. 41 and 35 U.S.C. 376. A fifty percent reduction in the fees paid under 35 U.S.C. 41(a) and (b) by independent inventors, small business concerns, and nonprofit organizations who meet prescribed definitions is required by 35 U.S.C. 41(h).

Subsection 41(f) of title 35, United States Code, provides that fees established under 35 U.S.C. 41(a) and (b) may be adjusted on October 1, 1992, and every year thereafter, to reflect fluctuations in the Consumer Price Index (CPI) over the previous 12 months.

Subsection 41(d) of title 35, United States Code, authorizes the Commissioner to establish fees for all other processing, services, or materials related to patents to recover the average cost of providing these services or materials, except for the fees for recording a document affecting title, for each photocopy, and for each black and white copy of a patent, and for library services.

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty (PCT).

Subsection 41(g) of title 35, United States Code, provides that new fee amounts established by the Commissioner under section 41 may take effect thirty days after notice in the *Federal Register* and the *Official Gazette of the Patent and Trademark Office*.

Fee Adjustment Level

The patent fees established by 35 U.S.C. 41(a) and (b) will be adjusted on October 1, 1998, to reflect fluctuations occurring during the previous twelve months in the Consumer Price Index for all urban consumers (CPI-U), and CPI-U adjustments, where applicable, from fiscal years 1992 through 1997. In calculating these fluctuations, the Office of Management and Budget (OMB) has determined that the PTO should use CPI-U data as determined by the Secretary of Labor. However, the Department of Labor does not make public the CPI-U until approximately twenty-one days after the end of the month being calculated. Therefore, the latest CPI-U information available is for the month of May 1998. In accordance with previous rulemaking methodology, the PTO uses the Administration's projected CPI-U for the twelve-month period ending September 30, 1998, which is 2.2 percent. Based on this projection, patent statutory fees will be adjusted by 2.2

Four patent service fees that are set by statute will not be adjusted. The four fees that are not being adjusted are the assignment recording fee, printed patent copy fee, photocopy charge fee, and library service fee.

The final fee amounts were rounded by applying standard arithmetic rules so that the amounts rounded would be convenient to the user. Fees rounded to an even number so that any comparable small entity fee would be a whole number.

General Procedures

Any fee amount that is paid on or after the effective date of the final fee adjustment will be subject to the new fees then in effect. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing or Transmission, where authorized under 37 CFR 1.8, will be considered to be the date of receipt in the PTO. A Certificate of Mailing or Transmission under Section 37 CFR 1.8(a)(1) is not proper for items which are specifically excluded under 37 CFR 1.8(a)(2). 37 CFR 1.8(a)(2) should be consulted to determine those items for which a Certificate of Mailing or Transmission is not proper. Such items include, among other things, the filing of national and international applications for patents and the filing of trademark applications. In addition, the provisions of 37 CFR 1.10 relating to filing papers and fees using the "Express Mail" service of the United States Postal Service (USPS) do apply to any paper or fee (including patent and trademark applications) to be filed in the PTO. If an application or fee is filed by "Express Mail" with a date of deposit with the USPS (shown by the "date in" on the "Express Mail" mailing label) which is dated on or after the effective date of the rules, as amended, the amount of the fee to be paid would be the fee established by the amended rules.

Discussion of Specific Rules

37 CFR 1.16 National application filing fees.

Section 1.16, paragraphs (a) through (d), and (f) through (j), is revised to adjust fees established therein to reflect the expiration of the patent fee surcharge established by the Omnibus Budget Reconciliation Act of 1990, as amended, and fluctuations in the CPI.

37 CFR 1.17 Patent application processing fees.

Section 1.17, paragraphs (a) through (d), (l), (m), (r), and (s), is revised to adjust fees established therein to reflect the expiration of the patent fee surcharge established by the Omnibus Budget Reconciliation Act of 1990, as amended, and fluctuations in the CPI.

37 CFR 1.18 Patent issue fees.

Section 1.18, paragraphs (a) through (c), is revised to adjust fees established therein to reflect the expiration of the patent fee surcharge established by the Omnibus Budget Reconciliation Act of 1990, as amended, andfluctuations in the CPI.

37 CFR 1.20 Post-issuance fees.

Section 1.20, paragraphs (d) through (g), is revised to adjust fees established therein to reflect the expiration of the patent fee surcharge established by the Omnibus Budget Reconciliation Act of 1990, as amended, and fluctuations in the CPI.

37 CFR 1.21 Miscellaneous fees and charges.

Section 1.21, paragraphs (a)(6)(ii), is revised to adjust fees established therein to recover costs.

37 CFR 1.492 National stage fees.

Section 1.492, paragraphs (a) through (d), is revised to adjust fees established therein to reflect the expiration of the patent

fee surcharge established by the Omnibus Budget Reconciliation Act of 1990, as amended, and fluctuations in the CPI.

Other Considerations

This final rule contains no information collection within the meaning of the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 et seq. This final rule has been determined to be not significant for purposes of Executive Order 12866.

Prior notice and opportunity for public comment for patent fee chnages is not required by the patent statutes or the Administrative Procedure Act. While the patent statutes specifically require that changes to patent fees shall not take effect "until at least 30 days after notice of the fee has been published in the *Federal Register* and in the *Official Gazette of the Patent and Trademark Office,*" 35 U.S.C. 41(g), they do not require any additional publication of proposed fee changes. In addition, changes in patent fees are exempted from the notice of proposed rulemaking requirements of the Administrative Procedure Act under 5 U.S.C. 553(a)(2) as the establishmnet of fee amounts is a matter related to agency management.

As prior notice and an opportunity for public comment are not required pursuant ot 5 U.S.C. 553, or any other law, the analytical requirements of the Regulatory Flexibility Act, 5 U.S.C. 601 et seq., are inapplicable.

A comparison of fee amounts for fiscal year 1998, this final rule for fiscal year 1999, H.R. 3723, and H.R. 3989 are included as an Appendix to this final rule.

List of Subjects

37 CFR Part 1

Administrative practice and procedure, Inventions and patents, Reporting and record keeping requirements, Small businesses.

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is amended by revising paragraphs (a) through (d), and (f) through (j) to read as follows:

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except provisional, design or plant applications:

By a small entity (§ 1.9(f))	$305.00
By other than a small entity	$610.00

(b) In addition to the basic filing fee in an original application, except provisional applications, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f))	$32.00
By other than a small entity	$64.00

(c) In addition to the basic filing fee in an original application, except provisional applications, for filling or later presentation of each claim in excess of 20:

By a small entity (§ 1.9(f))	$7.00
By other than a small entity	$14.00

(d) In addition to the basic filing fee in an original application, except provisional applications, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f))	$105.00
By other than a small entity	$210.00

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(f) Basic fee for filing each design application

By a small entity (§ 1.9(f))	$130.00
By other than a small entity	$260.00

(g) Basic fee for filing each plant application, except provisional applications:

By a small entity (§ 1.9(f))	$195.00
By other than a small entity	$390.00

(h) Basic fee for filing each reissue application:

By a small entity (§ 1.9(f))	$305.00
By other than a small entity	$610.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§ 1.9(f))	$32.00
By other than a small entity	$64.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim in excess of 20 and also in excess of the number of claims in the original patent:

By a small entity (§ 1.9(f))	$7.00
By other than a small entity	$14.00

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3. Section 1.17 is amended by revising (a)(i) through (5), (b) through (d), (l), (m), (r), and (s) to read as follows:

§ 1.17 Patent application processing fees.

(a) ***

(1) For reply within first month:

By a small entity (§ 1.9(f))	$45.00
By other than a small entity	$90.00

(2) For reply within second month:

By a small entity (§ 1.9(f))	$155.00
By other than a small entity	$310.00

(3) For reply within third month:

By a small entity (§ 1.9(f))	$355.00
By other than a small entity	$710.00

(4) For reply within fourth month:

By a small entity (§ 1.9(f))	$550.00
By other than a small entity	$1,100.00

(5) For reply within fifth month:

By a small entity (§ 1.9(f))	$750.00
By other than a small entity	$1,500.00

(b) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:

By a small entity (§ 1.9 (f))	$125.00
By other than a small entity	$250.00

(c) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§ 1.9 (f))	$125.00
By other than a small entity	$250.00

(d) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in an appeal under 35 U.S.C. 134:

By a small entity (§ 1.9(f)) $105.00
By other than a small entity $210.00

*****

(l) For filing a petition:

(1) For the revival of an unavoidably abandoned application under 35 U.S.C. 111, 133, 364, or 371, or
(2) For delayed payment of the issue fee under 35 U.S.C. 151:

By a small entity (§ 1.9(f)) $45.00
By other than a small entity $90.00

(m) For filing a petition:

(1) For revival of an unintentionally abandoned application, or

(2) For the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§ 1.9(f)) $490.00
By other than a small entity $980.00

*****

(r) For entry of a submission after final rejection under §1.129(a):

By a small entity (§ 1.9(f)) $305.00
By other than a small entity $610.00

(s) For each additional invention requested to be examined under §1.129(b):

By a small entity (§ 1.9(f)) $305.00
By other than a small entity $610.00

4. Section 1.18 is revised to read as follows:

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§ 1.9(f)) $490.00
By other than a small entity $980.00

(b) Issue fee for issuing a design patent:

By a small entity (§ 1.9(f)) $175.00
By other than a small entity $350.00

(c) Issue fee for issuing a plant patent:

By a small entity (§ 1.9(f)) $235.00
By other than a small entity $470.00

5. Section 1.20 is amended by revising paragraphs (d) through (g) to read as follows:

§ 1.20 Post issuance fees.

*****

(d) For filing each statutory disclaimer (§ 1.321):

By a small entity (§ 1.9(f)) $45.00
By other than a small entity $90.00

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond four years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) $385.00
By other than a small entity $770.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond eight years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) $770.00
By other than a small entity $1,540.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980, in force beyond twelve years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) $1,180.00
By other than a small entity $2,360.00

*****

6. Section 1.21 is amended by revising paragraph (a)(6)(ii) to read as follows:

§ 1.21 Miscellaneous fees and charges.

*****

(a) ***

(6) ***

(ii) Regrading of afternoon section (Claim Drafting) $230.00

*****

(7) Section 1.492 is amended by revising paragraphs (a) through (d) to read as follows:

§ 1.492 National stage fees.

*****

(a) The basic national fee:

(1) Where an international preliminary examination fee as set forth in § 1.482 has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) $270.00
By other than a small entity $540.00

(2) Where no international preliminary examination fee as set forth in § 1.482 has been paid to the United States Patent and Trademark Office, but an international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office as an International Searching Authority:

By a small entity (§ 1.9(f)) $305.00
By other than a small entity $610.00

(3) Where no international preliminary examination fee as set forth in § 1.482 has been paid and no international search fee as set forth in § 1.445(a)(2) has been paid on the international application to the United States Patent and Trademark Office:

By a small entity (§ 1.9(f)) $395.00
By other than a small entity $790.00

(4) Where an international preliminary examination fee as set forth in §1.482 has been paid to the United States Patent and Trademark Office and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness), and industrial applicability, as defined in PCT Article 33 (1) to (4) have been satisfied for all the claims presented in the application entering the national stage (see § 1.496(b)):

By a small entity (§ 1.9(f)) $39.00
By other than a small entity $78.00

(5) Where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office:

By a small entity (§ 1.9(f)) $395.00
By other than a small entity $790.00

(b) In addition to the basic national fee, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§ 1.9(f)) $32.00
By other than a small entity $64.00

(c) In addition to the basic national fee, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):

By a small entity (§ 1.9(f)) $7.00
By other than a small entity $14.00

(d) In addition to the basic national fee, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§ 1.9(f)) $105.00
By other than a small entity $210.00

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July 17, 1998

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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NOTE — The following appendix is provided as a courtesy to the public, and is not a substitute for the rules. It will not appear in the Code of Federal Regulations.

Appendix A - Comparison of Existing and Revised Fee Amounts

— Indicates fees remain at Pre-Oct. 1998 amount

37 CFR	Description	Pre-Oct. 1998	Final Rule Oct. 1998	H.R. 3723	H.R. 3989
1.16(a)	Basic Filing Fee	$790	$610	$760	—
1.16(a)	Basic Filing Fee (Small Entity)	$395	$305	$380	—
1.16(b)	Independent Claims	$82	$64	$78	—
1.16(b)	Independent Claims (Small Entity)	$41	$32	$39	—
1.16(c)	Claims in Excess of 20	$22	$14	$18	—
1.16(c)	Claims in Excess of 20 (Small Entity)	$11	$7	$9	—
1.16(d)	Multiple Dependent Claims	$270	$210	$260	—
1.16(d)	Multiple Dependent Claims (Small Entity)	$135	$105	$130	—
1.16(e)	Surcharge - Late Filing Fee	$130	—	—	—
1.16(e)	Surcharge - Late Filing Fee (Small Entity)	$65	—	—	—
1.16(f)	Design Filing Fee	$330	$260	$310	—
1.16(f)	Design Filing Fee (Small Entity)	$165	$130	$155	—
1.16(g)	Plant Filing Fee	$540	$390	$480	—
1.16(g)	Plant Filing Fee (Small Entity)	$270	$195	$240	—
1.16(h)	Reissue Filing Fee	$790	$610	$760	—
1.16(h)	Reissue Filing Fee (Small Entity)	$395	$305	$380	—
1.16(i)	Reissue Independent Claims	$82	$64	$78	—
1.16(i)	Reissue Independent Claims (Small Entity)	$41	$32	$39	—
1.16(j)	Reissue Claims in Excess of 20	$22	$14	$18	—
1.16(j)	Reissue Claims in Excess of 20 (Small Entity)	$11	$7	$9	—
1.16(k)	Provisional Application Filing Fee	$150	—	—	—
1.16(k)	Provisional Application Filing Fee (Small Entity)	$75	—	—	—
1.16(l)	Surcharge - Incomplete Provisional App. Filed	$50	—	—	—
1.16(l)	Surcharge - Incomplete Provisional App. Filed (Small Entity)	$25	—	—	—
1.17(a)(1)	Extension - First Month	$110	$90	—	—
1.17(a)(1)	Extension - First Month (Small Entity)	$55	$45	—	—
1.17(a)(2)	Extension - Second Month	$400	$310	$380	—
1.17(a)(2)	Extension - Second Month (Small Entity)	$200	$155	$190	—
1.17(a)(3)	Extension - Third Month	$950	$710	$870	—
1.17(a)(3)	Extension - Third Month (Small Entity)	$475	$355	$435	—
1.17(a)(4)	Extension - Fourth Month	$1,510	$1,100	$1,360	—
1.17(a)(4)	Extension - Fourth Month (Small Entity)	$755	$550	$680	—
1.17(a)(5)	Extension - Fifth Month (Small Entity)	$1,030	$750	$925	—
1.17(b)	Notice of Appeal	$310	$250	$300	—
1.17(b)	Notice of Appeal (Small Entity)	$155	$125	$150	—
1.17(c)	Filing a Brief	$310	$250	$300	—
1.17(c)	Filing a Brief (Small Entity)	$155	$125	$150	—
1.17(d)	Request for Oral Hearing	$270	$210	$260	—
1.17(d)	Request for Oral Hearing (Small Entity)	$135	$105	$130	—
1.17(h)	Petition - Not All Inventors	$130	—	—	—
1.17(h)	Petition - Correction of Inventorship	$130	—	—	—
1.17(h)	Petition - Decision on Questions	$130	—	—	—
1.17(h)	Petition - Suspend Rules	$130	—	—	—
1.17(h)	Petition - Expedited License	$130	—	—	—
1.17(h)	Petition - Scope of License	$130	—	—	—
1.17(h)	Petition - Retroactive License	$130	—	—	—
1.17(h)	Petition - Refusing Maintenance Fee	$130	—	—	—
1.17(h)	Petition - Refusing Maintenance Fee - Expired Patent	$130	—	—	—

37 CFR	Description	Pre-Oct. 1998	Final Rule Oct. 1998	H.R. 3723	H.R. 3989
1.17(h)	Petition - Interference	$130	—	—	—
1.17(h)	Petition - Reconsider Interference	$130	—	—	—
1.17(h)	Petition - Late Filing of Interference	$130	—	—	—
1.20(b)	Petition - Correction of Inventorship	$130	—	—	—
1.17(h)	Petition - Refusal to Publish SIR	$130	—	—	—
1.17(i)	Petition - For Assignment	$130	—	—	—
1.17(i)	Petition - For Application	$130	—	—	—
1.17(i)	Petition - Late Priority Papers	$130	—	—	—
1.17(i)	Petition - Suspend Action	$130	—	—	—
1.17(i)	Petition - Divisional Reissues to Issue Separately	$130	—	—	—
1.17(i)	Petition - For Interference Agreement	$130	—	—	—
1.17(i)	Petition - Amendment After Issue	$130	—	—	—
1.17(i)	Petition - Withdrawal After Issue	$130	—	—	—
1.17(i)	Petition - Defer Issue	$130	—	—	—
1.17(i)	Petition - Issue to Assignee	$130	—	—	—
1.17(i)	Petition - Accord a Filing Date Under § 1.53	$130	—	—	—
1.17(i)	Petition - Accord a Filing Date Under § 1.62	$130	—	—	—
1.17(i)	Petition - Make Application Special	$130	—	—	—
1.17(j)	Petition - Public Use Proceeding	$1,510	—	—	—
1.17(k)	Non-English Specification	$130	—	—	—
1.17(l)	Petition - Revive Abandoned Application	$110	$90	—	—
1.17(l)	Petition - Revive Abandoned Application (Small Entity)	$55	$45	—	—
1.17(m)	Petition - Revive Unintentionally Abandoned Application	$1,320	$980	$1,210	—
1.17(m)	Petition - Revive Unintent Abandoned Application (Small Entity)	$660	$490	$605	—
1.17(n)	SIR - Prior to Examiner's Action	$920	—	—	—
1.17(o)	SIR - After Examiner's Action	$1,840	—	—	—
1.17(p)	Submission of an Information Disclosure Statement (§ 1.97)	$240	—	—	—
1.17(q)	Petition - Correction of Inventorship (Prov. App.)	$50	—	—	—
1.17(q)	Petition - Accord a filing date (Prov. App.)	$50	—	—	—
1.17(q)	Petition - Entry of submission after final rejection (Prov. App.).	$50	—	—	—
1.17(r)	Filing a submission after final rejection (1.129(a))	$790	$610	$760	—
1.17(r)	Filing a submission after final rejection (1.129(a)) (Small Entity)	$395	$305	$380	—
1.17(s)	Per add'l invention to be examined (1.129(b))	$790	$610	$760	—
1.17(s)	Per add'l invention to be examined (1.129(b)) (Small Entity)	$395	$305	$380	—
1.18(a)	Issue Fee	$1,320	$980	$1,210	—
1.18(a)	Issue Fee (Small Entity)	$660	$490	$605	—
1.18(b)	Design Issue Fee	$450	$350	$430	—
1.18(b)	Design Issue Fee (Small Entity)	$225	$175	$215	—
1.18(c)	Plant Issue Fee	$670	$470	$580	—
1.18(c)	Plant Issue Fee (Small Entity)	$335	$235	$290	—
1.19(a)(1)(i)	Copy of Patent	$3	—	—	—
1.19(a)(1)(ii)	Patent Copy - Overnight delivery to PTO Box or overnight fax	$6	—	—	—
1.19(a)(1)(iii)	Patent Copy Ordered by Expedited Mail or Fax - Exp. service	$25	—	—	—
1.19(a)(2)	Plant Patent Copy	$15	—	—	—
1.19(a)(3)(i)	Copy of Utility Patent or SIR in Color	$25	—	—	—
1.19(b)(1)(i)	Certified Copy of Patent Application as Filed	$15	—	—	—
1.19(b)(1)(ii)	Certified Copy of Patent Application as Filed, Expedited	$30	—	—	—
1.19(b)(2)	Cert. or Uncert. Copy of Patent-Related File Wrapper/Contents	$150	—	—	—
1.19(b)(3)	Cert. or Uncert. Copies of Office Records, per Document	$25	—	—	—
1.19(b)(4)	For Assignment Records, Abstract of Title and Certification	$25	—	—	—
1.19(c)	Library Service	$50	—	—	—
1.19(d)	List of Patents in Subclass	$3	—	—	—
1.19(e)	Uncertified Statement-Status of Maintenance Fee Payment	$10	—	—	—
1.19(f)	Copy of Non-U.S. Patent Document	$25	—	—	—
1.19(g)	Comparing and Certifying Copies, Per Document, Per Copy	$25	—	—	—
1.19(h)	Duplicate or Corrected Filing Receipt	$25	—	—	—
1.20(a)	Certificate of Correction	$100	—	—	—
1.20(c)	Reexamination	$2,520	—	—	—
1.20(d)	Statutory Disclaimer	$110	$90	—	—
1.20(d)	Statutory Disclaimer (Small Entity)	$55	$45	—	—
1.20(e)	Maintenance Fee - 3.5 Years	$1,050	$770	$940	—
1.20(e)	Maintenance Fee - 3.5 Years (Small Entity)	$520	$385	$470	—
1.20(f)	Maintenance Fee - 7.5 Years	$2,100	$1,540	$1,900	—
1.20(f)	Maintenance Fee - 7.5 Years (Small Entity)	$1,050	$770	$950	—
1.20(g)	Maintenance Fee - 11.5 Years	$3,160	$2,360	$2,910	—
1.20(g)	Maintenance Fee - 11.5 Years (Small Entity)	$1,580	$1,180	$1,455	—
1.20(h)	Surcharge - Maintenance Fee - 6 Months	$130	—	—	—
1.20(h)	Surcharge - Maintenance Fee - 6 Months (Small Entity)	$65	—	—	—
1.20(i)(1)	Surcharge - Maintenance After Expiration - Unavoidable	$700	—	—	—
1.20(i)(2)	Surcharge - Maintenance After Expiration - Unintentional	$1,640	—	—	—
1.20(j)(1)	Extension of Term of Patent Under 1.740	$1,120	—	—	—
1.20(j)(2)	Initial Application for Interim Extension Under 1.790	$420	—	—	—
1.20(j)(3)	Subsequent Application for Interim Extension Under 1.790	$210	—	—	—
1.21(a)(1)(i)	Application Fee (non-refundable)	$40	—	—	—

37 CFR	Description	Pre-Oct. 1998	Final Rule Oct. 1998	H.R. 3723	H.R. 3989
1.21(a)(1)(ii)	Registration examination fee	$310	—	—	—
1.21(a)(2)	Registration to Practice	$100	—	—	—
1.21(a)(3)	Reinstatement to Practice	$40	—	—	—
1.21(a)(4)	Certificate of Good Standing	$10	—	—	—
1.21(a)(4)	Certificate of Good Standing, Suitable Framing	$20	—	—	—
1.21(a)(5)	Review of Decision of Director, OED	$130	—	—	—
1.21(a)(6)(i)	Regrading of A.M. section (PTO Practice and Procedure)	$230	—	—	—
1.21(a)(6)(ii)	Regrading of P.M. section (Claim Drafting)	$230	—	—	—
1.21(b)(1)	Establish Deposit Account	$10	—	—	—
1.21(b)(2)	Service Charge Below Minimum Balance	$25	—	—	—
1.21(b)(3)	Service Charge Below Minimum Balance	$25	—	—	—
1.21(c)	Filing a Disclosure Document	$10	—	—	—
1.21(d)	Box Rental	$50	—	—	—
1.21(e)	International Type Search Report	$40	—	—	—
1.21(g)	Self-Service Copy Charge	$.25	—	—	—
1.21(h)	Recording Patent Property	$40	—	—	—
1.21(i)	Publication in the *Official Gazette*	$25	—	—	—
1.21(j)	Labor Charges for Services	$40	—	—	—
1.21(k)	Unspecified Other Services	At Cost	—	—	—
1.21(k)	Terminal Use APS-CSIR (per hour)	$50	—	—	—
1.21(l)	Retaining abandoned application	$130	—	—	—
1.21(m)	Processing Returned Checks	$50	—	—	—
1.21(n)	Handling Fee - Incomplete Application	$130	—	—	—
1.21(o)	Terminal Use APS-TEXT	$40	—	—	—
1.24	Coupons for Patent and Trademark Copies	$3	—	—	—
1.296	Handling Fee - Withdrawal SIR	$130	—	—	—
1.445(a)(1)	Transmittal Fee	$240	—	—	—
1.445(a)(2)(i)	PCT Search Fee - Prior U.S. Application	$450	—	—	—
1.445(a)(2)(ii)	PCT Search Fee - No U.S. Application	$700	—	—	—
1.445(a)(3)	Supplemental Search	$210	—	—	—
1.482(a)(1)(i)	Preliminary Exam Fee	$490	—	—	—
1.482(a)(1)(ii)	Preliminary Exam Fee	$750	—	—	—
1.482(a)(2)(i)	Additional Invention	$140	—	—	—
1.482(a)(2)(ii)	Additional Invention	$270	—	—	—
1.492(a)(1)	Preliminary Examining Authority	$720	$540	$670	—
1.492(a)(1)	Preliminary Examining Authority (Small Entity)	$360	$270	$335	—
1.492(a)(2)	Searching Authority	$790	$610	$760	—
1.492(a)(2)	Searching Authority (Small Entity)	$395	$305	$380	—
1.492(a)(3)	PTO Not ISA nor IPEA	$1,070	$790	$970	—
1.492(a)(3)	PTO Not ISA nor IPEA (Small Entity)	$535	$395	$485	—
1.492(a)(4)	Claims - IPEA	$98	$78	$96	—
1.492(a)(4)	Claims - IPEA (Small Entity)	$49	$39	$48	—
1.492(a)(5)	Filing with EPO/JPO Search Report	$930	$790	—	—
1.492(a)(5)	Filing with EPO/JPO Search Report (Small Entity)	$465	$395	—	—
1.492(b)	Claims - Extra Individual (Over 3)	$82	$64	$78	—
1.492(b)	Claims - Extra Individual (Over 3) (Small Entity)	$41	$32	$39	—
1.492(c)	Claims - Extra Total (Over 20)	$22	$14	$18	—
1.492(c)	Claims - Extra Total (Over 20) (Small Entity)	$11	$7	$9	—
1.492(d)	Claims - Multiple Dependents	$270	$210	$260	—
1.492(d)	Claims - Multiple Dependents (Small Entity)	$135	$105	$130	—
1.492(e)	Surcharge	$130	—	—	—
1.492(e)	Surcharge (Small Entity)	$65	—	—	—
1.492(f)	English Translation - After 20 Months	$130	—	—	—
2.6(a)(1)	Application for Registration, Per Class	$245	—	—	—
2.6(a)(2)	Amendment to Allege Use, Per Class	$100	—	—	—
2.6(a)(3)	Statement of Use, Per Class	$100	—	—	—
2.6(a)(4)	Extension for Filing Statement of Use, Per Class	$100	—	—	—
2.6(a)(5)	Application for Renewal, Per Class	$300	—	—	—
2.6(a)(6)	Surcharge for Late Renewal, Per Class	$100	—	—	—
2.6(a)(7)	Publication of Mark Under § 12(c), Per Class	$100	—	—	—
2.6(a)(8)	Issuing New Certificate of Registration	$100	—	—	—
2.6(a)(9)	Certificate of Correction of Registrant's Error	$100	—	—	—
2.6(a)(10)	Filing Disclaimer to Registration	$100	—	—	—
2.6(a)(11)	Filing Amendment to Registration	$100	—	—	—
2.6(a)(12)	Filing Afffidavit Under Section 8, Per Class	$100	—	—	—
2.6(a)(13)	Filing Affidavit Under Section 15, Per Class	$100	—	—	—
2.6(a)(14)	Filing Affidavit Under Sections 8 & 15, Per Class	$200	—	—	—
2.6(a)(15)	Petitions to the Commissioner	$100	—	—	—
2.6(a)(16)	Petition to Cancel, Per Class	$200	—	—	—
2.6(a)(17)	Notice of Opposition, Per Class	$200	—	—	—
2.6(a)(18)	Ex Parte Appeal to the TTAB, Per Class	$100	—	—	—
2.6(a)(19)	Dividing an Application, Per New Application Created	$100	—	—	—
2.6(b)(1)(i)	Copy of Registered Mark	$3	—	—	—
2.6(b)(1)(ii)	Copy of Registered Mark, overnight delivery to PTO box or fax	$6	—	—	—

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2.6(b)(1)(iii)	Copy of Reg. Mark Ordered Via Exp. Mail or Fax, Exp. Svc.	$25	—	—	—
2.6(b)(2)(i)	Certified Copy of TM Application as Filed	$15	—	—	—
2.6(b)(2)(ii)	Certified Copy of TM Application as Filed, Expedited	$30	—	—	—
2.6(b)(3)	Cert. or Uncert. Copy of TM-Related File Wrapper/Contents	$50	—	—	—
2.6(b)(4)(i)	Cert. Copy of Registered Mark, Title or Status	$15	—	—	—
2.6(b)(4)(ii)	Cert. Copy of Registered Mark, Title or Status - Expedited	$30	—	—	—
2.6(b)(5)	Certified or Uncertified Copy of TM Records	$25	—	—	—
2.6(b)(6)	Recording Trademark Property, Per Mark, Per Document	$40	—	—	—
2.6(b)(6)	For Second and Subsequent Marks in Same Document	$25	—	—	—
2.6(b)(7)	For Assignment Records, Abstracts of Title and Cert.	$25	—	—	—
2.6(b)(8)	Terminal Use X-SEARCH	$40	—	—	—
2.6(b)(9)	Self-Service Copy Charge	$0.25	—	—	—
2.6(b)(10)	Labor Charges for Services	$40	—	—	—
2.6(b)(11)	Unspecified Other Services	At Cost	—	—	—
2.7(a)	Recordal application fee	$20	—	—	—
2.7(b)	Renewal application fee	$20	—	—	—
2.7(c)	Late fee for renewal application	$20	—	—	—

Department of Commerce
Patent and Trademark Office

[Docket No. 980713169-8167-01]

Dissemination of Patent and Trademark Information on the PTO's Web Site

Agency: Patent and Trademark Office, Commerce.

Action: Notice and request for public comments.

Summary: The Patent and Trademark Office (PTO) plans to expand the searchable database offerings on its World-Wide Web (Web) site by adding additional patent data and by including trademark data. This expansion will provide Web access to the full text of patents granted since 1976 and to the trademark text data for registered and pending marks. The PTO also plans to incorporate patent and trademark image data and trademark data for inactive marks as part of its expanded Web offering. The PTO requests public comments on its decision to expand its Web site offerings.

Dates: To ensure consideration, written comments must be submitted on or before August 26, 1998.

Addresses: Address comments to the Commissioner of Patents and Trademarks, Attention: Wesley H. Gewehr, Administrator for Information Dissemination, Crystal Park 3, Suite 451, Washington, D.C. 20231; or fax to 703-306-2737; or e-mail to jane.myers@uspto.gov. Comments will be available for public inspection in the Office of Electronic Information Products, Crystal Park 3, Suite 441, 2231 Crystal Drive, Arlington, Va. 22202.

For Further Information Contact: Jane S. Myers, Office of Electronic Information Products, by telephone at 703-306-2600; by fax at 703-306-2737; by e-mail to jane.myers@uspto.gov; or by mail to Patent and Trademark Office, Office of Electronic Information Products, Crystal Park 3, Suite 441, Washington, D.C. 20231.

Supplementary Information: The PTO has been directed to disseminate patent and trademark information using automated methods. See 35 USC 41(i)(2). The PTO currently provides the public with on-line access, for a fee, to internal patent and trademark automated search systems in its public search facilities located in Crystal City, Va. Thirty-one Patent and Trademark Depository Libraries (PTDLs) offer on-line access to PTO's automated patent full-text search system, and three Partnership PTDLs offer on-line access to PTO's automated trademark text and image search system and to the automated patent image retrieval system. The PTO also provides access to subsets of its patent and trademark databases on CD-ROMs in the PTO's public search facilities and at 83 PTDLs located throughout the country. The PTO sells its CD-ROM products to the public, and the Government Printing Office makes them available to the Federal Depository Libraries. Although the PTO has provided World-Wide Web access to searchable patent bibliographic data since November 1995, neither searchable trademark data, the full text of patents, nor patent and trademark image data are currently available on the PTO Web site.

The PTO hereby provides notice to the public of its plans to expand searchable patent data and to begin offering searchable trademark data on its Web site. In August of this year, the PTO plans to provide free Web access to the trademark text data that is currently available on the PTO's Cassis CD-ROM products—*Trademarks Registered* and *Trademarks Pending*—covering active registered and pending marks. In November 1998, this trademark offering will include the "clipped" images associated with these marks. In the future, this searchable trademark database will be expanded to include inactive (abandoned, cancelled and expired) marks and some additional data elements associated with those inactive marks, and will be updated more frequently to reflect more current conditions of the trademark database. Also in November 1998, the PTO plans to expand its patent database offering on the Web to include free access to the full text of all patents issued since 1976. In March 1999, the patent offering will allow users free access to the full page images of patents identified. On-line ordering of patent documents issued since 1976 for electronic delivery, for a fee, is planned for March 1999. Any such fee will be established by taking into consideration applicable government policy, OMB circular A-130, the Paperwork Reduction Act, and any other applicable statutes. The PTO requests public comments on its plans to expand its Web site offerings.

July 21, 1998

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Patent Terms Extended Less Than 35 U.S.C. § 156

Certificates extending the terms of the following patents were issued on July 15, 1998.

U.S. Patent No. 4,254,129; Granted March 3, 1981, to Albert A. Carr et al.; Owner of Record: Merrell Pharmaceuticals; Title: Piperidine Derivatives; Classification: 514/317; Product Trade Name: ALLEGRA™; Original Expiration Date: April 10, 1999; Term Extended: 679 days.

U.S. Patent No. 4,260,769; Granted April 7, 1981, to Valentino J. Stella et al.; Owner of Record: Merck & Co., Inc.; Title: 5,5-Diphenylhydantoins; Classification: 548/112; Product Trade

Name: CEREBYX® (fosphenytoin sodium); Original Expiration Date: April 7, 1998; Term Extended: Five years.

U.S. Patent No. 4,639,436; Granted January 27, 1987, to Bodo Junge et al.; Owner of Record: Bayer AG; Title: Antidiabetic 3,4,5-Trihydroxypiperidines; Classification: 514/24; Product Trade Name: GLYSET™ (Miglitol); Original Expiration Date: January 27, 2004; Term Extended: Five years.

U.S. Patent No. 4,670,444; Granted June 2, 1987, to Klaus Grohe et al.; Owner of Record: Bayer Aktiengesellschaft; Title: 7-Amino-l-Cyclopropyl-4-Oxo-1,4-Dihydro-Quinoline-and Naphthyridine-3-Carboxylic Acids and Antibacterial Agents Containing These Compounds; Classification: 514/300; Product Trade Name: BAYTRIL® (enrofloxacin); Original Expiration Date: December 9, 2003; Term Extended: Three years.

U.S. Patent No. 4,681,893; Granted July 21, 1987, to Bruce D. Roth; Owner of Record: Warner-Lambert Company; Title: Trans-6-[2-(3- or 4-Carboxamido-Substituted Pyrrol-1-Yl)Alkyl]-4-Hydroxypyran-2-One Inhibitors of Cholesterol Synthesis; Classification: 514/422; Product Trade Name: LIPITOR® (atorvastatin calcium); Original Expiration Date: May 30, 2006; Term Extended: 1,213 days.

U.S. Patent No. 4,689,339; Granted August 25, 1987, to Arto J. Karjalainen et al.; Owner of Record: Orion-Yhtyma Oy; Title: 4-Dihydroinden-2-YL-,4-Tetrahydronaphth-2-YL-, And 4-Dihydrobenzofuran-2-Ylimidazoles, Useful to Block α2-Andrenergic Receptors; Classification: 514/396; Product Trade Name: ANTISEDAN® (atipamezole hydrochloride); Original Expiration Date: November 21, 2005; Term Extended: 1,719 days.

U.S. Patent No. 4,861,584; Granted August 29, 1989, to Thomas W. Powell, Jr. et al.; Owner of Record: United Catalysts, Inc.; Title: Allergen Absorbent and Blocking Aerosol Composition; Classification: 424/79; Product Trade Name: IVY BLOCK® (bentoquatam); Original Expiration Date: August 29, 2006; Term Extended: 1,458 days.

U.S. Patent No. 4,902,683; Granted February 20, 1990, to Amin et al.; Owner of Record: Pharmacia & Upjohn Company; Title: Crystalline Cephalosporin Hydrohalide Salts; Classification: 514/206; Product Trade Name: EXCENEL® Sterile Suspension; Original Expiration Date: February 20, 2007; Term Extended: 460 days.

Certificates extending the terms of the following patents were issued on September 15, 1997:

U.S. Patent No. 4,406,899; Granted September 27, 1983, to Shimpei Aburaki et al.; Owner of Record: Bristol-Myers Company; Title: Cephalosporins; Classification: 424/246; Product Trade Name: MAXIPIME® (cefepime hydrochloride); Original Expiration Date: March 4, 2002; Term Extended: Five years.

U.S. Patent No. 4,544,664; Granted October 1, 1985, to Arto J. Karjalainen et al.; Owner of Record: Orion-Yhtyma Oy; Title: Antihypertensive Substituted Imidazole Derivatives; Classification: 514/396; Product Trade Name: DOMITOR® (medetomidine hydrochloride); Original Expiration Date: February 11, 2001; Term Extended: Three years.

U.S. Patent No. 4,686,214; Granted August 11, 1987, to John J. Boltralik; Owner of Record: Alcon Laboratories, Inc.; Title: Anti-Inflammatory Compounds for Ophthalmic Use; Classification: 514/179; Product Trade Name: VEXOL™ (rimexolone); Original Expiration Date: October 30, 2005; Term Extended: 996 days; Expiration Date of Extension: July 22, 2008.

U.S. Patent No. 5,045,302; Granted September 3, 1991, to James D. Kelly et al.; Owner of Record: Amersham International plc.; Title: Ligands and Cationic Complexes Thereof with Technetium-99M; Classification: 424/1.1; Product Trade Name: MYOVIEW™ (technetium tc99m tetrofosmin); Original Expiration Date: October 6, 2008; Term Extended: 491 days; Expiration Date of Extension: February 9, 2010.

Certificates of Correction for August 18, 1998

D. 374,937	5,660,122	5,711,269	5,737,123
D. 392,942	5,661,512	5,711,780	5,737,413
D. 393,900	5,661,617	5,712,155	5,737,500
D. 395,071	5,661,720	5,712,305	5,737,842
Re. 35,712	5,666,511	5,712,671	5,738,422
4,889,714	5,666,652	5,712,840	5,738,561
5,305,162	5,667,749	5,713,033	5,738,636
5,341,382	5,669,947	5,713,036	5,738,954
5,441,226	5,670,342	5,713,042	5,738,993
5,457,105	5,670,876	5,713,105	5,739,022
5,480,921	5,671,666	5,713,991	5,739,056
5,486,809	5,672,435	5,714,256	5,740,348
5,493,890	5,674,281	5,714,334	5,740,361
5,498,718	5,675,001	5,714,698	5,740,409
5,502,134	5,676,698	5,715,357	5,740,841
5,517,986	5,677,561	5,715,748	5,740,890
5,520,932	5,679,451	5,716,047	5,741,445
5,521,072	5,679,464	5,716,083	5,741,600
5,530,150	5,680,014	5,716,480	5,741,800
5,532,898	5,680,244	5,717,448	5,742,043
5,542,884	5,680,253	5,717,469	5,742,151
5,555,294	5,681,292	5,717,530	5,743,850
5,556,788	5,684,217	5,717,659	5,744,814
5,561,771	5,686,934	5,718,090	5,746,457
5,562,745	5,687,328	5,718,772	5,746,566
5,563,353	5,687,411	5,718,926	5,747,188
5,567,257	5,688,157	5,719,852	5,747,485
5,568,828	5,688,320	5,719,930	5,747,567
5,569,239	5,690,919	5,720,014	5,747,761
5,581,599	5,691,027	5,721,005	5,747,801
5,582,755	5,691,546	5,721,544	5,748,364
5,587,371	5,691,740	5,721,570	5,749,234
5,594,656	5,692,064	5,721,793	5,749,460
5,597,842	5,692,938	5,721,940	5,749,470
5,599,667	5,693,495	5,722,652	5,749,847
5,601,887	5,693,639	5,722,708	5,749,851
5,604,871	5,694,596	5,723,375	5,750,093
5,608,379	5,695,663	5,723,553	5,750,197
5,608,474	5,695,697	5,724,196	5,750,283
5,614,575	5,695,808	5,726,510	5,750,667
5,616,333	5,696,366	5,726,521	5,751,127
5,616,387	5,696,984	5,726,773	5,751,341
5,616,712	5,697,338	5,727,093	5,751,384
5,617,088	5,697,562	5,727,217	5,751,883
5,619,428	5,698,101	5,729,129	5,752,094
5,620,868	5,698,230	5,729,559	5,752,215
5,621,519	5,698,924	5,729,885	5,752,595
5,623,928	5,699,269	5,730,400	5,752,723
5,624,939	5,700,368	5,730,486	5,752,731
5,628,253	5,700,817	5,730,550	5,752,853
5,630,418	5,700,976	5,730,882	5,752,877
5,631,167	5,701,056	5,731,327	5,753,725
5,633,235	5,701,146	5,732,363	5,753,828
5,637,971	5,702,430	5,732,748	5,753,980
5,639,899	5,703,080	5,733,384	5,754,012
5,641,805	5,703,194	5,733,556	5,754,598
5,642,282	5,704,212	5,733,588	5,754,791
5,646,767	5,704,795	5,734,250	5,755,416
5,649,662	5,705,346	5,734,779	5,755,437
5,649,880	5,705,931	5,734,917	5,755,547
5,650,568	5,706,760	5,735,236	5,755,842
5,652,057	5,707,605	5,735,264	5,756,074
5,653,703	5,707,620	5,735,373	5,756,430
5,654,607	5,707,875	5,735,584	5,756,468
5,656,049	5,708,147	5,735,978	5,756,641
5,656,180	5,708,476	5,736,069	5,756,777
5,657,448	5,709,872	5,736,275	5,756,872
5,659,036	5,710,233	5,736,389	5,757,052
5,659,847	5,710,826	5,736,980	5,757,077

5,757,301	5,759,914	5,760,674	5,761,126	5,761,862	5,763,414	5,766,698	5,769,592
5,757,684	5,760,163	5,760,699	5,761,433	5,762,250	5,763,500	5,767,727	5,770,687
5,758,963	5,760,286	5,760,914	5,761,443	5,762,479	5,763,527	5,768,825	
5,759,216	5,760,306	5,761,014	5,761,844	5,762,917	5,765,035	5,769,138	
5,759,886	5,760,649	5,761,080	5,761,861	5,763,095	5,766,628	5,769,252	

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

June 29 — July 3, 1998

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
6-30	EX	74/349,470	GoldenCare Corp.	Whether the amendment to the ID is beyond the scope of the ID in the notice of allowance; whether the requirement for specimens showing service mark use was proper	Refusals affirmed		GOLDENCARE PROTECTOR [providing services to the life and health insurance industry; namely, conducting business and market research surveys for the development and marketing of life and health insurance products and annuities]		No
6-30	OPP	88,423	Alanis Seafoods, Inc. v. La Gloria Foods Corp.	2(d)	Opposition sustained	GLORIA [canned, bottled, or packaged foods-namely, pickled peppers, olives, mixed garden salad, vinegar, onions, maraschino cherries, fruits, vegetables, fish, and grated cheese, and edible olive oil]	LA GLORIA [corn and flour tortillas and taco shells (in Int. Cl. 30)]		No
6-30	CANC (R)	22,815	Life Corp. v. Carefree Trading Corp.	2(d)	Request for reconsideration denied (Petition to cancel granted)	LIFE, LIFE CORPORATION and LIFE CORPORATION OXYGEN PAC [emergency oxygen equipment, namely, resuscitators and inhalators]	LIFE MASK [face mask for applying cardiac pulmonary resuscitation]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
6-30	CANC	24,398	Life Data Labs, Inc. v. Helfter Enterprises, Inc.	2(d)	Petition for cancellation granted	FARRIER'S FORMULA [nutritional supplements for animals]	FARRIER'S CHOICE [nutritional additives for livestock feed]		No
6-30	CANC CANC	23,341 24,964	Norman M. Mazer v. Electronic Realty Associates, L.P.	2(d) and 2(e)(1)	Petitions for cancellation granted on 2(d) ground; petitions denied on 2(e)(1) ground; respondent's mark had acquired distinctiveness	IF WE DON'T SELL IT, WE'LL BUY IT [real estate services]	IF WE DON'T SELL YOUR HOUSE, WE'LL BUY IT! [real estate brokerage services]		No
6-30	CANC (SJ)	22,163	Harker's Inc. v. Marie G. Kelley	Whether there was service mark use in commerce as of the date of the statement of use	Petition for cancellation granted as to Int. Cl. 41 on nonuse ground [motion for summary judgment granted]; fraud and 2(d) claims dismissed as moot; petition to cancel as to Int. Cl. 28 dismissed	FOOD DUDES [various food products]	FOOD DUDES [hand puppets, in Int. Cl. 28; production of an ongoing educational television program and video series regarding nutrition, in Int. Cl. 41]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-1	OPP	98,357	Taylor Corp. v. Barbara Schaffer	2(d); whether opposer or the applicant has any rights in angel design sought to be registered	Opposition dismissed [case remanded to Ex. Att. under Rule 2.131 to refuse registration on ground that design is not used as a mark]	Angel design [greeting cards; stationery]	Angel design [printed publications, namely greeting cards, cartoon books and illustrated children's books]		No
7-1	OPP (SJ)	105,178	Par-A-Dice Gaming Corp. v. Carnival Corp.	2(d)	Opposition sustained [motion for summary judgment granted]	PAR-A-DICE RIVERBOAT CASINO [entertainment services, including casino services, live performances by musicians and/or comedians; nightclub, bar and restaurant services; riverboat cruise services	PARADISE [cruise ship services, Int. Cl. 39; entertainment services, namely, casino services, producing and organizing stage shows, nightclub shows, contests and party planning services, in Int. Cl. 41; providing lodging, restaurant, catering and social function facilities, rental services for special occasions on board cruise ships, in Int. Cl. 42]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

Please address mail as follows:

Box _____
Assistant Commissioner for Patents
Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

SPECIAL BOXES FOR TRADEMARK MAIL

Special box designations should be used to allow forwarding of particular types of trademark mail to the appropriate areas as quickly as possible. In addition to these box designations, filers are encouraged to indicate whether the contents of the envelope contain a fee. Envelopes containing a fee should be marked "FEE;" envelopes not containing a fee should be marked "NO FEE." Box designations and "FEE/NO FEE" indicators should appear on the envelope as well as on the cover sheet or first page of any document.

Please address mail as follows:

Box _____
FEE (or NO FEE)
Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

SPECIAL BOXES APPLICABLE TO *BOTH* PATENT AND TRADEMARK MAIL

The following special box designations are applicable to both patent and trademark related mail, and the recommendations for "Special Boxes for Patent Mail" (above) should be followed for the types of mail listed below.

Please address mail as follows:

Box _____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information from the U.S. Patent and Trademark Office. Many PTDLs have on file patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs receive both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office* and numerical sets of patents in a variety of formats. Patent and trademark search systems in the Cassis CD-ROM series are available at all PTDLs to increase access to that information. It is through the CD-ROM systems and other depository materials that preliminary patent and trademark searches may be conducted through the numerically arranged collections.

Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

All information is available for use by the public free of charge. However, there may be charges associated with the use of on-line systems, photocopying and related services.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	Not Yet Operational
	New Haven Free Public Library	Not Yet Operational
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-8875
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 630-6120
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

State	*Name of Library*	*Telephone Contact*
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
	Stony Brook: Engineering Library, State University of New York	Not Yet Operational
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6971
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Portland: Paul L. Boley Law Library, Lewis & Clark College	(503) 768-6786
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Puerto Rico	Mayaquez General Library, University of Puerto Rico	(787) 832-4040 Ext. 3459
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(864) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	(806) 742-2282
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	(802) 656-2542
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
NICHOLAS P. GODICI, (Acting) Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	01/11/96
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	06/25/96
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	07/29/96
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	05/27/96
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	11/23/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/13/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/26/96
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	04/26/96
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	12/21/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	11/12/96
TELECOMMUNICATIONS, GROUP 2600—JIN F. NG, Director	305-3900	09/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	305-3293	06/28/96
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	12/14/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	03/11/97
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	02/07/96
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	02/13/96
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	02/04/97

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of July 1, 1998

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Christopher Wells, Acting Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/26/98	05/15/98
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/28/97	03/06/98
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/07/97	05/13/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/17/97	04/09/98
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/10/97	02/25/98
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/08/97	03/09/98
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/98	04/27/98
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/27/97	04/13/98
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/17/97	06/09/98
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	04/30/98	—0—
Renewals (All Classes)	05/12/98	—0—
Section 12(c) Publications (All Classes)	04/01/98	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 through (703) 305–9752 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

AUGUST 18, 1998

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,728,565 (3601st)

ELASTED SUPPORT MEMBER FOR SUPPORTING STUFFING OF FURNITURE PIECES

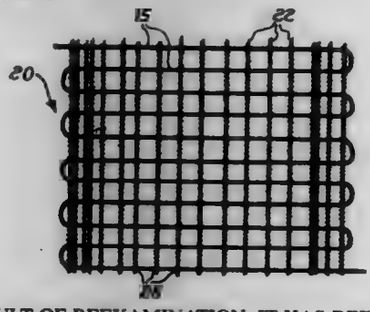
Anacleto Fontana, Monza, Italy, assignor to Cintel S.A.S. Di Fontana A. & C.

Reexamination Request No. 90/003,431, May 12, 1994.

Reexamination Certificate for Patent 4,728,565, issued Mar. 1, 1988, Ser. No. 932,722, Nov. 19, 1986.

Int. Cl.[6] B32B *7/00*

U.S. Cl. 442—60



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–5** are cancelled.

[1. An elastic support member for supporting the stuffing or upholstery of furniture pieces wherein said support member is formed of an elastic fabric having at least in one of the transverse longitudinal directions thereof rubber threads, said rubber threads being covered by loops formed by yarn stitches.**]**

B1 4,754,853 (3602nd)

CALIPER BRAKE FOR A BICYCLE

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Sakai, Japan

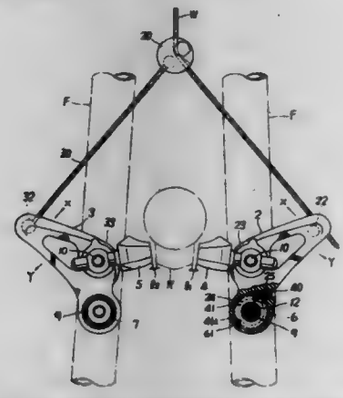
Reexamination Request No. 90/004,815, Oct. 22, 1997.

Reexamination Certificate for Patent 4,754,853, issued Jul. 5, 1988, Ser. No. 61,228, Jun. 12, 1987.

Claims priority, application Japan, Jun. 20, 1986, 61-95288 U

Int. Cl.[6] F16D *65/44*

U.S. Cl. 188—24.19



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **5** and **6** is confirmed.

Claims **1–2** are determined to be patentable as amended.

Claims **3–4**, dependent on an amended claim, are determined to be patentable.

New claims **7–63** are added and determined to be patentable.

1. A caliper brake for a bicycle, comprising:

(a) a fixing base means adapted to be fixed to the bicycle frame and comprising a first pivot shaft and a second pivot shaft;

(b) a first brake arm and a second brake arm each having a brake shoe supported rotatably to respectively said first pivot shaft and said second pivot shaft;

(c) a first return spring interposed between said fixing base means and said first brake arm for biasing said first brake arm in a direction to enlarge a distance between said brake shoe of said first brake arm and said brake shoe of said second brake arm;

(d) a second return spring interposed between said fixing base means and said second brake arm for biasing said second brake arm in a direction to enlarge said distance between said brake shoe of said first brake arm and said brake shoe of said second brake arm; and

(e) a biasing force adjusting means for adjusting a biasing force applied by said first return spring against said first brake arm, *wherein said biasing force adjusting means includes an adjusting screw for adjusting a position of the first return spring.*

B1 4,810,156 (3603rd)

BULK BAG UNLOADING STATION

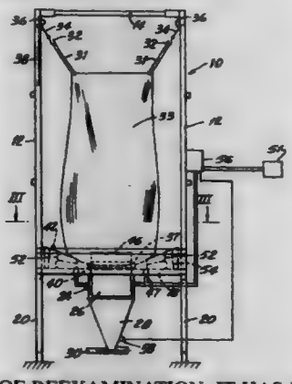
Stevens P. Pendleton, Ramsey, and Herbert A. Worsford, Wayne, both of N.J., assignors to Vac-U-Max, Belleville, N.J.

Reexamination Request No. 90/004,595, Apr. 7, 1997.

Reexamination Certificate for Patent 4,810,156, issued Mar. 7, 1989, Ser. No. 96,073, Sep. 11, 1987.

Int. Cl.[6] B65G *65/23*

U.S. Cl. 414—415



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **6** are cancelled.

Claims **2**, **4** and **7** are determined to be patentable as amended.

Claims **3** and **5**, dependent on an amended claim, are determined to be patentable.

1. A bag unloading station comprising: a frame, means for suspending from said frame a bag containing a bulk material and having a bottom flap or spout; a base plate at a lower part of said frame and having an opening therein with a vertically extending axis; bulk material receiving means below said opening; and a mechanism above said base plate, for intermittently moving a

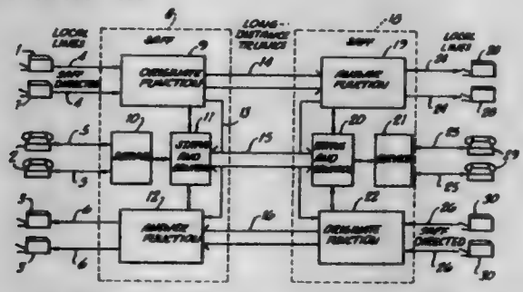
bottom portion of the bag placed thereon, said mechanism including a plurality of petals, at least several of said petals being plates pivotable respectively about a substantially horizontal shaft adjacent said opening, and a plurality of pneumatically operable actuators between said base plate and said several petals respectively for pivoting said plates about their respective shafts away from said base plate toward said vertically extending axis and downwardly again back toward said base plate, to thereby shake-up the material in the bag and facilitate flow thereof through the bottom flap or spout when opened and through said opening into the bulk material receiving means.

B1 4,994,926 (3604th)

FASCIMILIE TELECOMMUNICATIONS SYSTEM AND METHOD

Richard J. Gordon, Los Angeles, Calif., and James R. Kennedy, Tucson, Ariz., assignors to Audiofax IP L.L.C., Marietta, Ga.

Reexamination Request No. 90/004,806, Oct. 20, 1997.
Reexamination Certificate for Patent 4,994,926, issued Feb. 19, 1991, Ser. No. 248,798, Sep. 22, 1988.
Int. Cl.[6] H04N *1/00*
U.S. Cl. 358—400



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–39** is confirmed.

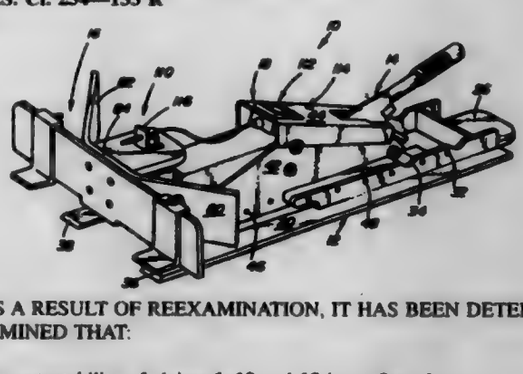
1. A system for facilitating facsimile communications between a transmitting facsimile machine and at least one intended receiving facsimile machine, comprising at least one store and forward facility, means coupling the at least one store and forward facility to the switched telephone network for receiving transmissions from a transmitting facsimile machine, said store and forward facility including computer means for controlling its operation and including mass storage means for storing facsimile transmissions together with information identifying the transmitting facsimile machine and the at least one intended receiving facsimile machine under control of said computer means, said store and forward facility also including means coupling it to the switched telephone network for transmitting facsimile messages stored in the mass storage means to at least one intended receiving facsimile machine, and wherein said mass storage means additionally includes mailboxes associated with particular system subscribers and wherein facsimile messages received and stored by the mass storage means and intended for receiving facsimile machines associated with those subscribers are stored in the respective mailboxes, said store and forward facility being responsive to instructions received from a subscriber to transmit the facsimile messages stored in that subscriber's mailbox to any particular facsimile machine designated in the instructions by the subscriber, whereby a subscriber who is traveling or otherwise away from the fixed location of his facsimile machine may have facsimile messages intended for receipt by his facsimile machine collected, and retrieve them from any location where any other facsimile machine is situated.

B1 5,181,694 (3605th)

FLOOR COVERING INSTALLATION TOOL

Harvey C. Collins, 7143 S. River Rd., Marine City, Mich. 48039

Reexamination Request No. 90/004,901, Jan. 23, 1998.
Reexamination Certificate for Patent 5,181,694, issued Jan. 26, 1993, Ser. No. 865,375, Apr. 8, 1992.
Int. Cl.[6] B66F *3/00*
U.S. Cl. 254—133 R



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** and **13** is confirmed.

1. A tool for lifting furniture to enable installation of floor covering under the furniture partitions comprising:

a frame;

means for raising and lowering a lifting member, said raising and lowering means coupled with said frame and lifting assembly;

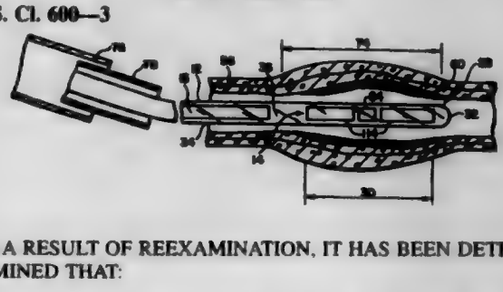
said lifting assembly including a first member coupled with said raising and lowering means a second member removably coupled with said first member and including a planar surface for providing an abutment surface for the furniture to be lifted, and a third member releasably coupled with said second member, said third member providing a lifting, surface, which faces the same direction as said planar surface and said third member being slidable along a length of said surface for providing a plurality of lifting positions.

B1 5,199,939 (3606th)

RADIOACTIVE CATHETER

Michael D. Dake, 1915 Mandeville Canyon Rd., Los Angeles, Calif. 90049; Bruce Hedger, 16220 Gundry Ave., Paramount, Calif. 90723, and Stephen Oesterle, 101 Burlingame Ave., Los Angeles, Calif. 90049

Reexamination Request Nos. 90/003,914, Oct. 10, 1995 and 90/004,313, Jul. 25, 1996.
Reexamination Certificate for Patent 5,199,939, issued Apr. 6, 1993, Ser. No. 484,117, Feb. 23, 1990.
Int. Cl.[6] A61N *5/00*
U.S. Cl. 600—3



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6**, **11**, **14**, **15**, **17**, **19**, **20**, **22–25**, **27**, **29–32**, **34**, **35**, and **39** are determined to be patentable as amended.

Claims **7–10**, **12**, **13**, **16**, **18**, **21**, **26**, **28**, **33**, **36**, **37**, **38**, **40** and **41**, dependent on an amended claim, are determined to be patentable.

New claims **42–65** are added and determined to be patentable.

1. A device suitable for endoluminal radiation treatment of a portion of a coronary artery in humans *after angioplasty*, the device comprising:

(a) an elongated, flexible carrier having a proximal section and a distal section; and

(b) radioactive means positioned in a radioactive segment of the distal section of the carrier, the radioactive means providing radiation in an amount *selected within a range* from 0.01 to 100,000 millicuries per centimeter length of the radioactive [portion] *segment*, wherein the carrier is sized and has sufficient stiffness and flexibility to navigate a *vascular system to the* human coronary artery so that the radioactive segment can be placed in a selected portion of [a] *the* human coronary artery, [the] *and wherein the device has sufficient* radioactive means [when] *that when the radioactive segment is* so placed [providing] *the radioactive means provides* sufficient radiation in less than 30 minutes to prevent restenosis in the selected portion *of the coronary artery* after *subjection thereof to* angioplasty.

B1 5,299,779 (3607th)

FLOOR COVERING INSTALLATION METHOD

Harvey C. Collins, 7143 S. River Rd., Marine City, Mich. 48039

Reexamination Request No. 90/004,902, Jan. 23, 1998.

Reexamination Certificate for Patent 5,299,779, issued Apr. 5, 1994, Ser. No. 24,632, Mar. 1, 1993.

Int. Cl.[6] B66F *3/00*

U.S. Cl. 254—1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–5 is confirmed.

1. A method for lifting furniture partitions or the like comprising:

providing a convertible lifting mechanism including means for raising and lowering a lifting member, said raising and lowering means coupled with a frame and lifting assembly;

connecting means coupled with said raising and lowering means, said connecting means having a planar connecting surface,

said convertible lifting mechanism including a first removable member having an abutment contact surface in a single plane for raising and lowering an object to be lifted,

said first member having a first connecting portion in said single plane for connecting with said planar connecting surface,

a second member having an abutment contact surface for raising and lowering the object to be lifted,

said second member having a second connecting portion in a plane parallel to said single plane and connecting with said planar connecting surface, said second connecting portion being at an angle to said second member abutment contact surface, and

said lifting assembly connectable to either of said first or second members for lifting said object, wherein said first member is removed to convert said tool from a first to a second lifting tool;

positioning said lifting mechanism with respect to an object to be lifted such that either said first or second member is in contact with said object to be lifted;

actuating said raising and lowering means to raise said object to be lifted;

actuating said raising and lowering means to return said object to be lifted to its original position.

B1 5,446,640 (3608th)

CHRISTMAS LIGHT

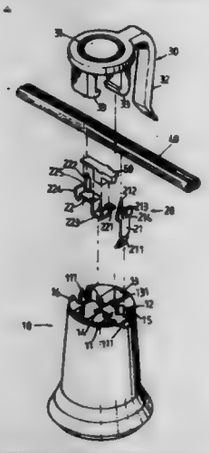
Mei Mei Lin, Suite I 11F, No. 95- 8 Chang Ping Road, Secl, Taichung, Taiwan

Reexamination Request No. 90/004,644, May 19, 1997.

Reexamination Certificate for Patent 5,446,640, issued Aug. 29, 1995, Ser. No. 210,449, Mar. 21, 1994.

Int. Cl.[6] F21V *21/00*

U.S. Cl. 362—407



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–3 is confirmed.

1. A Christmas light comprising:

light stand having a circular body, a hanger connected to

an outer periphery of said body which extends outwardly and downwardly from said body, and a pair of correspondingly opposite projections extended downwardly from said body with hooks on the ends thereof, each of said hooks perpendicularly extended from each projection and face toward one another;

a lamp receptacle having on one end a flare opening and having a threaded inner periphery for fastening an incandescent lamp bulb therein, and another end which has an elongated groove with a pair of corresponding opposite oval shaped portions extending at opposite ends thereof for receiving a two-ply electrical cable therein, said another end of said receptacle further includes a pair of recesses disposed symmetrically and perpendicularly to said groove and bisects said groove to receive said hooks therein respectively, an aperture positioned at a center of said groove, a recess formed on one end of said groove and at a bottom of one of said oval shaped portions, two block pieces each formed at one end of said groove adjacent to said oval shaped portion, two slits each formed at one end of said groove between said oval shaped portion and said block piece; and

contact means which are embedded in said slits of said lamp receptacle respectively comprising a first copperflake and a second copperflake, said first copperflake having on one end a tilting portion and another end a spur with laterally protrudent portion and a reinforcement groove therebetween, said tilting portion stops against said recess, said second copperflake having one end a fixing piece, and another end a spur with a laterally protrudent portion and a reinforcement groove therebetween, an u-shape bend abutting said fixing piece and intermediate the ends of said second copperflake, said u-shape bend of said second copperflake being inserted into said aperture, and said first and second copperflakes being fixed to and restrained from said slits, respectively, with said spurs thrusted into said two-ply cables for transmitting the electric current therefrom to a tip contact and a ring contact of said incandescent lamp bulb respectively.

REISSUES

AUGUST 18, 1998

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,870

NORMED TRANSPORT PALLET

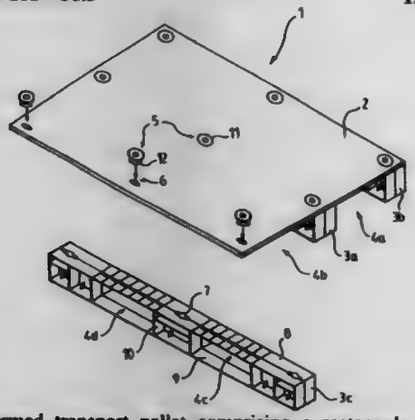
Michel George Durand, Moigny s/Ecole/Essone, France, assignor to Antai Trading, Ltd., Dublin, Ireland

Original No. 5,445,084, dated Aug. 29, 1995, Ser. No. 41,113, Apr. 1, 1993. Application for reissue Feb. 28, 1996, Ser. No. 608,236

Claims priority, application Switzerland, Apr. 10, 1992, 01185/92

Int. Cl.[6] **B65D** *19/12*

U.S. Cl. 108—56.3 **12 Claims**



1. Normed transport pallet comprising a rectangular support surface (2, 20) having normed dimensions, and longitudinal support beams (3*a* to 3*c*), a longitudinal dimension of which corresponds to one dimension of the support surface, which support beams area arranged beneath said support surface (2, 20), characterized in that said beams (3*a* to 3*c*) are fabricated from injected plastic material and in that they are attached to the support surface (2, 20) by releasable fixation means (5, 7) beneath the support surface (2, 20), said fixation means (5, 7) comprising at least one first opening (7) provided in an upper portion of each beam (3*a* to 3*c*), which opening (7) permits the insertion of a latch member (5) for latching the support surface (2) together with beams (3*a* to 3*c*), said latch member (5) comprising a pin with a bayonet means, which comprises a retention plate (11) provided to abut on a side of the support surface (2) which is turned away from the beams (3*a* to 3*c*), an essentially cylindrical portion (12) extending away from said retention plate (11) and which is provided to traverse the support surface (2) through a second opening (6) within said support surface (2, 20) and radial projections (13*a* to 13*b*) which extend radially outwardly from a free end portion of said cylindrical portion (12), and said first opening (7) having a shape essentially corresponding to the essentially cylindrical portion (12) of pin (5) and two eccentric cutaway portions (15*a*, 15*b*) which permit the passage of the projections (13*a*, 13*b*) during the insertion of the pin into each beam (3*a* to 3*c*).

Re. 35,871

WATER RECLAMATION SYSTEM AND METHOD

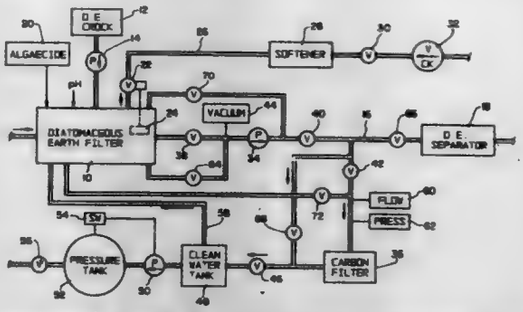
Dennis Bundy, Ocala, and Ralph M. Hansen, Jr., New Port Richey, both of Fla., assignors to Americleer Corporation, Ocala, Fla.

Original No. 5,223,150, dated Jun. 29, 1993, Ser. No. 840,735, Feb. 18, 1992. Continuation of Ser. No. 578,076, Sep. 4, 1990, Pat. No. 5,093,012. Application for reissue Nov. 29, 1994, Ser. No. 346,402

The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.

Int. Cl.[6] **B01D** *24/00*

U.S. Cl. 210—765 **11 Claims**



8. A method of reclaiming water which has been previously used comprising the steps of:

continuously passing the water through a diatomaceous earth filter to remove particulates therefrom to produce filtered water;

storing said filtered water in a clean water tank ready for reuse;

continually recirculating at least a portion of said filtered water taken from said clean water tank through said diatomaceous earth filter.

Re. 35,872

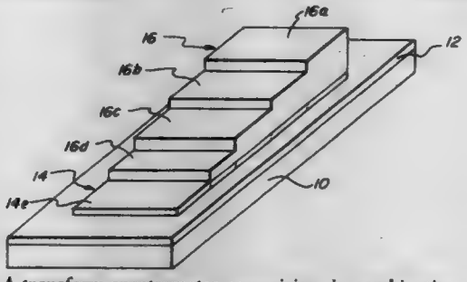
SUPERCONDUCTING DETECTOR ASSEMBLY AND APPARATUS UTILIZING SAME

David B. Fenner, Simsbury, and Robert M. Carangelo, Glastonbury, both of Conn., assignors to Advanced Fuel Research, Inc., East Hartford, Conn.

Original No. 5,354,989, dated Oct. 11, 1994, Ser. No. 997,457, Dec. 28, 1992. Application for reissue Apr. 17, 1996, Ser. No. 633,483

Int. Cl.[6] **G01J** *3/51;* **H01L** *27/146;39/00*

U.S. Cl. 250—336.2 **18 Claims**



18. A transform spectrometer comprising, in combination:

(1) a detector assembly for discriminating, as a function of wavelength, radiation impinging thereon, said detector assembly comprising: a plurality of photothermal detector elements arranged as an array and having substantially contiguous operative surfaces providing at least one planar irradiation face, all of said detector elements being responsive to radiation throughout a given range of wavelengths; and an interference layer superposed upon said irradiation face of said array with an associated region of said layer in registry with each of said detector elements, said layer being composed of a material that produces constructive and destructive optical interference conditions to periodically modulate, and thereby transmit selectively as a function of layer thickness, multiple bands of wavelengths of radiation in said range, said regions differing from one another in thickness so as to constitute said layer a graded interference filter, and to thereby provide a plurality of detectors that differ from one another in their response to radiation within said given range, each of said detectors registering a spectral irradiance periodically modulated, thereby being capable of discriminating a plurality of wavelength bands;

(2) means for generating electrical currents, said means for generating being operatively connected to said array; and

(3) electronic data processing means operatively connected for transforming electrical currents from said means for generating, after passage through said detector elements of said array, so as to produce signals representative of the energy of radiation caused to impinge upon said irradiation face, discriminated as a function of wavelength, said data processing means functioning to apply matrix-inversion transform algorithms to said electrical currents, for producing such signals.

Re. 35,873

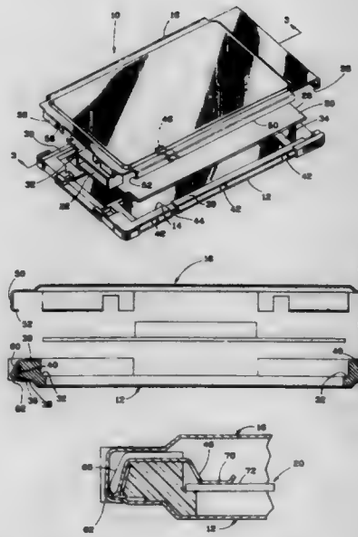
SHIELDED PRINTED CIRCUIT CARD HOLDER

Randy Gray Simmons, Lewisville; Riley Keith Barker, Lexington, and Ronald Dillon Sizemore, Germanton, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Original No. 5,339,222, dated Aug. 16, 1994, Ser. No. 43,316, Apr. 6, 1993. Application for reissue Aug. 15, 1996, Ser. No. 698,581

Int. Cl.[6] **H05K** *9/00*

U.S. Cl. 361—818 **32 Claims**



26. A printed circuit (PC) card holder, comprising a frame member and a lower cover comprising a metal shell having at least one fixing section integrally molded in said frame member to secure said frame member to said metal shell; a printed circuit card peripherally within said lower cover; and an upper cover secured to said integrally molded frame and lower cover and enclosing said printed circuit card.

PLANT PATENTS

GRANTED AUGUST 18, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,552
MINIATURE ROSE PLANT NAMED 'MEIPROVAN'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Feb. 6, 1997, Ser. No. 798,020
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of Miniature rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive small double flowers which exhibit a stable pink coloration,
(b) exhibits an erect, compact, and regular growth habit,
(c) propagates well from cuttings, and
(d) is particularly suited for growing as an ornamental pot plant;

substantially as herein shown and described.

10,553
MINIATURE ROSE PLANT NAMED 'MEICAFLON'

Alain A. Meilland, Antibes, France, assignor to CP (Delaware), Inc., Wilmington, Del.

Filed Jul. 31, 1997, Ser. No. 904,436
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of Miniature rose plant characterized by the following combination of characteristics:

(a) forms in abundance attractive blossoms that are radiant Neyron Rose in coloration,
(b) exhibits a hanging growth habit,
(c) forms glossy medium green foliage,
(d) propagates well on its own roots, and
(e) is particularly suited for growing as ornamentation in a hanging basket;

substantially as herein shown and described.

10,554
'FA 18' PEACH TREE

Annette Bjorge, and Randy Bjorge, both of Coloma, Mich., assignors to International Plant Management, Lawrence, Mich.

Filed Oct. 28, 1996, Ser. No. 738,258
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—42.1 **1 Claim**

1. A new and distinct variety of peach tree, *Prunus persica*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of vigorous, upright, open, very hardy, large, medium density, regular bearing tree, with moderate resistance to bacterial spot, producing freestone fruits having clear white, non-browning flesh and substantially round, firm, 90% bright pinkish-red skin color at maturity which occurs 30 days after 'Redhaven' peach.

10,555
'FA 12' PEACH TREE

Annette Bjorge, and Randy Bjorge, both of Coloma, Mich., assignors to International Plant Management, Lawrence, Mich.

Filed Oct. 28, 1996, Ser. No. 738,252
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct variety of peach tree, *Prunus persica*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of large size, very vigorous, upright, very hardy, spreading, medium density, regular bearing tree, with good resistance to bacterial spot, producing freestone fruits having non-browning flesh and substantially round, firm, 90 to 100% blushed, bright red skin color at maturity which occurs 5 days after the maturity of 'Redhaven' peach.

10,556
'FA 17' PEACH TREE

Annette Bjorge, and Randy Bjorge, both of Coloma, Mich., assignors to International Plant Management, Lawrence, Mich.

Filed Oct. 28, 1996, Ser. No. 738,253
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—43.2 **1 Claim**

1. A new and distinct variety of peach tree, *Prunus persica*, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of vigorous, medium density, regular bearing tree, with resistance to bacterial spot producing freestone fruits having clear yellow, non-browning flesh and substantially round, firm, 80 to 90% dark-red, blush skin color at maturity which occurs 30 days after 'Redhaven' peach.

10,557
MAACKIA AMURENSIS PLANT NAMED 'STARBURST'

William Flemer, III, Plainsboro Township, Middlesex County, N.J., assignor to Newplant Associates, Allentown, N.J.

Filed Nov. 20, 1996, Ser. No. 754,087
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—51.1 **1 Claim**

1. A new and distinct variety of *Maackia amurensis* tree, as illustrated and described, characterized particularly as to novelty by its straight trunk with attractive peeling coppery bark, exceptionally vigorous growth and its very large showy and abundant white panicles of flowers, born upright in closely clustered panicles at the ends of thick twigs.

10,558
JAPANESE ELM TREE NAMED 'DISCOVERY'

J. Richard Durand, Portage la Prairie, Canada, assignor to Bailey Nurseries Inc., St. Paul, Minn.

Filed Mar. 10, 1997, Ser. No. 814,036
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—53.3 **1 Claim**

1. A new and distinct variety of Japanese elm tree having the following combination of charateristics:

(a) exhibits an attractive symmetrical upright vase-shaped growth habit,
(b) forms foliage that is obovate to oval in configuration and is slightly smaller than is typical for the species,

(c) exhibits good cold hardiness, and
(d) is highly resistant to Dutch elm disease;

substantially as illustrated and described.

10,559
AFRICAN VIOLET PLANT NAMED LEONARDO DA VINCI
Reinhold Holtkamp, Sr., Ress-Haffen, Germany, assignor to International Plant Breeding A.G., Bern, Switzerland
Filed Feb. 7, 1997, Ser. No. 798,298
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—69.1 **1 Claim**

1. A new and distinct cultivar of African violet plant named Leonardo da Vinci, as described and illustrated, and particularly characterized by its single violet-shaped multi-colored flowers which have a white center and some white edges and an intensive purplish red patch on each of the three large petals (occasionnally on the two small petals also) that fades out to a lighter purplish red color; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, oval to heart-shaped leaves; profuse flowering; vigorous and compact growth habit; flowering 9–10 weeks after potting, and by its long lasting and non-dropping flowers.

10,560
AFRICAN VIOLET PLANT NAMED 'MONET'
Reinhold Holtkamp, Sr., Rees-Haffen, Germany, assignor to International Plant Breeding A.G., Bern, Switzerland
Filed Feb. 7, 1997, Ser. No. 797,617
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet plant named 'Monet', as described and illustrated, and particularly characterized by its single violet-shaped, multi-colored flowers with unique markings of large white centers contrasting with the purplish blue petals; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, oval to heart-shaped leaves; profuse flowering; vigorous and compact growth habit; flowering 9–10 weeks after potting, and by its long lasting and non-dropping flowers.

10,561
VARIETY OF GERANIUM NAMED 'DRAPIN'
Wilhelm Elsner, Dresden, Germany, assignor to Elsner Pac Jungpflanzen, Germany
Filed Nov. 8, 1996, Ser. No. 746,423
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of geranium plant substantially as shown and described.

10,562
STEVIA PLANT NAMED 'RSIT 94-1306'
Elizabeth Ann Sys; Albert Anthony Marsolais, and James Brandle, all of Ontario, Canada, assignors to Royal-Sweet International Technologies Ltd. Part., Vancouver, Canada
Filed May 29, 1996, Ser. No. 652,712
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—100 **1 Claim**

1. A new and distinctive variety of Stevia plant, substantially as herein shown and described.

10,563
STEVIA PLANT NAMED 'RSIT 95-166-13'
James Brandle; Elizabeth Ann Sys, and Albert Anthony Marsolais, all of Ontario, Canada, assignors to Royal-Sweet International Technologies Ltd. Part., Vancouver, Canada
Filed May 29, 1996, Ser. No. 656,044
Int. Cl.[6] A01N *5/00*
U.S. Cl. Plt.—100 **1 Claim**

1. A new and distinctive variety of *Stevia rebaudiana* Bertoni plant, substantially as herein shown and described.

10,564
STEVIA PLANT NAMED 'RSIT 94-751'
Albert Anthony Marsolais; James Brandle, and Elizabeth Ann Sys, all of Ontario, Canada, assignors to Royal-Sweet International Technologies Ltd., Vancouver, Canada
Filed May 29, 1996, Ser. No. 657,463
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—100 **1 Claim**

1. A new and distinctive variety of Stevia plant, substantially as herein shown and described.

PATENTS

GRANTED August 18, 1998

ERRATA

Patents

For CLASS	See PATENT NO.
040—322	5,794,363
040—406	5,794,364
040—476	5,794,365
040—540	5,794,366
074—015	5,794,476
074—033	5,794,477
074—089	5,794,478
074—143	5,794,479
074—425	5,794,480
600—515	5,794,623
187—333	5,794,745
187—333	5,794,746
220—458	5,794,801
292—288	5,794,871
273—447	5,794,944
283—034	5,794,954
433—092	5,795,159
433—174	5,795,160
433—100	5,795,167
445—024	5,795,212
436—005	5,795,712
554—009	5,795,969
252—182	5,796,117
396—536	5,796,464
372—050	5,796,714
375—200	5,796,760
379—035	5,796,789
379—059	5,796,790
379—265	5,796,791
375—232	5,796,814
375—206	5,796,959
707—005	5,797,128

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PATENTS

GRANTED AUGUST 18, 1998

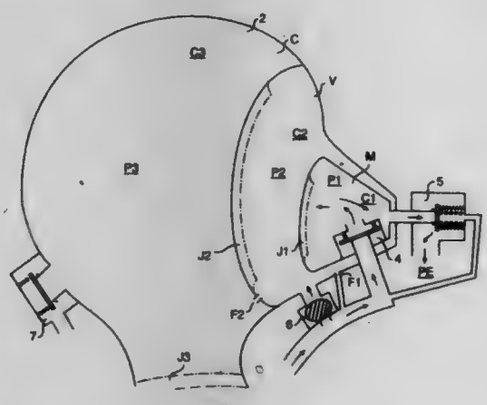
GENERAL AND MECHANICAL

5,794,260

HEAD PROTECTION SYSTEM WITH REGULATED PRESSURE AREAS

Robert Schegerin, 4 Chemin Due Vallot, 78350 Jouy En Josas, France

Filed Dec. 18, 1996, Ser. No. 769,136
Claims priority, application France, Dec. 21, 1995, 95 15233
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—6.1 **16 Claims**



1. A head protection system for providing certain types of physiological head protection in a contaminated atmosphere and at a low oxygen concentration, wherein the head protection system comprises a mask, a front face, a helmet portion, a first cavity defined by the mask for including the mouth and nose of the wearer, a breathable air inlet which admits breathable air under pressure to said first cavity, a second cavity defined by the front face of the head protection system for including the eyes of the wearer, a third cavity defined by the helmet portion of the head of the wearer, said head protection system further comprising:

three continuous seals which close up on themselves, the first seal insulating the first cavity from the second cavity, the second seal insulating the second cavity from the third cavity and the third seal insulating the third cavity from ambient atmosphere;

at least one regulating means integrated in the mask for regulating a pressure in the first cavity;

at least one regulating means for regulating pressure in the third cavity such that the pressure therein is regulated as a continuous and increasing function of the pressure in the breathable air inlet and is generally lower than the pressure in the first cavity;

at least one regulating means for regulating a pressure in the third cavity such that the pressure therein is generally lower than the pressure in the second cavity; and wherein:

a differential pressure prevailing on each side of the first seal is equal to a pressure in the first cavity less the pressure in the second cavity;

a differential pressure prevailing on each side of the second seal is equal to a pressure in the third cavity less the pressure in the second cavity; and

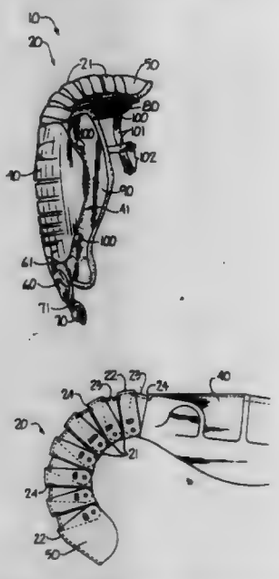
the second seal is positioned in the head protection system such that when the system is worn, the second seal creates a strain on the skin of the cheeks in contact with the first seal.

5,794,261

PROTECTIVE JOINT GUARD

Dennis V. Hefling, Ballwin, Mo., assignor to Rawlings Sporting Goods Company, Inc., Fenton, Mo.

Filed Mar. 12, 1997, Ser. No. 816,189
Int. Cl.[6] A41D *13/06*
U.S. Cl. 2—16 **18 Claims**



1. A protective joint guard for protecting a joint against contact, said joint guard comprising:

a plurality of uniformly shaped rigid segments wherein each of said segments is shaped to extend transversely across the anterior surface of a portion of a joint and wherein the segments are interlocked with adjacent segments to extend continuously without interruption along a length of the joint, said segments being locked together in a manner to enable the segments to move relative to one another so as to conform in shape to the joint throughout an entire range of motion of the joint and to extend continuously without interruption along a length of the joint through said entire range of motion.

5,794,262

FIRE-PROOF PROTECTIVE WEARING OUTFITS WITH DIFFERENTIATED PERSPIRABILITY

Giuseppe Capello, Turin, Italy, assignor to Prometeo S.p.A., Sommariva del Bosco, Italy

Continuation of Ser. No. 311,000, Sep. 22, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 757,961
Claims priority, application Italy, Sep. 23, 1996, T093 A 000696
Int. Cl.[6] A41D *11/00*
U.S. Cl. 2—81 **1 Claim**

1. The protective fire-proof outfit for activities involving a risk of burns, having the following characteristics, in combination:

a) the outfit being constituted of various garment components which are at least partially superposed on each other so as to provide a different degree of protection for different body regions of a person wearing the outfit,

b) the outfit having a small area of minimum protection in correspondence with at least one more heat-resistant body region of a person wearing the outfit, constituting an area where the ambient temperature of an environment outside the outfit can be detected so that a person can become aware of the ambient temperature promptly,



c) in regions of greatest protection, as a result of the superposition of the various garment components, the outfit has an outer layer of fire-proof fabric superposed on at least one layer of mesh made of a fire-proof yarn and at least one layer of net made of fire-proof yarn, the layers being arranged so as to facilitate the transfer of heat from the outside environment to the skin of a person wearing the outfit by radiation but to keep to a minimum the transfer of heat by conduction,

wherein the garment components of which the outfit is made are configured to provide a different degree of air-permeability in different regions of the outfit,

wherein said outfit includes a portion of greater air-permeability comprising at least a horizontal strip-like portion extending substantially through half of the height of a portion of the outfit designed to cover a wearer's trunk, below a line which is spaced apart downwardly from a portion of the outfit designed to be worn adjacent a wearer's shoulders, so as to cover the breast and central area of the back of a wearer,

wherein the portion of greater air permeability also covers the region of a wearer's trunk below said strip-like portion, and

wherein the portion of greater air permeability also covers a portion of the outfit designed to cover the entirety of a wearer's arms.

5,794,263

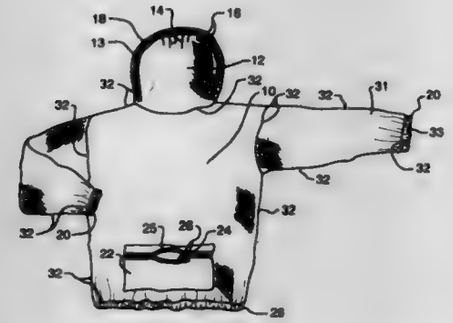
INSECT PROTECTIVE GARMENT

Nancy T. Carman, P.O. Box 190, 78 Whitney Brook Rd., Elkins, N.H. 03233

Filed Apr. 22, 1997, Ser. No. 840,598

Int. Cl.[6] A41D *13/00*

U.S. Cl. 2—84 **20 Claims**



1. An insect protective garment for covering the head, arms and torso of a wearer, said garment comprising:

an upper body portion sized to correspond to a wearer's torso, said upper body portion having a head opening sized such wearer's head may easily pass therethrough, said upper body portion also having a torso opening sized such that a wearer's torso may easily pass therethrough;

a pair of sleeves, permanently attached to said upper body portion, said sleeves sized such that a wearer's arms may easily be inserted therein; and

a hood which can completely enclose a wearer's head, said hood being permanently attached to said upper body portion;

wherein said hood comprises a face cover having a top, left and right sides and a bottom and a rear portion having a top, left and right sides and a bottom, and wherein said face cover further comprises a plurality of trianaular shaped folds adjacent to the top of said face cover; and

wherein said upper body portion and said rear portion of said hood are formed from a single layer of semi-rigid insect excluding mesh; said mesh of said upper body portion and said rear portion of said hood being a color that is reflective of radiant heat from the sun and said mesh of said face cover being a color that is substantially darker than said mesh used for the remaining garment such that greater visibility through said mesh of said front panel is provided.

5,794,264

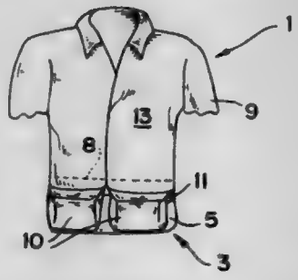
TRAVELER'S STOW-AWAY JACKET

Melville Yuen, 1709 Wilhelmina Rise, Honolulu, Hi. 96816

Filed May 2, 1997, Ser. No. 850,756

Int. Cl.[6] A41D *15/00*

U.S. Cl. 2—93 **4 Claims**



1. A stow away garment comprising:

an upper torso covering garment section having arm outlets, a closable torso front portion and a depending back portion; and

a lower garment section joined to said upper section along its depending back portion, said upper garment section depending back portion overlapping said lower section where joined thereto with said lower section having at least one storage pocket liner and an upper belted portion located outside of said pocket liner, whereby said back portion can conceal the lower section's upper belted portion along its overlapping part to conceal from view the pocket liner and the stored upper section and upper garment section being foldable and storable in said lower section's storage liner and capable of being worn when so folded on a user's waist by fastening the lower section's upper belted portion there around.

5,794,265

GARMENT SLEEVE WITH PROTECTIVE INSERT IN DISTAL END

Melvyn Reich, Parsippany, N.J., assignor to Masterpiece Apparel, New York, N.Y.

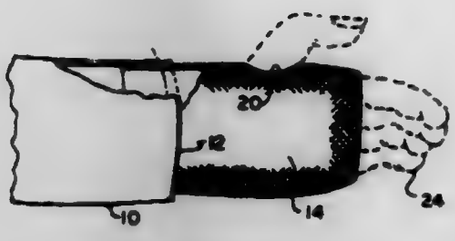
Filed Jan. 10, 1997, Ser. No. 781,085

Int. Cl.[6] A41D *27/10*

U.S. Cl. 2—125 **2 Claims**

1. A garment having a sleeve with sufficient length as to cover the wearer's entire arm to about the wrist, further having an interior side and an exterior side and an opening at the distal end;

a hollow flexible article having a first end attached to the interior of the sleeve about the periphery of the distal end and a



second end extending outwardly from said sleeve and having sufficient length to cover no more than the palm area of a wearer's hand and allowing the fingers free unrestricted movement;

said hollow flexible member further having an elongated opening on a thumb side for receiving the thumb of the wearer, said elongated opening being spaced from said second end thus allowing the hollow flexible article to cover a palm area of the wearer when the thumb is inserted through said elongated opening;

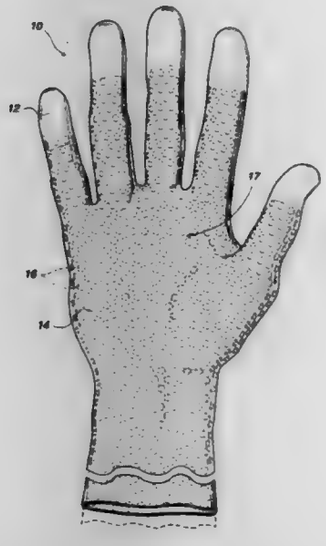
the hollow flexible article is extended from the distal end of the sleeve when the garment is in use and is retracted completely into the sleeve when the hand is withdrawn from the garment allowing said article to be retained within the sleeve, giving the garment a conventional appearance.

5,794,266

GLOVE HAVING PROJECTIONS ON INNER SURFACE

Tomtae Young Han, 2844 Orange Ave., La Crescenta, Calif. 91214

Filed Sep. 30, 1997, Ser. No. 940,334
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—159 **19 Claims**



1. A glove comprising:

a back portion formed from a flexible material, the back portion having outer and inner surfaces, wherein a plurality of projections are disposed on the inner surface; and

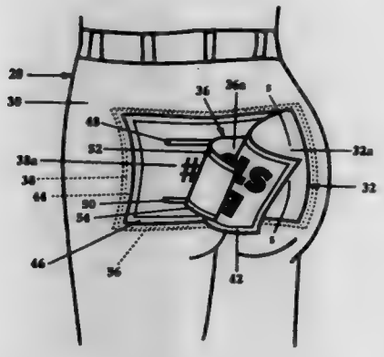
a palm portion formed from the flexible material and coupled to the back portion so as to form a void for fitting a hand, the palm portion having outer and inner surfaces, wherein a plurality of projections are disposed on the inner surface except in a region substantially near a finger tip.

5,794,267

INTERACTIVE ARTICLES OF APPAREL WITH REMOVABLE AND INTERCHANGEABLE PANELS

Richard D. Wallace, 9801 W. 123rd St., Overland Park, Kans. 66213

Filed Dec. 6, 1994, Ser. No. 349,960
Int. Cl.[6] A41D *1/06*
U.S. Cl. 2—227 **55 Claims**



19. An interactive article of apparel comprised, in combination of:

a garment constructed of a material and having an inside surface and an outside surface;

said garment having at least one first fastening means fixedly attached to said outside surface and said first fastening means is straddled by at least a second fastening means;

said garment having at least one second fastening means fixedly attached to said outside surface, with at least one fastening member that angles or bends and ultimately provides said second fastening means with a frame shape that would be necessary for its shape to eventually surround said first fastening means and whereby said second fastening means' frame shape is located around said first fastening means;

at least one panel having an inside and outside periphery and constructed of a material having an inside surface and an outside surface and at least one fastening member around its periphery on the inside surface, that is complimentary to at least one of the said fastening means on said garment's outside surface, whereby said panel is hingedly attached to the garment by one of the said fastening means.

5,794,268

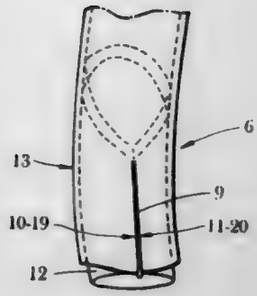
GARMENT HAVING AN EXTERNAL ENVELOPE AND AN IMPERVIOUS PART INSIDE THE EXTERNAL ENVELOPE

Georges Pessey, Les Riondes, La Clusaz, F-74220, France

PCT No. PCT/FR95/01240, § 371 Date Jun. 11, 1996, § 102(e) Date Jun. 11, 1996, PCT Pub. No. WO96/09777, PCT Pub. Date Apr. 4, 1996
PCT Filed Sep. 27, 1995, Ser. No. 649,657
Claims priority, application France, Sep. 28, 1994, 94 11803
Int. Cl.[6] A41D *1/06; 1/02*
U.S. Cl. 2—227 **15 Claims**

1. A garment, comprising:

an external envelope having two lateral borders which form a longitudinal slit extending through only a portion of the external envelope such that the lateral borders are connected to each other at a base, the lateral borders having a fastener system, the longitudinal slit being capable of forming an opening in an open position in which the lateral borders are separated except at the base, and the longitudinal slit also being capable of assuming a closed position in which the lateral borders of the longitudinal slit are connected to each other by the fastener system;



at least one water impervious part located inside the external envelope, the at least one impervious part comprising a face having an upper border, a lower border, and two lateral borders; and

wherein edges of the two lateral borders of the impervious part are connected to edges of the two lateral borders of the longitudinal slit of the external envelope.

5,794,269

Patent Not Issued For This Number

5,794,270

PROTECTIVE HEADWEAR

Jonathan Macdonald Prentice Howat, 390 London Road, Headington, Oxford, 0X3 8DW, Oxfordshire, England

Filed Aug. 12, 1996, Ser. No. 695,447

Int. Cl.[6] A42B *3/00*

U.S. Cl. 2—410 **11 Claims**





1. Protective headwear, comprising:

a first head covering for covering at least one portion of a person's head;

a second head covering for covering at least one portion of the person's head, at least one portion of said second head covering being within, or adapted to be at least partly within said first head covering, such that said first and second head coverings are in joint relationship whereby said second head covering is movable relative to said first head covering;

said first covering comprising at least one articulation means for enabling articulation of said first head covering; such that

at least one portion of said first head covering is articulatable relative to at least one further portion of said first head covering; and

said at least one articulation means being contractible and comprising further an element selected from the group consisting of at least one cloth, at least one bellows, at least one elastometer and at least one mesh.

5,794,271

HELMET SHELL STRUCTURE

Dale Hastings, 4520 Auburn Blvd., Sacramento, Calif. 95841

Filed Oct. 17, 1996, Ser. No. 732,941

Int. Cl.[6] A42B *3/00*

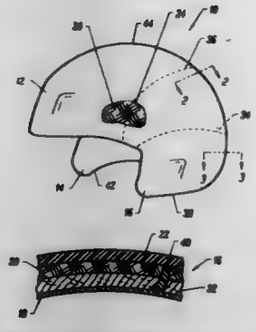
U.S. Cl. 2—412 **3 Claims**

1. A helmet shell structure, comprising:

a. first inner layer of epoxy resin shaped into a structure of desired size and configuration;

b. a second layer of woven fabric laid atop the first layer of epoxy;

c. a third outer layer of epoxy resin laid atop said second layers, said epoxy resin of said third outer layer being in situ cured to a transparent state over said second layer, wherein said second layer of woven fabric is visible through said outer layers of in



situ cured epoxy resin, said third outer layer of in situ cured epoxy resin penetrating said second layer of woven fabric; and

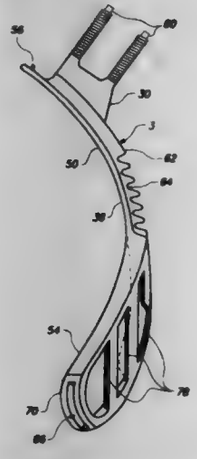
d. a fourth layer of fiberglass interposed said first layer of epoxy resin and second layer of woven fabric, said fourth layer extending over only a portion of the shell, said second layer being visible through said third outer layer of in situ cured epoxy where said fourth layer of fiberglass extends.

5,794,272

PROTECTIVE HELMET WITH IMPROVED RETENTION SYSTEM HAVING A REAR STABILIZER

Kurt Workman, Santa Cruz; Steven Sasaki, Campbell; John O'Neel, Menlo Park, and John Karl, San Jose, all of Calif., assignors to Specialized Bicycle Components, Inc., Morgan Hill, Calif.

Filed Jan. 31, 1996, Ser. No. 594,461
Int. Cl.[6] A42B 3/08
U.S. Cl. 2—421 **22 Claims**



1. An adjustable protective helmet for a cyclist comprising:

a helmet body having a front portion and a rear portion;

a rear stabilizer having one portion mounted in the rear portion along the centerline of the helmet body and having an opposite free end, said rear stabilizer having a resilient base shaped to conform to the back of the cyclist's head or neck;

a helmet retention system for retaining the helmet body and the rear stabilizer in a desired position on the cyclist's head, said helmet retention system comprising retention strap sections engaged with the helmet body on oppositely disposed sides of the helmet body and extending downward to a point below the cyclist's ear and from that point rearward to the free end of the rear stabilizer;

said rear stabilizer extending from the rear portion of the helmet body such that at least a portion of the helmet retention system contacts the cyclist below the occipital protuberance when the helmet body is located at the desired position on the cyclist's head.

5,794,273

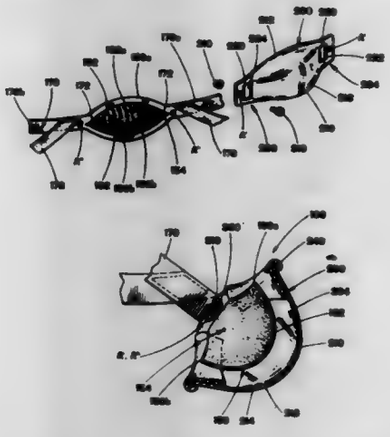
Patent Not Issued For This Number

5,794,274

CHIN PROTECTOR FOR HELMETS

Nelson Kraemer, Mt. Prospect, Ill., assignor to Riddell, Inc., Chicago, Ill.

Filed Apr. 24, 1997, Ser. No. 842,438
Int. Cl.[6] A42B 3/08
U.S. Cl. 2—421 **15 Claims**



1. A chin protector for use with a helmet, comprising:

an inner member including a flexible, substantially cup-shaped central portion having first and second ends and shaped to receive a wearer's chin, a substantially concave inner surface and a substantially convex outer surface, each surface extending between the first and second ends of the central portion;

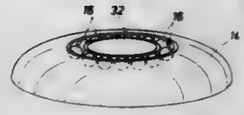
an outer member including first and second ends, and a cup-shaped shell portion having a substantially concave inner surface and a substantially convex outer surface; and

suspension means for at least partially suspending, in a spaced relationship, the shell portion of the outer member from the central portion of the inner member with a gap formed between the inner and outer members, whereby upon an

impact force striking the outer surface of the outer member, the force transmitted to a wearer's chin is attenuated.

5,794,275
IMPACT ABSORBING SHIELD FOR PROTECTIVE GEAR
Byron A. Donzis, #18 W. Rivercrest, Houston, Tex. 77042
Filed Feb. 9, 1996, Ser. No. 599,290
Int. Cl.[6] A41D *13/00;13/08*
U.S. Cl. 2—455 17 Claims

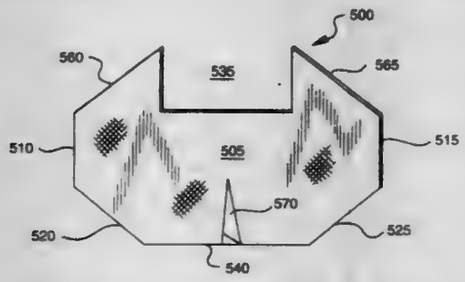




17. An improvement in a street sport impact absorbing pad adapted to be worn on a body and having a shield with an outer surface, said improvement comprising:

means for providing a multi-directional rolling contact bearing with a non-attached, impact imparting surface to translate a tangential moment of impact against said absorbing pad.

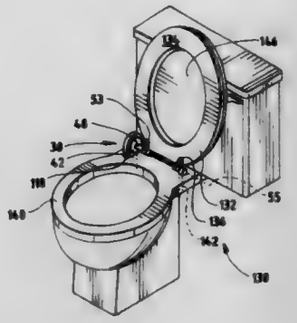
5,794,276
NECK PROTECTION DEVICE
Fern Lisa Walker, 7636 NW. 25th St., Margate, Fla. 33063
Continuation-in-part of Ser. No. 521,537, Aug. 30, 1995. This application Nov. 13, 1995, Ser. No. 558,106
Int. Cl.[6] A41D *13/00;27/12*
U.S. Cl. 2—468 19 Claims



1. A garment for attachment to a mask for protecting a user's neck from exposure to bloodborne pathogens and other airborne particles, the garment comprising:

a drape portion substantially shaped to conform to the user's neck region, said drape portion having an upper edge and a substantially u-shaped mask receiving portion along said upper edge, said mask receiving portion having one of an adhesive and hooks releasably securing said mask receiving portion to the outer surface of the mask.

5,794,277
AUTOMATIC TOILET SEAT CLOSING DEVICE
Clifford D. Jones, 9424 Tulley Ave., Oak Lawn, Ill. 60453-2441
Filed Mar. 14, 1997, Ser. No. 818,094
Int. Cl.[6] A47K *13/12*
U.S. Cl. 4—236 27 Claims



1. An automatic closing device for closing a container of the type having a cover which is hingedly mounted on a body and moveable between a closed position in which the cover is substantially flush with the body and an open position in which the cover is pivotally raised above the body, said automatic closing device for use in combination with a timing member of the type including timer means for measuring a predetermined time interval, a shaft rotatable between a de-activated position and an activated position, an arm moveable between an extended position and a retracted position, the shaft being operatively connected to the timer means so that rotation of the shaft to the activated position activates the timer means and so that the shaft automatically rotates to the de-activated position during the pre-determined time interval, and the arm being operatively connected to the timer means so that activation of the timer means by the shaft moves the arm to the retracted position and so that the arm moves to the extended position at the completion of the pre-determined time interval, said automatic closing device comprising:

a plate member having an opening formed therein, said plate member being secured to the timing member to align said opening with the shaft, the shaft extending from the timer means through said opening;

a first hinge assembly including a cylindrical member rotatable in a first direction and a second direction and having a chamber sized to receive a portion of the shaft therein, said portion of the shaft being positioned within said chamber;

a first hinge member secured to said cylindrical member opposite said portion of said shaft and rotating concurrently with said cylindrical member;

coupling means for coupling said hinge assembly to the timing member such that rotation of said cylindrical member in the first direction rotates the shaft from the de-activated position to the activated position;

a gear rotatable between a rest position and an energized position and having a centrally-positioned channel sized to encircle a portion of said cylindrical member, said gear being positioned to encircle said portion of said cylindrical member;

connection means for connecting said gear to said portion of said cylindrical member such that rotation of said cylindrical member in the first direction rotates said gear from the rest position to the energized position;

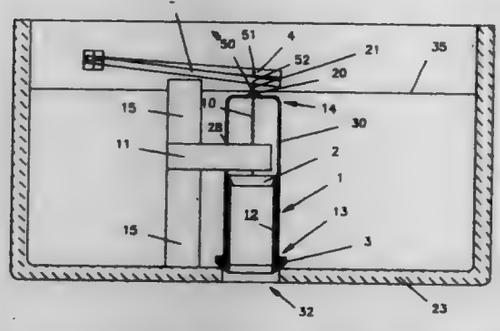
retention coupling means for coupling said gear to the arm when the arm is in the retracted position thereby retaining said gear in the energized position;

reverse rotation means for rotating said gear from the energized position to the rest position at the completion of the pre-determined time interval; and

attaching means for attaching the cover of the container to said first hinge member such that moving the cover from the closed position to the open position rotates said cylindrical member in the first direction thereby rotating the shaft to the

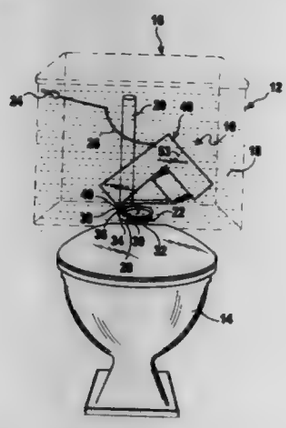
activated position and such that the cover moves to the closed position when said cylindrical member rotates in the second direction.

5,794,278
TANK FLUSHING APPARATUS
William Kirt, 2503 Pepper Tree Dr., Erie, Pa. 16510
Filed Jun. 24, 1997, Ser. No. 881,112
Int. Cl.[6] E03D 1/14
U.S. Cl. 4—327 **8 Claims**



1. A toilet tank flushing apparatus comprising a tank for holding flushing water; said tank having a water outlet therein; a cage; a cylinder having both ends open; a full flush stopper; and, a partial flush stopper; said cylinder affixed at one end to said full flush stopper; said cage affixed to said full flush stopper; said partial flush stopper sealingly engages the other end of said cylinder; said partial flush stopper movable within said cage and out of engagement with said cylinder to effectuate a partial flush; said full flush stopper sealingly engages said outlet in said tank; said cage, said cylinder, and said full flush stopper together being movable away from said outlet in said tank in order to effectuate a full flush, control means for operating said partial flush stopper and said full flush stopper.

5,794,279
WATER SAVER ATTACHMENT FOR TOILETS
Shirley Schwartz, 2481 Kaanapali Pkwy. #252, Lahaina, Hi. 96761
Filed Aug. 15, 1997, Ser. No. 915,537
Int. Cl.[6] E03D 1/35
U.S. Cl. 4—415 **11 Claims**



1. A water saver attachment for toilets adapted to be pivotally mounted in a toilet flush tank to selectively cover a drain pipe within the flush tank, said water saver attachment including:

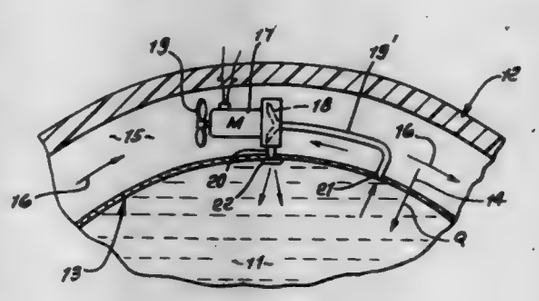
a) a hollow L-shaped water weight box including a horizontal section having an open top side and a vertical section connected thereto and extending downwardly from an end thereof;

b) a support arm connected between the horizontal and vertical sections of said hollow L-shaped water weight box;

c) a cover connected to said support arm; and

d) means for pivotally mounting said water saver attachment within the flush tank wherein said water saver attachment is pivotable between a first at rest position in which said cover seals the drain pipe to prevent water from flowing therethrough and a second flushing position in which said water saver attachment is pivoted whereby said cover is pivoted to selectively allow water to flow through the drain pipe, said water saver attachment automatically pivoting back to said first at rest position upon completion of said flushing of said toilet due to the counterbalance caused by the weight of water retained within said hollow L-shaped water weight box to limit the amount of water flowing through the drain pipe.

5,794,280
SPA APPARATUS WITH HEAT TRANSFERRING HANGING INTERIOR STRUCTURAL LINER
Borg Hansen, Calabasas, and Rafael Gonzalez, Palmdale, both of Calif., assignors to Softub, Inc., Chatsworth, Calif.
Filed Jan. 8, 1997, Ser. No. 780,731
Int. Cl.[6] A61H 33/00
U.S. Cl. 4—541.1 **14 Claims**



1. A heated therapeutic spa comprising, in combination:

a) a spa tub containing water and having water circulating plumbing attached thereto, the tub having an inner wall which is thermally conductive,

b) the tub further having a thermally insulative load bearing outer wall, and a bottom wall,

c) a plenum chamber formed between the inner wall and the outer wall and extending about the inner wall,

d) a motor and pump for circulating water in the tub through said water circulating plumbing, the motor and pump being in operative communication with said plenum chamber,

e) a fan operating in conjunction with said motor and driven thereby to circulate air in the plenum chamber that is heated by the operation of the motor,

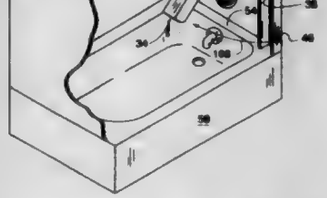
f) the fan operating to force the heated air to circulate through the plenum chamber, and from the location of the motor and around the inner wall, whereby the heat from the air is conducted through said thermally conductive inner wall to the water in said tub to heat the water, the temperature of the air decreasing as it flows around the inner wall before returning to the location of the motor.

5,794,281

SHOWER CURTAIN APPARATUS AND METHOD

James C. Shearon, Englewood, Colo., assignor to Unifran Inc., Highlands Ranch, Colo.

Filed Jan. 24, 1997, Ser. No. 788,763
Int. Cl.[6] A47K 3/14
U.S. Cl. 4—558 7 Claims



1. A vertically movable shower curtain apparatus, comprising:

a wall connector assembly for connection to a first wall adjacent to a shower system, said wall connector assembly having a length that extends in a vertical direction;

an upper support assembly having a length and including a free end and an attachment end at opposite ends of said length, said support assembly being pivotally connected to said wall connector at said attachment end, said upper support assembly including an exposed side;

a cover assembly movable relative to said upper support assembly between a first raised position and second lowered position by engagement of said cover assembly through said exposed side of said upper support assembly. said cover assembly extending in said vertical direction when in said second lowered position, and said cover assembly having a width; and

a receiver member for connection to a second wall for receiving said free end of said upper support assembly, said receiver member being spaced from said attachment end by a distance, and said upper support assembly length being substantially equal to said distance;

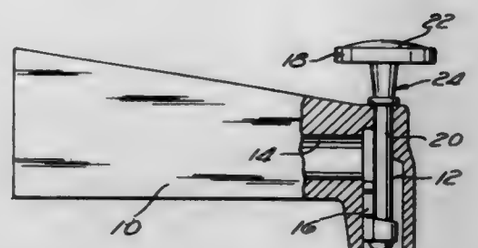
wherein said upper support assembly is pivotal between a first position and a second position, said upper support assembly length extending in a vertical linear direction along the first wall and said free end being adjacent to said wall connector in said first position and said free end being held by said receiver member in said second position, said wall connector assembly length being at least equal to said length of said upper support assembly, said wall connector assembly length being at least equal to said cover assembly width, said wall connector assembly covering said exposed side of said upper support assembly when said upper support assembly is in said first position wherein said cover assembly is surrounded along said width thereof using said wall connector assembly and said upper support assembly.

5,794,282

TEMPERATURE-INDICATING WATER DIVERTER FOR WATER SPOUT

Carol A. Lucas, and John T. Lucas, both of 25225 Perch Dr., Dana Point, Calif. 92629

Filed Feb. 28, 1997, Ser. No. 807,698
Int. Cl.[6] E03C 1/04
U.S. Cl. 4—678 6 Claims



4. A water delivery apparatus in communication with a water source, the apparatus comprising:

a) a water delivery spout; and

b) a one-piece water diverter disposed in the spout, said diverter comprising:

1) a temperature sensing water flow direction control member for directing water flowing through the spout to a selectable delivery destination as selectable by movement of the flow direction control member in the water delivery spout such that water flows about the water flow direction control member and the temperature of said water is sensed by the flow direction control member; and

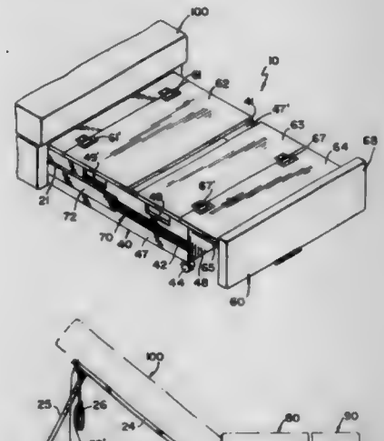
2) an externally viewable temperature display member in communication with the flow direction control member for reporting the temperature of the water as sensed by the flow direction control member.

5,794,283

CONVERTIBLE FURNITURE

Jose E. Vila, and Elina M. Vila, both of 2678 West 60 St., Hialeah, Fla. 33016-4724

Filed Dec. 8, 1997, Ser. No. 986,352
Int. Cl.[6] A47C 17/13
U.S. Cl. 5—18.1 9 Claims



1. A furniture that is selectably convertible between a bed and chair resting on a horizontal surface, comprising:

A) first housing means having a substantially rectangular projected shape defining a first cavity therein, with first and second ends including a first peripheral upper edge aligned in a substantially horizontal plane and defining a first opening and further including a first upper flat closure member and said first end including an aperture;

B) second housing means having third and fourth ends and being slidably housed within said first housing means, having a substantially rectangular projected shape, including a second peripheral upper edge aligned in a substantially horizontal

plane and defining a second opening and a second cavity therein, and further including a second upper flat closure member for selectively closing said second opening;

C) an extension support member telescopically housed within said second housing means further including a third peripheral upper edge aligned in a substantially horizontal plane and further including a third upper flat closure member hingedly mounted on said third peripheral upper edge;

D) first guiding means for slidably extending said second housing means outwardly from said first housing means;

E) second guiding means for slidably extending said extension support member outwardly from said second housing means; and

F) a cushion assembly cooperatively and removably mounted on said first, second and third upper flat closure members, so that a substantially horizontal resting surface is provided.

5,794,284

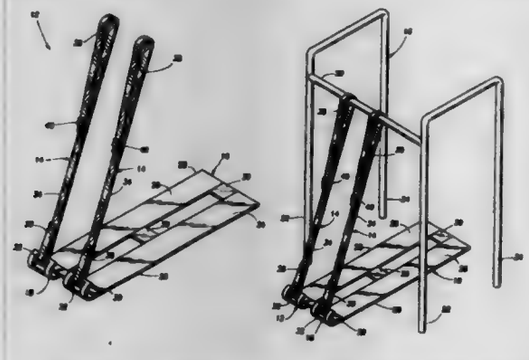
APPARATUS FOR AIDING PERSONS IN RISING FROM A SEATED POSITION TO A STANDING POSITION

Joseph Ray Southwell, Jr.; Deborah Ann Southwell; Ruth Ann Southwell; Joseph Ray Southwell, III; Kathryn A. Sikorski; Paul Robinson; James Edward Petkovsek, and Steven Bereyso, all of McKinney, Tex., assignors to Walker Sled, L.P., McKinney, Tex.

Filed Aug. 13, 1996, Ser. No. 689,739

Int. Cl.[6] A61H *3/00*

U.S. Cl. 5—81.1 R **7 Claims**



1. Apparatus for aiding a person in rising from a seated position, the apparatus comprising:

a walker:

a substantially rigid platform portion, said platform portion including first and second elongated rails and a plurality of lateral bars coupled to said first and second rails, said bars maintaining said first and second rails in a parallel spaced apart relationship to each other, and said platform portion further including a forward end portion and first and second openings formed through said forward end portion; and

first and second substantially flexible elongated connection members, each of said first and second connection members having first and second opposite end portions, each of said first and second connection members being pivotably attached through one of said first and second openings at said first opposite end portion thereof, and each of said first and second connection members being pivotably attached to the walker at said second opposite end portion thereof.

5,794,285

BED COVER ASSEMBLY

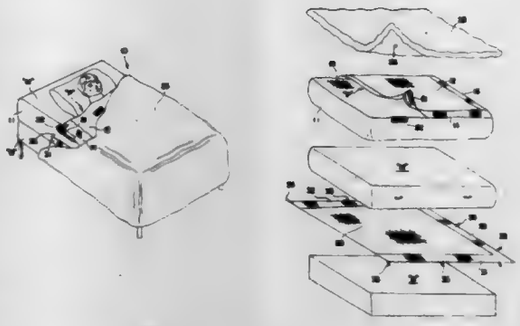
Reda R. Burch, 8609 Knollwood Cir., Charlotte, N.C. 28213

Filed Jan. 30, 1997, Ser. No. 792,182

Int. Cl.[6] A47G *9/04*

U.S. Cl. 5—497 **14 Claims**

1. A bed cover assembly for a mattress, comprising:



(a) a bottom sheet adapted for covering a top surface and sides of the mattress, said bottom sheet having opposed sides and a foot end, each of said opposed sides and said foot end having a length;

(b) a top sheet overlying the bottom sheet, said top sheet having opposed sides and a foot end, each of said opposed sides and said foot end having a length; and

(c) an elastic attachment member located along a perimeter portion of the top sheet for elastically interconnecting the top sheet and the bottom sheet together, said elastic attachment member comprising first and second elastic side sections and an elastic end section, wherein each of said sections has an upper edge and a lower edge, the opposed sides of the top sheet being attached directly and respectively to the respective upper edges of said first and second elastic side sections along the respective lengths of each of said opposed sides of the top sheet, and the foot end of said top sheet being directly attached to said upper edge of said elastic end section along the length of said foot end of said top sheet, and the opposed sides of the bottom sheet being attached directly and respectively to the respective lower edges of said first and second elastic side sections along the respective lengths of each of said opposed sides of the bottom sheet, and the foot end of said bottom sheet being directly attached to said lower edge of said elastic end section along the length of said foot end of said bottom sheet; and

(d) said elastic attachment member cooperating with the top sheet and bottom sheet to form a resilient sleeping pocket around a bed occupant positioned therebetween, such that said top sheet can be pulled in a direction away from said bottom sheet to accommodate movement of the bed occupant while maintaining the top sheet in an assembled condition over the bottom sheet and mattress.

5,794,286

PATIENT TREATMENT APPARATUS

Gerald R. Scott, Villa Park; James P. Moulton, Elgin, both of Ill.; V. Craig Seyl, Lenexa, Kans.; John L. Emrich, Algonquin, and Wayne L. Peterson, St. Charles, both of Ill., assignors to Standex International, Salem, N.H.

Filed Sep. 13, 1995, Ser. No. 527,555

Int. Cl.[6] A61F *5/01*

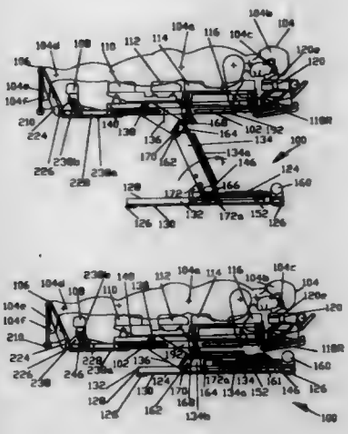
U.S. Cl. 5—611 **27 Claims**

1. Apparatus for supporting a patient for controlled dropping movement from a first level toward a second level, said apparatus including:

power driven lift means for elevating at least a portion of the patient to said first level;

latch means for retaining said lift means at said first level; and

release means for actuating said latch means to initiate a drop from said first level toward said second level in response to the exertion of a predetermined downward force on the patient; said release means includes adjustable control means



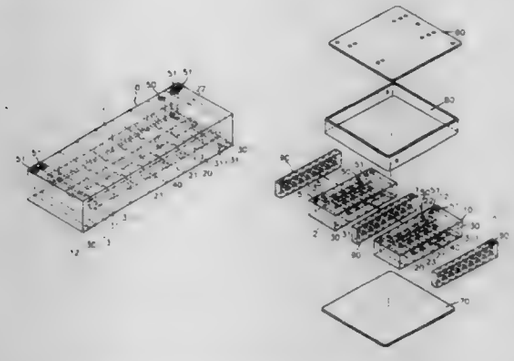
for selecting the amount of said predetermined downward force for activating said release means to initiate the drop.

5,794,287

WATER BAG OF A WATER BED

Ming-Chun Chung, 7F, No. 22, Alley 3, Lane 227, Nung An Street, Taipei, Taiwan

Filed Apr. 21, 1997, Ser. No. 844,613
Int. Cl.[6] A47C *27/10;27/08*
U.S. Cl. 5—687 **1 Claim**



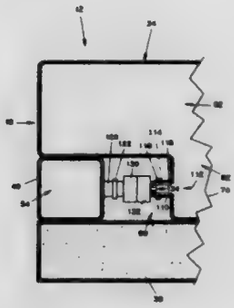
1. A water bag for a water bed, comprising:
a collapsible, hollow, rectangular, air-tight shell having two opposite ends;
a plurality of transverse buffering partition boards fastened in parallel to said air-tight shell on the inside and defining a plurality of transverse water chambers, each of said buffering partition boards having a plurality of locating holes;
two packing boards fastened to said air-tight shell and defining with the two opposite ends of said air-tight shell two independent end chambers, which when inflated keep the two opposite ends of said air-tight shell in shape;
two air chamber partition boards fastened to said air-tight shell on the inside and spaced between said buffering partition boards and said packing boards, and defining with said packing boards two inflating chambers, each of said air chamber partition boards having a plurality of air filling holes;
a plurality of air bags respectively mounted in the locating holes of said buffering partition boards, and having respective air inlets respectively connected to the air filling holes of said air chamber partition boards; and
air valve means mounted in said air-tight shell through which air is filled into said inflating chambers and said end chambers separately.

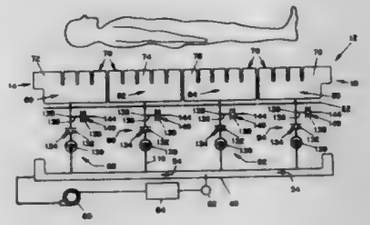
5,794,288

PRESSURE CONTROL ASSEMBLY FOR AN AIR MATTRESS

Sohrab Soltani, Charleston; James J. Romano, and Timothy W. Perez, both of James Island, all of S.C., assignors to Hill-Rom, Inc., Batesville, Ind.

Filed Jun. 14, 1996, Ser. No. 663,994
Int. Cl.[6] A47C *27/10;* **A61G** *7/057*
U.S. Cl. 5—713 **16 Claims**





1. A control system for controlling the pressure of fluid within a chamber upon which a person rests, the control system comprising:
a manifold having a wall configured to define an interior region in fluid communication with a source of pressurized fluid,
an air sack configured to define the chamber, the air sack including a wall configured to define an interior region of the air sack, the wall being formed to include a plurality of air loss openings in fluid communication with the interior region of the air sack so that the interior region of the air sack is in fluid communication with the atmosphere outside of the air sack, and
a flow control assembly including a conduit in fluid communication with the interior region of the air sack and in fluid communication with the interior region of the manifold and a check valve mounted in the conduit to prevent the flow of pressurized fluid through the conduit from the interior region of the air sack to the interior region of the manifold so that pressurized fluid from the manifold flows through the flow control assembly to the interior region of the air sack and out of the air sack through the plurality of openings.

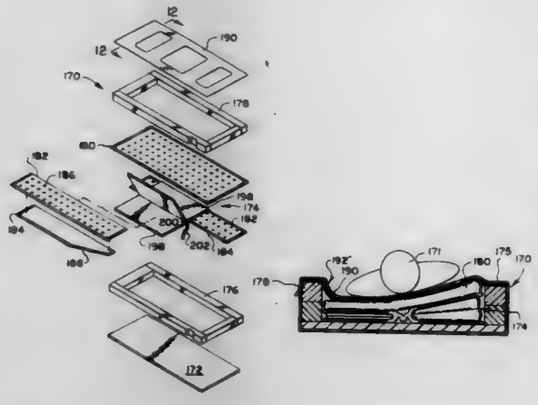
5,794,289

MATTRESS FOR RELIEVING PRESSURE ULCERS

Ronald D. Wortman, Angola; Michael P. Rechin, Silver Creek; Roland E. Flick, Elma, all of N.Y., and John K. Whitney, Dorado, Puerto Rico, assignors to Gaymar Industries, Inc., Orchard Park, N.Y.

Continuation-in-part of Ser. No. 540,400, Oct. 6, 1995, abandoned. This application Nov. 12, 1996, Ser. No. 748,209
Int. Cl.[6] A61G *7/04*
U.S. Cl. 5—713 **24 Claims**

1. A mattress, which comprises:
a) a crib;
b) a lower support member secured to the crib; and



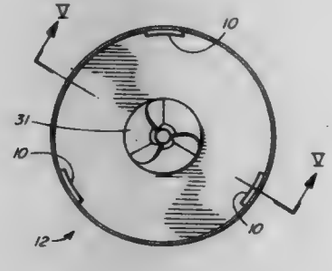
c) a first inflatable cushion surrounded by the crib and comprising side-by-side first and second adjustably inflatable bladders extending substantially along and on opposed sides of a longitudinal axis of the mattress, wherein each of the first and second adjustably inflatable bladders comprises an upper inflatable bladder and a lower inflatable bladder so that an upper surface of the first inflatable cushion is tiltable with respect to a horizontal orientation when one of the upper bladders of one of the first and second adjustably inflatable bladders is inflated while the lower bladder of the other of the first and second adjustably inflatable bladders is deflated.

5,794,290

METHOD AND APPARATUS FOR IMPROVING THE WASHING ABILITY OF WASH WATER IN A WASHING MACHINE

Denzil S. Roberts, 1471 Sherwood Drive, Nanaimo, British Columbia, Canada, V9T 1G8

Filed Mar. 4, 1997, Ser. No. 805,913
Int. Cl.[6] D06F *39/02*
U.S. Cl. 8—159 **5 Claims**



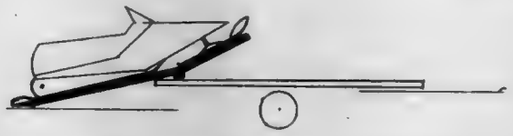
1. A washing method performed in a washing machine having a wash basket with a generally cylindrical inside surface for containing wash water and a wash load, the method including the of attaching a discrete tile of a ceramic material to the inside surface of the wash basket to provide a ceramic surface projecting above the wash basket inside surface for contact with the wash water in the basket.

5,794,291

RAMP

Johan Olaussen, Havsteinbakken 7B, N-7021, Trondheim, Norway, and Erling Nylund, Torvveien 52, N-9990, Batsfjord, Norway

PCT No. PCT/NO94/00170, § 371 Date Oct. 17, 1996, § 102(e) Date Oct. 17, 1996, PCT Pub. No. WO95/11142, PCT Pub. Date Apr. 27, 1995
PCT Filed Oct. 19, 1994, Ser. No. 656,249
Claims priority, application Norway, Oct. 20, 1993, 933766
Int. Cl.[6] B60P *1/24*; **B62B** *1/10*
U.S. Cl. 14—69.5 **16 Claims**



9. A ramp for loading and unloading a snowmobile from an elevated load bed, said snowmobile having a drive belt and a pair of skis, said ramp comprising:

a pair of elongate tracks, having front and rear ends, extending along the length of said ramp on opposite sides thereof and adapted to receive said snowmobile skis;

a central portion, adapted to receive said snowmobile drive belt, extending between and joining said elongate tracks;

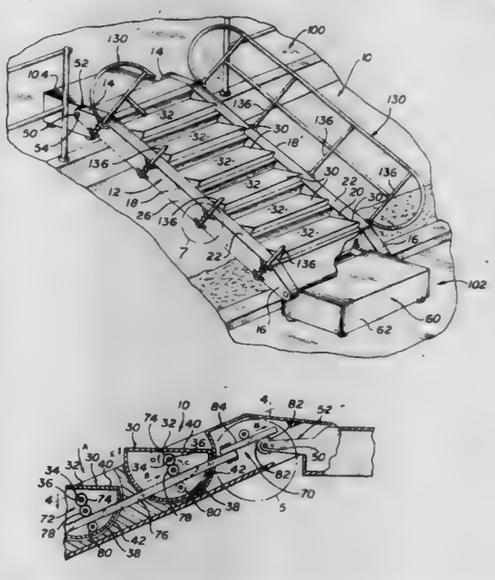
a means for moving said ramp on said load bed; said tracks being angled upwards at their front ends.

5,794,292

PORTABLE GANGWAY WITH LEVELING STAIRS

Patrick J. Ricci, Jr., 2604 NW. 2nd Ave., Boca Raton, Fla. 33431

Filed Nov. 20, 1996, Ser. No. 753,100
Int. Cl.[6] E01D *15/24*; **B63B** *27/14*
U.S. Cl. 14—69.5 **5 Claims**



1. A gangway to accommodate passage to at least one landing structure having a deck surface;

said gangway comprising:

a rigid support structure defining a main frame assembly having opposite first and second ends,

said main frame assembly including a pair of longitudinal frame members extending a length of said main frame assembly between said opposite ends, said longitudinal frame members being disposed in spaced, parallel relation to one another,

a plurality of step members each including a substantially flat top step surface, said step members being supported transversely between said longitudinal frame members and each of said step members being rotatable relative to said main frame assembly about a transverse axle having opposite end zones,

mounting means at said first end of said frame assembly for mounting said gangway to the landing structure and being pivotally fitted to said main frame assembly to define a main pivot axis,

primary drive means for synchronized rotating of said plurality of step members relative to said main frame assembly so that said flat top step surfaces of said step members remain level in parallel relation to one another upon a change in an angle of inclination of said main frame assembly as said second end of said main frame assembly moves through an arc about said main pivot axis,

said longitudinal frame members each including a main inboard wall, and top and bottom plates disposed in spaced relation to one another and perpendicular to said main inboard wall to define a gear chamber along a length of each of said longitudinal frame members between said top and bottom plates, said main inboard walls of said respective longitudinal frame members being disposed in spaced, parallel relation relative to one another to accommodate said step members therebetween,

said transverse axles of said step members being rotatably fitted through said main inboard walls of said longitudinal frame members so that said opposite end zones of said axles are positioned and disposed within said gear chambers,

said primary drive means including a drive gear assembly operatively communicating between said main pivot axis and each of said transverse axles of said respective step members, said drive gear assembly rotating said transverse axles and said step members, respectively, relative to said main frame assembly as said second end of said main frame assembly moves relative to said main pivot axis,

said drive gear assembly including:

a plurality of step gears each fitted to a respective one of said opposite end zones of said transverse axles within said gear chamber and being fixed thereto so as to be rotatable with said transverse axles;

an elongate rack gear in each of said gear chambers of said longitudinal frame members, said elongate rack gear in each gear chamber being disposed in driving engagement with said step gears on said transverse axles and being movable longitudinally in one direction towards said first end of said main frame assembly and an opposite direction towards said second end of said main frame assembly so as to rotate said step gears, said transverse axles and said step members in either of two opposite rotational directions;

pivot gears in each of said respective gear chambers, said pivot gears drivingly engaging said elongate rack gears to cause longitudinal movement of said rack gears upon swinging, rotational movement of said main frame assembly about said pivot gears;

a plurality of intermediate gears rotatably engaged between said elongate rack gear and said step gears in each of said gear chambers; and

a plurality of rollers rotatably supported within said gear chambers and engaging said longitudinal rack gear in each of said gear chambers to guide longitudinal movement of said rack gear and to maintain said rack gear in driving engagement with said intermediate gears.

5,794,293

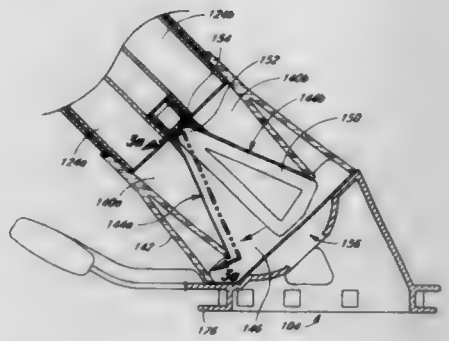
POOL SWEEP CLEANER

Martin I. Hoffinger, 2239 Embassy Dr., West Palm Beach, Fla. 33401

Filed Sep. 30, 1996, Ser. No. 723,135
Int. Cl.[6] E04H *4/16*
U.S. Cl. 15—1.7 **3 Claims**

1. A pool cleaning apparatus comprising:

a water intake inlet that is configured to be positioned on an inner surface of said pool while sucking water from said pool so as to suck debris from said inner surface of said pool;



two suction tubes that are configured to be attached to a single suction hose wherein said two suction tubes are in fluid communication with said water intake inlet via a plenum wherein said two suction tubes each define a first and a second opening into said plenum and wherein said first and said second openings are configured to have a lip and a raised ridge that extends around said first and said second openings; and

a movable wedge having a triangular cross section defining a first and second plane that is positioned within said plenum, wherein said movable wedge is movable between a first position, wherein said first plane of said wedge covers said first opening and a second position wherein said second plane of said wedge covers said second opening so that when the first opening is covered by said wedge and said suction tubes are attached to a suction hose, a suction force is initially exerted against said wedge at the first opening inducing the apparatus to move over said inner surface of said pool and so that water flow is increased through said second opening wherein the increase in water flow over time reduces said suction force exerted at said first opening and induces said wedge to move so as to cover said second opening thereby resulting in said suction force being initially exerted against said wedge at the second opening inducing the apparatus to move over said inner surface of said pool and so that water flow is increased through said first opening wherein the increase in water flow over time reduces said suction force exerted at said second opening and induces said wedge to move so as to cover said first opening wherein said wedge is formed from a deformable material so that when said wedge covers said first or said second openings said suction force exerts a sufficient force against said deformable material so that said first and second raised ridges press into said wedge so that said raised ridges and said deformable material form a seal.

5,794,294

APPARATUS FOR CLEANING PLAY BALLS

Lawrence W. Weidmann, N21 W24052 Dorchester Dr. #6A, Pewaukee, Wis. 53072; Laura J. Bucaro, and Michael V. Bucaro, both of 12750 W. Bobwood St., New Berlin, Wis. 53151

Filed Aug. 19, 1996, Ser. No. 699,467
Int. Cl.[6] A63B *47/04*
U.S. Cl. 15—21.2 **15 Claims**

1. An apparatus to be used in a process of cleaning work pieces, said apparatus comprising:

a tub arranged to receive a cleaning liquid and a plurality of said work pieces;

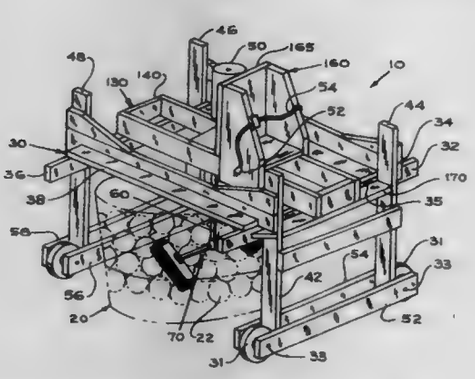
a supporting frame, said supporting frame located adjacent to said tub and at least a portion of said frame being positioned above said tub;

a supporting structure pivotally coupled to said supporting frame;

a motor, said motor supported by said supporting structure;

a drive shaft structure, said drive shaft structure having a first end and a second end;

said first end of said drive shaft structure being coupled to said motor; and



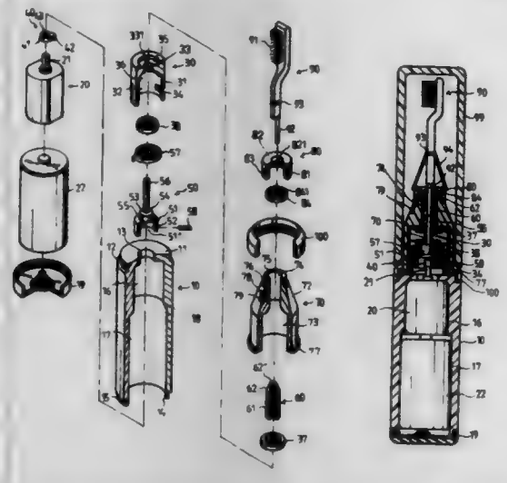
a brush mechanism, said brush mechanism being coupled to said second end of said drive shaft structure, and being adapted to agitate said liquid and to scrub said work pieces.

5,794,295

ELECTRICALLY OPERATED OSCILLATORY TOOTHBRUSH

Chung-Shan Shen, Suite 2, 7F, No. 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed Mar. 11, 1996, Ser. No. 613,321
Int. Cl.[6] A46B *13/02*
U.S. Cl. 15—22.1 **2 Claims**



1. An electrically operated oscillatory toothbrush comprising:

a tubular housing, said housing having a smaller diameter bottom at an upper end of the housing including a first axial hole with peripheral threads, an externally threaded neck at a lower end thereof, a first chamber and a larger diameter second chamber defining a shoulder thereinbetween;

an electric motor axially secured in the first chamber of said housing and having a rectangular shaft eccentrically arranged on a top of the motor and exposed exterior of said housing;

a battery axially disposed in the second chamber of said housing and secured by a cover;

an actuator sleeved onto the rectangular shaft of said motor, said actuator having an annular body, a rectangular hole made in registry with the rectangular shaft and a push means laterally extending from an outer periphery of the annular body;

an oscillator covering said actuator and positioned above an upper surface of the bottom of said housing, said oscillator having an annular body, an upper end, a first transverse recess formed through a peripheral wall, a smaller diameter member centrally formed above the upper end including a rectangular central bore for securing a rectangular axle rod, and a vertical slot in the peripheral wall for securing one end of a recoil spring therein, and a pawl means inserted into the first transverse recess and positionably engageable with the push means of said actuator;

a sleeve member covering said oscillator and the other end of said recoil spring being connected to an inner wall of the sleeve member, said sleeve member having a hollow cylinder body defining a third chamber therein, an upper end including a second axial hole at a center thereof, a second transverse recess of predetermined length in a peripheral wall of the hollow cylinder body for sliding the pawl means therein, first and second circular cavities formed on opposite sides of the upper end for respectively receiving first and second bearings therein, said first and second bearings each having a rectangular central bore sizeably equal to the body of said rectangular axle rod;

a chuck member axially inserted onto said axle rod and positioned against the first bearing, said chuck member having a cylinder body, a rectangular central bore made in registry with the body of said rectangular axle rod and a tapered upper end in which a plurality of vertical slots are formed spaced apart;

a cap member having a hollow cylinder body defining a fourth chamber to receive said sleeve member therein, a tapered upper portion including a third axial hole therein for passing said chuck member therethrough and a threaded neck at an upper end, a recess in a peripheral wall of the tapered upper portion for securing a switch therein, and a flange extended outward from a lower rim of the cop member and having a diameter equal to that of the upper end of said housing so that said cap member covers said upper end and is fastened by means of a locking ring;

a third bearing sleeved on the tapered upper end of said chuck member, said bearing having a tapered central bore made in registry with the upper end of said chuck member;

a fastening means fastened on the threaded neck of said cap member with said third bearing enclosed therein, said fastening means having an annular body with peripheral threads on an internal wall and a fourth axial hole centrally formed therein;

a toothbrush axially inserted into the upper end of said chuck member and fastened by said fastening means, said toothbrush having a bristle head, a shank, a connection rod and an annular groove formed around a periphery of the shank thereof;

a waterproof means secured between the annular groove of said toothbrush and said fastening means, said waterproof means having a flexible conical body, a maximum diameter equal to the diameter of said fastening means and a minimum diameter equal to the diameter of the annular groove;

a tubular cover on said toothbrush.

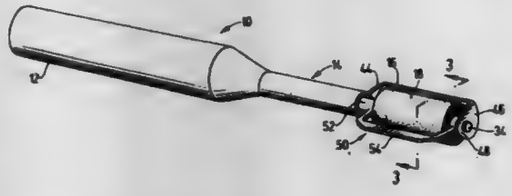
5,794,296

ELECTRIC TOOTHBRUSH

Tit Shing Wong, Kowloon, Hong Kong, assignor to Vontechs Limited, Inc., Hong Kong

Filed May 16, 1996, Ser. No. 645,643
Int. Cl.[6] A46B *13/02*
U.S. Cl. 15—23 **26 Claims**

1. An electric toothbrush comprising:



a housing;

a bi-directional electric motor mounted within the housing, the motor having a motor shaft axially disposed within the hous-

ing, the direction of rotation of the shaft being dependent upon the polarity of electrical energy supplied to the motor;

a source of electrical energy contained within the housing;

a multi-position electrical reversing switch electrically coupled between the motor and the source of electrical energy, the reversing switch adapted for reversing the polarity of electrical energy supplied to the motor such that when the reversing switch is in a first position the motor shaft rotates in a first direction and when the reversing switch is in a second position the motor shaft rotates in a second direction opposite to the first direction, said reversing switch having a neutral position wherein the motor is electrically disconnected from the source of electrical energy;

a rotary brush rotatably mounted at a distal end of the housing, the brush being mechanically coupled to the motor shaft; and

a direction controller coupled to the reversing switch, the controller moveable between at least first and second positions there by moving the reversing switch between first and second positions, respectively, the controller disposed adjacent the rotary brush such that when the electric tooth brush is brought into proximity with upper teeth to be cleaned the controller is brought into contact with the crowns of such upper teeth and is thereby moved to a first position to cause rotation of the motor shaft in a first direction and when the electric tooth brush is brought into proximity with lower teeth to be cleaned the controller is brought into contact with the crowns of such lower teeth and is thereby moved to the second position to cause rotation of the motor shaft in the second direction, said controller having a neutral position such that when the controller is moved to the neutral position the motor is thereby de-energized.

5,794,297

CLEANING MEMBERS FOR CLEANING AREAS NEAR WALLS USED IN FLOOR CLEANER

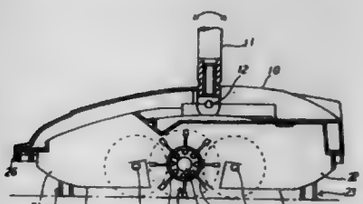
Kouichi Muta, Chiba, Japan, assignor to Hoky Contico, L.L.C., St. Louis, Mo.

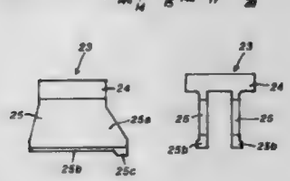
Filed Mar. 29, 1995, Ser. No. 412,451

Claims priority, application Japan, Mar. 31, 1994, 6-085690

Int. Cl.[6] A47L *11/33;13/00*

U.S. Cl. 15—42 **37 Claims**





5. A cleaning member for cleaning areas near walls and for attachment to a floor cleaner, the floor cleaner having a main body casing including a bottom,

the cleaning member comprising:

a top mounting section for mounting the cleaning member onto a corner of the bottom of the main body casing; and

a downwardly extending plate to take up dust, the downwardly extending plate having a top edge joined to the top mounting section at essentially a right angle, and a bottom edge, said cleaning member being attachable to said main body casing so that said downwardly extending plate extends along a direction perpendicular to a moving direction of said floor cleaner, and said downwardly extending plate includes an overhang along the direction perpendicular to the moving direction of said floor cleaner and protecting outwardly from said main body casing, and a protruding portion protruding downwardly from a lower end of said overhang;

the cleaning member being integrally formed from a soft and flexible material.

5,794,298

DEVICE FOR HANDLING A BRUSH HEAD FOR CLEANING THE SURFACE OF LARGE OBJECTS

Dietmar Fügel, Wolfschlugen; Stefan Fritz, and Martin Wanner, both of Stuttgart, all of Germany, assignors to Putzmeister Aktiengesellschaft, Aichtal, Germany

PCT No. PCT/EP94/02556, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO95/06586, PCT Pub. Date Mar. 9, 1995

PCT Filed Jul. 30, 1994, Ser. No. 617,850

Claims priority, application Germany, Aug. 31, 1993, 43 29 253.4

Int. Cl.[6] B60S *3/00;* **A47L** *11/00;* **B08B** *7/00*

U.S. Cl. 15—53.2 **20 Claims**

1. A device for handling of a brush for the surface cleaning of large objects, comprising a multi-joint assembly having multiple joints to which brush means for cleaning large objects is attached, a mast having an arm assembly, the arm assembly having at least one of an articulated mast and a telescopic mast, the arm assembly having an end arm supporting the multi-joint assembly first, second and third motor-driven rotary units sequentially arranged in the multi-joint assembly and respectively having axes of rotation, the axes of the first and third rotary units being perpendicular to the axis of the second rotary unit, a motor-driven telescopically extending, linear unit connected to the third rotary unit the linear unit defining an axis, a fourth rotary unit having an axis of orientation perpendicular with respect to the axis of the linear unit and being connected to the multi-joint assembly, the brush means being rotatable about an axis perpendicular with respect to the axis of orientation of the fourth rotary unit and being moved during the cleaning operation along specified paths of movement on a surface to be treated, the axis of rotation of the third rotary unit being aligned with the axis of the linear unit, and the axis of the first rotary unit adjacent the end arm and the axis of the linear unit always being positioned in parallel planes.

5,794,299

CONTAINMENT APPARATUS

Thomas R. Gockel, Fremont; Lorin Olson, Scotts Valley; Lynn Ryle, San Jose, and Brett A. Whitelaw, Pleasanton, all of Calif., assignors to Ontrak Systems, Inc., San Jose, Calif.

Filed Aug. 29, 1996, Ser. No. 705,115

Int. Cl.[6] B08B *11/00;13/00*

U.S. Cl. 15—77 **33 Claims**

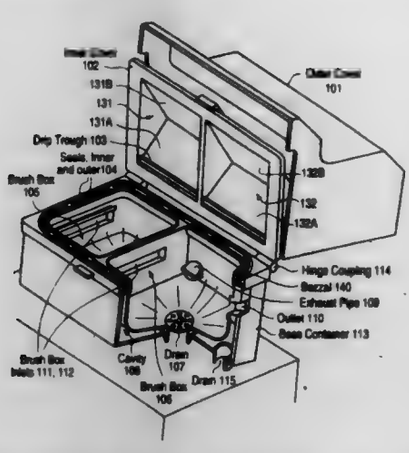
1. A containment apparatus for use in a wet processing system, said containment apparatus comprising:

an outer box;

at least one inner box having rounded corners and coupled to and contained in said outer box, such that a cavity is formed therebetween;

a lid assembly rotatably coupled to the outer box such that the lid assembly is pivotally connected to an edge portion thereof;

a first seal for sealing the lid assembly to an upper edge of the outer box and a second seal for sealing the lid assembly to an upper edge of the at least one inner box, and forming a



double-hump seal with the outer box and said at least one inner box when the lid assembly is in a closed position.

5,794,380

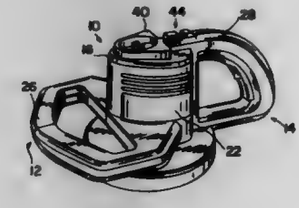
POWER TOOL

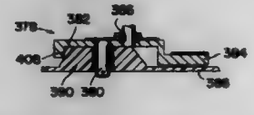
Robert E. McCracken, Tucson, Ariz., and James B. Watson, Conyers, Ga., assignors to Waxing Corporation of America, Inc., Elmhurst, Ill.

Continuation of Ser. No. 546,158, Oct. 20, 1995. This application Oct. 21, 1996, Ser. No. 734,121

Int. Cl.[6] A47L *11/10*

U.S. Cl. 15—97.1 **5 Claims**





1. An orbital polisher having a pad with an axial bore extending through its center, the polisher comprising:

a housing;

a motor in the housing;

a shaft rotatably driven by the motor about a rotational axis along which the shaft extends;

an axial lining in the pad axial bore having an upper end and a lower end with a first axial predetermined distance therebetween;

a counterweight assembly attached to the shaft for rotation therewith;

a post on the counterweight assembly adjacent to and spaced from the rotational axis of the attached shaft to be connected to the pad for causing the pad to travel in an orbital path and having a length greater than the first axial predetermined distance;

a detent ball mounted to the post for detenting and releasably securing the pad to the post adjacent the rotational axis, the ball being spaced from the bottom of the counterweight assembly along the length of the post a second axial predetermined distance slightly greater than the first axial predetermined distance for allowing the ball to engage the lower end of the axial lining; and

biasing means between the post and ball for urging a portion of the ball in a first radial direction relative to the shaft a first radial predetermined distance and permitting the ball portion to move in a second radial direction opposite to the first radial direction under a predetermined force applied to the ball portion by inserting the post in the axial lining and to rebound in the first direction to substantially the first radial predetermined distance when the predetermined force is removed with the ball engaging the axial lining lower end and the bottom of the counterweight situated adjacent the axial lining upper end to tightly secure the pad onto the post for orbital movement therewith.

5,794,301

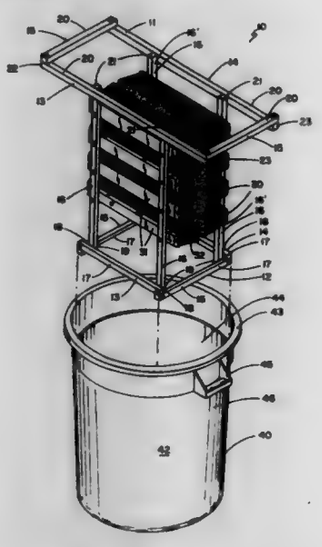
WASHER FOR FOLDING CHAIRS

John C. Hietala, 92 Old Meeting House La., Norwell, Mass. 02061

Filed Dec. 10, 1996, Ser. No. 762,767

Int. Cl.[6] A46B *11/00*; **B08B** *3/00*; **A47L** *13/26*

U.S. Cl. 15—104.92 **12 Claims**



1. A washer for folding chairs, comprising:

a container holding a fluid;

a frame assembly inserted into said container, said frame assembly having a top, bottom, front, rear, two sides and four vertical struts extending from the frame assembly bottom to the frame assembly top, two of said struts being positioned at the frame assembly front and two of said struts being positioned at the frame assembly rear, each said vertical strut having a top and a bottom, each said vertical strut being positioned in parallel to the other vertical struts, said frame assembly having a plurality of vertically arranged sets of linear, horizontal brushes attached to said vertical struts, the brushes in each set being placed opposite each other, said frame assembly being adapted to receive a folded chair.

5,794,302

CAR WASHING BRUSH

Yung-Cheng Lin, 439 Chiu Fen Road, Yung Ching Hsiang, Changhua, Taiwan

Filed Dec. 18, 1996, Ser. No. 768,944

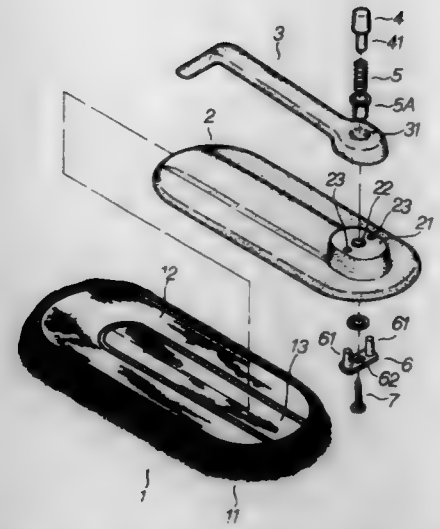
Int. Cl.[6] B25G *1/06*; **A46B** *5/00*

U.S. Cl. 15—172 **6 Claims**

1. A washing brush, comprising:

a brush head having a receiving recess defined in an upper side thereof;

a holding plate secured in said receiving recess of said head and provided at one end of an upper side thereof with a retaining



projection, said retaining projection defining a fastening hole and two locating holes;

a handle having defined at one end thereof a pivoting hole;

a sleeve member provided in said pivoting hole;

biasing means received in said sleeve;

a press button engaged with said biasing means; and

a fastening device provided with two locating projections removably received in and removably extending out of said two locating holes of said retaining projection of said holding plate, said fastening device being coupled with said press button,

wherein said fastening device couples said one end of said handle with said retaining projection of said holding plate such that said two locating projections of said fastening device extend from said two locating holes of said retaining projection of said holding plate and engage said handle, said handle is rotatable when said press button of said handle is displaced by an external force to remove said two locating projections of said fastening device from said handle.

5,794,303

HAND HELD VACUUM AND SCRAPER COMBINATION

Jakie Sanfilippo, and Donna Sanfilippo, both of 758 Burkshire Dr., Corpus Christi, Tex. 78412

Filed Feb. 28, 1996, Ser. No. 608,399
Int. Cl.[6] A47L *5/26*
U.S. Cl. 15—344 **6 Claims**



1. A combination portable vacuum and scraper apparatus comprising:

an elongated, hand held outer housing having a front end and a back end;

an on/off switch located at said back end;

a vacuum intake port located at said front end;

a scraping means for scraping flat surfaces, said scraping means affixed to said outer housing near said vacuum intake port;

at least one air discharge port formed as a penetration in said outer housing in fluid communication with said vacuum intake port;

an air transfer shaft connecting said air discharge port and said vacuum intake port;

a removable residue cartridge having a filter, said residue cartridge held within said air transfer shaft such that air traveling through said air transfer shaft passes through said residue cartridge and impinges against the filter;

a centrifugal blower driven by a motor, said blower contained within said air transfer shaft to provide a means of propelling air from said vacuum intake port, along said air transfer shaft, and out said air discharge port;

a one way air valve mounted near the vacuum intake port and covering said air transfer shaft for allowing only the inward flow of air, thereby preventing the accidental discharge of debris and shavings when said blower is in an unengaged state; and

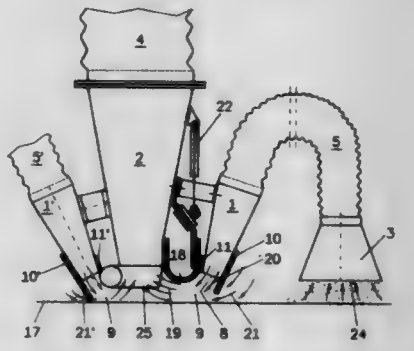
a battery housed within said housing and in electrical contact with both said on/off switch and said motor in order to provide the necessary electrical energy to operate said motor.

5,794,304

SWEEPING MACHINE WITH DUST EXTRACTION

Eberhard Ritter, Berlin, Germany, assignor to Het Haller Entwicklungs Und Technologiegesellsaaft MbH & Co., Germany

Filed Dec. 12, 1995, Ser. No. 571,226
Int. Cl.[6] E01H *1/08*
U.S. Cl. 15—346 **7 Claims**



1. A sweeping vehicl for pneumatically taking up refuse, including a suction mouthpiece (2) having a suction air intake area (9) and connected via a first suction line (4) to a mobile refuse container (6), and including a second suction line (5), connected at a suction end to a suction hood (3) at a lateral broom (7), and wherein air ejector nozzle (2) is connected to the other end of the second suction line (5), said ejector nozzle having a suction opening (8) disposed within the suction air intake area (9) of the suction mouthpiece (2).

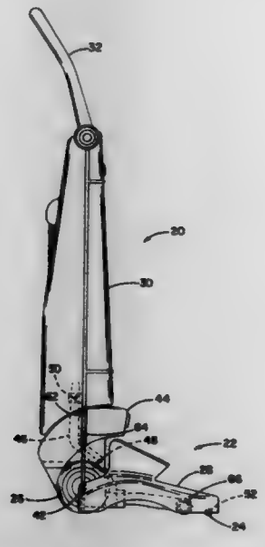
5,794,305

ARTICULATION DEVICE FOR A VACUUM CLEANER

Kenneth J. Weger, 1001 E. Lilac Dr., Tempe, Ariz. 85281

Filed Dec. 17, 1996, Ser. No. 773,799
Int. Cl.[6] A47L *5/28*
U.S. Cl. 15—411 **13 Claims**

1. A vacuum cleaner having improved maneuverability for moving over a surface, the vacuum cleaner comprising:



a base portion including

spaced forward wheels having a forward axis,

a pair of hemispherically shaped rearward wheels having a rear axis, and

a base member coupling the forward wheels and the rearward wheels such that the rear axis is pivotable in a plane generally perpendicular to the surface, only one of the rearward wheels being disposed on the surface when the rear axis is pivoted from a generally horizontal position; and

an upright portion coupled to the rearward wheels for pivoting the rear axis in the plane generally perpendicular to the surface, whereby the vacuum cleaner may be caused to move in a generally straight direction when both of the rearward wheels are disposed on the surface, and the vacuum cleaner may be caused to turn when the rear axis is pivoted from a generally horizontal position and only one rear wheel is disposed on the surface.

5,794,306

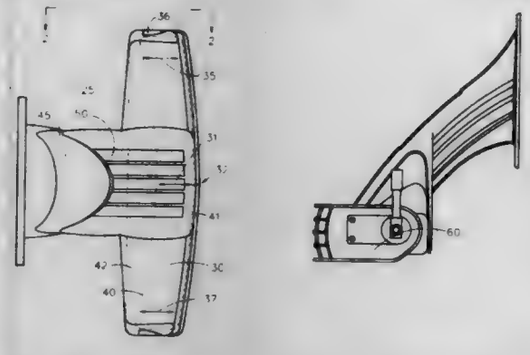
YARD CARE MACHINE VACUUM HEAD

Usman Firdaus, Strongsville, Ohio, assignor to Mid Products, Inc., Cleveland, Ohio

Filed Jun. 3, 1996, Ser. No. 657,331

Int. Cl.[6] A47L *9/02*

U.S. Cl. 15—418 **10 Claims**



1. In a lawn vacuum having a motor driven collection fan with an inlet opening and a vacuum distribution head connected thereto, the vacuum distribution head having a laterally disposed opening, the improvement of a restriction, said restriction being located in the vacuum distribution head, the opening having lateral ends on each side of a center of the opening and characterized in that said restriction reduces from the center to the ends of the opening, means for said restriction to modify the vacuum of the laterally disposed opening, and characterized in that the vacuum distribution head having a front and a back and at least one of the front and back being varied to provide said restriction.

5,794,307

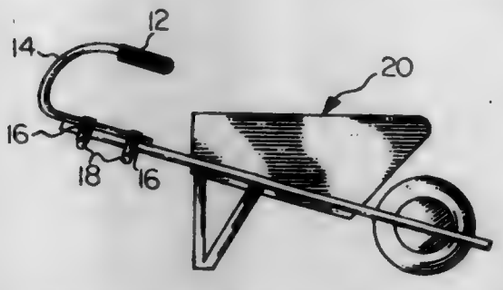
WHEELBARROW HANDLE EXTENSION

Rufus B. Overcash, and Louisa C. Overcash, both of 6711 Pine Lake Ln., Charlotte, N.C. 28227

Filed Nov. 4, 1996, Ser. No. 743,497

Int. Cl.[6] A47B *95/02*

U.S. Cl. 16—114 R **11 Claims**



1. A handle extension for attachment to the straight, shaft-like type of handle commonly used on wheelbarrows and similar devices so that the extensions can be used by tall operators in combination with only a slight bend in their knees to lift and begin transport of a load in a wheelbarrow without having to excessively bend over and subject their backs to a risk of injury, said handle extension comprising an arcuate tubular member having a distal end and a tapered proximal end; a hand grip, said hand grip attached to said distal end, said hand grip being made from flexible material and having an outer surface conformable in configuration and dimension to an adult human hand of a taller than average operator; and said handle extension also comprising connection means, said connection means securely attaching said proximal end to the straight, shaft-like handle so that said distal end and said proximal end of said tubular member are positioned remote from an operator and so that a taller than average operator intending to move a device by one of its straight, shaft-like handles can instead do so by said hand grip with only a slight bend in the knees.

5,794,308

HINGE

Rudolf Rentsch, Erlenbach, Switzerland, and Bruce Mueller, Mukwonago, Wis., assignors to Creanova AG, Baar, Switzerland

PCT No. PCT/EP95/00651, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO95/23097, PCT Pub. Date Aug. 31, 1995

PCT Filed Feb. 23, 1995, Ser. No. 696,865

Claims priority, application Switzerland, Feb. 23, 1994, 00530/94

Int. Cl.[6] E05D *1/00*

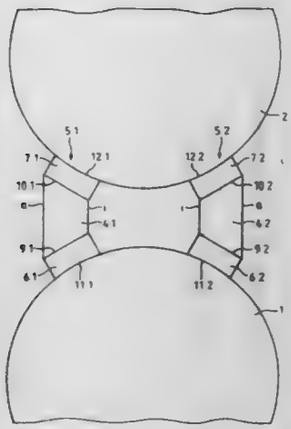
U.S. Cl. 16—225 **31 Claims**

1. A resilient hinge arrangement, comprising:

a first hinge part (1),

a second hinge part (2) that assumes a plurality of stable pivoting positions with respect to said first hinge part (1) with a dead center lying at least between two of said stable pivoting positions,

said second hinge part (2) being arranged to pivotably move from pivoting positions between said two stable pivoting positions, through said dead center, outside said dead center itself, in an elastically resilient manner into a nearest one of said stable pivoting positions,



two connecting arms (5) spaced a distance apart comprising at least one coupling element (6, 7, 16) protruding movably from each of said first hinge part (1) and second hinge part (2), and

at least one substantially flexurally rigid intermediate part (4) between said coupling elements (6, 7, 16) that is delimited by two bending regions (9, 10, 11) that are spaced apart and arranged at an angle to each other between said intermediate part and said coupling elements (6, 7, 16), wherein:

each of said two connecting arms (5) is substantially stress-free in an opened position and a closed position of said first hinge part (1) relative to said second hinge part (2) at a point at which said bending regions (9, 10, 11) come closest to each other, and

each coupling element (6, 7, 16) is arranged to execute a maximum elastic relieving movement in a region of said dead center upon said pivoting movement of said second hinge part (2) with respect to said first hinge part (1) between said two stable pivoting positions through said dead center.

5,794,309

HINGE AND LOCK ASSEMBLY FOR A MOTOR VEHICLE DOOR

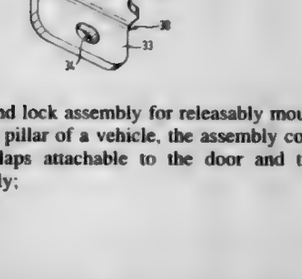
Norbert Lotz, Leichlingen, Germany, assignor to ED. Scharwächter GmbH & Co. KG, Remscheid, Germany

Filed Feb. 7, 1997, Ser. No. 796,643

Claims priority, application Germany, Feb. 20, 1996, 196 06 186.5

Int. Cl.[6] E05D *11/10*

U.S. Cl. 16—334 **12 Claims**



1. A hinge and lock assembly for releasably mounting a vehicle door on a door pillar of a vehicle, the assembly comprising:

two hinge flaps attachable to the door and the door pillar, respectively;

a hinge pin for pivotally connecting the two flaps with each other, the hinge pin having an extension projecting beyond height of the assembly;

a support releasably attachable to the door pillar for attaching the hinge to the door pillar, the support having a base for supporting the hinge flap attachable to the door pillar and an opening provided in the base for receiving the hinge pin extension;

a torsional door lock having a S-shaped torsion bar fixedly supported on the hinge flap attachable to the vehicle door; and

an indexing arrangement formed on the hinge flap attachable to the door pillar and including alternating, following each other projections and indentations which cooperate with the torsion bar of the door lock for locking the door in a predetermined position,

wherein the hinge flap attachable to the door pillar is formed of a folded sheet material section and has a substantially U-shape,

wherein the assembly further comprises a plurality of holding members pivotally supported on one leg of the U-shaped hinge flap and cooperating with respective indentations of the indexing arrangement for holding a weighting arm of the torsion bar, and

wherein another opposite leg of the U-shaped hinge flap is provided with a projection form-lockingly engageable in another opening provided in the support base.

5,794,310

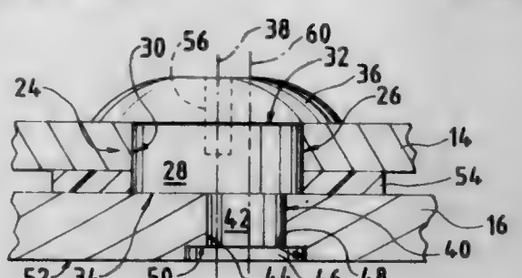
ADJUSTABLE WINDOW HINGE

Brian D. Dallmann, Owatonna, Minn., assignor to Truth Hardware Corporation, Owatonna, Minn.

Filed Feb. 24, 1997, Ser. No. 805,123

Int. Cl.[6] E05D *15/00*

U.S. Cl. 16—362 **20 Claims**



1. In a window hinge having a track for mounting to a window frame, a sash arm for mounting to a window sash and connected at one end to a first pivot secured to the track, and a support arm connected at one end to a second pivot secured to the track, with one of said first and second pivots being fixed relative to the track, an adjustable pivot between the support arm and the other end of the sash arm comprising:

a first cylindrical opening in the sash arm;

a second cylindrical opening in the support arm; and

a stud including:

a pivot portion including a cylindrical shaft extending through the second cylindrical opening;

a rivet portion extending from one end of the cylindrical shaft through the first cylindrical opening, said rivet portion being eccentric to said pivot portion cylindrical shaft;

a head on an end of the rivet portion spaced from the cylindrical shaft, wherein the head and the one end of the cylindrical shaft engage opposite sides of the sash arm to frictionally secure the stud against pivoting relative to the sash arm;

means for securing the support arm to the pivot portion for pivoting about the cylindrical shaft; and

means engageable by a torque applying tool for turning the stud between frictionally secure positions relative to the sash arm.

5,794,311

OPENER ROLLER FOR AN OPEN-END SPINNING DEVICE

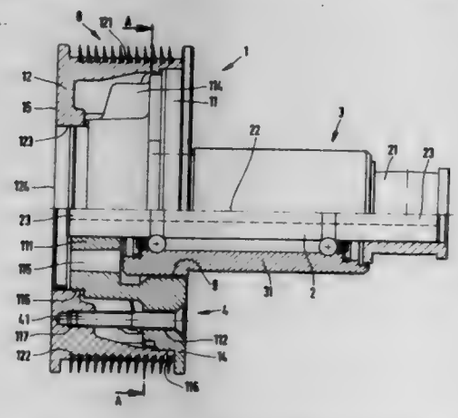
Edmund Schuller, Ingolstadt; Eva-Maria Greppmair, Peutenhausen, and Claus Franz, Ingolstadt, all of Germany, assignors to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed May 31, 1996, Ser. No. 657,687

Claims priority, application Germany, Jun. 7, 1995, 195 20 345.3

Int. Cl.[6] D01H *4/34*

U.S. Cl. 19—112 **20 Claims**



1. An opener roller for an open end spinning machine, comprising:

a base body having an opening therein for attachment with a shaft which is mounted in a bearing for rotatable support of said opener roller;

a clothing holder mounted on said base body and having a longitudinally extending cylindrical outer circumferential surface;

card clothing attached to said cylindrical outer circumferential surface;

a first axial face configured with said base body facing said bearing, and a second axial face opposite said first axial face, wherein said card clothing is located between said axial faces;

attaching devices circumferentially spaced and extending through said first axial face and into said clothing holder to attach said clothing holder to said base body; and

wherein a portion of said base body defines said first axial face and a portion of said clothing holder defines said second axial face, said attaching devices extending completely through the portion of said base body defining said first axial face and into the portion of said clothing holder defining said second axial face.

5,794,312

HOLDING DEVICE

Sean Patrick O'Mahony, 816 Green St., Alexandria, Va. 22314

Filed Feb. 15, 1995, Ser. No. 388,818

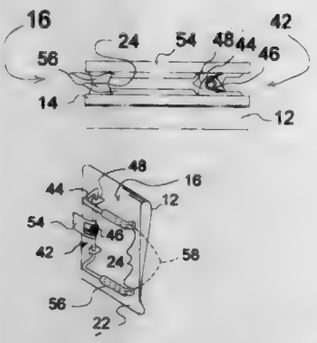
Int. Cl.[6] A44B *21/00*

U.S. Cl. 24—3.3 **6 Claims**

1. A holder for supporting and securing objects such as eyeglasses, by encircling and/or grasping one or a plurality of temples, said holder formed from resilient material, said holder comprising:

a) a frontal elongate plate member essentially having a front face and a rear face, said frontal elongate plate member having essentially an upper edge, a lower edge, a left edge, and a right edge, said elongate late member being essentially flat;

b) a base member pivotally mounted on said frontal elongate plate member generally extending along rear face of said frontal elongate plate member in a parallel, spaced apart, face-to-face relationship therewith, said base member terminating near said edges of said frontal elongate plate member;



c) an urging means bearing mutually with said frontal elongate plate member and said base member for biasing an opposing edge of said frontal elongate plate member towards a corresponding opposing edge of said elongate base member whereby said frontal elongate plate member may be pressed on a frontal side opposite of said opposing edge of said frontal elongate plate member producing a substantially spaced apart gap between said opposing edge of said frontal elongate plate member and said corresponding opposing edge of said elongate base member for receiving one or a plurality of said eyeglass temples whereby releasing said pressure from said frontal side of said elongate plate member urges said opposing edge of said frontal elongate plate member towards said corresponding opposing edge of said elongate base member securely encircling and/or grasping said temples of said eyeglasses;

d) a compressible material defining two linear members of constant thickness secured to the base and plate members so as to define a gap therebetween with two additional facing compressible members which are thicker than the linear compressible members and positioned at the free ends of the base and plate members so as to maintain the said gap; and,

e) an article attachment means comprising of a side generally planar attached to said base member on a side opposite to said frontal elongate plate member to attach said holder to clothing and the like.

5,794,313

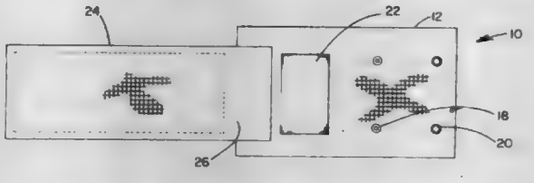
SAFETY BAR SECUREMENT STRAP FOR POWER EQUIPMENT

Daniel P. Parsons, 7300 Pursley Dr. Apt. D, New Port Richey, Fla. 34653

Filed Dec. 11, 1997, Ser. No. 988,629

Int. Cl.[6] A44B *18/00*

U.S. Cl. 24—306 **1 Claim**



1. A new safety bar securement strap for power equipment for maintaining a motor of the power equipment in an operative orientation comprising, in combination:

a handle strap having a generally rectangular configuration, the handle strap having an upper surface and a lower surface, the upper surface having a pair of male snaps thereon inwardly of an outer edge thereof, the upper surface having a pair of female snaps thereon disposed inwardly from said outer edge, the handle strap for wrapping around a handle of a piece of power equipment with the male snaps coupling with the female snaps for securement to the handle, the upper surface having a hook and loop patch disposed thereon inwardly of the female snaps; and

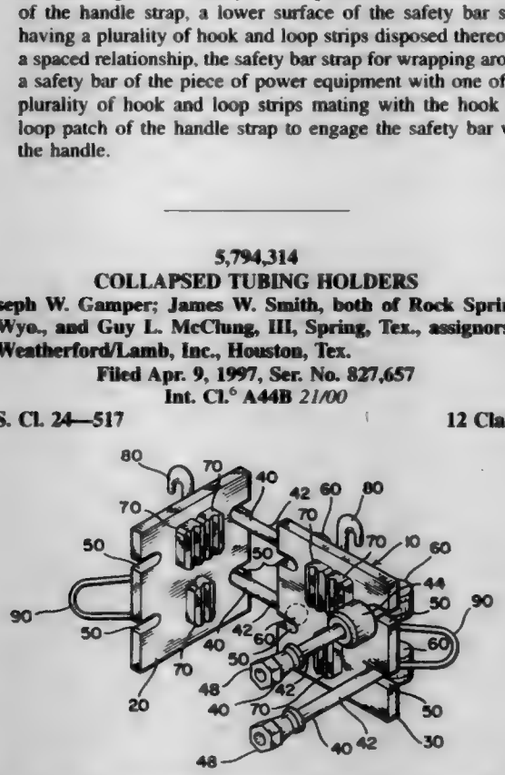
a safety bar strap having a generally rectangular configuration, an inner edge of the safety bar strap secured to an inner edge of the handle strap, a lower surface of the safety bar strap having a plurality of hook and loop strips disposed thereon in a spaced relationship, the safety bar strap for wrapping around a safety bar of the piece of power equipment with one of the plurality of hook and loop strips mating with the hook and loop patch of the handle strap to engage the safety bar with the handle.

5,794,314

COLLAPSED TUBING HOLDERS

Joseph W. Gamper; James W. Smith, both of Rock Springs, Wyo., and Guy L. McClung, III, Spring, Tex., assignors to Weatherford/Lamb, Inc., Houston, Tex.

Filed Apr. 9, 1997, Ser. No. 827,657
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—517 **12 Claims**



1. A holder for holding collapsed coiled tubing, the holder comprising

a first plate,

a second plate,

wherein each plate has at least two slots in sides thereof, said slots forming opposed slot pairs in the plates, said slots open to the outside and wherein the securement apparatus comprises a bolt releasably secured in each slot pair,

securement apparatus for releasably securing the plates together in a spaced-apart relationship about a portion of a collapsed tubular, and

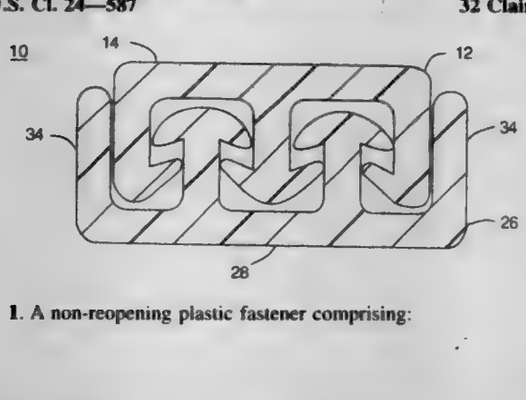
at least one gripper on one plate for gripping the collapsed tubular between the first plate and second plate.

5,794,315

NON-REOPENING FASTENER FOR PLASTIC PACKAGING AND METHOD OF FORMING SAME

Larry W. Crabtree, Morristown, Tenn.; Jack L. Rosette, Ft. Mill, S.C., and Samuel T. Webb, Talbott, Tenn., assignors to Li.. Pac, Inc., Atlanta, Ga.

Filed Dec. 28, 1995, Ser. No. 580,194
Int. Cl.[6] B65D *33/00;33/16;33/24*
U.S. Cl. 24—587 **32 Claims**



1. A non-reopening plastic fastener comprising:

complimentary first and second profiles disposed adjacent and opposite to one another, said first and second profiles of substantial length and configured to interlock with one another;

said first profile includes a first base and first ribs integrally connected to said first base, each of said first ribs having a width, said first ribs including a main rib and two outer ribs disposed on opposite sides of said main rib, said first profile also includes first grooves spacing said outer ribs from said main rib, said first ribs having hook members projecting therefrom; and

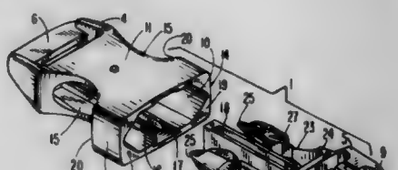
said second profile includes a second base and two inner ribs integrally connected to said second base, said two inner ribs adapted to be positioned within said first grooves, said two inner ribs having projections for engaging said hook members and for maintaining said second profile along said first grooves, said second profile also includes a pair of guide ribs integrally connected to said second base and disposed on opposite ends of said second profile, said first profile being movable into engagement with said second profile to lock said first and second profiles together along said hook members and projections, respectively.

5,794,316

SIDE-RELEASE BUCKLE HAVING IMPROVED LOCKING FEATURE

Joseph Anscher, Muttontown, N.Y., assignor to National Molding Corp., Farmingdale, N.Y.

Filed Jun. 24, 1996, Ser. No. 669,190
Int. Cl.[6] A44B *11/25*
U.S. Cl. 24—625 **12 Claims**





1. A side release buckle, comprising:

a female socket member comprising a top wall, a bottom wall and a pair of opposing side walls connecting the top and bottom walls, the side walls and the top and bottom walls defining a cavity therebetween which is open at an open end thereof;

a male plug member having at least one arm member for insertion within said cavity of said socket member through said open end of said cavity, said at least one arm member having a top surface, a bottom surface, an outer side surface and an inner side surface;

an essentially V shaped latching surface defined in said arm member, said latching surface extending from an apex situated on the outer side surface of the arm member in a direction toward the inner side surface of the arm member to a pair of ends which are situated on the top and bottom of the arm member;

a locking surface integrated in at least one of said side walls of said socket member, the locking surface defining an essentially V shaped engagement surface, said engagement surface being adapted to engage said latching surface on said at least one arm member when said at least one arm member is

inserted into the open end of said cavity to couple the plug member to the socket member, whereby the surface area of engagement of the latching surface with the engagement surface is essentially uniformly distributed around the top, bottom and outer side surface of said at least one arm member when the plug member is coupled to the socket member;

means for disengaging the latching surface from the engagement surface to permit decoupling of the plug member from the socket member; and

means for coupling a belt to at least one of the plug member or the socket member.

5,794,317

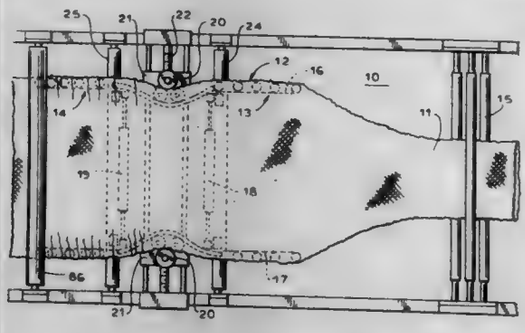
NON-MARKING SPREADER FOR TUBULAR KNITTED FABRIC

Earl S. Allison, Kannapolis, N.C., assignor to Tubular Textile LLC, Lexington, N.C.

Filed Sep. 20, 1996, Ser. No. 716,941

Int. Cl.[6] D06C 5/00

U.S. Cl. 26—80 **14 Claims**



1. In a spreader-propeller apparatus for processing tubular knitted fabric and of the type comprising a pair of spreader side frames, spacer means for retaining said side frames in predetermined spaced apart relation, each said side frame comprising an entry section and an exit section, each said section mounting a plurality of grooved guide rollers and fabric driving belts trained in said guide rollers and exposed for internal engagement with the walls of tubular knitted fabric configured in generally flat, two-layer form, and a pair of internal belt-driving rollers in a mid portion of each said side frame arranged to be engaged through a fabric wall by external, controllably driven edge drive rolls, the improvement characterized by

(a) each of said frame sections comprising a pair of elongated, generally flat sheet metal strips extending generally in a longitudinal direction and mounting between them a plurality of said grooved guide rollers for rotation about axes disposed generally at right angles to a processing plane defined, by said side frames,

(b) said frame sections having generally longitudinally extending outer lateral edges, and portions of said grooved guide rollers extending laterally outward beyond said outer lateral edges,

(c) first reference planes extending from upper and lower portions of said belts and guide rollers and in contacting relation to the outer lateral edges of said sheet metal frame sections forming first reference angles with said processing plane,

(d) upper and lower tubular elements rigidly secured to the upper and lower surfaces respectively of said frame sections and spaced inwardly from the outer lateral edges thereof,

(e) said tubular elements being of a diameter which is a large multiple of the thickness of said sheet metal frame sections, and

(f) second reference planes extending from upper and lower portions of said belts and in tangential relation to outer surfaces of said tubular elements forming second reference angles with said processing plane which are greater than said first reference angles, whereby fabric passing over said spreader and guided at its edge portions along a path defined by said second reference angles is maintained free of moving contact with said outer lateral edges.

5,794,318

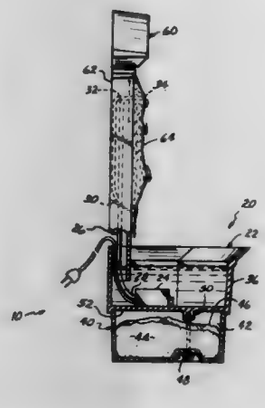
COMBINATION LAWN/GARDEN ORNAMENT AND CREMATION CONTAINER

Daniel J. Parker, Connersville, Ind., and Mark H. Thesken, Cincinnati, Ohio, assignors to Batesville Casket Company, Inc., Batesville, Ind.

Filed Feb. 10, 1997, Ser. No. 798,438

Int. Cl.[6] A61G 17/08

U.S. Cl. 27—1 **11 Claims**



1. A combination lawn/garden ornament and cremation container comprising:

a decorative water fountain adapted to circulate water from a water source upwardly said fountain including an upwardly extending decorative structure over which the water cascades downwardly;

said fountain including an openable and closable compartment adapted to contain cremated remains of a deceased.

5,794,319

METHOD AND DEVICE FOR DRAWING-IN AND TRANSPORTING WARP THREADS

Martin Hunziker, Maienfeld, Switzerland, assignor to Staubli AG, Sargans, Switzerland

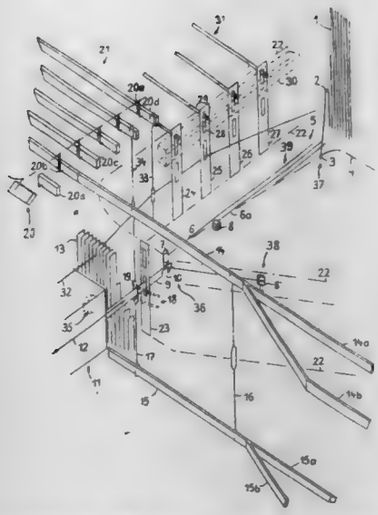
Filed Dec. 20, 1996, Ser. No. 770,896

Claims priority, application Switzerland, Dec. 21, 1995, 03624/95

Int. Cl.[6] D03J 1/14

U.S. Cl. 28—203.1 **17 Claims**

1. A method for drawing warp threads into harness elements of a weaving machine through use of a drawing-in member, comprising conveying the warp threads individually with a first movement to a transfer site immediately in front of a weaving reed, individually grouping the warp threads with a drawing-in member, and drawing



the individual warp threads with a second movement into the harness elements.

5,794,320

CORE BULLET MANUFACTURING METHOD

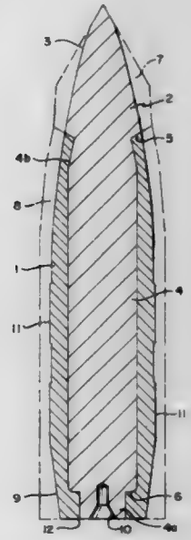
Albert Wernz, and Wolfgang Katzmaier, both of Oberndorf/Neckar, Germany, assignors to Heckler & Koch GmbH, Oberndorf/Neckar, Germany

Filed Feb. 3, 1997, Ser. No. 794,667

Claims priority, application Germany, Feb. 5, 1996, 196 04 061.2

Int. Cl.[6] B21K *21/06*

U.S. Cl. 29—1.23 **4 Claims**



1. A method for making a core bullet, comprising the steps of

a) forming a core bullet blank including a core shank and nose-end by machining the core shank to finishing size, machining a forward portion of the nose-end to finishing size, and machining a remainder of the nose-end maintaining an oversize, forming a circular undercut between the core shank and the remainder of the nose-end;

b) formfitting a jacket blank having an oversized outer diameter to the circular step and along the entire length of the core shank of the core bullet blank a; and

c) securing the core bullet blank formed by a) and b) between turning centers and machining the outside of the core bullet blank and jacket blank such that the rotational axis of the core bullet blank coincides with the axis of the turning centers to form the final core bullet.

5,794,321

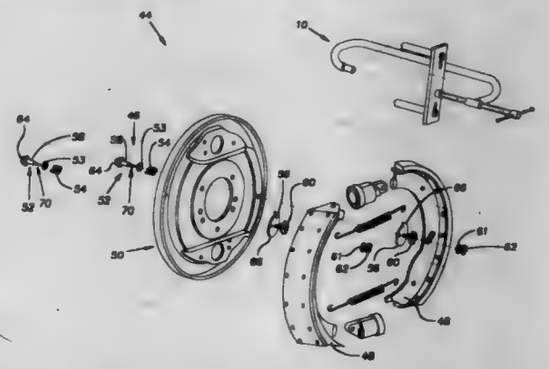
SPRING COMPRESSION TOOL AND METHOD

Eric A. Jereb, 14500 Reddington Ave., Maple Heights, Ohio 44137

Filed Jul. 30, 1996, Ser. No. 690,641

Int. Cl.[6] B23P *19/04*

U.S. Cl. 29—225 **11 Claims**



1. A spring compression tool, comprising a body member and an adjustable portion, said body member having a first end and a second end, said first end comprising a first clamping member, said first clamping member defining a recess which is adapted to receive a head of an adjustment stud, said adjustable portion comprising a shaft, a plate, and second and third clamping members, said shaft having a first end and a second end and being movably secured to the second end of the body member, said plate having a first end and a second end, said shaft first end being affixed to said plate at a location closer to said plate second end than to said plate first end, said second and third clamping members being secured to said plate, outer surfaces of said second and third clamping members cooperate to define a plane generally parallel to said plate member, said second and third clamping members being movable relatively toward and away from said first clamping member.

5,794,322

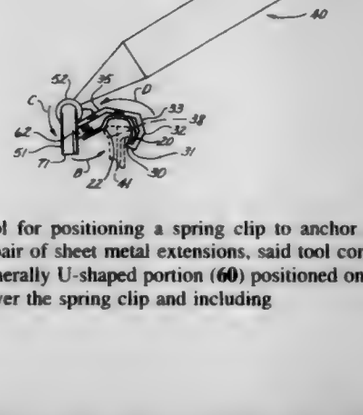
TOOL FOR INSTALLING CLIP ON DUCT FLANGES

Robert Issagholian-Havai, 7239 Lonzo St., Tujunga, Calif. 91042

Filed Aug. 28, 1995, Ser. No. 519,741

Int. Cl.[6] B23B *11/00*

U.S. Cl. 29—243.56 **2 Claims**



1. A tool for positioning a spring clip to anchor an adjacent, opposing pair of sheet metal extensions, said tool comprising

(a) a generally U-shaped portion (**60**) positioned on and extending over the spring clip and including

(i) a first member (31) for engaging one of the sheet metal extensions, and

(ii) a second member (35, 62) for, when said first member engages one of the sheet metal extensions, positioning adjacent another of the sheet metal extensions

to extend laterally outwardly away from both of the sheet metal extensions, and

to contact the spring clip; and,

(b) pivot means attached to the U-shaped portion for pivoting beneath and pressing against the other of the sheet metal extensions for displacing said second member against the spring clip at points spaced laterally from the other of the sheet metal extensions for forcing the clip over the other of the sheet metal extensions.

5,794,323

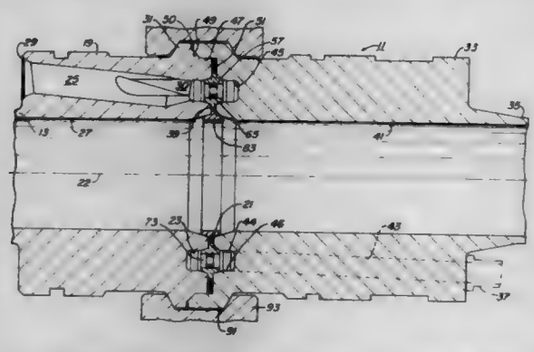
NON-ORIENTING MULTIPLE BORE HUB

Gary L. Galle, Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

Filed Jul. 18, 1996, Ser. No. 683,831

Int. Cl.[6] **B23Q** *3/00;* **F16L** *27/00*

U.S. Cl. 29—464 **19 Claims**



17. A method of connecting two sections of a subsea flowline together, each of the sections having a primary pipe and an auxiliary pipe carried alongside the primary pipe, the method comprising:

attaching a first hub member to one of the sections and a second hub member to the other of the sections, each hub member having a longitudinal axis and an axial bore joined to one of the sections of the primary pipe, a concentric face surrounding the bore, and an auxiliary passage having a first end at the face and a second end joined to one of the sections of the auxiliary pipe, at least one of the faces having an annular concentric groove formed therein, the first end of one of the auxiliary passages registering with the groove; and

without orienting the first ends of the auxiliary passages with each other, clamping the hub members together with their axes coinciding, the groove allowing communication between the auxiliary passages.

5,794,324

PALLET COUPLE AND DECOUPLE CLAMPING APPARATUS AND METHOD FOR PALLET COUPLING AND DECOUPLING

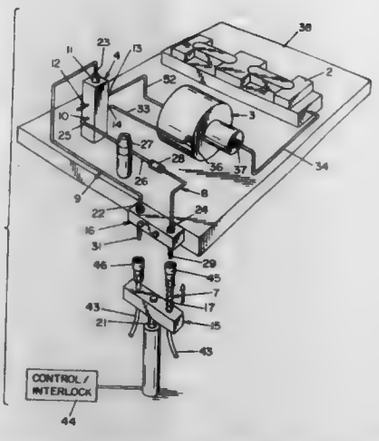
Kurt D. Schaldach, Strongsville, Ohio, assignor to Automation Enhancements Unlimited, Cleveland, Ohio

Division of Ser. No. 95,902, Jul. 22, 1993, Pat. No. 5,662,316. This application May 5, 1995, Ser. No. 435,970

Int. Cl.[6] **B25B** *1/18*

U.S. Cl. 29—559 **2 Claims**

1. A method for automatically clamping and unclamping a workpiece in a pallet, said method includes a vice means, a pressure amplification means, a pilot valve, said pilot valve having a power port and a control port, and means for applying and



removing pressure to said pilot valve, said method comprising the steps of applying pressure sequentially to said power port and then to said control port thereby controlling said amplification means and opening said vice means, positioning said Workpiece in said vice means, and removing pressure sequentially from said control port thereby controlling said amplification means and closing said vice means.

5,794,325

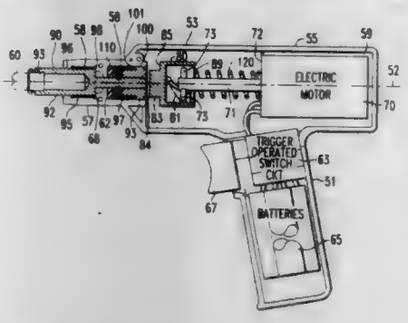
ELECTRICALLY OPERATED, SPRING-BIASED CAM-CONFIGURED RELEASE MECHANISM FOR WIRE CUTTING AND SEATING TOOL

Michael M. Fallandy, Ventura, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 7, 1996, Ser. No. 660,469

Int. Cl.[6] **B23P** *19/02;* **H01R** *43/00;* **B25D** *11/00*

U.S. Cl. 29—566.4 **29 Claims**



1. A utility device comprising a rotatable shaft having an axis, a drive unit for rotating said rotatable shaft about said axis, a translatable element, which engage said shaft and is translated in a first direction along said axis by the rotation of said rotatable shaft, and a force-imparting mechanism coupled with said translatable element and being operative to apply a force to said translatable element in a second direction along said axis opposite said first direction, and causing said translatable element to be translated in said second direction along said axis in response to said rotatable shaft having been rotated by said drive unit through a prescribed angle of rotation about said axis; and wherein

said translatable element has a cam surface portion and said rotatable shaft has a cam surface engaging portion which extends generally transverse of said axis and engages said cam surface portion of said translatable element, such that rotation of said shaft causes rotation of said cam surface engaging portion thereof against said cam surface portion of said translatable element, and translation of said translatable element in said first direction along said axis;

said cam surface engaging portion of said shaft comprises a transverse projecting element which extends from a main

body portion of said shaft generally transverse of said axis, and said cam surface portion of said translatable element has a slot therein, which is sized to allow said transverse projecting element to pass therethrough and become disengaged from said cam surface portion of said translatable element upon said shaft having been rotated through said prescribed angle of rotation about said axis, thereby releasing said translatable element to be translated in said second direction along said axis by the force impart thereto by said force-imparting mechanism; and

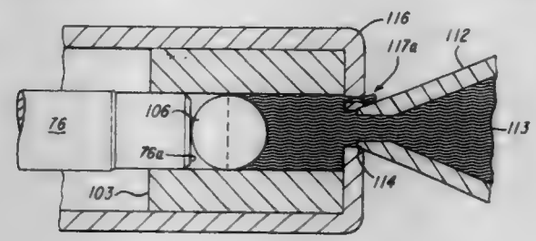
said translatable element has a cup-shaped configuration containing a plurality of interior cam surfaces with said slot therebetween, said transverse projecting element of said rotatable shaft engaging said plurality of interior cam surfaces as said rotatable shaft is rotated by said drive unit about said axis, until said rotatable shaft has been rotated through said prescribed angle of rotation about said axis, thereby allowing said transverse projecting element to enter said slot and allow said translatable element to be translated in said second direction along said axis by the force impart thereto a said compression spring mounted on said rotatable shaft.

5,794,326

REMOVAL OF END PLAY IN ELECTRIC MOTORS

Ned L. Kikly, Vandalia, Ohio, assignor to ITT Automotive Electrical Systems, Inc., Auburn Hills, Mich.

Filed Dec. 19, 1996, Ser. No. 772,069
Int. Cl.[6] H02K *15/14*
U.S. Cl. 29—596 **12 Claims**



1. A method of assembling an electric motor having a shaft, comprising the following steps:

a) placing a ball near an end face of the shaft in the electric motor; and

b) driving the ball into contact with said end face of the shaft by applying a pressure to the ball by using a fluid material such that when said fluid material solidifies said ball is held against said end face, and said fluid material conforms in shape to said ball and wherein said fluid material is in direct contact with said ball when driving said ball into said contact.

5,794,327

METHOD FOR MAKING COPPER ELECTRICAL CONNECTIONS

Richard E. Whisler, Seminole, and Larry Lee Wysong, St. Petersburg, both of Fla., assignors to Bird Electronic Corporation, Solon, Ohio

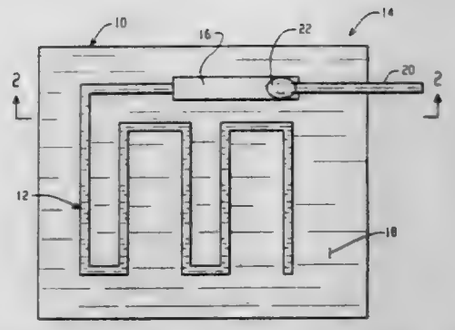
Filed Mar. 5, 1996, Ser. No. 611,220
Int. Cl.[6] H01C *17/06*; **H01R** *9/00*
U.S. Cl. 29—620 **5 Claims**

1. A method for making an electrical connection between a lead and a conductor on a substrate, comprising, in sequence, the steps of:

a.) disposing a copper conductor on a ceramic substrate;

b.) positioning a copper lead in contact with said conductor;

c.) applying a copper film to the lead and the conductor to attach the lead to the conductor,; and



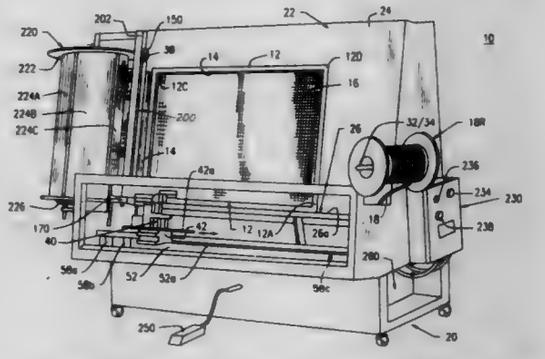
d.) heating the substrate, lead and conductor assembly to form a high temperature, solid copper bond between the lead, film and conductor so that subsequent soldering operations may be performed without damage to the connection.

5,794,328

AUTOMATED WINDOW SCREEN ASSEMBLY APPARATUS

Albert A. Simone, 3125 Woodbridge Ave., Building 6E, Edison, N.J. 08837

Filed Oct. 18, 1996, Ser. No. 731,874
Int. Cl.[6] B23P *21/00*
U.S. Cl. 29—709 **23 Claims**



1. A splining apparatus for seating an elongated flexible spline material into a screen retaining channel of a screen frame to secure flexible screen material thereto comprising:

a) means for receiving and holding a screen frame, said means including an elongated horizontal support that supports the screen frame;

b) carriage means mounted on the said means for receiving and holding;

c) means for moving said carriage means linearly between a first position and a second position;

d) means, mounted on said carriage means, for supplying spline material to the screen frame and for joining the spline material and screen material to the screen frame as said carriage means moves from said second position to said first position;

e) means located at said first position for supplying screen material to the screen frame;

f) means located at said second position for feeding spline material to said means for supplying and joining spline material;

g) a corner clam p cutting means, non-movably mounted on said means for receiving and holding at said first position, for cutting the spline material at said first position, and for seating the spline material and the screen material at said first position into the screen retaining channel of the screen frame;

h) sensor means for sensing an end of the screen frame and for stopping movement of said carriage means at said second position; and

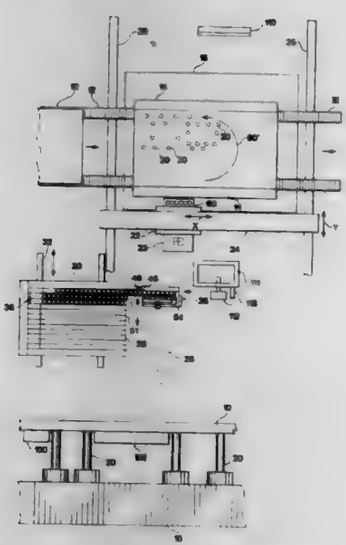
i) said means for supplying and joining includes a spline wheel sub-assembly for inserting and seating the spline material and screen material into the screen retaining channel as said carriage means and said means for supplying and joining move from said first position to said second position, and also includes a spline cutter sub-assembly for cutting the spline material at said second position after the spline material and the screen material have been seated in said screen retaining channel.

5,794,329

SUPPORT APPARATUS FOR CIRCUIT BOARD

Mark E. Rossmeisl, Beverly, Mass., and Edna M. Murby, N. Kingstown, R.I., assignors to MPM Corporation, Franklin, Mass.

Filed Feb. 27, 1995, Ser. No. 391,394
Int. Cl.[6] H05K *3/30;13/04;13/08*
U.S. Cl. 29—743 **12 Claims**



1. Support apparatus for a circuit board utilizing circuit board support pins, the improvement comprising:

a support table having a support surface for supporting at least one circuit board support pin,

a supply for holding the at least one circuit support pin,

a pin placement head operable to transport the at least one circuit support pin from the supply and to release it on said support surface, and

an X-Y transporter that moves said pin placement head relative to said table in both X and Y directions so as to place the at least one circuit support pin at any selectable location on said support surface; and

wherein said X-Y transporter includes an elongated frame that is aligned with the X-axis and is movable along an elongated frame aligned with the Y-axis; and

wherein said pin placement head is carried on the elongated frame; and

wherein the supply may hold a plurality of circuit support pins, the circuit support pins having upright shafts and bases that support the pins on said support surface; and

wherein said placement head has a bore for receiving a said upright shaft of a said pin and further comprising a vacuum source connected to said bore via a fluid path to retain said shaft in said bore: and further comprising a source of compressed air connected to said fluid path to eject said upright shaft of said pin during placement; and

wherein said pin placement head has a plunger movable between a raised position for transport by said transporter over said board and a lowered position for placement of a pin at a desired and a lowered position for placement of a pin at a desired location on said table; and

wherein said bore is in said plunger; and

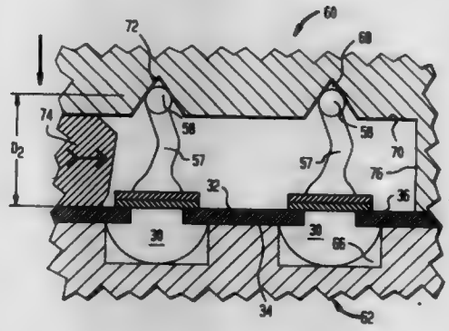
wherein said placement head includes a block defining a chamber in which said plunger is sealably mounted for movement into and out of said chamber, and wherein said fluid path communicates with said chamber to move said plunger to said lowered position by said source of compressed air, and further comprising a vacuum sensor connected to said fluid path to detect the presence of said shaft in said bore, and wherein said plunger has a side opening to said bore near the top of said bore that is aligned with a side passage in said block when said plunger is in said raised position, and further comprising a first by-pass passage from said side passage to said fluid path, and a check valve along said by-pass passage for vacuum only communication is said raised position to sense the presence or absence of said shaft to said bore.

5,794,330

MICROELECTRONICS UNIT MOUNTING WITH MULTIPLE LEAD BONDING

Thomas H. Distefano, Monte Sereno, Calif., and John W. Smith, Jr., Austin, Tex., assignors to Tessera, Inc., San Jose, Calif.

Division of Ser. No. 190,779, Feb. 1, 1994, Pat. No. 5,455,390.
This application May 8, 1995, Ser. No. 436,649
Int. Cl.[6] H05K *3/34*
U.S. Cl. 29—840 **24 Claims**



1. A method of making a microelectronic unit subassembly comprising the steps of:

(a) providing a connection component having a dielectric structure, having an array of terminals on a top surface of the dielectric structure and having flexible leads connected to said terminals and extending through said dielectric structure to bottom ends at a bottom surface of said dielectric structure; and

(b) engaging the bottom surface of said connection component dielectric structure with a front surface of a microelectronic unit having an array of contacts thereon while subjecting said connection component and microelectronic unit to heat and pressure so that the bottom surface of the dielectric layer forms a sealed interface with the front surface of the microelectronic unit and so that the bottom ends of the flexible leads on the connection component bond with the contacts on the unit so as to form electrical connections therebetween, wherein said dielectric structure includes a compliant layer and said leads extend through said compliant layer, and wherein at least some of said flexible leads extending through said compliant layer are bent during said engaging step.

5,794,331

PROCESS FOR THE EXCHANGE OF A DETECTION MODULE HYBRIDIZED BY WELDING BUMPS

Michel Ravetto, Meylan; Jean-Paul Chamonal, Ismier; François Marion, Saint, and Jean-Louis Pornin, Crolles, all of France, assignors to Commissariat a l'Energie Atomique, France

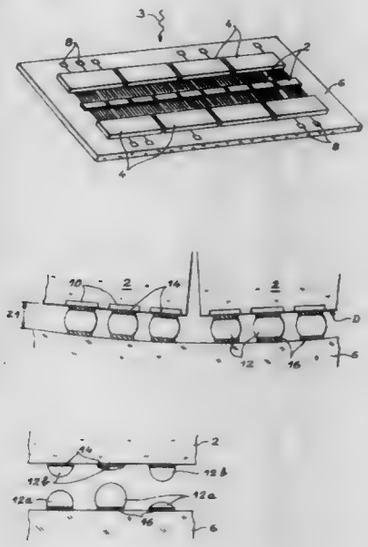
PCT No. PCT/FR95/01306, § 371 Date May 31, 1996, § 102(e) Date May 31, 1996, PCT Pub. No. WO96/11497, PCT Pub. Date Apr. 18, 1996

PCT Filed Oct. 6, 1995, Ser. No. 647,934

Claims priority, application France, Oct. 6, 1994, 94 11948

Int. Cl.[6] H05K *3/34*

U.S. Cl. 29—840 11 Claims



1. Process for exchanging a first detection module hybridized to an interconnection support by welding bumps, comprising: providing an interconnection support having (a) at least one first group of welding elements for the hybridization of the first detection module thereto, and (b) at least one second group of welding elements for the hybridization of a second detection module replacing the first detection module, the first detection module having connection blocks having a surface wettable by the weld arranged with said wettable surface facing the elements of the first group of welding elements during hybridization, said first detection module having zones intended for being positioned facing elements of the second group of welding elements during said hybridization which are non-wettable by the weld; providing a replacement detection module having connection blocks whose surface is wettable by the weld and positioning the replacement detection module with said connection blocks facing elements of the second group of welding elements during the hybridization of said replacement detection module on the interconnection support, the zones of the replacement detection module which are positioned facing elements of the first group of welding elements during said hybridization being non-wettable by the weld; and, exchanging the first detection module hybridized by means of the first group of welding elements by dehybridization of said first detection module, with the replacement detection module being hybridized by means of the second group of welding elements; the second group of welding elements being deduced from the first group of welding elements by 180° rotation about an axis perpendicular to the face of the interconnection support carrying said first and second groups of welding elements; and, hybridizing the replacement detection module on the interconnection support after having been placed in a position deduced, by said rotation, from the position occupied by the first detection module when it was hybridized.

5,794,332

METHOD OF PRODUCING A PLURALITY OF PRESS-CONNECTING JOINT CONNECTORS

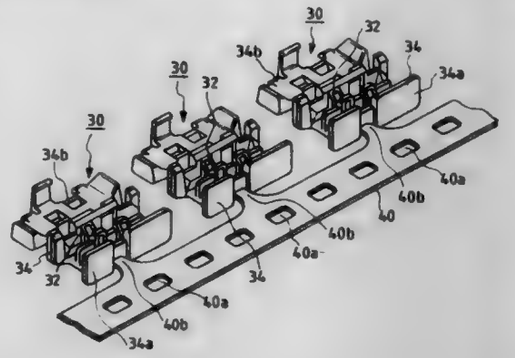
Hiroshi Yamamoto, and Akira Kato, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Feb. 6, 1996, Ser. No. 597,151

Claims priority, application Japan, Feb. 9, 1995, 7-021773; Mar. 9, 1995, 7-049957

Int. Cl.[6] H01R *43/04*

U.S. Cl. 29—863 4 Claims



1. A method of producing a plurality of press-connecting joint connectors, comprising the following steps:

providing a plurality of press-connecting terminal groups which are connected to each other via a linkage plate, each one of said groups including a plurality of press-connecting terminals;

integrally molding said each one of said groups in a housing thereby forming a plurality of press-connecting joint connectors interconnected via said linkage plate.

5,794,333

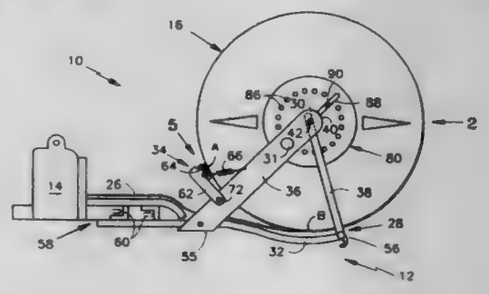
METHOD AND A UNIT FOR CHANGING A DIE DURING WIRE TERMINATION

Patrick J. Shea, El Paso, Tex., assignor to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Aug. 13, 1996, Ser. No. 689,638

Int. Cl.[6] H01R *43/00*

U.S. Cl. 29—863 11 Claims



2. A method for changing a die for a wire termination machine, said method for use with at least first and second units each having the die and a reel holder connected to the die, the reel holder supporting a reel of terminals, said reel including two side faces, one on either side of said reel, said terminals being fed into the die, wherein said method comprises the steps of:

biasing the side faces of the first unit reel apart at a first point to thereby bias the side faces toward each other at a second point so that the terminals do not undesirably exit the reel near the second point;

attaching the first unit to the termination machine;

running the termination machine;

setting up the second unit including biasing the second unit reel side faces apart at a first point to thereby bias the reel side faces toward each other at a second point;

stopping the termination machine;

detaching the first unit from the termination machine;

attaching the second unit to the termination machine; and

running the termination machine.

5,794,334

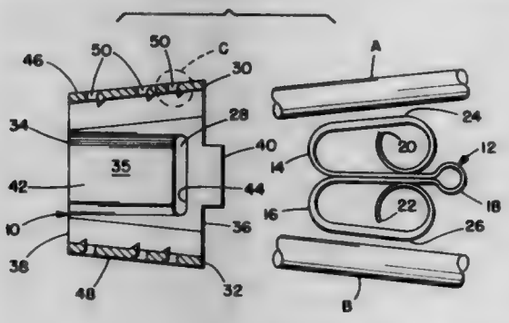
METHOD OF FORMING ELECTRICAL WEDGE CONNECTOR WITH RETENTION BARBS

Richard Chadbourne, Merrimack, and William J. Lasko, Lisbon, both of N.H., assignors to Framatome Connectors USA, Inc., Fairfield, Conn.

Division of Ser. No. 518,744, Aug. 23, 1995, Pat. No. 5,679,031. This application Sep. 5, 1996, Ser. No. 708,547

Int. Cl.[6] H01R *43/20*

U.S. Cl. 29—876 **13 Claims**



1. A method of forming a wedge connector shell, the method comprising steps of:

forming a general C-shaped member having an overall wedge shape;

forming a hole through the member at an end curve of the member; and

forming a projection at an edge of the hole that projects into a receiving area of the member.

5,794,335

Patent Not Issued For This Number

5,794,336

ELECTRICAL CONNECTOR HAVING IMPROVED CONTACT RETENTION MEANS

Mark G. Hopson, Greer, S.C., and Scott C. Roland, Collesville, Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Continuation of Ser. No. 413,662, Mar. 30, 1995. This application Feb. 3, 1997, Ser. No. 794,159

Int. Cl.[6] H01R *43/04*

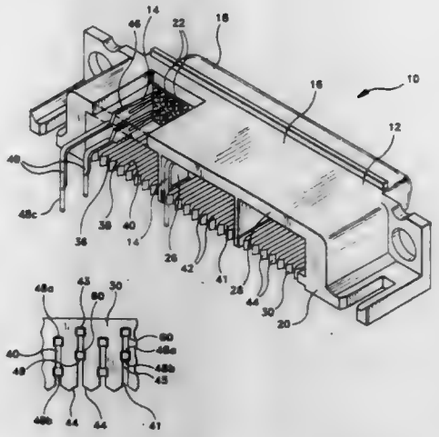
U.S. Cl. 29—882 **12 Claims**

1. A method of retentively supporting an electrical contact in an electrical connector housing comprising the steps of:

providing a connector housing having a contact retention plate defining an elongate contact accommodation slot therein, said slot having an open end, an opposed closed end and an intermediate slot portion therebetween;

providing an electrical contact having a retention extent including opposed extent surfaces;

inserting said contact into said connector housing so that said retention extent is non-captively resident within said intermediate slot portion;



deforming said retention plate adjacent said intermediate slot portion about two opposed surfaces of said retention extent of said contact to captively confine said retention extent of said contact within said intermediate slot portion.

5,794,337

VALVE SEAT AND TEST PROCEDURE

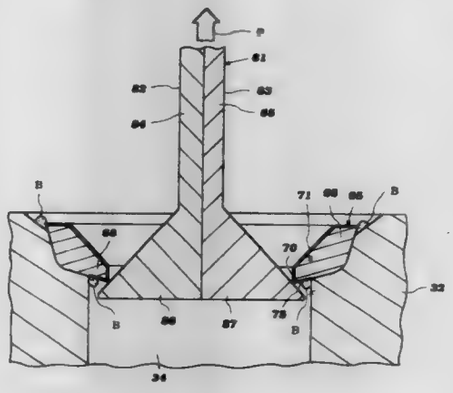
Shuhei Adachi, and Junichi Inami, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Apr. 25, 1996, Ser. No. 638,980

Claims priority, application Japan, Apr. 26, 1995, 7-102016

Int. Cl.[6] B23P *11/00*

U.S. Cl. 29—888.44 **29 Claims**



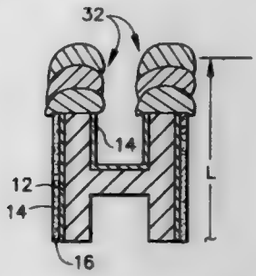
1. A method of affixing and testing a valve seat insert in a cylinder head having a flow passage ending in a combustion chamber recess, said method comprising the steps of forming a recess in said cylinder head at the base of the flow passage, forming an insert to be received in said recess and having an opening adapted to form a flow opening registering with said cylinder head flow passage and an outer surface positioned to engage the part of said cylinder head defining said recess, placing said insert in alignment with said recess, applying pressure to said cylinder head and said insert for forcing said insert into said recess, passing an electrical current through said pressing member, said insert and said cylinder head during at least a portion of said pressing operation to heat said cylinder head and metallurgically bond said insert and said cylinder head, monitoring the amount of depression of said insert into said recess in respect to time, and comparing the amount of depression with a known range of values to assure that the bonding of said insert to said cylinder head is satisfactory.

5,794,338

METHOD FOR REPAIRING A TURBINE ENGINE MEMBER DAMAGED TIP

Joseph H. Bowden, Jr., Mason, and Lawrence J. Roedl, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 4, 1997, Ser. No. 825,982
Int. Cl.[6] B23P 15/00
U.S. Cl. 29—889.1 7 Claims



1. In a method for repairing a damaged tip of a turbine engine member having a designed length, the member including an outer wall having thereon an environmental resistant coating extending at least onto the tip, the steps of:

removing the damaged tip to provide a preform end surface on the member, while retaining the coating on the outer wall adjacent the preform end surface;

bonding replacement tip material to the preform end surface to provide a repaired member preform having a second length greater than the designed length; and,

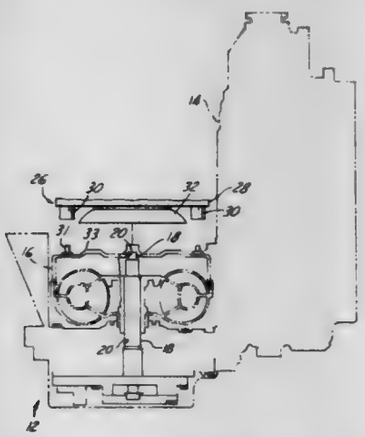
removing a portion of the replacement tip material to provide the member with a repaired member tip and with substantially the designed length, while retaining the coating on the wall adjacent the repaired member tip.

5,794,339

AUTOMATED ASSEMBLY OF TRANSMISSION COMPONENTS

Thomas E. Pearson, Grosse Ile, and Thomas James, Rochester Hills, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Dec. 27, 1994, Ser. No. 363,852
Int. Cl.[6] B23P 15/00
U.S. Cl. 29—889.5 2 Claims



1. An automated method of aligning splines of a torque converter with splines of a vehicle automatic transmission subassembly while assembling the torque converter to the transmission subassembly using an end effector assembly connected to an arm of a robot, the method comprising the steps of:

positioning the transmission subassembly with the splines extending upwards in a substantially vertical direction;

engaging the torque converter with the end effector assembly;

positioning the torque converter over the transmission subassembly with the splines of the torque converter substantially centered over the splines of the transmission subassembly;

providing a compliance mechanism in the end effector assembly such that a limited amount of relative movement can occur between the robot arm and the torque converter;

providing sensing means coupled to the compliance mechanism such that the sensing means detects relative vertical position between the robot arm and torque converter;

providing an oscillator assembly in the end effector assembly such that the torque converter can be turned back-and-forth relative to the robot arm;

lowering the torque converter down onto the transmission subassembly until the sensing means detects a vertical change in relative position between the robot arm and torque converter;

activating the oscillator if the robot arm has not dropped a predetermined distance associated with full seating of the torque converter on the transmission subassembly;

detecting a vertical change in relative position between the robot arm and the torque converter;

repeating the lowering step until the robot arm has dropped the predetermined distance indicating a full seating of the torque converter; and

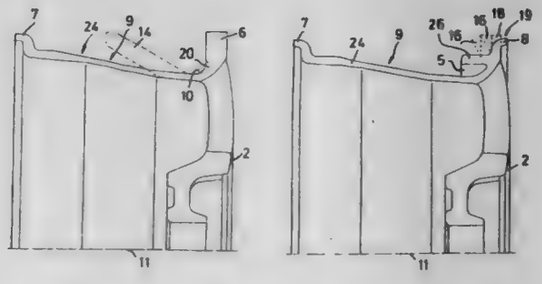
deactivating the oscillator.

5,794,340

METHOD FOR THE MANUFACTURE OF A VEHICLE WHEEL

Günter Pollkötter, Beckum, Germany, assignor to Leico GmbH & Co. Werkzeugmaschinenbau, Ahlen, Germany

Filed Apr. 2, 1997, Ser. No. 832,358
Claims priority, application Germany, Apr. 19, 1996, 196 15 675.0
Int. Cl.[6] B21K 1/32; B60B 3/10;21/00
U.S. Cl. 29—894.324 9 Claims



1. A method for the manufacture of a vehicle wheel wherein a cast preform with a wheel body, a radial flange and a coaxial region is formed into a wheel body and a rim having at least one undercut and an outer and inner rim horn, comprising the steps of:

preshaping the coaxial region into a rim bed with an inside horn, wherein said preshaping is performed with spinning rollers;

splitting the radial flange into an inner leg and an outer leg;

preshaping the inner leg into a rim shoulder thereby forming the at least one undercut;

preshaping the outer leg into an outer rim horn; and,

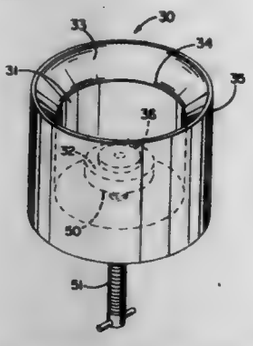
machining the rim bed, the outer rim horn, the inner rim horn and the rim shoulder to achieve the respective final profiles.

5,794,341

METHOD FOR ASSEMBLING A CONSTANT VELOCITY UNIVERSAL JOINT

Sean M. Carlini, Rockford, Ill., assignor to Aircraft Gear Corporation, Rockford, Ill.

Filed Dec. 28, 1995, Ser. No. 580,225
Int. Cl.[6] B23P 15/00
U.S. Cl. 29—898.061 6 Claims



1. A method of assembling a constant velocity cross groove universal joint, the joint requiring assembly of an outer race, an inner race drivably connected through drive balls located in circumferentially spaced tracks of the races alternately inclined relative to a rotational axis, the balls being maintained in a constant velocity plane by a ball cage disposed between the races,

the method comprising the steps of positioning the inner race in a cup of an assembly tool with an adequate axial length of the tracks thereof projecting above a tapered rim of the cup for engagement with a set of drive balls,

manually supporting a ball cage in approximate position surrounding the inner race,

inserting the drive balls into windows in the cage and on the rim so that the taper engages the balls with tracks in the inner race, thereby to support the ball cage with the balls, the ball cage and balls partly projecting above the rim of the cup,

positioning an outer race on the rim of the cup with the tracks of the outer race engaging the projecting portions of the balls to locate the balls in driving engagement with both the inner and outer races, and

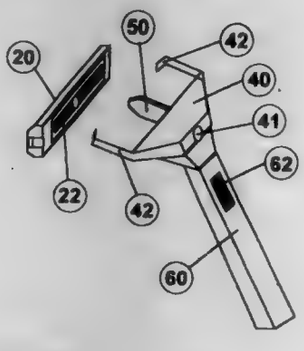
inverting the cup to allow the inner race to drop into the outer race, carrying the balls along the tracks and the cage with the balls.

5,794,342

OSCILLATING BLADE RAZOR

Melville G. Davey, P. O. Box 212, Swansea, Mass. 02777

Filed Aug. 9, 1996, Ser. No. 694,829
Int. Cl.[6] B26B 21/40
U.S. Cl. 30—45 11 Claims



1. A razor comprising

a cartridge comprising a case, a shuttle and, at least one cutting blade attached to and aligned longitudinally with said shuttle, said shuttle disposed within said case and constrained to movement substantially in the longitudinal axis,

a head including a cartridge engaging means and a cantilever mounted piezoelectric vane positioned such that the distal end of said piezoelectric vane engages said shuttle when said cartridge is engaged with said head, and

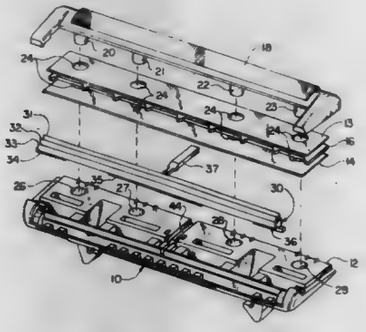
a handle attached to said head, said handle comprising a piezoelectric vane electronic driving means, a battery for powering said electronic driving means, and an on off switch.

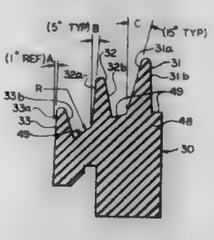
5,794,343

RAZOR BLADE ASSEMBLY

Alejandro Lee, Cambridge; William C. Carson, III, Acton, and Douglas R. Kohring, Chelmsford, all of Mass., assignors to The Gillette Company, Boston, Mass.

Filed May 12, 1997, Ser. No. 854,573
Int. Cl.[6] B26B 21/14
U.S. Cl. 30—50 26 Claims





1. A safety razor blade unit comprising

at least one blade,

a razor blade body structure supporting the at least one blade and having a front wall extending parallel with a blade edge and disposed forward of the at least one blade, and

an elongated guard member disposed in the razor blade body structure for contacting and stretching a skin surface being shaved in front of the at least one blade during shaving, said guard member comprising a unitary molded member of elastomeric material, said unitary molded member comprising

a molded bottom base portion extending downwardly for juxtaposition adjacent the front wall of the body structure along the length of the guard member and

a molded upper portion having a plurality of protrusions projecting upwardly therefrom for contacting the skin surface onto which the at least one blade is applied, said protrusions comprising at least three fins extending along an upper surface of said guard upper portion parallel to the blade edge and spaced one from the other, each said spaced apart fin having a fin proximal base and a fin distal edge above said fin base, said fin distal edges being disposed on a substantially arcuate convex surface and successive said fins being inclined more towards said at least one blade than forwardly disposed adjacent fins,

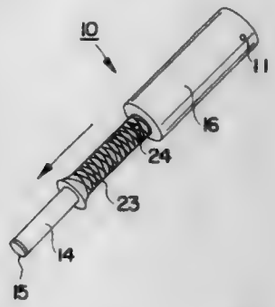
wherein the guard member will engage the skin being shaved at a series of separate contact areas spanning an area greater than the sum of contact areas of individual fin distal edges.

5,794,344

STRAWBERRY CORE REMOVER

Matthew Alexander Poulos, and Joyce Shordone Poulos, both of 20544 Yeandle Ave., Castro Valley, Calif. 94546

Filed Dec. 3, 1996, Ser. No. 759,751
Int. Cl.[6] A47J 23/00
U.S. Cl. 30—113.1 8 Claims



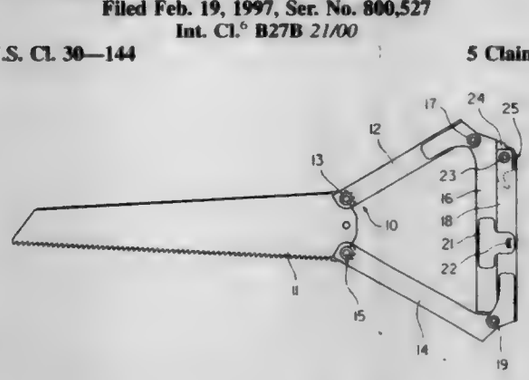
1. A device for coring a strawberry comprising:
a cutting tube having a cutting end and a handle end and a longitudinal slot extending axially in a wall of said tube intermediate said handle end and said cutting end;
an ejector rod slidably positioned inside said cutting tube with a proximal rod end closest to said cutting end and a distal rod end closest to said handle end;
an ejector sleeve slidably positioned on an outside of said cutting tube with a proximal sleeve end closest to said cutting end and a distal sleeve end closest to said handle end;
a screw through an opening in said ejector sleeve and said longitudinal slot in said cutting tube and screwed into said ejector rod providing that said screw is positionable between ends of said longitudinal slot in said cutting tube;
helical spring means inside said cutting tube and extending between said handle rod end and said handle end of said cutting tube for restoring said ejector rod to a rest position inside said cutting tube.

5,794,345

FOLDING POCKET SAW

Randall C. Ryon, Victor, and Richard M. Baran, Webster, both of N.Y., assignors to Sawvivor Inc., Webster, N.Y.

Filed Feb. 19, 1997, Ser. No. 800,527
Int. Cl.[6] B27B 21/00
U.S. Cl. 30—144 5 Claims



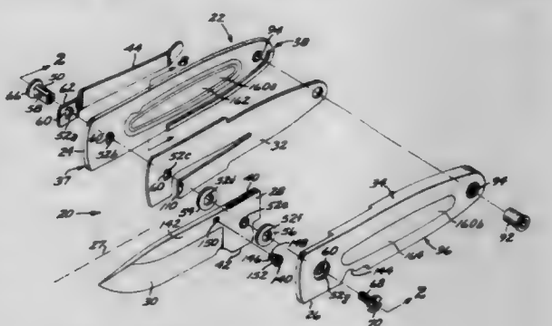
1. A folding saw, including:
an elongated saw blade;
first and second frame members pivotally connected to one end of said blade adjacent respectively to upper and lower edges thereof;
first and second handles pivotally connected to said first and second frame members respectively as extensions thereof;
said frame members and said handles pivotable between a closed configuration overlying edges of said blade, and an open configuration with one said handle overlying the other;
locking means on said first and second handles operable in both said closed configuration and in said open configuration to lock said handles together; and
an auxiliary tool mounted on one of said handles for pivotal movement between a retracted position within said handle and an exposed position.

5,794,346

KNIFE WITH MOVABLE BLADE

Brett P. Seber, Escondido, and Roy L. Helton, Jr., San Diego, both of Calif., assignors to Buck Knives, Inc., El Cajon, Calif.

Continuation of Ser. No. 307,183, Sep. 16, 1994, Pat. No. 5,546,662, which is a continuation-in-part of Ser. No. 138,703, Oct. 18, 1993, abandoned, and Ser. No. 138,670, Oct. 18, 1993, abandoned. This application Aug. 6, 1996, Ser. No. 692,749
Int. Cl.[6] B26B 1/04
U.S. Cl. 30—161 5 Claims

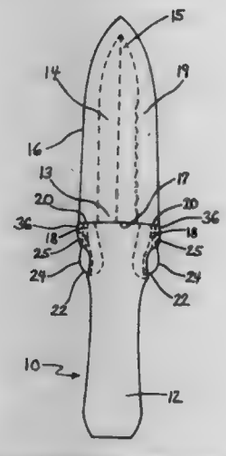


1. A knife, comprising:
a knife body;
a first member fixed stationary with respect to the knife body;
a second member that is movable with respect to the knife body between a closed position wherein the first member and the second member are in a facing relationship and an open position wherein the first member and the second member are not in a facing relationship; and
a detent mechanism comprising
a detent protrusion supported on one of the first member and the second member and extending a height above the member on which it is supported, the detent protrusion having a detent protrusion surface profile thereon, and
a detent protrusion recess on the other of the first member and the second member, the recess being positioned to receive the detent protrusion therein when the second member is in the closed position, the recess having a recess surface profile which matches to the protrusion surface profile over at least a respective portion of the profiles,
wherein the detent protrusion surface profile comprises
a flat protrusion base having a protrusion base length,
a pair of sloped protrusion sides, each protrusion side being inclined at an angle of about 45 degrees to the flat base, and
wherein the recess surface profile comprises
a flat recess base having a recess base length,
a pair of sloped recess sides, each recess side being inclined at an angle of about 45 degrees to the flat base,
the recess base length being sufficiently greater than the protrusion base length that the protrusion is received within the recess with the protrusion sides resting against the recess sides when the second member is in the closed position.

4. A knife, comprising:
a handle;
a blade movably attached to the handle and having a noncircular thumb pin receiver opening therethrough, wherein the thumb pin receiver opening is D-shaped; and
a thumb pin having a cross sectional shape along a first portion of its length which matches to the cross sectional shape of the

thumb pin receiver, which first portion is roughened and is press fit into the thumb pin receiver opening.

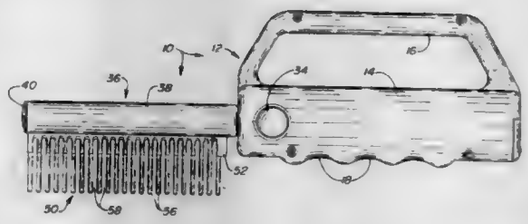
5,794,347
KNIFE/SHEATH LOCKING DEVICE
Michael L. Serpa, P.O. Box 2693, Newport Beach, Calif. 92659
Filed Jan. 3, 1997, Ser. No. 779,258
Int. Cl.[6] B26B *29/02*
U.S. Cl. 30—162 **6 Claims**



1. A knife/sheath combination, comprising:
a sheath, said sheath having a knife encasing portion and an open end;
a knife to be inserted into said sheath, said knife having a blade and a handle;
said handle having at least one tunnel structure located proximal to said blade of said knife, said tunnel structure being defined by a top wall, a bottom wall, and an outer wall, said tunnel structure having a front opening and a rear opening, and said tunnel structure incorporating latch-retaining means;
said sheath including at least one flexible arm extending outward from said open end in a direction toward said handle of said knife when said blade of said knife is enclosed within said sheath, said flexible arm positioned to be cooperatively accepted by said tunnel structure on said handle, and latch means disposed on said flexible arm for releasable locking engagement with said latch-retaining means of said tunnel structure upon insertion of said flexible arm within said tunnel structure;
said flexible arm and said tunnel structure shaped to provide an inward deflection of said flexible arm with respect to said knife handle upon insertion of said flexible arm within said tunnel structure until the point at which said latch means of said flexible arm engages said latch-retaining means of said tunnel structure, whereupon said flexible arm will flex in a direction outward with respect to said handle to obtain a locked position by the interaction of said latch means with said latch-retaining means.

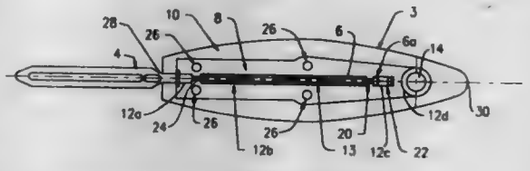
5,794,348
CLIPPER COMB
Mike Scott, 1195 Brafforton Dr., Tallahassee, Fla. 32312
Filed Oct. 1, 1996, Ser. No. 720,429
Int. Cl.[6] B26B *21/12*
U.S. Cl. 30—195 **19 Claims**

1. A clipper comb comprising:
a handle;
a motor disposed within the handle;
a comb, having a base with an opening, a plurality of teeth and a plurality of teeth openings defined between each of the plurality of the teeth, attached to the handle;



a hollow first shaft having a first end attached to the handle and a second end;
a worm gear, having a groove, disposed and adapted to rotate within the first shaft;
a blade, having a leading edge, a trailing edge, and a base, adapted to slide within the opening;
a guide, attached to the base, disposed within and progressable through the groove in response to worm gear rotation; and
transmission means, disposed intermediate and engagable with the motor and the worm gear, for rotation of the worm gear.

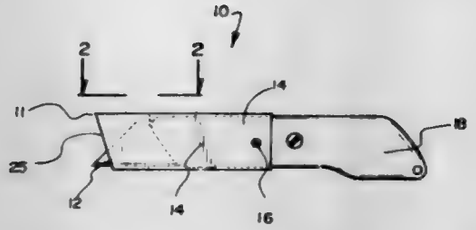
5,794,349
POTATO AND VEGETABLE PEELER
Drew Kelley, and Robert B. Skerker, both of Buffalo, N.Y., assignors to Robinson Knife Manufacturing Company, Inc., Buffalo, N.Y.
Filed Apr. 1, 1997, Ser. No. 831,316
Int. Cl.[6] B26B *1/02*
U.S. Cl. 30—279.6 **14 Claims**



1. A vegetable and potato peeler comprising:
a handle;
a shaftway formed longitudinally throughout said handle;
a peeler blade;
a shaft on which said peeler blade is mounted; and
means for rotatably securing said shaft in said shaftway and for affording the flow of liquid through said shaftway wherein the means for rotatably securing said shaft in said shaftway and for affording the flow of liquid through said shaftway is comprised of a stop on the end of the shaft opposite the peeler end and a shaftway formed of sub-passages comprised of at least one bottleneck chamber for securing said stop and positioned so as to laterally align said shaft in said shaftway without preventing the flow of said liquid through said shaftway, and shaftway entrance and exit holes.

5,794,350
UTILITY KNIFE ADAPTOR
James Shand, 130 School St., Revere, Mass. 02151
Filed Jan. 30, 1997, Ser. No. 791,664
Int. Cl.[6] B26B *29/02*
U.S. Cl. 30—294 **3 Claims**

3. A utility knife adaptor for insertion over an end of a utility knife having a blade with a sharpened edge and a tip adjacent the sharpened edge, the adaptor comprising:
a sleeve adapted to fit over the end of the utility knife, the sleeve having an open end for receiving the end of a utility knife, a closed end opposite the open end for receiving and covering the tip of the blade and a lower edge extending between the open and closed ends, the lower edge being positionable proximate the sharpened edge of the blade;



a curved cutout section being formed in the lower edge of the sleeve to expose a portion of the sharpened edge of the blade in a hollow area of the curved cutout section without exposing the tip of the blade, the perimeter of the curved cutout section curving about an axis of curvature oriented perpendicular to the length of the sharpened edge of the blade such that the curved cutout section is adapted to receive a wire shaped member such that the blade penetrates an outer surface of the wire shaped member when the wire shaped member is positioned within the curved cutout section; and

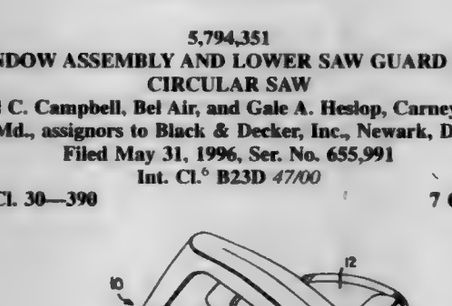
an attachment means for coupling the sleeve to a housing of the utility knife, the attachment means comprising a screw threaded received in a threaded hole for pressing against the housing of a housing of a utility knife.

5,794,351

WINDOW ASSEMBLY AND LOWER SAW GUARD FOR CIRCULAR SAW

David C. Campbell, Bel Air, and Gale A. Heslop, Carney, both of Md., assignors to Black & Decker, Inc., Newark, Del.

Filed May 31, 1996, Ser. No. 655,991
Int. Cl.[6] B23D *47/00*
U.S. Cl. 30—390 **7 Claims**



1. A window assembly for a hand-held circular saw, the saw having a circular blade and a substantially planar base for supporting The saw on a workpiece, the assembly comprising:

an upper guard fixedly secured to the saw and surrounding the upper periphery of the blade, said guard having an opening therein adjacent a forward half of the blade; and

a transplant member adapted to be attached to said upper guard adjacent a forward half of the blade, said member being mounted to said upper guard to cover said opening, said member having a top surface, a forward edge, and a rearward edge;

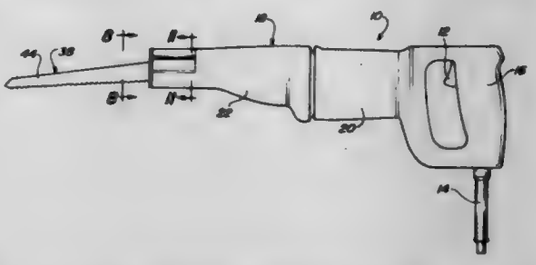
wherein said member is mounted to said upper guard in an orientation such that said top surface of said member slopes downwardly from said rearward edge to said forward edge to form a rearwardly facing acute angle with respect to the planar base, said angle having a minimum value which reduces glare from overhead light sources that is the value of a bisecting angle of an angle formed by a first line extending from a first point where the periphery of the blade exits the top of the workpiece to said rear edge of said top surface of said member and a second line extending forwardly from said rear edge and parallel to said planar base; said rearwardly facing acute angle has a maximum value which reduces glare from forward light sources that is the value of a bisecting angle of an angle formed by said first line and a third line that extends a second point six inches directly front of said first point to said rear edge, of said member.

5,794,352

SAW BLADE CLAMPING ARRANGEMENT FOR A POWER TOOL

Stephen C. Dassoulas, Baltimore, Md., assignor to Black & Decker Inc., Newark, Del.

Continuation-in-part of Ser. No. 504,050, Jun. 9, 1995, Pat. No. 5,647,133. This application Nov. 5, 1996, Ser. No. 744,023
Int. Cl.[6] B27D *19/02*
U.S. Cl. 30—392 **20 Claims**



1. A saw blade clamping arrangement for a power tool of the type including a housing, a drive shaft mounted for reciprocating motion relative to the housing, and a saw blade releasably interconnected with the drive shaft, the saw blade clamping arrangement comprising:

a clamp support interconnected with the drive shaft;

a locking member selectively engageable with the saw blade to operatively interconnect the saw blade with the drive shaft;

an actuation member attached to the power tool, said actuation member moveable between a first position in which the locking member operatively interconnects the saw blade with the drive shaft and a second position in which the locking member permits displacement of the saw blade relative to the drive shaft; and

a spring clamp member for biasing said locking member into engagement with the saw blade, said spring clamp member having a first end constrained with respect to said clamp support, a second end displaceable by said actuation member, and an elongated slot disposed adjacent said second end;

said locking member including a reduced diameter portion adapted to translate within said elongated slot as said second end is displaced by said actuation member.

5,794,353

CAN OPENER

Zi-Xiu Lin, 58, Ma Yuan West St., Taichung, Taiwan

Filed May 28, 1997, Ser. No. 864,086
Int. Cl.[6] B67B *7/32*
U.S. Cl. 30—418 **1 Claim**

1. A can opener comprises:

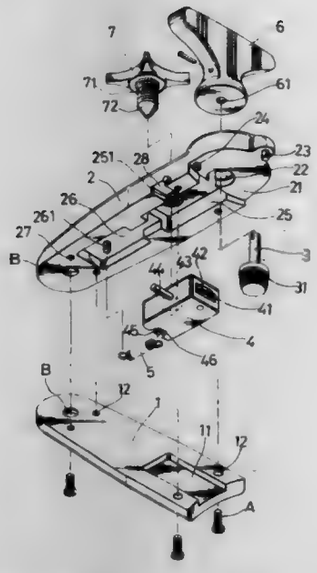
a lower seat, an upper seat disposed on the lower seat, a swivel button disposed on the upper seat, a swivel wing disposed on the upper seat, and a slide block disposed between the lower seat and the upper seat,

the lower seat having a slide recess, a round hole and a plurality of through holes,

the upper seat having a distal spacing, an insertion hole, a slide groove, a threaded hole, a channel, a plurality of threaded apertures, a circular hole, a post, a protrusion, a pillar, and a protruded bar,

the round hole matching the circular hole,

a shaft disposed on a rotor,



the swivel wing having a center hole to receive the shaft,

the rotor inserted in the insertion hole,

the slide block having a rod, a column, a slot and a cone-shaped recess hole,

a blade holder and a blade inserted in an interior of the slide block,

the slide block placed on the slide recess of the lower seat,

a spring having a first end enclosing the pillar and a second end enclosing the column,

the swivel button having a threaded shank passing through the threaded hole and a tip end inserted in the cone-shaped recess hole, and

a plurality of threaded fasteners passing through the respective through holes and the respective threaded apertures to fasten the lower seat and the upper seat together.

5,794,354

RAZORS

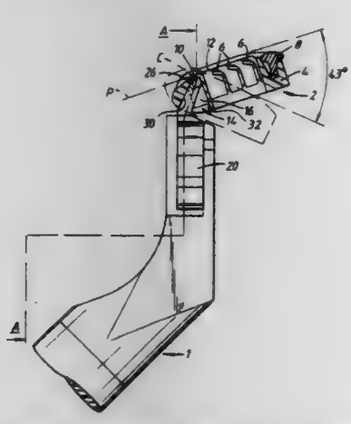
Bernard Gilder, Berkshire, England, assignor to The Gillette Company, Boston, Mass.

Division of Ser. No. 244,039, May 20, 1994, Pat. No. 5,533,263. This application Apr. 30, 1996, Ser. No. 643,117

Claims priority, application United Kingdom, Nov. 27, 1991, 9125261; Nov. 3, 1992, 9222984

Int. Cl.[6] B26B *21/52*

U.S. Cl. 30—530 **13 Claims**



1. A safety razor comprising a blade unit (2) including a guard having a guard surface, at least one blade (6) having a blade edge, at least one additional blade, and a cap behind said additional blade, and a handle (1) mounting the blade unit for pivotal movement in one direction only from a rest position about a pivot axis, characterized in that the pivot axis (C) underlies the guard surface (10) as seen in a direction normal to a plane (P) containing the guard surface (10) and the blade edge (12) adjacent thereto, and a rinsing space open to the underside of the blade unit and defined between the guard surface (10) and said cap and underlying said one blade and said additional blade, said rinsing space being substantially unobstructed by the handle to flow of rinsing water through said space when the blade unit is in the rest position.

5,794,355

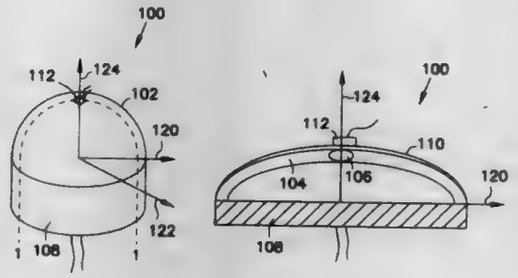
ROTATIONALLY ACTUATED POSITION SENSOR

Larry A. Nickum, Sioux City, Iowa, assignor to Gateway 2000, Inc., North Sioux City, S. Dak.

Filed Jun. 3, 1996, Ser. No. 655,701

Int. Cl.[6] G01C *9/06*

U.S. Cl. 33—366 **23 Claims**



1. A position sensor comprising:

inner and outer curved surfaces substantially concentrically aligned to form a container therebetween, wherein the container is filled with a viscous fluid and a lighter-weight fluid such that a bubble of the lighter-weight fluid is created that changes position within the container as the sensor is moved, and wherein the bubble is in contact with both the inner and the outer curved surfaces;

a source of electro-magnetic radiation positioned to illuminate substantially all the container at one time so that a portion of the radiation is transmitted through the bubble; and

a radiation detector positioned opposite the radiation source so that the portion of the radiation transmitted through the bubble activates a section of the detector corresponding to the position of the bubble within the container.

5,794,356

THREE DIMENSIONAL COORDINATE MEASURING APPARATUS

Simon Raab, Longwood, Fla., assignor to Faro Technologies, Inc., Lake Mary, Fla.

Continuation of Ser. No. 398,592, Mar. 3, 1995, Pat. No. 5,611,147. This application Nov. 18, 1996, Ser. No. 751,904

Int. Cl.[6] G01B *7/03*

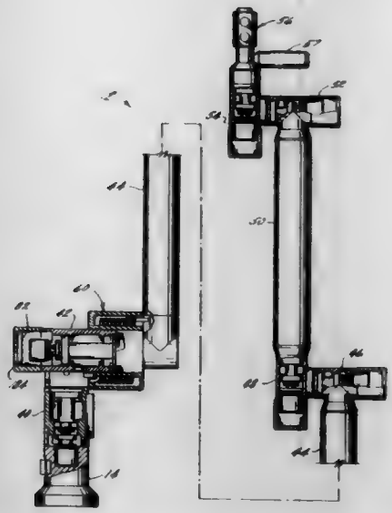
U.S. Cl. 33—503 **57 Claims**

1. A three dimensional coordinate measuring system comprising:

a movable arm having opposed first and second ends, said arm including a plurality of joints with each joint corresponding to a degree of freedom such that said arm is movable within a selected volume, each of said joints comprising a rotational transfer housing, said transfer housing including a housing shoulder and a shaft shoulder for housing a position transducer, said transducer producing a position signal;

a support base attached to said first end of said movable arm;

a probe attached to said second end of said movable arm;



an electronic circuit for receiving said position signals from said transducer and providing a digital coordinate corresponding to the position and orientation of said probe in a selected volume;

a groove in both the transfer housing shoulder and the transfer shaft shoulder to allow a preselected rotation of each transfer housing; and

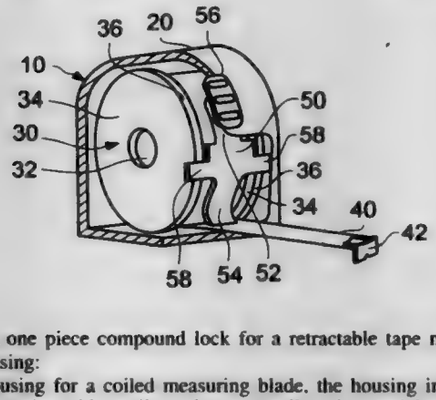
a shear shuttle for preventing mechanical overload due to mechanical stressing of said transfer housing.

5,794,357

ONE PIECE COMPOUND LOCK FOR TAPE MEASURE

Edgar Thomas Gilliam, Franklinton, and William Cecil Blackman, Raleigh, both of N.C., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jul. 31, 1997, Ser. No. 904,352
Int. Cl.[6] G01B *3/10*
U.S. Cl. 33—767 **13 Claims**



1. A one piece compound lock for a retractable tape measure, comprising:

a housing for a coiled measuring blade, the housing including opposing side walls, a bottom wall and a peripheral wall between the side walls, and having an opening between the bottom wall and the peripheral wall;

a tape blade drum rotatably mounted in the housing;

a tape blade wound on the blade drum, the tape blade reciprocally moveable through the opening;

a one piece lock member slidably mounted in the housing, the lock member having a longitudinal elongated body including a resilient tongue extending longitudinally from the body toward the bottom wall of the housing and a drum locking means;

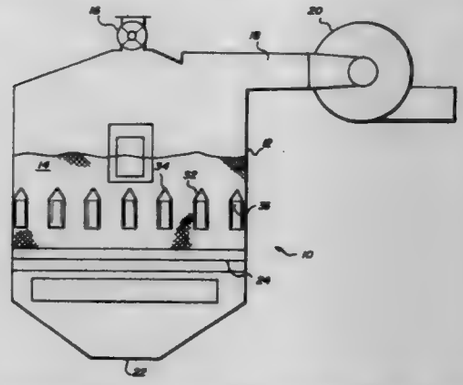
wherein, the lock member is movable between a locked position with the tongue pressing the tape blade to the bottom wall and with the drum locking means in frictional contact with the drum, and an unlocked position with the tongue above the tape blade and with the drum locking means spaced from the drum.

5,794,358

APPARATUS FOR COOLING AND DRYING BULK PRODUCTS USING PRIMARY AND AUXILIARY AIR

Thomas W. Robertson, Merrimack, N.H., assignor to Consolidated Process Machinery, Inc., Merrimack, N.H.

Filed Jun. 12, 1997, Ser. No. 874,041
Int. Cl.[6] F26B *17/12*
U.S. Cl. 34—172 **16 Claims**



1. Apparatus for circulating air through particulate material, comprising:

a housing defining a particulate material storage volume and having a particulate material inlet and a grate adjacent a bottom of said housing forming openings for flowing material from said volume and for flowing primary air upwardly through the grate and into the material in said volume;

a plurality of ducts above said grate for flowing auxiliary air into the material in said volume; and

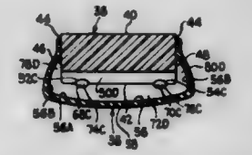
an air mover for drawing primary air through the openings of said grate and auxiliary air from said ducts into the material in said volume.

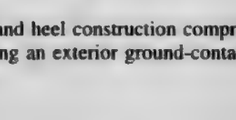
5,794,359

SOLE AND HEEL STRUCTURE WITH PERIPHERAL FLUID FILLED POCKETS

Stuart E. Jenkins, Thousand Oaks; K. Michael Schmidt, deceased, late of Woodside, both of Calif., by Barbara A. Schmidt, legal representative, and Tuan N. Le, Portland, Oreg., assignors to Energaire Corporation, Pebble Beach, Calif.

Filed Jul. 15, 1996, Ser. No. 680,047
Int. Cl.[6] A43B *13/20*
U.S. Cl. 36—28 **17 Claims**





1. A shoe sole and heel construction comprising:

a structure having an exterior ground-contacting surface;

an elongated midsole disposed in the structure above the ground contacting surface to avoid contact with the ground in use, the midsole having a ground facing surface and a peripheral side surface;

a first flexible bulge formed in the structure and projecting from the exterior ground-contacting surface for contact with the ground in use and defining a first pocket, wherein at least a portion of the first pocket extends outwardly beyond the peripheral side surface of the midsole and is defined by the first bulge and a portion of the peripheral side surface so as not to underlie the midsole; and

fluid disposed in the first pocket, whereby at rest a foot in a shoe incorporating the structure is cushioned comfortably on the fluid in the first pocket.

5,794,360

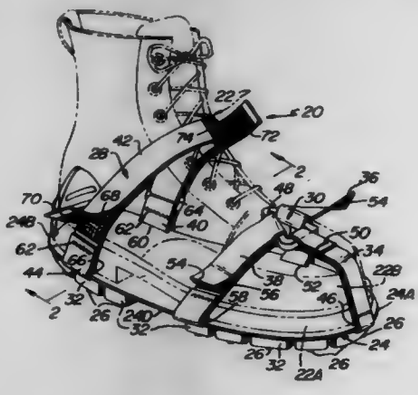
NON-SLIP SANDAL FOR USE ON OTHER FOOTWEAR AND HAVING STRAPPING MEANS FOR ENABLING TIGHTNESS ADJUSTMENT AND RAPID DISCONNECTION

Michael Bell, 1706 Triumphe Way, Warrington, Pa. 18976, and Jonathan Marc Bell, Philapelphia, Pa., assignors to Michael Bell, Warrington, Pa.

Filed Mar. 7, 1997, Ser. No. 814,767

Int. Cl.[6] A43B *3/12;3/18;* **A43C** *11/08*

U.S. Cl. 36—7.6 **10 Claims**



1. A strapping assembly for releasably securing one component to another to adjust the tightness therebetween, while enabling the rapid and easy disconnection of said strapping assembly, said strapping assembly comprises a first strap member, a second strap member, and a third strap member, said first strap member being fixedly secured to one of said components and having a free end portion to which a ring is secured, said second strap member being fixedly secured to the other of said components and having a free end portion to which first releasable securement means is fixedly secured, said third strap member being an elongated flexible member having a first free end and a second free end, said first free end of said third strap including second releasable securement means fixedly secured thereto, said second releasable securement means being arranged to be releasably secured to said first releasable securement means of said first strap member, said second free end of said third strap member being arranged to be extended through said ring at said free end of said first strap member and brought into engagement with a portion of said third strap member intermediate said first and second free ends to releasably secure said second free end thereto, said releasable securement between said first and second strap members being arranged to be readily disconnected by merely pulling on said first free end of said third strap member.

5,794,361

FOOTWEAR WITH A SOLE PROVIDED WITH A DAMPER DEVICE

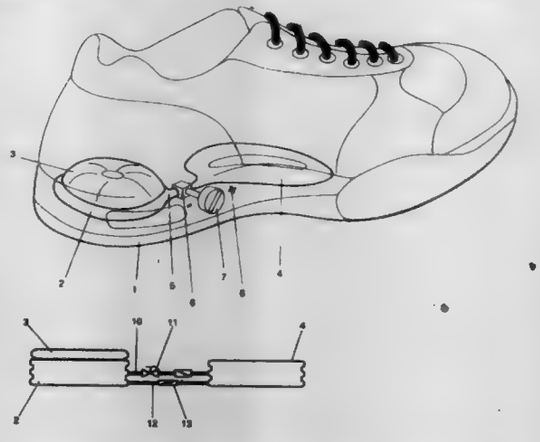
Marc Sadler, Venice, Italy, assignor to Sadler S.A.S. Di Marc Sadler & C., Venice, Italy

Filed Jun. 19, 1996, Ser. No. 665,911

Claims priority, application Italy, Jun. 20, 1995, VE95 A 000019

Int. Cl.[6] A43B *13/20;21/28*

U.S. Cl. 36—29 **12 Claims**



1. A footwear having a sole provided with a damper device, wherein said damper device comprises:

a first reservoir with deformable but inextensible walls and containing a substantially incompressible fluid, in a position interposed between a plantar and a tread of said sole said first reservoir being disposed at a heel of said footwear;

a second reservoir with deformable but inextensible walls and containing a substantially compressible fluid, said second reservoir being vertically aligned with said first reservoir, with at least a wall of said first reservoir contacting a wall of said second reservoir; and

a third reservoir with deformable but inextensible walls, which communicates with said first reservoir via a first passage of adjustable cross-section.

5,794,362

SIZE ADJUSTABLE ATHLETIC BOOT

Louis F. Polk, III, 4740 Lodge La., Excelsior, Minn. 55331; James B. Easley, 110 First Ave. NE. #1103, Minneapolis, Minn. 55413; Adam L. Luedke, 8273 Stockbridge Cir., Eden Prairie, Minn. 55344, and Scott B. Olson, 885 Ferndale St., Wayzata, Minn. 55391

Filed Apr. 24, 1996, Ser. No. 631,842

Int. Cl.[6] A43B *3/26;23/07;5/04;* **A63C** *1/20*

U.S. Cl. 36—97 **37 Claims**

1. A size adjustable in-line roller skate boot of a molded construction comprising:

a foot support surface having a length;

a base section having an upper base surface defining a portion of said foot support surface, a toe end, a rear end, and a bottom base surface;

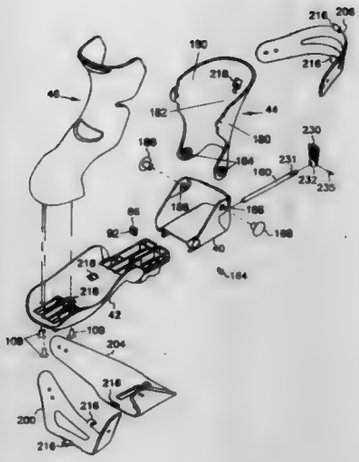
a front and a rear wheel attachment bracket adjacent said toe end and said rear end, respectively, and depending from said bottom surface of said base section, said front and rear wheel attachment brackets being spaced apart a fixed distance;

a resilient tongue section having a fixed end adjacent said toe end of said base section and a free end;

a heel section slidably carried on said rear end of said base section and having an upwardly extending heel wall;

a cuff extending generally upward from said heel wall;

an adjustable securing mechanism adapted to releasably secure said skate boot to a user's foot; and



a length adjust mechanism adapted for positioning said heel section and said toe end of said base section relative to one another to vary said length of said foot support surface of said skate boot without varying said fixed distance between said front and rear wheel attachment brackets.

5,794,363

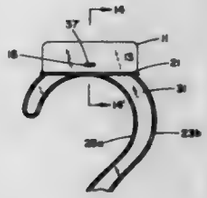
HANGER HOOK FOR A GARMENT HANGER WITH INDICATOR

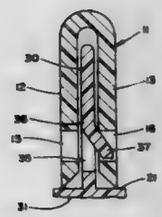
David John Marshall, Victoria, Australia; Stanley Gouldson, Northport, and Roland Harmer, Centereach, both of N.Y., assignors to Spotless Plastics Pty. Ltd., Australia

Continuation-in-part of Ser. No. 176,087, Dec. 30, 1993, Pat. No. 5,388,354, and Ser. No. 173,905, Dec. 27, 1993, Pat. No. 5,507,086, said Ser. No. 176,087 is a continuation of Ser. No. 985,342, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 741,462, Sep. 17, 1991, abandoned, said Ser. No. 173,905 is a division of Ser. No. 670,963, May 2, 1991, Pat. No. 5,272,806, which is a continuation-in-part of Ser. No. 287,985, Dec. 20, 1988, abandoned. This application Feb. 6, 1995, Ser. No. 384,115

Int. Cl.[6] G09F *3/00*

U.S. Cl. 40—322 **10 Claims**





1. A plastic garment hanger comprising:

a hook adapted to engage a supporting means, said hook having an upwardly projecting web extending from said hook; and

an indicator attachment means formed on said upwardly projecting web to engage and releasably secure said indicator to said upwardly projecting web, wherein said attachment means comprises a resilient detent means formed in said upwardly projecting web, said resilient detent means terminating in a resiliently mounted laterally projecting portion.

5,794,364

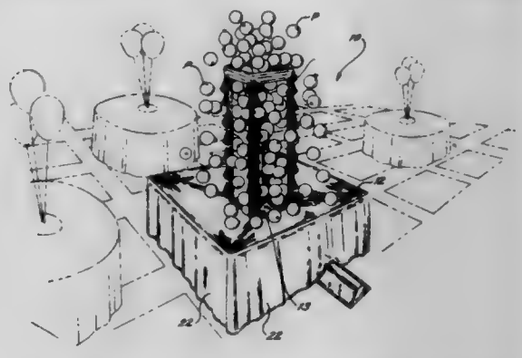
PROJECTILE LAUNCHING AND RECIRCULATING DISPLAY APPARATUS AND METHOD OF DISPLAYING SAME

Randel William Richmond, 635 S. Hampton Ave., Orlando, Fla. 32803

Filed Oct. 15, 1996, Ser. No. 732,839

Int. Cl.[6] G09F *19/00*

U.S. Cl. 40—406 **21 Claims**



1. A balloon launching and recirculating display apparatus comprising:

a plurality of balloons;

a balloon collector extending in a generally horizontal plane, said balloon collector having an open upper end positioned to collect the plurality of balloons therein, a relatively smooth upper surface sloping downwardly from the open upper end to a lower end portion for facilitating downward rolling of the plurality of balloons, and an opening positioned in the lower end portion;

a blower having an output positioned to underlie the collector opening for blowing a gas upwardly through the opening and thereby blowing the plurality of balloons upwardly when overlying the collector opening;

an elongate, vertically-extending chute having a lower end positioned to overlie and be spaced-apart from the collector opening and the output of the blower and an upper end extending upwardly therefrom so that the plurality of balloons overlying the collector opening and the output of the blower are projected upwardly into the lower end of said chute, through said chute, outwardly from the upper end of said chute, and outwardly from the path of the blowing gas to be collected by said balloon collector after falling downwardly from the upper end of said chute to be recirculated to the lower end of said chute to thereby provide a continuous balloon cascading-type appearance;

static inhibiting means cooperating with said balloon collector for inhibiting static energy from accumulating on said balloon collector to enhance the recirculation of the plurality of balloons; and

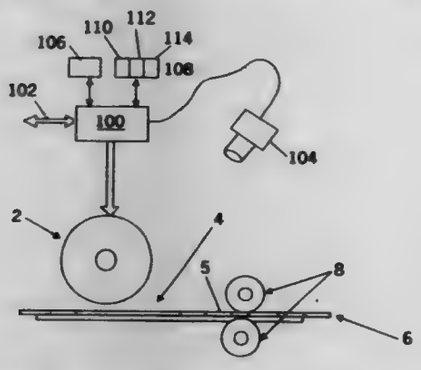
at least one light directly underlying said balloon collector opening and aligned with said chute and positioned adjacent said blower for illuminating said chute so that when the plurality of balloons are blown upwardly through said chute the visual appearance is enhanced when the apparatus is positioned in low ambient environments.

5,794,365

METHOD AND APPARATUS FOR TURNING A PAGE IN A BOOK

Erich Hindermeyer, Dettenhausen; Siegbert Link, Wildberg, and Eckhard Kunigkeit, Stuttgart, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 11, 1995, Ser. No. 439,533
Claims priority, application European Pat. Off., May 27, 1994, 94108241
Int. Cl.[6] G09F 11/00
U.S. Cl. 40—476 22 Claims



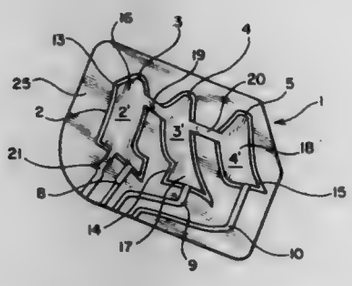
1. A method for turning a page of a book comprising the steps of:
- applying an initial value of a contact force between a lifting means and the page;
- increasing the initial value of the contact force when no page has been lifted during a page turning procedure;
- employing a last applied value of the contact force as an initial value when a next page is to be turned; and
- decreasing the value of the contact force when more than one page has been lifted during a page turning procedure.

5,794,366

MULTIPLE SEGMENT ELECTRO-LUMINESCENT LIGHTING ARRANGEMENT

Tseng-Lu Chien, 8F, No. 29, Alley 73, Lin-Shen Street, Shi-Chi Town, Taipei, Hseng, Taiwan

Continuation-in-part of Ser. No. 729,408, Oct. 11, 1996, which is a continuation of Ser. No. 305,294, Sep. 15, 1994, Pat. No. 5,572,817. This application Nov. 15, 1996, Ser. No. 746,706
Int. Cl.[6] G09F 13/22
U.S. Cl. 40—540 21 Claims



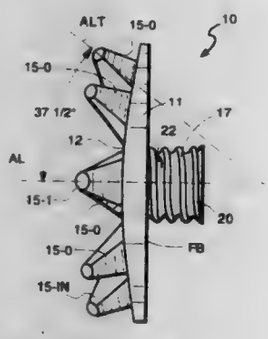
1. A multiple segment electro-luminescent lighting arrangement, comprising:
- a backsheet on which are formed a plurality of electro-luminescent light segments;
- electrical circuit means on the backsheet for electrically connecting the light segments respectively to a power supply;
- a phosphor material formed on a portion of the electrical circuit means constituting lower electrodes of the electro-luminescent light segments, a second portion of the electrical circuit means being formed on the phosphor material to constitute upper electrodes of the electro-luminescent light segments;
- a first at least partially transparent frontsheet layer attached to the backsheet and covering said electro-luminescent light segments; and
- a second frontsheet layer secured to the backsheet and having openings for permitting passage of light from said electro-luminescent light segments therethrough.

5,794,367

SPORTS SHOE CLEATS

Francis C. Carroll, Philadelphia, Pa., assignor to GreenKeepers, Inc., Philadelphia, Pa.

Filed Feb. 20, 1997, Ser. No. 802,908
Int. Cl.[6] A43B 5/00;15/00
U.S. Cl. 36—134 16 Claims



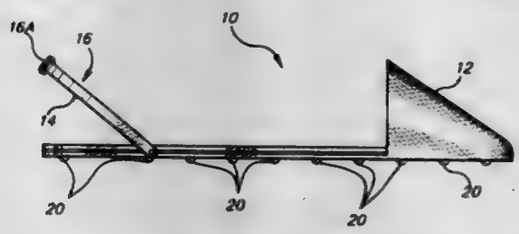
1. A sports shoe cleat comprising
- a body member having an outer face and an inner face,
- a threaded stud molded integrally with said main body member and projecting outwardly from said inner face and having an axis perpendicular to said inner face,
- a plurality of perimeter traction teeth projecting around the perimeter of said outer face, and
- a central wear tooth having an axis AL aligned with the axis of said threaded stud member and wherein each perimeter traction tooth has an axial line ALT which is angled outward relative to said axis AL to provide lateral stability and enhanced traction.

5,794,368

PROTECTIVE COVER FOR SPIKED GOLF SHOES

Alan A. Kirby, 924 Portola, Del Ray Oaks, Calif. 93940

Filed Apr. 29, 1997, Ser. No. 848,163
Int. Cl.[6] A43B 5/00
U.S. Cl. 36—135 7 Claims



1. A protective cover for spiked golf shoes, comprising:
- a substantially flat sole having a front portion and a rear portion, said sole being generally rectangular in shape and including a treaded external surface;
- a toe hold peripherally connected to and bridging the front portion of said sole, said toe hold configured to form an enclosure for receiving a toe portion of a spiked golf shoe; and

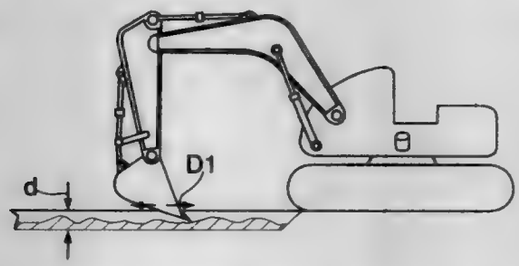
a heel retaining member connected to the rear portion of said sole, said heel retaining member including at least one elastic strap.

5,794,369

DEVICE AND PROCESS FOR CONTROLLING THE AUTOMATIC OPERATIONS OF POWER EXCAVATORS

Si Cheon Lee, Changwon, and Dong Jae Lee, Seoul, both of Rep. of Korea, assignors to Samsung Heavy Industries, Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 29, 1995, Ser. No. 564,761
Int. Cl.[6] E02F *5/02*
U.S. Cl. 37—348 **16 Claims**



1. A device for controlling automatic operations of a power excavator comprising:

sensing means adapted for sensing the motions of moving parts of said excavator;

discriminating means adapted for operating sensed data outputted from the sensing means and discriminating, without reference to an operator input, the automatic operation to be performed by the excavator; and

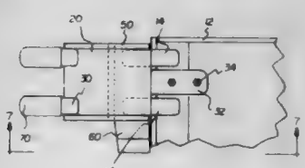
control signal output means adapted for outputting control signals to said moving parts of the excavator so as to automatically perform the automatic operation discriminated by the discriminating means.

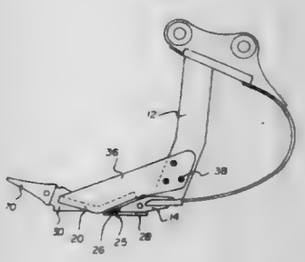
5,794,370

TIERED TRENCHING BACKHOE APPARATUS

Ronald G. Haagenstad, 119 Summer Heavon Dr., Blackhawk, Colo. 80403-9032, and Samuel Pratt, P.O. Box 5 Bedford Industrial Park, Bedford, Pa. 15522

Continuation of Ser. No. 679,851, Jul. 15, 1996. This application May 13, 1997, Ser. No. 827,961
Int. Cl.[6] E02F *3/96*
U.S. Cl. 37—404 **2 Claims**





1. A tiered trenching backhoe apparatus comprising:

a trenching plate having a transverse bend therein located between substantially planar first and second plate portions or said trenching plate, said trenching plate having first and second end edges oriented substantially parallel to said transverse bend and having lateral side edges extending between said end edges;

a first tooth mount secured to said first end edge of the trenching plate and protecting in a direction substantially orthogonal to said first end edge;

a second tooth mount secured to said first end edge and projecting from said first end edge in an orientation substantially parallel to the first tooth mount;

a planar side member secured to the lateral side edge of the trenching plate adjacent to a trihedral support member and projecting substantially parallel to a plate portion of said trenching plate;

wherein said planar side member includes a downward bend therein at a location spaced from said lateral side edge; and

a mounting pocket mounted on said trenching plate for receiving at least one tooth shank of a backhoe bucket; and

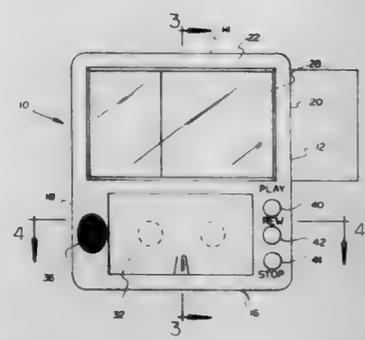
a mounting strap for holding said pocket in an abutted condition to a tooth shank of a backhoe bucket, said mounting strap being mounted to said mounting pocket and extending from said mounting pocket for mounting to the bucket.

5,794,371

PICTURE FRAME SYSTEM

Grace Camillery, 3 Croydon Dr., Bellmore, N.Y. 11710

Filed Jan. 6, 1997, Ser. No. 779,319
Int. Cl.[6] G09F *1/12*
U.S. Cl. 40—717 **5 Claims**



2. A picture frame system comprising:

an information storage media;

a housing in a rectangular configuration having an upper edge, a lower edge and parallel side edges therebetween, the housing having a front face and a rear face, the housing having a rectangular opening formed in an upper extent of the front face thereof and a slit formed in one of the side edges adjacent the front face and in alignment with the rectangular opening;

a viewing screen formed in the front face of the housing adjacent to the upper edge of the housing;

a photograph having a thin rectangular configuration and an area slightly larger than that of the rectangular opening, the photograph adapted to be removably situated within the slit such that the photograph resides between the rectangular opening and the viewing screen;

a receptacle for receiving, storing, moving and playing the information storage media, the receptacle coupled with respect to the front face of the housing; and

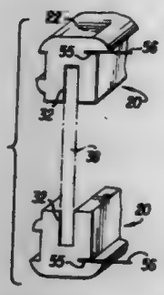
control means to read the information storage media when in the receptacle and activated and to generate a picture on the screen.

5,794,372

PICTURE FRAME MOLDING

Gary G. Grana, 213 S. Arlington Heights Rd., Arlington Heights, Ill. 60005

Continuation of Ser. No. 539,751, Oct. 5, 1995, abandoned. This application Jul. 24, 1997, Ser. No. 899,596
Int. Cl.[6] G09F *1/12*
U.S. Cl. 40—729 1 Claim



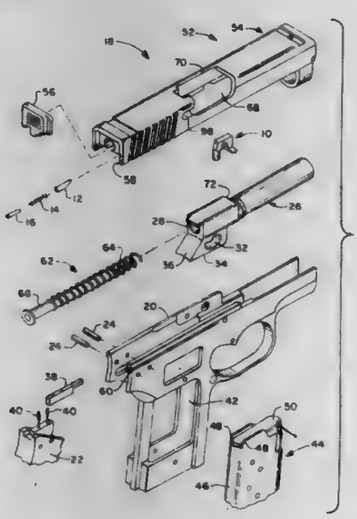
1. A rectangular picture frame assembly comprising:
a first frame including four moldings assembled together;
a second frame including four moldings assembled together;
each of said moldings of said first and second frames having the same shape;
each of said moldings of said first and second frames having an elongated body of poly-sided cross section with a decorative front face, an opposed rear face, an outer side face, and an inner face;
each said inner side face having an inwardly facing projecting lip for engaging and holding in place an outer surface of a picture or a piece of glass within said frame;
said rear face of each of said four moldings of said first and second frames having a substantially continuous groove therein; and
four planar sheets, said planar sheets received within respective grooves of said first and second frames, said planar sheets connecting said first frame to said second frame.

5,794,373

CARTRIDGE EXTRACTOR

Kook-Jin Moon, 630 Rte. 303, Blauvelt, N.Y. 10913

Continuation-in-part of Ser. No. 536,009, Sep. 29, 1995, Pat. No. 5,678,340. This application May 12, 1997, Ser. No. 854,833
Int. Cl.[6] F41A *15/00*
U.S. Cl. 42—25 19 Claims



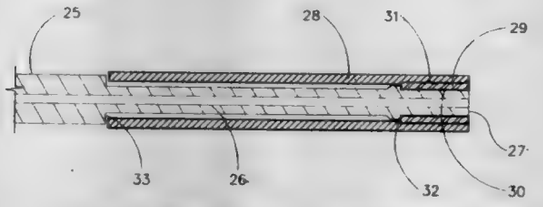
1. An anti-fouling extractor for extracting a cartridge from a firearm having at least one surface abutting the extractor, said surface having a tendency to accumulate combustion products upon operation of the firearm, the extractor movably engaging said surface during the extraction of the cartridge, the extractor comprising means adjacent said surface for receiving and briefly accumulating portions of the combustion products from said surface during moveable engagement by the extractor.

5,794,374

GUN BARREL STABILIZER

David L. Crandall, 11040 N. River Rd., Idaho Falls, Id. 83402

Filed Jan. 21, 1997, Ser. No. 781,341
Int. Cl.[6] F41C *27/00*
U.S. Cl. 42—97 22 Claims



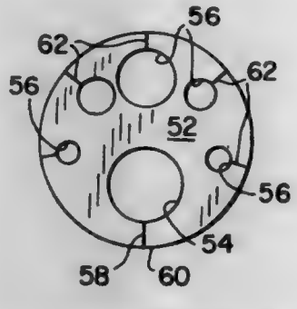
1. A gun barrel stabilizer system comprising: a stabilizer of predetermined mass and shape, capable of extending rearward from a distal end of the gun barrel without further contact with the gun, and a means of rigid attachment of said stabilizer to said gun at or near said distal end of said gun barrel which allows said stabilizer to extend rearward without further contact with said gun during firing, thereby reducing angular deflection of a final segment of gun bore adjacent to said distal end during firing, to increase gun accuracy.

5,794,375

FISHING ROD RETAINERS

Michael D. Wright, 4849 N. 18th St., Milwaukee, Wis. 53209

Filed Sep. 20, 1996, Ser. No. 716,968
Int. Cl.[6] A01K *87/00*
U.S. Cl. 43—25 11 Claims



1. Retainers for storing and transporting a disassembled multi-sectioned fishing rod wherein one section is disengageable from a main section and capable of adjacent, parallel alignment with the main section, comprising:
a first retainer having a unitary, one-piece and substantially circular construction and a plurality of openings therein, each opening capable of receiving one of a main section and at least one other section of the fishing rod, the first retainer having a gapless slit from each opening to an outer edge of the first retainer, such that one opening of the first retainer is capable of receiving the main section between a reel mounted on the main section and a fishing line eyelet on the main section, wherein the first retainer is capable of completely encircling the main section and another opening of the first retainer is capable of receiving the at least one other section of the fishing rod; and

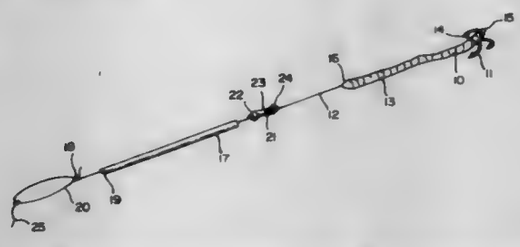
a second one-piece retainer having a plurality of openings capable of receiving the main section and the at least one other section of the fishing rod therein.

5,794,376

APPARATUS FOR THREADING A WORM ONTO A MULTI-PRONG FISH HOOK

Dean L. Frizzell, 4721 65th St., Sacramento, Calif. 95820, and Robert John Silva, 8530 Danridge Dr., Sacto, Calif. 95828

Filed Jul. 16, 1997, Ser. No. 893,335
Int. Cl.[6] A01K *91/00*
U.S. Cl. 43—43.15 **1 Claim**



1. Apparatus for threading a worm onto a multi-prong fish hook, said apparatus comprising:

a leader,

a tube and

a slider,

said leader having a first end and a second end, with a loop formed at said first end and said second end being attached to said fish hook,

said tube and said slider being installed on said leader with said slider between said tube and said fish hook, and

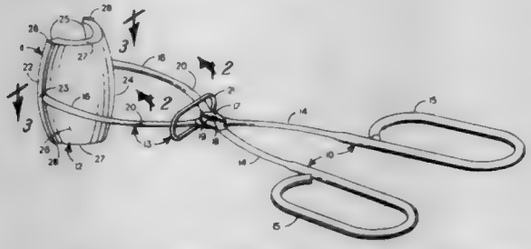
said slider being configured such that force in a range of 1 to 10 ounces is required to move said slider on said leader.

5,794,377

INSECT CATCHING TOOL

Stephen B. Kensok, and Kimberly L. Pyfer, both of 1142 Juanita La., Elk, Wash. 99099

Filed Apr. 22, 1996, Ser. No. 636,002
Int. Cl.[6] A01M *3/00*
U.S. Cl. 43—134 **6 Claims**



1. A tool for catching, holding, transporting and releasing insects, comprising in combination:

two similar body arms each having forward, rearward and medial portions, said body arms crossing and pivotally interconnected in their medial portions, with the forward and rearward portions curving toward each other and with the rearward portion of each body arm having a handle portion;

similar paired opposed arcuate jaw bodies, each having a medial portion and two outer edge portions, carried by the forward end portions of each body arm, said arcuate jaw bodies extending substantially parallel to the pivotal axis of the body arms and arrayed convexly to each other so that their outer end portions are closer to each other than the medial portions, and

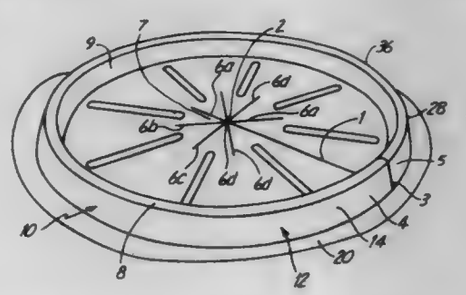
a flexibly resilient sheet-like catching pad having shorter forward edges and longer lateral edges with the shorter forward edges substantially the length of the jaw bodies and, each forward edge carried on an inner surface of each jaw body so that the shorter forward edges may be moved by the jaw bodies to fold the longer lateral edges into a pocket defined by the catching pad.

5,794,378

TREE EDGING

Alan A. Beatrez, 3051 210th St. East, Prior Lake, Minn. 55372

Continuation-in-part of Ser. No. 375,933, Jan. 20, 1995, abandoned. This application Sep. 10, 1996, Ser. No. 709,854
Int. Cl.[6] A01G *13/02*
U.S. Cl. 47—25 **2 Claims**



1. A single component landscape device positionable at a base of a tree, or other vertical object consisting of:

a resilient, rigid, reversibly deformable main body comprising an outer periphery constructed of a single molded sheet of resilient, rigid plastic having a central opening and a radial slit extending from the opening to a point on the outer periphery of the main body, thereby allowing passage of an object from outside the central opening;

two upwardly extending annular walls integral with the main body that join through an upper transition zone to form an edging on the main body outer periphery with one of the two walls being an inner wall to retain decorative material and the other wall being an outer wall to provide structural integrity and a cosmetically appealing edge;

a plurality of radial slits extending from the central opening of the main body; and

an annular flange integral with the main body for anchoring the main body into a material such as soil, wherein the rigid main body reversibly deforms when subjected to a shear force.

5,794,379

WOODEN VASE FOR HOLDING CUT FLOWERS

Jerry H. McKay, 30609 Inkster Rd., Franklin, Mich. 48025

Filed Oct. 22, 1996, Ser. No. 735,017
Int. Cl.[6] A01G *5/00;* **A47G** *7/00*
U.S. Cl. 47—41.01 **3 Claims**

1. A flower vase comprising:

a turned burlwood vessel having a flat bottom adapted to rest on a surface and having a cavity machined thereinto defined by an irregular top edge; a wall of substantially constant thickness, said wall having an inner surface and, an epoxy coating



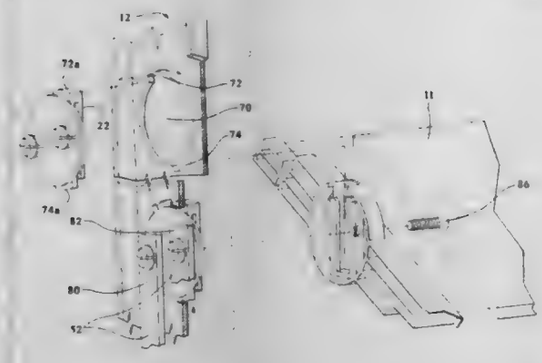
applied to the entire inner surface defining said cavity to perform as a water vessel for holding water to keep cut flowers fresh.

5,794,380

LOUVRE WINDOW CLIP ASSEMBLY

James F. Guardia, Yorba Linda, Calif., assignor to Reflectolite Products Company, Inc., Sun Valley, Calif.

Filed Jan. 24, 1997, Ser. No. 788,317
Int. Cl.[6] E06B *7/08*
U.S. Cl. 49—74.1 **8 Claims**



1. A two piece louvre window clip assembly operated with a frame member having an interior side and opening through the frame member, the opening of the frame member having a diameter, the assembly comprising:

a hub having insulating portions, the hub further comprising a front face and a rear face, the front face of the hub being connected to a tongue, the hub further comprising an outer diameter, the tongue comprising a tang that extends radially outward past the outer diameter of the hub and radially outward past the diameter of the opening;

said hub received through the opening of the frame member and entrapped in the frame member with portions of the frame member between projecting portions of the hub;

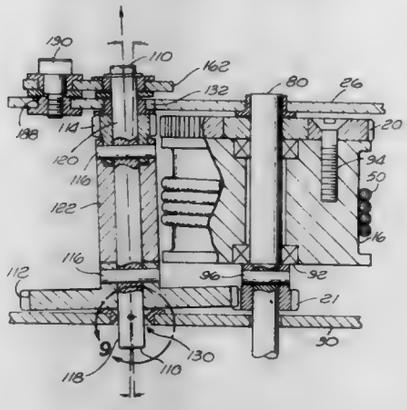
a clip having a front side and a back side, the front side having a glass receiving groove, the back side comprising a u-shaped groove, the tongue of the hub being slidably connected to the groove of the clip.

5,794,381

SELECTIVELY ENGAGEABLE MOTOR DRIVE ASSEMBLY

Roy R. Rizkovsky, Lake Elizabeth, Calif., assignor to Ricon Corporation, Pacoima, Calif.

Filed Dec. 22, 1995, Ser. No. 577,237
Int. Cl.[6] E05F *15/00;* **F16H** *57/00*
U.S. Cl. 49—139 **21 Claims**



1. A selectively engageable motor-drive assembly for use in operating a vehicle door or ramp, comprising:

a motor ;

a pulley drawing a cable attached to the door or ramp;

a torque-multiplying arrangement positionable between a first position wherein said pulley is decoupled from said torque-multiplying arrangement for manual operation and a second position wherein said torque-multiplying arrangement is coupled to said pulley for motorized operation;

an actuator mechanism comprising a lever structure for moving said torque-multiplying arrangement between said first and second positions and a cam for guiding movement of said actuator mechanism; and

a solenoid for actuating said lever structure between said first and second positions and for positioning the torque multiplying arrangement in accordance with a selection of said manual or motorized operation.

5,794,382

FIRE RATED REMOVABLE MULLION

Matthew S. Prucinsky, Indianapolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.

Filed Nov. 27, 1995, Ser. No. 562,921
Int. Cl.[6] E06B *5/00*
U.S. Cl. 49—365 **11 Claims**

1. A fire-rated removable mullion assembly mounting in a doorway having a frame with a top, a bottom, and two sides, comprising:

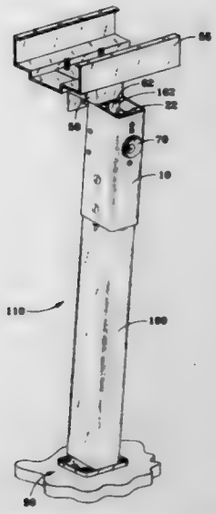
a top fitting mounted to the top of the door frame;

a bottom fitting assembly mounted to the bottom of the door frame;

a mullion head having means for detachably engaging said top fitting;

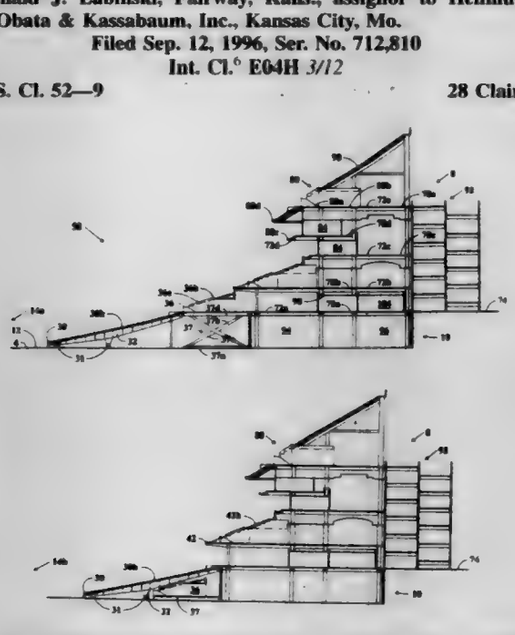
a mullion tube having means for mounting between said mullion head and said bottom fitting assembly; and

means for accommodating thermal expansion of said mullion assembly in case of fire to resist warping of said mullion assembly, the means for accommodating thermal expansion of said mullion assembly to resist warping of said mullion assembly comprising a fusible spacer mounted between two



components of a group of components consisting of said top fitting, said mullion head and said mullion tube.

5,794,383
RECONFIGURABLE SEATING SYSTEM FOR MULTI-PURPOSE STADIUM
Ronald J. Labinski, Fairway, Kans., assignor to Hellmuth, Obata & Kassabaum, Inc., Kansas City, Mo.
Filed Sep. 12, 1996, Ser. No. 712,810
Int. Cl.[6] E04H *3/12*
U.S. Cl. 52—9 **28 Claims**



1. In combination with a multi-purpose stadium having a playing field reconfigurable between first and second playing field configurations, each said playing field configuration having a respective playing field side, the improvement of a reconfigurable seating system, which comprises:

(a) a horizontally-movable band of seating sections having a first position extending along the first playing field configuration side and a second position extending along the second playing field configuration side;

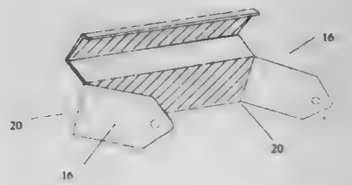
(b) a vertically-movable band of seating sections having a first, raised, use position associated with said first playing field configuration and a second, lowered, storage position associated with said second playing field configuration;

(c) said horizontally-movable band in its second position at least partly overlying said vertically-movable band in its lowered position;

(d) translation means for horizontally moving said horizontally-movable band between its first and second positions; and

(e) lift means for raising and lowering said vertically-movable band.

5,794,384
PLASTIC CLIP FOR DOWNSPOUT ATTACHMENT TO VINYL SIDING
James L. Dean, 1834 SE. Quail Cir., Hillsboro, Oreg. 97123, and Rodney B. Hall, 666 SE. 155th, Portland, Oreg. 97233
Filed Jul. 15, 1996, Ser. No. 680,144
Int. Cl.[6] F04D *13/08;* **F16L** *3/123*
U.S. Cl. 52—16 **1 Claim**





1. A one piece plastic mounting clip attaching a vertically disposed gutter downspout to vinyl siding, with said vinyl siding comprising longitudinal overlapping vinyl siding members and defining a longitudinal lock between adjacent vinyl siding members in the region of overlapping;

the mounting clip having a main body portion with a first angled bend extending from the main body portion and a second angled bend extending from the first angled bend, and a lip at the top of the second angled bend positively locking the mounting clip over a bottom longitudinal lock of one of the vinyl siding members, with the vertically disposed gutter downspout attached to the mounting clip by arms extending outwardly from the main body portion of the mounting clip along each side of the gutter downspout.

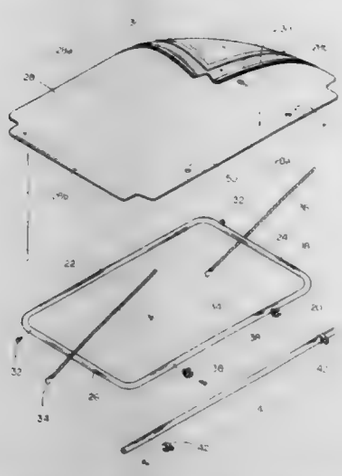
5,794,385
PORTABLE COLLAPSIBLE SHELF
Michael P. Donovan, 5053 S. 36th Ave., Omaha, Nebr. 68107
Filed Sep. 27, 1996, Ser. No. 722,557
Int. Cl.[6] E04F *19/00*
U.S. Cl. 52—36.4 **7 Claims**

1. In combination:

a primary exterior door mounted in a door frame having opposing vertical jamb faces;

a storm door mounted exteriorly of the primary door, the storm door having a windovw therein with a solid panel located below the window;

a shelf pivotally connected to the storm door allowing pivotal movement between a first position projecting generally horizontally rearwardly from the storm door, and a second position hanging generally vertically adjacent the storm door; and



a support selectively connected to the shelf allowing selective support of the shelf in the first position.

5,794,386

ROOF PANEL FOR SLOPED ROOFS

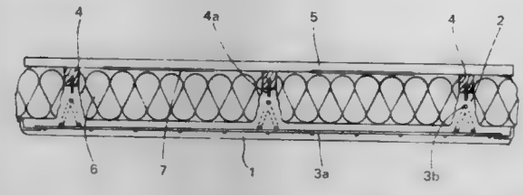
Udo Paul Klein, Hockenheim, Germany, assignor to Suba Cooperation Gesellschaft Fur Bauforschung und Franchising MBH, Hockenheim, Germany

Filed Jul. 2, 1996, Ser. No. 674,410

Claims priority, application Germany, Mar. 7, 1995, 195 23 673.4

Int. Cl.[6] E04B *7/02*

U.S. Cl. 52—91.1 **15 Claims**



1. A sloped roof, comprising a roof panel having a self-supporting, reinforced plate (**1**) of age-hardenable material, including a reinforcement for the plate (**1**) comprising bars (**3***b*) running generally parallel to the roof slope above the plate (**1**), attachment elements (**4**) arranged proximate to the bars (**3***b*) for attaching roofing material to the panel, ribs (**2**) running generally parallel to the roof slope above the plate (**1**) and joined in one piece with the plate (**1**), said ribs serving to contain and enclose the bars (**3***b*) on all sides, and wherein the attachment elements (**4**) are disposed on a side of the ribs (**2**) facing away from the plate (**1**).

5,794,387

DEVICE AND METHOD TO LIFT AND MANIPULATE POLES WHICH ARE MOUNTED ONTO A BASE

Joe P. Crookham, Oskaloosa, Iowa, assignor to Musco Corporation, Oskaloosa, Iowa

Filed Mar. 20, 1997, Ser. No. 822,278

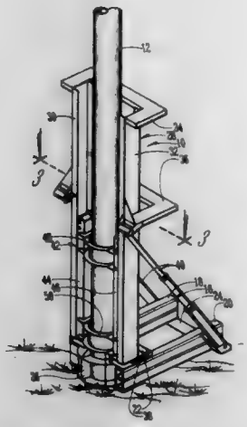
Int. Cl.[6] F04H *12/34*

U.S. Cl. 52—122.1 **26 Claims**

8. An apparatus for manipulating a pole relative to a base which can be rigidly fixed in the ground and the pole is separable from the base comprising:

a frame;

a first connection mounted on the frame and connectable to the base;



a second connection mounted on the frame and connectable to the pole;

an actuator connected to the first and second connections, the actuator comprising at least one extendible and retractable member which can move the second connection both towards and away from the first connection; and

so that using the first connection on the base as a reference, the pole can be moved relative to the base by operation of the actuator.

5,794,388

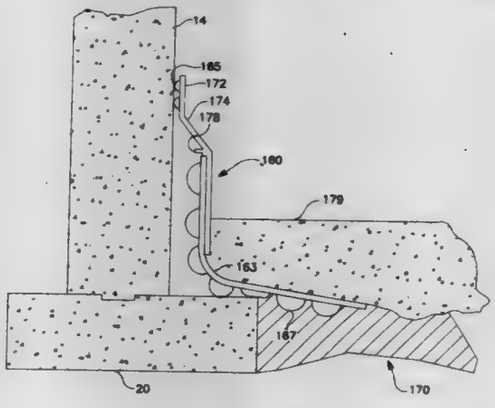
APPARATUS FOR CONTROLLING WATER SEEPAGE AT A STRUCTURAL INTERFACE

Robert Jackman, 12920 W. Francis Rd., Mokena, Ill. 60448

Continuation-in-part of Ser. No. 520,552, Aug. 29, 1995, Pat. No. 5,630,299. This application Apr. 30, 1997, Ser. No. 846,819

Int. Cl.[6] E04B *1/70;* **E04F** *17/00*

U.S. Cl. 52—169.5 **7 Claims**



1. An apparatus for use in controlling water seepage at an interface between a wall supported by a footing and a floor with a side surface adjacent the wall and a bottom surface bearing on the footing, and for providing a means to avoid buckling of the floor due to heat expansion,

the apparatus comprising panel means intended to be interposed between the wall and the side of the floor and between the footing and the bottom surface of the floor to provide a water passage spacing therebetween,

the panel means comprising a flexible layer strip and an attached film strip having an array of domed-shaped air pockets disposed on one of its sides,

to produce a water flow path in the space between the domed-shaped air pockets,

the flexible layer strip being adapted to be mounted adjacent to the wall but spaced therefrom and from the footing,

the film strip being attached to a side of the flexible layer strip, and extending downwardly therefrom.

5,794,389

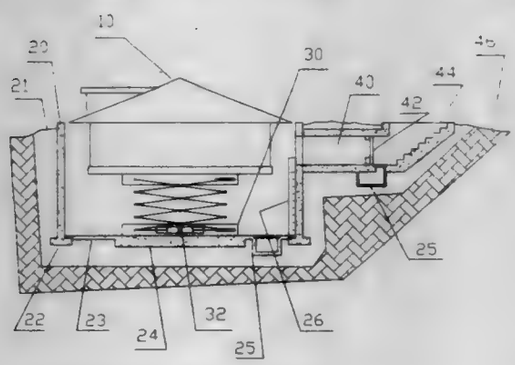
HURRICANE HOME SHELTER

Erwin L. Vysma, 8701 Oasis Ave., Westminster, Calif. 92683

Filed Jan. 16, 1996, Ser. No. 585,904

Int. Cl.[6] E02D *27/32*

U.S. Cl. 52—169.6 **12 Claims**



1. A hurricane home shelter comprising:

an open top concrete structure adapted to contain a building therein;

said structure comprising:

a) a fixed floor;

b) opposed parallel side walls including footings disposed on said fixed floor;

c) a building elevating means disposed on said fixed floor between said opposed parallel walls;

d) said building elevating means being operable to selectively elevate and lower the building relative to said structure,

said building elevating means comprises:

a fixed base,

a motion base, and

a plurality of scissors-like sections connected intermediate said fixed base and said motion base.

5,794,390

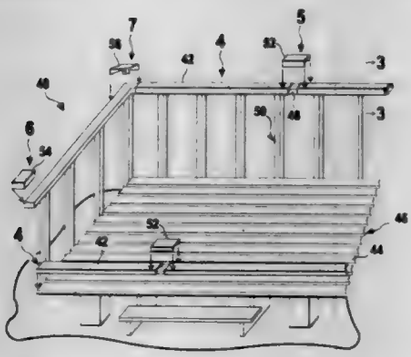
STRUCTURAL COVERING

Paul S. Oliveri, 828 Rensselaer Ave., Staten Island, N.Y. 10309, and Camilo P. Messina, O'Gorman Ave., Staten Island, N.Y. 10306

Filed Apr. 2, 1997, Ser. No. 825,904

Int. Cl.[6] E04F *11/16;15/00*

U.S. Cl. 52—177 **24 Claims**



1. A structural covering that is attachable to a rail of a railing that has a top, a pair of sides, ends, and a bottom, and that is attachable to a floor board of a deck that has a top, a pair of sides, ends, and a bottom, while covering most of the rail of the railing and any exposed ends thereof and covering most of the floor board of the deck and any exposed ends thereof, comprising:

a) a general covering component for covering most of the floor board of the deck and for covering most of the rail of the railing; said generally covering component having ends;

b) a connecting component for joining said ends of said general covering components that are adjacent and collinearlly-aligned;

c) an end cap component for covering any exposed end of the rail of the railing and for covering any exposed end of the floor board of the deck and for covering any free ends of said general covering component;

d) a corner component for joining facing ends of said covering general covering components that are adjacent and not collinearlly-aligned; and

e) attaching means for attaching said structural component to the rail of the railing and to the floor board of the deck; said attaching means including a pressure sensitive tape whose adhesive is impregnated with an insect repellant.

5,794,391

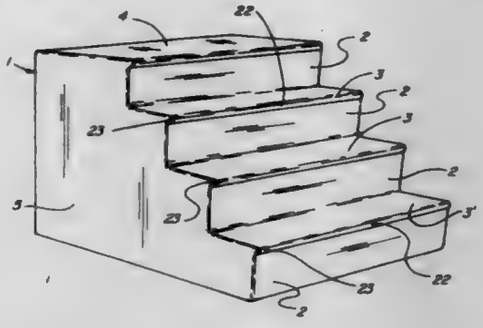
REINFORCED FIBERGLASS STEPS

John M. Howard, 170 E. Alton Ave., East Alton, Ill. 62024

Filed Feb. 5, 1997, Ser. No. 794,857

Int. Cl.[6] E04F *11/09*

U.S. Cl. 52—182 **10 Claims**



1. An integral step unit for use in the construction trade, comprising:

(a) a plurality of essentially vertical risers and corresponding perpendicular tread surfaces forming a plurality of steps, wherein the juncture edge joint of each of said risers and treads comprises a rounded outside edge surface and a rounded inside edge radius, each of said vertical risers further comprising a lower inside radius;

(b) an upper horizontal landing perpendicular and attached to the uppermost riser and to said sides;

(c) left and right sides corresponding and integrally attached to said landing, risers, and treads;

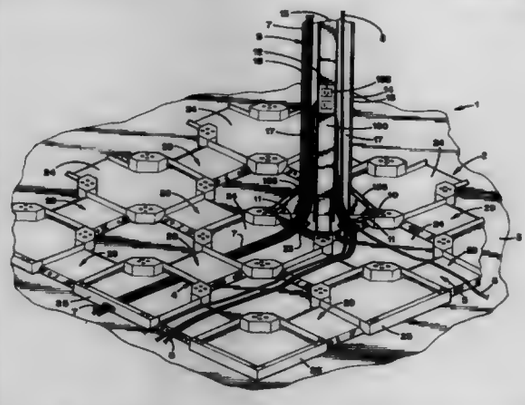
(d) a back of said unit integrally attached to said sides and landing surface;

wherein said unit is made of fiberglass reinforced plastic and wherein said unit tapers downwardly and outwardly from said landing surface and tapers inwardly from the back to the front of said unit.

5,794,392
UTILITY DISTRIBUTION SYSTEM FOR OPEN OFFICE PLANS AND THE LIKE

Carl V. Forslund, III, Grand Rapids; Thomas G. Feldpausch, Hastings, and Frederick S. Faiks, Greenville, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed May 18, 1993, Ser. No. 63,463
Int. Cl.[6] E04F *15/024*
U.S. Cl. 52—220.7 **53 Claims**



1. A utility distribution system for open office plans and the like, comprising:

a prefabricated floor construction adapted to be abuttingly supported on a building floor, and including a hollow interior portion thereof defining a raceway to route at least one utility conduit therethrough, and a floor surface shaped to support at least one workstation thereon;

a utility post for distributing utilities from said floor construction to the workstation, and including a foot mounted on said floor construction and supporting said utility post in a generally upstanding orientation, and having a marginally positioned open foot area thereof disposed above said raceway and communicating therewith; a utility outlet mounted on said utility post and adapted to selectively dispense utilities therefrom; and an external utility channel shaped to retain at least one utility conduit therein, having an outwardly oriented open face into which utility conduits can be inserted from an exterior side of said utility post, and extending continuously between and communicating with said utility outlet and the open foot area of said foot, whereby utilities are readily provided at the workstation by pulling the utility conduit from the raceway of said floor construction, through the open foot area of said utility post, and laying the utility conduit into said utility channel of said utility post by insertion into the open face thereof to a location adjacent said utility outlet for connection therewith.

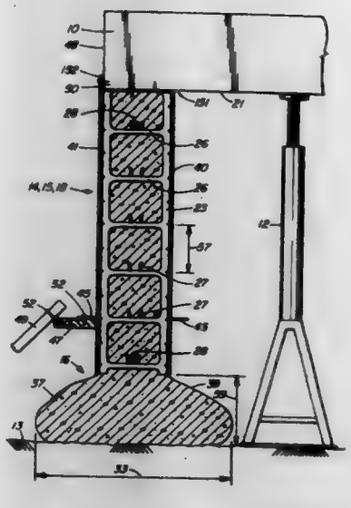
5,794,393
CONCRETE FOUNDATION WALL FORM APPARATUS AND METHOD

Richard Neil Fearn, 1817 Ocean Surf Place, South Surrey, British Columbia, Canada, V4P 9P1

Filed May 29, 1996, Ser. No. 657,046
Int. Cl.[6] E02D *27/00*
U.S. Cl. 52—294 **29 Claims**

1. A prefabricated building foundation form assembly comprising:

(a) a plurality of form stiffeners for spacing longitudinally apart along an axis of a foundation wall to be constructed, each form stiffener having a width defined by laterally spaced apart inner and outer edges of the form stiffener, which edges are also spaced longitudinally apart from corresponding edges of other form stiffeners, each form stiffener to be located to extend generally transversely of the axis of the foundation wall so as to extend across corresponding width of the foundation wall so that the inner and outer edges of the form stiffener are disposed on opposite sides of the axis, and

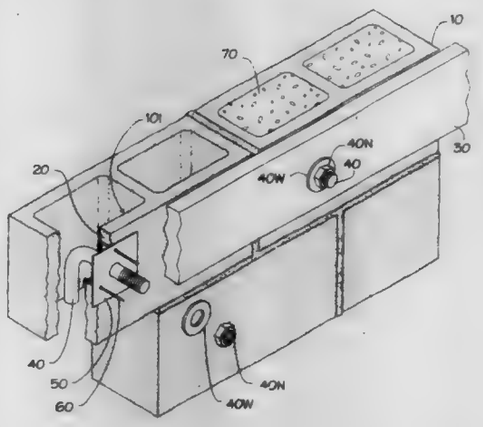


(b) a flexible sheet form element for positioning along the axis of the foundation wall and for forming into a generally U-shaped cross section so that the sheet form element has inner and outer upper portions for connecting to at least upper portions of the inner and outer edges respectively of the plurality of form stiffeners at locations which are longitudinally spaced apart along the flexible sheet form element, the generally U-shaped cross section of the sheet form element also having a lower portion contiguous with the upper portions for locating below the plurality of form stiffeners to extend as a substantially continuous elongated container below the plurality of stiffeners.

5,794,394
ANCHOR BOLT CENTERING DEVICE

Joseph A. Bill, 23910 Cedar Creek Trc., Moreno Valley, Calif. 92557, and Robert L. Bledsoe, 9300 Hunt Rd., Corona, Calif. 91719

Filed Mar. 10, 1997, Ser. No. 814,791
Int. Cl.[6] E04B *1/41*
U.S. Cl. 52—295 **2 Claims**



1. A masonry wall structure for mounting a wall plate, the structure comprising:

a hollow masonry wall providing a front surface and, spaced apart therefrom, a rear surface, the masonry wall further providing a bolt mounting hole therein, the bolt mounting hole providing a bolt mounting hole diameter;

an anchor bolt positioned centrally within the mounting hole and extending outwardly therefrom;

a flat plate of a stiff sheet material, the flat plate laying in contact with the front surface of the wall, the plate having a clearance hole therein, and a plurality of hook mounting holes arranged on a diameter concentric with the clearance hole, the diameter being approximately equal to the bolt mounting hole diameter;

a plurality of wire hooks, each of the wire hooks having a first leg, and a second contiguous leg positioned generally at a right angle to the first leg, the first leg of each of the wire hooks being frictionally engaged in one of the hook mounting holes and extending through the bolt mounting hole into the masonry wall so that, together, the first legs of the wire hooks position the flat plate on the front surface such that the clearance hole in the flat plate is concentric with the mounting hole;

the second leg of each of the hooks laying in contact with the rear surface of the wall so that the flat plate is held tightly against the front surface thereof with the anchor bolt centered within the bolt mounting hole;

a grout filling the hollow masonry wall and laying in contact with the flat plate and further, between the anchor bolt and the bolt mounting hole.

5,794,395

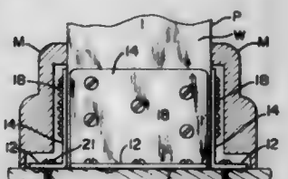
ANCHOR BRACKET WITH CLEATS

Robert H. Reed, 25557 Snyder, Conifer, Colo. 80433

Filed Jun. 19, 1996, Ser. No. 666,761

Int. Cl.[6] E06B *1/02*; **F16B** *7/08*

U.S. Cl. 52—298 **14 Claims**



1. An anchor bracket for securing a post in an upright position relative to a support surface wherein one end of said post is in direct contact with said support surface, said bracket comprising:

a flange portion adapted for extending at a right angle from said post with a lower surface of said flange adapted to exend in substantially parallel relation to said support surface;

at least one projection extending downwardly from said lower surface of said flange and adapted to bear against said support surface when said bracket is secured to said post thereby drawing said post toward said support surface and wherein each said projection is in the form of a rounded cleat; and

an attachment portion extending upwardly at a right angle from said flange portion, said attachment portion adapted to be disposed in flush relation to a vertical wall of said post.

5,794,396

ROOF MOUNTING ASSEMBLY

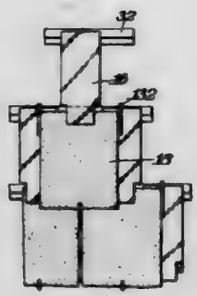
Alden T. Gibbs, 158 Conduit St., Annapolis, Md. 21401

Filed Jul. 30, 1996, Ser. No. 689,025

Int. Cl.[6] E04D *1/00*

U.S. Cl. 52—518 **45 Claims**

1. A covering assembly for covering a roof or side of a structure comprising an understructure, a plurality of rows of elongated pans, a plurality of rows of covering panels, each of said pans having a generally flat central portion defined by elongated side edges joined by upper and lower edges, a hook structure extending



generally from one of said upper and lower edges, said hook structure extending downwardly away from said central portion and generally parallel to said central portion and terminating in a free end disposed directly below and spaced from said central portion, said hook structure thereby including three mounting surfaces comprising said central portion and the downward extension and said free end, each of said pans being detachably mounted to said understructure by said hook structure being hooked around and against said understructure, adjacent rows of said pans being mounted to overlap each other with said lower edges of one row of said pans overlapping said upper edges of the adjacent row of said pans, each of said panels having elongated side edges joined by upper and lower edges, each of said rows of panels comprising adjacent panels having side edges disposed generally against each other to create sets of longitudinal joints at said side edges of adjacent panels, said panels being disposed over said pans and staggered with respect to said pans, said panels being detachably mounted to said understructure with said pans located at and below each of said joints, each of said joints being at a location between said side edges of said pans, said location of said pans being imperforate, said pans and said panels being compliantly and tightly mounted to said understructure, an undersurface of one of the pans being in contact with an outer surface of one of the panels, and said pans being of generally the same length as said panels at said location of said joint to generally prevent flow of water through said joint directly to said understructure.

5,794,397

CLEAN ROOM CEILING STRUCTURE LIGHT FIXTURE WIREWAY

Craig S. Ludwig, White Salmon, Wash., assignor to Cleanpak International, Inc., Clackamas, Oreg.

Division of Ser. No. 390,803, Feb. 14, 1995, Pat. No. 5,613,759, which is a continuation of Ser. No. 292,055, Aug. 17, 1994, abandoned, which is a continuation of Ser. No. 166,593, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 959,495, Oct. 9, 1992, abandoned, which is a continuation of Ser. No. 739,693, Aug. 2, 1991, abandoned, which is a continuation-in-part of Ser. No. 720,186, Jun. 24, 1991, abandoned. This application Nov. 25, 1996, Ser. No. 756,228

Int. Cl.[6] E04B *2/00*

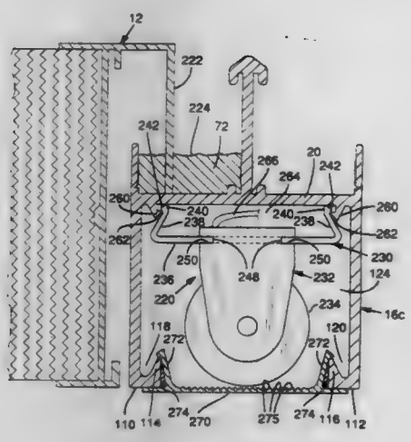
U.S. Cl. 52—506.08 **17 Claims**

1. A ceiling structure for a clean room including air filters, the ceiling structure comprising:

a grid for supporting said air filters and including at least one rail, said rail defining a downward-facing channel;

a light fixture including a light tube and associated wiring providing electrical power to said light tube, said light fixture being maintained within said downward-facing channel; and

a wireway panel attachable within said downward-facing channel and establishing thereabove a wireway enclosure within said downward-facing channel whereby said associated wir



ing routes through said wireway enclosure and said light tube is located below said panel.

5,794,398

FRAMEWORK WITH HOLLOW MEMBERS PROCESS FOR PRODUCING THE SAME AND ITS USE

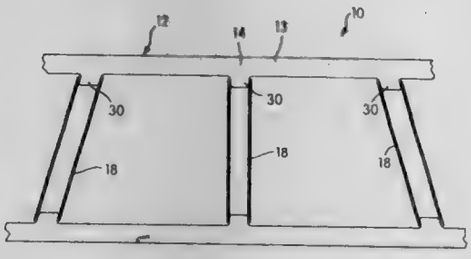
Klaus Knehler, Mahrenstr. 7; Friedrich Klaas, Achalmstr. 24, and Helmut Bogel, Gabelsbergerstr. 10, all of D-73431 Aalen, Germany

Continuation of Ser. No. 387,927, Apr. 13, 1995. This application Apr. 7, 1997, Ser. No. 835,232

Claims priority, application Germany, Aug. 25, 1992, 42 28 238.1

Int. Cl.[6] F16B *7/00*

U.S. Cl. 52—653.2 **10 Claims**



1. A framework comprising:

a plurality of generally tubular frame members each having two opened ends and at least one radially outwardly projecting portion disposed between said opened ends, each said at least one radially outwardly projecting portion being devoid of any openings and projecting radially outwardly beyond a general radial extent of said opened ends; and

a plurality of interconnecting members interconnecting said plurality of generally tubular frame members to one another, said interconnecting members each having at least two openings, said tubular frame members having said projecting portions thereof fixedly retained within associated openings in said interconnecting members.

5,794,399

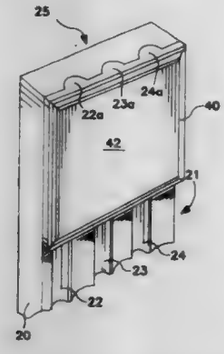
COMBINED MOLDING AND MOLDING CAPS

Floyd A. Searer, Elkhart, Ind., assignor to FAS Industries, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 675,575, Jul. 3, 1996, Pat. No. 5,692,354. This application Apr. 28, 1997, Ser. No. 848,028

Int. Cl.[6] E04F *19/02*

U.S. Cl. 52—718.01 **9 Claims**



1. A combined molding cap and molding strip, comprising:

a molding strip having a substantially flat attachment surface and a substantially planar, opposing non-attachment surface extending along the longitudinal axis thereof;

a plurality of at least one of beaded ridges and fluted channels extending along said substantially planar non- attachment surface of the molding strip; and

at least one molding cap having a substantially planar surface including at least one of complementary fluted channels and beaded ridges for respectively engaging the plurality of at least one beaded ridges and fluted channels of the substantially planar non-attachment surface of the molding strip so that said at least one molding cap is in closely abutting relationship with said molding strip at a desired location along said longitudinal axis.

5,794,400

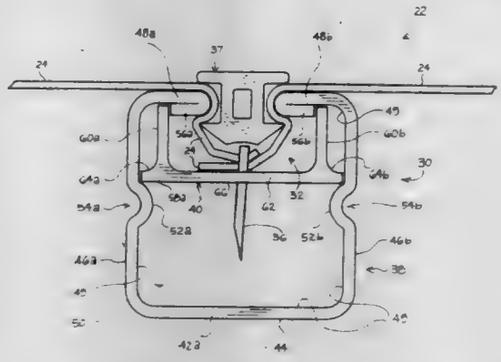
COMPOSITE FRAME MEMBER

Larry M. Fisher, 2316 Piedmont Ridge Ct., Marietta, Ga. 30062, and Henry W. Gordon, Birmingham, Ala., assignors to Larry M. Fisher, Marietta, Ga.

Filed Oct. 22, 1996, Ser. No. 735,015

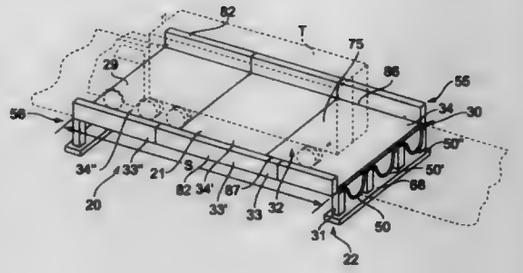
Int. Cl.[6] E04F *10/00*

U.S. Cl. 52—731.2 **18 Claims**



1. A composite frame member for use in constructing fabric covered awnings, said frame member comprising an elongated bendable external member defining an internal cavity and being formed with a slot extending at least partially along the length of said external member for access to said internal cavity, an elon-

gated bendable internal member disposed within said internal cavity extending at least partially along the length of said external member, said internal member having a web portion that is aligned with, internally spaced from, and accessible through said slot in said external member, said internal member being formed of a material suitable for receiving and firmly holding piercing fasteners installed through said slot and into said web portion, and indentations formed in said external member below said web of said internal member for capturing and securing said internal member in place within said internal cavity of said external member.



5,794,401

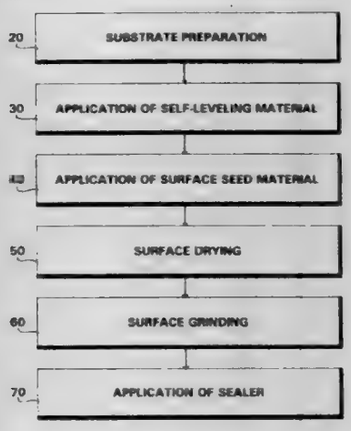
DURABLE ARCHITECTURAL FLOORING AND METHOD OF FABRICATING THE SAME

Lee A. Shaw, 1924 Irvine Ave., Newport Beach, Calif. 92660, and Ronald D. Shaw, 1988 Pelican, Costa Mesa, Calif. 92626

Filed Jun. 3, 1997, Ser. No. 868,187

Int. Cl.[6] E04B *1/00*

U.S. Cl. 52—741.41 **15 Claims**



1. A method of producing an-architectural flooring comprising the steps of:

a) preparing a substrate upon which said flooring is to be formed;

b) pouring a cementitious, self-leveling topping upon said substrate;

c) broadcasting a quantity of seed material upon said cementitious, self-leveling topping;

d) allowing said cementitious, self-leveling topping having said seed material broadcast thereon to become sufficiently dry;

e) grinding an upper surface of said topping having said seed material embedded thereupon; and

f) applying a sealer to the upper surface of said cementitious, self-leveling topping.

5,794,402

MODULAR POLYMER MATRIX COMPOSITE SUPPORT STRUCTURE AND METHODS OF CONSTRUCTING SAME

Chris Dumlao, Pleasanton, and Eric Abrahamson, Palo Alto, both of Calif., assignors to Martin Marietta Materials, Inc., Raleigh, N.C.

Filed Sep. 30, 1996, Ser. No. 723,109

Int. Cl.[6] A47B *13/08*

U.S. Cl. 52—783.17 **31 Claims**

1. A load bearing support structure comprising:

at least one modular structural section; and support means supporting said at least one modular structural section;

said at least one modular structural section supported on and connected with said support means;

said at least one modular structural section comprising:

a load bearing deck including at least one sandwich panel, said at least one sandwich panel having:

an upper surface;

a lower surface; and

a core including, a plurality of adjacent, substantially hollow, elongated core members positioned between said upper surface and said lower surface, each of said elongated core members including a pair of side walls and upper and lower walls connecting the side walls, at least one side wall of said pair of side walls is disposed at an oblique angle to one of said upper and lower surfaces such that said pair of side walls and said upper and lower walls, when viewed in cross-section, define a polygonal shape, and each of said elongated core members has one of said side walls positioned generally adjacent to one of said side walls of one of the adjacent elongated core members and the other of said side walls positioned adjacent to one of said side walls of one of the adjacent elongated core members.

5,794,403

FIREPROOF TRANSPARENT PANE PANEL

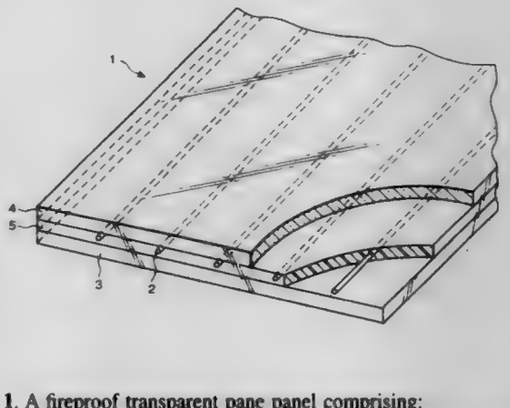
Klaus Oberländer, Hanau; Norbert Brand, Darmstadt, and Winfried Belzner, Gründau, all of Germany, assignors to Degussa Aktiengesellschaft, Germany

Filed Oct. 17, 1996, Ser. No. 733,699

Claims priority, application Germany, Oct. 21, 1995, 195 39 214.0

Int. Cl.[6] A47G *1/00*

U.S. Cl. 52—786.11 **29 Claims**



1. A fireproof transparent pane panel comprising:

a plastic pane core disposed between panes of inorganic glass to form a composite pane; and

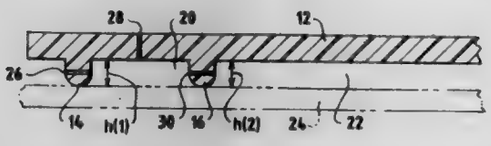
internal plastic support elements embedded within the core.

5,794,404

WINDOW INSULATING APPARATUS

Hoon Y. Kim, 4806 N. Sawyer, Chicago, Ill. 60625

Filed Feb. 19, 1997, Ser. No. 802,234
Int. Cl.[6] A47G *1/00*
U.S. Cl. 52—786.13 **17 Claims**



1. An insulating attachment for attachment to a window having a planar surface surrounded by a window frame, comprising in combination:

a panel, said panel being substantially planar and translucent, said panel being fitted within the window frame and having a dimension substantially similar to the dimension of the window;

at least one ridge formed on one side of said panel, the path of said ridge extending along the perimeter of said panel in a substantially rectangular manner, said ridge defining a chamber when said insulating attachment is placed against the window surface, wherein said chamber is enclosed by said ridge, said panel, and the window surface; and

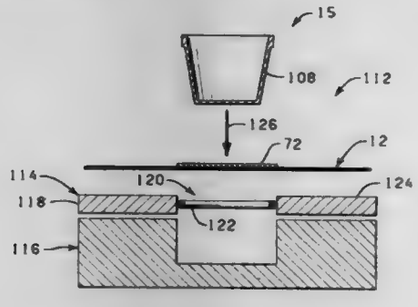
an air passage formed through said ridge into said chamber through which air is withdrawn for a partial vacuum in said chamber, said partial vacuum in said chamber creating a suction pressure on the window, thereby securing said insulating attachment to the window, said panel being spaced apart from the window surface.

5,794,405

FLOWER POT COVER HAVING A THICKENED BASAL PORTION

Donald E. Weder, Highland, Ill., assignor to Southpac Trust International, Inc.

Filed Jun. 7, 1995, Ser. No. 472,087
Int. Cl.[6] B65B *11/00;43/08*
U.S. Cl. 53—397 **20 Claims**



1. A method for forming a shape sustaining flower pot cover, the method comprising the steps of:

providing a sheet of material having an upper surface, a lower surface, and an outer peripheral edge, the sheet of material further comprising:

a basal portion having a periphery and a first thickness; and

a peripheral portion extending outwardly from the periphery of the basal portion to the outer peripheral edge of the sheet of material, the peripheral portion having a second thickness wherein the second thickness of the peripheral portion is less than the first thickness of the basal portion; and

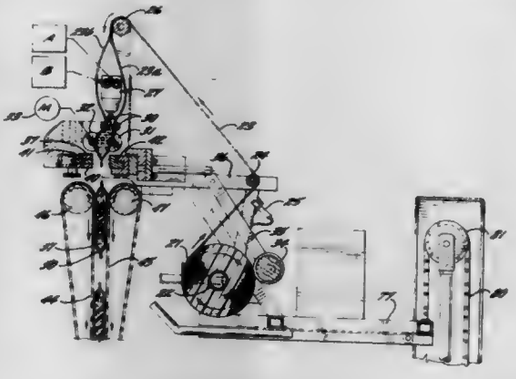
forming the sheet of material into a shape sustaining flower pot cover having an upper end, a lower end, a bottom and a receiving space shaped to receive a flower pot including forming the basal portion of the sheet of material into the bottom of the shape sustaining flower pot cover and forming the peripheral portion of the sheet of material into the upper and lower end of the shape sustaining flower pot cover such that when the flower pot is disposed in the receiving space of the shape sustaining flower pot cover, the basal portion of the sheet of material is disposed substantially adjacent a bottom of the flower pot and within the confines of the lower end of the shape sustaining flower pot cover.

5,794,406

FOAM CUSHIONING PANELS FOR PACKAGING PURPOSES

Abraham N. Reichental, Southbury; Kenneth P. Chrisman, Monroe; Alexander Shafir, Watertown, all of Conn.; Michael C. Ruscitti, Boxmeer, Netherlands, and George T. Bertram, Newtown, Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Oct. 2, 1996, Ser. No. 724,736
Int. Cl.[6] B65B *9/06;23/00;61/02;61/24*
U.S. Cl. 53—410 **45 Claims**



1. A method of making polymer foam cushioning element, the method comprising:

advancing a pair of sheets of plastic film material in parallel face to face relationship;

injecting foam precursors between the advancing plastic sheets;

sealing the sheets together to form a plastic bag containing the foam precursors;

forming the bag into the shape of a panel by confining the bar between spaced apart substantially planar surfaces during the formation of foam within the bag by the foam precursors, the substantially planar surfaces being spaced apart a distance less than the expansion capacity of the foam during formation thereof; and

removing the bar from between the substantially planar surfaces when the foam precursors have substantially finished expanding into foam to form a foam cushion panel.

5,794,407

ASEPTIC CHEMICAL TRANSFER SYSTEM

Daniel P. Smekens, Bonheiden, Belgium, assignor to Pharmacia & Upjohn Company, Kalamazoo, Mich.

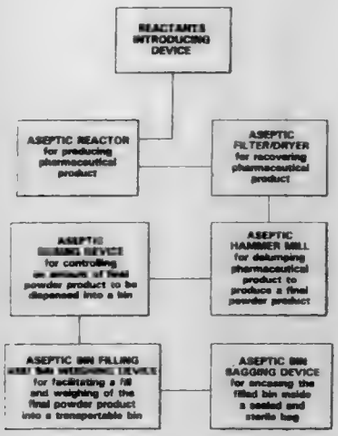
Division of Ser. No. 297,323, Aug. 29, 1994, Pat. No. 5,715,646. This application May 27, 1997, Ser. No. 863,728
Int. Cl.[6] B65B *55/00*
U.S. Cl. 53—428 **12 Claims**

1. A method of aseptically producing, harvesting and packaging a pharmaceutical product, comprising the steps of:

introducing a reactant into an aseptic reactor;

conducting a reaction to produce pharmaceutical product;

introducing the produced pharmaceutical product into a filter/dryer for recovering the pharmaceutical product;



aseptically delivering the recovered pharmaceutical product to a hammer mill for delumping or a micronizing mill to size the recovered pharmaceutical product to produce a final powder product;

aseptically introducing the final powder product into a dosing device;

enveloping a transportable bin with a removable binstopper inside an open top bag and sealingly engaging a rim region of the open top of the bag to a plate having an opening therethrough closable by a removable bagstopper;

placing the subassembly consisting of the bag, transport bin, binstopper, plate and bagstopper beneath the dosing device; and

aseptically filling the final powder product into the transportable bin.

5,794,408

INERTING PROCESS FOR PACKAGING COVERS AND DEVICES FOR CARRYING OUT SAID PROCESS

Andre Patouraux, Nethen, and Philippe Patouraux, Grez-Boiceau, both of Belgium, assignors to Madpack-Servicos Internacionais, LDA, Funchal, Portugal

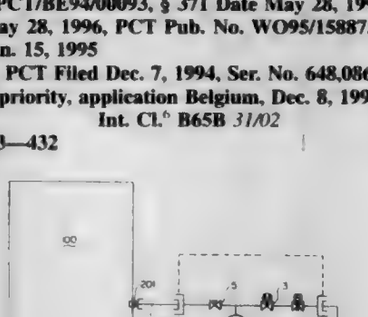
PCT No. PCT/BE94/00093, § 371 Date May 28, 1996, § 102(e) Date May 28, 1996, PCT Pub. No. WO95/15887, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 7, 1994, Ser. No. 648,086

Claims priority, application Belgium, Dec. 8, 1993, 9301362

Int. Cl.[6] B65B *31/02*

U.S. Cl. 53—432 **14 Claims**



7. An inerting process for a packaging cover, including an industrial packaging cover, the packaging cover covering an item, the process comprising:

enclosing the item within at least one composite sheet to form the packaging cover, the composite sheet being tightly sealed and having two apertures;

measuring a parameter associated with a level of relative humidity within the packaging cover;

exhausting gas from within the packaging cover through a first valve sealed in one of the apertures in the composite sheet and injecting an inert gas into the packaging cover through a second valve sealed in the other of the apertures in the packaging cover until the level of humidity within the packaging cover has fallen below a predetermined level; and

maintaining a pressure within the packaging cover to be close to equilibrium with an external atmospheric pressure while exhausting the gas and injecting the inert gas.

5,794,409

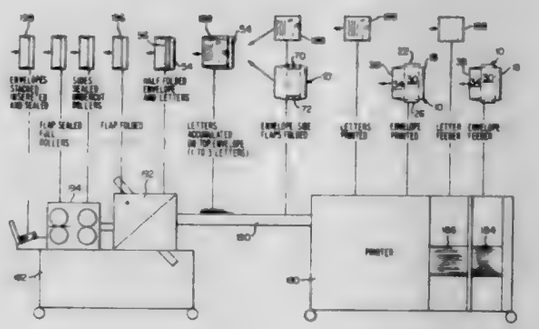
METHOD OF PROCESSING AND STUFFING AN ENVELOPE

Walter M. Akridge, Dayton; David E. Washburn, and John A. Moore, Jr., both of Kettering, all of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Division of Ser. No. 414,935, Mar. 31, 1995. This application May 30, 1996, Ser. No. 657,631

Int. Cl.[6] B65B *11/48;61/02*

U.S. Cl. 53—460 **14 Claims**



1. A method of automatically stuffing an envelope, said method comprising the steps of:

providing a plurality of envelope sheets, each envelope sheet having a front panel connected to a back panel along a bottom fold line, to a closing flap along a top fold line, to a left-side flap along a left-side fold line and to a right-side flap along a right-side fold line, each envelope sheet further having a first pattern of pressure sensitive adhesive provided on at least one of a location on the left-side flap and a location opposite the left-side flap, and a second pattern of pressure sensitive adhesive provided on at least one of a location on the right-side flap and a location opposite the right-side flap;

providing a plurality of inserts, each insert being effectively smaller in area then each envelope sheet;

automatically feeding one of said envelope sheets into a high-speed separate sheet printer;

automatically printing in a non-impact manner on at least one surface of the front panel before the envelope sheet is formed into an envelope;

automatically disposing at least one insert on top of each envelope sheet before the envelope sheet is formed into an envelope;

after the envelope sheet printing step, automatically folding over the left-side flap and the right-side flap along the left-side fold line and along the right-side fold line, respectively, onto the front panel;

automatically folding over the back panel along the bottom fold line and onto the left-side flap and the right-side flap, thereby sandwiching at least one insert between the front and back panels; and

automatically activating said first pattern of adhesive and said second pattern of adhesive to form an envelope stuffed with at least one insert.

5,794,410

METHOD AND APPARATUS FOR WRAPPING SPHERICAL OBJECTS

Robert I. Harper, Unit 5, Dominion Works, Bilston Road, Wolverhampton, West Midlands. WV2 2NH., Great Britain

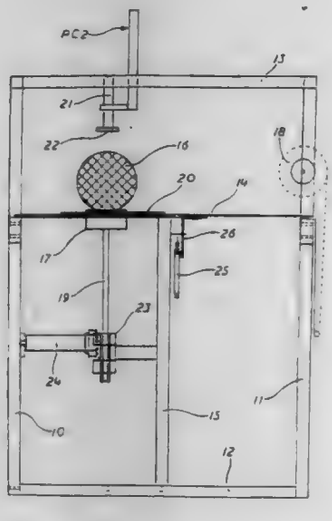
PCT No. PCT/GB95/02819, § 371 Date Jun. 4, 1997, § 102(e) Date Jun. 4, 1997, PCT Pub. No. WO96/17774, PCT Pub. Date Jun. 13, 1996

PCT Filed Dec. 4, 1995, Ser. No. 849,629

Claims priority, application United Kingdom, Dec. 7, 1994, 9424616

Int. Cl.[6] B65B *11/54*

U.S. Cl. 53—463 **6 Claims**



1. A method of wrapping a generally spherical object (16), which method comprises:

a) placing a thermoplastic film on a work surface (14) which includes a support member (17) movable downwardly relative to the remainder of the work surface (14),

b) placing the object (16) to be wrapped on the portion of the film resting on the support member (17);

c) providing a displacement member (21) which is movable into engagement with the uppermost portion of the object (16),

d) moving said displacement member (21) and thus the object (16) and the support member (17) downwardly until the displacement member (21) has reached a predetermined position and the uppermost portion of the object (16) is below the level of the work surface (14),

e) maintaining the object (16) and the support member (17) in their downwardly displaced positions while moving the displacement member (21) upwardly out of engagement with the object (16),

f) operating gathering means (20) which engages the thermoplastic film in such manner that the thermoplastic film is gathered around the object (16),

g) effecting rotation of the support member (17) and the object (16) while the thermoplastic film is engaged by the gathering means (20), and

h) effecting sealing of the uppermost portion of the film by moving the displacement member (21), which then acts as a heating element (22), into engagement with said uppermost portion of the film.

5,794,411

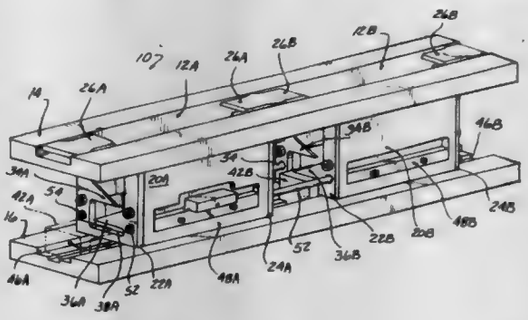
SINGLE STATION FOOD PRODUCT WRAPPING MACHINE

Timothy F. Combs, Lambertville, and James O. Byrd, Monroe, both of Mich., assignors to Research Products Manufacturing, Inc., Ida, Mich.

Filed Jul. 24, 1996, Ser. No. 687,121

Int. Cl.[6] B65B *11/00*

U.S. Cl. 53—466 **10 Claims**



1. A method of wrapping a product formed into a stick having a rectangular cross sectional shape and four parallel side surfaces and two end surfaces comprising the steps of positioning a rectangular sheet of wrapping sheet material of greater size than the shape of said stick against a face of a rectangular cavity formed in a folding frame and opening onto a face of said folding frame to define a rectangular opening matched to said product stick shape, but slightly oversized;

pushing said product stick with one side surface of said sheet into said opening to cause folding of all four sides of said sheet up against two respective side surfaces and two end surfaces of said product stick;

forming four wing folds at each end face of said one surface extending longitudinally away from said end surfaces while accommodating said wing folds in slots in said folding frame aligned with a respective one of said two sides;

further advancing said product stick into said cavity while engaging one wing fold at each end with a folding finger to fold each wing fold against a respective end face;

further advancing said product stick into said cavity while engaging the other wing fold at each end with a second folding finger to fold the other wing folds against the product stick end face;

pushing a blade into the cavity at each end against a part of a portion of said sheet material folded against said end face to fold said sheet parts against an upper side of said product stick while forming backwardly extending wing folds at each corner of said upper side of said product stick; and,

thereafter rotating a pair of top fold plates each initially recessed into a respective opposite sidewall of said cavity outwardly and down against said wing folds to fold said wing folds and intervening parts of said sheet down against said upper side of said product stick.

5,794,412

METHOD OF FOLDING A PORTION OF DIELECTRIC SHEET MATERIAL

Giuseppe Ronconi, Ronta, Italy, assignor to CO.ME.SCA. Costruzioni Meccaniche Scarperia S.r.l., Viale Kennedy, Italy

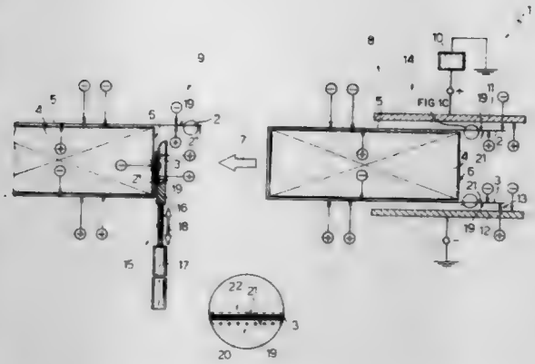
Filed Mar. 13, 1997, Ser. No. 816,312

Claims priority, application Italy, Mar. 15, 1996, BO96A0144

Int. Cl.[6] B65B *11/00*

U.S. Cl. 53—466 **8 Claims**

1. A method of folding portions of dielectric sheet material, the method comprising mating a sheet (5) including said portions with a product for folding the sheet about the product in a substantially U-shape configuration, wherein said portions form two outer longitudinal faced flaps; folding a first of said portions onto an outer



surface of said product (4); generating an electrostatic force of attraction between said first portion and said outer surface by forming a first given distribution of electric charges on an inner surface of said first portion, and a second distribution of charges of opposite sign on said outer surface; abandoning said folded first portion; and folding a second of said portions onto said outer surface of the product and onto said folded first portion.

5,794,413

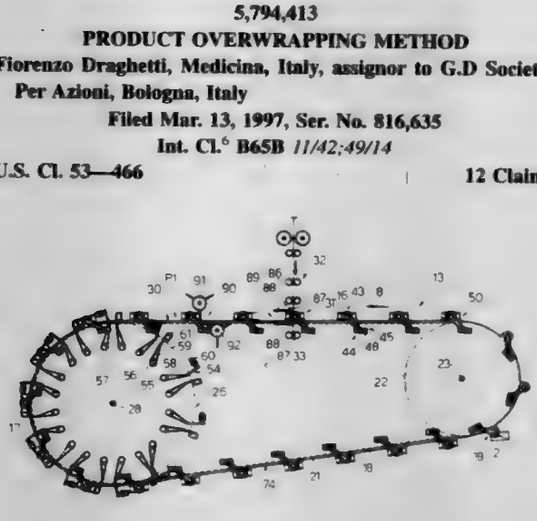
PRODUCT OVERWRAPPING METHOD

Fiorenzo Draghetti, Medicina, Italy, assignor to G.D Societa' Per Azioni, Bologna, Italy

Filed Mar. 13, 1997, Ser. No. 816,635

Int. Cl.[6] B65B *11/42;49/14*

U.S. Cl. 53—466 **12 Claims**



1. A method of overwrapping products (2) in sheets (33) of wrapping material, the method comprising the steps of feeding the products (2) successively along a given path (P), and performing, at successive points along said path (P), a first wrapping operation wherein each sheet (33) is folded into a U about a respective said product (2); a second wrapping operation wherein the sheet (33) is further folded to form about the respective product (2) a tubular wrapping (35) with open ends (36); a first stabilizing operation wherein the tubular wrapping (35) is closed by means of a longitudinal joint; a third wrapping operation wherein said open ends (36) are folded onto the product (2); and a second stabilizing operation wherein said folded ends (36) are secured by means of an end joint; the method being characterized in that said first and second wrapping operations are performed while retaining each product (2) via gripping means (43), which are maintained constantly in a gripping position on the product (2) throughout the performance of said first and second wrapping operations.

5,794,414

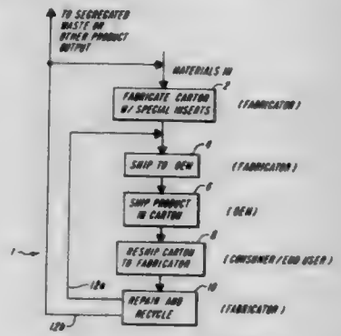
RECYCLE SHIPPING ASSEMBLY

Michael J. Grey, Richboro, Pa.; Wayne Williams, Boxford, and William H. Shaw, Manchester, both of Mass., assignors to Re-Source America I.P., Inc., Wilmington, Del.

Continuation of Ser. No. 461,045, Jun. 5, 1995, Pat. No. 5,542,237, which is a continuation of Ser. No. 71,234, Jun. 2, 1993, Pat. No. 5,456,061, which is a continuation of Ser. No. 775,694, Oct. 10, 1991, Pat. No. 5,247,747, which is a continuation of Ser. No. 690,082, Apr. 23, 1991, Pat. No. 5,131,212, which is a continuation-in-part of Ser. No. 427,812, Oct. 26, 1989, abandoned. This application Apr. 5, 1996, Ser. No. 630,917

Int. Cl.[6] B65B *23/00;61/02;* **B65D** *73/02;85/42*

U.S. Cl. 53—472 **12 Claims**



1. A process for recycling or reusing a shipping container containing a plastic product support, said process comprising:

(a) providing to a product provider a shipping container adapted to contain a product for shipping to a customer, wherein said product is supported by a plastic product support;

(b) providing said customer with directions for returning said shipping container and plastic product support to a third party refurbisher;

(c) after removal of said product, returning said shipping container and plastic product support to said third party refurbisher pursuant to said directions;

(d) reusing said shipping container if said shipping container is reusable, refurbishing said shipping container and plastic product support if said shipping container and plastic product support is refurbishable, or recycling said shipping container or plastic product support if said shipping container and plastic product support are not reusable or refurbishable; and

(e) repeating steps (a), (b), (c) and (d).

5,794,415

APPARATUS FOR PACKING LAYERED FRUIT INTO BINS

Howard Huff, 377 E. Gleed Rd., Natches, Wash. 98937, and Keith A. Kister, 1551 N. Del Rey, Sanger, Calif. 93657

Filed Jan. 11, 1996, Ser. No. 585,208

Int. Cl.[6] B65B *35/30*

U.S. Cl. 53—475 **49 Claims**

49. A method of loading fruit into a container with an open face, comprising:

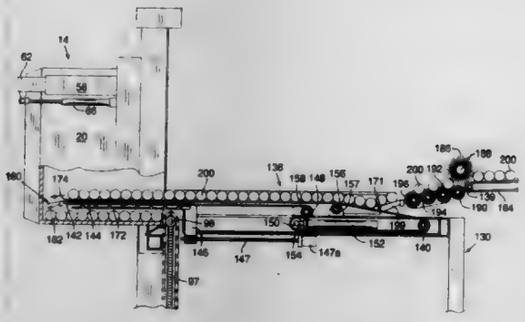
providing the container on a transport surface, wherein the container is a transport orientation with the open face directed upwardly;

moving the container in the transport orientation on the transport surface from a pre-loading location to a loading location;

tilting the container from the loading location into a loading position in which the container is held in a loading orientation with the open face directed sideways;

providing an endless belt conveyor having a leading edge that moves between an extended position and a retracted position, wherein the endless belt conveyor has an endless belt that moves to deliver items from the endless belt;

with the bin in the loading orientation, extending the leading edge of the conveyor through the open face of the bin into the



container to an item delivery position, and delivering items into the bin from the moving endless belt;

retracting the leading edge of the conveyor as the items are being delivered to form a layer of the items in the container, wherein a rate of delivery of the conveyor is substantially the same as a rate of retraction of the conveyor;

lowering the container in the loading orientation relative to the conveyor, after forming the layer of the items, then extending the leading edge of the conveyor through the open face of the bin into the container to the item delivery position, and delivering items into the bin while retracting the item conveyor to form another layer of the items in the container on top of the layer of items already in the container, wherein the step of lowering the container after delivering the layer of items comprises lowering the container a predetermined amount, then extending the leading edge of the conveyor into the container, then raising the container relative to the conveyor until an item in the container contacts the conveyor, then lowering the container to provide a clearance between the conveyor and the item that contacted the item conveyor;

repeating the step of lowering the container and delivering a layer of items into the container until a desired number of layers of items have been delivered;

providing an item delivery regulator at a leading edge of the conveyor, and using the regulator to prevent the delivery of items from the conveyor until the conveyor is extended to the item delivery position;

incrementally covering the open face of the container after each layer of items is delivered into the container by advancing a cover to a height of a top layer in the container after the item conveyor has been retracted, wherein the cover has a movable surface that neutralizes frictional engagement and relative movement between the cover and an item abutting against the cover;

after the desired number of layers of items have been delivered, tilting the container from the loading location to the transport location; and

transporting the container on the transport surface from the loading location to a storage location.

5,794,416

COMPUTER CONTROLLED SYSTEM FOR LOADING PALLETS IN A CONFINED CARGO AREA

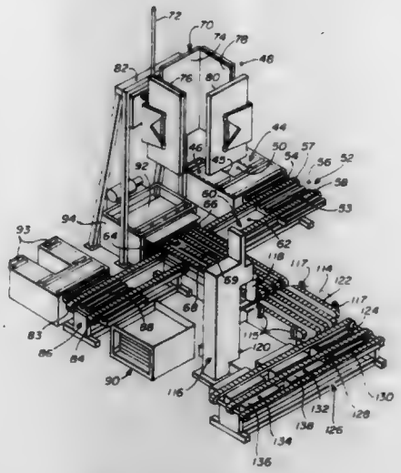
Kem M. Rahman, Plano, Tex., assignor to Recot, Inc., Pleasanton, Calif.

Filed Oct. 16, 1996, Ser. No. 732,198
Int. Cl.[6] B65B *53/00;35/50*
U.S. Cl. 53—540 **14 Claims**

1. A system for sequentially receiving stacks of boxes of product in multiple layers, each layer having at least two boxes, and effectively loading the maximum number of layers of boxes in an enclosed cargo space comprising:

a first area for sequentially receiving stacks of boxes, each stack having layers of boxes of the same height, which height may or may not be the same height as the layer of boxes in the next sequentially received stack;

a programmable microprocessor for (1) storing a stack location and maximum height in given sequential locations in said enclosed cargo space and (2) determining how many layers of boxes of each sequentially received stack must be placed in a



given stack location in said cargo space to provide the maximum height stack in said given stack location;

box delayering means coupled to said programmable microprocessor for sequentially receiving said stacks of boxes from said first area and removing as many layers of boxes from each received stack as determined by said programmable microprocessor to create said maximum height stack;

a stretch-wrap machine for sequentially receiving the delayered stacks of boxes stretch wrapping said delayered stacks into unitary stacks; and

a second area for sequentially receiving and temporarily storing said stretch-wrapped stacks of boxes; and

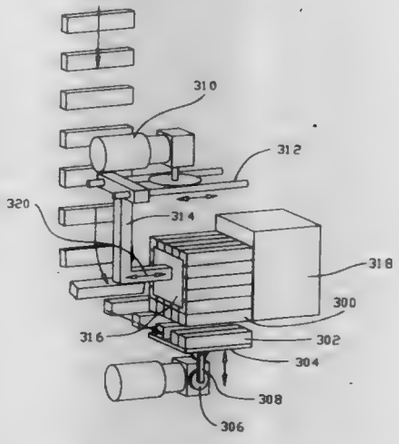
means for sequentially transporting said stretch-wrapped stacks of boxes to said enclosed cargo area in proper order and for stacking them in each given stack location to maximize use of said enclosed cargo area.

5,794,417

VERSATILE CASE PACKING DEVICE

James A. Mohrman, Concord, N.C., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 27, 1997, Ser. No. 789,035
Int. Cl.[6] B65B *35/30*
U.S. Cl. 53—541 **20 Claims**



1. An adjustable apparatus for the packaging of uniformly shaped articles into a larger container, comprising:

an opening for receiving a stream of articles,

a powered conveyor infeed for delivering a predetermined amount of articles from said stream into the apparatus,

a telescoping base plate adjacent said powered infeed for receiving the predetermined amount of articles,

a layer sensor located proximate to said telescoping base plate to determine when the predetermined amount of articles has been fed to the base plate,

a rod connected to the telescoping base plate, said rod raising and lowering the telescoping base plate,

opposing telescoping retaining stops having ledges above said telescoping base plate, said retaining stop ledges acting to retain any lifted articles in a raised state over the telescoping base plate,

a telescoping push plate located adjacent to said articles in their raised state, said telescoping push plate also being slidingly mounted on adjustable rails,

a height sensor located proximate to said telescoping push plate, said sensor to determine when a sufficient amount of raised articles are over the telescoping base plate,

an adjustable exit portal for allowing the passage of a formed stack of articles,

a push device for propelling the push plate towards the exit portal, and

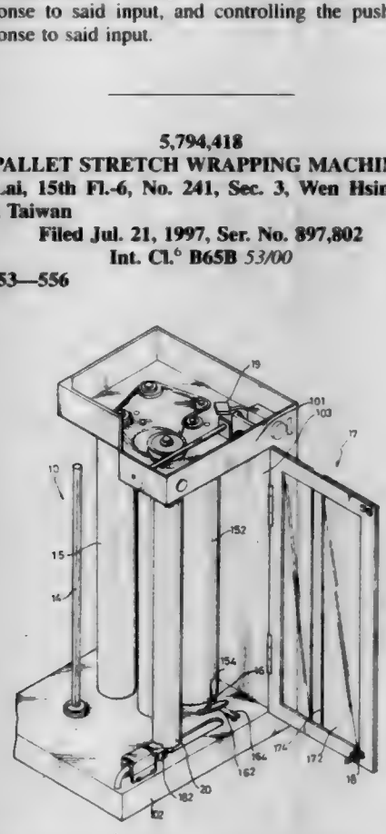
a controller for receiving input from the sensors, actuating the lift in response to said input, controlling the powered infeed in response to said input, and controlling the push device in response to said input.

5,794,418

PALLET STRETCH WRAPPING MACHINE

Robert Lai, 15th Fl.-6, No. 241, Sec. 3, Wen Hsin Rd., Taichung, Taiwan

Filed Jul. 21, 1997, Ser. No. 897,802
Int. Cl.[6] B65B *53/00*
U.S. Cl. 53—556 **6 Claims**



1. A pallet stretch wrapping machine comprising:

a column vertically disposed;

a turntable attached to a lower portion of said column for supporting an article thereon;

a frame vertically movably mounted in said column and including an upper housing having a bottom wall defining a first elongate slot, a lower housing having a top wall defining a second elongate slot disposed under said upper housing, and a vertical wall connecting between said upper and lower housings;

a plurality of upright rollers rotatably mounted between said upper and lower housings;

an upright post including a lower portion fixedly mounted on said lower housing;

a spool rotatably mounted on said upright post;

a roll of resilient film wrapped around said spool and extending through each of said rollers, said rollers co-operating to deliver said roll of resilient film to envelop said article; and

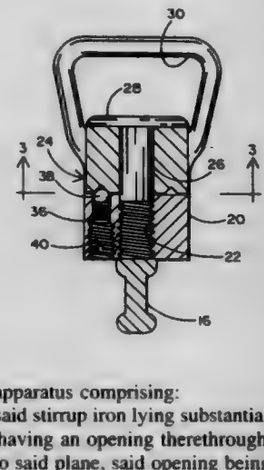
a velocity adjusting mechanism mounted between said upper and lower housings for adjusting a rotational velocity of each of said rollers for delivering said roll of resilient film, said velocity adjusting mechanism comprising an upright tension adjusting rod urged on said resilient film and having an upper end portion movably received in said first slot and a lower end portion movably received in said second slot, a first rack fixedly mounted on said bottom wall of said upper housing, a first gear fixedly mounted on said upper end portion of said tension adjusting rod and meshing with said first rack, a second rack fixedly mounted on said top wall of said lower housing, a second gear fixedly mounted on said lower end portion of said tension adjusting rod and meshing with said second rack, a variable resistor fixedly mounted on said top wall of said lower housing, a knob rotatably mounted on said variable resistor for adjusting the resistance of said variable resistor, and a swing plate having a first end portion fixedly mounted on said knob and a second end portion pivotally connected with the lower end portion of said tension adjusting rod.

5,794,419

EQUESTRIAN STIRRUP IRON

Martin D. Cohen, 122 Monterey Ave., Pacific Grove, Calif. 93950

Filed Mar. 22, 1996, Ser. No. 621,014
Int. Cl.[6] B68C *3/00*
U.S. Cl. 54—47 **4 Claims**



2. Equestrian apparatus comprising:

a stirrup iron, said stirrup iron lying substantially in a plane, said stirrup iron having an opening therethrough at substantially a right angle to said plane, said opening being sufficiently large to receive the foot of an equestrian rider, the bottom of said opening being defined by a foot bar for engagement by the foot of an equestrian rider;

a stirrup leather member defining a stirrup leather opening and attached to said stirrup iron by a body, said stirrup leather opening being sized to receive a stirrup leather for support of said stirrup, said stirrup leather opening defining a stirrup leather plane, said stirrup leather plane lying a predetermined angle away from said stirrup iron plane so that when hanging freely, said stirrup iron is positioned so that it may be readily accessed by the foot of an equestrian rider;

said body being rotatably mounted with respect to said stirrup iron on a pivot for rotation about an axis;

a detent interengaged between said body and said stirrup iron, said detent releasably positioning said stirrup leather opening in preselected angular positions with respect to said stirrup iron; and

said body having detent recesses therein and said stirrup iron having an engagement member for resiliently engaging in one of said recesses, said recesses being arranged at substantially

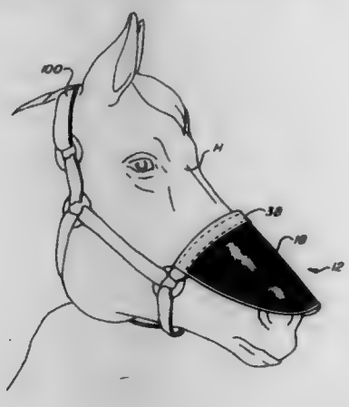
a right angle around said axis so as to selectively detent said stirrup iron in its selected position.

5,794,420

NOSE SHADE

Stephany Ann Fine, P.O. Box 558, Tucker, Ga. 30084

Filed Jan. 27, 1997, Ser. No. 788,328
Int. Cl.[6] B68C 5/00; A01K 13/00
U.S. Cl. 54—80.3 19 Claims



10. A shade for protecting an animal's nose from the sun comprising:

a scooped-shaped cover having a webbing with the outer periphery encompassed by a bias tape and having a first corner, a second corner, and a first medial portion therebetween; and

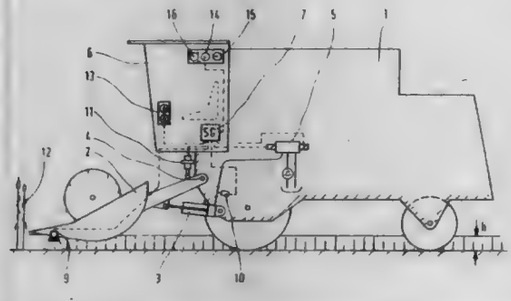
a flap attached to the cover and extending from proximate the first corner to proximate the second corner.

5,794,421

DEVICE FOR REGULATING THE DISTANCE FROM THE GROUND OF A WORKING UNIT OF AN AGRICULTURAL MACHINE

Josef Maichle, Beilstein, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00188, § 371 Date Aug. 30, 1996, § 102(e) Date Aug. 30, 1996, PCT Pub. No. WO95/23496, PCT Pub. Date Sep. 8, 1995
PCT Filed Feb. 16, 1995, Ser. No. 704,538
Claims priority, application Germany, Mar. 3, 1994, 44 06 892.1
Int. Cl.[6] A01O 34/86;75/14;75/28
U.S. Cl. 056—10.2 E 7 Claims



1. A device for regulating ground clearance of a working unit of an agricultural machine, said device including

a pressurizable control element (3) in the agricultural machine for setting the ground clearance of the working unit from ground over which the agricultural machine moves;

a position sensor (11) which detects a position of the working unit (2) relative to the machine and which generates a working unit position signal characteristic of said position of the working unit (2);

a pressure sensor (10) which measures a pressure occurring in the control element (3) and which generates a control element pressure signal characteristic of said pressure in the control element (3);

a ground clearance sensor (9) which measures a ground clearance of the working unit (2) from the ground in a contactless manner and issues a corresponding ground clearance sensor output signal; and

a control device (7) for operating the control element to set the ground clearance of the working unit according to said ground clearance sensor output signal alone in a first distance range closest to the ground, according to said working unit position signal alone in a second distance range furthest from the ground and according to a combined signal equal to a mixture of the ground clearance sensor output signal and the working unit position signal in a third transitional distance range between the first and second distance ranges,

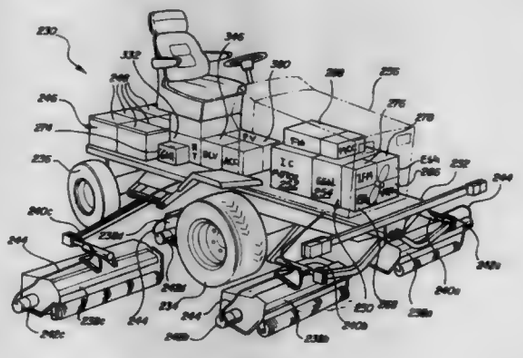
wherein said combined signal is substantially equal to said ground clearance sensor output signal at a position in the third transitional distance range closest to the first distance range and said combined signal contains an increasing proportion of the working unit position signal at positions increasingly close to the second distance range until said combined signal is substantially equal to said working unit position signal closest to said second distance range.

5,794,422

ELECTRIC DRIVE MOWER WITH MOTOR GENERATOR SET

Kirk W. Reimers, and Dammika Weeratunga, both of Lincoln, Nebr., assignors to Ransomes America Corporation, Lincoln, Nebr.

Filed Nov. 13, 1995, Ser. No. 557,778
Int. Cl.[6] A01D 34/58
U.S. Cl. 56—11.9 42 Claims



1. A self-propelled riding mower comprising:

a frame;

a plurality of ground engaging wheels supporting the frame;

means for mechanically generating electrical energy supported from the frame; and

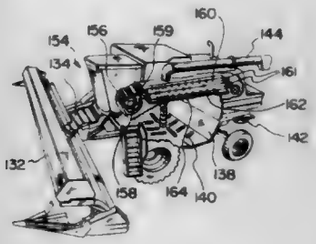
a plurality of reel type lawn mowers supported from the frame and one of the plurality of reel type lawn mowers located forward of each of the plurality of ground engaging wheels, the reel type lawn mowers being moveable between a raised non-operative position and a lowered operative position in which the reel type lawn mowers engage the ground, each reel mower being driven by a respective electric motor which receives electrical power from the means for generating electrical energy.

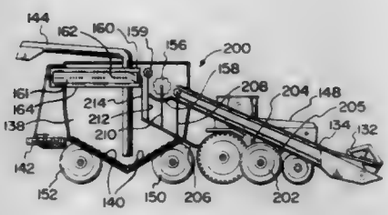
5,794,423

MOBILE HARVESTER FOR CHAFF, GRAIN, GRAIN LEAVINGS AND WEED SEEDS

Robert H. McLeod, Winnipeg, Canada, assignor to Bob McLeod Inc., Winnipeg, Canada

Filed Nov. 1, 1996, Ser. No. 742,622
Int. Cl.[6] A01D *41/06*
U.S. Cl. 56—14.6 11 Claims





1. A mobile harvester for harvesting a mixture of chaff, grain, grain leavings, and weed seeds from a field crop, comprising:

a header for cutting and collecting a field crop from an area of land to produce a cut crop;

an elevator for conveying the cut crop away from the header;

thresher equipment, positioned to receive the cut crop from the elevator, for threshing the cut crop to separate chaff, grain, grain leavings and weed seeds from straw;

a straw separator having apertures of such a size as to allow chaff, grain, grain leavings and weed seeds to pass therethrough, while substantially preventing straw from passing therethrough, thus producing a separate straw component and a mixture of chaff, grain, grain leavings and weed seeds;

a straw discharge for returning said straw component to said area of land;

a holding vessel to receive and hold said mixture of chaff, grain, grain leavings and weed seeds; and

a discharge to permit removal of said mixture of chaff, grain, grain leavings and weed seeds from the harvester in an unclassified condition;

said header, elevator, thresher equipment, straw separator, straw discharge, and holding vessel all forming part of a mobile unit.

5,794,424

MOWING MACHINE HAVING A HARVESTING MECHANISM WITH A LIGHTENING DEVICE

Rino Ermacora, St. Jean Saverne; Martin Walch, Dettwiller; Bernard Wattron, Saverne, and Joel Wilhelm, St.-Louis, all of France, assignors to Kuhn S.A., Saverne Cedex, France

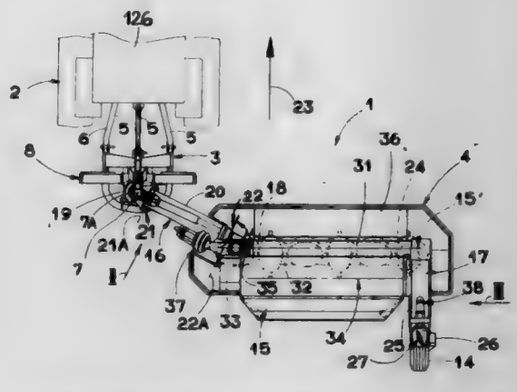
Filed May 10, 1996, Ser. No. 644,059
Claims priority, application France, May 10, 1995, 95 05692
Int. Cl.[6] A01D *34/66*
U.S. Cl. 56—15.1 28 Claims

1. A mowing machine comprising:

a harvesting mechanism which extends, during mowing, transversely to a working direction;

a carrying structure which includes a connection means which is used to connect the mowing machine to a drive vehicle;

a connection device which connects said harvesting mechanism to said carrying structure in order to allow a heightwise displacement of said harvesting mechanism with respect to said carrying structure;



a lightening device of said harvesting mechanism which includes at least one deformable envelope which contains a gas under adjustable pressure; and

an adjustment device which is attached to said at least one deformable envelope in order to be able to adjust the action of said at least one deformable envelope, said adjustment device comprising:

(i) a supply circuit provided with at least one electrovalve connected to said at least one deformable envelope and being able to take at least a first position and a second position, said at least one electrovalve maintaining the pressure of the gas contained in said at least one deformable envelope when said at least one electrovalve is in said first position, and said at least one electrovalve being able to cause a fluid supplied by a supply source to enter said at least one deformable envelope or to cause fluid to leave said at least one deformable envelope when said at least one electrovalve is in said second position; and

(ii) electrical control means which allow a user of the mowing machine to control said at least one electrovalve from a driving position in the drive vehicle, to switch said at least one electrovalve between the at least first and second positions.

5,794,425

LAWN DEBRIS COLLECTING SYSTEM AND METHOD

Scott Thomason, and Daniel J. Martens, both of Brooklyn, Ohio, assignors to MTD Products Inc., Cleveland, Ohio

Filed Sep. 5, 1996, Ser. No. 707,591
Int. Cl.[6] A01D *34/70*
U.S. Cl. 56—202 24 Claims

21. A lawn mower, comprising:

a body having a lawn debris opening;

a handle bar operatively connected to said body;

cutting means for use in cutting associated vegetation;

motor means for selectively rotating said cutting means;

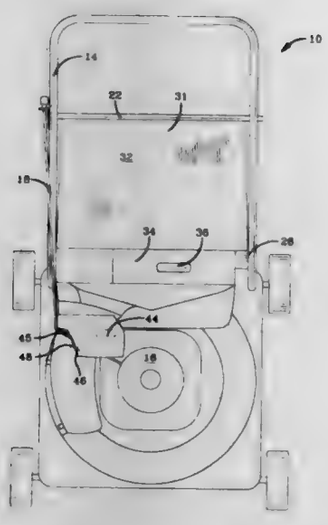
an extended pull rope for selectively starting said motor means, said extended pull rope extending from said motor means to said handle bar; and,

a lawn debris collecting system including,

(a) a grass bag assembly for holding lawn debris, said extended pull rope extending over said grass bag assembly,

(b) a chute assembly for connecting said lawn debris opening to said grass bag assembly, said chute assembly including,

(i) a chute and,



(ii) a door, said door moving said extended pull rope from over said grass bag assembly as said grass bag assembly is lifted for removal.

5,794,426

DEVICE FOR THREADING IN THE THREAD DURING THE CHANGE OF A RING TRAVELLER

Andreas Neff, Pfäffikon, Switzerland, assignor to Bracker AG, Pfaffikon, Switzerland

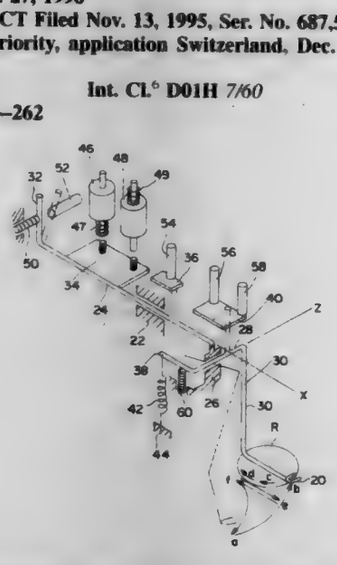
PCT No. PCT/CH95/00264, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO96/19602, PCT Pub. Date Jun. 27, 1996

PCT Filed Nov. 13, 1995, Ser. No. 687,541

Claims priority, application Switzerland, Dec. 22, 1994, 03 889/94

Int. Cl.[6] D01H *7/60*

U.S. Cl. 57—262 **3 Claims**



1. A thread moving device adapted for mounting on a traveller-changing assembly for a ring spinning machine, the ring spinning machine including a ring and a rotatably mounted cop for carrying thread, said device comprising:

first and second articulated pivot members connected to the traveller-changing assembly and defining a cardan joint for movement of the members about first and second intersecting cardanic axes;

a thread-receiving member formed at a working end of said second pivot member for being positioned adjacent the ring of the ring spinning machine for receiving a portion of thread;

energy storage biasing means engaging a connecting end of the second pivot member and cooperating with guide means for moving the thread-receiving member about the cardanic axes between a plurality of positions relative to the ring;

said guide means including a detent arranged for blocking movement of the first pivot member about the first cardanic axis beyond a predetermined point, such that when movement of the first pivot member is blocked, said biasing means effects movement of the second pivot member and the thread-receiving member about the second cardanic axis.

5,794,427

PROCESS OF AND APPARATUS FOR MAKING LOW SHRINKAGE

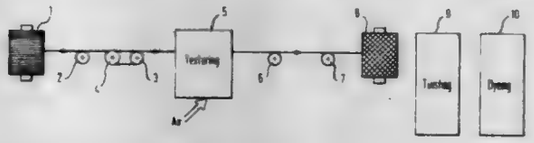
Franco Cavedon, Treviso, Italy; Hartmut Ritter, Algolsheim, France, and Martin Lohe, Breisach, Germany, assignors to Madeira Garnfabrik Rudolf Schmidt KG, Freiburg, Germany

Filed Jul. 3, 1997, Ser. No. 887,740

Claims priority, application Germany, Jul. 4, 1996, 196 27 010.3

Int. Cl.[6] D01H *13/26*

U.S. Cl. 57—290 **31 Claims**



1. A process of making low-shrinkage yarn, in particular sewing yarn, of synthetic, pre-oriented polymer multifilaments, comprising the steps of:

drawing multifilaments in the form of a single strand at a temperature of about 180° to 230° C. by a factor of 1.6 to 2.5;

air-texturing the drawn strand at a rate of overfeed of 1.03 to 1.20 to form a single-strand raw yarn;

feeding the raw yarn to a fluffing zone of predetermined length at a rate of overfeed of 1.003 to 1.025;

winding the fluffy raw yarn at slightest possible tension;

reeling off and twisting the wound raw yarn; and

treating the twisted raw yarn at a temperature of 125° to 135° C. over 1 to 3 hours in a dyeing unit, and, optionally, dyeing the raw yarn.

5,794,428

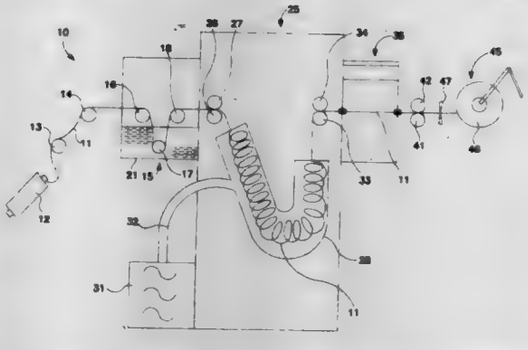
METHOD OF BULKING AND HEAT-SETTING A MOVING, CONTINUOUS LENGTH OF TWISTED THERMOPLASTIC YARN

Cheryl Elizabeth Rhodes, and Clifford Nelson Rhodes, both of 18301 Mandrian Point Dr., Cornelius, N.C. 28031

Filed May 29, 1996, Ser. No. 654,954

Int. Cl.[6] D02G *1/20*

U.S. Cl. 57—292 **8 Claims**



1. A method of bulking and heat-setting a moving, continuous length of twisted thermoplastic yarn made of a homogeneous

assembly of fibers having relatively uniform shrinkage characteristics, comprising the steps of:

(a) saturating the yarn with a dielectric fluid contained in a fluid saturation station;

(b) moving the yarn downstream from the saturation station to an electromagnetic heating chamber, and while the yarn is in the heating chamber:

(i) heating the saturated fibers of the yarn using electromagnetic radiation;

(ii) bulking the yarn through uniform shrinkage of the homogeneous fibers to increase the diameter and texture of the yarn;

(iii) simultaneously with heating and bulking the yarn, permanently setting the twist of each of the homogeneous fibers of the yarn; and

(c) collecting the twisted and bulked yarn in a collection station located downstream of the heating chamber.

5,794,429

YARN FRICTION FALSE TWISTING APPARATUS

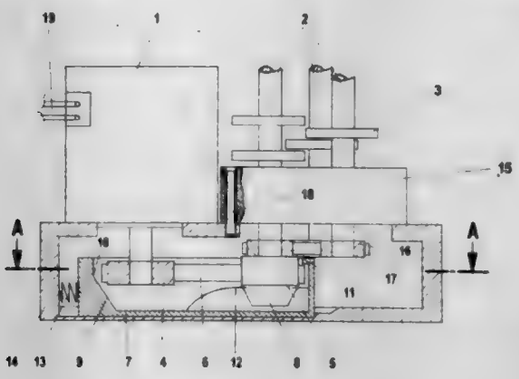
Detlev Overstrass, Velbert, and Heilmut Lorenz, Remscheid, both of Germany, assignors to Barmag AG, Remscheid, Germany

Filed May 22, 1996, Ser. No. 651,521

Claims priority, application Germany, May 23, 1995, 195 18 941.8

Int. Cl.[6] D01H *1/24;7/46*

U.S. Cl. 57—339 **22 Claims**



1. A yarn false twisting apparatus comprising:

a base frame,

a drive motor mounted to said base frame and including an output shaft which defines an output shaft axis,

a yarn false twist assembly comprising a bearing block, and at least three spindles mounted to said bearing block for rotation about parallel axes which are positioned at the corner points of an equilateral polygon having a number of sides corresponding to the number of spindles, and a plurality of circular disks mounted on each spindle for rotation therewith, and with the disks of the spindles overlapping at a point centrally between the spindles and defining an operative yarn path of travel extending axially therebetween,

means releasably mounting said false twist assembly to said base frame at a fixed distance from said output shaft axis and so that the axes of said spindles are parallel to said output shaft axis, said mounting means comprising at least one guide pin fixed to said base frame and extending in a direction parallel to the output shaft axis, and an opening in said bearing block of said yarn false twist assembly positioned to receive said guide pin, and such that the yarn false twist assembly is able to be separated from said base frame by withdrawing the yarn false twist assembly in a direction parallel to the output shaft axis, and

drive transmission means including a drive belt operatively connecting the output shaft of said drive motor to each of said spindles of said yarn false twist assembly so that the drive motor is able to rotate all of the spindles in the same direction, and with the drive transmission means being disconnectable so as to permit the yarn false twist assembly to be removed from the base frame to facilitate the removal and replacement of the drive belt.

5,794,430

FIBER CONDUIT PLATE FOR AN OPEN-END SPINNING DEVICE

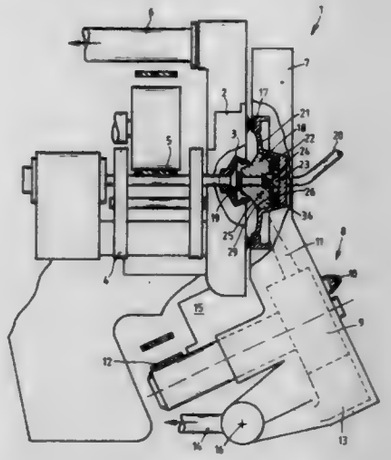
Hans Grecksch, Mönchengladbach; Lothar Winzen, Erkelenz; Brigitte Riede, Mönchengladbach, and Wolfgang Radermacher, Wegberg, all of Germany, assignors to W. Schlafhorst AG & Co., Monchen-Gladbach, Germany

Filed May 1, 1997, Ser. No. 847,059

Claims priority, application Germany, May 2, 1996, 196 17 527.5

Int. Cl.[6] D01H *4/00*

U.S. Cl. 57—417 **10 Claims**



1. An open-end spinning device comprising a rotor housing having a forward side, the housing defining a forward opening at the forward side thereof, a spinning rotor rotatably disposed in the forward opening of the rotor housing for driven rotation, a fiber conduit plate for closing the forward opening of the rotor housing, a conduit plate adapter having an opening for delivering fibers to the rotor and a nozzle for take-off of yarn from the rotor, and a fastening arrangement releasably affixing the conduit plate adapter to the fiber conduit plate for selective exchangability of the conduit plate adapter, the fastening arrangement comprising a threaded connection and a magnetic coupling between the fiber conduit plate and the conduit adapter.

5,794,431

EXHAUST RECIRCULATION TYPE COMBINED PLANT

Motoaki Utamura; Shinichi Hoizumi; Yasushi Takeda; Toshihiko Sasaki; Hideaki Komatsu; Seiichi Kirikami; Takeshi Suzumura; Tetsuo Sasada; Takashi Ikeguchi, and Shigehisa Sugita, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 274,425, Jul. 13, 1994, abandoned. This application Dec. 6, 1995, Ser. No. 568,176

Claims priority, application Japan, Jul. 14, 1993, 5-173940

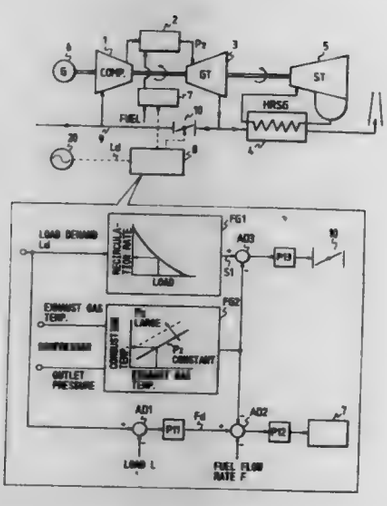
Int. Cl.[6] F02C *6/18;7/00*

U.S. Cl. 60—39.03 **5 Claims**

1. A thermal power plant, comprising:

a compressor for compressing gas;

a combustor for mixing said compressed gas with fuel and for burning the mixture;



a gas turbine connected to said combustor, and being arranged to be driven by the burned mixture;

a generator connected to said gas turbine and being arranged to be driven thereby; and

recirculation means for recirculating at least some of the exhaust gas of the gas turbine to the compressor;

characterized in that:

the recirculation means has control means for controlling the amount of exhaust gas recirculated to the compressor at a partial load condition of the thermal Dower plant in dependence on at least one of:

(a) the load of the generator;

(b) the rate of the flow of fuel to the combustor; and

(c) the load demand of an external system powered by the generator;

in order to maintain a temperature of the gas turbine exhaust gas or a temperature of the burned mixture at the inlet of the gas turbine at a constant level.

5,794,432

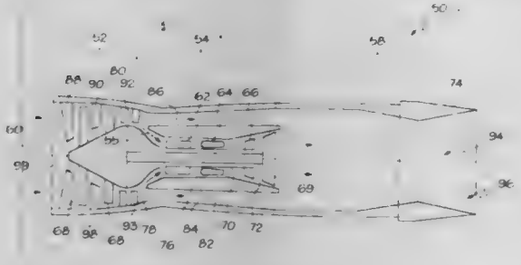
VARIABLE PRESSURE AND VARIABLE AIR FLOW TURBOFAN ENGINES

Donald K. Dunbar, Sharonville; Marlen L. Miller, Mainville, and George L. Converse, Cincinnati, all of Ohio, assignors to Diversitech, Inc., Cincinnati, Ohio

Filed Aug. 27, 1996, Ser. No. 703,851

Int. Cl.° F02K *3/02*

U.S. Cl. 60—204 **28 Claims**



1. A variable cycle gas turbine engine, comprising:

a fan assembly having a flow path comprising:

(a) an inlet;

(b) an exit;

(c) a plurality of variable pitch inlet guide vanes disposed adjacent said inlet;

(d) a plurality of variable pitch outlet guide vanes disposed adjacent said outlet;

(e) a plurality of fan blades for imparting kinetic energy to the air passing through said fan assembly during use, said plurality of fan blades being arranged in at least a first row and a second row, said first row being disposed adjacent to and downstream of said variable pitch inlet guide vanes and said second row being disposed adjacent to and upstream of said variable pitch outlet guide vanes;

(f) a plurality of variable pitch stator vanes disposed between said first and second rows of fan blades; and

(g) said flow path sized to accommodate a maximum air flow there through and a maximum pressure ratio there across during operation at a fan speed and a stall margin;

a single fan bypass duct in air flow communication with said fan assembly and disposed downstream thereof;

a core engine in air flow communication with said fan assembly and disposed downstream thereof, said core engine having a compressor, a first turbine assembly downstream of said compressor, a first shaft connecting said first turbine assembly to said compressor whereby said compressor is driven by said first turbine assembly, and a combustor disposed between said compressor and said first turbine assembly;

a second turbine assembly in air flow communication with said core engine and disposed downstream thereof, said second turbine rotatably connected to said fan assembly by a second shaft, said fan blades being rotatably driven by said second turbine assembly;

said flow path sized to accommodate a first operating point at said fan speed, said first operating point having about said maximum air flow through said fan assembly at a pressure ratio across said fan assembly substantially less than said maximum pressure ratio;

said flow path sized to accommodate a second operating point at said fan speed and about said predetermined stall margin, said second operating point having about said maximum pressure ratio across said fan assembly at an air flow through said fan assembly substantially less than said maximum air flow;

a variable area exhaust nozzle disposed downstream of said second turbine assembly and in air flow communication with said fan bypass duct and said second turbine assembly, said variable area exhaust nozzle adapted to expand said air flows to the atmosphere during operation; and

wherein said variable pitch vanes are adapted to regulate transition of the engine operation between said first operating point and said second operating point.

5,794,433

THRUST REVERSER DOOR SIDE FILLERS

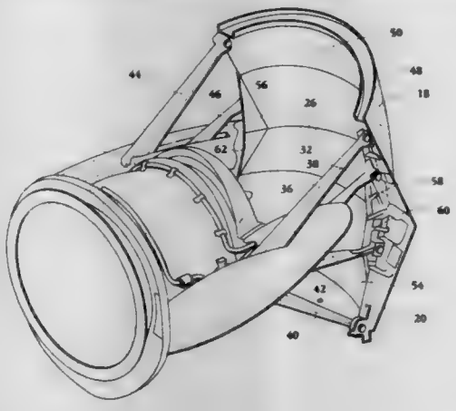
Fred H. Peters, and Thomas J. Jannetta, both of Tulsa, Okla., assignors to The Nordam Group, Inc., Tulsa, Okla.

Filed Jun. 18, 1996, Ser. No. 665,743

Int. Cl.° F02K *3/02*

U.S. Cl. 60—226.2 **6 Claims**

1. For use with an aircraft engine nacelle, the engine having a



nozzle through which thrust producing engine exhaust gases pass, an improved target-type thrust reverser system comprising:

a first door having substantially the shape of a segment of a hollow frusto-conical member having inner and outer sur-

faces, having opposed longitudinal edges that taper towards each other and having a forward and a rearward edge;

a second door shaped substantially as said first door and having inner and outer surfaces, having opposed longitudinal edges and having a forward and a rearward edge;

linkage arms pivotally supporting each of said first and second doors, the doors being translatable between stowed and deployed positions, the exterior surfaces of said doors in their stowed positions forming a part of the exterior surface of the engine nacelle and when in their deployed positions the said rearward edges of said first and second doors abutting and the doors longitudinal edges intercepting each other in opposed obtuse angles;

the inner surfaces of said doors forming a generally concave exhaust gas intercepting target that diverts exhaust gases from said nozzle in directions having reverse thrust force tangents; and

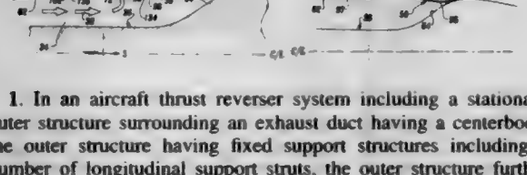
a pair of side filler panels attached to and functioning integrally with each said door, a filler panel being positioned at the junction of each of said longitudinal edges and said rearward edges of each said door, each side filler panel conforming with said inner surface of the door to which it is attached to thereby enlarge said concave exhaust gas intercepting target.

5,794,434

AIRCRAFT THRUST REVERSER SYSTEM WITH LINEARLY TRANSLATING INNER AND OUTER DOORS

Imre A. Szupkay, Othello, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 9, 1996, Ser. No. 727,952
Int. Cl.[6] F02K *3/02*
U.S. Cl. 60—226.2 **17 Claims**



1. In an aircraft thrust reverser system including a stationary outer structure surrounding an exhaust duct having a centerbody, the outer structure having fixed support structures including a number of longitudinal support struts, the outer structure further including a number of reverse thrust airflow ducts containing cascades located circumferentially between the longitudinal support struts, the reverser thrust airflow ducts for connecting the exhaust duct with the ambient atmosphere, the improvement comprising:

(a) a plurality of outer doors for closing the reverse thrust airflow ducts which contain the cascades to the atmosphere, each outer door having open and closed positions, the outer door open and closed positions being oriented parallel to one another;

(b) a single cylindrical inner door for closing the reverse thrust airflow ducts at the exhaust duct, the inner door having open and closed positions, the inner door including an inboard surface; in the open position the inboard surface contacting the centerbody to block airflow through the exhaust duct; and

(c) an actuation system for moving the inner and outer doors between their open and closed positions; the actuation system comprising:

(i) first actuators connected between the fixed support structures and the outer doors, the first actuators being oriented in a longitudinal direction; and

(ii) second actuators connected between the fixed support structures and the inner door, the second actuators being oriented in a longitudinal direction; the first and second actuators being arranged to cause the inner and outer doors to translate linearly fore and aft without rotation in going between their open and closed positions.

7. In an aircraft thrust reverser system including a stationary outer structure surrounding an exhaust duct having a centerbody, the outer structure having fixed support structures including a number of longitudinal support struts, the outer structure further including a number of reverse thrust airflow ducts containing cascades located circumferentially between the longitudinal support struts, the reverser thrust airflow ducts for connecting the exhaust duct with the ambient atmosphere, the improvement comprising:

(a) a number of outer doors for closing the reverse thrust airflow ducts which contain the cascades to the atmosphere, each outer door having open and closed positions;

(b) a single cylindrical inner door for closing the reverse thrust airflow ducts at the exhaust duct, the inner door having open and closed positions, the inner door including an inboard surface; in the open position the inboard surface contacting the centerbody to block airflow through the exhaust duct;

(c) a bridging member interconnected between the inner door and the outer doors, movement of inner door causing simultaneous like movement of the outer door; and

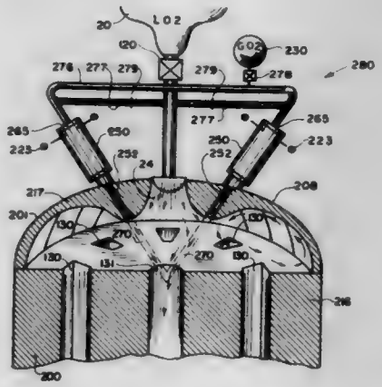
(d) an actuation system for moving the inner and outer doors between their open and closed positions; the actuation system comprising a number of actuators connected between the fixed support structures and the inner door, the actuators being oriented in a longitudinal direction; wherein the inner door and outer doors are translated by the actuators linearly fore and aft without rotation in going between their open and closed positions.

5,794,435

STABLE-COMBUSTION OXIDIZER VAPORIZER FOR HYBRID ROCKETS

H. Stephen Jones, Lacombe, La., assignor to Lockhhed Martin Corporation, Bethesda, Md.

Filed Feb. 7, 1996, Ser. No. 597,883
Int. Cl.[6] F02K *9/28*
U.S. Cl. 60—251 **27 Claims**



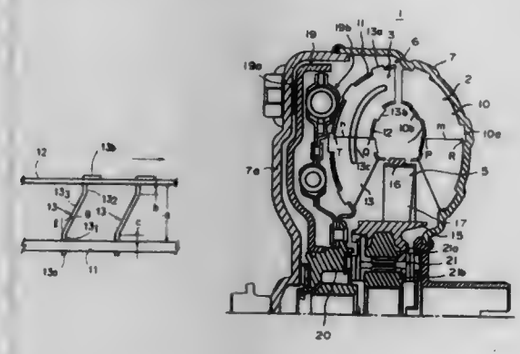
11. Apparatus including a vaporization system for a rocket, the rocket comprising a first fluid propellant component and a second propellant component, wherein the second propellant component is in a casing, and the vaporization system comprises: a first hybrid heater having combustion products when ignited, the hybrid heater being positioned such that the combustion products of the hybrid heater are directed into the casing of the second propellant component when the hybrid heater is ignited for vaporization of substantially all the first fluid propellant component; and means for igniting the hybrid heater.

5,794,436

HYDRAULIC POWER TRANSMISSION

Koji Maeda, Anjo, Japan, assignor to Aisin AW Co., Ltd., Japan

Filed Jun. 5, 1996, Ser. No. 660,662
Claims priority, application Japan, Jun. 5, 1995, 7-138055
Int. Cl.[6] F16D *33/00*
U.S. Cl. 60—367 **8 Claims**



1. A hydraulic power transmission for transmitting power comprising a pump impeller and a turbine runner for transmitting power by circulating a fluid between said pump impeller and a turbine runner; said pump impeller and a turbine runner each having a shell, a core and multiple sheet-like blades connected to said shell and said core; wherein:

said sheet-like blades in at least one of said pump impeller and a turbine runner each have a first connecting part connected to said shell and a second connecting part connected to said core and a middle part between these connecting parts, and

said middle part has a first side connected to said first connecting part, a second side connected to said second connecting part, and is inclined at a predetermined angle to a line perpendicular to said shell and said core; and at least one of said first connecting part connected to said shell and said second connecting part connected to said core extends substantially perpendicular to said shell and said core.

5,794,437

REGENERATIVE ADAPTIVE FLUID MOTOR CONTROL

Robert Moshe Lisniansky, 8 Brighton 15-th St., Apt. 2J, Brooklyn, N.Y. 11235

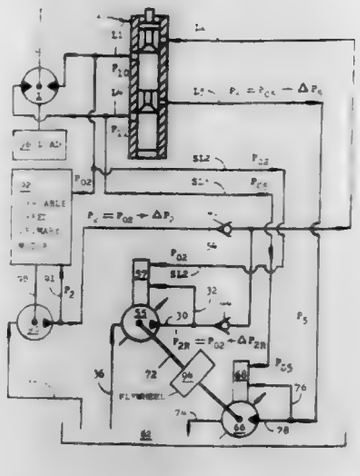
Continuation-in-part of Ser. No. 399,134, Mar. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 75,287, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 814,781, Dec. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 521,390, May 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 291,431, Dec. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 1,514, Jan. 7, 1987, abandoned, which is a division of Ser. No. 704,325, Feb. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 318,672, Nov. 5, 1981, abandoned. This application Sep. 18, 1996, Ser. No. 715,470
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—414 **21 Claims**

15. A regenerative adaptive fluid motor control method comprising the steps of:

constructing a fluid motor control system including fluid motor and load means, spool valve means, and fluid power means;

said fluid motor and load means including fluid motor means and motor load means and accumulating a load related energy;

said spool valve means having at least three fluid power lines including a motor line conducting a motor fluid flow to or a motor fluid flow from said fluid motor means of said fluid motor and load means, a supply power line, and an exhaust power line;



said fluid power means including energy accumulating means being implemented for powering at least one constant displacement pump generating a pressurized fluid stream being implemented for powering said supply power line of said spool valve means;

introducing an exhaust line energy recuperating means for varying a counterpressure rate in said exhaust power line and for recuperating said load related energy of said fluid motor and load means;

constructing an energy recuperating pressure drop feedback control system including said exhaust line energy recuperating means;

regulating an exhaust fluid pressure drop across said spool valve means by said energy recuperating pressure drop feedback control system by varying said counterpressure rate in said exhaust power line by said exhaust line energy recuperating means;

introducing a supply line pressure drop regulator bypassing said constant displacement pump;

constructing a supply line pressure drop feedback control system including said constant displacement pump and said supply line pressure drop regulator;

regulating a supply fluid pressure drop acorss said spool valve means by said supply line pressure drop feedback control system by varying a pressure rate of said pressurized fluid stream by said supply line pressure drop regulator;

constructing a load adaptive energy regenerating system including first load adaptive energy converting means, said energy accumulating means, and second load adaptive energy converting means;

said fist load adaptive energy converting means including said energy recuperating pressure drop feedback control system;

said second load adaptive energy converting means including said supply line pressure drop feedback control system;

prodividing a load adaptive regeneration of said load related energy of said fluid motor and load means by said load adaptive energy regenerating system by converting said load related energy through said first load adaptive energy converting means including said energy recuperating pressure drop feedback control system to a recuperated energy of said energy accumulating means, by storing said recuperated energy by said energy through said second load adaptive energy converting means including said supply line pressure drop feedback control system to a regenerated energy of said pressurized fluid stream being implemented for powering said supply power line of said spool valve means;

facilitating said load adaptive regeneration of said load related energy of said fluid pressure drop across said spool valve means and regulating said supply fluid pressure drop across said spool valve means by said energy recuperating pressure drop feedback control system and said supply line pressure drop feedback control system, respectively.

5,794,438

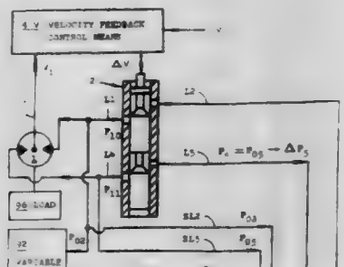
ADAPTIVE FLUID MOTOR FEEDBACK CONTROL

Robert Moshe Lisniansky, 8 Brighton 15-th St., Apt. 2J, Brooklyn, N.Y. 11235

Continuation-in-part of Ser. No. 401,133, Mar. 8, 1995, abandoned, which is a continuation-in-part of Ser. No. 75,287, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 814,781, Dec. 30, 1991, abandoned, which is a continuation-in-part of Ser. No. 521,390, May 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 291,431, Dec. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 1,514, Jan. 7, 1987, abandoned, which is a division of Ser. No. 704,325, Feb. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 318,672, Nov. 5, 1981, abandoned. This application Sep. 19, 1996, Ser. No. 716,474

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—327 **20 Claims**



1. A regenerative adaptive fluid motor control method comprising the steps of:

constructing a fluid motor control system including fluid motor and load means, spool valve means, and fluid power means;

said fluid motor and load means including fluid motor means and motor load means and accumulating a load related energy;

said spool valve means having at least three fluid power lines, including a motor line conducting a motor fluid flow to or a motor fluid flow from said fluid motor means of said fluid motor and load means, a supply power line, and an exhaust power line;

said fluid power means including energy accumulating means being implemented for powering a variable delivery fluid power supply generating a pressurized fluid stream being implemented for powering said supply power line of said spool valve means;

introducing an exhaust line energy recuperating means for varying a counterpressure rate in said exhaust power line and for recuperating said load related energy of said fluid motor and load means;

constructing an energy recuperating pressure drop feedback control system including said exhaust line energy recuperating means;

regulating an exhaust fluid pressure drop across said spool valve means by said energy recuperating pressure drop feedback control system by varying said counterpressure rate in said exhaust power line by said exhaust line energy recuperating means;

constructing a supply line pressure drop feedback control system including said variable delivery fluid power supply;

regulating a supply fluid pressure drop across said spool valve means by said supply line pressure drop feedback control system by varying a pressure rate of said pressurized fluid stream by a variable delivery means of said variable delivery fluid power supply;

constructing a load adaptive energy regenerating system including first load adaptive energy converting means, said energy accumulating means, and second load adaptive energy converting means;

said first load adaptive energy converting means including said energy recuperating pressure drop feedback control system;

said second load adaptive energy converting means including said supply line pressure drop feedback control system;

providing a load adaptive regeneration of said load related energy of said fluid motor and load means by said load adaptive energy regenerating system by converting said load related energy through said first load adaptive energy converting means including said energy recuperating pressure drop feedback control system to a recuperated energy of said energy accumulating means, by storing said recuperated energy by said energy accumulating means, and by converting said recuperated energy through said second load adaptive energy converting means including said supply line pressure drop feedback control system to a regenerated energy of said pressurized fluid stream being implemented for powering said supply power line of said spool valve means;

facilitating said load adaptive regeneration of said load related energy of said fluid motor and load means by regulating said exhaust fluid pressure drop across said spool valve means and regulating said supply fluid pressure drop across said spool valve means by said energy recuperating pressure drop feedback control system and said supply line pressure drop feedback control system, respectively.

5,794,439

REGENERATIVE ADAPTIVE FLUID CONTROL

Robert Moshe Lisniansky, 8 Brighton 15-th St., Apt. 2J, Brooklyn, N.Y. 11235

Continuation-in-part of Ser. No. 399,123, Mar. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 75,288, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 815,175, Dec. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 521,663, May 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 301,646, Jan. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 96,120, Sep. 14, 1987, abandoned, which is a division of Ser. No. 737,063, May 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 704,325, Feb. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 318,672, Nov. 5, 1981, abandoned. This application Sep. 18, 1996, Ser. No. 715,434

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—414 **25 Claims**

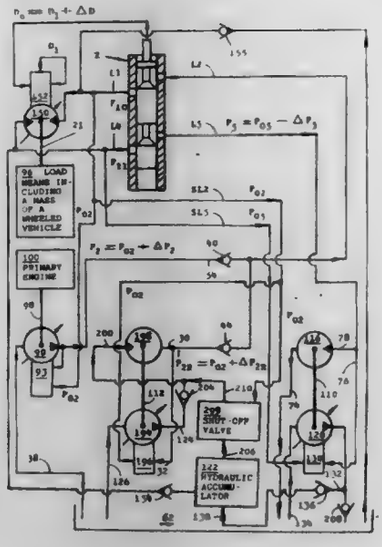
20. A regenerative adaptive fluid power transmission in a regenerative adaptive fluid motor control system containing a fluid motor control system includjng fluid motor means, spool valve, means and fluid power means;

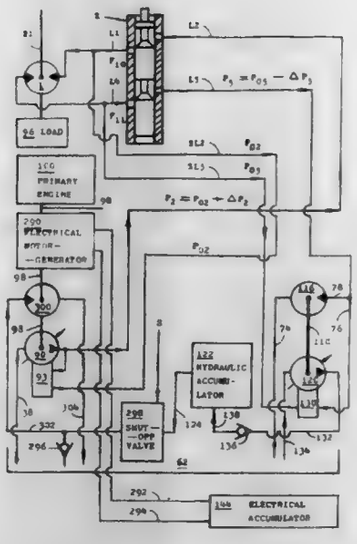
said spool valve means having at least three fluid power lines, including a motor line conducting a motor fluid flow to or a motor fluid flow from said fluid motor means, a supply power line conducting a supply fluid flow from said fluid power means, and an exhaust power line conducting an exhaust fluid flow to said fluid power means;

said regenerative adaptive fluid power transmission comprising:

an exhaust line energy recuperating means for varying a counterpressure rate in said exhaust power line and for recuperating an exhaust fluid energy of said exhaust fluid flow;

an energy recuperating pressure drop feedback control system including said exhaust line energy recuperating means and operable to regulate an exhaust fluid pressure drop across said spool valve means by varying said counterpressure rate in said exhaust power line by said exhaust line energy recuperating means;





a load adaptive energy regenerating system including first load adaptive energy converting means, energy accumulating means, and second load adaptive energy converting means;

said first load adaptive energy converting means including said energy recuperating pressure drop feedback control system and operable to convert said exhaust fluid energy of said exhaust fluid flow to a recuperated energy of said energy accumulating means for storing and subsequent use of said recuperated energy;

said second load adaptive energy converting means operable to convert said recuperated energy of said energy accumulating means to a regenerated energy reusable by said fluid motor means;

a primary variable delivery fluid power supply generating a primary pressurized fluid stream being implemented for powering said supply power line of said spool valve means;

a primary supply line pressure drop feedback control system including said primary variable delivery fluid power supply and operable to regulate a primary supply fluid pressure drop across said spool valve means by varying a primary pressure rate of said primary pressurized fluid stream by a primary variable delivery means of said primary variable delivery fluid power supply.

5,794,440

ADAPTIVE FLUID CONTROL

Robert Moshe Lisniansky, 8 Brighton 15-th St., Apt. 2J, Brooklyn, N.Y. 11235

Continuation-in-part of Ser. No. 399,772, Mar. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 75,288, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 815,175, Dec. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 521,663, May 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 301,646, Jan. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 96,120, Sep. 14, 1987, abandoned, which is a division of Ser. No. 737,063, May 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 704,325, Feb. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 318,672, Nov. 5, 1981, abandoned. This application Sep. 16, 1996, Ser. No. 710,323

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—414 **25 Claims**

19. A regenerative adaptive fluid motor control system comprising:

a fluid motor control system including fluid motor and load means, spool valve means, and fluid power means;

said fluid motor and load means including fluid motor means and motor load means and accumulating a load related energy;

said spool valve means having at least three fluid power lines, including a motor line conducting a motor fluid flow to or a motor fluid flow from said fluid motor means of said fluid motor and load means, a supply power line, and an exhaust power line;

said fluid power means including energy accumulating means being implemented for powering a variable delivery fluid power supply generating a pressurized fluid stream being implemented for powering said supply power line of said spool valve means;

an exhaust line energy recuperating means for varying a counterpressure rate in said exhaust power line and for recuperating said load related energy of said fluid motor and load means;

an energy recuperating pressure drop feedback control system including said exhaust line energy recuperating means and operable to regulate an exhaust fluid pressure drop across said spool valve means by varying said counterpressure rate in said exhaust power line by said exhaust line energy recuperating means;

a supply line pressure drop feedback control system including said variable delivery fluid power supply and operable to regulate a supply fluid pressure drop across said spool valve means by varying a pressure rate of said pressurized fluid stream by a variable delivery means of said variable delivery fluid power supply;

a load adaptive energy regenerating system including first load adaptive energy converting means, said energy accumulating means, and second load adaptive energy converting means;

said first load adaptive energy converting means including said energy recuperating pressure drop feedback control system and operable to convert said load related energy of said fluid motor and load means to a recuperated energy of said energy accumulating means for storing and subsequent use of said recuperated energy;

said second load adaptive energy converting means including said supply line pressure drop feedback control system and operable to convert said recuperated energy of said energy accumulating means to a regenerated energy of said pressurized fluid stream being implemented for powering said supply power line of said spool valve means.

5,794,441

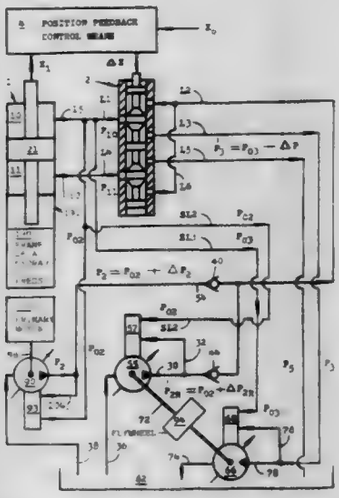
ADAPTIVE FLUID FEEDBACK CONTROL

Robert Moshe Lisniansky, 8 Brighton 15-th St., Apt. 2J, Brooklyn, N.Y. 11235

Continuation-in-part of Ser. No. 400,617, Mar. 8, 1995, abandoned, which is a continuation-in-part of Ser. No. 75,288, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 815,175, Dec. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 521,663, May 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 301,646, Jan. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 96,120, Sep. 14, 1987, abandoned, which is a division of Ser. No. 737,063, May 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 704,325, Feb. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 318,672, Nov. 5, 1981, abandoned. This application Sep. 19, 1996, Ser. No. 710,567

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—414 **12 Claims**



1. A regenerative adaptive fluid motor position feedback control method comprising the steps of:

constructing a fluid motor position feedback control system including fluid motor and load means, spool valve means, fluid power means, and position feedback control means;

said fluid motor and load means including a fluid motor means and motor load means and accumulating a load related energy;

said spool valve means having at least three fluid power lines including a motor line conducting a motor fluid flow to or a motor fluid flow from said fluid motor means of said fluid motor and load means, a power supply line, and a separate exhaust power line conducting only said motor fluid flow from said fluid motor means of said fluid motor and load means;

said fluid power means including a variable delivery fluid power supply generating a pressurized fluid stream being implemented for powering said supply power line of said spool valve means;

said position feedback control means measuring a motor position of said fluid motor means and producing a position feedback control error signal;

regulating said motor position of said fluid motor means by said fluid motor position feedback control system by modulating said spool valve means by said position feedback control error signal;

introducing an exhaust line energy recuperating means for varying a counterpressure rate in said separate exhaust power line and for recuperating said load related energy of said fluid motor and load means;

constructing an energy recuperating pressure drop feedback control system including said exhaust line energy recuperating means;

regulating an exhaust fluid pressure drop across said spool valve means by said energy recuperating pressure drop feedback control system by varying said counterpressure rate in said separate exhaust power line by said exhaust line energy recuperating means;

preventing a substantial dynamic operation interference between regulating said exhaust fluid pressure drop and regulating said motor position by providing a significant dynamic performance superiority for said energy recuperating pressure drop feedback control system against said fluid motor position feedback control system by providing either a significant frequency-response superiority or a significant final-transient-time superiority for said energy recuperating pressure drop feedback control system against said fluid motor position feedback control system;

constructing a load adaptive energy recuperating system including load adaptive energy converting means and energy accumulating means;

said load adaptive energy converting means including said energy recuperating pressure drop feedback control system;

providing a load adaptive recuperation of said load related energy of said fluid motor and load means by said load adaptive energy recuperating system by converting said load related energy through said load adaptive energy converting means including said energy recuperating pressure drop feedback control system to a recuperated energy of said energy accumulating means for storing and subsequent use of said recuperated energy;

facilitating said load adaptive recuperation of said load related energy of said fluid motor and load means by regulating said exhaust fluid pressure drop across said spool valve means by said energy recuperating pressure drop feedback control system;

constructing a supply line pressure drop feedback control system including said variable delivery fluid power supply;

regulating a supply fluid pressure drop across said spool valve means by said supply line pressure drop feedback control system by varying a pressure rate of said pressurized fluid stream by a variable delivery means of said variable delivery fluid power supply;

preventing a substantial dynamic operation interference between regulating said supply fluid pressure drop and regulating said motor position by providing a significant dynamic performance superiority for said supply line pressure drop feedback control system by providing either a significant frequency-response superiority or a significant final-transient-time superiority for said supply line pressure drop feedback control system against said fluid motor position feedback control system.

5,794,442

ADAPTIVE FLUID MOTOR CONTROL

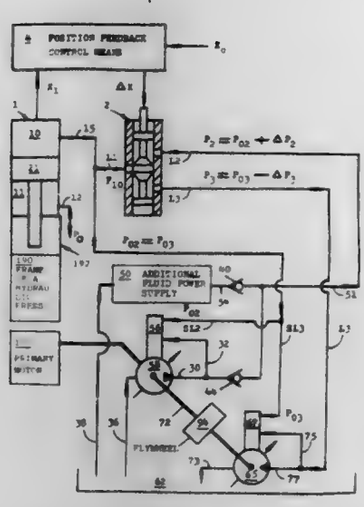
Robert Moshe Lisniansky, 8 Brighton 15-th St., Apt. 2J, Brooklyn, N.Y. 11235

Continuation-in-part of Ser. No. 400,617, Mar. 8, 1995, abandoned, which is a continuation-in-part of Ser. No. 75,288, Jun. 11, 1995, abandoned, which is a continuation-in-part of Ser. No. 815,175, Dec. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 521,663, May 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 301,646, Jan. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 96,120, Sep. 14, 1987, abandoned, which is a division of Ser. No. 737,063, May 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 704,325, Feb. 13, 1985, abandoned, which is a continuation-in-part of Ser. No. 318,672, Nov. 5, 1981, abandoned. This application Oct. 2, 1996, Ser. No. 725,056

Int. Cl.[6] F16D *31/02*

U.S. Cl. 60—414 **17 Claims**

14. A regenerative adaptive fluid motor output feedback control system comprising:



a fluid motor output feedback control system including fluid motor and load means, spool valve means, fluid power means, and output feedback control means; said fluid motor and load means including fluid motor means and motor load means and accumulating a load related energy; said spool valve means having at least three fluid power lines including a motor line conducting a motor fluid flow to or a motor fluid flow from said fluid motor means of said fluid motor and load means, a supply power line, and an exhaust power line; said fluid power means including a variable delivery fluid power supply generating a pressurized fluid stream being implemented for powering said supply power line of said spool valve means; said output feedback control means measuring a motor output of said fluid motor means and producing an output feedback control error signal being implemented for modulating said spool valve means;

an exhaust line energy recuperating means for varying a counterpressure rate in said exhaust power line and for recuperating said load related energy of said fluid motor and load means;

an energy recuperating pressure drop feedback control system including said exhaust line energy recuperating means and operable to regulate an exhaust fluid pressure drop across said spool valve means by varying said counterpressure rate in said exhaust power line by said exhaust line energy recuperating means; said energy recuperating pressure drop feedback control system having a significant dynamic performance superiority against said fluid motor output feedback control system by having either a significant frequency-response superiority or a significant final-transient-time superiority against said fluid motor output feedback control system;

a load adaptive energy recuperating system including load adaptive energy converting means and energy accumulating means; said load adaptive energy converting means including said energy recuperating pressure drop feedback control system and operable to convert said load related energy of said fluid motor and load means to a recuperated energy of said energy accumulating means for storing and subsequent use of said recuperated energy;

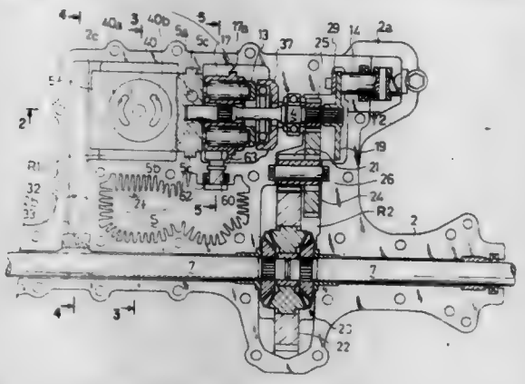
a supply line pressure drop feedback control system including said variable delivery fluid power supply and operable to regulate a supply fluid pressure drop across said spool valve means by varying a pressure rate of said pressurized fluid stream by a variable delivery means of said variable delivery fluid power supply; said supply line pressure drop feedback control system having a significant dynamic performance superiority against said fluid motor output feedback control system by having either a significant frequency-response superiority or a significant final-transient-time superiority against said fluid motor output feedback control system.

5,794,443

AXLE DRIVING APPARATUS

Hiroaki Shimizu, Amagasaki, Japan, assignor to Kanzaki Kokyukoki Mfg. Co., Ltd., Japan

Filed Sep. 25, 1996, Ser. No. 719,447
Claims priority, application Japan, Jan. 8, 1996, 8-001006
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—456 **6 Claims**



1. An axle driving apparatus comprising:

a housing;

a hydrostatic transmission disposed in said housing, said hydrostatic transmission including an input shaft;

an axle driven by said hydrostatic transmission disposed in said housing;

a cooling fan disposed on said input shaft; and

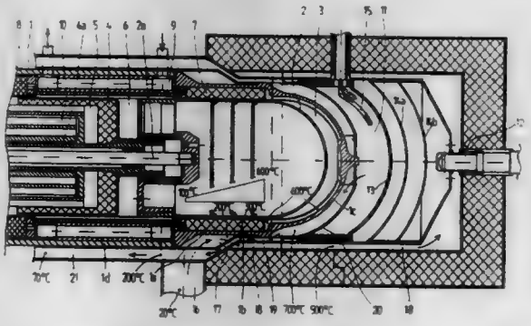
a through opening forming a dead space in said housing between said axle and said hydrostatic transmission.

5,794,444

METHOD FOR UTILIZING WASTE-GAS HEAT FROM HEAT-GENERATING AND REFRIGERATING MACHINES

Peter Hofbauer, Roesrath-Hoffnungstaal; Klaus Heikrodt, Krefeld; Rolf-Peter Strauss, Frankenberg, and Bernd Thomas, Aachen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, and Viesmann Werke GmbH & Co., Allendorf/Eder, both of Germany

PCT No. PCT/DE96/00787, § 371 Date Jan: 6, 1997, § 102(e) Date Jan. 6, 1997, PCT Pub. No. WO96/35086, PCT Pub. Date Nov. 7, 1996
PCT Filed May 6, 1996, Ser. No. 765,223
Claims priority, application Germany, May 5, 1995, 195 16 499.7
Int. Cl.[6] F01B *29/10*; F25B *9/00*; F02G *1/04*
U.S. Cl. 60—517 **4 Claims**



1. A method for utilizing the heat in the exhaust gas of the combustion chamber of a heating and refrigerating engine working on the basis of a regenerative cyclic gas process by preheating the combustion air supplied to the combustion chamber, wherein the process gas displaced from a hot working volume or supplied to this working volume flows through a regenerator arranged in the

region of a hot piston, wherein the combustion air flows around a pressure vessel wall that surrounds the cooler section of the regenerator while exhaust gas flows around the hotter section of the vessel wall surrounding the regenerator, and wherein at the same time heat is extracted from the exhaust gas by the combustion air that flows counter to the exhaust gas.

5,794,445

ARRANGEMENT FOR RETURN OF EXHAUST GASES IN SUPERCHARGED ENGINES WITH PARALLEL TURBINES

Stefan Dungner, Södertälje, Sweden, assignor to Scania CV AB, Sweden

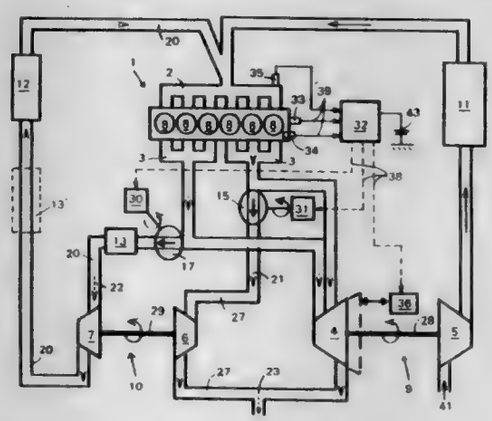
PCT No. PCT/SE95/01461, § 371 Date Jun. 5, 1997, § 102(e) Date Jun. 5, 1997, PCT Pub. No. WO96/18031, PCT Pub. Date Jun. 13, 1996

PCT Filed Dec. 6, 1995, Ser. No. 849,500

Claims priority, application Sweden, Dec. 8, 1994, 9404259

Int. Cl.[6] F02M *25/07*

U.S. Cl. 60—605.2 **18 Claims**



1. Arrangement for return of exhaust gases in a supercharged combustion engine, which arrangement comprises:

a first supercharger turbine;

an exhaust system with an exhaust manifold which receives exhaust gases from the cylinders of the combustion engine and leads the exhaust gases to the first supercharger turbine, the exhaust manifold comprising a first exhaust manifold and a second exhaust manifold, each of which receives exhaust gases from different cylinders of the combustion engine;

an inlet system for supply of inlet air to the cylinders of the combustion engine, the inlet system having a first supercharger compressor which is driven by the first supercharger turbine to pressurize the inlet air in the inlet system;

an exhaust gas duct which communicates with the first exhaust manifold and which leads a first partial exhaust gas flow to the first supercharger turbine;

an exhaust gas return duct which has a first end which communicates with the second exhaust manifold and a second end which communicates with the inlet system;

a second supercharger turbine arranged in parallel with the first supercharger turbine and situated in the exhaust gas duct, the second supercharger turbine being driven by the first partial exhaust gas flow; and

a second supercharger compressor arranged in the exhaust gas return duct and driven by the second supercharger turbine to deliver a second partial exhaust gas flow from the second exhaust manifold to the inlet system at a pressure increased by the second supercharger compressor.

5,794,446

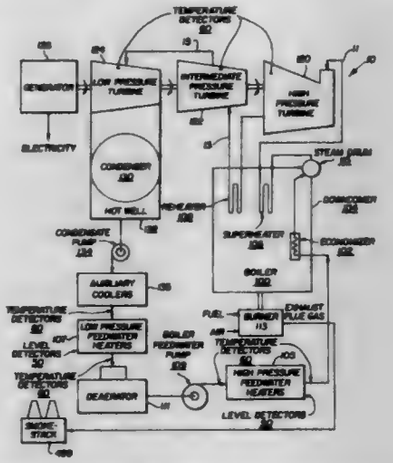
POWER PLANT PERFORMANCE MANAGEMENT SYSTEMS AND METHODS

James N. Earley, Rockdale; Jeffrey D. Hooper, Lexington; Billy H. Stigall, Thorndale, and John S. Stinson, Rockdale, all of Tex., assignors to Basic Resources, Inc., Dallas, Tex.

Filed Oct. 28, 1996, Ser. No. 738,932

Int. Cl.[6] F01K *13/02*

U.S. Cl. 60—646 **30 Claims**



25. A process of alerting the power plant operator of a hazardous condition, comprising:

(a) detecting a first temperature of feed water immediately before said feed water has entered heating equipment;

(b) detecting a second temperature of said feed water immediately after said feed water has exited said heating equipment;

(c) comparing said first temperature to said second temperature to generate a temperature difference between said first temperature and said second temperature;

(d) comparing said temperature difference with a preferred temperature difference to determine whether said temperature difference is within an approved range from said preferred temperature difference;

(e) generating a warning signal to alert said power plant operator if said temperature difference is not within said approved range; and

(f) taking corrective actions to keep said steam powered electric power generating station operating in such a manner that said temperature difference is within said approved range from said preferred temperature difference.

5,794,447

RANKINE CYCLE BOILER FEED VIA HYDROKINETIC AMPLIFIER

Mark Nicodemus, LeRoy, N.Y., assignor to Helios Research Corporation, Mumford, N.Y.

Filed Apr. 1, 1996, Ser. No. 627,243

Int. Cl.[6] F01K *9/00;* **F04F** *5/00*

U.S. Cl. 60—654 **44 Claims**

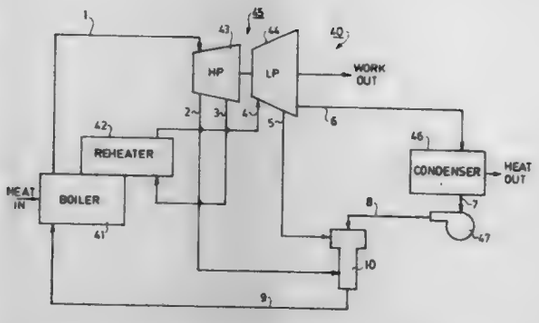
1. A Rankine cycle system including a boiler, a turbine, a condenser, and a hydrokinetic amplifier, said system comprising:

a. a condensate pump for pumping condensate into a liquid input of the hydrokinetic amplifier;

b. a motivating vapor line directing vapor from the turbine to a motivating vapor input nozzle of the hydrokinetic amplifier;

c. a heating vapor line drawn from a higher pressure region of the turbine than the motivating vapor for directing the heating vapor into merger with an accelerated stream of condensate in a merging region of the hydrokinetic amplifier downstream of an R area;

d. a throat region of the hydrokinetic amplifier arranged for receiving the heating vapor and condensate from the merging region; and



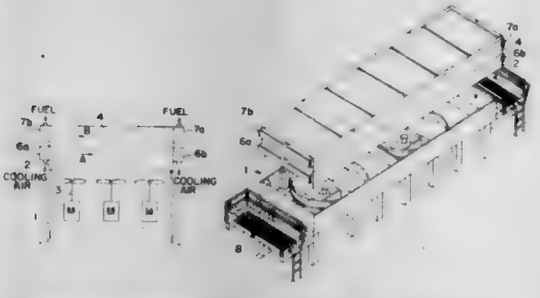
e. a diffuser downstream of the throat region for converting fluid velocity to pressure directed to the boiler.

5,794,448

GAS TURBINE FUEL HEATING APPARATUS

Masanori Fujioka; Teruaki Sakata, and Carmelo Osmena Dilao, all of Takasago, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 628,301
Claims priority, application Japan, Apr. 14, 1995, 7-089139
Int. Cl.[6] F02C *7/08*
U.S. Cl. 60—736 **12 Claims**



1. A fuel heating apparatus for a gas turbine comprising:

an air cooler for cooling turbine cooling air, said air cooler having a refrigerant air entrance side and a refrigerant air exit side; and

a fuel heater for heating fuel flowing through said fuel heater, said fuel heater being provided on said air cooler at said refrigerant air exit side.

5,794,449

DRY LOW EMISSION COMBUSTOR FOR GAS TURBINE ENGINES

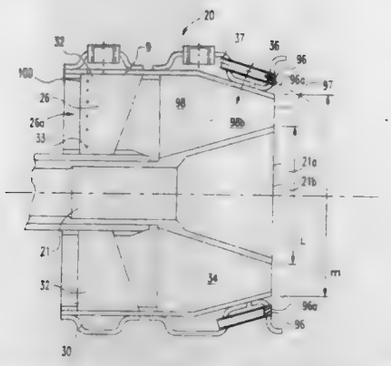
Mohan K. Razdan, Indianapolis; Jacob T. McLeroy, Franklin, and Duane A. Smith, Carmel, all of Ind., assignors to Allison Engine Company, Inc., Indianapolis, Ind.

Division of Ser. No. 462,511, Jun. 5, 1995. This application Mar. 28, 1997, Ser. No. 821,361
Int. Cl.[6] F02C *1/00*
U.S. Cl. 60—737 **13 Claims**

1. A combustor assembly for receiving a flow of fuel from an external source and a flow of air from a compressor, comprising:

a combustion housing having an upstream end, a downstream end, and a combustion barrel disposed within said combustion housing; and

a premix dome having a downstream end connected to the upstream end of said combustion housing for receiving and substantially premixing the fuel and air prior to delivery to said upstream end of said combustion housing, said premix dome comprising:



a centerbody extending longitudinally through said premix dome;

a vaned swirler having an inlet and an outlet, said vaned swirler positioned around said centerbody for turning and mixing the fuel and air passing through said premix dome; and

a premix chamber located adjacent said swirler, positioned around said centerbody and defining therebetween a cavity having a converging portion for accelerating the flow of fuel and air passing through said premix dome to said upstream end of said combustion housing to inhibit flashback into said premix dome;

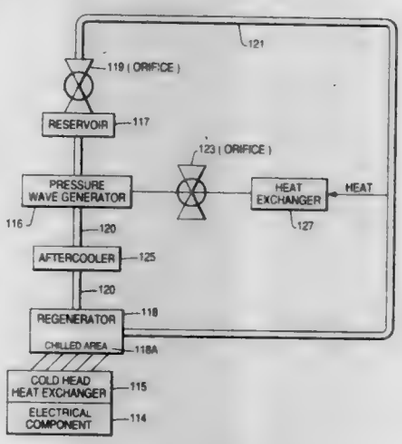
said centerbody further including a root diameter measured adjacent said outlet of said vaned swirler, a tip located adjacent said downstream end of said premix dome, and a widening portion downstream of said outlet of said vaned swirler, said widening portion having a maximum diameter greater than said root diameter for minimizing disparities in temperatures in said combustion barrel by enlarging the radius of the annulus through which the premixed flow exits said premix chamber and thereby spreading out the air and fuel mixture entering said combustion barrel.

5,794,450

REMOTELY LOCATED PULSE TUBE FOR COOLING ELECTRONICS

Arthur Ray Alexander, Valley Center, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 3, 1997, Ser. No. 778,931
Int. Cl.[6] F25B *9/00*
U.S. Cl. 62—6 **19 Claims**



1. An apparatus for cooling at least one electrical component, comprising:

a pressure wave generator for delivering working fluid pulses characterizable by a mass flow and a pressure to a regenerator remote from the pressure wave generator, the regenerator

comprising a chilled area thermally coupled to the electrical component formed when the working fluid pulses pass through the regenerator;

a conduit for transmitting the working fluid pulses to the regenerator, communicatively coupled to the pressure wave generator and the regenerator;

a pulse tube, coupled to the regenerator for communicating the working fluid pulses to a reservoir supplying working fluid to the pressure wave generator; and

an orifice coupled between the reservoir and the pulse tube wherein the orifice is tuned to control a phase relationship between the mass flow and pressure of the working fluid in the regenerator.

5,794,451

METHOD FOR CONTROLLING AN ICE-EJECTING MODE OF AN ICE MAKER

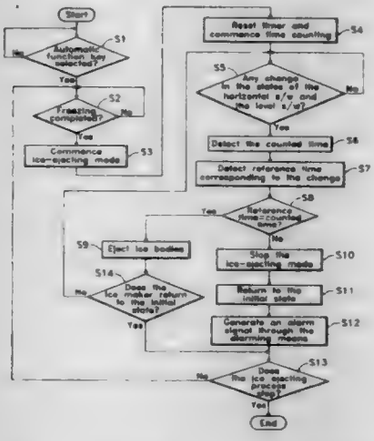
Kun-bin Lee, Seoul, and Sung-ho Cho, Kyonggi-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 10, 1997, Ser. No. 872,064

Claims priority, application Rep. of Korea, Jun. 10, 1996, 96-20576

Int. Cl.[6] F25C *5/06*

U.S. Cl. 62—71 **9 Claims**



1. A method of controlling an ice making mechanism which includes a tray for receiving water to be frozen into ice bodies, a sensor for determining whether the water is frozen and to initiate an ice-ejecting mode, a motor for rotating the tray to perform the ice-ejecting mode, a switching mechanism for indicating a state of the ice-ejecting mode, and a switch-actuating structure driven by the motor for changing a state of the switching mechanism during the ice-ejecting mode, the method comprising the steps of:

A) initiating an ice ejecting mode;

B) counting a time period beginning from step A;

C) determining whether the state of the switching mechanism has been changed;

D) stopping the ice-ejecting mode when a state of the switching mechanism has not changed within a reference time period; and

E) generating an alarm signal indicating to a user that the ice-ejecting mode has been stopped.

5,794,452

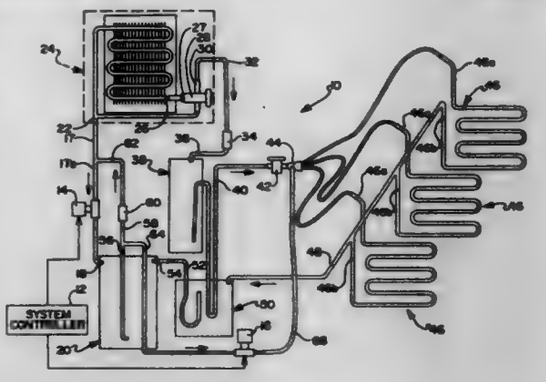
HOT GAS BYPASS SYSTEM FOR AN ICEMAKER

William J. Black; Matthew W. Allison, both of Gurnee; Melvin A. Baker, Grayslake, and Gary L. Van Riper, Wildwood, all of Ill., assignors to Scotsman Group, Inc., Vernon Hills, Ill.

Filed May 1, 1997, Ser. No. 846,860

Int. Cl.[6] F25C *5/10*

U.S. Cl. 62—73 **12 Claims**



9. An icemaker comprising:

a condenser having an inlet;

a compressor having a discharge port and at least one input port for supplying hot vaporous refrigerant from said discharge port to said inlet of said condenser;

at least one evaporator having an inlet for receiving refrigerant from said condenser, said refrigerant being used to chill said evaporator;

a hot gas valve disposed between said discharge port of said compressor and said inlet of said evaporator, said hot gas valve being opened during a harvest cycle of said icemaker to cause said hot vaporous refrigerant to be injected into said evaporator during said harvest cycle;

a conduit in communication with said inlet of said condenser and said input port of said compressor;

a harvest bypass valve disposed in said conduit, said harvest bypass valve being opened to permit the flow of said hot vaporous refrigerant from said condenser back into said input port of said compressor during said harvest cycle to thereby supply an additional quantity of said hot vaporous refrigerant to said compressor to assist said compressor in executing said harvest cycle.

5,794,453

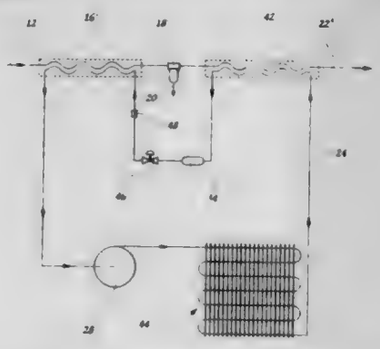
APPARATUS AND METHOD FOR REMOVING CONDENSABLE MATERIAL FROM A GAS

James W. Barnwell, New Castle, Del., assignor to Flair Corporation, Ocala, Fla.

Filed Jul. 22, 1996, Ser. No. 681,328

Int. Cl.[6] B01D *53/00*; **F25D** *17/06*

U.S. Cl. 62—79 **23 Claims**



1. An apparatus for removing condensable material from a gas comprising:

a flow through gas system which includes in series a chiller for cooling said gas and condensing said condensable material from said gas, a separator for separating said condensed material from said gas and draining away said condensate, and a reheater for reheating said gas;

a closed refrigerant system which passes a predetermined charge of refrigerant in series through said chiller to cool said gas by absorbing heat from said gas and evaporating, through a compression unit in which said refrigerant is compressed and an amount of energy is added thereto, then through an auxiliary condenser sized to remove from said refrigerant the energy added thereto by said compression unit at no load conditions, and then through said reheater and back to said chiller; and

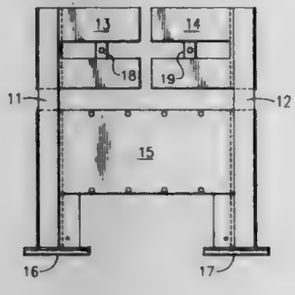
wherein said predetermined charge of refrigerant is sized to cause said refrigerant exiting said reheater to be substantially in a gaseous state when there is no flow of gas and to cause the pressure of said refrigerant exiting said reheater to generally decrease as said flow of gas through said reheater increases.

5,794,454

COOLING DEVICE FOR HARD TO ACCESS NON-COPLANAR CIRCUIT CHIPS

Willard Stephen Harris, Red Hook; Randall Gail Kemink, Poughkeepsie; William David McClafferty, New Paltz, and Roger Ray Schmidt, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1996, Ser. No. 760,618
Int. Cl.[6] F25D *23/12;* **F28D** *15/00*
U.S. Cl. 62—259.2 **8 Claims**



1. A cooling device comprising:

a pair of heat pipes;

a thermally conductive bridging plate to which said heat pipes are attached in a fixed spaced-apart substantially parallel configuration, at least one of said heat pipes having a portion thereof which extends beyond said bridging plate; and

at least one flexible flap thermal conductor attached to at least one of said heat pipes on a single edge of said flap and at a position along said extending heat pipe portion.

5,794,455

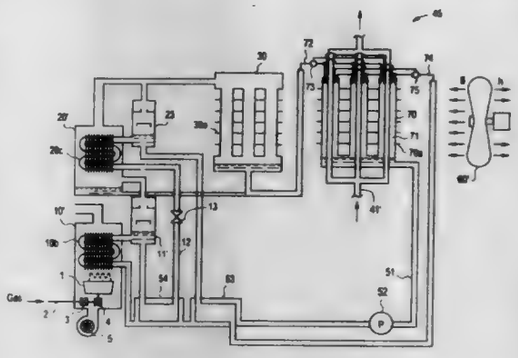
Patent Not Issued For This Number

5,794,456

ABSORPTION-TYPE AIR CONDITIONING APPARATUS HAVING FIN TUBE ABSORPTION LIQUID REGENERATORS

Katsusuke Ishiguro; Takehiro Sato, and Akira Maruyama, all of Aichi, Japan, assignors to Paloma Industries, Ltd., Aichi, Japan

Filed Jun. 18, 1997, Ser. No. 877,661
Claims priority, application Japan, Jul. 11, 1996, 8-203293
Int. Cl.[6] F25B *33/00*
U.S. Cl. 62—497 **10 Claims**



1. An absorption-type air conditioning apparatus, the apparatus comprising:

a first regenerator for heating a first absorption liquid which is a solution of a liquid coolant and an absorption medium, said first regenerator including a first fin-tube-type heat exchanger having a first fin tube in which the first absorption liquid is heated while flowing through the first fin tube, said first regenerator separating said first absorption liquid into a coolant vapor and a second absorption liquid which has a lower concentration of liquid coolant and a higher concentration of absorption medium than said first absorption liquid; and

a second regenerator, operating at a lower temperature than said first regenerator, for heating said second absorption liquid by using said coolant vapor produced in said first regenerator, said second regenerator including a second fin-tube-type heat exchanger having a second fin tube in which the second absorption liquid is heated while flowing through the second fin tube, said second regenerator separating said second absorption liquid into a coolant vapor and a third absorption liquid which has a lower concentration of liquid coolant and a higher concentration of absorption medium than said second absorption liquid.

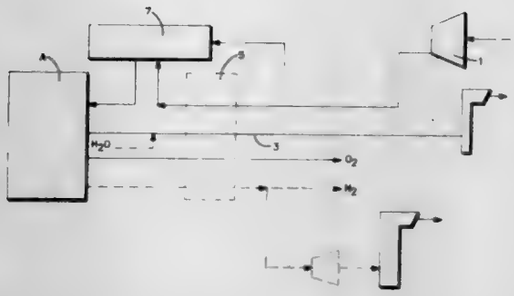
5,794,457

PROCESS AND INSTALLATION FOR THE SUPPLY OF AN APPARATUS FOR SEPARATING AIR

Didier Magnet, Vincennes; Emmanuel Garnier, Paris; Bernard Saulnier, Colombes, all of France, and Jean-Louis Girault, Liege, Belgium, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Apr. 8, 1997, Ser. No. 832,173
Claims priority, application France, Sep. 25, 1996, 96 11681
Int. Cl.[6] F25J *3/04*
U.S. Cl. 62—643 **10 Claims**

1. Process for the supply of air to a cryogenic air separation apparatus, comprising compressing air in an adiabatic compressor, and then supplying the thus-compressed air to a heat exchanger and then to an air separation apparatus, in which one of the air gases from the separation apparatus is reheated by the compressed air from the adiabatic compressor in said heat exchanger and is then sent to said air purification unit in which it serves for regen



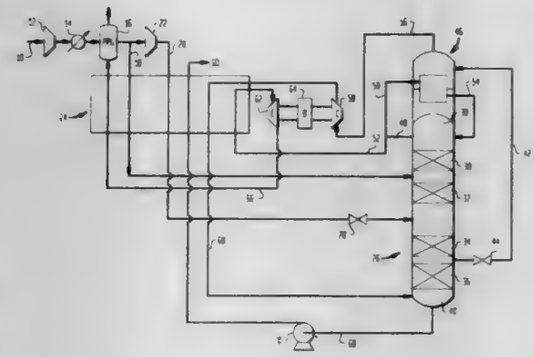
eration, and adding water to the air gas from the separation apparatus that is used for said regeneration.

5,794,458

METHOD AND APPARATUS FOR PRODUCING GASEOUS OXYGEN

Joseph P. Naumovitz, Lebanon; Joseph Straub, North Haledon, and Leighton B. Wilson, North Plainfield, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Jan. 30, 1997, Ser. No. 790,834
Int. Cl.[6] F25J *3/04*
U.S. Cl. 62—647 **10 Claims**



1. A method of making gaseous oxygen comprising:
forming a compressed and purified air stream;
fully cooling and then rectifying said compressed and purified air stream in a single column oxygen generator to produce a gaseous nitrogen rich tower overhead and a liquid oxygen rich column bottoms in top and bottom regions thereof, respectively;
extracting from said oxygen generator and valve expanding a liquid coolant stream having a nitrogen content greater than said liquid oxygen rich column bottoms;
withdrawing a tower overhead stream and dividing said tower overhead stream into first and second subsidiary streams;
condensing said first subsidiary stream against vaporizing said coolant stream to produce a vaporized coolant stream and column reflux;
partially heating said second subsidiary stream, expanding said second subsidiary stream with performance of work to form a refrigerant stream, and fully warming said refrigerant stream;
compressing said vaporized coolant stream, fully cooling said vaporized coolant stream, and reintroducing said vaporized coolant stream back into said single column oxygen generator;
using part of said work generated by expanding said second subsidiary stream to compress said vaporized coolant stream;
extracting a column bottoms stream, pumping said column bottoms stream to a pressure; and
using said column bottoms stream to form said gaseous oxygen.

5,794,459

JEWELRY ARTICLE ADAPTED FOR EXTENSION FROM EYEGLASSES

Patricia M. Ignatowski, 2125A S. 42nd St., Milwaukee, Wis. 53215

Continuation-in-part of Ser. No. 637,195, Apr. 8, 1996, Pat. No. 5,675,988. This application Jul. 26, 1996, Ser. No. 688,037
Int. Cl.[6] A44C *25/00*
U.S. Cl. 63—38 **7 Claims**



1. An article of jewelry adapted for use with a temple arm of an eyeglass frame, the article of jewelry comprising:
a gripping member adapted to be removably attached onto the temple arm of the eyeglass frame;
a coupling member attached the gripping member;
at least one elongated decorative strand having one end attached to the coupling member; and
a releasable clasp attached onto the other end of said at least one elongated decorative strand for releasably attaching one or more jewelry accessories;
wherein the gripping member, coupling member, elongated decorative strand and releasable clasp form a unitary jewelry article to support releasable attachment of said one or more jewelry accessories, the unitary jewelry article being removably attachable onto the temple arm as an extension of the eyeglass frame.

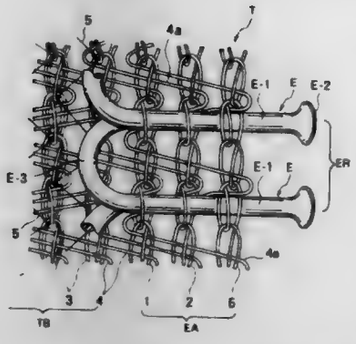
5,794,460

KNIT SLIDE FASTENER STRINGER

Yoshio Matsuda; Hidenobu Kato, and Yoshito Ikeguchi, all of Toyama-ken, Japan, assignors to YKK Corporation, Tokyo, Japan

Filed Jun. 20, 1997, Ser. No. 879,818
Claims priority, application Japan, Jun. 24, 1996, 8-163381
Int. Cl.[6] D04B *21/20;21/14;* **A44B** *19/56*
U.S. Cl. 66—193 **6 Claims**

1. A knit slide fastener stringer comprising:
(a) a fastener tape knit in a warp-knit ground structure and having along one longitudinal edge an element-attaching marginal portion;
(b) a continuous fastener element row knitted in and along said element-attaching marginal portion of said fastener tape and secured by anchoring chain stitch yarns of at least two wales simultaneously with the knitting of said fastener tape; and
(c) a number of additional anchoring knitting yarns disposed between said anchoring chain stitch yarns and successive coupling head portions of said fastener element row and extending warpwise over said fastener element row, part of said anchoring knitting yarns and the ground structure of the tape being connected by a part of the knitting yarns extending



weftwise substantially diagonally in gaps between adjacent fastener elements of said fastener element row from the upper side to the lower side to connect said anchoring knitting yarns with said ground structure of said fastener tape.

5,794,461

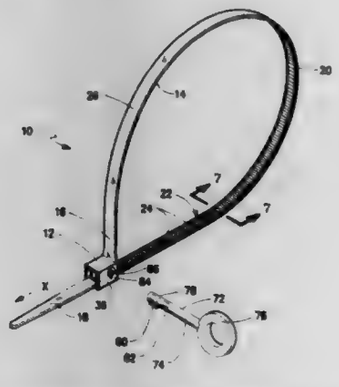
KEY OPERABLE RESTRAINING DEVICE

Jerry R. Smith, Littleton, Colo., assignor to The McKinley Group, Golden, Colo.

Filed Oct. 13, 1995, Ser. No. 543,199

Int. Cl.[6] E05B *75/00*

U.S. Cl. 70—16 **10 Claims**



1. A key operated restraining device adapted to create a securing loop of adjustable dimension, comprising:

(a) a locking head portion having an interior;

(b) an elongated strap portion having a proximal end connected to said head portion and a distal free end, said strap portion including a plurality of tooth structures disposed on a first surface thereof, said strap portion having sufficient length such that said free distal end is insertable through said locking head portion thereby to form a securing loop of adjustable dimension;

(c) a support block disposed in the interior of said head portion and terminating in spaced relation to an interior wall surface thereof; and

(d) a pawl member disposed in the interior of said head portion and terminating in spaced relation to said wall surface, said pawl member including a locking structure disposed thereon, said pawl member, said support block and said wall forming a slideway sized for close-fitting mated engagement with said strap portion, said strap portion being slideably movable in a first direction to reduce the dimension of said securing loop and in a second direction to expand the dimension of said securing loop, said pawl member connected to said locking head by a resilient hinge structure biasing said pawl member into a locking position wherein said locking structure is operative to lockably engage said tooth structures and a release position wherein said locking structure is disengaged from said tooth structures, said pawl member operative when in the locking position to permit ratcheting movement of said strap in the first direction but to prevent movement of said strap in the second direction, said pawl member and said support block configured to form a keyway therebetween sized and adapted to receive said key therein, said pawl member constructed such that rotation of said key in a first rotational direction moves said pawl element from the locking position to the release position.

5,794,462

DISABLING DEVICE

Duncan Andrew Steele, and David Graham Silvester, both of Billingshurst, England, assignors to Trailer Lock Development Limited, Billingshurst, United Kingdom

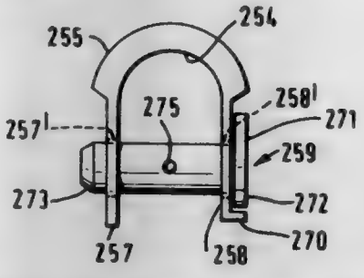
PCT No. PCT/GB93/02545, § 371 Date Aug. 11, 1995, § 102(e) Date Aug. 11, 1995, PCT Pub. No. WO94/13500, PCT Pub. Date Jun. 23, 1994

PCT Filed Dec. 14, 1993, Ser. No. 454,300

Claims priority, application United Kingdom, Dec. 16, 1992, 9226245; Jun. 17, 1993, 9312496; Sep. 9, 1993, 9318683; Nov. 20, 1993, 9323910

Int. Cl.[6] G05G *5/00*

U.S. Cl. 70—18 **4 Claims**



1. A disabling device lockable to a telescopic actuator for disabling it, the telescopic actuator having a cylinder and a rod, the rod being telescopically disposed within the cylinder, the rod having a rod end fitting at an end opposite the cylinder, the device comprising:

a U-shaped channel member sized to fit between the cylinder and the rod end fitting, the channel member having a base of the U and two limbs, each limb having an aperture, the two apertures being opposite each other; and

a padlock positioned between the limbs of the channel member, the padlock for locking the channel member to the rod of the actuator, whereby the actuator cannot be stroked with the channel member fitted due to interposition of the channel member between the cylinder and the rod end fitting;

wherein:

the device comprises a removable pin having a stem and a head, the stem being sized to engage in the apertures in the U-shaped channel member limbs and to extend through the limbs while engaged in the apertures, the stem having a transverse bore for receiving the padlock between the U-shaped channel member limbs, and the head being too large to pass through the apertures;

the head of the pin and the limb against which it lies when the stem is engaged in the apertures are dimensioned to prevent rotation of the engaged pin so as to align the transverse bore along the length of the U-shaped channel member and thereby facilitate installation of the padlock in the transverse bore and so as to help prevent tampering with the device by preventing rotational movement of the padlock relative to the U-shaped channel member to prevent unauthorized removal of the padlock;

the pin is dimensioned to be locked in position while its stem extends through the limbs of the channel member, wherein the pin is locked in position by the padlock which is positioned between the limbs of the channel member, and

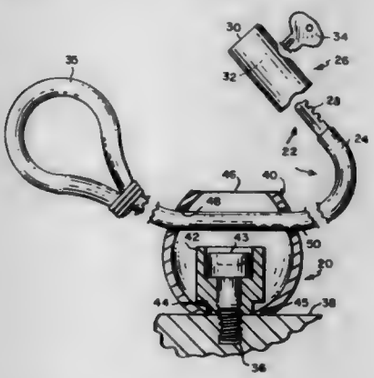
an end of the stem opposite from the head cannot be removed from the aperture it is engaged in and the channel member cannot be removed from the rod of the actuator.

5,794,463

TAMPER-PROOF ATTACHMENT FOR CABLE LOCKS AND THE LIKE

Cornelius McDaid, Dorchester, Mass., assignor to Kryptonite Corporation, Canton, Mass.

Filed Mar. 4, 1997, Ser. No. 811,476
Int. Cl.[6] E05B *73/00*
U.S. Cl. 70—18 **15 Claims**



1. A security attachment for connection to a portable article, said attachment comprising:

(a) a shell having concentric axial ports and opposed lateral ports;

(b) said concentric ports have different diameters, of which the smaller diameter port is to be positioned contiguously with said portable article and the larger diameter port is to be positioned remotely from said portable article;

(c) a collar within said shell;

(d) said collar being shouldered internally and externally to provide a stem of relatively small internal and external diameter, and a head of relatively large internal and external diameter;

(e) said collar fitting through said larger diameter port;

(f) said collar stem fitting through said smaller diameter port for tight contact with said article;

(g) the axial length of said collar stem being greater than the thickness of said shell in the vicinity of said article;

(h) the interior of said shell including a non-planar surface through which said smaller diameter port extends and which axially faces said collar head, and said collar head being of too great diameter to fit through said smaller diameter port and retaining said shell for free swiveling movement about said collar stem;

(i) a screw having a shank and a head;

(j) said shank being adapted to project through said collar and said smaller diameter port;

(k) said head being adapted to abut against said internal shoulder of said collar;

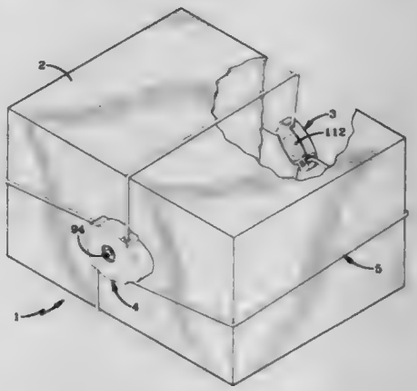
(l) said head having a central notch configured for reception of a tool.

5,794,464

UNIVERSAL WRAP SECURITY DEVICE

Lawrence R. Yeager, Uniontown; James T. Weisburn, Massillon; Christopher G. Gallagher, Akron; Ronald M Marsilio, Mogadore, and William G. Alford, Akron, all of Ohio, assignors to Alpha Enterprises, Inc., North Canton, Ohio

Continuation of Ser. No. 561,370, Nov. 21, 1995, Pat. No. 5,722,266. This application Nov. 25, 1997, Ser. No. 978,241
Int. Cl.[6] E05B *65/00*
U.S. Cl. 70—57 **18 Claims**



1. A security device adapted to be placed about an object to prevent said object from being opened, said device including:

cable means including first and second cables for placement about an object to be secured;

ratchet means connected to the cable means for tightening the cable means around the object;

a two-piece locking member including a base and a fastener, said base and fastener being connected to the cable means and releasably engaged with each other for releasably locking said cable means about the object; and

said first cable extending between and connected to the ratchet means and to the base of the locking member and the second cable extending between and connected to the ratchet means and the fastener of the locking member.

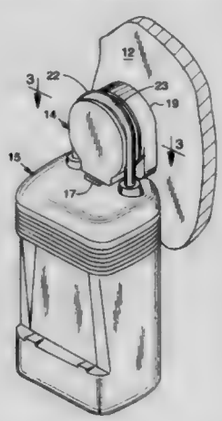
5,794,465

KEY LOCK BOX ASSEMBLY

Matthew S. Hill, Salem, Oreg., assignor to Supra Products, Inc., Salem, Oreg.

Filed Nov. 22, 1995, Ser. No. 561,921
Int. Cl.[6] E05B *65/48;67/00*
U.S. Cl. 70—63 **13 Claims**

4. A key box assembly for removably securing a key box to

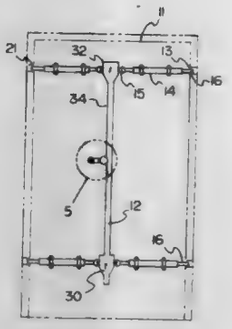


fixed structure, the key box having a lockable, U-shaped shackle, the assembly comprising:

a fastener;

a bracket, the bracket defining an aperture, wherein the fastener is inserted through the aperture to removably attach the bracket to the fixed structure;

a cap piece, having an elongated curved channel means for conforming to the inner curved surface of the shackle and a flat rear surface having a recess formed therein for slidably engaging the bracket, said elongated curved channel means lying in a plane perpendicular to said fastener; said cap piece is adapted to fit within the curved surface of the shackle to attach the key box to the cap piece whereby the key box cannot be removed from the fixed structure while the shackle of the key box is attached and locked to the cap piece.



5,794,466

KEY SAFE FOR HOUSING A KEY

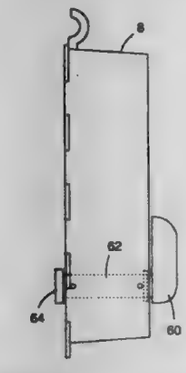
Robert Edward Hungerford, Renton, and John Frederick Brodel, Woodinville, both of Wash., assignors to Access Technology, Inc., Renton, Wash.

PCT No. PCT/US93/11540, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO94/12749, PCT Pub. Date Jun. 9, 1994

Continuation-in-part of Ser. No. 983,914, Dec. 1, 1992, abandoned, which is a continuation of Ser. No. 278,567, Jul. 21, 1994, Pat. No. 5,460,020. This PCT application Nov. 30, 1993, Ser. No. 436,321

Int. Cl.[6] E05B *65/52*

U.S. Cl. 70—63 **23 Claims**



1. A key safe comprising:

mortise access means for locking and unlocking a mortise lock, said mortise access means comprising a mortise actuator, and a mortise lever coupled to said mortise actuator by a mortise shaft;

an outer housing, the outer housing having walls defining an interior region, for enclosing said mortise lever within said interior region;

mounting means for mounting said outer housing to a surface;

opening means for permitting said outer housing to be moved from a closed position to an open position, thereby allowing access to said interior region;

electronic code entry means positioned on the exterior of said outer housing walls for permitting entry of key codes; and

activation means positioned in said interior region of said outer housing and responsive to said electronic code entry means for selectively releasing said mounting means and said opening means upon entry of said key codes.

5,794,467

SECURITY DOOR REPLACEMENT

Ronny E. Justice, 572 Harolds Branch Rd., Pikeville, Ky. 41501

Filed Apr. 29, 1997, Ser. No. 846,538

Int. Cl.[6] E05B *63/14*

U.S. Cl. 70—118 **7 Claims**

1. A security door replacement comprising:

a door member for mounting in a door frame having peripheral edges;

an elongated piston mounted in the interior of said door member, said piston being oriented substantially parallel to a longitudinal axis of said door member, said piston being mounted in a manner permitting longitudinal sliding movement of said piston in said door member, said piston having narrow portions and substantially wedge-shaped portions thereon wherein, the width of said piston is flared outwardly to form said wedge-shaped portions;

actuatable means for causing longitudinal sliding movement of said piston in said door member; and

locking arms mounted in the interior of said door member and extending laterally outward from said piston, each of said locking arms having an inside end and an outside end, said locking arms oriented perpendicular to said piston, said locking arms being mounted in a manner permitting movement of said locking arms in a lateral direction relative to said door member such that said outside end of each of said locking arms may move out through a respective aperture provided in said peripheral edges of said door member and through a respective aperture formed in said door frame, said inside end of each of said locking arms being positioned to interact with a respective one of said wedge-shaped portions of said piston such that sliding longitudinal motion of the piston results in lateral inward and outward motion of each of said locking arms, wherein actuation of said actuatable means produces selective outward movement of said outside end of each of said locking arms into engagement with and extension through a respective aperture formed in said door frame to thereby secure said door member in a closed position with respect to said door frame.

5,794,468

ANTI-THEFT STEERING WHEEL ASSEMBLY

Patrick Wai-Chung Leung, 1535 Ostler Court, North Vancouver, British Columbia, Canada, V7G 2P1

Filed Jun. 27, 1996, Ser. No. 672,088

Int. Cl.[6] B60R *25/02*

U.S. Cl. 70—209 **14 Claims**

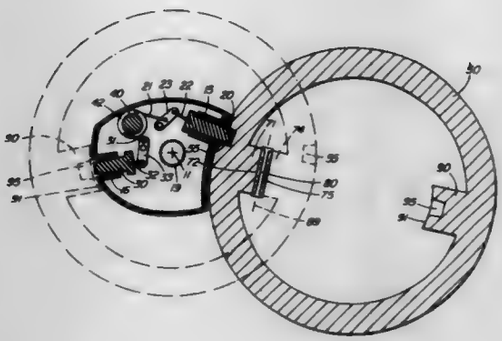
1. A steering wheel assembly for a vehicle, said assembly including:

(a) a hub;

(b) rim having a perimeter;

(c) means for pivotally connecting said rim with said hub for rotation of said rim relative to said hub about an axis of rotation disposed inwardly from said rim, said rim being rotatable about said axis between a first position permitting normal steerage of said vehicle and a second position impairing normal steerage of said vehicle; and,

(d) locking means operable when said rim is in said second position for releasably engaging and locking said rim in said



second position at a point of engagement at or near said perimeter.

5,794,469

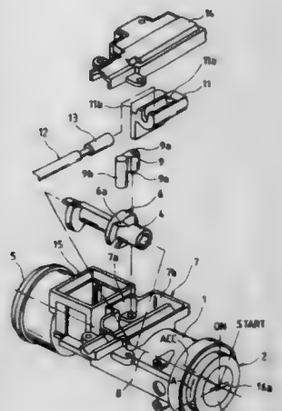
STEERING LOCK DEVICE

Noriyuki Suzuki, Aichi, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Sesakusho, Aichi, Japan

Continuation of Ser. No. 530,443, Sep. 19, 1995, abandoned, which is a continuation of Ser. No. 132,830, Oct. 7, 1993, abandoned. This application Aug. 8, 1997, Ser. No. 908,560
Claims priority, application Japan, Oct. 12, 1992, 4-070852 U

Int. Cl.[6] B60R 25/00

U.S. Cl. 70—252 5 Claims



1. A steering lock device comprising:
a key rotor in a housing, the key rotor being turnable between a locking position and operating positions with a key inserted thereinto;
a cam turnable together with the key rotor;
an accommodating member attached and tangent to a periphery of the housing;
a rotary member mounted within the accommodating member including a rotary member pivot axis normal to a key rotor axis, the rotary member being swingable between a regulating position and a releasing position upon turning of the key rotor from the key rotor locking position to the key rotor operating positions; and
a slider located within the accommodating member and movable between an unlocking position and a locking position upon movement of the rotary member from the regulating position to the releasing position.

5,794,470

MECHANICAL SEAT LOCK

Calvin R. Stringer, Saugus, Calif., assignor to P.L. Porter Co., Woodland Hills, Calif.

Filed Jun. 25, 1996, Ser. No. 666,878
Int. Cl.[6] A47C 31/00

U.S. Cl. 70—261 8 Claims



1. A mechanical seat lock comprising:
a housing
a rod having a first end extending into the housing and a second end extending out of the housing, the rod having a longitudinal axis;
a pair of coiled locking springs, each locking spring having a first portion fixed in the housing and extending around a portion of the rod, the normal inside diameter of each locking spring being less than the outside diameter of the rod so that each locking spring normally grips the rod, the coils of each locking spring having a natural helical angle with respect to the longitudinal axis of the rod;
a movable handle engaging a second portion of each locking spring, the second portion having freedom of movement and upon movement of the moveable handle uncoiling the locking spring to increase the locking spring's inside diameter to be greater than the outside diameter of the rod to release the rod;
a pair of end bushings in the housing, each end bushing being acted on by one of the locking springs, each end bushing having a face against the locking spring, against which the end bushing acts, the face being angled at an acute angle to the rod's longitudinal axis at an angle substantially greater than the natural helical angle of the coiled locking springs; and
a wedge bushing in the housing between the locking springs, the wedge bushing having opposing faces, each face being against one of the locking springs, each face of the wedge bushing being angled at an acute angle to the rod's longitudinal axis at an angle substantially greater than the natural helical angle of the coiled locking springs.

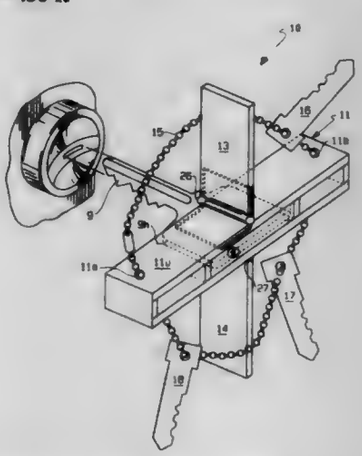
5,794,471

HOLDER FOR KEY INCLUDING KEY TURNER

Frank Rizzo, 52 Hall St., Eastchester, N.Y. 10709

Filed Jul. 22, 1996, Ser. No. 681,056
Int. Cl.[6] A44B 15/00; E05B 19/04

U.S. Cl. 70—456 R 1 Claim



1. A key holder and turner unit comprising
(a) an elongated body section having two sides;
(b) lock key holding compartment means in said body section;

(c) at least one hinged wing swingable about a hinge in a direction away from a section side to a position in which the wing is projecting from such side;

(d) limit means for preventing turning of said at least one hinged wing in said direction beyond a position suitable for gripping the wing together with the body; and

(e) at least one hinged wing having in addition projection means and having a key in the lock key holding compartment which projection means engages such key and holds such key in the compartment when said hinged wing is open

whereby the body section and at least one hinged wing are grippable for turning in such direction when the key is in the lock key holding compartment inserted in a lock and turned.

5,794,472

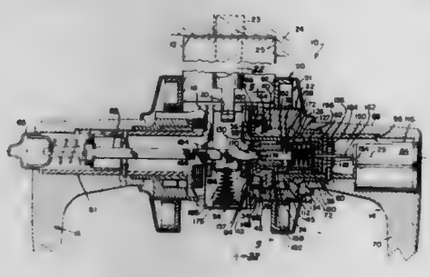
DISCONNECTING DRIVE MECHANISM FOR CYLINDRICAL LOCKSET

Steven A. Kester, Noblesville; Scott A. Gilbertson, Indianapolis; John W. McIntire, Anderson, and Ralph P. Palmer, Indianapolis, all of Ind., assignors to Best Lock Corporation, Indianapolis, Ind.

Filed May 1, 1995, Ser. No. 432,528

Int. Cl.[6] E05B *13/10*

U.S. Cl. 70—472 **14 Claims**



1. A cylindrical lock for use in a door containing a latch bolt supported for movement between an extended doof-latching position and a retracted door-unlatching position and a latch bolt retractor assembly connected to the latch bolt and movable relative to the door to move the latch bolt between the extended door-latching position and the retracted door-unlatching position, the cylindrical lock comprising

a hub adapted to mount in a fixed position on the door, the hub including an inner end adapted to lie adjacent to the latch bolt retractor assembly, an outer end adapted to face away from the latch bolt retractor assembly, a central hub aperture extending between the inner and outer ends, an axially extending hub slot, and a circumferentially extending hub slot,

a spindle mounted for rotational movement about an axis of rotation within the central hub aperture, the spindle including an inner end adapted to face toward the latch bolt retractor assembly, an outer end adapted to face away from the latch bolt retractor assembly, and a central spindle aperture extending between the inner and outer ends,

a door handle coupled to the spindle to rotate the spindle about the axis of rotation relative to the hub,

a retractor control member mounted for rotational movement within the central spindle aperture about the axis of rotation, the retractor control member including an inner end facing away from the door handle, an outer end adapted to face away from the latch bolt retractor assembly, and a cam adapted to engage the latch bolt retractor assembly to move the latch bolt between the extended door-latching position and the retracted door-unlatching position in response to rotation of the retractor control member about the axis of rotation,

a locking lug mounted for movement within the retractor control member between an axially outer locked position wherein the locking lug is situated in the axially extending hub slot to prevent rotation of the spindle relative to the hub and an axially inner unlocked position toward the door relative to the axially outer locked position wherein the locking lug is situated in the circumferentially extending hub slot to permit the spindle to rotate relative to the hub, and

means for moving the locking lug between the unlocked position coupling the spindle and retractor control member together so that the retractor control member rotates about the axis of rotation to move the latch bolt retractor assembly to move the latch bolt from the extended door-latching position to the retracted door-unlatching position in response to rotation of the spindle about the axis of rotation by the door handle and the locked position uncoupling the spindle and retractor control member so that the retractor control member does not rotate about the axis of rotation and the latch bolt retractor assembly is not moved to move the latch bolt from the extended door-latching position to the retracted door-unlatching position in response to the rotation of the spindle about the axis of rotation, the retractor control member being formed to include a circumferentially extending retractor control member slot, the locking lug being situated within the circumferentially extending retractor control member slot in the locked position, wherein the locking lug is formed to include notches providing a planned shear line through which the locking lug will shear if overtorqued, and the circumferentially extending retractor control member slot is configured to permit a sheared locking lug to rotate through a certain latch bolt retraction-delay angle before engaging and rotating the retractor control member.

5,794,473

METHOD OF REGULATING THE CROSS-SECTION OF ROLLING STOCK

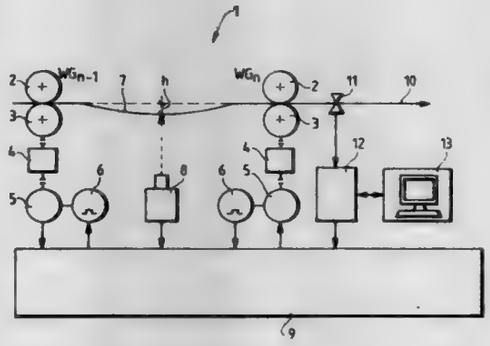
Otmar Palzer, Aldenhoven, Germany, assignor to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Germany

Filed Nov. 22, 1996, Ser. No. 755,331

Claims priority, application Germany, Nov. 23, 1995, 195 43 605.9

Int. Cl.[6] B21B *37/68*

U.S. Cl. 72—8.9 **3 Claims**

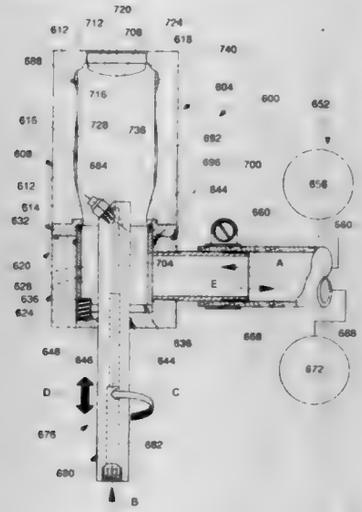


1. Method of regulating a cross-section of rolling stock through a rolling stock loop control between roll stands of a section rolling train, the method comprising changing horizontal forces in the rolling stock by changing a loop height of a rolling stock loop and purposely influencing width changes of the rolling stock through the horizontal forces.

5,794,474
METHOD AND APPARATUS FOR RESHAPING A CONTAINER BODY

Otis Willoughby, Boulder; Howard C. Chasteen, Golden, and Greg Robinson, Louisville, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Jan. 3, 1997, Ser. No. 779,859
Int. Cl.[6] B21D *26/02*
U.S. Cl. 72—62 **26 Claims**



1. A method for reshaping a container body, comprising the steps of:

exposing a surface of said container body to a first fluid under a substantially constant pressure; and

directing a high velocity stream of a second fluid, different from said first fluid, directly against a selected and discrete portion of said surface of said container body to reform at least a portion of said container body, said directing step being performed during said exposing step.

5,794,475
APPARATUS AND PROCESS FOR MANUFACTURING PROFILED BODIES

Helmut Schuppler, Eislingen, and Wolfgang Moser, Salach, both of Germany, assignors to Schuler Pressen GmbH & Co., Germany

Filed Aug. 29, 1996, Ser. No. 705,497
Claims priority, application Germany, Aug. 30, 1995, 195 31 907.9
Int. Cl.[6] B21D *9/08*
U.S. Cl. 72—213 **16 Claims**

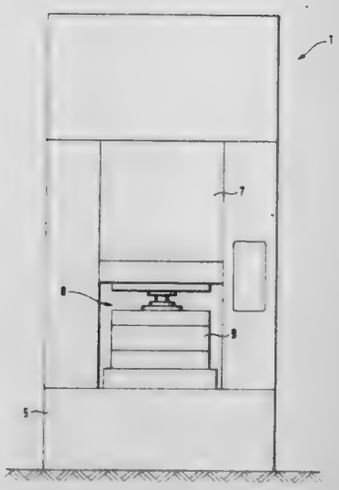
1. A press for manufacturing profiles, including parallel profiles on rotationally symmetrical housings, comprising

a top tool fastenable on a slide of the press movable against a tool receiving device and engageable with and disengageable from a workpiece,

a bottom tool stationarily disposable with respect to the slide and having an opening into which the top tool is movable and with an axis coinciding with a moving direction of the top tool,

a set of profile rolls arranged in the opening of the bottom tool and having outer circumferential surfaces in contact with abutments which bound the opening and support the profile rolls radially outwardly, the profile rolls being arranged with axes of rotation thereof in a circumferential direction of the opening, and

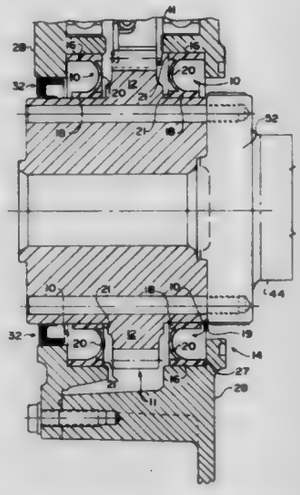
a cage arranged in the opening and which the profile rolls are held in the circumferential direction and movable in the axial direction of the opening such that the profile rolls are caged to one another with respect to the axial direction of the opening wherein the cage is positively connectable with a transmission for driving the cage in the axial direction at a speed which is half a speed of the top tool.



5,794,476
SELF-ALIGNING FLEXIBLE GEAR SUPPORT FOR AUXILIARY GEAR BOX

Richard A. Smietanski, Lockport, Ill., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Oct. 23, 1996, Ser. No. 735,480
Int. Cl.[6] F16H *57/02; 37/00;* **B65D** *61/00*
U.S. Cl. 74—15.63 **8 Claims**



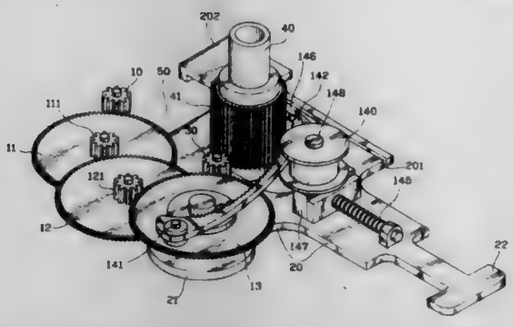
1. In combination with an auxiliary gear box for an internal combustion engine having a crankshaft, the gear box having a main gear adapted to be attached to said crankshaft, a flexible gear support for maintaining the position of the main gear in the gear box prior to assembly on said engine comprising a unitary structure mounted in a fixed position within said gear box and having a pair of concentrically spaced inner and outer rings and a flexible web extending between said rings, said inner ring having an inner periphery disposed in supporting relation to said main gear.

5,794,477

ALTERNATIVE MONO-DIRECTION AND DUAL-DIRECTION TRANSMISSION APPARATUS

Chu Ven-Chung, 3F, No. 3, Lane 42, Yuhsi st., Yung-ho City, Taipei Hsien, Taiwan

Filed Jul. 16, 1996, Ser. No. 682,903
Int. Cl.[6] F16H *21/40*
U.S. Cl. 74—33 **2 Claims**



1. An alternate mono-direction and dual-direction transmission apparatus, comprising:

a driving gear driven by an electric motor;

an output spindle having an output gear coaxially disposed thereon;

a reducing gear set including a plural number of gears and pinions for transmitting force and reducing rotation speed from the driving gear to the output gear;

a mono-direction gear engageable with the output gear;

a transversely slidable platform having an opening therein to permit the output spindle to pass therethrough, a vertical side wall, a vertical shaft for holding the mono-direction gear, and an alternate dual-rotation actuating means;

said alternate dual-rotation means including a third gear engaged with the reducing gear set, a link having a first end which is pivotally affixed to the third gear via a pin spaced apart from a center axis of the third gear and a second end which is slidable on the vertical side wall of the platform, and a roller held in a roller seat which is slidably contacted with a compression spring;

the link further having first and second sides, the first side of the link having a teeth rack which is engageable with the output gear and the second side of the link is in contact with the roller;

wherein, when the platform is moved transversely in one direction, the mono-direction gear engages with the third gear thus allowing the driving gear to transmit force in only one direction to the output spindle via the reducing gear set and the third gear, whereas, when the platform is moved transversely in an opposite direction, the mono-direction gear is disengaged from the output gear, and the teeth rack is engaged with the output gear through the roller and the compression spring thus enabling the output spindle to rotate alternately in both clockwise and counter-clockwise directions through the rotation of the pin on the third gear driven by the reducing gear set and driving gear.

5,794,478

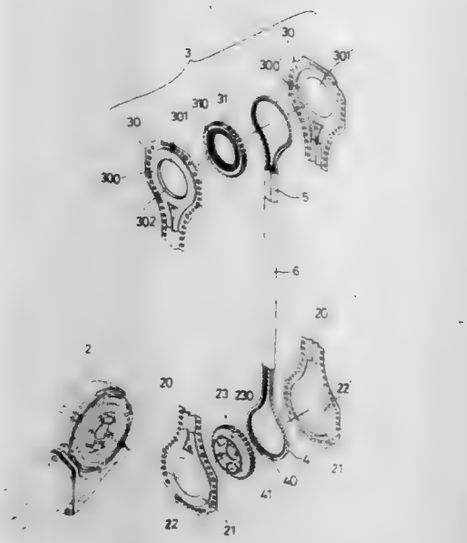
TRANSMITTING CHAIN FOR AN AUTOMOBILE ELECTRIC WINDOW

Kun Chu Chen, Taipei, Taiwan, assignor to Chin-Yun Huang, Tainan Hsien, Taiwan

Filed May 21, 1996, Ser. No. 651,821
Int. Cl.[6] F16H *7/02;7/18;* E05F *11/48*
U.S. Cl. 74—89.21 **3 Claims**

1. A transmitting chain for an automobile electric window, comprising:

two lower chain protectors fixed on one side of a rotating mechanism to fit with each other, each of said chain protectors



having a recessed portion forming a lower chain passageway and a lower center hole, a lower gear fitted in said lower chain passageway, said gear having a leaf connector projecting sidewise into said center hole of one of said two lower chain protectors;

an upper transmitting unit having two upper chain protectors and a upper gear, said two upper chain protectors respectively each having a recessed portion forming an upper chain passageway and an upper center hole, one of said two upper chain protectors having a sidewise projecting annular edge around said upper center hole, said upper gear having an annular groove in one side;

an endless transmitting chain fitted in said lower and upper chain passageways of said lower and said upper chain protectors and engaging said lower and upper gears in said upper and lower chain protectors;

two elastic tubes enclosing intermediate portions of said transmitting chain between said upper and said lower chain protectors;

an elongate cover covering around said two elastic tubes so as to locate said two elastic tubes side by side; and,

wherein said transmitting chain is integrally formed with a plurality of teeth spaced apart equidistantly on an inner side, having an outer flat side and a wire rope located between said inner side and said outer side.

5,794,479

ADJUSTING MECHANISM

Jörg Schwarzbich, Wertherstr. 15, D-33615 Bielefeld, Germany

Filed May 7, 1996, Ser. No. 646,074
Claims priority, application Germany, May 19, 1995, 195 18 424.6
Int. Cl.[6] B60N *2/02;* F16D *43/02*
U.S. Cl. 74—143 **14 Claims**

1. An adjusting mechanism for adjusting an adjustably movable member, comprising:

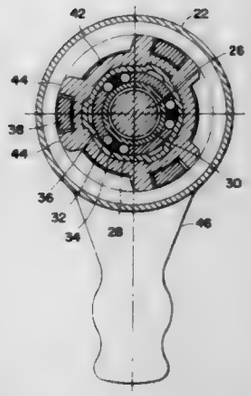
an adjusting element adapted to be connected to the adjustably movable member for producing an adjustment thereof; and

a coupling operably connected to the adjusting element for moving the adjusting element, the coupling including:

an actuating element arranged for movement in first and second opposite directions in response to the application thereto of an actuating force external to the coupling;

a release element operably connected to the actuating element for movement therewith in the first and second directions;

an elastic return element operably connected to the release element for storing energy in response to the release element being driven in either of the first and second direc-



tions by the actuating element when acted upon by an actuating force, and for applying the stored energy as a restoring force to the release element for causing the release element to be driven and drive the actuating element in a return direction; and

a connecting mechanism operably connecting the coupling to the adjusting element for driving the adjusting element when the actuating element and release element are driven by the actuating force, and for releasing the coupling from the adjusting element when the actuating element and release element are driven in a return direction by the restoring force.

5,794,480

DEVICE FOR DRIVING OF SLIDING ROOFS, WINDOW RAISERS, OR THE LIKE

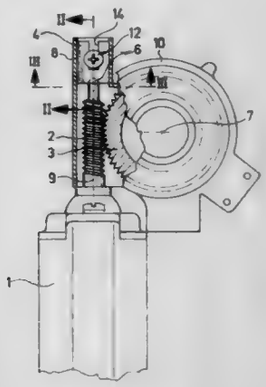
Jochen Schönsteiner, München, Germany, assignor to Webasto Karosseriesysteme GmbH, Stockdorf, Germany

Filed Mar. 7, 1996, Ser. No. 612,178

Claims priority, application Germany, Mar. 10, 1995, 195 08 556.6

Int. Cl.[6] **F16H** *57/12*

U.S. Cl. 74—425 **10 Claims**



1. Device for driving of a movable part of a motor vehicle, comprising a reversible drive motor to which a worm gear pair is connected on an output side of the motor, a worm gear shaft of which is formed as an extension of the motor shaft, and means for adjusting axial play of the worm gear shaft, said means having an adjustment part which rests against a free end of the worm gear shaft and which is movably guided in an axial direction of the worm gear shaft; wherein the adjustment part is engageable against a stationary guide surface by one of a positioning screw and a fastening rivet which extends through a hole in the stationary guide surface with a longitudinal axis thereof being at least approximately perpendicular to a longitudinal axis of the worm gear shaft, said one of a positioning screw and a fastening rivet tightly securing said adjustment part by acting thereon in the axial direction of the worm gear shaft.

5,794,481

DEVICE FOR BENDING OR CURVING HOLLOW-SECTION STRIPS

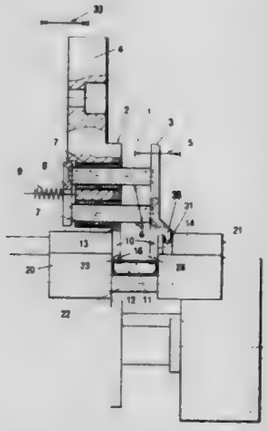
Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Austria

Filed Oct. 29, 1996, Ser. No. 740,391

Claims priority, application Austria, Oct. 31, 1995, 1799/95

Int. Cl.[6] **B21D** *7/022*

U.S. Cl. 72—307 **20 Claims**



1. In a device for bending a hollow-section strip (**12**) having clamping and guiding jaws (**20**, **21**) for engaging sides of the strip and which are parallel to a bending plane of the device, at least one of the laws (**21**) being movable relative to the other of the jaws (**20**), a bending support (**1**) which has two bending support parts (**2**, **3**) for depressing a surface of the strip perpendicular to the bending plane, and a bending lever that can pivot for bending the strip; the improvement wherein said bending support parts (**2**, **3**) are independent of said clamping and guiding jaws (**20**, **21**) and are movable in the bending plane relative to said clamping and guiding jaws (**20**, **21**).

5,794,482

APPARATUS IN A HYDRAULIC PRESS

Bengt Walkin, Tranemo, Sweden, assignor to AP&T Tranemo AB, Tranemo, Sweden

PCT No. PCT/SE94/00316, § 371 Date May 2, 1996, § 102(e) Date May 2, 1996, PCT Pub. No. WO94/23862, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 11, 1994, Ser. No. 537,654

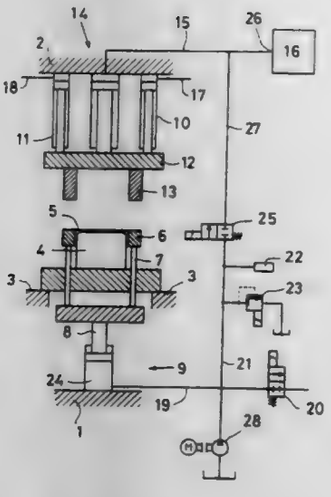
Claims priority, application Sweden, Apr. 19, 1993, 9301278-9

Int. Cl.[6] **B21D** *22/00;22/21*

U.S. Cl. 72—350 **23 Claims**

1. An apparatus in a hydraulic press for deep drawing, comprising:

mutually reciprocating clamping members (**6**, **13**) for fixedly clamping therebetween a sheet metal blank (**5**) with a predetermined force; at least two counter-directed clamping cylinders (**9**, **14**) connected with, and operating, each respective clamping member; a tool piece (**4**) over which the sheet metal blank (**5**) is formed; and a power unit (**10**, **11**, **16**) which, for forming the sheet metal blank, is operative to realize a relative movement between, on the one hand, the tool piece (**4**), and, on the other hand, the clamping members (**6**, **13**), characterized in that the working volumes of the clamping cylinders (**9**, **14**), at least during the forming phase proper, are intercon-



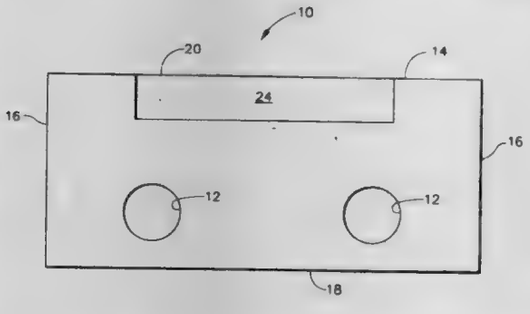
nectable to a common volume; and that a pressure maintenance device (**22**, **23**, **28**) is coupled to this volume for realising the predetermined clamping force.

5,794,483

ANGLED BLADE TOOLING FOR A FIN MACHINE

Mark F. Haushalter, Bellefontaine, and David L. Haushalter, Kenton, both of Ohio, assignors to Robinson Fin Machines, Inc., Kenton, Ohio

Filed Sep. 25, 1996, Ser. No. 721,610
Int. Cl.[6] **B21D** *5/16; 13/02*
U.S. Cl. 72—379.6 **8 Claims**



5. A method for folding fin material into a plurality of corrugations, the method comprising the steps of:

providing a substantially rectangular plane of metal having a front side, and an opposing back side, and further having a perimeter, the perimeter defined by a top edge, a bottom edge, and a pair of opposing side edges, each of the edges having an initially substantially similar thickness, and wherein the top edge is defined as the edge applied to the fin material to form a fold radius at each fold in the fin material;

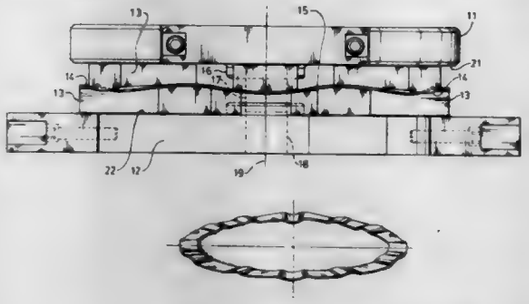
creating an angled surface on at least one side of the plane, commencing in an interior area of the plane below the top edge of the plane and terminating at the top edge of the plane, whereby an angled blade surface is created along at least a portion of the top edge of the plane, the angled blade surface having a narrower thickness than the initial edge thickness.

5,794,484

UNIVERSALLY MAKING WAVED PARTS

John Yas Jaddou, Warren, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Nov. 23, 1993, Ser. No. 155,877
Int. Cl.[6] **B21D** *13/02*
U.S. Cl. 72—414 **4 Claims**



1. A method of using a universal waving die, comprising:

(a) providing a die assembly having a plurality of wave forming blocks each with a working surface in the form of a conical segment and each segment having an axis of revolution defining said surface with differing radii at the radial ends of the blocks, the plurality of blocks being removably secured to at least two flat plates with the blocks spaced apart and with the axis of revolution of said blocks aligned with the radius of the plates;

(b) aligning a deformable arcuate material with the center of said plates;

(c) pressing said die assembly together with said deformable material interleaved therebetween at room temperature to cold work the material beyond the elastic region thereof and form waves in such material;

(d) continue to apply loading to said deformable material at a constant level for at least 30 seconds;

(e) relax said load and press the deformed material to a flat condition;

(f) allow the material to assume its semi-deformed shape and repeat pressing between the die assemblies if the shape is not to the desired number of waves and profile height; and

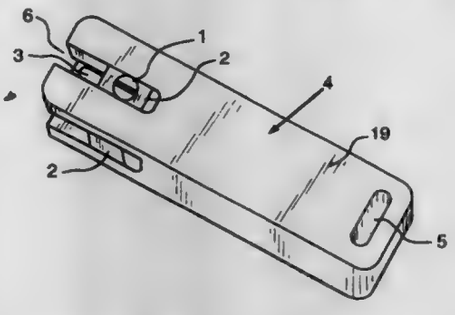
(g) securing at least some of said blocks in at least one of a new radial location on said plates or in a new circumferential spacing on said plates, and repeating steps (b)–(f).

5,794,485

TOOL FOR CRIMPING A TEE OR MAIN

Gary Lovas, 3431 Woodland Dr., Murrysville, Pa. 15668

Division of Ser. No. 574,723, Dec. 19, 1995, Pat. No. 5,694,735. This application Jul. 11, 1997, Ser. No. 893,488
Int. Cl.[6] **B21D** *11/20;* **E04B** *9/30*
U.S. Cl. 72—458 **6 Claims**



1. A tool to crimp a ceiling tee or main comprising:

a housing having an end with a first slot defined in the end;

an adjustable plate disposed in the first slot of the housing, and

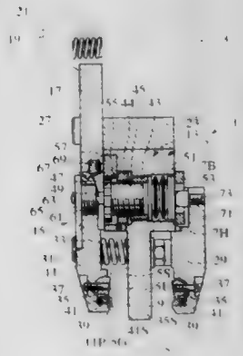
said plate adjustable in regard to position in the first slot so the tee or main can be inserted into the first slot a desired distance defined by the position of said plate in the first slot.

5,794,486

UPPER TOOL HOLDER APPARATUS FOR PRESS BRAKE

Mamoru Sugimoto, and Shiro Hayashi, both of Kanagawa, Japan, assignors to Amada Metrecs Company, Limited, Kanagawa, Japan

Filed Sep. 27, 1996, Ser. No. 720,013
Claims priority, application Japan, Oct. 2, 1995, 7-255153
Int. Cl.[6] B21D *5/02;5/04*
U.S. Cl. 72—481.3 **14 Claims**



1. An upper tool holder apparatus for a press brake including an upper table with a lower end, said upper tool holder being adapted to hold in the press brake an upper tool having a drop prevention groove, said upper tool holder comprising:

a holder body removably mounted on the lower end of the upper table, said holder body including an upper tool support portion for supporting said upper tool, said upper tool support portion extending in a vertical direction;

first and second upper tool clamps which are arranged on opposite sides of said holder body, each of said upper tool clamps being supported by said holder body so as to be movable relative to said holder body, each of said upper tool clamps having an upper portion and a lower portion, each of said upper tool clamps further including a pressing portion at the lower portion of said upper tool clamp so as to press said upper tool to said upper tool support portion when said upper tool clamp is moved to a clamped state;

an engage projection that is freely engageable with said drop prevention groove formed on said upper tool, said engage projection being formed at the lower portion of at least one of said upper tool clamps;

first clamp/unclamp means mounted on said holder body, said first clamp/unclamp means pressing the upper portion of said first upper tool clamp so that said upper tool is clamped by said first upper tool clamp, and releasing the upper portion of said first upper tool clamp so that said upper tool is unclamped by said first upper tool clamp; and

a slide bar supported by said holder body so as to be slidable in a horizontal direction, said slide bar including a rack;

wherein said first clamp/unclamp means comprises a female screw supported by said holder body, a male worm screw engaging with said female screw and having a first end and a second end, a pinion gear integrally connected with said male worm screw at the first end of said male worm screw, a pusher portion formed on the first end of said male worm screw to press the upper portion of said first upper tool clamp and a spring provided between the second end of said male worm screw and the upper portion of said second upper tool clamp; and

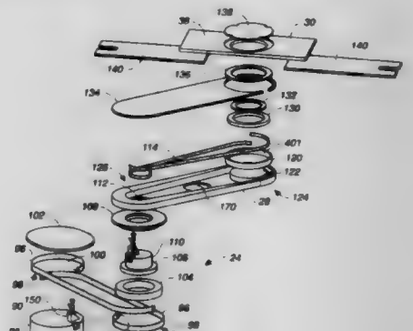
wherein said rack of said slide bar engages with said pinion gear of said first clamp/unclamp means so that, when said slide bar slides towards one direction, said male screw worm moves towards and presses the upper portion of said first upper tool clamp with said pusher portion, and when said slide bar slides towards another direction, said male screw worm moves towards and presses the upper portion of said second upper tool clamp through said spring.

5,794,487

DRIVE SYSTEM FOR A ROBOTIC ARM

Todd R. Solomon, Los Gatos; Donald J. Thomas, and Gerard J. Labonville, both of San Jose, all of Calif., assignors to Smart Machines, San Jose, Calif.

Continuation of Ser. No. 500,428, Jul. 10, 1995, abandoned.
This application Oct. 23, 1995, Ser. No. 546,728
Int. Cl.[6] G05G *11/00*
U.S. Cl. 74—490.03 **7 Claims**



1. A robot comprising:

a base;

a rotatable first link connected to the base by a shoulder joint;

a rotatable second link connected to the first link by an elbow joint;

an end-effector connected to the second link by a wrist joint;

a shoulder motor located in the base to rotate the first link about the shoulder joint;

a shoulder drive shaft extending from the shoulder motor and non-rotatably secured to the first link;

an elbow motor located in the base to rotate the second link about the elbow joint;

a first pulley positioned in the elbow joint and non-rotatably secured to the first link; and

a second pulley positioned in the wrist joint, the second pulley secured to the end effector and coupled to the first pulley by a first drive band, wherein a diameter of the first pulley and a diameter of the second pulley are related by a 1:2 ratio so that the end effector is constrained to maintain a radial alignment with respect to the shoulder joint;

a third pulley positioned in the shoulder joint;

an elbow drive shaft extending from the elbow motor and secured to the third pulley; and

a fourth pulley positioned in the elbow joint and secured to the second link, the fourth pulley directly coupled to the third pulley by a second drive band and driven thereby.

5,794,488

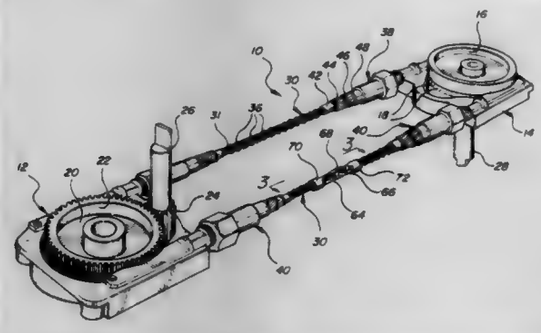
CORE ELEMENT CONNECTOR FOR REMOTE CONTROL ASSEMBLY

David P. Yanusko, Pottstown, Pa., assignor to Triumph Controls, Inc, North Wales, Pa.

Filed Mar. 14, 1997, Ser. No. 818,773

Int. Cl.[6] F16C *1/10*

U.S. Cl. 74—502.6 **10 Claims**



1. A motion transmitting remote control assembly (**10**) comprising:

a drive wheel housing (**12**);

a drive wheel (**20**) having a plurality of gear teeth (**18**) and rotatably supported by said drive wheel housing (**12**);

a driven wheel housing (**14**) spaced from said drive wheel housing (**12**);

a driven wheel (**16**) having a plurality of gear teeth (**18**) and rotatably supported by said driven wheel housing (**14**);

a motion transmitting core element (**30**) comprising a flexible cable (**31**) having first (**32**) and second (**34**) ends and a wire (**36**) wrapped helically about said cable (**31**) in spaced convolutions and entrained about said wheels (**16** and **20**) and in meshing engagement with said gear teeth (**18**) for transmitting rotational movement between said wheels (**16** and **20**);

connector means interconnecting said first (**32**) and second (**34**) ends of said core element (**30**) for maintaining said core element (**30**) entrained about said wheels (**16** and **20**) regardless of the orientation of said core element (**30**) as said core element (**30**) passes through said housings (**12** and **14**);

said connector means including a first loop (**64**) attached to said first end (**32**) of said core element (**30**) and a second loop (**66**) attached to said second end (**34**) of said core element (**30**) and a single unitary link (**68**) extending through said loops (**64** and **66**); and;

said connector means including a first socket (**70**) attached to said first end (**32**) and a second socket (**72**) attached to said second end (**34**), said first loop (**64**) having a U-shape with legs presenting distal ends (**74**) secured to said first socket (**70**), and said second loop (**66**) having a U-shape with legs presenting distal ends (**76**) secured to said second socket (**72**).

5,794,489

CONTROL PEDAL UNIT FOR MOTOR VEHICLES

Dieter Papenhagen, Waiblingen; Manfred Löchle, Stuttgart, and Thorsten Meyer, Fellbach, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

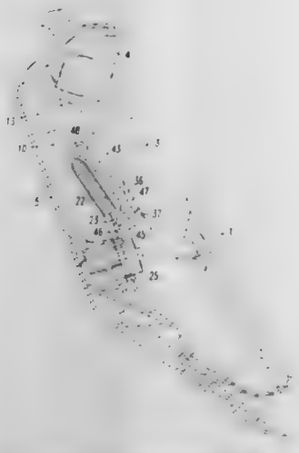
Filed Aug. 5, 1996, Ser. No. 692,498

Claims priority, application Germany, Aug. 29, 1995, 195 31 732.7

Int. Cl.[6] G05G *1/14*

U.S. Cl. 74—513 **8 Claims**

1. A control pedal unit for vehicles comprising a mounting structure having a U-shaped mounting end with spaced parallel leg walls forming an elongated cavity a pedal lever having an eyepiece with an opening at one end forming a pivotal support where said pedal lever is pivotally supported in said elongated cavity between said spaced parallel leg walls, at least one return spring biasing said pedal lever to a rest position, and a cover disposed on said



spaced parallel leg walls for closing said elongated cavity in said U-shaped mounting end and said cover being pivotally supported at one end thereof between said leg walls and said at least one return spring being engaged with said cover at the other end thereof such that said cover is held by said return spring in engagement with said leg walls so as to keep said cavity closed by said return spring which is hidden by said cover in said cavity.

5,794,490

CONTROL PEDAL UNIT FOR VEHICLES

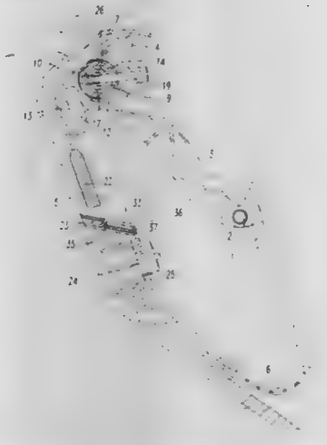
Dieter Papenhagen, Waiblingen; Manfred Löchle, Stuttgart, and Thorsten Meyer, Fellbach, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Aug. 5, 1996, Ser. No. 692,501

Claims priority, application Germany, Aug. 29, 1995, 195 31 737.8

Int. Cl.[6] G05G *1/14*

U.S. Cl. 74—513 **5 Claims**



1. A control pedal unit for vehicles comprising a mounting structure having a U-shaped mounting end with spaced parallel leg walls having opposite inner sides, an elongated pedal lever having at one end an eyepiece with an opening where said pedal lever is pivotally supported between said leg walls, at least one return spring operatively connected at one end to a mounting point on said pedal lever for biasing said pedal lever into a rest position, guide tracks arranged opposite one another at the inner sides of said leg walls, said guide tracks being inclined such that they have an entrance end, which is disposed at a greater distance from said mounting point of said return spring than the rest of said guide tracks and a slide member supported in said guide tracks between said leg walls so as to be slideable in a direction essentially transverse to the direction in which said elongated pedal lever extends, said spring being supported at its other end by said slide

member whereby said spring can be mounted to said mounting structure by moving said slide member, in a transverse direction, into said guide tracks between said leg walls.

5,794,491

Patent Not Issued For This Number

5,794,492

PARKING BRAKE USABLE AS EMERGENCY BRAKE

Thomas Edward Pare', Romulus, Mich., assignor to Dura Automotive Systems, Inc., Rochester Hills, Mich.

Filed Feb. 28, 1996, Ser. No. 607,785

Int. Cl.[6] B60T *7/04*; **G05G** *1/14*

U.S. Cl. 74—529 **7 Claims**



1. A parking brake actuator comprising a pedal lever mounted on a support bracket for pivotal movement between brake-release and brake-apply positions to release and apply a parking brake, a sector carried by the pedal lever, a pinion rotatably mounted on the support bracket in engagement with the sector, a torsion clutch spring having one end fixed to the support bracket and having a free end, the torsion clutch spring normally gripping and locking the pinion against rotation, a release lever, an electric device energizable to operate the release lever to engage and move the torsion clutch spring free and against a predetermined force to a position releasing and unlocking the pinion, and a latch which holds the release lever in pinion releasing position after the electric device is deenergized.

5,794,493

FOUR-CYLINDER MACHINE OF THE RECIPROCATING PISTON TYPE HAVING BALANCING MEANS

Christoph Bollig, Stolberg; Werner Bick, Würselen; Jürgen Dick, Aachen; Bernd Jung, Aachen, and Daniel Perak, Aachen, all of Germany, assignors to FEV Motorentechnik GmbH & Co. KG, Aachen, Germany

Filed Dec. 27, 1996, Ser. No. 777,385

Claims priority, application Germany, Dec. 27, 1995, 295 20 557 U

Int. Cl.[6] F02B *75/06*; **F16F** *15/26*

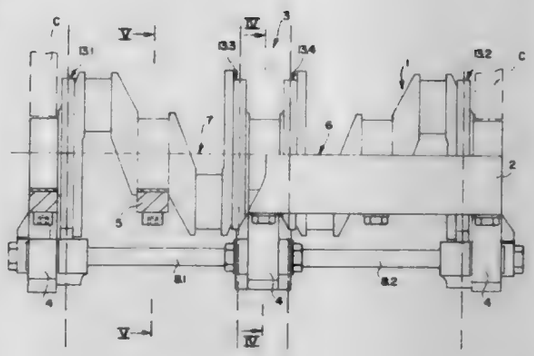
U.S. Cl. 74—603 **8 Claims**

1. A four-cylinder, reciprocating piston-machine comprising

(a) a crankshaft having a rotary axis;

(b) a center bearing supporting said crankshaft;

(c) two outer bearings flanking said center bearing and supporting said crankshaft;



(d) first, second, third and fourth torsion springs each having a length dimension extending parallel to said axis; said first and second torsion springs being parallel to and facing a first side of a reference plane containing said axis; said third and fourth torsion springs being parallel to and facing a second side of said reference plane; containing said axis;

(e) first, second, third and fourth elongated balancing masses being secured to and extending unidirectionally from respective said first, second, third and fourth torsion springs toward said crankshaft and being perpendicular to said axis; said first and second balancing masses being situated at respective said outer bearings; said third and fourth balancing masses being situated at said center bearing; and

(f) first, second, third and fourth control cams keyed to said crankshaft and being in engagement with a surface of respective said first, second, third and fourth elongated balancing masses for oscillating said balancing masses toward and away from said axis to exert varying torques to said respective torsion springs.

5,794,494

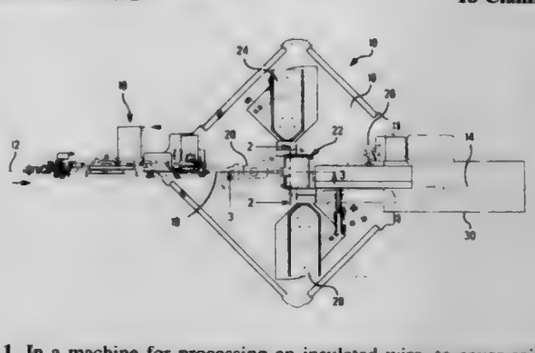
WIRE CUTTING AND STRIPPING MECHANISM

Alden Owen Long, Jr., Carlisle, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 22, 1997, Ser. No. 804,785

Int. Cl.[6] H02G *1/12*

U.S. Cl. 81—9.51 **18 Claims**



1. In a machine for processing an insulated wire, to sever said wire into a feed end and an eject end, and to remove a selected portion of insulation from at least one of said feed end and said eject end, the combination comprising:

(1) a wire cutting and stripping unit including a first left blade having a first cutting edge, a second left blade having a second cutting edge, a first right blade having a third cutting edge, and a second right blade having a fourth cutting edge, wherein said first and second left blades are attached to a left holder and said first and second right blades are attached to a right holder;

(2) wire feed unit for moving said wire along a wire path between said first and third cutting edges in a first direction and a second opposite direction;

(3) drive unit for moving said left and right holders in third and fourth opposite directions, respectively, so that said first left and first right blades converge toward each other and said first and third cutting edges effect said severing of said wire,

(4) means for further moving said left and right holders in said third and fourth directions, respectively, so that:

said first right and second left blades converge and said second and third cutting edges move into insulation cutting engagement with said elect side end, and

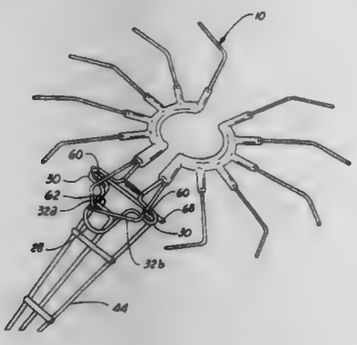
said first left and second right blades converge and said first and fourth cutting edges move into insulation cutting engagement with said feed side end.

5,794,495

ANIMAL GUARD APPLICATOR

Dwight Anderson, Ardmore, Okla., assignor to Oklahoma Gas & Electric Company, Oklahoma City, Okla.

Filed Sep. 25, 1996, Ser. No. 719,673
Int. Cl.[6] B25B *23/16*
U.S. Cl. 81—53.1 **5 Claims**



1. An animal guard in combination with an apparatus for positioning the animal guard on an insulator elevated a remote distance above the ground by an individual located on the ground, the guard including a pair of body portions joined by a connecting wire so that the body portions are arranged to define a substantially circular slot for receiving the insulator, the body portions movable between a clamping position wherein body portions are biased toward one another and an insertion position wherein the body portions are deflected away from one another to enable the guard to be slidably disposed onto the insulator, the connecting wire configured to form a rear loop and a pair of lateral loops, the apparatus comprising:

an elongated pole having a first end positionable near the ground and a second end extendible so that the second end is positionable adjacent the insulator; and

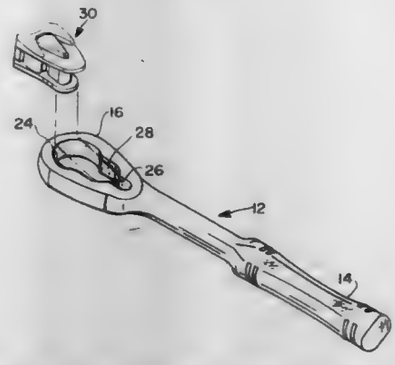
a guard applicator having a first end and a second end, the first end connected to the second end of the elongated pole at an angular relationship with respect to the second end of the pole, the second end of the guard applicator having a pair of spaced apart outer prongs slidably positioned through the lateral loops of the guard and engaged with a portion of the lateral loops of the guard, and the second end of the guard applicator having a support surface positioned adjacent each of the outer prongs on which a portion of the lateral loops of the guard is supportingly engaged whereby the support surfaces cooperate with the outer prongs to support the guard in a substantially horizontal plane for installation on the insulator.

5,794,496

PAWL MODULE FOR RATCHET WRENCH

Robert L. Arnold, Jacobus, Pa., assignor to Hand Tool Design Corporation, Wilmington, Del.

Filed Dec. 5, 1996, Ser. No. 760,734
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—63.2 **17 Claims**



1. A low profile ratchet wrench comprising a handle and a head, the head having an upper face and a lower face, an opening formed through the head between the upper face and the lower face, the opening having a first portion distal from the handle, a second portion proximal to the handle, and an intermediate portion therebetween, all of the portions communicating with one another,

a socket removably received in the first portion of the opening in the head, the socket having a plurality of gear teeth formed circumferentially thereabout,

a self contained pawl module received in the intermediate and second portions of the opening in the head, wherein the pawl module cooperates with the gear teeth on the socket, the pawl module having a body, a pawl being disposed in the body, a bore hole formed in the body and a detent means disposed in the bore hole.

5,794,497

DRIVER TOOL WITH ENERGY MAGNETIZER/ DEMAGNETIZER ON TOOL HANDLE

Wayne Anderson, 65 Grove St., Newport, N.Y. 11768

Filed Sep. 18, 1996, Ser. No. 710,485
Int. Cl.[6] B25B *23/08*
U.S. Cl. 81—451 **23 Claims**



1. A driver tool comprising an elongate handle defining a tool axis and shaped and dimensioned to be graspable within the hand of a user; a driver member mounted at one axial end of said handle

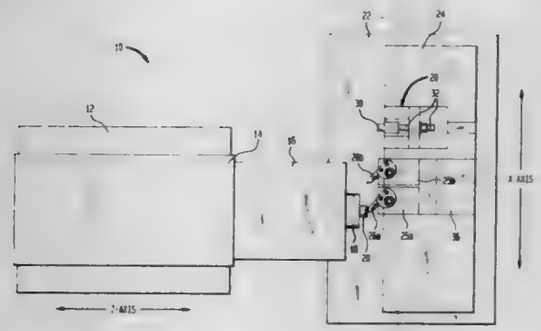
and defining a driver axis generally co-axially aligned with said tool axis; and magnet means formed of a permanently magnetized material on said handle for providing at least a magnetizing magnetic field accessible for selective placement of a magnetizable element within said field, wherein said magnet means is provided with at least two magnets arranged on said handle to provide separate regions one of which exhibits a magnetizing field and the other of which exhibits a demagnetizing field.

5,794,498

IN-SITU METHOD AND APPARATUS FOR BLOCKING LENSES

Leonard E. Chaloux, Keene, N.H., assignor to Taylor Hobson Limited, England

Filed Oct. 19, 1994, Ser. No. 325,818
Int. Cl.[6] B24B *5/02*
U.S. Cl. 82—1.11 **15 Claims**



1. A method of blocking a previously generated lens comprising the steps of:

a. providing a machining device having a workpiece holder holding a workpiece, a toolholder holding a tool for performing a machining operation on the workpiece, and a lens-blocking device, wherein the toolholder is moveable along a first axis, the lens-blocking device is moveable along a second axis, and the workpiece holder is moveable along a third axis which can traverse the first axis and the second axis;

b. moving the workpiece holder and the toolholder relative to one another so that the tool machines the workpiece to form a previously generated lens; and

c. moving the workpiece holder and the lens-blocking device relative to one another so that the previously generated lens becomes mounted to the lens-blocking device.

5,794,499

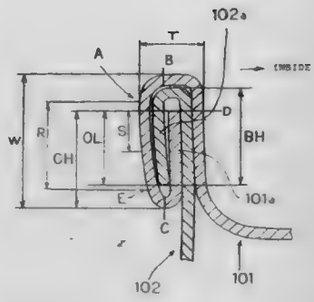
METHOD OF AND APPARATUS FOR DISASSEMBLING CAN FOR MEASUREMENT OF CAN SEAM DIMENSIONS

Toshiyuki Nakajima; Akira Okauchi; Setuo Hujino; Hirokazu Taya; Tomoki Shimoda, and Seiji Ohshiba, all of Ibaragi, Japan, assignors to Sapporo Breweries Ltd., Tokyo, Japan

Continuation of Ser. No. 495,681, Sep. 14, 1995, abandoned.
This application Feb. 21, 1997, Ser. No. 803,911
Claims priority, application Japan, Dec. 3, 1993, 5-303704
Int. Cl.[6] B23B *5/14*
U.S. Cl. 82—1.11 **7 Claims**

1. A method of disassembling a can and measuring seam dimensions of the can, the can including a can body and an end member which are coupled to each other by a can-seamed region, the can body having an end opening closed by the end member thereby sealing the interior of the can and the end member including a cover hook, said method comprising the steps of:

holding the can by gripping the end and a bottom of the can body;



cutting the outer circumferential edge region of the end member which externally surrounds a folded portion of the can body in the can-seamed region in a circumferential direction of the can;

separating the cover hook from the end member: and

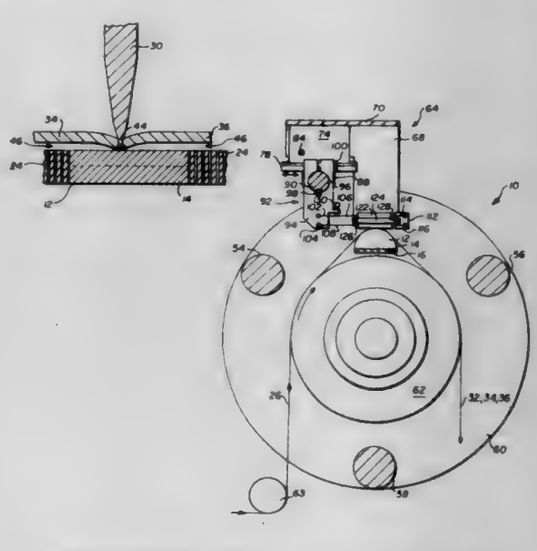
measuring the dimensions of the can-seamed region.

5,794,500

APPARATUS AND METHOD FOR SLITTING THIN WEBS

Michael Long, Rochester, and James Arthur White, Conesus, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 335,535, Nov. 7, 1994, abandoned.
This application Dec. 31, 1996, Ser. No. 777,108
Int. Cl.[6] B26D *1/03;7/08;7/26*
U.S. Cl. 83—22 **23 Claims**



1. A method for slitting a thin web, comprising the steps of:

providing a non-rotating air support member having a porous surface with an average pore size of about 2 μm;

moving a thin web past the air support member;

directing pressurized air to the air support member to float the web above the micro-porous surface;

providing at least one non-rotating cutting element having a cutting edge; and

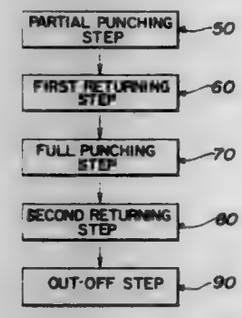
supporting the cutting edge against the micro-porous surface such that the cutting edge tangentially engages the micro-porous surface, whereby the thin web is slit by the at least one cutting element as the web floats above the micro-porous surface and moves past the air support member.

5,794,501

METHOD OF PUNCHING TEMPLATE FOR FORMING A BASE PLATE OF A TAPE CASSETTE

Kazuo Sasaki, and Shuichi Kikuchi, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 5, 1996, Ser. No. 708,732
Claims priority, application Japan, Sep. 7, 1995, 7-229919
Int. Cl.[6] B26D *3/00*
U.S. Cl. 83—49 **5 Claims**



1. A method of punching a template having a first surface and a second surface opposite to the first surface, said method comprising the steps of:

partially punching said template from an initial position thereof by pressing a first punch to said first surface to form a recessed portion of said first surface and having a first shear plane on a peripheral surface thereof and forming a projected portion of said second surface in a first die which has a second shear plane connected to said second surface on a peripheral surface thereof;

holding said first surface and said second surface respectively between a second punch and a second die to return said template to its said initial position;

pressing a third punch against said second surface and holding said first surface against a third die to thereby define a completely punched portion of the template whereby a punched flash is formed in an end of a fracture plane of the peripheral surface of the said recessed portion; and

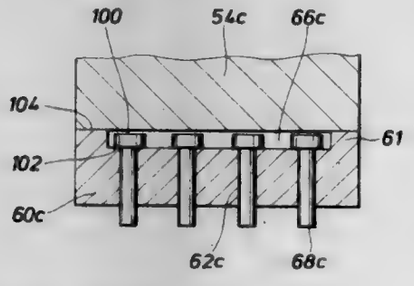
returning said completely punched portion of the template into said punched opening to remove said punched flash by sliding contact of said punched flash with an inner peripheral surface of said punched opening.

5,794,502

TWO PIECE PUNCH FOR ROLL PIERCING MATERIALS

Cornelis G. Arens, 9100 Hubbell, Detroit, Mich. 48228-2394, and William Anthony Meyer, 28339 Edward, Roseville, Mich. 48066

Continuation-in-part of Ser. No. 454,413, Dec. 21, 1989, abandoned. This application Dec. 20, 1993, Ser. No. 171,558
Int. Cl.[6] B26F *1/14*
U.S. Cl. 83—670 **1 Claim**



1. A punch roll comprising:

an axially extending annular member;

said annular member defining an opening extending axially therethrough, said annular member being characterized by opposed end portions each having a first radial dimension and an intermediate portion characterized by a second radial dimension,

an axially extending cylindrical member defining a third radial dimension;

said third dimension being smaller than said first dimension and said cylindrical member being telescopically received within said annular member;

a punch member comprising a cylindrical member disposed in close fitting relation within a radially extending bore defined in said annular member;

said punch member including an end portion having a radially enlarged dimension defining a head;

said head having a first portion defining an annular shoulder and an opposing second portion defining a top;

said punch member being maintained in said radially extending bore by abutment of said annular shoulder against said annular member; and

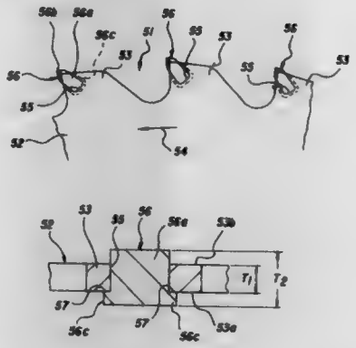
said top disposed in abutment against a peripheral surface of said cylindrical member.

5,794,503

DISC CUTTER

Tanehiko Asada, Shizuoka-ken, Japan, assignor to Tenryu Seikyo Kabushiki Kaisha, Shizuoka-ken, Japan

Continuation of Ser. No. 361,211, Dec. 21, 1994, abandoned. This application Jun. 26, 1996, Ser. No. 669,824
Claims priority, application Japan, Aug. 25, 1994, 6-225943
Int. Cl.[6] B23D *61/02*; B27B *33/08*
U.S. Cl. 83—835 **5 Claims**



1. A cutting tool comprising:

an annular disk-shaped base adapted to be driven about an axis of rotation, said base having a peripheral edge with a plurality of tool receiving recesses formed therein, each recess being defined by at least two surface portions extending across an axial width of said peripheral edge, each recess tapering inwardly in a radially outward direction;

a plurality of hardened cutting tool inserts fixed to said base at the recesses, each cutting tool insert having a cutting edge and a shank part received in a respective one of the recesses, each of said shank parts having first and second flanges integrally formed therewith on only one axial side of said shank part extending in a forward and a rearward direction, respectively, with respect to a rotational direction of the cutting tool, each of said first and second flanges defining an engaging shoulder portion extending in a plane substantially perpendicular to the axis and adjacent at least one side of each of said surface portions, each engaging shoulder portion engaging with one side surface of said base, each of said cutting tool inserts being fixed to said base at each of said engaging shoulder portions

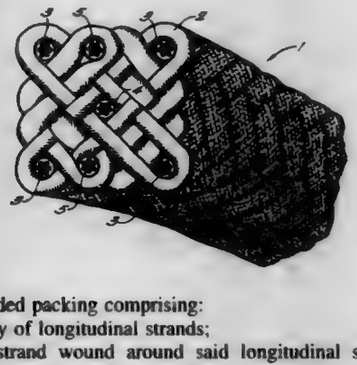
wherein said cutting edge of each of said cutting tool inserts has a relief angle extending in a direction away from said one side of said insert having said first and second flanges.

5,794,504

LUBRICATED BRAIDED PACKING AND METHOD OF MAKING SAME

Paul Vincent Starbile, Woburn, Mass., assignor to Chesterton International, Inc., Stoneham, Mass.

Filed Sep. 20, 1995, Ser. No. 530,900
Int. Cl.[6] D06P 7/00
U.S. Cl. 87—1 24 Claims



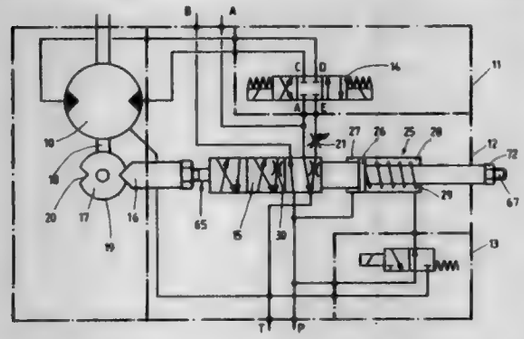
1. A braided packing comprising:
a plurality of longitudinal strands;
a braid strand wound around said longitudinal strands in a selected pattern and thereby forming a braid having an initial weight, said braid strand including yarn having a fiber glass core with fibers wound thereon, said fibers including approximately 50% Kynol and approximately 50% acrylic; and
lubricant impregnated in said braid in an amount increasing the weight of said braid by at least 100% of said initial weight.

5,794,505

POSITIONING DRIVE, IN PARTICULAR FOR A MACHINE TOOL

Günter Fischer, Gemünden, and Rainer Knöll, Burgsinn, both of Germany, assignors to Mannesmann Rexroth AG, Lohr/Main, Germany

PCT No. PCT/EP95/02467, § 371 Date Jan. 21, 1997, § 102(e) Date Jan. 21, 1997, PCT Pub. No. WO96/03586, PCT Pub. Date Feb. 8, 1996
PCT Filed Jun. 24, 1995, Ser. No. 776,639
Claims priority, application Germany, Jul. 22, 1994, 44 26 037.6
Int. Cl.[6] F15B 15/26
U.S. Cl. 91—41 9 Claims



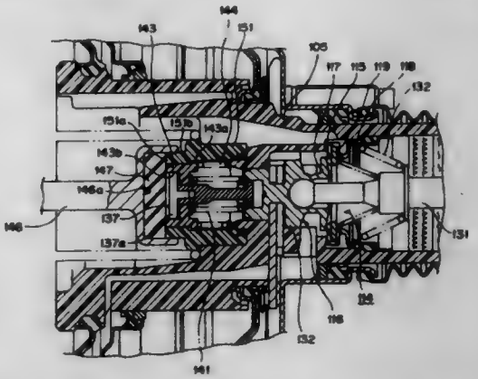
1. A positioning drive, comprising a hydraulic motor (10) which has a cam disk (17) which is rotatable with a motor shaft (18) and is provided with a cam (19), a control valve (12) with which the hydraulic motor (10) forms a structural unit with a housing (37, 46) and has a valve piston (15) which is displaceable between several positions, a control element (16) via which the valve piston (15) can rest against the cam disk (17), and an adjustment element (65) which is operatively arranged between the control element (16) and the valve piston (15) and coaxial to the valve piston (15), and wherein by relative displacement of said adjustment element with respect to the valve piston (15), the relative position between said valve piston (15) and said control element (16) is variable and the position of said adjustment element with respect to the valve piston (15) secured by a releasable locking element (72, 80), and wherein an outer part of the two parts, valve piston (15) and adjustment element (65), is guided outwardly through the housing (46), and the locking element (72, 80) is accessible from outside the housing (46).

5,794,506

REACTION MECHANISM FOR BRAKE BOOSTER

Hidefumi Inoue, and Naohito Saito, both of Saitama-ken, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1997, Ser. No. 895,356
Int. Cl.[6] F15B 9/10
U.S. Cl. 91—369.2 6 Claims



1. In a brake booster including a valve body slidably disposed within a shell, a power piston mounted on the valve body, a constant and a variable pressure chamber defined across the power piston, a valve mechanism disposed in the valve body, an input shaft for driving a valve plunger, which forms part of the valve mechanism, back and forth to switch a flow path in the valve mechanism, an output shaft which is driven forward as the valve body is driven forward, and a reaction disc interposed between one end of the output shaft and the valve plunger; a reaction mechanism for brake booster characterized in that the valve plunger comprises a forwardly located plunger member and a rearwardly located valve side member which are disposed to be slidable relative to each other, with a first spring being disposed between the plunger member and the valve side member, a piston being slidably disposed within the valve body with a given clearance with respect to the rear end face of the plunger member, a second spring having a greater resilience than the first spring being disposed between the piston and the valve body so that the first spring is compressed initially before the second spring is compressed.

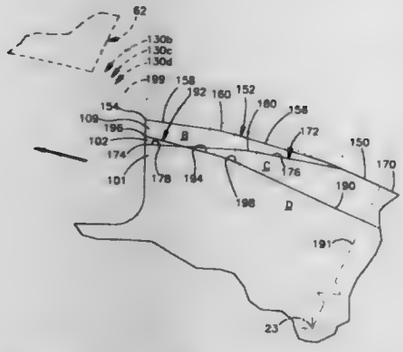
5,794,507

POWER STEERING CONTROL VALVE WITH BACK PRESSURE

Daniel J. Strong, Clinton Township, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Dec. 9, 1996, Ser. No. 762,605
Int. Cl.[6] F15B 9/10
U.S. Cl. 91—375 A 17 Claims

1. Apparatus comprising:
first and second relatively rotatable valve members which direct hydraulic fluid to flow between said valve members from inlet ports to outlet ports;
said valve members having radially opposed lands and grooves defining orifices that enlarge and orifices that constrict upon relative rotation of said valve members from neutral positions;
a pair of said constricting orifices being located in parallel between said inlet ports and said outlet ports, each of said pair



of parallel constricting orifices being defined by a chamfered corner of a corresponding one of said lands;

said valve members comprising means for providing back pressure at selected orifices between said outlet ports and said inlet ports, said selected orifices including only one of said pair of parallel constricting orifices.

5,794,508

STEERING VALVE

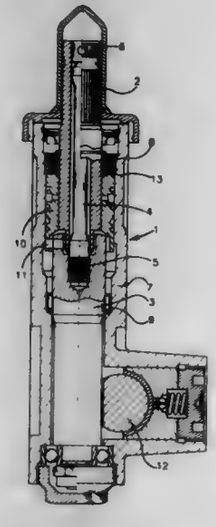
Hans-Willi Gerigk, Oberhausen, Germany, assignor to TRW Fahrwerksysteme GmbH & Co. KG, Dusseldorf, Germany

Continuation-in-part of Ser. No. 626,483, Apr. 2, 1996, abandoned. This application Jul. 8, 1997, Ser. No. 889,282

Claims priority, application European Pat. Off., Feb. 22, 1996, 96102701

Int. Cl.[6] F15B *9/10*

U.S. Cl. 91—375 A **17 Claims**



1. A steering valve for supplying hydraulic fluid to a servo-element, the steering valve comprising:

an input shaft;

an output shaft;

a spring element connecting said input shaft to said output shaft;

a valve casing surrounding said input shaft and connected to said output shaft;

a housing surrounding said valve casing; and

bearing means disposed between said input shaft and said housing;

said bearing means including means for dampening torsional vibration, said means comprising a ring-shaped piston element and a ring-shaped chamber element, said chamber element and said piston element being disposed coaxially and concentrically and being relatively rotatable one of said elements being attached to said input shaft and the other of said elements being attached to said valve casing, said bearing means further including an annular bearing member between one of said elements and said housing permitting relative movement of said one element and said housing;

said chamber element and said piston element defining a series of chambers spaced circumferentially around said input shaft, each of said chambers having incompressible fluid therein;

each of said chambers being defined in part by interdigitated portions of said chamber element and said piston element which interdigitated portions are movable circumferentially of said input shaft and relative to each other.

5,794,509

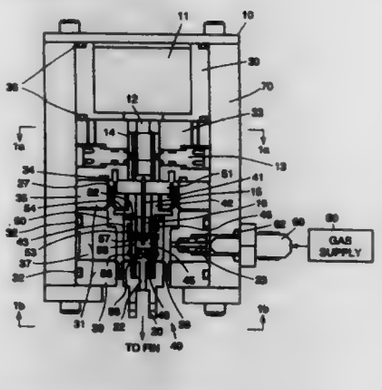
PROPORTIONAL PNEUMATIC FIN ACTUATOR SYSTEM WITHOUT FEEDBACK CONTROL

Charles M. DeLair, and Russell B. Cline, both of Tucson, Ariz., assignors to Raytheon Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 470,782

Int. Cl.[6] F15B *9/10*

U.S. Cl. 91—376 R **11 Claims**



10. An actuator system comprising:

a housing;

a stepper motor coupled to the housing and having a rotatable output shaft that is coupled to an axial lead screw;

a lead nut coupled to the axial lead screw such that the lead nut translates along an axis of the lead screw in response to rotation thereof;

a piston assembly disposed in the housing having an axial hole therethrough, and having passages therein for coupling operating gas therethrough, and wherein the piston assembly comprises a piston upper body, a piston inner body having the axial hole therethrough, and a piston outer sleeve, wherein the inner body has a first predetermined set of fill and vent passages therein, and wherein the outer sleeve has a second predetermined set of fill and vent passages therein;

a spool valve disposed in the axial hole through the piston assembly;

a piston clevis attached to the piston assembly for moving an inertial mass attached thereto;

an upper sealing member disposed between the piston upper body and piston inner body above the spool valve;

a lower sealing member disposed between the outer piston sleeve and the clevis below the spool valve;

an elongated axial quill coupled between the lead nut and the spool valve;

a variable pressure control chamber formed in the housing;

a constant pressure damping chamber formed in the housing;

gas supply means coupled to the housing for supplying operating gas to the damping chamber;

fill passages selectively coupled between the damping chamber and the control chamber for supplying operating gas to the control chamber; and

vent passages selectively coupled to the control chamber for exhausting operating gas outside the actuator system;

and wherein the stepper motor is caused to drive the pneumatic spool valve to a known position based upon the number of step commandos supplied thereto, and wherein the vent and fill passages are selectively uncovered in response to movement of the spool valve and the piston assembly which creates gas flow to or from the control chamber and causes a pressure differential across the face of the piston, thus inducing the piston to follow the spool valve and provide proportional control and accurate positioning of the piston without feedback control.

5,794,510

PRESSURIZED FLUID FEED SYSTEM

Toshiro Takano; Yoichi Netsu, and Mitsumasa Akashi, all of Kanagawa, Japan, assignors to Komatsu Ltd., Japan

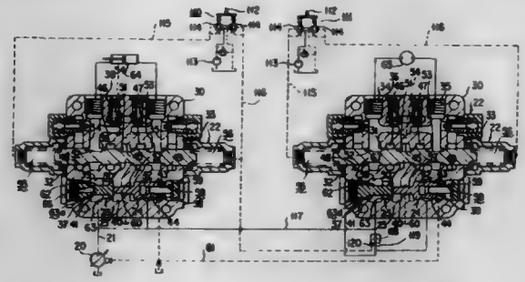
PCT No. PCT/JP94/01607, § 371 Date Mar. 15, 1996, § 102(e) Date Mar. 15, 1996, PCT Pub. No. WO95/09282, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 28, 1994, Ser. No. 617,758

Claims priority, application Japan, Sep. 28, 1993, 5-241120; Sep. 28, 1993, 5-241282

Int. Cl.[6] F15B *11/16*

U.S. Cl. 91—517 **2 Claims**



1. A pressurized fluid feed system having a hydraulic pump, a boom cylinder and a turning motor, and including a pressure compensating valve and a directional control valve which are disposed between said hydraulic pump and said boom cylinder, and a pressure compensating valve and a directional control valve which are disposed between said hydraulic pump and said turning motor, in which

said pressure compensating valves each comprise:

a check valve section having an inlet port connected to said hydraulic pump and an outlet port connected to said directional control valve for controlling an area of an aperture between said inlet port and said outlet port, and

a pressure reduction valve section having a first port connected to said hydraulic pump, a second port connected to a reservoir, a first pressure receiving section connected to a load pressure detecting circuit for said boom cylinder or said turning motor, and a second pressure receiving section connected to said second port, and which is operable under a pressure to said first pressure receiving section in a direction in which said first port and said second port communicate with each other and which is operable under a pressure to said second pressure receiving section in a direction in which a communication between said first port and said second port is blocked for driving said check valve section in a direction in which a communication between said inlet port and said outlet port is closed; and in which

each of said two pressure compensating valves is set by a highest load pressure by establishing a communication between the said two second pressure receiving sections of the respective pressure reduction valve sections of said two pressure compensating valves,

characterized in that

said check valve section of the pressure compensating valve on the side of said turning motor is provided with a variable flow rate control function when said turning motor is singly operated and with a fixed throttling function when said boom cylinder and said turning motor are simultaneously operated.

5,794,511

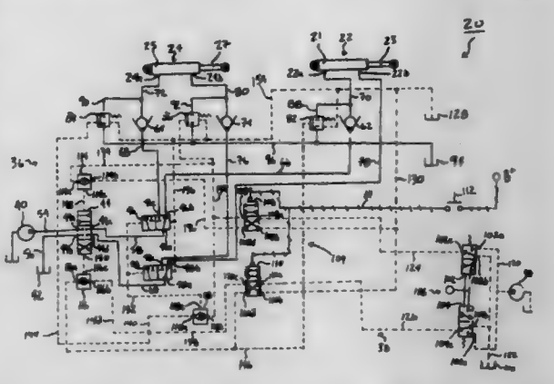
APPARATUS AND METHOD FOR CONTROLLING MULTIPLE FLUID CYLINDERS

Dennis L. Sorbel, Maple Park, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Nov. 26, 1996, Ser. No. 756,622

Int. Cl.[6] F15B *13/06*

U.S. Cl. 91—536 **12 Claims**



1. An apparatus for controlling a first fluid cylinder and a second fluid cylinder, comprising:

an operational pressure source;

a main control valve having a first fluid transmitting position and a second fluid transmitting position,

first and second diverter valves adapted for fluid communication between the main control valve and the first and second fluid cylinders, said diverter valves being selectively operable between a first position wherein fluid communication is established with the first fluid cylinder and isolated from the second fluid cylinder and a second position wherein fluid communication is established with the second fluid cylinder and isolated from the first fluid cylinder, said first and second cylinders being operable in a first direction when the main control valve is in its first fluid transmitting position and a second direction when the main control valve is in the second fluid transmitting position,

a pilot pressure source,

a fluid control circuit including first and second directional valves, each being selectively operable between a first neutral position and a second active position wherein the pilot pressure source is communicated to the main control valve to selectively position the main control valve in one of its first and second fluid transmitting positions;

a pilot valve assembly having a first valve position and a second valve position and being adapted for communication of pilot pressure with the first and second diverter valves to selectively control the movement thereof between their first and second positions; and

at least one ball resolver positioned in communication with the pilot pressure source and the main control valve, said ball resolver being placed in communication with the pilot pressure source upon the positioning of the directional valve in said first active position and said main control valve being positioned in said first fluid transmitting position when said first ball resolver is placed in fluid communication with said pilot pressure source.

5,794,512

MASTER CYLINDER

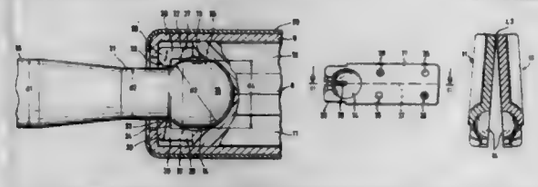
Gerhard Prosch; Christian Sperner, both of Höchstadt/Aisch, and Herbert Folk, Burghaslach, all of Germany, assignors to Ina Wälzlager Schaeffler KG, Herzoednaurach, Germany

Filed Jun. 27, 1996, Ser. No. 670,508

Claims priority, application Germany, Jun. 27, 1995, 195 23 215.1

Int. Cl.[6] F16J *1/14*

U.S. Cl. 92—128 **19 Claims**



1. A master cylinder for use in a hydraulically actuated clutch or brake system of a motor vehicle, comprising:

a casing formed with a bore; and

a piston means axially displaceable within the bore between an initial position and a working position, said piston means including a piston-shaft sleeve received in the bore and having opposite axial ends, with one axial end at an operator-actuated pedal-distal side being closed by a bottom in single-piece configuration with the piston-shaft sleeve, thereby defining an interior, at least two retainer shells extending between the axial ends and supported free of play in the interior by an inner wall of the piston-shaft sleeve, and a piston rod terminating in a spherical head which is swingably mounted to the retainer shells and provided to respond to a manual actuation of a pedal,

each of said retainer shells being formed at a pedal-proximate end of the piston-shaft sleeve with a spherical recess to define a ball socket in which the spherical head snaps in and is received in form-locking manner.

5,794,513

PRESSURE-APPLYING ARRANGEMENT IN A HYDRAULIC AXIAL PISTON MACHINE

Egon Kristensen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

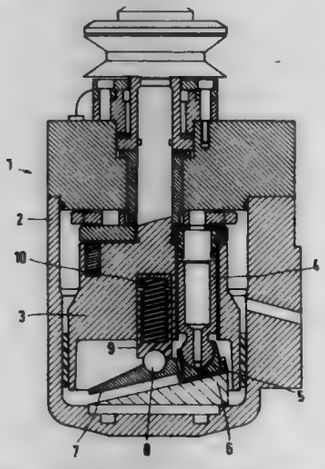
PCT No. PCT/DK94/00012, § 371 Date Jun. 27, 1995, § 102(e) Date Jun. 27, 1995, PCT Pub. No. WO94/16221, PCT Pub. Date Jul. 21, 1994

PCT Filed Jan. 7, 1994, Ser. No. 464,686

Claims priority, application Germany, Jan. 18, 1993, 43 01 120.9

Int. Cl.[6] F01B *13/04*

U.S. Cl. 92—57 **9 Claims**



1. A pressure-applying arrangement in a hydraulic axial piston machine, the machine having a pressure plate and a piston, said piston being axially displaceable in a cylinder body, being biased by a force acting in an axial direction with respect to the cylinder body, and acting against the pressure plate, the piston being formed from a high-strength thermoplastic plastic material;

a ball is arranged between the piston and the pressure plate;

said piston has a diameter which is at least 30% larger than the diameter of the ball; and

the ball is inserted in an end-face recess of the piston having a depth that corresponds to 0.3 to 0.4 times the diameter of the ball.

9. A pressure-applying arrangement in a hydraulic axial piston machine, the machine having a pressure plate and a piston, said piston being axially displaceable in a cylinder body, being biased by a force acting in an axial direction with respect to the cylinder body, and acting against the pressure plate, the piston being formed from a high-strength thermoplastic plastic material, in which on an upper side of the pressure plate there is formed a rotating contact surface facing the piston, and in which the contact surface extends up to bores which are provided in the pressure plate for receiving slider shoes.

5,794,514

VOLUMETRIC MACHINE WITH CURVED LINERS

Felice Pecorari, Campogalliano, Italy, assignor to S.A.I. Societa' Apparecchiature Idrauliche S.p.A., Italy

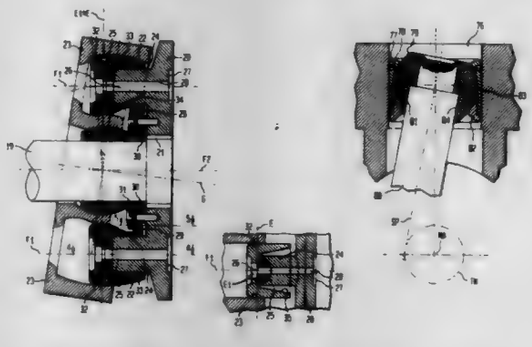
PCT No. PCT/IT96/00015, § 371 Date Jul. 10, 1997, § 102(e) Date Jul. 10, 1997, PCT Pub. No. WO96/22463, PCT Pub. Date Jul. 25, 1996

PCT Filed Jan. 19, 1996, Ser. No. 860,988

Claims priority, application Italy, Jan. 19, 1995, MO95A0011; May 17, 1995, MO95A0078

Int. Cl.[6] F01B *3/00*

U.S. Cl. 92—71 **18 Claims**



1. An apparatus for articulating and correcting the trajectory of a predetermined piston in a volumetric machine having a plurality of pistons in a plurality of corresponding curved cylinders, said apparatus comprising:

(a) at least one piston seal ring associated with said predetermined piston, said at least one seal ring positioned in a plane inclined to a plane of rotation of said plurality of pistons, said inclined plane being different for each of said plurality of pistons and containing an intersection point of an axis of rotation of said plurality of pistons and an axis of rotation of said plurality of cylinders;

(b) a position compensation element permitting movement of said predetermined piston in a direction tangential to an instantaneous trajectory of said predetermined piston; and

(c) a piston support in radial contact with said predetermined piston to compensate centrifugal forces acting on said predetermined piston.

5,794,515

SWASHPLATE CONTROL SYSTEM FOR AN AXIAL PISTON PUMP

Donald G. Bethke, 131 W. Oakwood Dr., Delafield, Wis. 53018

Filed Apr. 3, 1997, Ser. No. 825,762
Int. Cl.[6] F01B *29/00*
U.S. Cl. 92—128 **1 Claim**



1. A method of assembling an axial piston pump comprising the steps of:

a) providing a pump housing having an outer wall defining a generally cylindrical interior, a closed end wall with a drive shaft opening therein disposed on the axis of the housing, and an opposite open end;

b) providing a first piston positioned in the end wall of the housing;

c) providing a second piston positioned in the pump housing;

d) attaching a pair of trunnion blocks to the end wall on opposite sides of the opening, the block having alignable outer bearing surfaces to provide a common axis extending transverse to the housing axis;

e) rotatably mounting a drive shaft on the axis of the housing with one end of the shaft general to the drive shaft opening;

f) providing a swashplate having a rear bearing surface on one side, the bearing surface having a radius slightly greater than the radius of the outer bearing surface of the trunnion blocks, a smooth planar reaction surface opposite the rear bearing surface, and a drive shaft hole in the center of the swashplate extending through the bearing surface and the reaction surface;

g) providing a piston subassembly including a rotor housing having a central drive shaft engaging bore and a plurality of circumferentially spaced, axially disposed cylinders surrounding the bore, axially reciprocable pistons disposed in the cylinders and having piston ends extending outwardly from the cylinders in the same direction, and biasing means for urging the pistons axially in the same direction;

h) inserting the swashplate piston subassembly into the housing through the open end, around the drive shaft, with the rear bearing surface against the outer bearing surfaces of the trunnion blocks to allow the swashplate to tilt thereon such that the axis of the rear bearing surface provides a tilt axis coincident with the common axis of the outer bearing surfaces, the drive shaft received in and extending through the rotor bore and driving arrangement therein and with the piston heads in biased slidable rotational engagement with the reaction surface;

i) providing a cover plate having a centrally disposed bearing means for rotatably supporting the other end of the drive shaft and means for engaging the rotor housing and holding and maintaining the bias engagement between the piston ends and the swashplate reaction surface; and

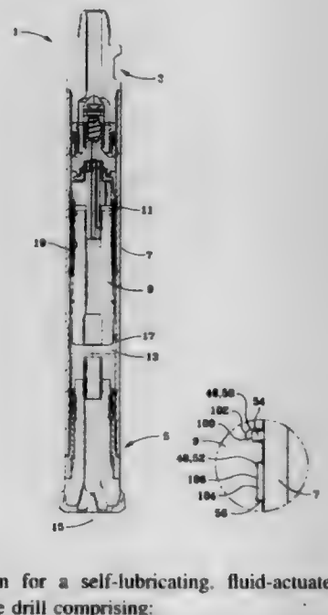
j) closing the open end of the pump housing with the cover plate such that the first piston engages the rear surface of the swashplate and the second piston engages the reaction surface of the swashplate in opposed relationship to the first piston.

5,794,516

PISTON FOR A SELF-LUBRICATING, FLUID-ACTUATED, PERCUSSIVE DOWN-THE-HOLE DRILL

Dale R. Wolfer, Salem, and Leland H. Lyon, Roanoke, both of Va., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Aug. 30, 1995, Ser. No. 520,801
Int. Cl.[6] F01B *31/10*
U.S. Cl. 92—155 **3 Claims**



1. A piston for a self-lubricating, fluid-actuated, percussive down-the-hole drill comprising:

(a) an elongated body member having a longitudinal central axis, said body member terminating in a back end and a front end, said body member having a generally circular cross section, as viewed radially to said longitudinal axis;

(b) a bore through said body member along said axis;

(c) a first self-lubricating bearing means on a first land portion of said outer surface of said body member adjacent said back end;

(d) a first self-lubricating, floating seal means on said first land portion adjacent said first bearing means;

(e) a second self-lubricating, floating seal means on a second land portion of said outer surface of said body member adjacent said front end;

(f) a second self-lubricating bearing means on said second land portion adjacent said second seal means; and

(g) said body member having an undercut portion extending between said first and second land portions, said bore and said undercut portion forming a portion of a percussive fluid transmitting passageway.

5,794,517
PISTON ASSEMBLY

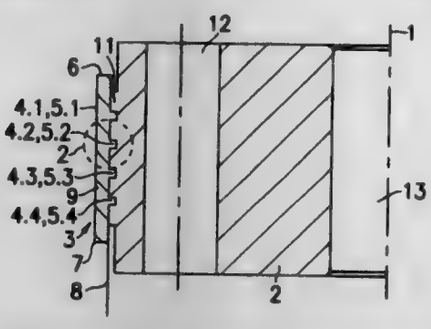
Juergen Emig, Grasellenbach, Germany, assignor to Firma Carl Freudenberg, Weinheim, Germany

Filed Apr. 9, 1996, Ser. No. 631,294

Claims priority, application Germany, Apr. 11, 1995, 195 13 727.2

Int. Cl.[6] F16J *9/00*

U.S. Cl. 92—244 **14 Claims**



1. A piston assembly that is capable of axially reciprocal movement within a cylindrical housing, comprising:

a piston having an axial length, said piston being made of a hard material and having a peripbery on which is at least one groove that is radially open to the exterior of the piston; and

a guide ring made of a polymer material that surrounds the piston along at least a portion of the axial length of the piston, said guide ring having at least one radially inwardly directed projection that mates with the groove on the piston so as to form-lock therewith, the guide ring further having a set of axially spaced apart integrally molded sealing lips that extend in the axial direction beyond the groove of the piston, and wherein the guide ring has a greater radial thickness, a larger outside diameter and a smaller axial length prior to manufacture than in its final assembled state.

5,794,518
APPARATUS AND DEVICE FOR LAUTERING SECOND WORTS IN BREWING

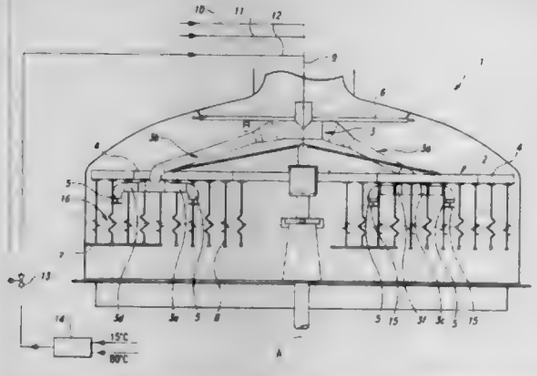
Kurt Stippler, Marzling, and Klaus Wasmuht, Ellingen, both of Germany, assignors to Anton Steinecker Maschinenfabrik GmbH, Freising-Attaching, Germany

Filed Oct. 18, 1996, Ser. No. 730,907

Claims priority, application Germany, Oct. 20, 1995, 195 39 180.2

Int. Cl.[6] A23L *1/28;* **C12G** *1/02*

U.S. Cl. 99—277.2 **11 Claims**



1. A method of lautering second worts or spargings during brewing in a lauter tun that is provided with a rotatable raking device and a distributor connected thereto for introducing at least one of the last runnings, first worts and sludge, comprising the steps of washing out the second wort which remains in spent grains after a first wort recovery by introducing hot water to the spent grains through the distributor from above the spent grains, and washing the second wort out of spent grains by means of the hot water that is applied from above onto the spent grains through the distributor.

5,794,519
BREWING HEAD FOR COFFEE PORTION CAPSULES OF AN ESPRESSO MACHINE

Daniel Fischer, Romanshorn, Switzerland, assignor to Eugster/Frismag AG, Romanshorn, Switzerland

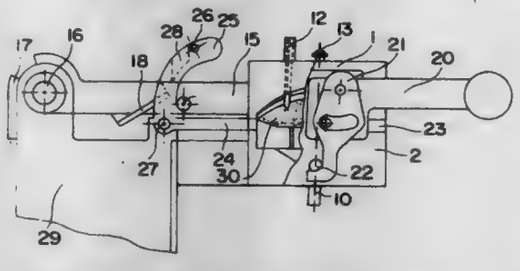
PCT No. PCT/EP95/03581, § 371 Date Jul. 12, 1996, § 102(e) Date Jul. 12, 1996, PCT Pub. No. WO96/08990, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 12, 1995, Ser. No. 648,160

Claims priority, application Germany, Sep. 22, 1994, 94 15 374 U

Int. Cl.[6] A47J *31/40;31/06*

U.S. Cl. 99—295 **8 Claims**



1. A brewing head of an espresso machine, comprising:

a lower brewing head part having a first recess and a coffee discharge conduit formed therein;

an upper brewing head part having a second recess and a hot water conduit formed therein, said upper brewing head part being pivotable relative to said lower brewing head part to a closed position in which the first recess and the second recess form a receptacle that receives a coffee portion capsule, and to an opened position in which the first recess and the second recess are separated from each other so that the coffee portion capsule can be inserted or discharged;

a plurality of hollow needles attached to said upper brewing head part, and being in fluid communication with the hot water conduit, said needles projecting into the receptacle and being penetratable into a top side of the coffee portion capsule for delivering hot water from the hot water conduit into an interior of the coffee portion capsule when said upper brewing head part is in the closed position;

a pyramid plate located within the first recess and having a plurality of projections formed thereon, and a plurality of discharge holes formed therethrough that communicate the receptacle with the coffee discharge conduit, said projections punching holes through a lower side of the coffee portion capsule when the hot water delivered into the interior of the coffee portion capsule is at a pressure that exceeds a resistance of the coffee portion capsule to tearing, so that the hot water together with dissolved coffee components are discharged through the discharge holes and the coffee discharge conduit, respectively;

ejector means located within said upper brewing head part for ejecting a used coffee portion capsule from the hollow needles when said upper brewing head part is in the opened position;

a housing;

a pivoting arm having one end pivotably connected to said housing and another end connected to said upper brewing head part, said pivoting arm being pivotable to pivot said upper brewing head part to the closed and opened positions, said pivoting arm having a lifting pin connected thereto; and

expeller means comprising an expeller implement that receives the coffee portion capsule and positions the coffee portion capsule within the receptacle, and an expeller arm having one

end connected to said expeller implement and another end pivotably connected to said housing, said expeller means engaging with said lifting pin when said pivoting arm is pivoted to move said expeller means in an upward direction, so that the coffee portion capsule within said expeller implement can fall from said expeller implement for disposal.

5,794,520

WATER HEATING VESSEL

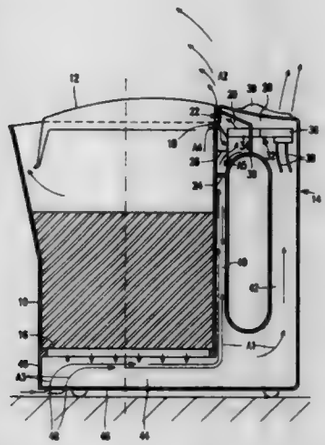
David V. Hefford, Esher, Great Britain, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1997, Ser. No. 818,141

Claims priority, application United Kingdom, Mar. 20, 1996, 9605831

Int. Cl.[6] **A23L** *1/00;* **A21B** *1/08;* **A47J** *27/00;* **H05B** *1/02*

U.S. Cl. 99—323.3 **9 Claims**



1. A water heating vessel comprising a body portion (**10**), an electric heating element (**16**) and a steam vent (**18**) connecting the upper part of the body portion to a vented steam chamber (**20**), the vessel further comprising a dry chamber (**28**) adjacent the steam chamber (**20**) and separated from the steam chamber by moisture-proof divider means (**30**), a steam sensor being sealed into said divider means so that a thermally-sensitive part (**34**) of the steam sensor is in the steam chamber and an electrical portion (**36**, **38**) of the steam sensor is in the dry chamber.

5,794,521

BREADMAKER AND A CODING SYSTEM THEREFOR

Simon K. C. Yung, 6 Purves Road, Jardine's Lookout, Hong Kong

Continuation of Ser. No. 346,432, Nov. 29, 1994, Pat. No. 5,704,277. This application Aug. 21, 1997, Ser. No. 915,654

Int. Cl.[6] **A21B** *1/00;* **A21D** *8/00;* **A47J** *27/00;37/01*

U.S. Cl. 99—327 **13 Claims**

1. An automatic breadmaker system, comprising:

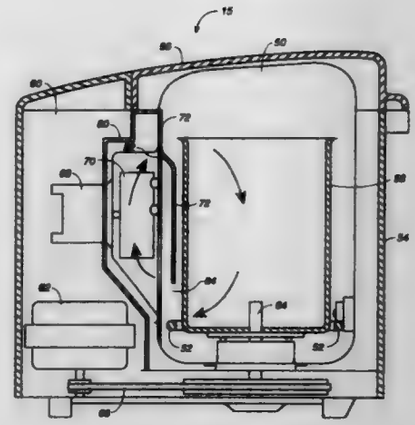
a package of ingredients for baking bread;

a breadmaker for operating a preprogrammed process selectable from a repertoire of preprogrammed processes, said breadmaker further comprising:

a baking pan for receiving said package of ingredients therein;

an input for inputting a code to select a preprogrammed process among said repertoire of preprogrammed processes; and

a controller responsive to said code for executing the selected preprogrammed process to process said package of ingredients in said baking pan; and wherein



said package of ingredients further comprises a code corresponding to a preprogrammed process of said breadmaker among said repertoire of preprogrammed processes.

5,794,522

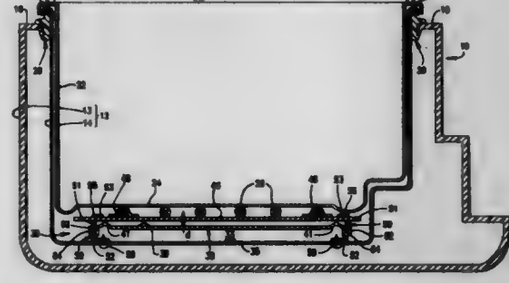
ELECTRICAL COOKING APPARATUS, IN PARTICULAR DEEP FAT DRYER

Bernard Bois, Caen, and Guy Collas, Ifs, both of France, assignors to Moulinex S.A., Paris, France

Filed Apr. 11, 1997, Ser. No. 832,341

Int. Cl.[6] **A47J** *27/00;36/38;37/12;* **H05B** *6/76*

U.S. Cl. 99—330 **8 Claims**



1. In an electric cooking apparatus comprising an insulating enclosure (**12**) having two shells spaced from each other comprising an external shell (**13**) and an inner shell (**14**), a food cooking vessel (**22**) removably mounted in the enclosure (**12**) at a distance from the inner shell (**14**), and an electric heating device (**30**) mounted fixedly in a space (**33**) separating a bottom (**24**) of the vessel (**22**) from a bottom (**35**) of the inner shell (**14**) and comprising a sheathed heating resistance (**26**) which extends flat and into which comes in direct contact substantially all the bottom (**24**) of the vessel (**22**); the improvement wherein the heating device (**30**) comprises a heat reflector (**38**) mounted fixedly on the inner shell (**14**) and disposed at a small distance (d) below the sheathed resistance (**26**) so as to concentrate the thermal radiation of the resistance over all the bottom (**24**) of the vessel (**22**).

5,794,523

Patent Not Issued For This Number

5,794,524

FOOD PROCESSOR WITH A MIXING VESSEL AND A DRIVE MECHANISM FOR AN AGITATOR IN THE MIXING VESSEL

Uwe Kemker, Wuppertal; Stefan Dörner, Solingen, and Oliver Lapp, Wuppertal, all of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Germany

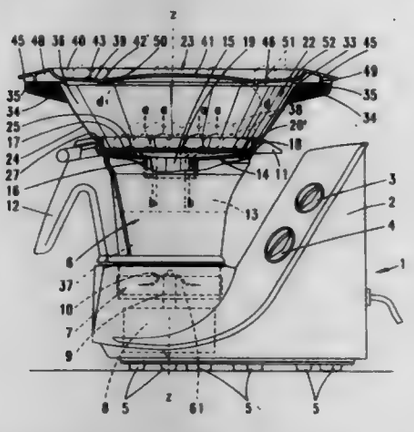
PCT No. PCT/EP95/01636, § 371 Date Jan. 7, 1997, § 102(e) Date Jan. 7, 1997, PCT Pub. No. WO95/29615, PCT Pub. Date Nov. 9, 1995

PCT Filed Apr. 28, 1995, Ser. No. 737,766

Claims priority, application Germany, Apr. 28, 1994, 44 14 823.2

Int. Cl.[6] A47J *27/04*

U.S. Cl. 99—348 **26 Claims**



1. A food processor comprising a mixing vessel being heatable in a lower region thereof, an agitator in the mixing vessel, a drive for the agitator, a top unit supported at an upper region of the mixing vessel opposite said lower region of the mixing vessel, said top unit comprising a cooking material support in a base of the top unit and having perforations in the base for preparation by steaming of foodstuffs, the perforations being formed in a cooking material support for receiving condensate/moisture to be conducted back into the mixing vessel, and wherein the food processor further comprises a vessel cover sitting on an upper edge of said vessel and extending beneath said top unit and into said vessel.

5,794,525

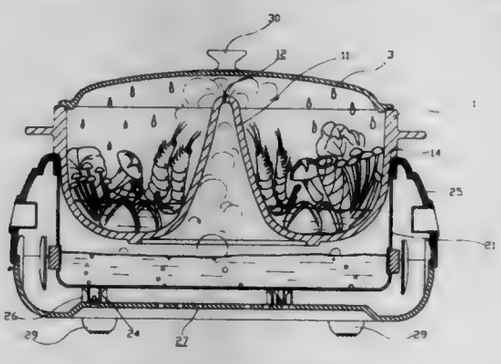
COOKING DEVICE

Chi-Po Fan, No. 1, Alley 1,Lane 226, Chung-Hwa Road, Sec. 4, Hsinchu City, Taiwan

Filed Nov. 12, 1997, Ser. No. 968,226

Int. Cl.[6] A47J *27/00;27/04;37/00*

U.S. Cl. 99—413 **3 Claims**



1. A cooking device comprising a heater which receives and supports thereon a food container which is adapted to receive and contain therein food to be cooked, the food container comprising a cylindrical casing having a top opening and a bottom on which a raised portion with a steam passage is formed, the steam passage having an exit opening at a location higher than the top opening of the casing, a cover being provided to close the open top of the casing, the heater comprising a base inside which a water vessel is provided to receive and contain therein a predetermined amount of water, heating means being provided around the water vessel to heat the water therein for generation of steam, the food container being configured to be fit into the water container to define a sealed space therein so that the steam generated inside the water vessel is only allowed to escape out of the water vessel via the steam passage and into the food container to heat and cook the food contained therein and to form a soup with the cooked food when the steam is cooled and condensed into distilled water which mixes with the food.

5,794,526

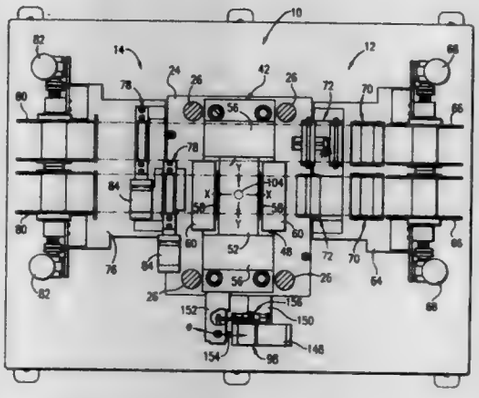
DIE CUTTING AND STAMPING PRESS HAVING SIMULTANEOUS X,Y,AND O AXES DIE REGISTRATION MECHANISM AND METHOD

Charles C. Raney, Shawnee, Kans., assignor to Preco Industries, Inc., Lenexa, Kans.

Continuation of Ser. No. 641,413, Apr. 30, 1996, Pat. No. 5,644,979. This application Apr. 9, 1997, Ser. No. 835,607

Int. Cl.[6] B30B *15/02;* **B26D** *5/00*

U.S. Cl. 100—39 **10 Claims**



9. A method for successively positioning a die unit in a desired predetermined relationship to defined portions of elongated material as successive defined portions are brought into position to be processed by the die unit, said method comprising the steps of:

advancing the material along an axial path of travel to successively feed the defined portions of the material into the die unit;

adjusting the position of the die unit relative to each material portion after feeding thereof to the die unit, including the steps of determining the position of the initially fed material portion relative to the die unit, and simultaneously changing the position of the die unit by simultaneous adjusting movement of the die unit along said axial path of travel, in a lateral direction transverse to said axial path of travel, and angularly about a reference axis transverse to a plane containing the material, until said material portion assumes a desired position relative to the die unit; and

operating said die unit to die cut each material portion after completion of said adjusting step.

5,794,527

CONVERGING PASSAGE CAN CRUSHER

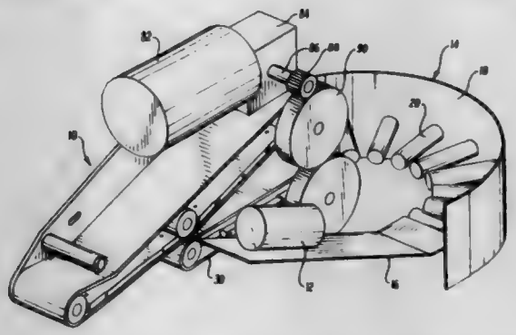
Richard Phillip Brooks, Bakewell, United Kingdom, assignor to Tony Team Limited, Bakewell, United Kingdom

Filed Mar. 20, 1996, Ser. No. 618,938

Claims priority, application United Kingdom, Mar. 25, 1995, 9506125

Int. Cl.[6] B30B *9/32*

U.S. Cl. 100—151 | **19 Claims**



1. A can crusher including two endless belt assemblies arranged alongside each other with facing runs of said belt assemblies being arranged to define a converging passage therebetween in a direction of motion of the belts, one belt assembly being located generally adjacent the other and one being pivotally mounted relative to the other whereby an angle of convergence of the passage and a gap between the belts at its smallest point are variable, biasing means to bias the facing runs of the endless belt assemblies toward each other, a pair of facing plates between which the pivotally mounted endless belt assembly is mounted, the pair of plates being pivotally mounted about an axis of rotation of a drive roller of the pivotally mounted belt assembly, and wherein the biasing means biases the pair of facing plates and the pivotally mounted belt assembly relative to the other belt assembly.

5,794,528

DEVICE FOR HOLDING TENSIONED SHEET-LIKE MATERIAL AND PROCESS FOR TENSIONING SAID MATERIAL

Hans-Ulrich Gronig, Schwarzenburg, Switzerland; Guido Kreuzer, Vlersen, and Eckhard Napp, Grefrath, both of Germany, assignors to Anton Hurtz GmbH & Co. KG, Nettetal, Germany

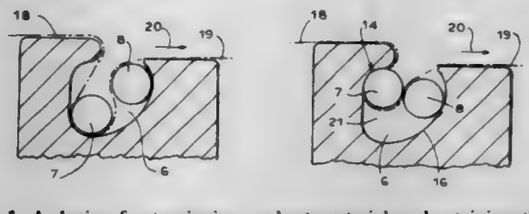
PCT No. PCT/DE94/00722, § 371 Date Dec. 27, 1995, § 102(e) Date Dec. 27, 1995, PCT Pub. No. WO95/01261, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 24, 1994, Ser. No. 578,511

Claims priority, application Switzerland, Jun. 29, 1993, 1947/93

Int. Cl.[6] B05C *17/06*

U.S. Cl. 101—127.1 | **15 Claims**



1. A device for tensioning a sheet material and retaining the sheet material in a tensioned state, said device comprising:

a stretching frame formed from a plurality of frame sections adapted to be spanned by a sheet material to be tensioned, said sheet material lying along a surface of said frame;

a longitudinal groove formed in each of said frame sections and opening at said surface at a narrow elongated mouth, said grooves each having a projection overhanging one side of the respective groove and defining a lip of the mouth, and opposite wall portions converging in a wedge shape toward said mouth, at least one of said wall portions being of circular arc segmental shape with a respective radius; and

two rigid cylindrical bars of round cross section in each of said grooves and extending at least part of the length thereof, said sheet material having a loop extending around only one of said bars and passing between said one of said bars and one of said wall portions juxtaposed therewith and passing between said bars whereby the other of said bars bears directly against another of said wall portions juxtaposed therewith, a first of said bars having a radius corresponding substantially to the radius of said circular arc segmental shape and both said first of said bars and a second of said bars having diameters less than a width of said mouth, a sum of said diameters being greater than said width of said mouth, whereby upon tensioning of said sheet material said loop pulls said one of said bars toward said mouth and friction of said sheet material between said bars causes said other of said bars to roll towards said mouth and wedge said bars against one another and said sheet material.

5,794,529

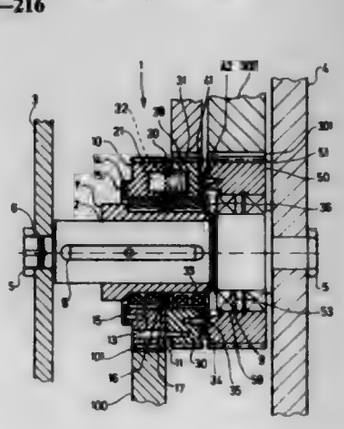
COMPLIANT DRIVE FOR PRINTING PRESSES

Douglas Joseph Dawley, Epping; Michael Lee Hearn, and David William Dupuis, both of Dover, all of N.H., assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris, Inc., Dover, N.H.

Filed May 2, 1996, Ser. No. 641,857

Int. Cl.[6] B41F *5/00*

U.S. Cl. 101—216 | **19 Claims**



9. A compliant drive for use in a printing press unit comprising:

a plate cylinder, the plate cylinder comprising a driving gear;

at least one driven gear;

an input gear, the input gear being meshed only with the driving gear and driven by the driving gear;

at least one input gear rolling contact bearing, the input gear being mounted for rotation on the at least one input gear rolling contact bearing;

at least one output gear, the at least one output gear being meshed only with the at least one driven gear and driving the at least one driven gear;

at least one first output gear rolling contact bearing, the at least one output gear being mounted for rotation on the at least one first output gear rolling contact bearing; and

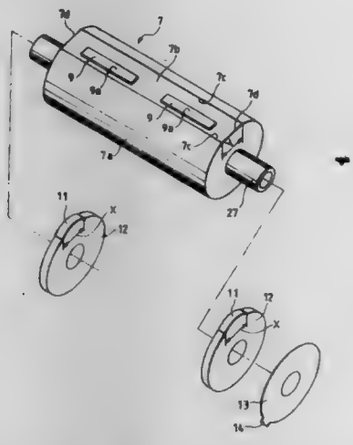
at least one compliant coupling between the input gear and the at least one output gear, the compliant coupling comprising at least one biasing element.

5,794,530

THERMAL TRANSFER PRINTER HAVING INTERMEDIATE TRANSFER MEMBER

Koichi Dobashi; Isao Owada, and Hiroyoshi Zama, all of Iwate-ken, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Oct. 7, 1996, Ser. No. 727,806
Claims priority, application Japan, Oct. 12, 1995, 7-264071
Int. Cl.[6] B41F *1/30*
U.S. Cl. 101—409 **11 Claims**



1. A thermal transfer printer having an intermediate transfer member comprising:

the intermediate transfer member;

a thermal print head for transferring portions of an ink layer from an ink ribbon to a circumferential surface of said intermediate transfer member in ink dots; and

a pressure drum to be pressed against said intermediate transfer member to transfer the ink dots from said intermediate transfer member thereto, provided with grippers coupled to a circumferential surface of the pressure drum and with end plates each having a circumferential section and a cam section, the circumferential section having a circumference less than a circumference of said pressure drum, the cam section formed so as to come into contact with the circumferential surface of said intermediate transfer member when said pressure drum is pressed against said intermediate transfer member and rotated and having a height from the circumferential surface of said pressure drum greater than that of upper ends of the grippers from the circumferential surface of said pressure drum at its opposite ends to avoid the collision of the grippers with said intermediate transfer member.

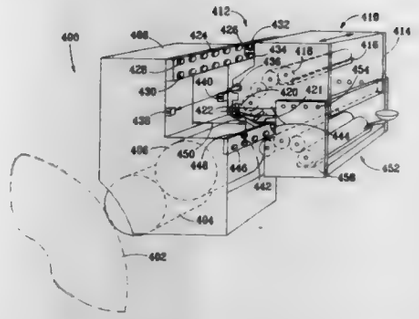
5,794,531

MULTIPLE COLOR OFFSET ROTARY PRINTING PRESS WITH HORIZONTAL SLIDE ACCESS

James J. Keller, 1806 E. Main St., Mesa, Ariz. 75203

Continuation-in-part of Ser. No. 577,124, Dec. 22, 1995, Pat. No. 5,590,598, which is a continuation-in-part of Ser. No. 205,288, Mar. 1, 1994, Pat. No. 5,477,780, which is a continuation-in-part of Ser. No. 33,313, Mar. 15, 1993, Pat. No. 5,289,768, which is a continuation-in-part of Ser. No. 902,875, Jun. 23, 1992, Pat. No. 5,193,458. This application Jan. 7, 1997, Ser. No. 779,754
Int. Cl.[6] B41F *1/34*
U.S. Cl. 101—479 **12 Claims**

1. A horizontal slide mechanism for removably replacing an inking unit on a rotary offset printing press of the type having a plate cylinder, a blanket cylinder and an impression cylinder having parallel rotational axes; said horizontal slide mechanism comprising:



(a) a first guide track and first slide plate pair mounted between said printing press and said inking unit parallel to said plate, blanket and impression cylinders at one location on said printing press for guided movement parallel to said plate, blanket and impression cylinders;

(b) a second guide track and second slide plate pair mounted between said printing press and said inking unit at another location parallel to and spaced apart a predetermined transverse distance from said first guide track and slide plate pair for guided movement and support of said inking unit; and

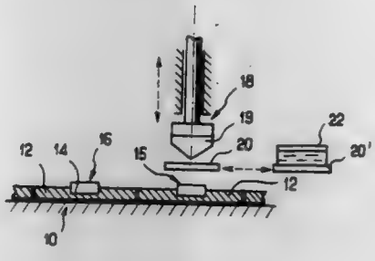
(c) a latching mechanism by which said inking unit is releasably held in a first position corresponding to inking engagement.

5,794,532

GAMBLING CHIP AND METHOD OF MARKING SAME

Christophe Gassies, Echevronne; Olivier Mauzac, Seppois-le-bas, and Eric Philippe, Grans, all of France, assignors to Etablissements Bourgogne ET Grasset, Savigny-les-Beaune, France

PCT No. PCT/FR96/00228, § 371 Date Oct. 2, 1996, § 102(e) Date Oct. 2, 1996, PCT Pub. No. WO96/25066, PCT Pub. Date Aug. 22, 1996
Continuation of Ser. No. 718,572, Oct. 2, 1996. This PCT application Feb. 13, 1996, Ser. No. 942,283
Claims priority, application France, Feb. 15, 1995, 95 01728
Int. Cl.[6] B41F *31/00*
U.S. Cl. 101—493 **31 Claims**



1. A gambling chip, comprising:

a decoration on at least one face of said gambling chip;

at least one layer of varnish on said decoration including at least one layer of ink applied by pressure pad marking.

5,794,533
SPEED CONTROL APPARATUS FOR WATERWAY TRAVELING VEHICLE

Yohei Takai, Tokyo, Japan, assignor to The Walt Disney Company, Burbank, Calif.

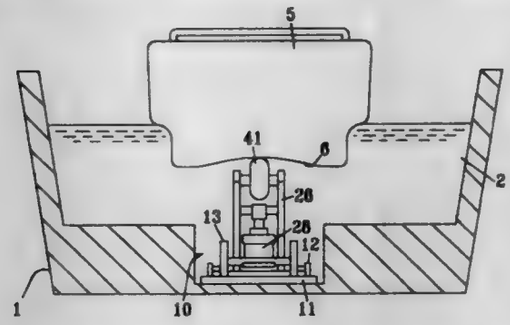
PCT No. PCT/US93/04779, § 371 Date Jul. 13, 1995, § 102(e) Date Jul. 13, 1995, PCT Pub. No. WO93/23126, PCT Pub. Date Nov. 25, 1993

PCT Filed May 18, 1993, Ser. No. 295,781

Claims priority, application Japan, May 18, 1992, 4-148944

Int. Cl.[6] A63G *3/02*

U.S. Cl. 104—73 **24 Claims**



10. An apparatus for controlling a water traveling vehicle intended to travel in a predetermined direction along a waterway, comprising:

a base mounted in said waterway, said base substantially defining a planar surface;

a vehicle speed control structure mounted on said base and having at least a portion thereof coming in contact with said vehicle to control said vehicle along said waterway, said vehicle speed control structure configured to enable rotation relative to said base about an axis substantially perpendicular to said planar surface, so as to accommodate said vehicle being offset from said predetermined direction when said vehicle and said portion come into contact.

5,794,534
SORTING INSTALLATION FOR SORTING INDIVIDUALLY CONVEYED OBJECTS

Robby Enderlein, Landsberg a. Lech; Johann Robu, Olching, both of Germany, and Hansjörg Geiger, Schwaz, Austria, assignors to MTS Modulare Transport Systeme GMBH, Vomp, Austria

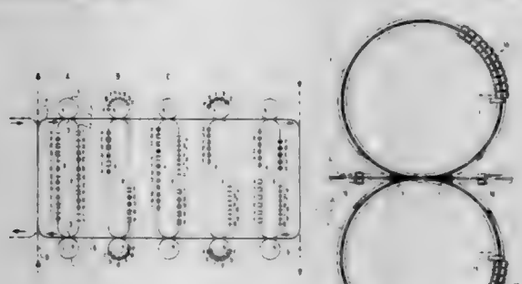
PCT No. PCT/EP95/01367, § 371 Date Oct. 3, 1996, § 102(e) Date Oct. 3, 1996, PCT Pub. No. WO95/27673, PCT Pub. Date Oct. 19, 1995

PCT Filed Apr. 12, 1995, Ser. No. 718,506

Claims priority, application Germany, Apr. 12, 1994, G 94 06 061.4

Int. Cl.[6] B61B *3/00*

U.S. Cl. 104—88 R **7 Claims**



1. A suspension conveyor comprising:

two conveyor circuits (**1**, **2**) having pushing or pulling means circulating in opposite directions, the two conveyor circuits (**1**, **2**) being arranged as a conveyor circuit pair on opposite sides of an additional conveyor path (**4**), the conveying direction of both conveyor circuits (**1**, **2**) coinciding with a conveying direction of said additional conveyor path (**4**);

roller devices (**10**) for carrying objects (a,b . . . n), said roller devices being entrained by the pushing or pulling means of the conveyor circuits (**1**, **2**); and

a controllable switching means (**3**) arranged between the conveyor circuits (**1**, **2**), for transferring the objects individually from one of the conveyor circuits to the other conveyor circuit, said switching means being adapted to transfer the objects selectively from the conveyor path (**4**) to either of the conveyor circuits (**1**, **2**) and from either of the conveyor circuits (**1**, **2**) to the conveyor path (**4**);

characterized in that

the suspension conveyor is a sorting installation including means connected to the said switching means for sorting numerous different individually conveyed objects (a,b, . . . n) in the sorting installation;

the conveyor circuits (**1**, **2**) and the additional conveyor path (**4**) extend within one plane;

said additional conveyor path (**4**) forming part of both conveyor circuits (**1**, **2**) over at least an infinitesimal path portion at the place of the switching means (**3**) and extends over said at least infinitesimal path portion in the same direction as the conveyor circuits (**1**, **2**); and

that the switching means (**3**) is further adapted to selectively allow the objects to travel past the switching means without leaving the respective conveyor circuit (**1**, **2**) in which the objects are present.

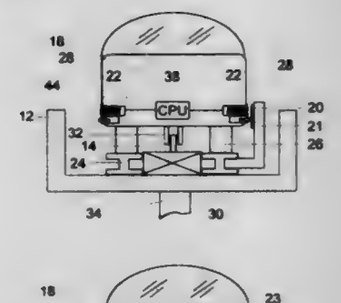
5,794,535
SWITCHING MECHANISM FOR TRANSIT MODULES

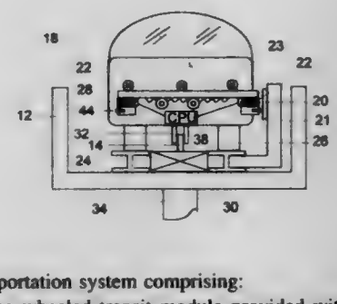
Herman I. Pardes, 45 Wickapecko Dr., Ocean, N.J. 07712-4137

Filed Apr. 10, 1997, Ser. No. 835,905

Int. Cl.[6] B61B *12/00*

U.S. Cl. 104—130.07 **2 Claims**





1. A transportation system comprising:

at least one wheeled transit module provided with a switching mechanism including an electromagnetic constraining fixture at each side of the transit module, and an idler wheel electromechanical assembly mounted adjacent to and cooperating with each said electromagnetic constraining fixture;

a main guideway connected to a plurality of branch guideways by a plurality of merge guideway sections, said main and branch guideways being provided with a central base guide for guiding said wheeled transit module, first and second lateral guidance bars mounted on first and second sides of each of said merge guideway sections, respectively, said central base guide having recessed portions on said merge guideway sections so as to allow the wheeled transit module to travel through said merge guideway sections without interference with said central base guide; and

wherein a control means is provided on said transit module to selectively activate a respective one of said electromagnetic constraining fixtures to follow a respective one of said first and second lateral guidance bars for guiding said transit module along a path defined by one of said guideways, and each said idler wheel electro-mechanical assembly is positioned to maintain a respective one of the electromagnetic constraining fixtures in close proximity to the respective one of the lateral guidance bars, and to provide curvature information of a respective one of the merge guideway sections to the control means for controlling wheel steering of said transit module.

5,794,536

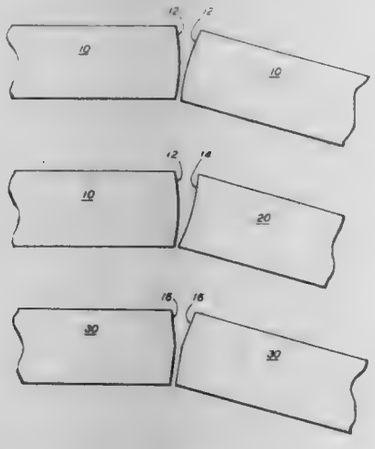
END DESIGN FOR A RAILWAY TYPE FREIGHT CAR

David W. Daugherty, Jr., Plainfield, and Staffan G. Brandt, Wauconda, both of Ill., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jun. 20, 1996, Ser. No. 670,778

Int. Cl.[6] B61D *49/00*

U.S. Cl. 105—3 **7 Claims**



1. A railway car system comprising:

a plurality of railway freight cars connected to one another end-to-end to form a train consist, each of said railway freight cars having a handbrake mechanism mounted on a predetermined side of the railway freight car, closely adjacent to at least one end of the railway freight car; each of said railway freight cars including at least one end having one of a substantially convex shape, concave shape, and double wedge shape such that the length of the train consist and the distance between adjacent freight cars of said railway freight cars are reduced without interference between connected ends of said adjacent freight cars when the freight cars travel around track curves.

5,794,537

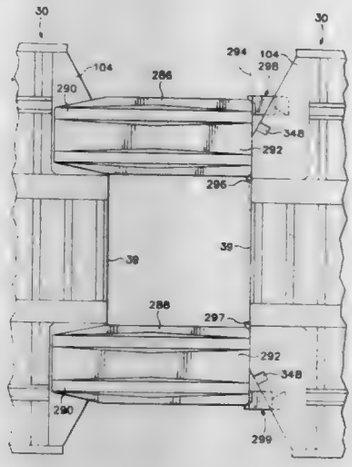
DECK-EDGE HINGE FOR LOADING BRIDGE

Jon B. Zaerr, and Michael D. Hubbard, both of Portland, Oreg., assignors to Gunderson, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 730,810, Oct. 17, 1996, Pat. No. 5,743,192. This application Oct. 3, 1997, Ser. No. 943,981

Int. Cl.[6] B61D *3/10*

U.S. Cl. 105—4.1 **10 Claims**



1. A hinge apparatus adjustable between a stowed configuration and an operative configuration, for use in temporarily connecting a bridge member to a deck of a railroad car, comprising:

(a) a hinge body including a hinge pivot element defining a generally horizontal hinge axis;

(b) a mounting assembly for attachment to said deck;

(c) a mounting pivot defining a vertical axis of rotation and interconnecting said hinge body with said mounting assembly; and

(d) a limit stop arranged to prevent said hinge body from moving from said stowed configuration beyond said operative configuration with respect to said mounting assembly.

5,794,538

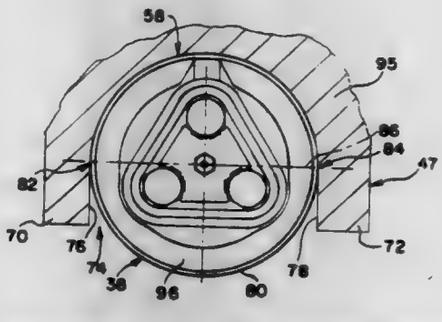
RAILCAR TRUCK BEARING ADAPTER CONSTRUCTION

Terry L. Pitchford, St. Louis, Mo., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Apr. 1, 1997, Ser. No. 831,733

Int. Cl.[6] B61F *5/26*

U.S. Cl. 105—218.1 **20 Claims**



1. A bearing adapter assembly to rigidly retain a bearing assembly and axle end of an axle in a railway truck sideframe pedestal jaw, each said sideframe having a first longitudinal axis, a first pedestal jaw, a second pedestal jaw, a first outer wall surface and a second outer wall surface with a wall thickness between said first and second outer wall surfaces,

each said first and second pedestal jaw having an upper wall, a first sidewall and a second sidewall cooperating to define a pedestal-jaw opening generally opposite said upper wall,

said pedestal-jaw upper wall, first sidewall and second sidewall having a pedestal-jaw surface,

said bearing adapter assembly positionable in said opening,

said axle being generally cylindrical with a second longitudinal axis, a cross-sectional diameter, a first end and a second end,

said second longitudinal axis generally transverse to said first longitudinal axis at a reference position,

a bearing assembly mounted on each said axle first and second end, said bearing assembly being generally annular with a horizontal diameter generally parallel to said axle cross-sectional diameter and having an end face with an outer circumference, said bearing horizontal diameter generally normal to and extending through said axle longitudinal axis and intersecting said bearing outer circumference at a first contact point and a second contact point, said axle longitudinal axis and said horizontal diameter cooperating to define a plane,

said bearing adapter assembly comprising:

an upper portion, a first sidewall and a second sidewall,

each said upper portion, first sidewall and second sidewall having an outer surface and an inner surface,

said adapter assembly positioned in said pedestal-jaw opening with said assembly outer surfaces contacting said pedestal-jaw upper wall, first sidewall and second sidewall pedestal-jaw surfaces, and approximately extending between said sideframe first and second outer wall surfaces;

means for rigidly securing said assembly to said sideframe in said pedestal-jaw opening;

said adapter assembly inner surface contoured to receive said bearing outer circumference, which bearing and axle ends are nestable against said contoured inner surface,

said adapter assembly first-sidewall inner surface tangentially contacting said bearing circumference at about one of said first and second contact points, and said assembly second sidewall inner surface tangentially contacting said bearing circumference at about the other of said first and second contact points to securely grip and retain said bearing and axle end against motion along said first longitudinal axis and against rotational motion in a plane defined by said sideframe first longitudinal axis and said second longitudinal axis.

5,794,539

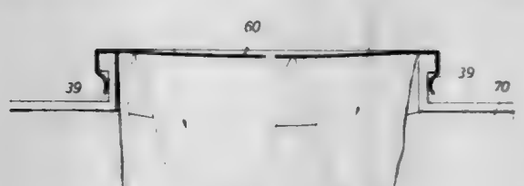
MOISTURE BARRIER FILTER SEAL FOR HOPPER RAIL CAR HATCHES

Michael Anthony Ott, Spring; Alfred W. Hendee, Houston, and Charles C. Hendee, Sugar Land, all of Tex., assignors to Hendee Enterprises, Inc., Houston, Tex., and Salco Products, Inc., Romeoville, Ill.

Continuation of Ser. No. 516,799, Aug. 18, 1995, Pat. No. 5,628,254. This application May 12, 1997, Ser. No. 854,849

Int. Cl.[6] B61D *39/00*

U.S. Cl. 105—377.08 **22 Claims**



1. A seal covering an opening of a hopper rail car for holding bulk particulate materials and providing moisture and particulate contamination protection, said seal having a size to allow movement with a vented cover for the opening of said hopper rail car, comprising:

a moisture barrier material and a filter material with the center portion of the moisture barrier material movable to a spaced apart position from the filter material; the materials forming a bonnet sized to fit over the hopper rail car opening; whereby the barrier material is fabricated to rupture at a predetermined pressure while leaving the filter material intact for filtering air entering the car.

5,794,540

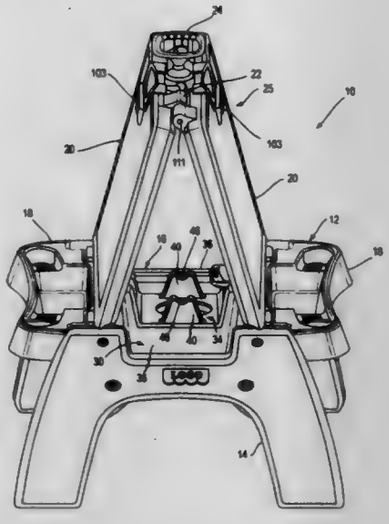
CHILD'S EASEL/TABLE

David Dombrowski, and Kenneth Von Felten, both of East Aurora, N.Y., assignors to Fisher-Price Inc., Aurora, N.Y.

Filed Aug. 16, 1996, Ser. No. 698,996

Int. Cl.[6] A47F *5/12*

U.S. Cl. 108—3 **27 Claims**



1. An article of furniture comprising:

a support member;

a work surface, including a pair of panels hingedly connected to each other for movement between a table orientation in which said panels are approximately coplanar, and an easel orientation in which said panels are disposed in an inverted V, said article being in a table configuration when said work surface is disposed on said support member in said table orientation and being in said easel configuration when said work surface is disposed on said support member in said easel orientation and positioned against the support member in said easel orientation; and

a handle coupled to the work surface and selectively engagable with said support member to lock said work surface to said support member in said table configuration.

5,794,541

MULTI-DEGREE-OF-FREEDOM TABLE SUPPORT UNIT, AND A MULTI-DEGREE-OF-FREEDOM TABLE MECHANISM

Kazuya Hirose, Tokyo, Japan, assignor to Hihaisuto Seiko Co., Ltd., Tokyo, Japan

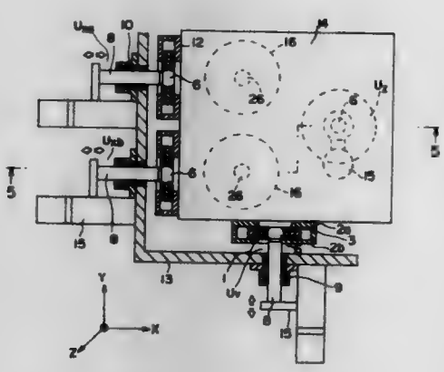
Filed Feb. 6, 1997, Ser. No. 796,700

Claims priority, application Japan, Feb. 7, 1996, 8-020817

Int. Cl.[6] A47F *5/12*

U.S. Cl. 108—20 **18 Claims**

1. A multi-degree-of-freedom table support unit, comprising a lengthwise and crosswise motion mechanism having two outer support plates integrally combined with an inner support plate sandwiched therebetween, bearings installed between said inner



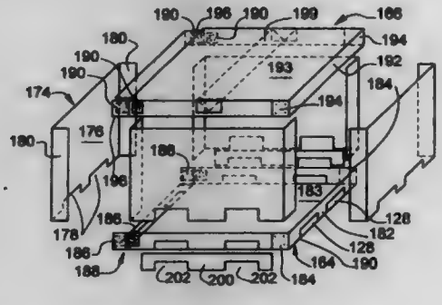
support plate and said outer support plates; spherical bearing mechanism comprising a spherical face formed on a surface of said inner support plate and a spherical body slidably engaging said spherical face; a rod installed in an opening formed in at least one of said outer support plates, with a tip of said rod connected with said spherical body; and a straight motion bearing mechanism supporting said rod and providing for back-and-forth movement of said rod.

5,794,542

CORRUGATED COLLAPSIBLE CONTAINER PACK

Larry G. Besaw, Jasper, Ind., assignor to The Servants, Inc., Jasper, Ind.

Filed Dec. 4, 1996, Ser. No. 760,225
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—51.3 **1 Claim**



1. A corrugated collapsible container pack, comprising:

a tray having a side edges bent upwardly forming four vertical tray side panels and a central floor panel, permanently attaching three of said four tray side panels forming two secured corners and removably attaching said remaining tray side panel with means for releasably securing said adjacent tray side panels forming a pair of detachable corners;

a corrugated pallet comprising at least one flat sheet and at least two leg wrap support members, each of said leg wrap support members comprising a sheet of corrugated material having a plurality of spaced apart parallel score lines formed therein, said sheet being folded inwardly forming creases along said score lines and at least five panel sections thereinbetween forming a generally rectangular shaped conduit having at least two of said panel sections overlapping and secured together with a holding means, said leg wrap support member including at least two spaced apart and aligned transverse slots formed through the sides of said support member, and said leg wrap support member including at least one support member therein, said corrugated pallet being positioned within said tray;

side wall sheets having a central panel and a pair of side panels disposed between said pallet and said tray;

a lid having side edges bent upwardly forming four vertical lid side panels and a central top panel, permanently attaching three of said four lid side panels forming two secured corners and removably attaching said remaining lid side panel with means for removably securing said adjacent lid side panels forming a pair of detachable corners, said lid being placed over the top of said side wall sheets;

a plurality of vertical support members for supporting said lid in the collapsed position in cooperative engagement with said tray, enclosing said side wall sheets therein; and

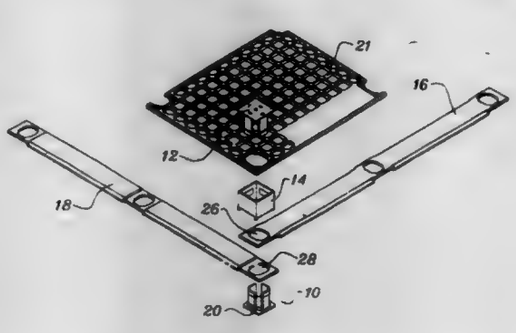
said detachable tray corners and said detachable lid corners being in alignment one with the other defining means for releasing said detachable lid corners of said vertical tray panel and said vertical lid panel for removing one of said side wall sheets and providing side access to the contents stored within said corrugated collapsible container pack during the erect position without removing said lid.

5,794,543

MODULAR PALLET SYSTEM

Michael John, Boca Raton, and Robert V. Daigle, Deerfield, both of Fla., assignors to Johnson & Ruddick, Ltd., Cayman Islands

Continuation-in-part of Ser. No. 523,639, Sep. 5, 1995. This application Nov. 24, 1995, Ser. No. 562,507
Int. Cl.[6] B65D *19/00*
U.S. Cl. 108—56.1 **5 Claims**



1. A modular pallet system, definable in terms of an xyz Cartesian matrix, the system comprising:

(a) a plurality of bottom elements, each having a rectilinear primary surface, said surface having opposing x and y axis edges, positionable in a first xy plane, said elements having integrally dependent positive z-axis prongs substantially at each of said x and y axis edges of said primary surface, each of said prongs terminating, at a positive z-axis end thereof, with first integral complemental engagement means;

(b) a plurality of top elements, each having a rectilinear primary surface having opposing x and y axis edges, said surface positionable in a second xy plane, above said first xy plane, said elements having integrally-dependent negative z-axis prongs substantially at each of said x and y axis edges of said primary surface, each of said prongs terminating, at a negative z-axis end thereof, with second integral complemental engagement means having inner and outer surfaces, the inner surface of each of said second engagement means proportioned for snap-fittable interlock with an opposing outer surface of a corresponding one of said first engagement means of said prongs of said bottom elements;

(c) a plurality of hollow box-like z-axis separation means having pairs of opposing xz and yz walls, and an open top and bottom within xy planes thereof, said walls and planes proportioned for internestable support of said primary surfaces of said top and bottom elements, interior surfaces of each of said walls including integrally-dependent means for snap-fittable

interlock with outer surfaces of said second complemental engagement means of said prongs of said top elements;

(d) a base layer comprising x-axis and y-axis linear offset members for defining x-and-y axis dimensions between said pluralities of said separation means, said members having openings therein proportioned for engagement between said edges of said xy planes of said bottom elements and base edges of said separation means; and

(e) a top layer positionable in the xy plane of said primary surface of said top elements, said top layer having openings therein proportioned for engagement between edges of said top elements and top edges of said separation means, whereby, upon interlock of opposing surfaces of said complemental engagement means of said top and bottom elements within a volume defined by said separation means, and the interlock of outer surfaces of said engagement means of said prongs of said top elements to said snap-fittable interlock means of said separation means, a structure having rigid xy, xz, and yz planes is thereby formed.

5,794,544

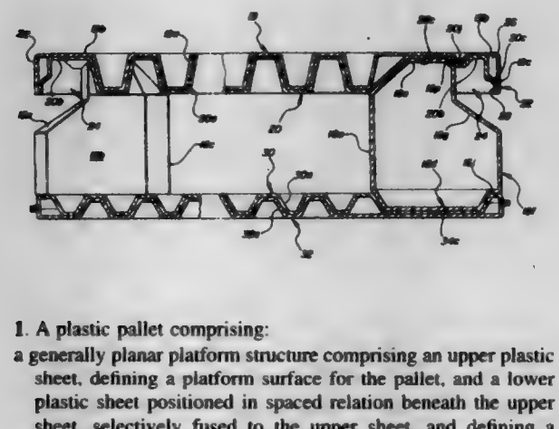
PLASTIC PALLET

Lyle H. Shuert, 70 Kingsley Manor Dr., Bloomfield Hills, Mich. 48304

Continuation of Ser. No. 636,062, Apr. 22, 1996, abandoned. This application May 19, 1997, Ser. No. 858,325

Int. Cl.[6] B65D *19/00*

U.S. Cl. 108—57.25 **11 Claims**



1. A plastic pallet comprising:

a generally planar platform structure comprising an upper plastic sheet, defining a platform surface for the pallet, and a lower plastic sheet positioned in spaced relation beneath the upper sheet, selectively fused to the upper sheet, and defining a plurality of spaced downwardly opening pockets with each pocket including a base surface portion and sidewall surface portions in surrounding relation to the base surface portion; and

a plurality of plastic legs positioned beneath the platform structure in respective proximity to the pockets, each leg having a hollow closed box configuration and including an upper wall structure having a base surface portion having a size and shape corresponding to the size and shape of the base surface portion of a respective pocket and sidewall surface portions having a size and shape corresponding to the size and shape of the sidewall surface portions of the respective pocket, each upper wall structure being seated in a respective pocket and being fused to the plastic material of the lower sheet defining that pocket at the interfaces of the base surface portions and the sidewall surface portions, the base and sidewall surface portions of the respective pockets coacting with the base and sidewall surface portions of the respective leg upper wall structures to rigidly secure the legs to the underface of the platform structure to preclude sliding displacement of the legs relative to the platform structure in response to shearing stress forces.

5,794,545

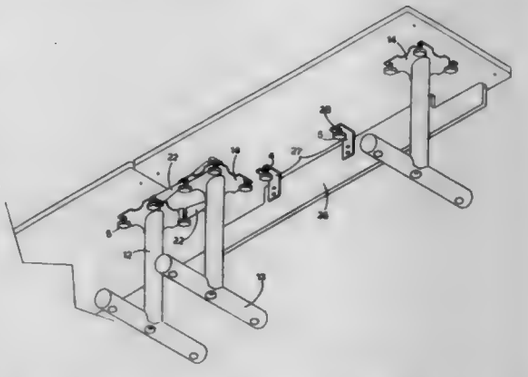
LINKABLE MODULAR TABLE SYSTEM

Randall D. McDaniel, Tuscumbia, and Gergory J. White, Decatur, both of Ala., assignors to JAMI, Inc., Overland Park, Kans.

Filed Feb. 14, 1997, Ser. No. 800,051

Int. Cl.[6] A47B *57/00*

U.S. Cl. 108—64 **12 Claims**



1. A linkable modular table assembly comprising:

a) a plurality of modular table tops, each said table top including a plurality of threaded anchors positioned in a bottom side thereof;

b) a plurality of fasteners, each with a threaded shaft with a predetermined diameter and a head larger than said predetermined diameter;

c) at least one leg bracket with multiple sides, said leg bracket holding a supporting leg, said leg bracket including a plurality of leg bracket slots arranged in a pattern with each said leg bracket slot sized to receive the shaft of a respective said fastener but not the head of said fastener with each leg bracket slot extending inward from a respective side of said leg bracket; and

d) at least some of said threaded anchors on some of said table tops are arranged in patterns which match the pattern of said leg bracket openings such that said leg brackets can be attached beneath individual table tops via a plurality of said fasteners; and wherein

e) when a pair of said table tops are positioned adjacent to each other with edges aligned, a combination of said anchors on both said table tops near said aligned edges are also arranged in a pattern which matches said pattern of said leg bracket openings such that said leg brackets can be attached to straddle and link said two tables together and such that said leg bracket can be removed from or installed on said table tops by loosening the fasteners and rotating said leg bracket until said slots disengage, or engage, respectively, respective ones of said fasteners in said pattern.

5,794,546

COLLAPSIBLE DISPLAY TABLE

Mark C. Carter, 10131 Kernwood Ct., Alta Loma, Calif. 91737

Continuation of Ser. No. 671,088, Jun. 27, 1996, abandoned, which is a continuation of Ser. No. 191,660, Feb. 4, 1994, abandoned. This application Jun. 27, 1997, Ser. No. 883,720

Int. Cl.[6] A47B *3/00*

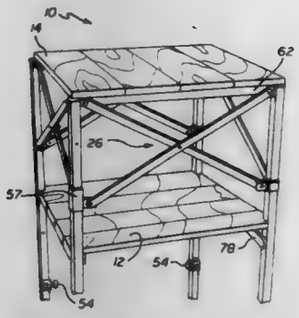
U.S. Cl. 108—115 **5 Claims**

1. A collapsible display table, comprising:

a table top having a bottom surface defining at least two slots;

at least three vertically disposed legs for supporting said table top, each of said legs having an upper end and a lower end;

each of said legs being connected to adjacent ones of said legs by a truss pair of link members, each of said truss pairs including first and second link members having first and second ends, said first link member having a first end connected to the upper end of one said leg, each second link



member having a first end slidably connected to said leg, and said first and second link members being pivotally connected together in a scissors configuration so as to be extendable horizontally from a first collapsed position to a second extended position;

at least two pivoting table top support arms each having first and second ends, said at least two pivoting table top supporting arms adapted to interfit with said at least two slots in said table top, said first end of each of said table top support arms being pivotally connected to the upper end of one of said legs, and the second end of each of said table top support arms being removably attached to said upper end of an adjacent one of said legs;

a lower shelf; and

at least two shelf support arms each having first and second ends and means for removably attaching said first and second ends of said shelf support arms between adjacent legs for supporting said lower shelf.

5,794,547

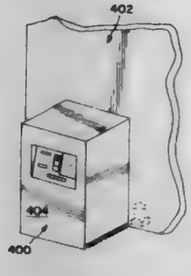
MODULAR TRANSPORT SYSTEM FOR AN AUTOMATIC TELLER MACHINE

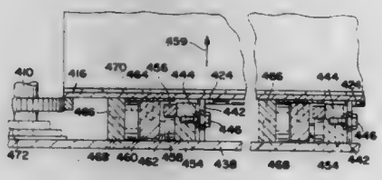
Ernest R. Dallman, Zionsville, and Franklin W. Wehr, Indianapolis, both of Ind., assignors to Dallman Industrial Corporation, Indianapolis, Ind.

Continuation of Ser. No. 501,189, Jul. 11, 1995, Pat. No. 5,611,288, which is a continuation of Ser. No. 121,790, Sep. 15, 1993, Pat. No. 5,440,999, which is a continuation-in-part of Ser. No. 954,001, Sep. 29, 1992, Pat. No. 5,299,511, which is a continuation-in-part of Ser. No. 892,758, Jun. 3, 1992, abandoned. This application Mar. 17, 1997, Ser. No. 819,543

Int. Cl.[6] **E05G** *1/00;* **G07G** *5/00*

U.S. Cl. 109—50 **7 Claims**





1. An apparatus which is configured to move an ATM relative to a wall between a retracted position and an extended position, the ATM having a top end and a bottom end, the apparatus comprising a base, a support configured to support the bottom end of the ATM, a bearing attached to and depending downwardly from the support and positioned between the base and the support to provide sliding support for the support on the base, and a rotational drive member fixedly mounted to the base and having a rotational output member, a driving surface stationary with and located on the underside of the support adjacent the attachment of the bearing, the rotational output member having peripheral portions thereon for sequentially coming in contact with the driving surface to move the driving surface linearly with respect to the base to cause the ATM to move between the retracted position and the extended position upon rotation of the rotational drive member.

5,794,548

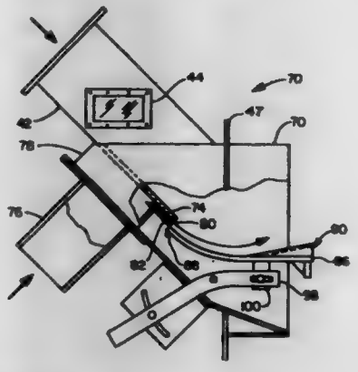
PNEUMATIC BARK DISTRIBUTOR FOR CONTINUOUS ASH DISCHARGE STOKERS

Dennis N. Barlow, Enfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 22, 1995, Ser. No. 578,006

Int. Cl.[6] **F23K** *3/18*

U.S. Cl. 110—104 R **20 Claims**



8. A fuel distributor apparatus for delivering associated particulate fuel to an associated continuous ash discharge furnace which comprises:

a housing, said housing having an inlet for a particulate fuel and an inlet for pressurized air, said housing including a surface for directing the flow of the associated particulate fuel and an outlet cooperating with said surface through which the associated particulate fuel and air exit said housing; and

a nozzle dimensioned and configured to direct pressurized air along a face of said surface to establish a boundary layer between said surface and the associated particulate fuel flowing over said surface, said apparatus including an elongated outlet plate and said surface is on said elongated outlet plate.

5,794,549

COMBUSTION OPTIMIZATION SYSTEM

Hudson R. Carter, Forest, Va., assignor to Applied Synergistics, Inc., Lynchburg, Va.

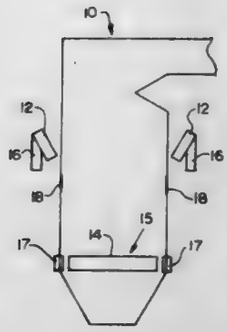
Filed Jan. 25, 1996, Ser. No. 591,012

Int. Cl.[6] **F23N** *5/00;5/24;* **F23M** *11/04*

U.S. Cl. 110—347 **12 Claims**

1. A system for providing information relating to combustion conditions within a fossil-fueled boiler that includes a side wall, a furnace section, a plurality of burners positioned in a substantially horizontal plane and adapted to produce flames combining to form a fireball within said furnace section, and an observation port located in the boiler side wall above the furnace section, said system comprising:

a) at least one imaging camera having optical and temperature measuring capabilities, said camera being positioned outside



of said boiler and directed downwardly to view a major portion of the upper surface of said fireball through said port and provide data representative of the shape, position, and temperature distribution of said fireball;

b) a processor connected to said camera to receive, store and process data received from said camera and to provide data representative of the NO_x content of hot gases produced by the fireball; and

(c) a monitor connected to said processor to receive and display data from the processor.

7. A method for providing information relating to combustion conditions within a fossil-fueled boiler that includes a side wall, a furnace section, a plurality of burners positioned in a substantially horizontal plane and adapted to produce flames combining to form a fireball within said furnace section, and an observation port located in the boiler side wall above the furnace section, the method comprising:

a) positioning at least one imaging camera having optical and temperature measuring capabilities outside of said boiler and directed downwardly to view a major portion of the upper surface of said fireball through said port;

b) acquiring data representative of the shape position and temperature distribution of said fireball with said camera;

c) receiving, storing and processing said data to produce processed data representative of the NO_x content of hot gases produced by said fireball; and

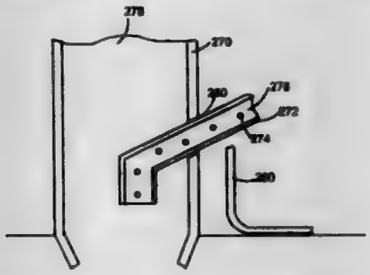
(d) transmitting data to a monitor, and displaying data thereon.

5,794,550

IMPLANTATION OF A FIXED WATER/NUTRIENT GEL

Galen John Chadwick, 105 Apricot La., Los Gatos, Calif. 95030

Filed Sep. 24, 1996, Ser. No. 719,147
Int. Cl.[6] A01C *21/00*; A01H *1/00*
U.S. Cl. 111—200 **13 Claims**



1. A method of providing an artificial root system for promoting seed germination and growth, comprising the steps of:

encasing a seed in a gel containing water and nutrients and capable of forming micro-tubular capillaries, said gel further containing a material to form a skin on said gel to isolate said gel from exterior elements;

forming a plug from said gel, said plug having a first end and a second end;

placing said plug into soil, said second end of said plug being proximate a moisture horizon,

forming an artificial pathway for root growth along said plug;

pulling moisture actively from said moisture horizon to said root;

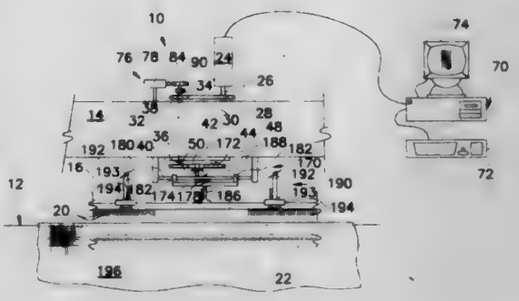
wherein as said seed germinates to form a plant, the roots of said plant extend along said gel to said moisture horizon and said micro-tubular capillaries wick water from said moisture horizon to draw additional water to said root.

5,794,551

TANGENTIAL DRIVE NEEDLE BAR SHIFTER FOR TUFTING MACHINES

Gerald Morrison, Ringgold, Ga., and M. Steven Berger, Chattanooga, Tenn., assignors to Modern Techniques, Inc., Ringgold, Ga.

Continuation-in-part of Ser. No. 305,585, Sep. 14, 1994, abandoned. This application Nov. 8, 1996, Ser. No. 746,406
Int. Cl.[6] D05C *15/00*
U.S. Cl. 112—80.41 **19 Claims**



1. A needle bar shifter for shifting one conventional needle bar of a tufting machine in a lateral direction with respect to a direction of travel of material being tufted by the tufting machine, more than one said needle bar shifter being used with more than one conventional needle bar to shift each conventional needle bar independently of each other conventional needle bar with respect to a direction and a distance of travel thereof, said needle bar shifter comprising:

a rotation imparting device including a pinion member;

a flexible member engaging said rotation imparting device proximate said pinion member and a support device, said flexible member being oscillated in a path about at least a portion of each of said rotation imparting device and said support device to impart movement of one needle bar in a direction tangential to said rotation imparting device, at least a portion of said flexible member defined between said rotation imparting device and said support device being disposed in a substantially linear configuration, said portion of said flexible member being substantially parallel to the direction of travel of the needle bar; and

a single attachment member adapted to be disposed between said flexible member and the needle bar, said attachment member being secured to said portion of said flexible member and being adapted to be secured to the needle bar.

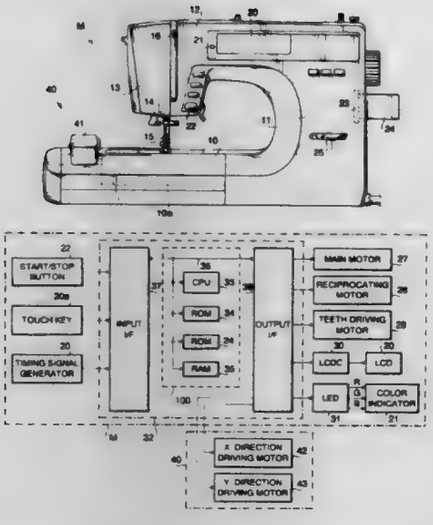
5,794,552

EMBROIDERY DATA PROCESSING DEVICE

Ryoji Owaki, Kasugai, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-Ken, Japan

Filed Nov. 4, 1996, Ser. No. 740,731
Claims priority, application Japan, Nov. 4, 1995, 7-309942
Int. Cl.[6] D05B *21/00*; D05C *5/02*
U.S. Cl. 112—102.5 **10 Claims**

1. An embroidery data processing device, comprising:



a displaying device for displaying a monochrome image of at least one partial embroidery pattern in accordance with partial embroidery data;

at least one indicator, provided separately from said monochrome image displayed on said displaying device, for displaying a color of a thread which is to be used for forming said at least one partial embroidery pattern displayed on said displaying device.

5,794,553

EMBROIDERY DATA PROCESSING APPARATUS

Masao Futamura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 16, 1996, Ser. No. 767,332

Claims priority, application Japan, Dec. 20, 1995, 7-332363

Int. Cl.[6] D05C *5/06;* **G06F** *19/00*

U.S. Cl. 112—102.5 **30 Claims**



1. An apparatus for processing embroidery data according to which a sewing machine produces an embroidery on a work sheet, comprising:

embroidery-shape determining means for determining at least one embroidery shape in an original image, based on original-image data representing the original image;

characteristic-data determining means for determining characteristic data based on a color characteristic of the embroidery shape determined by said embroidery-shape determining means; and

sewing-attribute determining means for determining at least one sewing attribute relating to sewing of the embroidery shape, based on said characteristic data determined by said characteristic-data determining means, said at least one sewing attribute comprising a stitch density at which the sewing machine sews the embroidery shape.

5,794,554

SEWING MACHINE WITH MEANS FOR SYNCHRONIZING DRIVE OF NEEDLE AND LOOP TAKER MOTORS

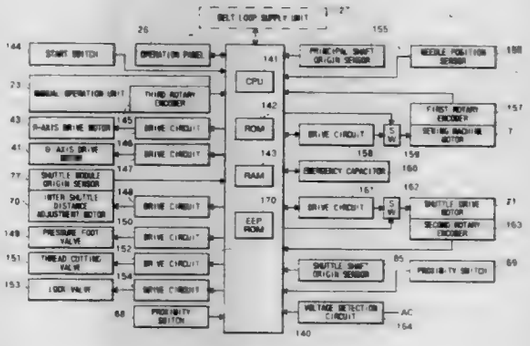
Kohichi Akahane, Nagoya; Takashi Kondo, Obushi; Masaki Shimizu, Toyoake; Yoshikazu Kurono, Hazu-gun, and Fumiaki Asano, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 19, 1996, Ser. No. 752,285

Claims priority, application Japan, Nov. 20, 1995, 7-328095

Int. Cl.[6] D05B *19/00*

U.S. Cl. 112—470.01 **17 Claims**



1. A sewing machine comprising:

a head portion including a needle bar that mounts a needle threaded with a needle thread;

a principal shaft;

a sewing machine motor for driving the needle bar via the principal shaft;

a bed portion including a loop taker for taking a thread loop of the needle thread in cooperative operation with the needle;

a loop taker drive shaft connected to move in association with the loop taker;

a driver including a drive motor that drives the loop taker drive shaft independently of the principal shaft;

a first detector that detects an origin position of the principal shaft and a rotational angle of the sewing machine motor and outputs a first detection signal accordingly;

a second detector that detects an origin position of the loop taker drive shaft and a rotational angle of the drive motor and outputs a second detection signal accordingly; and

a synchronization controller that controls at least one of the drive motor and the sewing machine motor based on the first detection signal from the first detector and the second detection signal from the second detector so that the loop taker and the principal shaft rotate in synchronization.

5,794,555

PROCESS FOR PROVIDING AN ARTICLE WITH A MACHINE-MADE EMBROIDERY PATTERN IN RELIEF

Ricky Pang Kim Kwang, Singapore, Singapore, assignor to Madeira Asia Pte. Ltd., Singapore, Singapore

Filed Aug. 7, 1997, Ser. No. 908,448

Claims priority, application Germany, Aug. 8, 1996, 196 32 092.5

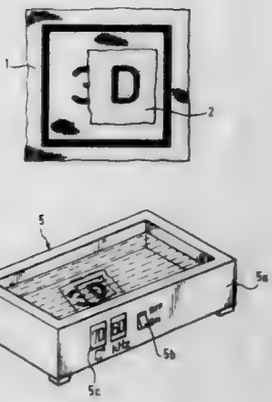
Int. Cl.[6] D05C *17/00*

U.S. Cl. 112—475.22 **6 Claims**

1. A process for providing an article with a machine-made embroidery pattern in relief, comprising the steps of:

placing a base material of a material selected from the group consisting of paper and cardboard upon an article;

embroidering an embroidery pattern on the base material and the article; and



removing the base material from the article in a water bath while subjecting the water bath to ultrasound.

5,794,556

HULL FOR SMALL WATERCRAFT

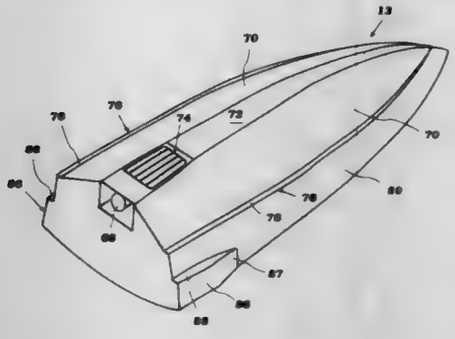
Noboru Kobayashi, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 442,022, May 16, 1995, abandoned. This application Aug. 15, 1996, Ser. No. 698,484

Claims priority, application Japan, May 16, 1994, 6-101074

Int. Cl.[6] B63B *43/14*

U.S. Cl. 114—123 **28 Claims**



1. A small watercraft comprising a hull having an undersurface and side walls, each side wall including a side surface, at least one passenger area formed at least in part between the side walls of said hull and located in front of a transom of the hull the passenger area including a center seat extending along a longitudinal axis of the hull, a steering assembly located in front of the passenger area and generally at a midpoint between said side walls, and a pair of sponsons each located on a respective one of said side surfaces of said side walls and being integrally formed with the respective side surface with a body of said sponson forming part of the respective side wall of the hull, each sponson extending forwardly from said transom only for a portion of a length of the passenger area and terminating behind the steering assembly, a lower surface of each sponson being disposed so that the lower surface is normally above the level of water in which the watercraft is operating except under unique loading conditions, such loading conditions including generally when the watercraft is turning, when a load larger than that created by an average-sized rider, who properly seated on the watercraft, is applied to the passenger area of the watercraft, and when at least one average-sized rider enters the watercraft from a rear end.

5,794,557

STEERING DEVICE FOR A VESSEL

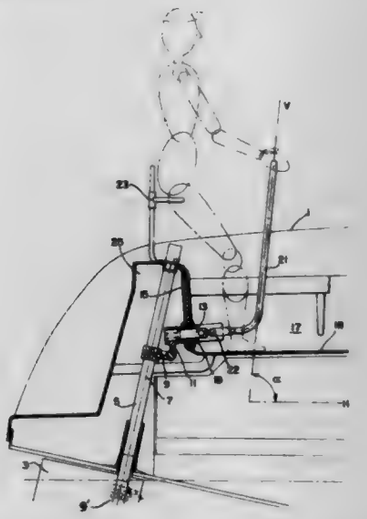
Frans Geukens, Malle, Belgium, assignor to Etap Yachting N.V., Belgium

Filed Jun. 21, 1996, Ser. No. 670,191

Claims priority, application Netherlands, Jun. 23, 1995, 1000654

Int. Cl.[6] B63H *25/10*

U.S. Cl. 114—144 R **14 Claims**



1. A steering device for a sailing vessel comprising at least one rudder arranged to pivot about a substantially vertically extending rudder pivoting axis and comprising at least one operating handle mounted on an operating handle pivot shaft extending in the longitudinal direction of the vessel for limited pivotal movement in an oblique arc, said arc being in a plane extending substantially vertically and transversely to the longitudinal axis of the vessel, the operating handle being connected to the rudder via at least one coupling mechanism, so that a pivotal movement of the operating handle causes a pivotal movement of the rudder about the rudder pivoting axis, characterized in that the coupling mechanism is formed by a set of cooperating gear segments, of which a first one is mounted on the rudder or a rudder pivot shaft connected thereto, and the second one is mounted on the at least one operating handle pivot shaft, said operating handle pivot shaft being fixedly connected to the operating handle for following rotational movement therewith.

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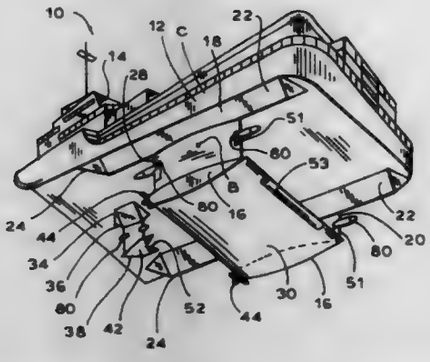
Steven Loui, Honolulu, Hi., assignor to Pacific Marine Supply Co., Ltd., Honolulu, Hi.

Continuation-in-part of Ser. No. 159,596, Dec. 1, 1993, Pat. No. 5,433,161. This application Dec. 1, 1994, Ser. No. 352,141

Int. Cl.[6] B63B *1/24*

U.S. Cl. 114—274 **29 Claims**

1. A high speed ship comprising a hull structure having a bow portion and a stern portion and being normally supported above the surface of the water at a design waterline when in operation, a forward strut depending from the bow portion of the hull structure subtended by a first buoyancy means, a pair of aft dual struts depending from the hull structure at approximately midship, said aft struts being subtended by a second buoyancy means whose beam is equal to or greater than its length extending laterally all the way between said struts; said aft struts and said second buoyancy means providing more than 70% of the buoyancy for the ship during operation to maintain said hull structure above the surface of the water during operation and said forward strut and first buoyancy means providing 30% or less of the buoyancy of the vessel during operation; and wherein the center of buoyancy of the



ship is located within the periphery of the second buoyancy means when viewed from above.

5,794,559
FUEL TANK
Bill Graham, 11669 Malden St., Cypress, Calif. 90630
Filed Jan. 28, 1997, Ser. No. 790,074
Int. Cl.[6] B63B *8/00*
U.S. Cl. 114—343 **18 Claims**



1. A fuel tank for storing fuel to be delivered to the engine of a motor which powers a watercraft, said fuel tank comprising:

a container having an inner storage area defined by a wall, said container having a "U"-shape when viewed in at least one direction, said container including a first end, a second end and a middle portion therebetween, said ends and middle portion defining a top of said container, said top at said first and second ends positioned above said top at the middle portion a first aperture positioned in said top at said first end portion through which fuel may be delivered to said inner storage area, a second aperture positioned in said top at said second end portion, and a fuel cap for positioning in said first aperture, said fuel cap including a fuel gauge for indicating the level of fuel in said tank.

5,794,560
AUTOMATIC DOG AND CAT FEEDER
Bruno Terenzi, 1341 Claremont Dr., San Bruno, Calif. 94066
Filed Nov. 14, 1996, Ser. No. 748,776
Int. Cl.[6] A01K *5/02*
U.S. Cl. 119—51.11 **7 Claims**

1. An automatic dog and cat feeder comprising:

a. a housing consisting of access holes;

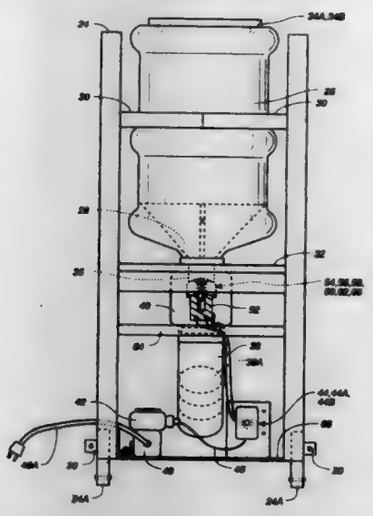
b. a frame;

c. a base support with a center hole on said frame;

d. a hopper with a top inlet hole for receiving feed and an outlet hole on its lower portion;

e. a funnel template installed in said hopper and located in the lower portion therein;

f. a cover for the hopper inlet hole;



g. a pipe reducer with an outlet hole installed in said base support center hole and the hopper accommodated above it;

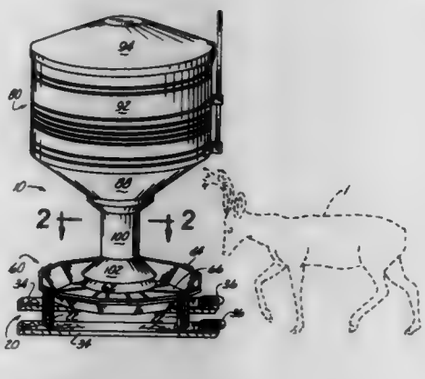
h. a plastic container with a hole on an upper flat end installed over the said pipe reducer outlet hole and said plastic container having a vertical slot hole on its lower side and an outlet hole on its lower end;

i. a cone valve positioned inside the plastic container in contact with the pipe reducer closing its outlet and capable of reciprocating;

j. a hub to hub elbow connected to the plastic container outlet to conduct said feed to the said housing exterior;

k. a feed dish positioned to receive the feed and an automatic control means to operate said cone valve at predetermined time periods to control amount of feed delivered to said feed dish.

5,794,561
WILDLIFE FEEDER
John C. Schulz, 408 Iowa St., Burlington, Iowa 52601
Filed Jun. 9, 1997, Ser. No. 871,095
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—52.1 **10 Claims**



1. A wildlife feeder, comprising:

a ground engaging support base;

a center support post having a lower end and an upper end, the lower end being attached to the base;

a feed storage bin having a bottom discharge opening, the bin being attached to the post near its upper end, and the discharge opening being disposed adjacent the upper end of the post; and

a feed trough attached to the post near its lower end and disposed to extend radially out therefrom, the trough being

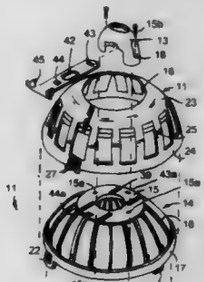
spaced downwardly from the bin providing an unobstructed animal access to the trough in an area between the bin and the trough.

5,794,562

POULTRY BREEDER PAN FEEDING SYSTEM AND PAN FEEDER ASSEMBLY THEREFOR

John F. Hart, Holland, Mich., assignor to Big Dutchman, Inc., Holland, Mich.

Filed Jan. 21, 1997, Ser. No. 786,661
Int. Cl.[6] A01K *39/01*
U.S. Cl. 119—52.4 **20 Claims**



1. A poultry pan feeder assembly comprising:
a pan for containing feed;
an inner grille mounted above said pan and having a plurality of first spaced ribs supporting said pan and providing spaced first openings therebetween located around its periphery permitting poultry to insert portions of their heads therethrough for eating said feed from said pan;
an outer grille fitted over said inner grille, said outer grille including spaced second openings around its periphery, said openings being separated by second ribs, said openings permitting poultry to insert portions of their heads therethrough for eating feed from said pan;
said second ribs each having a greater width than thickness and located closely adjacent to said first ribs; and
said second ribs having portions of said widths thereof overlapping said first ribs and extending into said first openings to restrict the size of said first openings through which poultry can insert their heads whereby male poultry breeders in attempting to eat out of said pans scrape portions of their heads on the edges of said second ribs and therefore are discouraged from eating feed out of said pans.

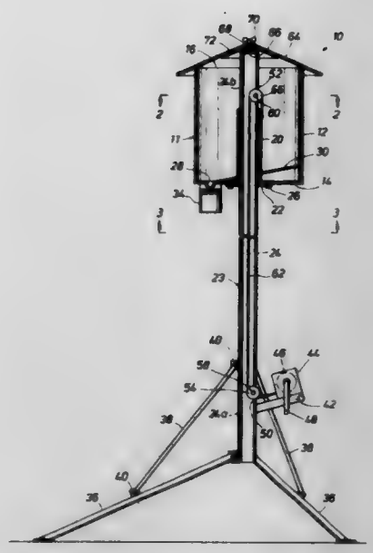
5,794,563

STAND-MOUNTED GAME FEEDER APPARATUS

Daniel T. Klepac, 5411 Rancho Rd., Needville, Tex. 77461

Filed Nov. 12, 1996, Ser. No. 747,556
Int. Cl.[6] A01K *5/02*
U.S. Cl. 119—57.91 **15 Claims**

1. A game feeder apparatus for dispensing feed comprising:
a container for storing feed, said container having a bottom panel having a center opening therethrough;



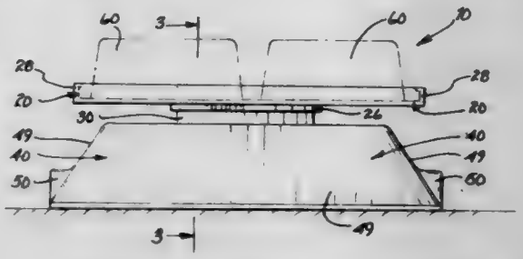
a vertical tube extending through said center opening, said vertical tube having an upper portion and a lower portion;
a plurality of legs connected to said lower portion of said vertical tube;
a winch having a rotatable spool, said winch mounted to said vertical tube;
a cable having a first end attached to said rotatable spool, said cable having a second end attached to said container;
a first pulley rotatably connected to said lower portion of said tube; and
a second pulley rotatably connected to said upper portion of said tube;
wherein said cable is guided by said first and second pulleys to said container.

5,794,564

APPARATUS FOR PREVENTING INSECTS FROM ACCESSING ANIMAL FEEDING CONTAINERS AND METHODS OF MAKING AND USING THE SAME THEREOF

Daniel C. Paro, 100 Country Cove, Warner Robins, Ga. 31088

Filed Oct. 22, 1996, Ser. No. 735,030
Int. Cl.[6] A01K *5/01*
U.S. Cl. 119—61 **24 Claims**



1. An apparatus, in combination with and for preventing insects from accessing at least one animal feeding container comprising:
an upper component having a surface area which receives and supports the at least one animal feeding container,
a support component having a top end and a bottom end wherein the top end of the support component is attached to the upper component, and
a lower component attached to the bottom end of the support component wherein the lower component has at least a retaining area for holding a liquid that prevents insects from access-

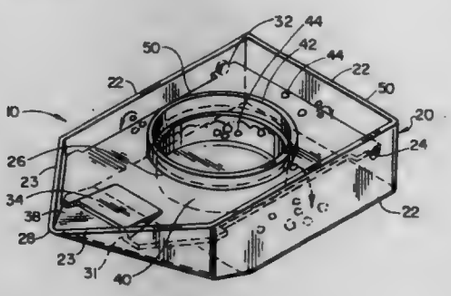
ing the upper component and the at least one animal feeding container supported by the at upper component.

5,794,565

PET FEEDING STATION

Paul T. Beshah, 7719 22nd St., Luois Park, Minn. 55426

Filed Jun. 17, 1997, Ser. No. 877,653
Int. Cl.[6] A01K *5/01*
U.S. Cl. 119—61 8 Claims



1. A pet food station comprising:

at least one tray, having a generally horizontal bottom surface,

said tray further comprising three side walls formed generally perpendicularly to the bottom surface, a fourth and fifth wall bent to a pointed end centrally thereof with said bottom rising up to meet the pointed end forming a platform;

a horizontal mount with at least one recess formed therein for receiving a dish, said horizontal mount for receiving spillage from said dish, said horizontal mount supported above said tray by said platform;

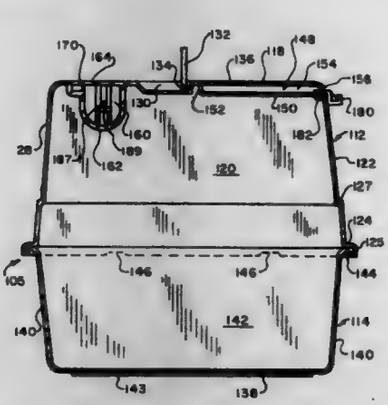
said horizontal mount having a handle formed in one end thereof adjacent the pointed end.

5,794,566

KITTY LITTER PAN

Catherine F. Goetz, Pittsburgh, and Dennis L. Klemm, Oakdale, both of Pa., assignors to Alco Industries, Inc., Valley Forge, Pa.

Filed Apr. 2, 1997, Ser. No. 825,776
Int. Cl.[6] A01K *1/035*
U.S. Cl. 119—161 13 Claims



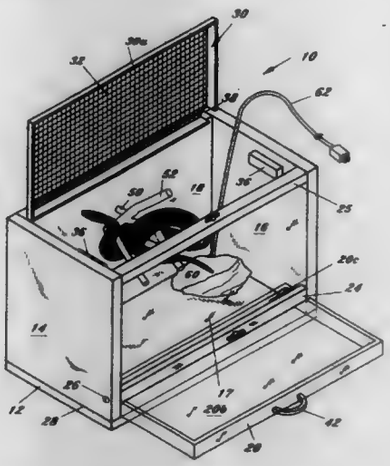
1. A portable, integrated litter pan including a housing having upper and lower sections detachably securable together to provide a substantially closed container, said upper section containing a pan liner storage compartment formed therein, further including a pivotable top on said upper section covering said liner storage compartment.

5,794,567

CLEANABLE OBSERVATION CAGE FOR REPTILES ESPECIALLY SNAKES

Roni Itzhak, 15435 78th Place North, Loxahatchee, Fla. 33470

Filed Jun. 17, 1997, Ser. No. 877,440
Int. Cl.[6] A01K *1/00*
U.S. Cl. 119—416 7 Claims



1. A reptile cage for securely housing a domestic reptile pet, such as a snake, amphibian, or lizard in a controlled environment, comprising:

a rigid, planar floor wall;

first and second parallel, vertical side walls and a back wall, firmly attached to the floor wall about its edges, forming side and back walls;

a clear, light-transmissive front wall attached to said side walls, not engaging said floor;

a movable, waterproof bottom tray, movable from a closed position inside the cage to an open position outside said cage, mounted movably between said front wall and said floor wall;

a top door having a wire screen and door frame connected to said back wall;

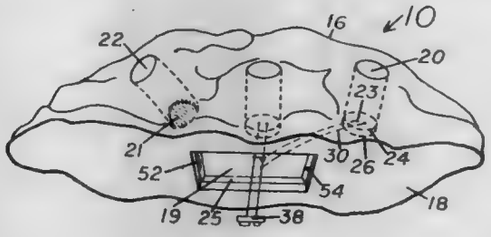
said floor wall, said first and second parallel vertical side walls, said back wall, said front wall, said movable bottom tray and said top door defining a living space for the domestic reptile pet, the pet being removable through said top and through said movable bottom tray when in said open position, said bottom tray forming part of said living space for the domestic reptile pet when in said closed position, wherein removal of the domestic reptile pet and cleaning of said living space is facilitated by moving said movable bottom tray to said open position.

5,794,568

ANIMAL ATTRACTANT AND SCRATCHING DEVICE

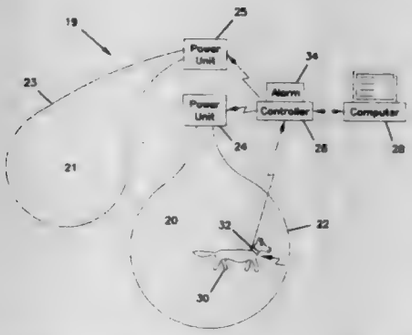
Steven D. Udelle, and Laura L. Udelle, both of 13 Seasons Dr., Punta Gorda, Fla. 33983-5432

Filed May 27, 1997, Ser. No. 863,738
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—707 10 Claims



1. An animal attracting and scratching device comprising:
a) a housing having a base and a continuous outer surface extending from the base so as to define an enclosed interior space;
b) a plurality of unobstructed openings disposed in said outer surface of said housing; each opening being so sized and configured so as to permit an animal to insert its paw therethrough;
c) an electronic sound synthesizer circuit disposed in the interior space of said housing; and
d) at least one pressure activated momentary contact switch electronically connected to said sound synthesizer, said at least one switch being disposed in the interior space of said housing beneath at least one of said openings so as to permit activation thereof by the animal placing its paw through said at least one opening.

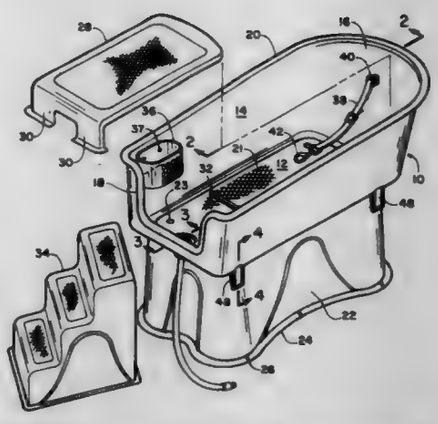
5,794,569
APPARATUS AND METHOD FOR ELECTRONIC CONFINEMENT OF ANIMALS
John Titus; Jim Barry, both of Prior Lake, and Max Hendrickson, Forest Lake, all of Minn., assignors to Joint Techno Concepts International, Inc., Westboro, Mass.
Filed Oct. 29, 1996, Ser. No. 741,852
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—721 **49 Claims**



1. A method of restricting movement of an animal relative to a selected area surrounded by a conducting perimeter, comprising the steps of:
sensing whether the animal approaches the conducting perimeter from inside the selected area or from outside the selected area; and
selectively correcting the animal in response to results of the sensing step.

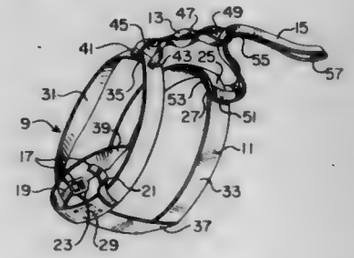
5,794,570
PORTABLE APPARATUS FOR GROOMING AND WASHING PETS
Jody R. Foster, and Wendy A. Leger, both of 3917 Quarry Rd., La Mesa, Calif. 91941
Filed Aug. 18, 1997, Ser. No. 916,715
Int. Cl.[6] A01K *13/00*
U.S. Cl. 119—756 **14 Claims**

1. A pet grooming center, which comprises:
an elongated tub for receiving a pet for grooming, having a base with interior and exterior surfaces, upstanding sides and first and second ends, said first end having a generally U-shaped cut out;
a generally inverted tub shaped pedestal having a base with interior and exterior surfaces, and upstanding sides and ends; and
means for releaseably securing said exterior base surface of said elongated tub to said exterior base surface of said pedestal;



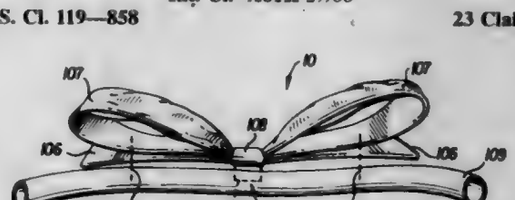
said pedestal configured to nest in said elongated tub with said exterior base surface of said pedestal in contact with said interior base surface of said tub for storage and transport.

5,794,571
VEHICULAR SAFETY RESTRAINTS FOR PETS
Carl L. Goldberg, P.O. Box 19679, Boulder, Colo. 80308
Filed Mar. 17, 1997, Ser. No. 819,000
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—792 **18 Claims**



1. A safety restraint for pets comprising:
first and second closed loops joined at one position to each other;
a breast strap connected at said first loop adjacent to said position and adapted for releasably associating opposite sides of said first loop; and
means at both said loops spaced from said position for releasably linking said loops thereat.

5,794,572
PET BOW TIE AND METHOD OF MANUFACTURE
Leigh Saunders, 720 Center St. S., Vienna, Va. 22180, and Martha K. Saunders, 5 Grist Mill La., Hingham, Mass. 02043
Filed Apr. 10, 1997, Ser. No. 831,595
Int. Cl.[6] A01K *27/00*
U.S. Cl. 119—858 **23 Claims**



1. A pet bow tie, comprising:
a substantially tubular piece of material, and

a bow portion attached to said substantially tubular piece of material;

wherein said substantially tubular piece of material has a hollow interior for receiving a pet collar inserted into said hollow interior, whereby said pet bow tie is mountable onto said pet collar, and

wherein said bow portion comprises two puffed portions joined together at a stitch line and two tails, each of said two tails joined to a respective one of said two puffed portions at said stitch line.

5,794,573

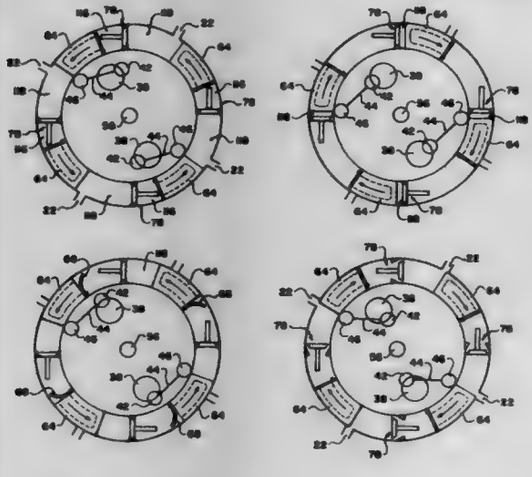
INTERNAL COMBUSTION ENGINE

Clarence Lavern Sunley, Box 1254, Esterhazy Saskatchenwan, Canada, S0A 0X0

Filed Aug. 19, 1996, Ser. No. 699,806

Int. Cl.[6] **F02B** *53/00;* **F02M** *57/06*

U.S. Cl. 123—18 R **12 Claims**



1. An internal combustion engine comprising:

a housing defining an annular engine chamber;

a plurality of pistons spaced around the engine chamber and extending thereacross;

drive means coupled to the pistons for simultaneously reciprocating the pistons along respective segments of the annular engine chamber;

a plurality of charging valves in the annular engine chamber between respective pairs of the pistons and, with the pistons, dividing the annular engine chamber into alternating charging and combustion chambers around the engine chamber, the charging valves permitting gas flow only from a charging chamber to an adjacent combustion chamber and each piston substantially preventing gas flow between the charging and combustion chambers on opposite sides of the piston;

intake means for admitting combustion air into the charging chambers with movement of the pistons into the combustion chambers; and

exhaust means for exhausting combustion gases from the combustion chambers with movement of the pistons into the charge chambers.

5,794,574

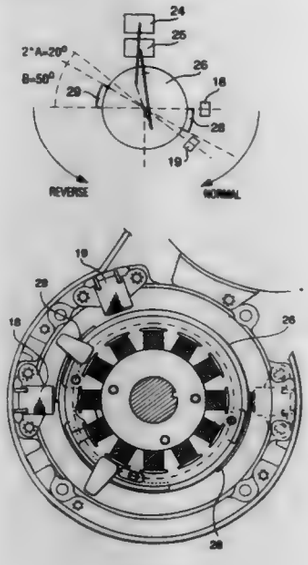
SYSTEM FOR REVERSING 2 STROKE ENGINE

Willy Bostelmann, Wels, Austria; Roger Rioux, Magog, and Benoit Pion, Balcourt, both of Canada, assignors to Bombadier Inc., Montreal, Canada

Filed Sep. 27, 1996, Ser. No. 721,099

Int. Cl.[6] **F01L** *13/02*

U.S. Cl. 123—41 E **13 Claims**



1. A system for reversing the direction of a two-stroke, internal combustion engine provided with a spark ignition system powered by a voltage derived from a magneto, the engine having at least one cylinder and a piston reciprocating therein and connected to drive a rotary crankshaft, the system comprising:

a manually operable inverse command button;

trigger means located proximate a rotary member driven by the crankshaft;

a cooperating member carried on the rotary member and cooperating with the trigger means as the rotary member rotates to generate a train of pulses separate and distinct from the magneto voltage;

means detecting the direction of rotation of the crankshaft and generating a direction signal indicative of direction of rotation;

a microprocessor control unit receiving the train of pulses, the direction signal and an output from the inverse command button and connected to control the spark ignition system, the microproeessor monitoring the speed and direction of rotation of the rotary member on the basis of the train of pulses and the direction signal, the microprocessor operable when the inverse command button is pushed to

1) stop ignition thereby causing the engine to slow down,

2) when the engine speed falls below a predetermined level momentarily generate an ignition spark at an angle sufficiently in advance of top dead center to reverse the direction of rotation of the crankshaft, and

(3) when the engine is reversed continue ignition at an appropriate timing for reverse rotation.

5,794,575

COOLANT CIRCUIT FOR MOTOR VEHICLES

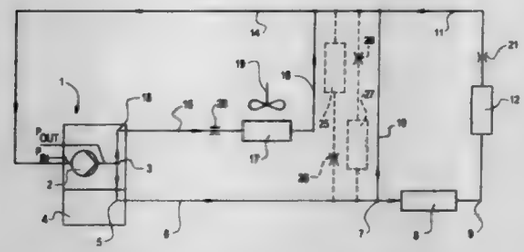
Guenter Sonnemann, Aue; Mirko Sierakowski, Zwickau, and Rainer Junghans, Reinsdorf, all of Germany, assignors to BEHR GmbH & Co., Stuttgart, Germany

Filed Oct. 23, 1996, Ser. No. 735,506

Claims priority, application Germany, Oct. 31, 1995, 195 40 591.9

Int. Cl.[6] F01P 7/14

U.S. Cl. 123—41.08 14 Claims



1. A method of controlling the flow-rate distribution in a coolant circuit for a motor vehicle having an engine, comprising:

circulating coolant in the coolant circuit comprised of a first branch for cooling the engine and a second branch for heating a passenger compartment, including a coolant pump, a first heat exchanger in the first branch for cooling coolant and a second heat exchanger in the second branch for heating air with the coolant; and throttling the coolant flow through the first and/or the second heat exchanger as a function of coolant pressure drop across a respective one of the heat exchangers; wherein the coolant flow is kept at a constant value at coolant saturation of the heat exchanger or when a predetermined pressure drop is reached.

5,794,576

ENGINE CYLINDER VALVE CONTROLLING APPARATUS

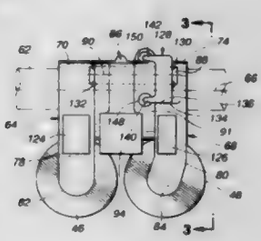
Seinosuke Hara; Nobutaka Hayashi; Seiji Tsuruta, all of Kanagawa, and Takanori Sawada, Atsugi, all of Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

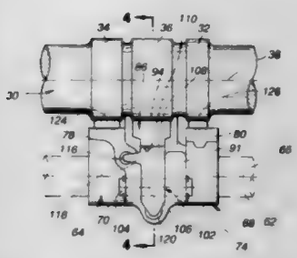
Filed Feb. 20, 1997, Ser. No. 803,518

Claims priority, application Japan, Feb. 20, 1996, 8-031996

Int. Cl.[6] F01L 13/00

U.S. Cl. 123—90.16 20 Claims





1. An apparatus for controlling cylinder valves for an internal combustion engine, comprising:

a first rocker arm pivotal about a rocker arm shaft axis, said first rocker arm being adapted for opening a first one of the cylinder valves;

a second rocker arm pivotal about said rocker arm shaft axis, said second rocker arm being adapted for opening a second one of the cylinder valves;

a free cam follower pivotal about a free cam follower axis that is spaced from and parallel to said rocker arm shaft axis, the free cam follower axis being stationary relative to said first rocker arm;

a first coupling selectively establishing a first drive connection between said free cam follower and said first rocker arm; and

a second coupling selectively establishing a second drive connection between said first rocker arm and said second rocker arm.

2. An apparatus for controlling cylinder valves for an internal combustion engine, comprising:

a first rocker arm for opening a first one of the cylinder valves, said first rocker arm having a first hub supported on and being pivotal about a rocker arm shaft axis;

a second rocker arm for opening a second one of the valves, said second rocker arm having a second hub supported on and being pivotal about said rocker arm shaft axis;

a free cam follower being supported on said first hub and being pivotal about a free cam follower axis parallel to said rocker arm shaft axis, said free cam follower axis being stationary relative to said first rocker arm;

a first coupling selectively establishing a first drive connection between said free cam follower and said first rocker arm; and

a second coupling selectively establishing a second drive connection between said first rocker arm and said second rocker arm.

5,794,577

VALVE TIMING CONTROL DEVICE

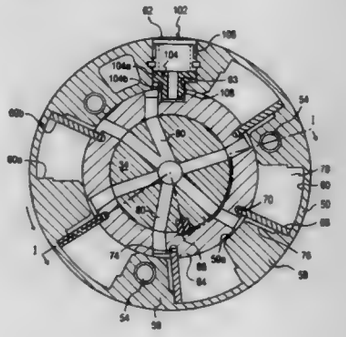
Naoki Kira, Aichi-pref., Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi-pref, Japan

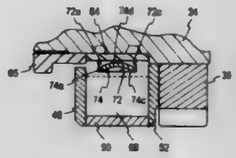
Filed Jul. 11, 1997, Ser. No. 893,482

Claims priority, application Japan, Jul. 12, 1996, 8-183515

Int. Cl.[6] F01L 1/344

U.S. Cl. 123—90.17 8 Claims





1. A valve timing control device comprising:

a rotor on a cam shaft of an engine;

a housing member rotatably mounted on the cam shaft and surrounding the rotor;

a chamber provided between the housing member and the rotor and having a pair of circumferentially opposed walls;

a vane mounted on the rotor and extending outwardly therefrom in the radial direction into the chamber so as to divide the chamber into a first pressure chamber and a second pressure chamber;

a plate spring inserted between the rotor and the vane; and

a fluid supplying means for supplying fluid under pressure to at least a selected one of the first pressure chamber and the second pressure chamber.

5,794,578

VALVE TIMING CONTROL APPARATUS

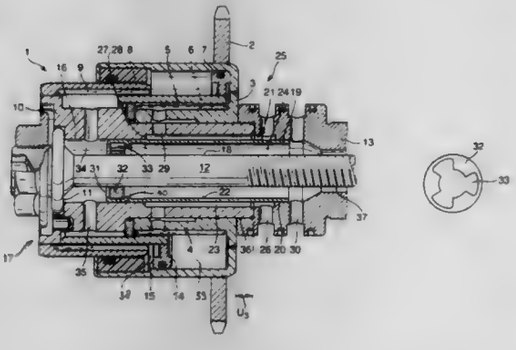
Andreas Strauss, Herzogenaurach; Jochen Auchter, Aurachtal, and Johannes Meyer, Karlsfeld, all of Germany, assignors to Ina Wälzlager Schaeffler oHG, Herzogenaurach, Germany

Filed Oct. 29, 1997, Ser. No. 960,246

Claims priority, application Germany, Nov. 6, 1996, 196 45 688.6

Int. Cl.[6] F01L *1/344*

U.S. Cl. 123—90.17 **17 Claims**



9. A valve timing control apparatus for adjusting a rotational relation between at least one camshaft and a timing pulley of an internal combustion engine, comprising,

a driven element having a central bore;

an adjusting member in mesh with the driven element and reciprocating between two axially spaced end positions and defining two pressure compartments which are fluidly sealed from one another;

an oil guide bush received in the central bore of the driven element and projecting in a bore of the camshaft;

fluid passageway means for conducting a fluid to the pressure compartments, said fluid passageway means including at least one passageway selected from the group consisting of a first passageway positioned between an outer surface area of the guide bush and an inner surface area of the driven element for conducting hydraulic medium to one of the pressure compartments, and a second passageway formed interiorly of the guide bush for conducting hydraulic medium to the other one of the pressure compartments; and

a screw fastener extending through the guide bush for non-rotatably securing the driven element to the camshaft, said guide bush being securely fixed to the screw fastener and so configured as to allow a fluid connection from the interior of the guide bush to the other one of the pressure compartments.

5,794,579

VARIABLE VALVE TIMING MECHANISM OF ENGINE

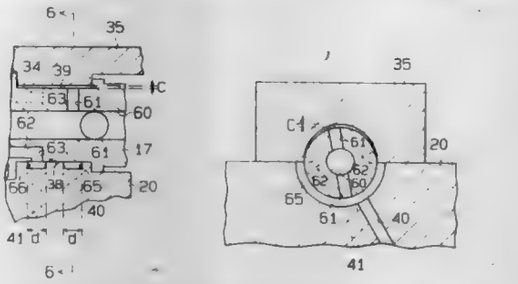
Yoshihito Moriya, Nagoya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 832,889, Apr. 4, 1997. This application Oct. 30, 1997, Ser. No. 961,220

Claims priority, application Japan, Apr. 8, 1996, 8-85043

Int. Cl.[6] F01L *1/344*

U.S. Cl. 123—90.17 **4 Claims**



1. An apparatus for adjusting the valve timing of a valve of an engine, the apparatus comprising:

a crankshaft;

a camshaft for actuating said valve, the camshaft having a journal;

a bearing for rotatably supporting said camshaft, the bearing having an inner cylindrical surface;

a rotor mounted on said camshaft, the rotor being rotatable relative to the camshaft;

a transmission means for connecting said rotor to the said crankshaft to transmit power from the engine to the rotor, wherein the transmission means applies a force to the rotor and the camshaft in a specific direction, and wherein as a result of a net force on said camshaft, a portion of said cylindrical surface is load bearing and an opposite portion of said cylindrical surface is non-load bearing;

an actuating member for changing the relative rotational relationship between said camshaft and said rotor;

a first pressure chamber for applying a hydraulic fluid pressure to said actuating member to move said actuating member in a first direction;

a second pressure chamber for applying a hydraulic fluid pressure to said actuating member to move said actuating member in a second direction;

a first passage defined in said camshaft, the first passage being connected to said first pressure chamber;

a second passage defined in said camshaft, the second passage being connected to said second pressure chamber;

a first groove formed in the inner cylindrical surface of said bearing, the first groove being connected to said first passage; and

a second groove formed in the inner cylindrical surface of said bearing, the second groove being connected to said second passage; and

wherein the first and second grooves each form an arc about the camshaft without surrounding the camshaft, and wherein the first and second grooves extend along the load bearing portion of the cylindrical surface.

5,794,580

REMOTE START/STOP SYSTEM FOR MAGNETO IGNITION ENGINES

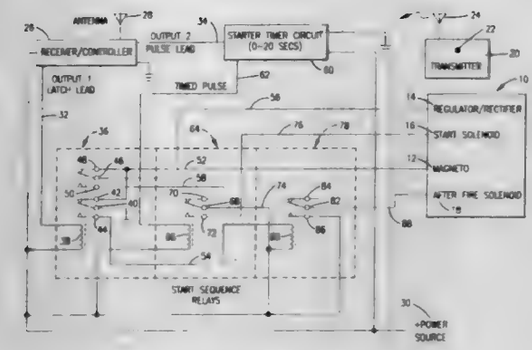
Joseph Galletti, Austin, Tex., assignor to Remote Products Inc., Austin, Tex.

Filed Feb. 26, 1997, Ser. No. 805,635

Int. Cl.[6] F02N *11/08*

U.S. Cl. 123—179.2 **20 Claims**

1. Apparatus for remotely starting an engine with a magneto ignition having a regulator/rectifier, a magneto, a start solenoid and an fuel shut-off solenoid, said apparatus comprising:



a transmitter for transmitting a radio frequency signal;

a receiver located remotely from said transmitter for receiving said signal;

means for autonomously applying power to said start solenoid for a selected time period following receipt of said signal by the transmitter and removing power from the start solenoid after said time period has elapsed;

means for autonomously applying power to said fuel shut-off solenoid upon receipt of said signal by the transmitter;

means for autonomously applying power to said regulator/rectifier following elapse of said time period;

and

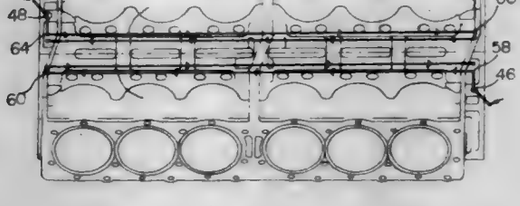
means for autonomously maintaining said magneto in an ungrounded condition to allow the engine to start during said time period and to run thereafter.

5,794,581

ENGINE LUBRICATION SYSTEM

mond B. Wedel, Jr., Elkhart, Ind., and Richard Moser, anta Ana, Calif., assignors to Torque Engineering Corporation, Elkhart, Ind.

Filed May 30, 1997, Ser. No. 866,635
Int. Cl.[6] F01M *11/02; 1/16*
U.S. Cl. 123—196 R **18 Claims**



1. An engine lubrication system for an engine including an engine block having opposite ends and rotatably supporting a crankshaft having main bearing journals and corresponding rod bearing journals, said crankshaft extending from adjacent one end of the engine block toward the other end of the engine block, said lubrication system comprising:

a pump;

a pair of inlet ports carried by the engine block communicated with said pump;

a pair of lubricant galleries in the engine block extending substantially parallel to the crankshaft; and

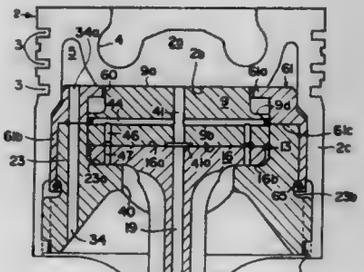
gallery passages communicating each of the galleries to each of the main bearing journals of the crankshaft.

5,794,582

CONNECTING STRUCTURE OF PISTON AND CONNECTING ROD

Shigeaki Horiuchi, Kanagawa, Japan, assignor to Isuzu Motors Ltd., Tokyo, Japan

Filed May 23, 1997, Ser. No. 862,877
Int. Cl.[6] F16J *1/14*
U.S. Cl. 123—197.2 **20 Claims**



1. Internal combustion engine apparatus comprising:

piston having a crown portion with a piston bottom surface, and a skirt projecting therefrom and defining a cavity;

a connecting rod having at one end a semicylindrical yoke portion having an upwardly directed semicylindrical concave surface and downwardly directed semicylindrical convex surfaces;

a guide member slidably retained between said bottom surface and said concave surface; and

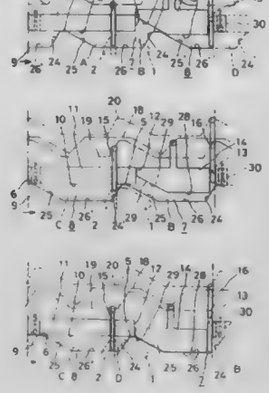
an annular member projecting into and fixed to said skirt, said annular member defining spaced apart semicylindrical surfaces engaging portions of said convex surfaces.

5,794,583

SIDE PRESSURE TYPE ROTARY ENGINE

Masao Ichieda, Nara-ken, Japan, assignor to Masahiro Ichieda, Amagasaki, Japan

Filed Jun. 6, 1996, Ser. No. 659,570
Claims priority, application Japan, Jun. 6, 1995, 7-164741
Int. Cl.[6] F02B *53/00*
U.S. Cl. 123—244 **6 Claims**



1. A side pressure type rotary engine comprising a cylinder having a suction port and an exhaust port formed in predetermined portions thereof, said suction port and said exhaust port being circumferentially spaced from each other;

a main shaft passes through said cylinder along the axis of said cylinder;

a rotor having a columnar body, the outer circumferential surface of which extends along an inner circumferential surface of said cylinder;

said rotor provided with a pair of flat end surface portions diametrically opposed to each other on both sides of the axis of said rotor and mounted fixedly on the main shaft and rotated unitarily therewith, said flat end surface portions provided with a first and second or a pair of working chamber-forming recesses on both sides of said flat end surface portions;

a fixed blocking element adapted to close a predetermined range of a head portion of said cylinder with a bottom surface of said blocking element, said bottom surface of said blocking element being slidingly in contact with said flat end surface portions of the rotor;

an active block movable along side surfaces of said fixed blocking element and in parallel with the axis of said cylinders;

a first movable blocking element located between said suction port and said exhaust port and adapted to close the part of said head portion of said cylinder and move in parallel with the axis of said cylinder so as to divide one of said first working chamber-forming recesses in said end surface of said rotor into two first working chamber-forming spaces;

a second movable blocking element which is substantially opposed to said first movable blocking element with respect to the axis of said cylinder, said second movable blocking element adapted to close part of said head portion of said cylinder and move in parallel with the axis of said cylinder so as to divide said second chamber-forming recesses into two second working chamber-forming recesses;

a suction and exhaust blocking element located between the suction port and the exhaust port, said suction and exhaust blocking element adapted to close the part of the head portion of the cylinder and move in parallel with the axis of the cylinder so as to divide the working chamber-forming recesses into two first working chamber-forming spaces;

an expansion blocking element which is substantially opposed to the suction and exhaust blocking element with respect to the axis of the cylinder, said expansion blocking element adapted to close the part of the head portion of the cylinder and move in parallel with the axis of the cylinder so as to divide the working chamber-forming recess into two second working chamber-forming spaces;

a driving mechanism adapted to move said active block and said first and second movable blocking elements at predetermined timings and strokes, whereby the expansive force of a gas is exerted on said rotor in the tangential direction thereof to rotate said rotor in the tangential direction thereof to rotate said main shaft;

wherein wall surfaces of said first working chamber-forming recesses at the front side of said first working chamber-forming recesses are set at the portions thereof which are near the bottom surfaces of said first working chamber-forming recesses and are set at a depth larger than the depth of said bottom surfaces.

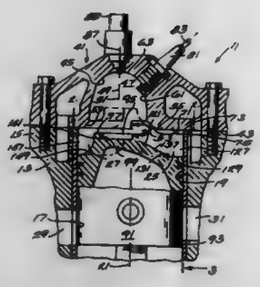
5,794,584

STRATIFIED COMBUSTION CHAMBER FOR A CROSS-SCAVENGED, TWO STROKE, INTERNAL COMBUSTION ENGINE

George Gillespie, Portadown Co. Armagh, Northern Ireland, assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 5, 1996, Ser. No. 628,844
Int. Cl.[6] F02B *19/16*
U.S. Cl. 123—257 **14 Claims**

1. An internal combustion engine comprising a cylinder block including an outer end, a cylinder extending from said outer end and including a cylindrical wall having an axis and opposite inlet and exhaust sides located in diametric relation to each other, an exhaust port located in said exhaust side of said cylindrical wall and in axially spaced relation from said outer end, and an inlet port located in said inlet side of said cylindrical wall and in axially



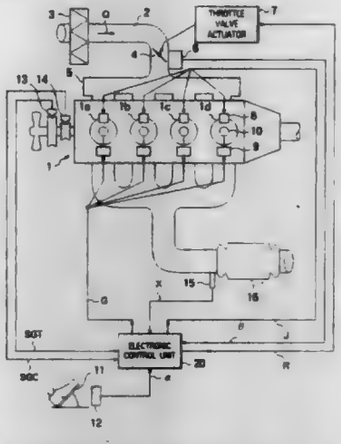
spaced relation from said outer end, a cylinder head fixed to said outer end of said cylinder block and including a recess extending from said cylinder, a spark plug fixed in said cylinder head between said cylinder axis and said exhaust side of said cylinder and along an axis located in a plane bisecting said inlet port and said exhaust port and extending at an acute angle to said cylinder axis, a fuel injector fixed in said cylinder head between said cylinder axis and said inlet side of said cylinder and along an axis located in said plane bisecting said inlet port and said exhaust port and extending in parallel and offset relation to said cylinder axis in the direction from said inlet port to said exhaust port, and a piston moveable axially in said cylinder and comprising an outer surface extending in opposing relation to said cylinder head and including a deflector extending diametrically from and between said cylindrical wall in transverse relation to said plane bisecting said inlet port and said exhaust port and including a centrally located raised crown having therein an axially inwardly extending bowl, an exhaust side wall extending from and between said cylindrical wall and defining an axially inwardly extending exhaust pocket extending between said exhaust side wall and said cylindrical wall, and an inlet side wall extending from and between said cylindrical wall and in spaced relation to said exhaust side wall and defining an axially inwardly extending inlet pocket extending along said inlet side wall and said cylindrical wall.

5,794,585

CYLINDER INJECTION FUEL CONTROL DEVICE FOR AN INTERNAL-COMBUSTION ENGINE

Shiro Yonezawa, and Hirofumi Ohuchi, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1997, Ser. No. 956,040
Int. Cl.[6] F02B *1/14;41/00*
U.S. Cl. 123—299 **5 Claims**



1. A cylinder injection fuel control device for an internal-combustion engine which has a fuel injection valve for directly injecting fuel into each cylinder of an internal-combustion engine and which supplies the amount of fuel required for a single stroke of each cylinder by applying, to each fuel injection valve, an

injection signal of a pulse width corresponding to the driving time of each fuel injection valve; wherein

said injection signal applied for a single stroke of each cylinder is divided into three pulses, and the amount of fuel required for a single stroke is divided into three portions;

a first injection signal and a second injection signal are respectively applied during a suction stroke, and a third injection signal is applies during a compression stroke to said fuel injection valve of said each cylinder; and

the amount of fuel supplied in response to said second injection signal is corrected in accordance with the operational state of said internal-combustion engine.

5,794,586

FUEL INJECTION CONTROL SYSTEM FOR IN-CYLINDER INJECTION INTERNAL COMBUSTION ENGINE

Hideyuki Oda; Kenji Goto; Nobuaki Murakami; Kazuchika Tashima, and Hiroki Tamura, all of Tokyo, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

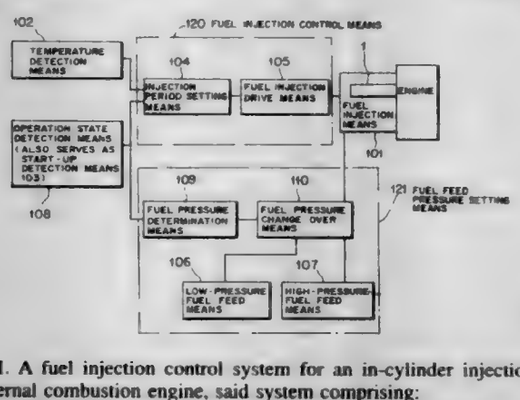
PCT No. PCT/JP96/01391, § 371 Date May 19, 1997, § 102(e) Date May 19, 1997, PCT Pub. No. WO96/37694, PCT Pub. Date Nov. 28, 1996

PCT Filed May 24, 1996, Ser. No. 776,242

Claims priority, application Japan, May 26, 1995, 7-128681

Int. Cl.[6] F02B *3/02*; **F02D** *41/06*

U.S. Cl. 123—305 **16 Claims**



1. A fuel injection control system for an in-cylinder injection internal combustion engine, said system comprising:

a fuel injection valve arranged at a cylinder for injecting fuel into said cylinder;

fuel feed pressure setting means for setting a fuel injection pressure of said fuel injection valve at a low pressure in a specific operation state including the time of a start-up of said internal combustion engine and setting said fuel injection pressure at a high pressure in an operation state other than said specific operation state; and

fuel injection control means for setting an injection period of said fuel injection valve as a period longer than a period of a single stroke in an operation cycle of said internal combustion engine in said specific operation state.

5,794,587

TUMBLE VALVE FOR MULTI-VALVE ENGINE

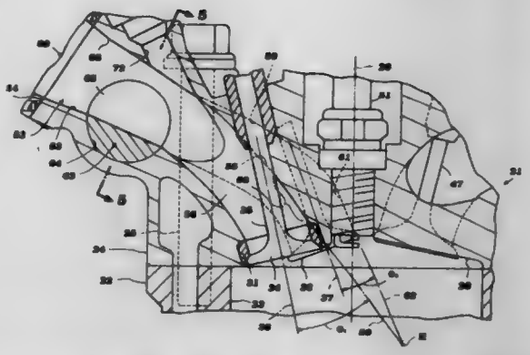
Yoshiharu Isaka, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 2, 1995, Ser. No. 458,461

Claims priority, application Japan, Jun. 14, 1994, 6-131828

Int. Cl.[6] F02B *31/00*; **F02M** *35/10*

U.S. Cl. 123—308 **20 Claims**



1. An induction system for an internal combustion engine having a cylinder head adapted to cooperate with a cylinder block, a cylinder bore and piston therein for defining a combustion chamber, said cylinder head being formed with three intake valve seats comprised of a pair of side intake valve seats being disposed contiguous to a plane containing the axis of the cylinder bore and extending parallel to or containing the axis of rotation of a crankshaft driven by a piston in the cylinder bore and a third center intake valve seat disposed between said side intake valve seats and further from said plane, intake passage means for serving said intake valve seats, said intake passage means comprising upper wall means terminating at the respective valve seats, the upper wall portion of at least one of said side valve seats being disposed so as to lie in a second plane that intersects the combustion chamber on the side of said first plane opposite to said center intake valve seat and at a point above the head of the piston when the piston is at its bottom dead center position so as to augment the tumble motion generated to the intake charge flowing into the combustion chamber from the one side valve seat.

5,794,588

DRIVE UNIT WITH AN ENGINE AND A RETARDER

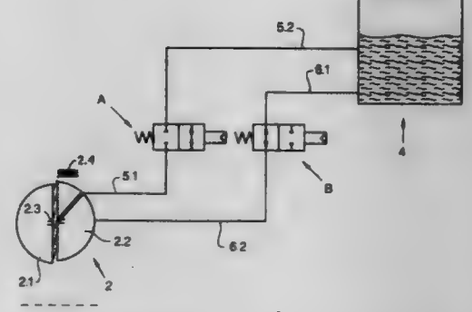
Klaus Vogelsang, Crailsheim; Peter Rose, Ilshofen; Helmut Ott, and Peter Heilinger, both of Crailsheim, all of Germany, assignors to Voith Turbo GmbH & Co. KG, Heidenheim, Germany

Filed Apr. 25, 1997, Ser. No. 844,699

Claims priority, application Germany, Apr. 25, 1996, 196 16 425.7

Int. Cl.[6] F02D *39/02*

U.S. Cl. 123—320 **5 Claims**



1. A drive unit comprising:

a) a hydrodynamic retarder having a hydrodynamic center, a working medium outlet, a rotor paddle wheel, a stator paddle wheel, and a housing surrounding said wheels;

b) a coolant cycle system, through which a coolant flows for an internal combustion engine, the coolant also being a working medium of the retarder;

c) a working medium container for the coolant;

d) a first pipe connected to and disposed between the hydrodynamic center of the retarder and a valve;

e) a second, leakage pipe disposed between the working medium outlet of the retarder and the valve; and

f) a third pipe disposed between the valve and the working medium container;

g) the valve having first and second positions wherein, in the first position, a conducting connection is established between the working medium container and the leakage pipe to provide for a pumping operation of the retarder, and in the second position, a conducting connection is established between the working medium container and the first pipe for a braking operation of the retarder.

5,794,589

EXHAUST VALVE MECHANISM IN AN INTERNAL COMBUSTION ENGINE

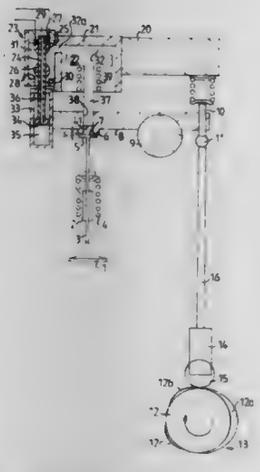
Nils Olof Håkansson, Stenkullen, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Nov. 25, 1996, Ser. No. 755,561

Claims priority, application Sweden, Nov. 24, 1995, 9504210

Int. Cl.[6] F02D *13/04*; F01L *1/24*

U.S. Cl. 123—321 **11 Claims**



1. Exhaust valve mechanism in an internal combustion engine, comprising at least one exhaust valve in each cylinder, for each cylinder a rocker arm mounted on a rocker arm shaft for operating the exhaust valve, a cam shaft, a cam element for each rocker arm, said cam element cooperating with means imparting a rocking movement to the rocker arm as the cam shaft rotates, and a hydraulic circuit with valve means and force-actuated means, which are actuatable to open the exhaust valve during an engine stroke other than the exhaust stroke, wherein the force-actuated means (**21**, **22**) are so disposed that a reactive force to the force of the force-actuated means in the opening direction of the exhaust a fixed portion (**20**) of the engine.

5,794,590

ENGINE BRAKE FOR A MULTICYLINDER DIESEL ENGINE

Horst Bergmann, Esslingen, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

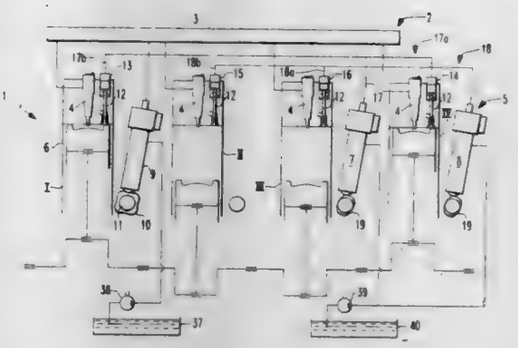
Filed Apr. 7, 1997, Ser. No. 835,382

Claims priority, application Germany, Apr. 20, 1996, 196 15 739.0

Int. Cl.[6] F01L *13/06*

U.S. Cl. 123—321 **4 Claims**

1. An engine brake for a multicylinder Diesel engine having a cylinder head with at least one exhaust or decompression valve for each cylinder for controlling the discharge of gases from said cylinder, a high pressure fuel injection system including a common fuel supply line for distributing fuel under pressure to the various cylinders and at least one cam shaft-operated plug-in high pressure



fuel pump for supplying fuel under pressure to said common fuel supply line, and an engine brake actuating system including for every two cylinder operating at a 360° crankshaft phase difference a plug-in pump which, during engine braking operation concurrently operates the exhaust or decompression valves of the associated two cylinders, alternately one at the end of a compression stroke and the other at the end of an exhaust stroke, said plug-in pump being operated by a camshaft driven double-cam cam structure.

5,794,591

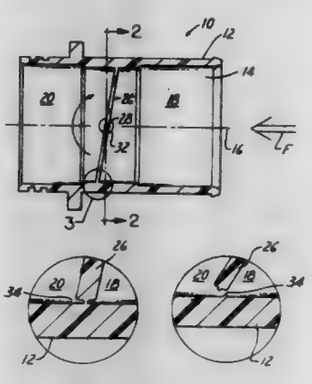
THROTTLE VALVE FOR AN INTERNAL COMBUSTION ENGINE

Christopher Joseph Kalebjian, Belleville; Catherine Ann Kerrigan, Plymouth, both of Mich.; Robert Sharples, Chelmsford, Great Britain; Wade Coots, Livonia, and Thomas Daniel Wernholm, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 17, 1997, Ser. No. 819,159

Int. Cl.[6] F02D *9/08*; B23P *17/00*

U.S. Cl. 123—337 **19 Claims**



1. A molded throttle valve for an internal combustion engine induction system comprising:

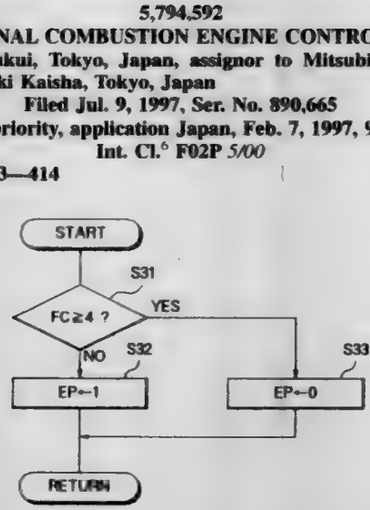
a throttle body having a throttle bore defining an axis; and,

a throttle plate for controlling air flow through said throttle valve, with said throttle plate having a periphery and being integrally molded within said throttle bore and attached to said throttle body at said periphery, thereby providing a relatively exact throttle plate to throttle bore positional relationship, with said throttle plate being adapted for subsequent detachment at said periphery from said throttle body for relative motion within said throttle bore.

5,794,592
INTERNAL COMBUSTION ENGINE CONTROLLER

Wataru Fukui, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1997, Ser. No. 890,665
Claims priority, application Japan, Feb. 7, 1997, 9-025483
Int. Cl.[6] F02P *5/00*
U.S. Cl. 123—414 **5 Claims**



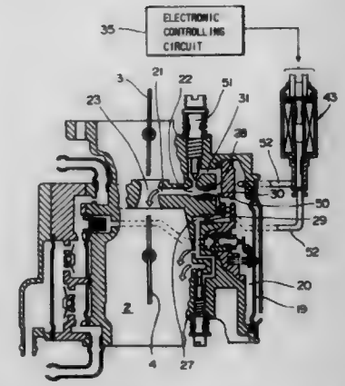
1. An internal combustion engine controller, comprising:
an angle sensor for individually outputting a crank angle signal and a cylinder identification signal by detecting the rotational angle of an internal combustion engine; and
a control/arithmetic operation circuit for calculating the control parameters of the internal combustion engine based on the crank angle signal and the cylinder identification signal and outputting drive signals to the actuators of the internal combustion engine according to the control parameters, wherein:
the crank angle signal includes pulses corresponding to the first and second reference crank angles of the respective cylinders of the internal combustion engine; and
the cylinder identification signal includes a pulse having a phase difference to the crank angle signal as well as the pulse number created from the second reference crank angle to the first reference crank angle of a next cylinder is different from that of other cylinders as to at least a specific cylinder, and said control/arithmetic operation circuit includes:
timing calculation means for calculating the control timing;
count means for counting the pulse number of the cylinder identification signal detected from the second reference crank angle to the first reference crank angle;
cylinder identification assessment means for assessing how the respective cylinders are identified based on the count value of the pulse number and a previous count value and outputting a cylinder identification flag as a result of the assessment; and
control reflection means for reflecting the value of the cylinder identification flag to the output state of the drive signals, wherein said control reflection means prohibits the output of the drive signals when the cylinder identification flag does not correspond to any of the respective cylinders.

5,794,593
ELECTRONICALLY CONTROLLED TYPE FLOATLESS CARBURETOR

Toshio Sugii, Odawara, Japan, assignor to Mikuni Corporation, Japan

Division of Ser. No. 468,702, Jun. 6, 1995, Pat. No. 5,632,248. This application Dec. 10, 1996, Ser. No. 762,913
Int. Cl.[6] F02M *7/20*
U.S. Cl. 123—438 **3 Claims**

1. An electronically controlled type floatless carburetor wherein fuel is delivered to a fuel regulating chamber by actuation of pumping means, the fuel from said fuel regulating chamber is ejected in a suction passage from a main nozzle via a main fuel passage including a main jet, and moreover, the fuel from said fuel

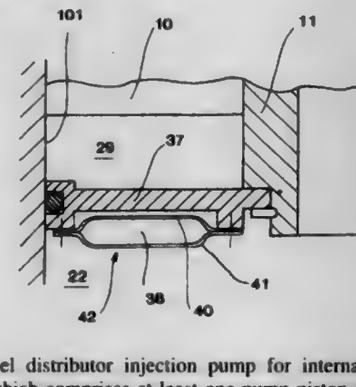


regulating chamber is ejected in said suction passage from a slow system ejection port via a pilot fuel passage including a pilot jet, comprising:
a united fuel passage having said main fuel passage and said pilot fuel passage united with each other;
a fuel communication passage and a throttle for communicating said united fuel passage with said fuel regulating chamber;
a solenoid valve disposed at an intermediate position of said fuel communication passage to adjust a quantity of fuel passing through said fuel communication passage by duty driving; and
an electronic controlling circuit for controlling actuation to said solenoid valve in response of inputting of one or more parameters,
wherein the quantity of fuel delivered to said main fuel passage and said pilot fuel passage includes a quantity of fuel adjusted by duty driving which passing through said fuel communication passage as said solenoid valve is actuated and a quantity of fuel flowing through said throttle.

5,794,594
FUEL INJECTION PUMP

Wolfgang Fehlmann, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE96/00612, § 371 Date Apr. 28, 1997, § 102(e) Date Apr. 28, 1997, PCT Pub. No. WO97/08454, PCT Pub. Date Mar. 6, 1997
PCT Filed Mar. 29, 1996, Ser. No. 817,976
Claims priority, application Germany, Aug. 30, 1995, 195 31 811.0
Int. Cl.[6] F02M *37/04;* **F04B** *11/00*
U.S. Cl. 123—450 **7 Claims**



1. A fuel distributor injection pump for internal combustion engines, which comprises at least one pump piston (16), which is guided so that it the at least one pump piston moves radially in a pump cylinder (15) and defines a pump work chamber (17) on an end face, a drive mechanism (21), which engages an end of the pump piston (16) remote from the pump work chamber (17) and drives the at least one pump piston (16) to carry out pressure strokes in an axial direction of said at least one pump piston, a

drive mechanism chamber (**22**), said drive mechanism chamber contains the drive mechanism (**21**) and is filled with a lubricating fluid, a fuel filled storage chamber (**29**), said storage chamber is divided from the drive mechanism chamber (**22**) by a movable wall (**37**), the pump work chamber (**17**) is filled with fuel from the storage chamber during the execution of intake strokes of the pump piston (**16**) and into which a partial quantity of injection pressure fuel, which is supplied in the feed stroke, is sent at an end of the feed stroke of the pump piston (**16**), wherein a fuel pressure in the storage chamber (**29**) is significantly greater than a lubrication fluid pressure in the drive mechanism chamber (**22**), and a vacuum chamber (**38**) is disposed in the drive mechanism chamber (**22**), said vacuum chamber is at least partially defined by a membrane (**39**; **40**, **41**) that is acted upon by the lubrication fluid pressure, and that a rigidity of the membrane (**39**; **40**, **41**) is designed so that the membrane deflects toward the vacuum chamber (**38**) only when there is a pressure load that is slightly greater than the lubrication pressure in the drive mechanism chamber, (**22**).

5,794,595

MOUNTING ARRANGEMENT FOR A FUEL INJECTOR HOLDER

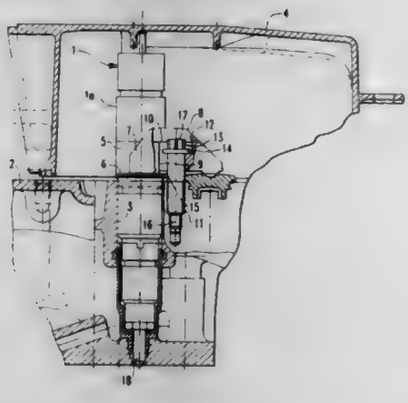
Frank Berger, Leutenbach, and Bernhard Schwarzkopf, Waldstetten, both of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany

Filed Jul. 14, 1997, Ser. No. 892,031

Claims priority, application Germany, Jul. 24, 1996, 196 29 855.5

Int. Cl.[6] **F02M** *55/02*

U.S. Cl. 123—470 **5 Claims**



1. A mounting arrangement for mounting a fuel injector holder in an injector holder recess formed in a cylinder head of an internal combustion engine, said mounting arrangement comprising a clamping pawl having one end seated on a support surface of said cylinder head and having an opposite forked end forming engagement fingers seated on support surfaces formed on said injector holder and a screw extending through said clamping pawl and being threaded into said cylinder head for forcing said injector holder into said injector holder recess, said injector holder having a shoulder adjacent said mounting screw and said mounting screw having a head with an annular projection disposed below said shoulder so that, upon unscrewing of said mounting screw, said annular projection engages said shoulder for pulling said injector holder out of said injector holder recess.

5,794,596

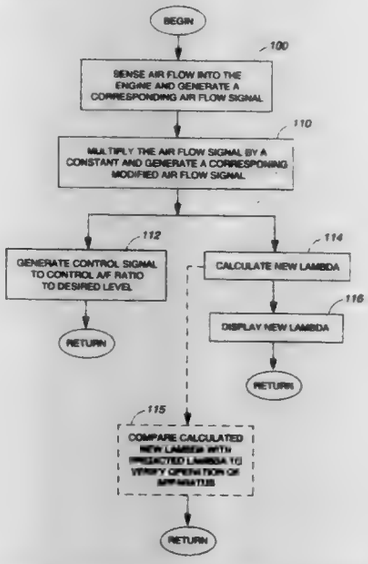
METHOD AND SYSTEM FOR PREDICTABLY CONTROLLING AIR/FUEL RATIO

James William Butler, Livonia; Alex David Colvin, Oak Park, and Thomas John Korniski, Livonia, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Apr. 14, 1997, Ser. No. 837,169

Int. Cl.[6] **F02M** *51/00*

U.S. Cl. 123—488 **20 Claims**



1. A method for controlling air/fuel ratio of an internal combustion engine to a desired level of richness or leanness, wherein the engine normally includes a control logic connected thereto for normally controlling the air/fuel ratio at stoichiometry, the method comprising:

sensing air flow into the engine and generating a corresponding air flow signal;

multiplying the air flow signal by a constant corresponding to the desired level of richness or leanness to generate a modified air flow signal;

determining a desired amount of fuel based on the air flow signal and the modified air flow signal; and

controlling the fuel to be delivered to the engine based on the desired amount of fuel to obtain the desired level of richness or leanness.

5,794,597

DEVICE FOR SUPPLYING INTERNAL COMBUSTION ENGINE WITH FUEL FROM SUPPLY CONTAINER

Helmut Schwegler, Pleidelsheim; Kurt Frank, Schorndorf; Ansgar Seitz, Neuhausen; Wolfgang Bueser, Freiberg, and Uwe Talmon, Muehlacker, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE96/00284, § 371 Date Oct. 28, 1996, § 102(e) Date Oct. 28, 1996, PCT Pub. No. WO96/35871, PCT Pub. Date Nov. 14, 1996

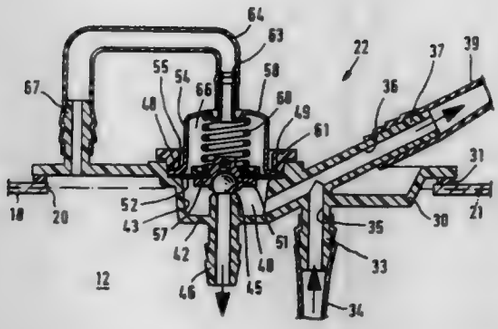
PCT Filed Feb. 23, 1996, Ser. No. 732,488

Claims priority, application Germany, Mar. 9, 1995, 195 16 890.9

Int. Cl.[6] **F02M** *37/04*

U.S. Cl. 123—514 **11 Claims**

1. A device for supplying with fuel 1 combustion engine with fuel from a supply tank, with a feed pump (**14**) disposed in the supply tank (**12**), which can be inserted through an opening (**20**) in the supply tank (**12**), with a closure element for closing the opening (**20**), on which a pressure regulator is disposed, which has a pressure chamber (**40**, **140**, **440**) with a connection to the pressure side of the feed pump (**14**), to the internal combustion engine



(10) and to a relief chamber (12, 90, 98), wherein the closure element has a flange-like base body (30, 130, 230, 330, 430) made of plastic, which closes the opening (20), in which a depression (40, 140, 440) is formed, into which a connector (45, 145), which constitutes the connection of the pressure chamber with the relief chamber (12, 90, 98) and is made of one piece with the base body (30, 130, 230, 330, 430), projects, wherein the depression (40, 140, 440) for forming the pressure chamber is covered with an elastically deformable diaphragm (52, 152, 252, 452, which cooperates at least indirectly with the front end (51) of the connector (45, 145), wherein a spring (60, 160, 460) acts on the diaphragm (52, 152, 252, 452) in the direction toward the connector (45, 145) and, when a defined pressure is exceeded in the pressure chamber (40, 140, 440), clears the connector (45, 145) for the connection of the pressure chamber (40, 140, 440) with the relief chamber (12, 90, 98), and wherein the diaphragm (52, 152, 252, 452) is clamped between the base body (30, 130, 230, 330, 430) and a separate retaining element (54, 154, 254, 354, 454) fastened on the base body, characterized in that a support element (70) is connected with the diaphragm (52, 152, 252, 452) in which a flattened ball (74) is movably seated, wherein with its flattened area (75) the ball (74) cooperates as a closure member with the front end (51) of the connector (54).

5,794,598

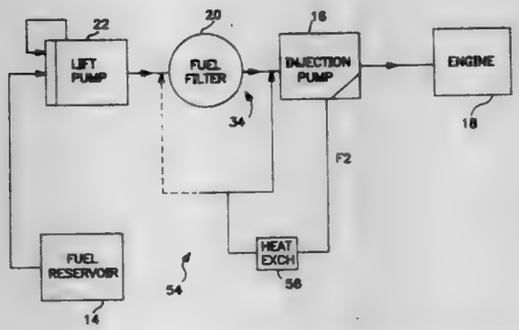
FUEL CIRCUIT AND CIRCULATION METHOD FOR FUEL INJECTION SYSTEM

Leon P. Janik, Suffield, and Michael J. Williams, Glastonbury, both of Conn., assignors to Stanadyne Automotive Corp., Windsor, Conn.

Continuation of Ser. No. 667,644, Jun. 21, 1996. This application Jun. 5, 1997, Ser. No. 869,377

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—514 **18 Claims**



1. A fuel circulation circuit for a fuel system for supplying fuel to a fuel injection system for an engine, the fuel system having a fuel reservoir, the fuel circulation circuit comprising:

a fuel injection pump comprising inlet means for receiving a flow of fuel and return outlet means for returning a flow of excess fuel;

supply means for defining a supply path from said reservoir to said inlet means of said fuel injection pump;

filter means disposed in said supply path for filtering a flow of fuel; and

return passage means for recirculating excess fuel from said return outlet means of said fuel injection pump to an intermediate location of said supply path;

wherein none of the excess fuel is recirculated through said filter means.

5,794,599

METHOD FOR CHECKING THE TIGHTNESS OF A TANK SYSTEM OF A VEHICLE HAVING AN INTERNAL COMBUSTION ENGINE

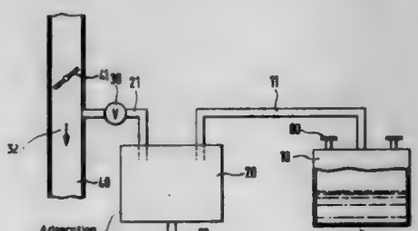
Andreas Blumenstock, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 26, 1997, Ser. No. 806,411

Claims priority, application Germany, Mar. 1, 1996, 196 07 771.0

Int. Cl.[6] F02M *33/02*

U.S. Cl. 123—519 **6 Claims**



1. A method for checking the tightness of a tank system of an internal combustion engine having an intake pipe, the tank system including: a fuel tank wherein fuel vapor forms, a regeneration valve connected to said intake pipe; an adsorption filter connected between said regeneration valve and said fuel tank; said regeneration valve being movable between a closed position and an open position wherein said fuel vapor is drawn by suction into said intake pipe; said adsorption filter having a venting line; and, shutoff means for said venting line and said shutoff means being movable between a first position wherein said venting line is closed off pressure tight and a second position wherein said venting line is open to said adsorption filter; and, pump means for generating a diagnostic overpressure in said tank system; the method comprising the steps of:

generating a diagnostic overpressure in said tank system with said regeneration valve in said closed position and said shutoff means in said first position;

first moving said regeneration valve to said open position;

measuring the pressure in said tank system; and,

then switching said shutoff means into said second position when said pressure in said tank system corresponds essentially to atmospheric pressure.

5,794,600

INTERNAL COMBUSTION ENGINE CONTROL

Raymond John Hill, Beldon, Australia, assignor to Orbital Engine Company (Australia) Pty. Limited, Balcatta. W.A., Australia

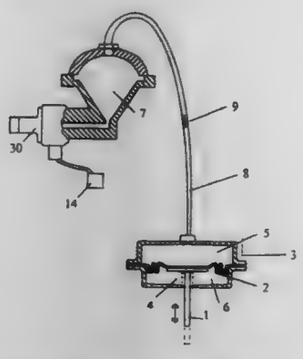
PCT No. PCT/AU95/00390, § 371 Date Dec. 27, 1996, § 102(e) Date Dec. 27, 1996, PCT Pub. No. WO96/00843, PCT Pub. Date Jan. 19, 1996

PCT Filed Jun. 29, 1995, Ser. No. 750,971

Claims priority, application Australia, Jun. 30, 1994, PM 6565

Int. Cl.[6] F02D *1/06*

U.S. Cl. 123—531 28 Claims



1. A method of operating an internal combustion engine having a fuel injection system comprising the steps of injecting fuel entrained in a compressed gas to in engine combustion chamber, electronically managing fluid pressure available from a source associated with the operation of the engine in at least part of the load operating range of the engine, applying said managed pressure as an energy source to power a control device to control at least one operating parameter of the engine, wherein said step of electronically managing fluid pressure comprises the step of controlling said fluid pressure using an electronic control unit.

5,794,601

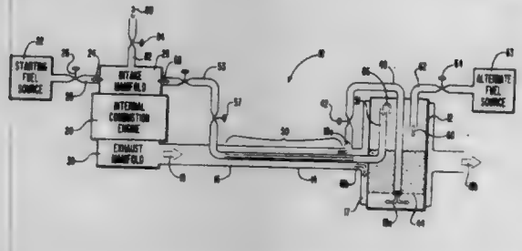
FUEL PRETREATER APPARATUS AND METHOD

Paul Pantone, 41 E. 300 South, Price, Utah 84501

Filed May 16, 1997, Ser. No. 858,085

Int. Cl.[6] F02M *31/18*

U.S. Cl. 123—538 18 Claims



1. A pretreater apparatus for pretreating fuel to provide a suitable fuel for combustion in fuel burning apparatus, the apparatus having a fuel intake system and an exhaust system, the improvement comprising:

a volatilization chamber for volatilizating said fuel in said volatilization chamber;

a heated reactor tube through which the volatilized fuel flows:

a reactor rod mounted in the reactor tube around which the volatilized fuel flows as it flows through the reactor tube, the space between the reactor rod and the reactor tube through which the volatilized fuel flows forming a reaction zone; and

inlet means for directing said reacted fuel into the intake system of the fuel burning apparatus.

5,794,602

CRANKCASE VENTILATING SYSTEM

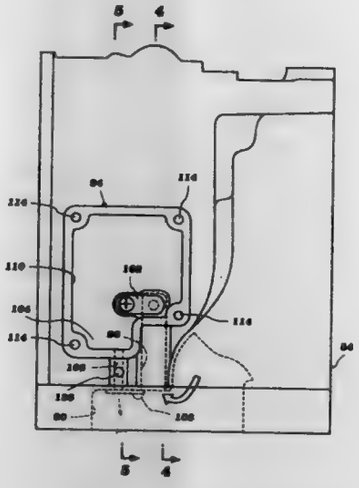
Sakayuki Kimura, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Aug. 30, 1996, Ser. No. 697,907

Claims priority, application Japan, Aug. 30, 1995, 7-221620

Int. Cl.[6] B63H *21/26*

U.S. Cl. 123—572 28 Claims



1. An internal combustion engine comprising a crankcase formed between a cylinder block and a crankcase member, a lubrication system including a lubricant reservoir, the lubrication system being configured to deliver lubricant from the lubricant reservoir to at least the crankcase, and a ventilation system in communication with the lubricant system, the ventilation system including a lubricant separator disposed on one side of the cylinder block, said lubricant separator including a breather chamber, a first passage extending between the lubrication system and the breather chamber, and a second passage extending between the breather chamber and the lubrication system, at least portions of both the first and second passages being integrally formed with the cylinder block.

5,794,603

IGNITION COIL DEVICE

Masao Miyamoto, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Filed Feb. 20, 1997, Ser. No. 803,237

Claims priority, application Japan, Feb. 20, 1996, 8-032080

Int. Cl.[6] F02P *13/00*

U.S. Cl. 123—634 10 Claims

1. An ignition coil device (**2**; **102**;) for an ignition system in an internal combustion engine, comprising:

a primary coil subassembly, comprising:

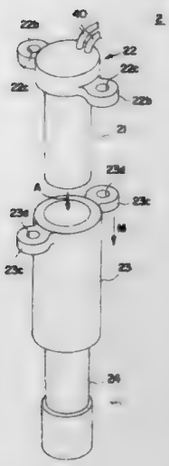
a wiring harness (**40**) having a first end connectable to a power supply and an opposed second end,

a power switch (**22**) connected with the second end of the wiring harness (**40**),

a substantially tubular primary coil portion (**21**; **121**) electrically connected to and integrally secured to the power switch (**22**), and

a magnetic core (**21***c*) disposed within the substantially tubular primary coil portion (**21**; **121**), and

a secondary coil portion (**23**; **123**) connected to the internal combustion engine and having a hollow tubular shape substantially conforming to the tubular shape of the primary coil portion (**21**; **121**), the primary coil portion being detachably fitted within the hollow tubular secondary coil portion (**23**;



123) for permitting separation of said primary coil subassembly from the secondary coil portion (23; 123).

5,794,604

AIR-FUEL RATIO CONTROL SYSTEM HAVING FUNCTION OF AFTER-START LEAN-BURN CONTROL FOR INTERNAL COMBUSTION ENGINES

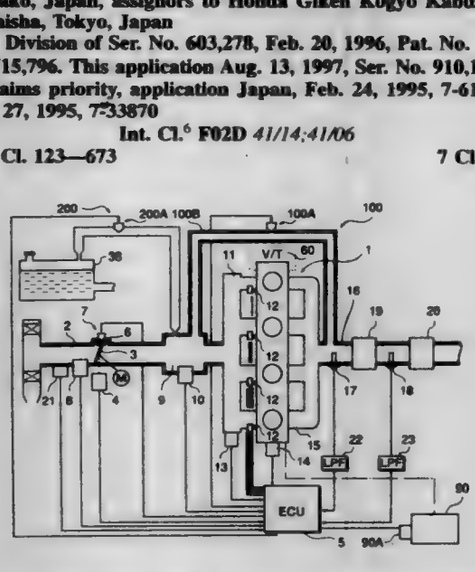
Norio Suzuki; Koichi Fujimori; Yusuke Hasegawa; Hiroki Munakata; Shusuke Akazaki, and Masuhiro Yoshizaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 603,278, Feb. 20, 1996, Pat. No. 5,715,796. This application Aug. 13, 1997, Ser. No. 910,155

Claims priority, application Japan, Feb. 24, 1995, 7-61784; Feb. 27, 1995, 7-33870

Int. Cl.[6] F02D *41/14;41/06*

U.S. Cl. 123—673 **7 Claims**



1. An air-fuel ratio control system for an internal combustion engine having a plurality of cylinders, and an exhaust passage, comprising:

air-fuel ratio-detecting means arranged in said exhaust passage for detecting an air-fuel ratio of exhaust gases emitted from said cylinders;

cylinder-by-cylinder air-fuel ratio-estimating means for estimating an air-fuel ratio of a mixture supplied to each of said cylinders, separately from other ones of said cylinders, based on an output from said air-fuel ratio-detecting means and a model representative of a behavior of said exhaust passage;

first control means for calculating a control amount for said each of said cylinders, based on said air-fuel ratio of said mixture supplied to said each of said cylinders estimated by said cylinder-by-cylinder air-fuel ratio-estimating means and for controlling said air-fuel ratio of said mixture supplied to said each of said cylinders in a feedback manner based on the calculated control amount, separately from the other ones of said cylinders;

second control means for carrying out feedforward control of controlling said air-fuel ratio of said mixture supplied to said each of said cylinders in a feedforward manner to a value leaner than a stoichiometric air-fuel ratio immediately after start of said engine; and

learning means for learning said control amount to obtain a learned value thereof;

said second control means carrying out said feedforward control by the use of said learned value.

5,794,605

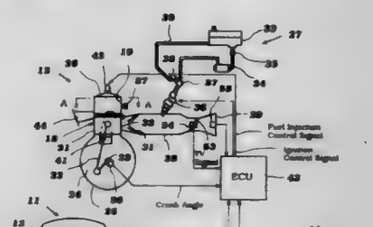
FUEL CONTROL FOR MARINE ENGINE

Masahiko Kato, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 5, 1996, Ser. No. 611,148

Int. Cl.[6] F02D *41/14*

U.S. Cl. 123—688 **20 Claims**



1. A feedback control system for an internal combustion engine having a combustion chamber, a fuel and air supply system for delivering a fuel and air charge to said combustion chamber, an exhaust discharge that discharges the exhaust gases in a condition wherein the back pressure may vary, a combustion condition sensor for determining the fuel/air ratio supplied by said fuel and air supply system to said combustion chamber, a feedback control system for receiving signals from said combustion condition sensor and controlling said fuel/air supply system to maintain the desired fuel/air ratio, and detecting means for detecting an abnormal condition in the event a change in the fuel/air ratio is demanded by the feedback control system and the fuel/air ratio signal does not change within a predetermined time after the ratio change is effected, said abnormal condition of said combustion condition sensor being caused by abnormal exhaust back pressure.

5,794,606

RAM FEED AMMO BOX

Bernard A. Deak, 17370 Spanghurst Dr., Walton Hills, Ohio 44146

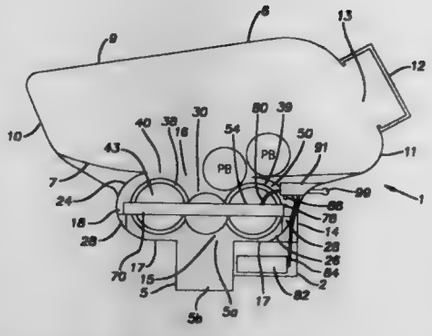
Filed May 28, 1996, Ser. No. 654,354

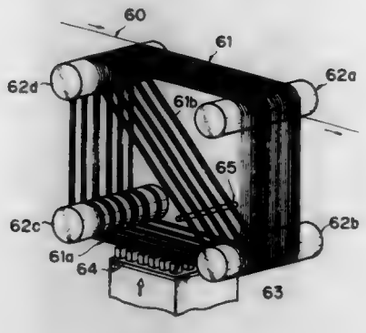
Int. Cl.[6] F41B *11/02*

U.S. Cl. 124—51.1 **20 Claims**

1. A feed mechanism for use with a gun having an infeed tube for receiving paintballs that are to be fired from the gun, said feed mechanism comprising:

a storage container for holding paintballs, said storage container having a wall with a feeder opening therein;





a feeder tube for connection to the infeed tube so as to form a feed path;

a feed structure having a passage extending between the feeder opening of the storage container and the feeder tube, said passage being defined in part by first and second surfaces having a spacing therebetween that is smaller than the diameter of the paintballs, said first surface being composed of a deformable material that grips paintballs at the feeder opening;

means for moving the first surface towards the feeder tube so as to move paintballs gripped by the first surface through the passage and into the feeder tube; and

means for automatically stopping the moving means when there is a jam in the feed path.

17. A gun for firing paintballs, said gun comprising:

a canister for holding compressed gas that fires paintballs out of the gun;

an infeed tube for receiving paintballs to be fired out of the gun; and

a feed mechanism comprising:

a storage container for holding paintballs, said storage container having a wall with a feeder opening therein;

a feeder tube connected to the infeed tube so as to form a feed path;

a feed structure having a passage extending between the feeder opening of the storage container and the feeder tube, said passage being defined in part by a first surface secured to the periphery of a first wheel and a second surface secured to the periphery of a second wheel, said first and second surfaces having a spacing therebetween that is smaller than the diameter of the paintballs, said first and second surfaces being composed of a deformable material that grips paintballs at the feeder opening;

an electric motor for rotating the first wheel towards the feeder tube so as to move paintballs gripped by the first and second surfaces through the passage and into the feeder tube;

a battery for providing electric power to the electric motor; and

means for cutting-off electric power to the electric motor when there is a jam in the feed path.

5,794,607

PROCESS FOR PRODUCING HEAT SINK HAVING GOOD HEAT DISSIPATING CHARACTERISTICS

Toshio Aihara, Sendai; Masahito Tasaka, Amagasaki, and Chihiro Hayashi, Takarazuka, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Division of Ser. No. 28,156, Mar. 9, 1993. This application Mar. 24, 1994, Ser. No. 217,271

Claims priority, application Japan, Mar. 9, 1992, 4-50880; Mar. 30, 1992, 4-74652

Int. Cl.[6] B28D *1/06*

U.S. Cl. 125—16.02 **12 Claims**

1. A process for producing a heat sink comprising forming a plurality of shaped projections in a surface of a workpiece having a bottom plate which is integral with the shaped projections, each of the shaped projections being separated from an adjacent shaped projection by at least a first distance, moving a wire array over the shaped projections, said wire array being stretched with parallel sections thereof aligned on a pitch, urging said wire array against the shaped projections with an abrasive containing working fluid present between said wire array and said shaped projections, and shaping plane parallel plate fins by forming many parallel grooves in the shaped projections under the grinding action of the abrasive grains contained in the working fluid, each of the plate fins being separated from an adjacent plate fin by at most a second distance, the first distance being greater than the second distance.

5,794,608

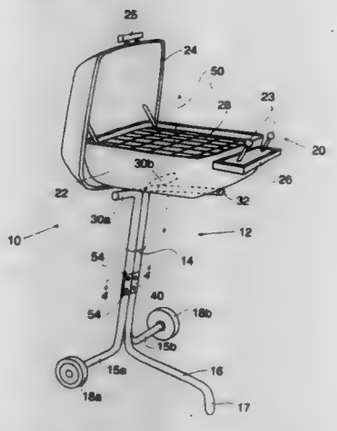
BARBECUE STAND

Thomas Von Berg, Knoxville, Tenn., assignor to MECO Corporation, Greeneville, Tenn.

Filed Oct. 15, 1996, Ser. No. 730,357

Int. Cl.[6] A47J *37/00;* **F24C** *15/08*

U.S. Cl. 126—25 R **20 Claims**



1. A barbecue unit with a forward end comprising:

(a) a basin having a hinged cover, a grill, a front end and a rear end; and

(b) a unitary post having a first end and a second end wherein:

the first end is attached to the basin substantially near the rear end of the basin;

a plurality of cantilever support arms is attached to the first end for supporting the basin; and

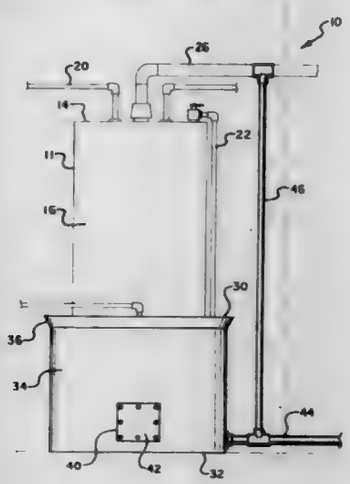
the second end comprises at least three support legs attached thereto, wherein each support leg extends laterally from the second end of the unitary post.

5,794,609

HOT WATER HEATER DRAINAGE SYSTEM

Clifford Grant, 44 Gray St., Montclair, N.J. 07042

Filed Aug. 7, 1997, Ser. No. 910,527
Int. Cl.[6] F24H 1/00
U.S. Cl. 126—363 5 Claims



1. A water heater overflow prevention device comprising, in combination:

a water heater with a cylindrical configuration, said cylindrical configuration having a circular bottom face, a circular top face, and a tubular periphery formed between said top face and said bottom face;

said top face, bottom face and tubular periphery defining an interior space, wherein the bottom face has a plurality of feet for elevating the water heater above ground, the water heater having a water input line connected to the top face thereof for receiving water to be heated, a water output line connected to the top face thereof for delivering water that has been heated, an overflow pipe connected to the top face of the water heater and extending downwardly adjacent to and in parallel with the periphery of the water heater and terminating at a open end adjacent the bottom face of the water heater for allowing excess water from the water heater to flow therefrom, and an exhaust pipe having a vertical extent connected to the top face of the water heater and a horizontal extent in communication with the vertical extent and extending outwardly therefrom, the exhaust pipe adapted for allowing the expelling of harmful gases from the water heater, the water heater further having a control panel situated on the periphery adjacent the bottom face thereof, the control panel adapted to allow the selective actuation of the water heater and further the determination of an amount of heated water available therein;

an overflow pan including a circular base with a cylindrical periphery integrally coupled thereto and extending upwardly therefrom thereby defining an open top and an interior space in which the water heater is situated such that the overflow tube is also situated within the pan, the overflow pan further having an upper peripheral lip integrally coupled to the periphery of the overflow pan and extended upwardly and radially outwardly therefrom, a threaded aperture formed in the periphery of overflow pan adjacent the base thereof, a square cutout formed in the periphery of the overflow pan for allowing access to the control panel, and an access cover adapted to be removably secured over the square cutout for precluding the leaking of water therefrom, wherein a height of the pan is greater than ⅓ that of the water heater;

a horizontally oriented drainage pipe having a first end threadedly coupled to the threaded aperture of the overflow pan and a second end in communication with a sewer for draining the overflow pan of any excess water that may be present therein; and

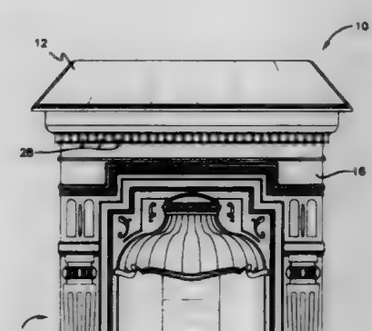
a vertical vent pipe having a first end in communication with the drainage pipe and a second end connected to the exhaust pipe, the vent pipe adapted for allowing the escape of harmful gases from the sewer to the exhaust pipe.

5,794,610

FREE STANDING FIREPLACE

Joan E. Facchina, 19441 Noel Rd., Elwood, Ill. 60421

Filed Dec. 4, 1996, Ser. No. 759,519
Int. Cl.[6] F24C 3/00
U.S. Cl. 126—512 7 Claims



1. A modular fireplace for accommodating combustion while obviating requirements for exhausting products of combustion, comprising:

a modular facade having a front surface and a rear surface, and comprising a vertical front face member disposed to face forwardly, a right lateral side member and a left lateral side member disposed vertically and adjacent said front face member respectively at right and left sides of said front face member, and a mantel disposed above and covering said front face member, said right lateral side member and said left lateral side member, said front face member having a plurality of first protrusions each bearing a hole for removably attaching said front face member to said right and said left lateral side members, said two lateral side members each having a plurality of second protrusions each bearing a hole for removably attaching said lateral side members to both said front face member and said mantel, and where said mantel has a plurality of third protrusions each bearing a hole for removably attaching said mantel to both said right and said left lateral side member, and where each one of said first protrusions, said second protrusions, and said third protrusions are selectively alienable with another one of said first protrusions, said second protrusions, and said third protrusions for the purpose of receiving a threaded fastener when said facade is assembled; and

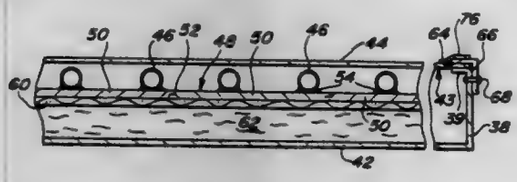
a firebox disposed within and exposed to said front face member between said right lateral side member and said left lateral side member, said firebox having an upper surface and first attachment means for removably attaching said firebox to said front face member, said firebox having closed construction at said upper surface.

5,794,611

SOLAR COLLECTOR

Edward W. Bottum, Jr., and Edward W. Bottum, Sr., both of Brighton, Mich., assignors to Refrigeration Research, Inc., Brighton, Mich.

Filed May 24, 1996, Ser. No. 653,335
Int. Cl.[6] F24J 2/24
U.S. Cl. 126—661 21 Claims



1. A solar collector device comprising:

a housing having two side walls and two end walls interconnecting said side walls at opposite longitudinal ends of said side walls, and a rear wall extending between said side walls and said end walls closing a rear side of said housing, one of said end walls and each of said side walls having a slot defined therein, said slots extending generally parallel to a plane of said rear wall, another of said end walls terminating adjacent an open end of each of said slots in said side walls;

a means for gathering incident solar energy mounted in said housing; and

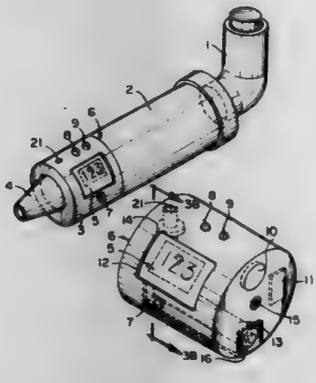
a cover connected to said housing at an open front side of said housing to enclose said means for gathering incident solar energy between said rear wall and said cover, said cover being formed of a glazing material permitting solar energy external to said housing to pass through said cover and be incident on said means for gathering, wherein said cover is received within and releasably 1–8, 10–17 and retained by said slots for insertion into and removal from said slots at said open ends adjacent said another of said end walls.

5,794,612

MDI DEVICE WITH ULTRASOUND SENSOR TO DETECT AEROSOL DISPENSING

Allan Wachter, and Stuart Lindsay, both of Tempe, Ariz., assignors to Aeromax Technologies, Inc., Voorhees, N.J.

Filed Apr. 2, 1997, Ser. No. 832,369
Int. Cl.[6] A61M 11/00; A62B 9/04; 7/00
U.S. Cl. 128—200.23 20 Claims



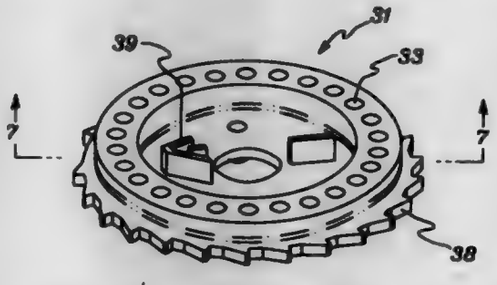
1. In a device for administering metered doses of propellant driven medicament for inhalation by a patient, said device having a mouthpiece through which the medicament passes, the improvement which comprises an indicating system having sensor means for detecting a selected range of ultrasound, controller means associated with said sensor means for signalling said detected ultrasound, said controller means having a timer; means for recording actuations and flow rates; and display means for displaying said signals.

5,794,613

MULTIPLE-DOSE DISPENSER FOR DRY POWDER INHALERS

Walter Piskorski, Londonderry, N.H., assignor to Sepracor, Inc., Marlborough, Mass.

Filed Jan. 9, 1997, Ser. No. 780,801
Int. Cl.[6] A61M 15/00
U.S. Cl. 128—203.12 12 Claims



1. A multiple-dose dispenser for use with dry powder inhalers, said multiple-dose dispenser comprising a first portion and a second portion, each portion having a plurality of cavities extending therethrough, wherein each of the cavities is closed on one end with a seal and wherein the first portion is bonded to the second portion such that each of the open cavities in the second portion is in alignment with one of the cavities in the first portion, thereby forming a plurality of sealed chambers.

5,794,614

APPARATUS FOR COMPENSATING FOR FLOW AND PRESSURE VARIANCES IN PNEUMATIC CIRCUITS

Roger A. Gruenke, 4400 W. 97th St., Overland Park, Kans. 66207; Russell L. Trimble, 12006 Goddard Cir., Overland Park, Kans. 66213; Christopher D. Lasnier, 13123 S. Brougham, Olathe, Kans. 66062; Steven W. Loethen, 19300 E. 26th Terrace S., Independence, Mo. 64057; Jiri G. Orlt, 10411 W. 52nd Cir., Shawnee, Kans. 66203; James A. Snook, 6511 Floyd, Overland Park, Kans. 66202, and Marilyn S. Wyble, 13228 W. 107th, Lenexa, Kans. 66201

Continuation of Ser. No. 95,652, Jul. 21, 1993, Pat. No. 5,549,106, which is a continuation of Ser. No. 846,133, Apr. 9, 1992, Pat. No. 5,259,373, which is a continuation of Ser. No. 632,237, Dec. 21, 1990, Pat. No. 5,134,995, which is a continuation-in-part of Ser. No. 518,001, May 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 513,757, Apr. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 354,143, May 19, 1989, abandoned. This application Jun. 7, 1996, Ser. No. 660,298
Int. Cl.[6] A61M 16/00; A62B 7/04; F16K 31/02
U.S. Cl. 128—204.21 20 Claims

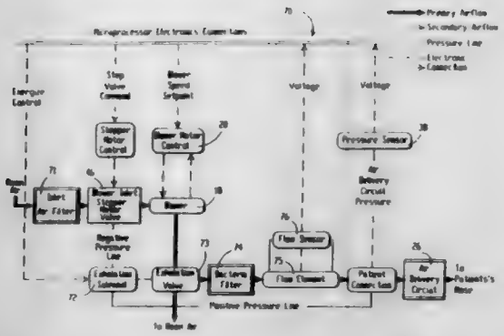
1. An apparatus for compensating variances in a circuit used for applying airway pressure to a patient's airway, comprising:

a source of breathable gas provided under a controllable pressure;

a pneumatic circuit connection supplying the breathable gas from the source to the patient's airway, wherein the pneumatic circuit connection exhibits a connection variance;

a sensor disposed proximal to the pneumatic circuit connection for ascertaining a circuit characteristic and producing a signal value representative thereof;

a memory storing a look-up table containing empirical values corresponding to known variances of pneumatic circuit connections;



a signal processor receiving and comparing the signal value with the empirical values to ascertain a deviation value; and

a controller connected to the signal processor and the source of breathable gas, wherein the controller adjusts the source in accordance with the deviation value.

5,794,615

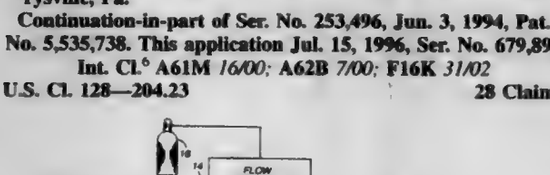
METHOD AND APPARATUS FOR PROVIDING PROPORTIONAL POSITIVE AIRWAY PRESSURE TO TREAT CONGESTIVE HEART FAILURE

Mark C. Estes, Irwin, Pa., assignor to Respironics, Inc., Murrysville, Pa.

Continuation-in-part of Ser. No. 253,496, Jun. 3, 1994, Pat. No. 5,535,738. This application Jul. 15, 1996, Ser. No. 679,898

Int. Cl.[6] A61M *16/00;* **A62B** *7/00;* **F16K** *31/02*

U.S. Cl. 128—204.23 **28 Claims**



1. A Proportional Positive Airway Pressure apparatus for delivering pressurized breathing gas to the airway of a patient, said apparatus comprising:

means for continuously delivering breathing gas at a minimally sufficient pressure to reduce cardiac preload and afterload at any given moment during at least a portion of a breathing cycle where the minimally sufficient gas pressure may continuously vary during the at least a portion of a breathing cycle and is responsive to a sensed rate of flow of gas, said minimally sufficient gas pressure being the summation of a pressure needed to reduce cardiac preload and afterload in the absence of respiratory loading and a pressure needed to overcome the impact of respiratory loading on cardiac preload and afterload,

gas flow generator means for providing a source of gas;

conduit means for delivering gas to the airway of a patient from said source of gas;

circuitry means for providing a command signal to regulate a pressure controller means;

sensor means for continuously detecting the rate of flow of gas within said conduit means and for continuously transmitting signals to said circuitry means corresponding to said rate of flow of gas within said conduit means;

first control means operatively connected to said circuitry means for selectively establishing a first gain to be applied by said circuitry means to first flow rate signals continuously transmitted by said sensor means to said circuitry means, said first flow rate signals corresponding to flow within said conduit means indicative of inspiration;

second control means operatively connected to said circuitry means for selectively establishing a second gain to be applied by said circuitry means to second flow rate signals continuously transmitted by said sensor means to said circuitry means, said second flow rate signals corresponding to flow within said conduit means indicative of expiration, and

pressure controller means co-operable with said gas flow generator means for delivering said gas flow within said conduit means and within the airway of a patient at said minimally sufficient gas pressure during the at least a portion of a breathing cycle in proportion to both said first gain and said continuously transmitted first flow rate signals during inspiration and in proportion to both said second gain and said continuously transmitted second flow rate signals throughout expiration in response to said command signal.

5,794,616

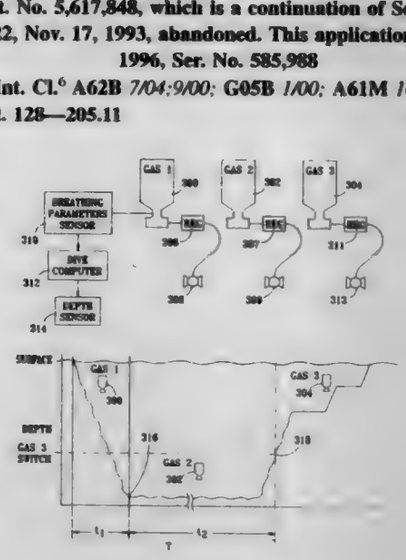
USE OF MULTIPLE GAS BLENDS WITH A DIVE COMPUTER

Michael J. Cochran, and Peter Francis Readey, both of Plano, Tex., assignors to Cochran Consulting, Inc., Richardson, Tex.

Continuation-in-part of Ser. No. 578,157, Dec. 29, 1995, which is a continuation-in-part of Ser. No. 514,363, Aug. 11, 1995, Pat. No. 5,617,848, which is a continuation of Ser. No. 154,022, Nov. 17, 1993, abandoned. This application Jan. 16, 1996, Ser. No. 585,988

Int. Cl.[6] A62B *7/04;9/00;* **G05B** *1/00;* **A61M** *16/00*

U.S. Cl. 128—205.11 **19 Claims**



1. A method for controlling the mix of gases provided to a diver during a dive, comprising the steps of:

providing a gas system that can deliver first and second separate and different gas mixes;

controlling the gas system to initialize the dive with the first gas mix;

calculating dive parameters for the diver based upon the first gas mix;

determining when the diver has discontinued use of the first gas mix; and

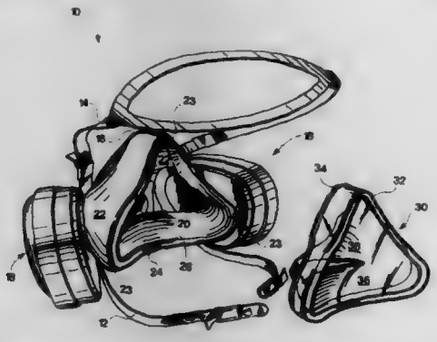
upon determining that the diver has discontinued use of the first gas mix, calculating the dive parameters for the diver based upon the second gas mix.

5,794,617

FACE MASK AND RETAINER

Robert Brunell, and Joseph Zdrok, both of Webster, Mass., assignors to Louis M. Gerson Co., Inc., Middleboro, Mass.

Filed Oct. 17, 1996, Ser. No. 731,704
Int. Cl.[6] A62B *18/02*
U.S. Cl. 128—206.16 **13 Claims**



1. A face mask comprising:

a deformable resilient face shaped, face piece having at least one outer wall carrying at least one exhalation valve and at least one inhalation valve;

an encircling rim formed by said face piece shaped to contact and conform to a user's face to form a seal against said face when the mask is worn by the user;

said rim having an edge defined by outer face piece walls extending away from the rim,

said face piece defining an interior portion of the face piece forming a breathing chamber,

an encircling bent back rim portion extending from the rim and toward the interior of the face piece;

a removable and replaceable retainer for positioning over the rim of said face piece during shipping or storage and comprising:

a conforming rim for positioning over the bent back rim of the face piece, and

a bent over confirming rim portion extending from the conforming rim for conforming to at least part of said outer face piece walls and for forming a frictional fit between the face piece and the retainer, the retainer being substantially nondeformable under normal conditions of use.

5,794,618

Patent Not Issued For This Number

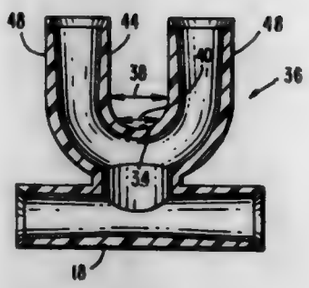
5,794,619

NASAL CANNULA MOUNTED SOLELY BY FRICTIONAL ENGAGEMENT WITH THE COLUMELLA

Robert Edelman, 115 Horseshoe Rd., Mill Neck, N.Y. 11765, and Louis M. Pagliara, 11 Lowell Rd., Port Washington, N.Y. 11050

Filed Feb. 18, 1997, Ser. No. 802,049
Int. Cl.[6] A61M *15/08;16/00;* **A62B** *7/00;9/00*
U.S. Cl. 128—207.18 **1 Claim**

1. A method of supplying oxygen into a nose of a patient having left and right nasal cavities on opposite sides of the columella of the nose of the patient and using a cannula of a type having a U-shaped body, said method comprising the steps of selecting as the sole site of attachment for the cannula the columella of the nose of the patient, using a cannula embodied with a circular configuration in a base of said U-shaped body of a diameter of approximately 0.25 inches, urging said cannula in movement so as to project as nasal inserts length portion extensions of said cannula base initially in angular ascending movement into nasal cavities



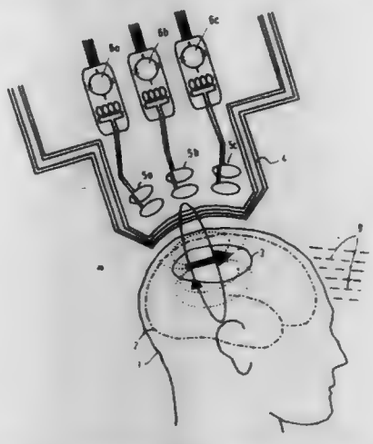
until contact is established with the columella adjacent a distal end thereof, subsequently urging said cannula in movement rearwardly along the columella until a location along the columella at which a width of the columella is greater than a width of a chord of said circular configuration of said cannula base, and establishing frictional engagement between inwardly facing wall means bounding said circular configuration of said cannula base against outwardly facing sides of the columella, whereby said cannula is held in place solely by said frictional attachment to obviate any need for supporting ear loops and any attaching contact internally of the nasal cavities as might contribute to discomfort in the use of said cannula.

5,794,620

METHOD OF RECONSTRUCTING THE SPATIAL CURRENT DISTRIBUTION IN A BIOLOGICAL OBJECT, AND DEVICE FOR PERFORMING THE METHOD

Olaf Helmut Dossel, Tangstedt, and Walter Heinrich Kullmann, Hamburg, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 543,600, Jun. 25, 1990, abandoned. This application May 22, 1995, Ser. No. 446,274
Claims priority, application Germany, Jun. 25, 1990, 39 22 150.4
Int. Cl.[6] A61B *5/05;* **G06F** *15/42*
U.S. Cl. 128—653.1 **10 Claims**



1. A method of determining a spatial distribution of current sources with a biological object having a morphological structure from magnetic fields produced outside the object, said method comprising:

designating from image data generated by scanning the interior of the object with an imaging device, one or more surfaces within an object on which current sources are presumed to be present and to represent effect of all actual current sources within the object;

measuring at a plurality of points outside the object the values of at least one component of magnetic fields produced by all actual current sources in the object; and

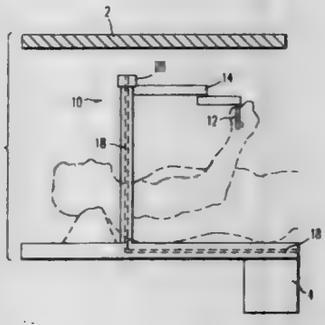
receiving at a computing unit the measured values and coordinates pertinent to the designated surfaces and determining by said computing unit a distribution of the presumed current sources along said surfaces.

5,794,621

SYSTEM AND METHOD FOR MEDICAL IMAGING UTILIZING A ROBOTIC DEVICE, AND ROBOTIC DEVICE FOR USE IN MEDICAL IMAGING

Neville Hogan, Sudbury, and Hermano Igo Krebs, Somerville, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Nov. 3, 1995, Ser. No. 553,021
Int. Cl.[6] A61B *5/05*
U.S. Cl. 128—653.1 **49 Claims**



1. A robotic system for use in an imaging system comprising:
an end effector adapted to engage a body segment of a patient;
a mounting assembly movably mounting said end effector wherein said end effector and said mounting assembly are formed of magneto-translucent materials;
a position sensing system for providing positional information of the end effector;
an actuator system for moving said end effector; and
wherein said position sensing system includes a magneto-translucent encoder coupled to one of said mounting assembly and said end effector of said robotic system.

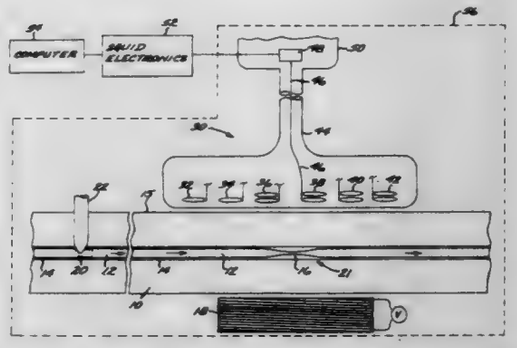
5,794,622

MEASUREMENT OF FLUID FLOWS IN A LIVING ORGANISM

Micheal Chopp, Southfield; John Moran, Dearborn, and Norman Tepley, Bloomfield Hills, all of Mich., assignors to Biomagnetic Technologies, Inc., San Diego, Calif.

Continuation of Ser. No. 351,728, Dec. 7, 1997, abandoned, which is a continuation of Ser. No. 233,392, Apr. 26, 1996, abandoned, which is a continuation of Ser. No. 893,503, Jun. 4, 1992, Pat. No. 5,305,751. This application May 24, 1996, Ser. No. 653,101
Int. Cl.[6] A61B *5/026*
U.S. Cl. 128—654 **18 Claims**

1. A method of measuring liquid flows in a living organism, comprising the steps of:
applying an applied magnetic field to a living organism, the applied magnetic field being selected from the group consisting of a constant magnetic field, a time varying magnetic field, and a spatially varying magnetic field;
introducing a magnetizable fluid from an external source into a flow of liquid in the living organism, wherein the magnetable fluid is a suspension of magnetite particles in a carrier fluid, wherein the flow of liquid is selected from the group consisting of a blood flow, a urine flow, and a flow of an injected liquid, and wherein the quantity of magnetizable liquid flowing from the external source varies as a function of time; and



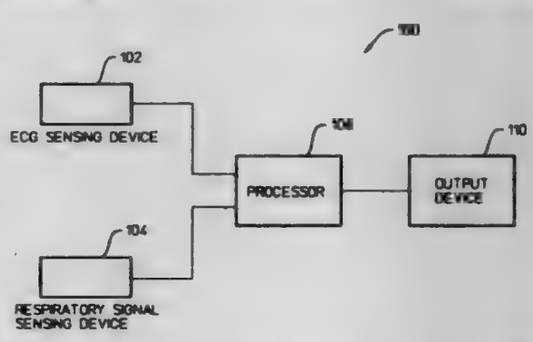
measuring the variation in an induced magnetic field emanating from the living organism as a measure of the flow of the magnetizable fluid and the liquid within the living organism, the step of measuring including a step of determining a liquid flow from the measured magnetic field variation.

5,794,623

INTRAMYOCARDIAL WENCKEBACH ACTIVITY DETECTOR

A. Dean Forbes, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 27, 1996, Ser. No. 722,351
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 128—702 **21 Claims**



1. An apparatus for detecting repeating patterns of irregular intramyocardial activity in the body of a patient, comprising:
(a) means for measuring electrocardiographic (ECG) signals from the body;
(b) means for measuring respiratory signals from the body; and
(c) a processor electrically associated with the means for measuring ECG signals and with the means for measuring respiratory signals, for numerically reducing interfering effects of respiration on the measured ECG signals, based on the respiratory signals, and for determining the presence or absence of intramyocardial Wenckebach activity.

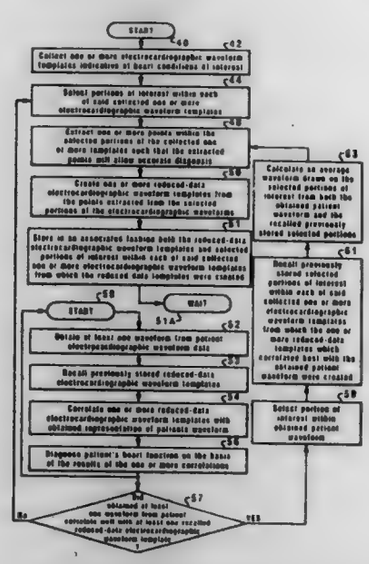
5,794,624

METHOD AND SYSTEM FOR THE FAST DETERMINATION OF EKG WAVEFORM MORPHOLOGY

Manlik Kwong, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 31, 1997, Ser. No. 792,604
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 128—702 **10 Claims**

6. A system for providing improved automated diagnosis of heart function on the basis of electrocardiographic data, said system comprising:



means for collecting one or more electrocardiographic waveform templates known to be indicative of heart conditions of interest;

means for selecting portions of said collected one or more electrocardiographic waveform templates with said selected portions being especially identified with said heart conditions of interest;

means for creating one or more reduced-data electrocardiographic waveform templates from said collected one or more electrocardiographic waveform templates by extracting from said selected portions of said collected one or more electrocardiographic waveform templates only predetermined points; and

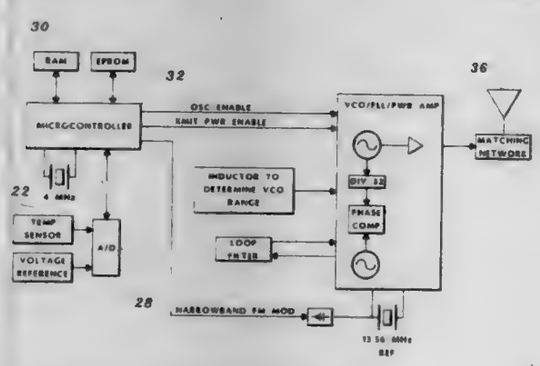
means for diagnosing a patient's heart function by correlating said created one or more reduced-data electrocardiographic waveform templates with said patient's electrocardiographic waveform data.

5,794,625

MONITORING SYSTEM FOR ANIMALS

Stella A. McCarley, Rt. 1, Box 166-C, Dension, Tex. 75020, and Steven J. Fisher, Bedford, Tex., assignors to Stella A. McCarley, Denison, Tex.

Filed Aug. 6, 1996, Ser. No. 692,588
Int. Cl.[6] A61B *5/00*
U.S. Cl. 128—736 **6 Claims**



1. An apparatus for monitoring body temperature of an animal, comprising:

a) a monitoring unit having means for sensing a body temperature of the animal and means for electronically transmitting said body temperature,

b) said monitoring unit adapted to be placed within a birth canal of the animal being monitored,

c) said monitoring unit alternating between an active mode and an inactive mode,

d) said monitoring unit responding to the onset of parturition by detecting a temperature change when said device is expelled from the birth canal of the animal being monitored and by transmitting a signal responsive to said temperature change,

e) a base unit for receiving electronically transmitted body temperature from at least said one monitoring unit,

f) said base unit including means for displaying said body temperature,

g) said base unit including means for comparing said body temperature transmitted by said monitoring unit with a preselected range of temperatures, and

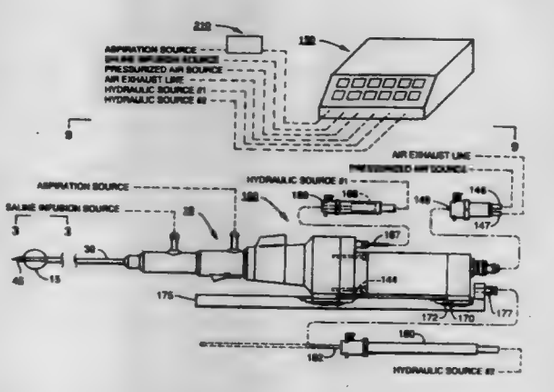
h) means for generating an alarm when said body temperature is outside said preselected range of temperatures.

5,794,626

EXCISIONAL STEREOTACTIC APPARATUS

Maciej J. Kieturakis, 372 Beverly Dr., San Carlos, Calif. 94070

Continuation of Ser. No. 292,479, Aug. 18, 1994, abandoned.
This application Aug. 14, 1996, Ser. No. 696,557
Int. Cl.[6] A61B *10/00*
U.S. Cl. 128—754 **25 Claims**



1. An excisional apparatus for use in excising tissue from the interior of a body, comprising:

a platform; and

a needle assembly mounted on the platform, the needle assembly including:

(a) a longitudinally extending extension sleeve having proximal and distal ends and defining a longitudinal axis, wherein said distal end carries at least one excising member movable between a first position in which the excising member is contracted relative to said axis for insertion into the interior of the body and a second position in which the excising member is expanded relative to said axis for excising tissue, said proximal end of the sleeve being coupled to a traveling arm of the stereotactic platform, the excising member having a tip for penetrating tissue;

(b) an excising member-expanding structure operatively connected to the excising member;

(c) an excising member-contracting structure operatively connected to the excising member; and

(d) a rotational motor operatively connected to the excising member.

5,794,627

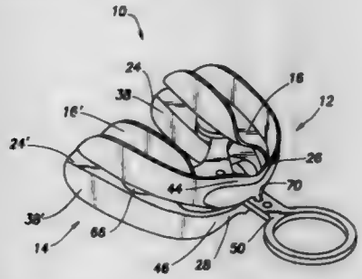
DISPOSABLE MANDIBULAR ADVANCEMENT APPLIANCE

Don E. Frantz, 400 Medical Center Blvd. #209, Webster, Tex. 77598, and Michael D Frantz, 1019 E. Foster, Couer d'Alene, Id. 83814

Continuation-in-part of Ser. No. 493,926, Jun. 23, 1995. This application Dec. 16, 1996, Ser. No. 766,651

Int. Cl.[6] A61F 5/56

U.S. Cl. 128—848 15 Claims



1. An oral appliance for use in advancing a patient's lower jaw, comprising:

upper and lower, generally "u" shaped bite trays each including troughs along both sides and the front portions and adapted to fit over the upper and lower teeth of the patient,

the upper tray having fastening means near its front portion,

a supply of material which, when applied to the troughs of each tray, is adapted to adhere thereto, and, when the trays are fitted over the teeth, form an impression which adheres to the teeth to the extent necessary to be temporarily retained in the patient's mouth, and

connecting means having an inner end connected to the lower tray rearwardly of the fastening means when the trays are in place and

of such length that its outer end extends forwardly of the patient's lips, and means intermediate its inner and outer ends which is releasably fastenable to the fastening means of the upper tray,

said connecting means being sufficiently elastic that its outer end may be manipulated to permit it to be fastened to the upper tray in different forward and rearward positions, or, with the connecting means releasably fastened to the lower tray prior to installation of the trays, the lower tray will, when installed, force the lower tray and thus the lower jaw to a desired forward position with respect to the upper tray, but nevertheless being sufficiently non-elastic as to prevent substantial movement of the lower tray from the position in which it is releasably fastened,

said trays and said impressions, upon hardening, being sufficiently elastic that they may be removed from the teeth.

5,794,628

THERMOPLASTIC POSITIONING SLING AND METHOD OF FABRICATION THEREOF

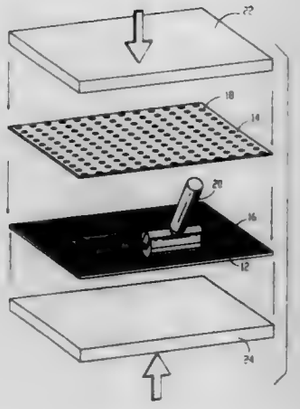
Richard D. Dean, 21617 W. 71st Ter., Shawnee, Kans. 66218

Continuation-in-part of Ser. No. 628,449, Apr. 5, 1996. This application Jan. 13, 1997, Ser. No. 782,597

Int. Cl.[6] A61F 9/00

U.S. Cl. 128—858 34 Claims

1. A composite material adapted for shaping to assume a desired concavo-convex configuration and comprising a generally flat sheet of mesh-type synthetic resin material characterized by the properties of being moldable upon heating thereof and becoming substantially shape-retaining upon subsequent cooling, and a thin layer of resiliently stretchable material having a series of apertures therethrough and secured to one face of said sheet, said layer remaining secured to said sheet during molding of said sheet, said layer presenting an inner surface adjacent said sheet and an opposed outer surface, said layer apertures being continuous and extending through the full thickness of the layer and intersecting both said inner and outer surfaces thereof, said layer being essentially solid in cross-section in the regions thereof between said apertures.



5,794,629

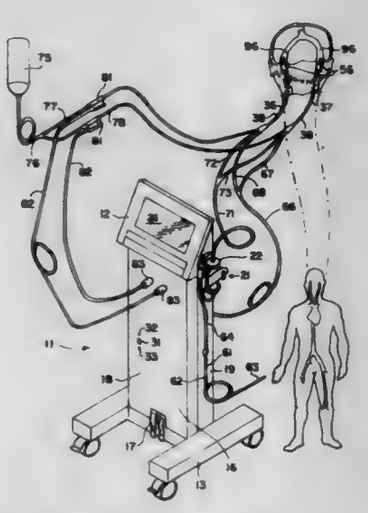
METHOD FOR TREATING ISCHEMIC BRAIN STROKE

John G. Frazee, Toluca Lake, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Nov. 27, 1996, Ser. No. 757,303

Int. Cl.[6] A61B 19/00

U.S. Cl. 128—898 30 Claims

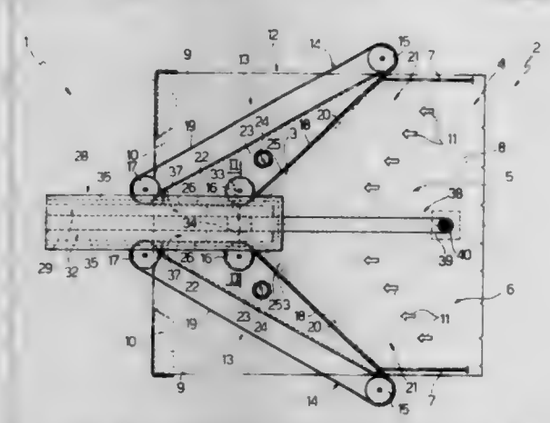


1. A method for treating a patient sustaining an acute ischemic stroke in the brain, the brain having a blood circulatory system including a torcular Herophili and first and second transverse venous sinuses adjoining the torcular Herophili, the method comprising at least partially occluding the first and second transverse venous sinuses in first and second locations respectively adjacent to the torcular Herophili to partially obstruct venous blood drainage while controlling the degree of said at least partially occluding the first and second transverse venous sinuses to permit some antegrade venous blood flow from at least one of said transverse venous sinuses and introducing a flow of the patient's arterial blood into at least one of said transverse venous sinuses distal to said locations to provide a substantially continuous retrograde blood flow into the venous side of the brain of the patient to overcome the lack of arterial blood flow for a period of time until the patient exhibits at least some resolution of ischemic brain symptoms.

5,794,630
UNIT FOR SIMULTANEOUSLY FORMING TWO LAYERS OF TOBACCO

Fausto Mengoli, Sasso Marconi, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

Filed Feb. 18, 1997, Ser. No. 802,897
Claims priority, application Italy, Feb. 19, 1996, BO96A0072
Int. Cl.[6] A24C *5/18*
U.S. Cl. 131—84.1 **8 Claims**

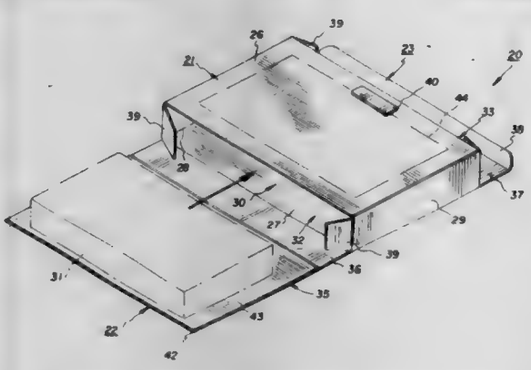


1. A unit (2) for simultaneously forming two layers (3) of tobacco, the unit (2) comprising a conveying device (4) for feeding a stream (5) of shredded tobacco in a given direction (11); and dividing conveying means (12) for concentrating said stream (5) into two layers (3); said dividing conveying means (12) comprising two suction conveyors (14), each in turn comprising an intercepting branch (20) movable crosswise to a respective portion (21) of said stream (5); and a conveying branch (22) movable substantially in said g n direction (11); a transfer station (37) through which at least part of the conveying branch (22) of each suction conveyor (14) extends; and, for each said conveying branch (22), a suction belt (32) at least part of which extends in said given direction (11) above and along the respective conveying branch (22) at said transfer station (37) to receive a respective said layer (3) of tobacco from the respective conveying branch (22).

5,794,631
GIFT/PRODUCT HOLDING SYSTEM

Elyse Sylvester, Bethel, Conn., assignor to Sylvester Associates, Bethel, Conn.

Filed Jul. 18, 1995, Ser. No. 503,826
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—387.1 **19 Claims**



1. A combined container and greeting card for packaging a generally rectangular object, comprising:

a rectangular top panel, said top panel having a top surface an inner surface, and indicia printed on the top surface:

a rectangular bottom panel of the same shape as the top panel and located parallel to and spaced from the top panel;

a pair of opposed edge panels having an identical shape and size to each other and connecting the top and bottom panels;

said top, bottom and edge panels forming a tube of rectangular cross section taken along a central portion thereof, and having a first opening at a first end thereof for insertion of an object into said tube;

a closing structure for closing said opening whereby said tube and closing structure form a container;

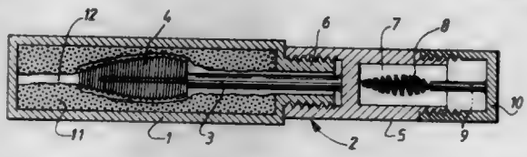
a cover flap overlying the top surface of the top panel and covering at least a major portion thereof, said cover flap being attached to the container and including a first fold-line which is foldable over and onto the top panel to cover said portion and foldable in a reverse direction to reveal the top surface of the top panel and a facing surface of the cover flap, whereby the cover flap and top surface of the top panel form a greeting card; and

a fastening structure positioned between edges of at least one of said top surface of the top panel and said facing surface of the cover flap, said fastening structure being readily changeable between a first position in which the cover flap is freely movable away from the top panel to reveal said facing surface and top surface and a second position in which the cover flap and top panel are interconnected to prevent movement of the cover flap away from the top panel.

5,794,632
DEVICE FOR PACKAGING AND APPLYING A MAKEUP PRODUCT, IN PARTICULAR MASCARA

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Apr. 26, 1996, Ser. No. 638,213
Claims priority, application France, Apr. 26, 1995, 95 05000
Int. Cl.[6] A45D *40/24*
U.S. Cl. 132—317 **27 Claims**



1. Device for a makeup product comprising an elongate body and an applicator that can be engaged in said body, the applicator having a rod provided at one end with a makeup product application element and the rod being connected at the other end to a gripping element, said body having a liquid reservoir in which the application element may be engaged, the application element comprising an elongate block of a makeup product to be applied, said liquid reservoir containing a liquid which is different from the makeup product of said elongate block.

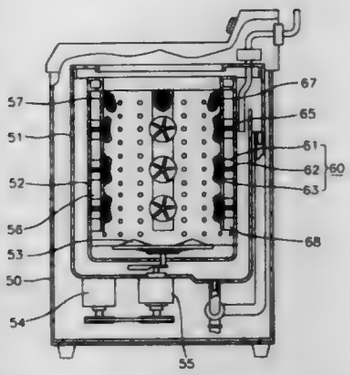
5,794,633
WASHING MACHINE WITH SUB-PULSATORS

Won-Jin Song, Kwangju, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

Filed May 30, 1997, Ser. No. 865,936
Claims priority, application Rep. of Korea, May 31, 1996, 96-19441
Int. Cl.[6] D06F *17/08*
U.S. Cl. 134—53 **8 Claims**

8. A washing machine having a washing tub for accommodating laundry and washing water, a pulsator mounted on a bottom of said washing tub for generating vortical water flow in said washing tub, and a motor for driving said pulsator, said washing machine comprising:

a plurality of ducts for providing a passage along a vertical direction in an inner side wall of said washing tub, said ducts



being symmetrically disposed to a rotational axis of said pulsator and being formed with an upper port and a lower port for inflow and outflow of the washing water;

a plurality of sub-pulsators having a rotating shaft, a rotating wing, and a water flow generating wing, said rotating shaft passing through the side inner wall of said washing tub, one end of said rotating shaft being protruded inside said washing tub and the other end of said rotating shaft being placed inside said duct, said rotating wing being installed on said rotating shaft and being rotated by a flow of the washing water flowing in said ducts when said pulsator rotates, said water flow generating wing being installed on said rotating shaft so as to be rotated together with said rotating wing, said sub-pulsators being disposed along a longitudinal direction of each duct;

a plurality of bearings for supporting said rotating shaft so that said rotating shaft is smoothly rotated; and

a filter installed at the upper port of said duct, said filter for filtering dirt in the washing water flowing out of the upper port.

5,794,634

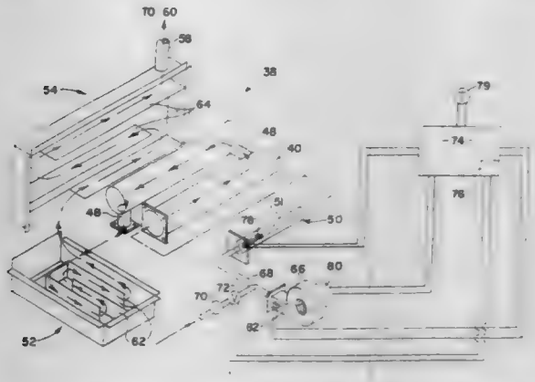
WAREWASHER TANK HEATING SYSTEM AND CONTROLS THEREFOR

Lars Noren, and Doug Noren, both of Petaluma, Calif., assignors to Premark FEG L.L.C., Wilmington, Del.

Continuation of Ser. No. 607,091, Feb. 28, 1996, Pat. No. 5,642,742, which is a continuation-in-part of Ser. No. 322,929, Oct. 13, 1994, Pat. No. 5,511,570. This application Jun. 26, 1997, Ser. No. 883,239

Int. Cl.[6] B08B *3/10*

U.S. Cl. 134—57 D **21 Claims**



16. In a warewasher having an enclosable wash/rinse chamber, an open-topped water tank at the bottom of said chamber, said tank having a bottom wall and side walls for containing water therein at an approximate predetermined fill level during an idle period between successive washing periods, at least one wash arm, a water pump having an inlet adjacent the bottom of said tank, and conduit means interconnecting said pump and said wash arm for recirculating water by means of said pump during a wash period from said pump inlet to said wash arm onto ware in said chamber and enabling returning of the water to said tank through said open top during water recirculation, the improvement including a tank heating system for maintaining water temperature within a predetermined elevated range, comprising:

a hollow, elongated heat exchange tube immersed in water in said tank a distance below said fill level and below a level to which water descends while being recirculated by said pump during a wash period, said heat exchange tube having an outer surface in primary heat exchange relationship with water in said tank;

said heat exchange tube extending between a pair of walls of said tank and having an inlet end and an outlet end to provide a passageway for conducting an air/gas fuel mixture through said heat exchange tube;

a hollow, elongated infrared gas burner positioned generally centrally within said heat exchange tube and mounted adjacent the inlet end of said tube, said burner including a permeable outer combustion surface spaced a short distance from the internal surface of said hollow tube and providing a shallow burning zone at said permeable outer surface;

an igniter closely adjacent the combustion surface of said burner essentially at said inlet end of said heat exchange tube;

an air blower including an air conducting conduit for inducing air to flow into said hollow burner and through said combustion surface when said blower is activated;

water temperature sensing means in said tank for initiating activation of said air blower and igniter in response to the water temperature decreasing below said predetermined temperature range;

a gas supply including a supply line connected to said conduit intermediate said blower and said burner;

valve means in said supply line for connecting and disconnecting said gas supply relative to said conduit;

control means for activating said valve means to an open gas flow condition in response to activation of both said air blower and said igniter;

said air flow and gas providing an ignitable air/gas mixture to said burner for combustion of said mixture at said burning zone by means of said igniter;

at least one secondary heat exchanger in intimate contact with the exterior of at least one wall of said tank below said predetermined fill level;

an exhaust stack for venting combustion products to the exterior of said warewasher;

said secondary heat exchanger having baffle means therein forming a labyrinthine passageway communicating at one end thereof with the outlet end of said primary heat exchanger and at the opposite end thereof with an entrance end of said exhaust stack; and

means intermediate said combustion outer surface and the vented end of the exhaust stack for inducing sufficient back pressure within said heat exchangers to maximize heat transfer from said water heating system to water within the tank.

5,794,635

EYE GLASS CLEANING MACHINE

Kenneth E. Maines, 40 Hidden Vale C1 NW, Calgary, Canada, T3A 5C8

Filed Jan. 29, 1997, Ser. No. 790,450

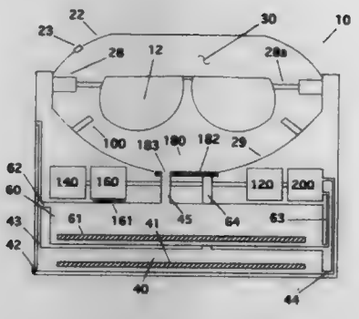
Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—95.3 **6 Claims**

1. An eyeglass cleaning machine for cleaning a pair of eyeglass, comprising:

(a) an enclosure, providing a base supporting a removable top, the base forming a bowl defining an eyeglass cavity;

(b) a cleaning fluid tank, carried by the enclosure, having a first dispensing tube and having a fill port;



(c) a rinse fluid tank, carried by the enclosure, having a second dispensing tube and having a fill port;

(d) valve means, in communication with the first and second dispensing tubes, for regulating the flow of fluid through the first and second dispensing tubes;

(e) fluid pump means, in communication with the valve means, for pumping fluid from either the cleaning fluid tank or the rinse fluid tank;

(f) at least four spray nozzles, carried by the enclosure and in communication with the fluid pump means, for spraying the pair of eyeglasses; and

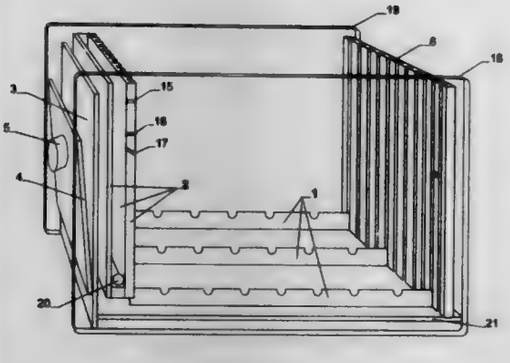
(g) drain valve means, carried by a lower portion of the bowl, for regulating the flow of fluid from the bowl into the rinse fluid tank and the cleaning fluid tank, the drain valve means in communication with the fill port of the cleaning fluid tank and the fill port of the rinse fluid tank, the drain valve means comprising a manually rotatable valve plate sized to block fluid passage through the fill ports associated with the cleaning fluid tank and the rinse fluid tank, the manually rotatable valve plate defining a hole sized for selective communication with one of the fill ports associated with the cleaning fluid tank and the rinse fluid tank.

5,794,636

ARCHIVAL WASHER FOR PHOTOGRAPHIC PRINTS OR FILM WITH MULTI LEVEL DIVIDERS

Daniel A. Vogel, 9171 Bataan St. NE., Blaine, Minn. 55449

Filed Jul. 11, 1996, Ser. No. 678,665
Int. Cl.[6] B08B *3/04*
U.S. Cl. 134—115 R **18 Claims**



1. An improved divider for use in a photographic print washer containing vertical chambers for holding photographic material to be washed clean of chemical residue, the vertical chambers being separated by a divider, the improvement comprising:

a bottom section defining a lower portion of the divider; and

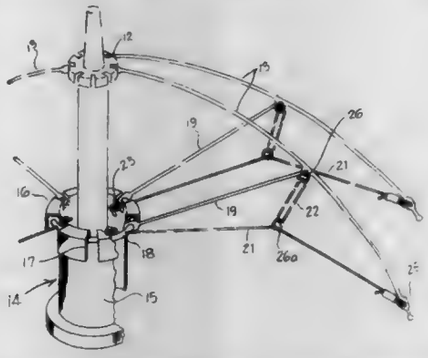
a top section defining an upper portion of the divider, wherein the top section is configured to be selectively associated with the bottom section.

5,794,637

NON FLIP UMBRELLA

Luisito A. Figueron, 183 Sinag Street, Mandaluyong Metro Manila, Philippines

PCT No. PCT/US94/11529, § 371 Date Jan. 28, 1997, § 102(e) Date Jan. 28, 1997, PCT Pub. No. WO96/03898, PCT Pub. Date Feb. 15, 1996
PCT Filed Oct. 11, 1994, Ser. No. 793,002
Int. Cl.[6] A45B *25/02*
U.S. Cl. 135—27 **4 Claims**



1. In an umbrella of the type having a fabric canopy fastened to a folding radial frame with hinged ribs radiating from a center pole, a sliding catch movable in an up and down manner encompassingly secured on said center pole, said sliding catch defining a cylindrical sleeve provided with an integral hub at the upper end thereof, braces hingedly connected to said hub in their inner ends and to said ribs in their outer ends; the improvement wherein said catch is non-rotatable relative to said pole and which further comprises a reinforcing guy assembly, positioned between said sliding catch and said ribs, said guy assembly comprising a plurality of radially disposed reinforcing strings, the inner ends of said reinforcing strings being connected to said sliding catch, and the outer ends of said reinforcing strings being connected to said respective ribs, a plurality of suspending means respectively disposed above each of said reinforcing strings and below said braces, each said suspending means having a lower end connected to said reinforcing strings and an upper end fixedly connected to said ribs, whereby said suspending means tightens said reinforcing strings to hold said reinforcing strings in place and prevents said reinforcing strings from drooping when said umbrella is folded, said reinforcing guy assembly further comprising a circular ring member, said ring member encompassingly positioned on said sleeve of said sliding catch, the inner ends of said reinforcing strings being connected and disposed radially relative to said ring member, the outer ends of said reinforcing strings being connected to said ribs.

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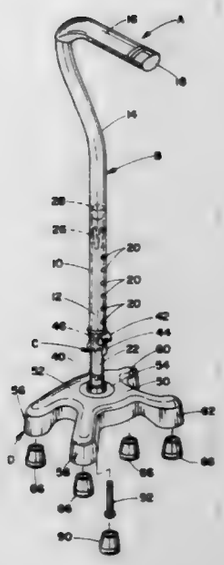
COMPOSITE BASE ASSEMBLY FOR CANE HAVING FIFTH LEG

Joseph B. Richey, Chagrin Falls, and Shane Obitts, Elyria, both of Ohio, assignors to Invacare Corporation, Elyria, Ohio

Filed Nov. 7, 1996, Ser. No. 743,757
Int. Cl.[6] A45B *9/04*
U.S. Cl. 135—65 **12 Claims**

1. In a patient support device having a handle conformed to receive weight from a patient,; an stem member operatively associated with the handle, and having first and second ends, the first end receiving the patient's weight from the surface for transfer to the second end; a base assembly operatively associated with the second end of the stem member and including first, second, third, and fourth legs extending outwardly therefrom for transferring the patient's weight from the stem member to an associated ground surface, the improvement comprising:

a fifth leg extending outwardly from the base member in a region intermediate the first, second, third, and fourth legs,



each of the first, second, third, fourth and fifth legs includes a non-slip tip on the terminal end of the legs adapted to engage the ground surface, the tip of the fifth lea being disposed on an external surface of the base member.

5,794,639

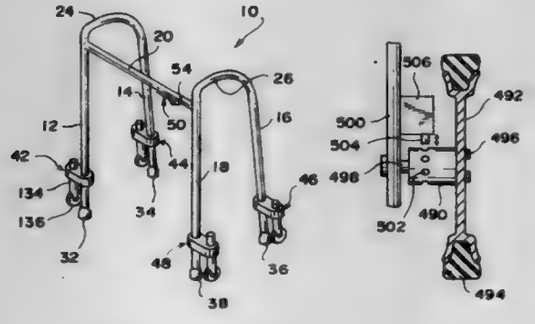
ADJUSTABLY CONTROLLABLE WALKER

Eli Einbinder, 121 E. 60th St., New York, N.Y. 10022

Continuation-in-part of Ser. No. 551,137, Oct. 31, 1995. This application Oct. 4, 1996, Ser. No. 725,705

Int. Cl.[6] A61H *3/00*

U.S. Cl. 135—67 23 Claims



1. A controller for a wheeled vehicle to be pushed or pulled by a user, comprising:

a frame including relatively movable elements and carrying a wheel and a wheel support member;

an actuator having a first state and a second state, said actuator being affixed to said frame and responsive to relative motion of said frame elements produced by lifting and releasing said frame to shift between said first and said second states;

a stabilizer brake mechanism affixed to said support member and having an engaged position for placing the vehicle in a stable state and a released position for placing the vehicle in a mobile state and being normally in one of said positions, said stabilizer being movable between said engaged and released positions, respectively, when said actuator is shifted between said first state and said second state; and

means for adjusting said actuator to calibrate the response of said stabilizer to said actuator.

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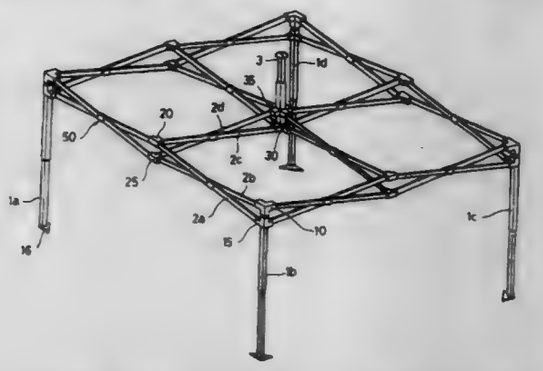
QUICK ASSEMBLY TENT FRAMEWORK

Jung-Woo Jang, 53-26 Gamsam-dong, Dalseo-ku, Daegu, Rep. of Korea

Filed Feb. 13, 1997, Ser. No. 799,806

Int. Cl.[6] E04H *15/50*

U.S. Cl. 135—131 2 Claims



1. A quick assembly tent framework comprising, a plurality of upright support members, a plurality of first and second scissor bars forming separable edge scissor assemblies through a plurality of upper and lower joint mounts and detachably connecting the upright support members together through a plurality of first stationary and slidable mounts, a center post supporting the top center of a flexible covering of a tent and having second stationary and slidable mounts, a plurality of third and fourth scissor bars forming roof scissor assemblies and connecting the second stationary and slidable mounts to the upper and lower joint mounts thus holding the center post, wherein

each of said mounts is provided with a channel type socket for holding one end of an associated scissor bar, said socket being eccentrically formed on each mount with thick and thin sidewalls being formed on opposite sides of the socket, said thin sidewall being resilient thus elastically opening the socket when the scissor bar is hinged to the mount, each of said thick and thin sidewalls having a hinge bore and a hinge guide depression, said guide depression extending from an edge of each sidewall to the edge of the hinge bore; and

two connection members are attached to both ends of each scissor bar in order to hinge each scissor bar to sockets of associated mounts, each of said connection members being axially slit to a depth thus forming a channel slit with resilient sidewalls being formed on opposite sides of said slit, each of said resilient sidewalls having a boss on its outside surface, said boss being guided by the guide depression and elastically snapped into the hinge bore when each scissor bar is jointed to an associated mount.

5,794,641

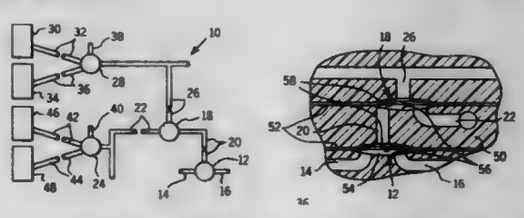
VALVE CONTROL

Jeffrey Y. Pan, Lake Forest, and Donald Ver Lee, Libertyville, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Division of Ser. No. 399,081, Mar. 8, 1995. This application Aug. 8, 1996, Ser. No. 694,010

Int. Cl.[6] F16K *7/17*

U.S. Cl. 137—1 1 Claim



1. A method of controlling a valve, the method comprising the steps of:

(a) providing a number of first valves, each of the number of first valves being fluidly connected with a first fluid conveying conduit and a second fluid conveying conduit, each of the first valves being movable between a first position where fluid communicates between the first fluid conveying conduit and the second fluid conveying conduit and a second position where no fluid communicates between the first fluid conveying conduit and the second fluid conveying conduit;

(b) fluidly connecting at least one second valve with each of the number of first valves with at least one memory conduit;

(c) fluidly connecting a source of relatively increased pressure or relatively reduced pressure with the at least one second valve, the at least one second valve being movable between a first position where the source of relatively increased pressure or relatively reduced pressure is fluidly connected with the at least one memory conduit and a second position where the source of relatively increased pressure or relatively reduced pressure is not fluidly connected with the at least one memory conduit;

(d) moving the at least one second valve toward its first position to fluidly connect the at least one memory conduit and a first subset of the number of first valves with the source of relatively increased pressure or relatively reduced pressure and to move the first subset of the number of first valves toward a first predetermined one of its first position and its second position responsive to the relatively increased pressure or the relatively reduced pressure;

(e) moving the at least one second valve toward its second position thereby maintaining the first subset of the number of first valves in the first predetermined one of its first position and its second position; and

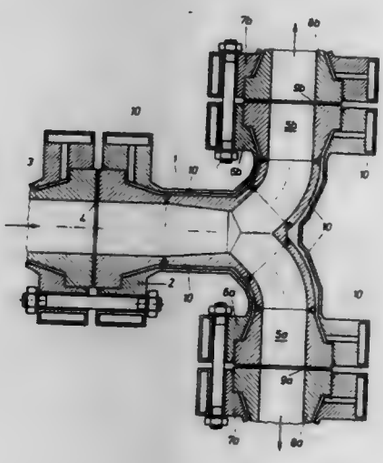
(f) fluidly connecting the source of relatively increased pressure or relatively reduced pressure with a second subset of the number of first valves to move the second subset of the number of first valves toward a second predetermined one of its first position and its second position responsive to the relatively increased pressure or the relatively reduced pressure.

5,794,642

PROCESS FOR TRANSPORTING THERMALLY UNSTABLE VISCOUS MASSES

Stefan Zikeli, Regau; Michael Longin, Lenzing, and Friedrich Ecker, Timelkam, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Mar. 10, 1997, Ser. No. 814,258
Int. Cl.[6] E03B *1/00*
U.S. Cl. 137—4 **32 Claims**



1. A process for transporting a thermally unstable viscous mass through pipes comprising

(a) dividing said mass during transportation thereof into X_1 partial flows T, X_1 being calculated according to the relation

$$X_1=Q^{(N-1)} \quad (I)$$

wherein Q and N are positive integers independent from each other, and

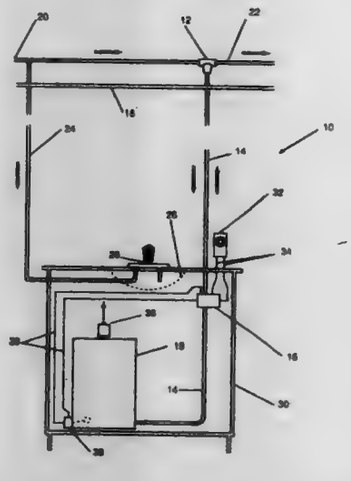
(b) transporting all the vicious mass in each said partial flow at the same flow rate.

5,794,643

PRESSURE REGULATED DIVERTING APPARATUS AND METHOD FOR WATER CONSERVATION

John L. Brice, 911 Almadin, San Antonio, Tex. 78258

Filed Nov. 3, 1995, Ser. No. 553,081
Int. Cl.[6] F24H *1/00*
U.S. Cl. 137—14 **20 Claims**



1. In a water delivery system where both hot and cold water lines are separately available, a method of regulating the hot water line for water conservation comprising the steps of:

(a) inserting a vacuum flow device into a hot water supply line;

(b) connecting one end of a two-ended diversion line to the vacuum flow device;

(c) connecting a regulating valve to the other end of the diversion line;

(d) connecting a containment device to the regulating valve;

(e) opening the regulating valve so that water that has cooled in the hot water supply line over time, enters the diversion line and enters the containment device;

(f) filling the containment device with this cooled hot water until pressure in the diversion line equals pressure in the hot water supply line; and

(g) opening a hot water outlet in the hot water supply line so that fresh hot water from a hot water heater is directly available at the hot water outlet.

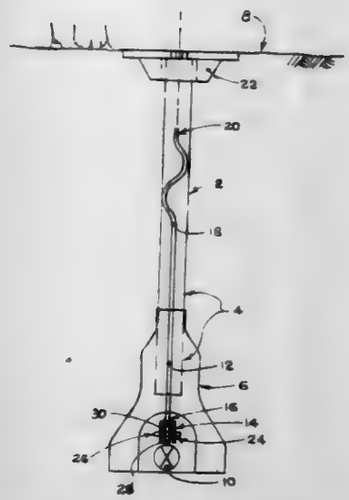
5,794,644

ADAPTOR TOOLS AND METHOD TO EXPOSE VALVE

Christopher John Paylor, 4225 Hickory Dr., Mississauga, Ontario, Canada, L4W 1L3

Filed Jun. 21, 1993, Ser. No. 78,927
Int. Cl.[6] F16K *43/00;31/44*
U.S. Cl. 137—15 **21 Claims**

1. An adaptor for connecting a rod and a valve disposed below ground level, said adaptor including a body member extending along an axial length thereof for defining an axis of rotation, said body member including a socket at one end thereof to register with said valve, said body member including at least one radially



disposed threaded hole opening into said socket, said threaded hole for threadably receiving a displaceable engageable member having a spherical member moveable radially within said radially disposed threaded bole as to:

(i) move said spherical member radially into said socket and grin and lock said adaptor to said valve for axial rotation of said valve solely by urging said socket against the valve;

(ii) move radially away from said socket and valve and release said adaptor from said valve by solely pulling said socket away from said valve

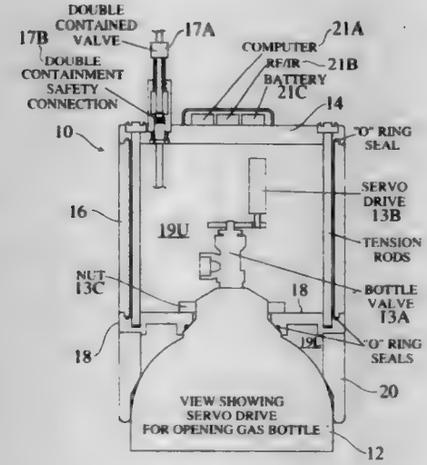
and means at another end of said adaptor for connection to said rod.

5,794,645

METHOD FOR SUPPLYING INDUSTRIAL GASES USING INTEGRATED BOTTLE CONTROLLERS

Roderick G. Rohrberg, and Timothy K. Rohrberg, both of Torrance, Calif., assignors to Creative Pathways, Inc., Torrance, Calif.

Filed Jul. 15, 1996, Ser. No. 680,769
Int. Cl.[6] G05D *7/06*
U.S. Cl. 137—15 **9 Claims**



1. A method of supplying an industrial gas comprising the steps of:

providing a bottle controller (**10**) mounted directly on the top of a gas bottle (**12**); said gas bottle (**12**) having a supply of said industrial gas (G); said bottle controller (**10**) having a housing (**11**); said housing (**11**) being adapted to form a seal around the top of said gas bottle (**12**); said housing (**11**) including a gas manifold (**27**);

said housing (**11**) adapted to be able to be evacuated and pressurized;

said gas manifold (**23**) including an automatic discharge pressure transducer which senses pressure inside said housing (**11**) and which automatically vents excess gas and generates an alarm; and said housing (**11**) including a double contained valve (**17A**) and a double containment safety connection (**17B**) to provide a housing which is substantially explosion proof;

connecting said bottle controller (**10**) to a fabrication process input;

controlling the use of said supply of said industrial gas (G) remotely; and

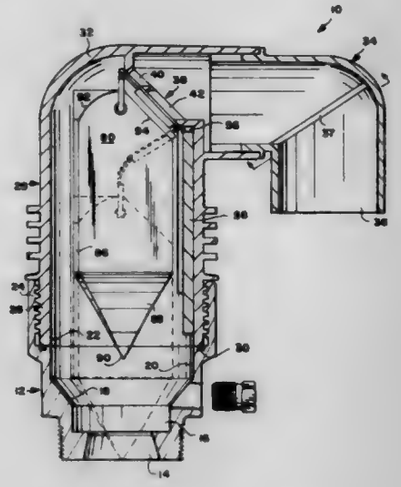
removing said bottle controller (**10**) from said fabrication process input.

5,794,646

AIR RELEASE VALVE

Lee A. Perkins, Lowden, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Mar. 31, 1997, Ser. No. 828,509
Int. Cl.[6] F16K *24/04*
U.S. Cl. 137—202 **11 Claims**



1. An air release valve comprising a housing having a fluid inlet and a fluid outlet, a valve plate within said housing between the inlet and outlet, the valve plate having a pair of discrete apertures isolated from each other; a valve seal assembly including a seal engageable with said valve plate overlying said apertures; a float located in the housing upstream of the valve plate and connected to the seal, said float displaceable between first and second positions in said housing wherein displacement of the float in one direction progressively detaches successive portions of the seal from said apertures, said float having a tapered end remote from the seal, said tapered end movable into said inlet when said float moves to the second position, said inlet including a first portion tapering inwardly in a direction of fluid flow, a second expansion portion, and a third portion tapering outwardly in the direction of fluid flow, said second expansion portion located axially between said first and third portions.

5,794,647
VALVE SYSTEM

Martin William Denmark, Telford, and Phillip John Haseley, Newport, both of United Kingdom, assignors to BTR plc, London, England

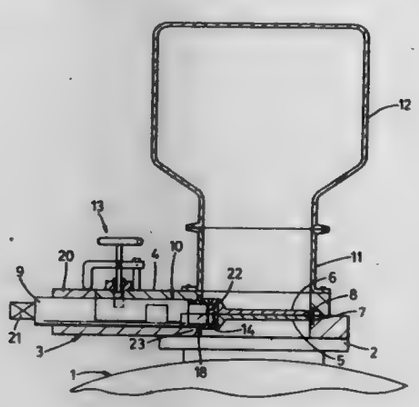
PCT No. PCT/GB95/00764, § 371 Date Dec. 23, 1996, § 102(e) Date Dec. 23, 1996, PCT Pub. No. WO95/27864, PCT Pub. Date Oct. 19, 1995

PCT Filed Apr. 4, 1995, Ser. No. 727,420

Claims priority, application United Kingdom, Apr. 6, 1994, 9406769

Int. Cl.[6] F16K *1/22;43/00*

U.S. Cl. 137—315 **9 Claims**



1. A valve system comprising a first member having a first circular aperture sealable by a first disc connected to a first shaft to rotate therewith, the first shaft being provided with a first formation thereon and having an axis of rotation extending diametrically of the first disc and the first aperture, a second member, separate from the first member, having a second circular aperture sealable by a second disc connected to a second shaft to rotate therewith, the second shaft being provided with a second formation thereon complementary to the first formation provided on the first shaft, the first and second members being capable of being connected together with the first disc positioned alongside the second disc with the first formation on the first shaft interengaged with the second formation on the second shaft and the first and second shafts and first and second discs being capable of simultaneous rotation about a single axis to open and close the valve system, at least one of the first and second formations on the first and second shafts provided with a safety interlock system which allows the first formation on the first shaft and the second formation on the second shaft to be disengaged only when at least one of the first and second apertures is closed by the valve system.

5,794,648
HOSE WINDING APPARATUS

Horst Jentzsch, Waldenbucher Strasse 9, D-72631 Aichtal, and Berthold Schuppler, Haldenweg 37, D-73249 Wernau, both of Germany

Filed Jan. 18, 1996, Ser. No. 588,534

Int. Cl.[6] A01M *7/00*

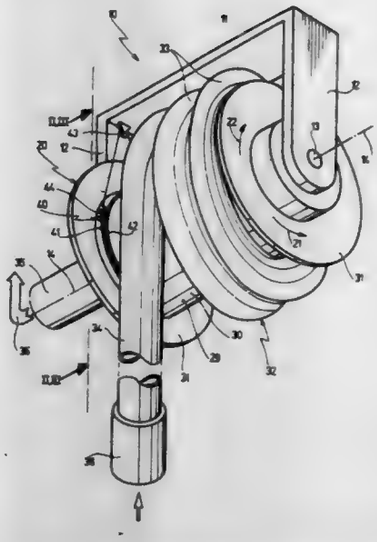
U.S. Cl. 137—355.23 **14 Claims**

1. An apparatus for winding an elongate, flexible element comprising:

a rotatable drum for winding-up and for unwinding, respectively, said element on a first peripheral surface of said drum;

return drive means for rotating said drum in a winding direction; and

brake means for automatically stopping rotation of said drum caused in said winding direction by said return drive means, said stopping being effected at a predetermined rotary stop position of said drum when said element is wound onto said drum except of a predetermined residual length of said element, said brake means comprising an elongate, flexible braking element being wound around a second peripheral surface of said drum with several windings, a section of said wound braking element being lifted-off said second peripheral surface and guided around a stationary deflection point, said braking element having, further, a first terminal end attached to said second peripheral surface and having a predetermined length so as to stop rotation of said drum at said predetermined rotary stop position by means of a pull force in said braking element.



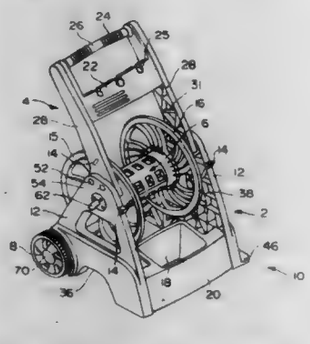
5,794,649
PORTABLE HOSE CART ASSEMBLY

Kenneth J. Spear, Vienna, W. Va.; Steven F. Brooker, Marietta, Ohio; Rudy F. Planthaber, Mineral Wells, and Eric D. Bennett, Parkersburg, both of W. Va., assignors to O. Ames Co., Parkersburg, W. Va.

Filed Oct. 1, 1996, Ser. No. 724,668

Int. Cl.[6] B65H *75/34*

U.S. Cl. 137—355.27 **42 Claims**



1. A portable hose cart assembly comprising:

a supporting frame structure constructed and arranged to be nested on top of a similar supporting frame structure;

said supporting frame structure constructed and arranged such that a similar supporting frame structure nests on top of said supporting frame structure;

a hose reel structure having a surface for receiving a length of coiled hose thereon;

said hose reel structure having circular end flanges;

said circular end flanges being fixed to the ends of said hose reel structure;

said circular end flanges having a diameter larger than that of the hose reel structure surface;

said hose reel structure being rotatably mounted within said supporting frame structure such that a portion of the said circular end flanges are above the highest point of said supporting frame structure;

a handle structure connected to said supporting frame structure such that said handle structure can be moved from a stacking position extending generally downwardly coextensive with respect to said supporting frame structure so that a hand grip portion is disposed above said circular end flanges;

said handle structure having a locking mechanism constructed and arranged to secure said handle structure in said operating position;

wheel structures connected to said supporting frame structure constructed and arranged to enable said portable hose cart assembly to be rolled manually by exerting force on the hand grip portion of said handle structure in said operating position;

said structures being constructed and arranged to allow a similar portable hose cart assembly to be stacked on top of said portable hose cart assembly with said handle structure in said stacking position and said supporting frame structure of said portable hose cart assembly in a nesting relation with the supporting frame structure of the similar portable hose cart assembly such that said circular end flanges of said portable hose cart assembly are closely spaced below the circular end flanges of the similar portable hose cart assembly;

said structures providing upwardly facing supporting surfaces constructed and arranged to support a similar portable hose cart assembly stacked in a nesting arrangement on top of said portable hose cart assembly;

said structures providing downwardly facing stacking surfaces constructed and arranged to engage the upwardly facing supporting surfaces of a similar portable hose cart assembly when said portable hose cart assembly is stacked in a nesting arrangement on top of the similar hose cart assembly with the handle structure thereof in a stacking position;

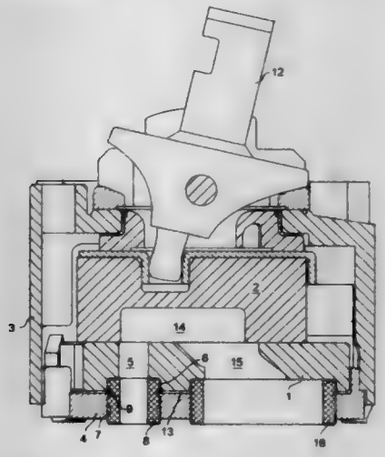
wherein said upwardly facing supporting surfaces of said portable hose cart assembly when engaged by the downwardly facing stacking surfaces of a similar portable hose cart assembly determine that said circular end flanges of said portable hose cart assembly are closely spaced below the circular end flanges of the similar portable hose cart assembly.

5,794,650

CARTRIDGE FOR SANITARY FITTINGS

Hans Nikolayczik, Minheim, Germany, assignor to American Standard Inc., Piscataway, N.J.

Filed Mar. 20, 1997, Ser. No. 821,150
Int. Cl.[6] F16K *25/00*
U.S. Cl. 137—454.2 **5 Claims**



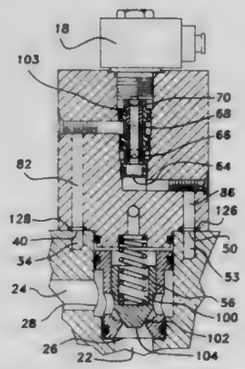
1. A cartridge for sanitary fittings comprising a housing with at least one stationary valve disk and one movable valve disk, said housing having a base, said stationary valve disk adjacent to said base whereby said stationary valve disk includes at least one channel for water intake and a recess positioned on a side of said stationary disk which faces said base, said base including a passage for water to flow through, a sealing ring disposed in said passage, said base including a rim on the top surface thereof which encircles said passage and projects into said recess of said stationary valve disk.

5,794,651

VALVE ADAPTOR CAP

Ronald T. Miller, Utica, Mich., assignor to General Hydraulics Corporation, Sterling Heights, Mich.

Filed Mar. 13, 1996, Ser. No. 615,628
Int. Cl.[6] F16K *31/12*
U.S. Cl. 137—454.5 **15 Claims**



1. A valve adaptor cap for a fluid control system, said valve adaptor cap providing an interface between a slip-in cartridge valve inserted in a manifold block having fluid flow passages, control line passages, and drain passages therein, and a screw-in cartridge valve for controlling an operating position of the slip-in valve, said valve adaptor cap comprising:

a block having a first face and an opposite second face, said first face for mounting to said manifold block and having a periphery, said second face having an opening for receiving a screw-in cartridge valve having a longitudinal axis, said opening being oriented generally perpendicular to said first face;

cap passages within said block providing fluid communication between said screw-in cartridge valve and said control line passages, said drain passage, and said slip-in valve;

fastening means for fastening said block to said manifold block such that said slip-in valve is secured within said manifold block; and

said screw-in cartridge valve being oriented generally perpendicular to said first face when received within said opening so that a plurality of said valve adaptor caps can be compactly mounted to said manifold block.

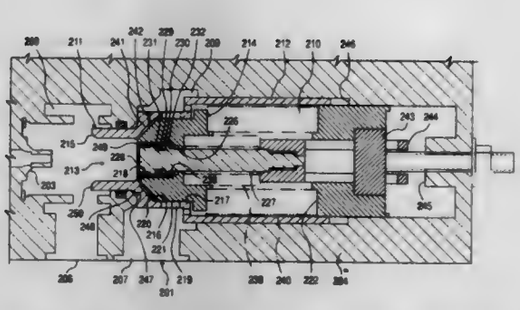
5,794,652

RELIEF VALVE

Eiichi Mukumoto, Takarazuka, Japan, assignor to Konan Electric Co., Ltd., Hyogo, Japan

Filed Nov. 30, 1995, Ser. No. 563,566
Int. Cl.[6] F16K *31/124*
U.S. Cl. 137—474 **1 Claim**

1. A relief valve comprising a valve chest and a primary passage which allows the valve chest to be in free communication with a pressurized oil passage outside the valve case formed in a valve case, a main valve element directly including a pilot valve element in the valve case arranged, a oil passage of the main valve hole formed with holes with different diameters comprising a small-diameter section, a taper section in which the diameter gradually



increases, and a large-diameter section arranged in that order in such a manner that the diameters continuously change, a pilot valve seat sealably in contact with a pilot valve element formed at the connections between the small diameter section and the taper section, the tip end of the pilot valve element with tapered circumferential surface, the outer circumferential edge slidably fitted to the large-diameter cylinder section of the main valve element, a main valve hole formed on the circumferential wall of the large-diameter cylinder section of the main valve element, an opening pressure bearing area of the pilot valve rapidly increased, the pilot valve element is rapidly opened, and at the same time the valve opening pressure bearing area of the main valve element by separating the pilot valve element from the main valve element by exerting oil pressure of the primary passage to the pilot valve via an oil passage formed in the main valve element while resisting against the energizing means for energizing pilot valve element in the direction of the main valve element, thereby rapidly and fully opening the main valve element in the direction opposite to the pilot valve element, and allowing the pilot valve element to open and close the oil passage between the pilot valve seat and the main valve hole, a valve element externally fitted to the shaft shape support fixed to the valve case in such a manner free to advance and retreat in the axial direction, a sealing means comprising an elastic body for sealing the clearance between the support and the valve element, characterized by expanding the inner circumferential surface of the valve element to form a sub valve chest, arranging a sub valve element externally fitted to the support and sealing member in this sub valve chest, sealing the clearance between the inner circumferential surface of the sub valve element and the support with the sealing member, and at the same time pressing the sub valve element against the diameter changing section of the inner circumferential surface of the valve element by oil pressure exerted from the pressure bearing area to the sub valve element to seal the clearance between the sub valve element and the support inserting hole.

5,794,653

WATER SHUT-OFF VALVE AND CONTROL SYSTEM

Charles R. DeSmet, and Robert C. Williams, III, both of Raleigh, N.C., assignors to Charles DeSmet, Raleigh, N.C.

Filed Apr. 25, 1997, Ser. No. 845,351

Int. Cl.[6] F16K *31/12*

U.S. Cl. 137—486 **13 Claims**

1. A water distribution system, which comprises;

(a) a water flow inlet from a water feed source;

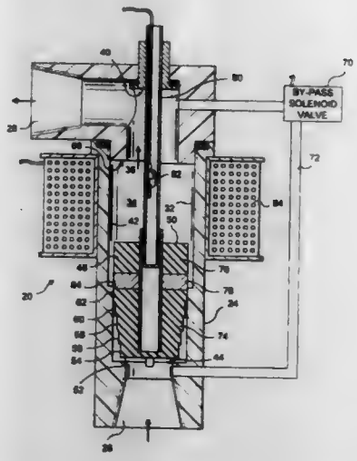
(b) a water flow outlet at a point of water distribution;

(c) first valve means connected to the water flow outlet for controlling water distribution;

(d) conduit means for carrying water flow under super-atmospheric pressure from the inlet to the outlet; and

(e) second valve means for controlling water flow in the conduit means, located in the conduit means between the inlet and the outlet, said second valve means comprising;

(1) a non-magnetic valve housing having an internal wall defining a vertical, fluid tight water flow path between a housing inlet and a housing outlet; the housing inlet being in fluid communication with the water flow inlet and the housing outlet being in fluid communication with the water flow outlet;



(2) a valve seat on the housing internal wall positioned around the flow path between the housing inlet and the housing outlet;

(3) an aperture in the housing on an axial line with the water flow path;

(4) tubular shaft means mounted in the aperture on an axis extending in the longitudinal direction of the flow path, said shaft means having a first end extending out of the housing, and a second end terminating within the housing, and a tube lumen extending between shaft first and second ends;

(5) an electromagnetically responsive, water-flow responsive valve body slidingly mounted on the tubular shaft means to move from a first, valve open position to a second, valve closed position, said body being adapted by size and configuration to sealingly mate with the valve seat when moved to the second position on the tubular shaft means, said body being responsive to water flow along the flow path to move to the first position on the tubular shaft means and responsive to the force of gravity in the absence of water flow along the flow path, whereby said body moves to the second position in the absence of water flow along the water flow path;

(6) valve body stop means disposed in the housing for limiting movement of the valve body in a direction along the tubular shaft means beyond the first position and above the second position;

(7) actuator means comprising a first part fixedly mounted on the valve body and a cooperating second part slidingly mounted in the lumen between the tubular shaft means first and second ends;

(8) a stationary stator mounted on the outside of the internal wall of the housing and outside of the water flow path, between the valve seat and the stop means; and

(f) control means for energizing and de-energizing the stationary stator, operable by the actuator means when the valve body moves from the first position to the second position and the second position to the first position.

5,794,654

REED VALVE APPARATUS

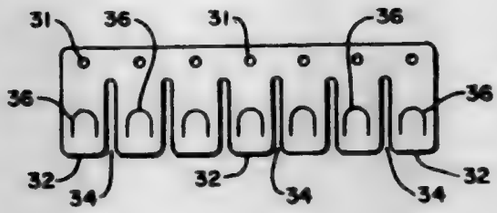
Michael F. Marvonek, and Patricia Marvonek, both of P.O. Box 232, Stafford Springs, Conn. 06076

Filed Feb. 8, 1996, Ser. No. 598,510

Int. Cl.[6] F16K *15/00*

U.S. Cl. 137—512.15 **11 Claims**

1. A reed member for use with an associated reed cage in an associated reed valve which comprises: a resilient flat member having a base end portion and a free end portion, said base end portion including means for mounting said member to associated structure, and said member has at least one arch shaped cut therein, said arch shaped cut including an arch part and first and second



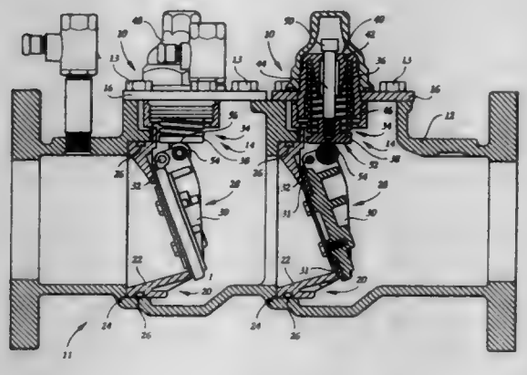
sides, each of said first and second sides having free ends and other ends, said other ends being joined by said arch part, said first and second sides being disposed in substantially perpendicular relationship to said base end portion with said arch part being disposed closer to said base end portion than said free ends of said first and second sides, the arch shaped cut defining a flap, said flap being dimensioned and configured for relative motion with respect to the rest of said member in response to fluid pressure.

5,794,655

SWING-TYPE CHECK VALVE ASSEMBLY HAVING AN INTEGRATED VALVE SEAT AND VALVE HOUSING COVER

Robert Vernon Funderburk, Charlotte, and Timothy Duane Price, Monroe, both of N.C., assignors to Conbraco Industries, Inc., Matthews, N.C.

Filed Feb. 25, 1997, Ser. No. 806,116
Int. Cl.[6] F16K *15/00*
U.S. Cl. 137—527 **13 Claims**



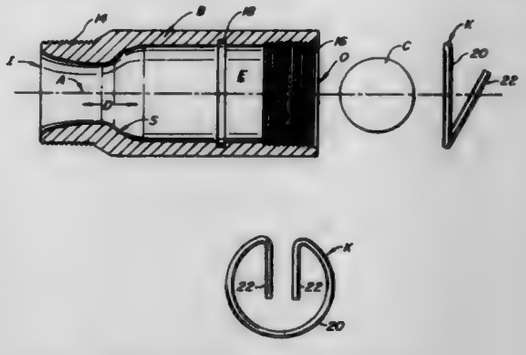
1. A swing-check valve for controlling fluid flow comprising:
a valve housing having a port for fluid flow therethrough, said valve housing including a removable cover for accessing an interior of said valve housing; and
a valve assembly disposed within the interior of said valve housing for controlling the fluid flow through said valve housing and having a valve seat subassembly, said valve assembly including means for attaching said valve assembly to said cover for removal of said valve assembly from said interior of said valve housing simultaneously with removal of said cover from said valve housing.

5,794,656

BALL CHECK VALVE WITH OFFSET OPEN BALL MOVEMENT

Michael K. Breslin, Mill Valley, Calif., assignor to Clean Environment Engineers, Oakland, Calif.

Filed Apr. 17, 1996, Ser. No. 635,099
Int. Cl.[6] F16K *15/04*
U.S. Cl. 137—533.11 **7 Claims**



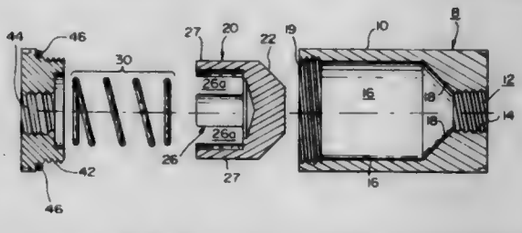
1. In the combination of a ball check valve having:
a valve body;
a valve inlet;
a valve outlet;
a valve flow conduit extending from the valve inlet to the valve outlet, the valve flow conduit being defined about a flow axis extending from the valve inlet to the valve outlet;
a valve seat having a constricting diameter configured within the valve flow conduit;
an expanded flow volume defined within the valve flow conduit between the valve seat and valve outlet;
a checking ball for moving to and from the valve seat at the constricting diameter respectively out of and into the expanded flow volume; and
means for retaining the checking ball within the expanded flow volume;
the improvement to the means for retaining the checking ball within the expanded flow volume comprising:
an annulus configured in the valve body within the expanded flow volume above the valve seat;
a spring ball retaining clip including a circular portion having a dimension exceeding the annulus with less than 360° circumference and at least one tang protruding from the circular portion;
the at least one tang bent at an angle with respect to the flow axis of the valve flow conduit to cause checking ball displacement along the tang to the side of the expanded flow volume.

5,794,657

SAFETY CHECK VALVE FOR FUEL DELIVERY SYSTEM

Gordon D. Oberg, 1717 S. Lake Stickney Dr., Lynnwood, Wash. 98037

Filed Feb. 7, 1997, Ser. No. 796,268
Int. Cl.[6] F16K *15/00*
U.S. Cl. 137—543.19 **10 Claims**



7. A safety fuel check valve for a fuel delivery system between a fuel tank and an engine fuel pump, comprising:

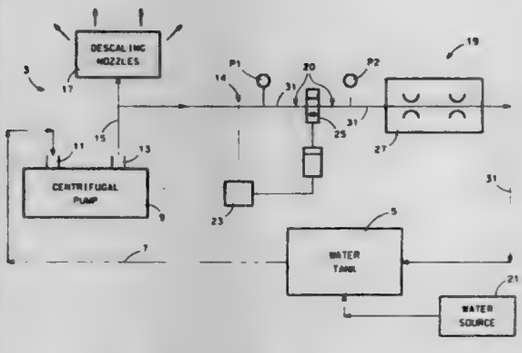
a check valve housing defining a cylindrical bore formed with axially aligned inlet and outlet, said inlet having threads for direct connection to an output port of said fuel tank, said safety check valve further having a conical valve seat in said bore of said housing and a needle valve body formed at a first end of said body with a conical nose fitted to said conical seat and being movable axially in said bore to close and open fuel flow with respect to said valve seat, and said valve body having a guide portion formed at a second end axially opposed to said conical nose, said guide portion having a generally square section structure that is hollowed out at the end opposite said conical nose to define a cavity and on which structure the exterior corners are rounded to conform to said bore for being guided thereby, said square section structure defining flat sides that are spaced inwardly from said housing bore to form reduced resistance passages for fuel, and a compression spring mounted in said bore and retained in said cavity for urging the needle valve body to its seated position, said compression spring having a force selected to normally hold the needle valve body in its seated position closing fuel flow and yielding to allow said needle valve body to unseat and open fuel flow when a fuel pump operates to cause a vacuum suction in the fuel line.

5,794,658

HIGH ENERGY PUMP SYSTEM FOR USE IN THE DESCALING OF STEEL

Joel L. Saikin, Chesterton, Ind., assignor to Bethlehem Steel Corporation

Division of Ser. No. 697,763, Aug. 29, 1996, Pat. No. 5,675,880. This application May 9, 1997, Ser. No. 853,479
Int. Cl.[6] E03B *7/07*
U.S. Cl. 137—563 **6 Claims**



1. A recirculation system for a high energy pump which enables liquid at a pressure of from about 1,400–2,500 psi to be instantaneously available to a jet nozzle for selective spraying, the recirculation system comprising:

a pressure detector located proximate a pump discharge for measuring the pressure of a high pressure liquid being pumped and to be selectively output from the nozzle;

means for opening a recirculation valve when said detector detects a liquid pressure greater than a predetermined threshold; and

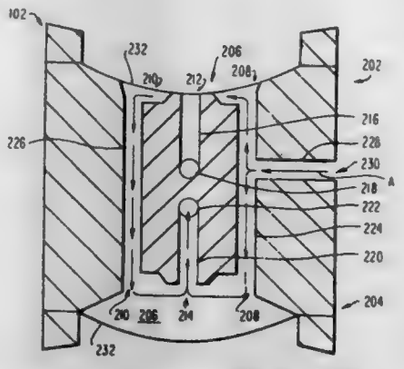
recirculation means including a plurality of orifices in series with one another for maintaining the pressure of the liquid proximate the pump discharge at from about 1,400–2,500 psi so that high pressure liquid is always available to said nozzle.

5,794,659

ZERO DEAD-LEG VALVE STRUCTURE

Ronald R. DuRoss, Huntsville, Ala., and William K. Tucker, Cherry Hill, N.J., assignors to SCI Systems, Inc., Huntsville, Ala., and BOC Group Inc., New Providence, N.J.

Continuation of Ser. No. 471,375, Jun. 6, 1995, abandoned, which is a division of Ser. No. 45,554, Apr. 9, 1993, abandoned. This application Dec. 31, 1996, Ser. No. 777,837
Int. Cl.[6] F16K *11/20*
U.S. Cl. 137—597 **9 Claims**



1. Valve apparatus for controlling the flow of gases, said apparatus comprising, in combination;

at least one conduit in the form of a loop;

said conduit having first, second and third ports spaced apart from one another;

a pair of valve closure members, each being mounted adjacent one of said first and second ports and being movable to open and close the port to which it is adjacent; and

an actuating device for selectively actuating said valve closure members to selectively open and close said first and second ports;

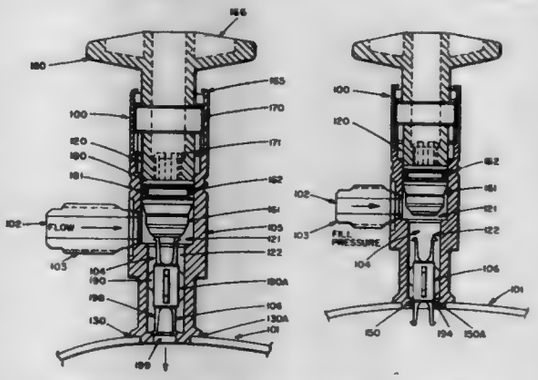
in which said conduit extends from said third port past said first port and then past said second port and then back to said third port, and in which said valve closure members do not occlude said conduit.

5,794,660

VALVES FOR PRESSURIZED CONTAINERS

Christopher Dandridge Mohn, North Kingstown, R.I., assignor to Amtrol Inc.

Continuation of Ser. No. 540,769, Oct. 11, 1995, Pat. No. 5,657,790. This application May 7, 1997, Ser. No. 851,524
Int. Cl.[6] F17C *13/00*
U.S. Cl. 137—614.2 **12 Claims**



1. A manufacturing process for fabricating both refillable and non-refillable valves for pressurized containers, comprising the steps of:

(a) fabricating a undirectional stepped valve housing, wherein said housing comprises a central bore that includes an upper

portion, lower portion and a middle portion located therebetween, wherein said lower portion is narrower than said middle portion which in turn is narrower than said upper portion;

(b) fabricating a port in the middle portion of said housing to facilitate connection of a nozzle thereto;

(c) securing said valve housing to said container such that the lower portion of said central bore is in fluid communication with the interior of said container;

(d) fabricating means for controlling the opening and closing of said valve and an associated valve body component for making a primary valve seal when the valve is closed;

(e) inserting a blocking element comprising a free standing check into said housing, whenever said valve is to be used as a non-refillable valve, such that said blocking element is centered within and rests in the lower portion of said central bore in proximity to said container;

(f) installing said means for controlling and said associated valve body component into said housing, such that said valve body component is located after installation within said middle portion of said central bore and said means for controlling is located after installation at least in part within the upper portion of said central bore; and

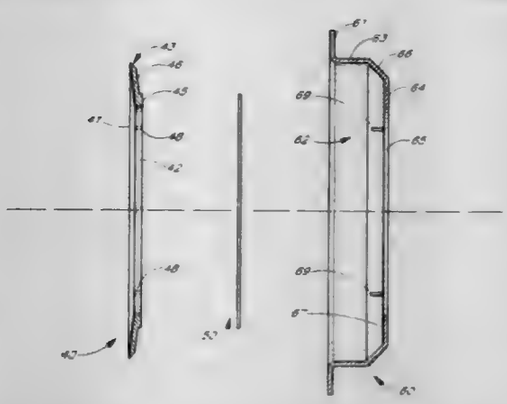
(g) securing the combination of said means for controlling and said associated valve body component, together with said blocking element whenever a blocking element is inserted into said housing in step (e), within said housing.

5,794,661

TANK ISOLATION VALVE

Mark L. Natalizia, Willits, Calif., assignor to Microphor, Inc., Willits, Calif.

Filed Oct. 21, 1996, Ser. No. 734,165
Int. Cl.[6] F16K *15/14*
U.S. Cl. 137—849 **5 Claims**



1. A tank isolation valve assembly for use in an effluent discharge path to provide a vapor barrier to prevent back flow of gases while enabling fluid and solid substances to pass therethrough in a desired flow direction, said tank isolation valve assembly comprising:

a main housing member having a peripheral flange joined with an apertured outlet wall, said outlet wall defining a valve member receiving region including an apertured bottom wall portion, a side wall portion and a wall portion formed at an angle with respect to and joining said bottom and side wall portions;

a first apertured mounting gasket received about the side wall portion of said main housing member adjacent said peripheral flange, and a second apertured mounting gasket positioned on the opposite side of said peripheral flange from said first mounting gasket, each said gasket having an outer diameter greater than the outer diameter of said peripheral flange;

a second member comprising a valve plate having a convex peripheral portion mounted in sealing engagement with said wall portion, and having an apertured wall structure with a valve member retaining surface facing said valve member receiving region; and

an isolation valve member comprising a flexible diaphragm mounted in sealing relationship between said valve member receiving region and said valve member retaining surface, said valve member being provided with a first plurality of boss receiving apertures, said valve plate being provided with a second plurality of boss receiving apertures, and said outlet wall including plurality of valve member mounting bosses extending therefrom and received within said first and second plurality of boss receiving apertures,

said flexible diaphragm comprising a pair of disks fabricated from an elastomeric material, each disk having a plurality of slits extending from a central region thereof and wherein said disks are mutually positioned with solid portions of one of said pair of disks overlying the slits of the other one of said pair of disks, said slits being of a length to permit the passage of both fluid and solid effluent therethrough, with at least some of said slits terminating in enlarged openings.

5,794,662

PIPE LINER AND METHOD OF INSTALLATION

Henri S. St. Onge, and Bryan St. Onge, both of 226 Catalina Drive, West Hill, Ontario, Canada, M1E 1B7

Filed Aug. 15, 1996, Ser. No. 695,999
Int. Cl.[6] F16L *55/16*
U.S. Cl. 138—97 **10 Claims**



1. A method of forming a pipe within an existing pipe of a given inside diameter comprising the steps of providing PVC pipe segments having an outside diameter sized to allow loose insertion into the existing pipe, joining a multiplicity of said pipe segments forming a series thereof and inserting the joined pipe segments into said existing pipe such that the joined pipe segments define a desired length of pipe loosely received within the existing pipe as said given inside diameter is much greater than said outside diameter of said pipe segments, sealing opposite ends of said joined pipe segments and heating said joined pipe segments under pressure to cause said pipe segments to soften and expand said pipe segments and joints therebetween outwardly until restricted by said existing pipe with the integrity of said joints being maintained, cooling said joined pipe segments and removing the seals from said opposite ends to expose a new pipe with an outside surface thereof in contact with said inside diameter of said existing pipe with said new pipe inherently maintaining its expanded size.

5,794,663

APPARATUS FOR REPAIRING A PIPELINE AND METHOD FOR USING SAME

Larry W. Kiest, Jr., Ottawa, and Gary Van Ameyde, Tinley Park, both of Ill., assignors to LMK Enterprises, Ottawa, Ill.

Division of Ser. No. 622,817, Mar. 27, 1996, which is a continuation-in-part of Ser. No. 293,697, Aug. 19, 1994, abandoned. This application Apr. 24, 1997, Ser. No. 840,035
Int. Cl.[6] F16L *55/16*
U.S. Cl. 138—98 **3 Claims**



1. In combination:

an elongated bladder tube having a fill end for receiving a quantity of fluid resin, a vacuum end for connection to a vacuum source, and flexible tube walls forming a tube cavity therein;

a layer of resin absorbent material within said tube cavity and having a first material end spaced a predetermined distance from said vacuum end of said bladder tube and a second material end;

an elongated wick having an interior wick end positioned between said first and second material ends of said resin absorbent material, said wick extending from said interior wick end toward said vacuum end of said bladder tube and terminating in a vacuum wick end, at least a portion of said wick being between said vacuum end of said bladder tube and said second material end of said resin absorbent material.

5,794,664

WEFT FEEDING DEVICE FOR FLUID WEAVING MACHINE

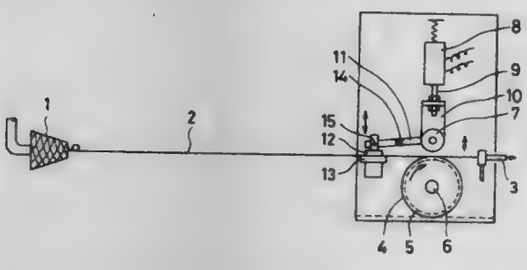
Iwao Hasegawa, and Toshiyuki Kidokoro, both of Tokyo, Japan, assignors to Micron Instrument Inc., Tokyo, Japan

Filed Sep. 27, 1996, Ser. No. 722,831

Claims priority, application Japan, Sep. 29, 1995, 7-254102; Jul. 12, 1996, 8-183760

Int. Cl.[6] D03D *47/36;47/38*

U.S. Cl. 139—452 **11 Claims**



1. A weft feeding device for use in a fluid weaving machine, comprising:

a yarn feed roller;

a pinch roller mounted for movement into contact with and away from said yarn feed roller;

an openable and closable gripper having a gripper base and a gripper movable part operably linked with said pinch roller;

a solenoid operably coupled with said pinch roller for actuating said pinch roller to move into contact with and away from said yarn feed roller;

a coupling arm pivotable about a pivot axis and having first and second ends; and

wherein said gripper movable part is provided at said first end of said coupling arm, and said pinch roller is provided at said second end of said coupling arm, such that actuation of said pinch roller by said solenoid to move said pinch roller relative to said yarn feed roller causes movement of said gripper movable part relative to said gripper base.

5,794,665

JACQUARD MACHINE HOOK SELECTING DEVICE DRIVEN BY A BISTABLE ELEMENT

Walter Keim, Senden, Germany, assignor to Groose Webereimaschinen GmbH, Burlafingen, Germany

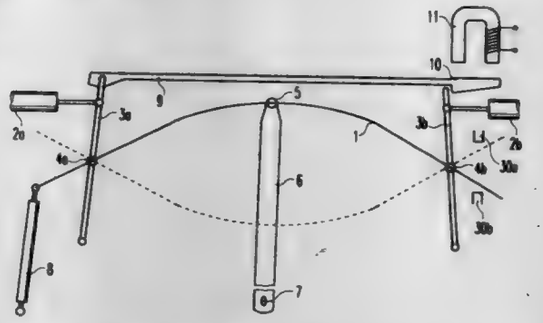
PCT No. PCT/EP94/03417, § 371 Date Jul. 1, 1996, § 102(e) Date Jul. 1, 1996, PCT Pub. No. WO95/11327, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 17, 1994, Ser. No. 633,791

Claims priority, application Germany, Oct. 19, 1993, 43 35 620.6; Aug. 22, 1994, 44 29 765.3

Int. Cl.[6] D03C *13/00;3/00;3/24*

U.S. Cl. 139—455 **39 Claims**



1. Jacquard machine having hooks (**6**) for raising and lowering warp threads (**12**) in a weaving machine, a hook drive device (**1**, **2***a*, **2***b*; **1**, **20**, **21**) for selectively imparting a lifting or lowering movement to the hooks (b); and a hook selection device (**8**, **9**, **11**), which selects particular ones of the hooks (**6**) in order to hold the warp threads (**12**) connected with said selected hooks (b) characterized that,

the hook drive device (**1**, **2***a*, **2***b*; **1**, **20**, **21**) includes for each said hook (**6**) deformable bistable element (**1**) driving the hook in a positive manner, said deformable bistable element responsive to an external mechanical loading acting periodically on the deformable bistable element (**1**) alternatively takes up a first stable positioning state which corresponds to a raised state of the hook (**6**), or a second stable positioning state, which corresponds to a lowered state of the hook (**6**), and

means causing the hook selection device (**9–11**) to impart a mechanical deformation to the bistable deformable element (**1**) to produce after each period of the mechanical loading a specific one of the two stable positioning conditions for the selected hooks (b), and a neutral positioning condition in the absence of any mechanical loading.

5,794,666

GASEOUS FUEL FILLING STRUCTURE AND FILLING METHOD USING THE SAME

Yuji Yanagawa, Nagoya; Keigo Kato, Okazaki; Koichiro Muta, Okazaki; Tadao Ikihara, Okazaki, and Tamon Tanaka, Gojo, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1996, Ser. No. 724,956

Claims priority, application Japan, Oct. 2, 1995, 7-254989; Oct. 3, 1995, 7-256323

Int. Cl.[6] F17D *1/04;* **B60S** *5/02;* **F17C** *5/06*

U.S. Cl. 141—18 **27 Claims**

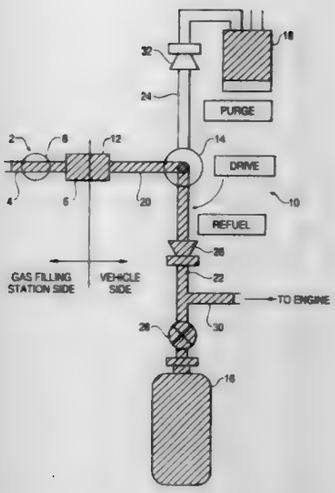
1. A gaseous fuel filling structure, comprising:

a coupler which connects to an external gaseous fuel supply system when supplying a gaseous fuel to a vehicle;

a gaseous fuel cylinder that stores the gaseous fuel supplied from the external gaseous supply system through said coupler;

a fuel dissipation preventing device which prevents dissipation of the gaseous fuel; and

a switching device placed in a selected one of a first state in which said coupler is connected to said gaseous fuel cylinder



and disconnected from said fuel dissipation preventing device, and a second state in which said coupler is connected to said fuel dissipation preventing device, said switching device including a back flow preventing device which prevents back flow of the gaseous fuel from said gaseous fuel cylinder toward said coupler, wherein said gaseous fuel filling structure is provided on the vehicle.

5,794,667

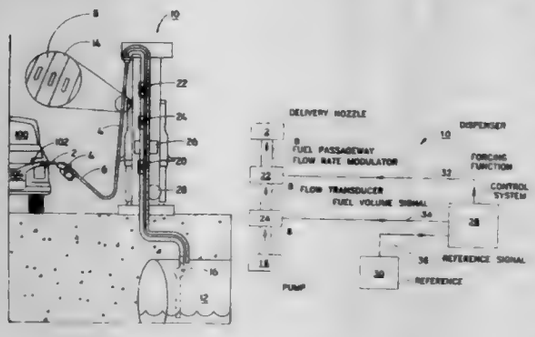
PRECISION FUEL DISPENSER

Edward A. Payne, Greensboro; Hal C. Hartsell, Jr., Kernersville, and Walter L. Baker, Greensboro, all of N.C., assignors to Gilbarco Inc., Greensboro, N.C.

Filed May 17, 1996, Ser. No. 650,917

Int. Cl.[6] B67D *5/08*

U.S. Cl. 141—128 **37 Claims**



1. A precision fuel dispenser comprising:

a fuel dispenser for delivering fuel along a fuel delivery path;

a flow rate modulator in said fuel delivery path; and

a control system operatively associated with said flow rate modulator for regulating the rate of flow in said fuel delivery path during a portion of a fueling operation to define a flow-rate-dependent fueling process including controlling the rate of flow in said delivery path to provide a defined average flow rate during a portion of the fueling operation by increasing or decreasing the flow rate above or below the defined average flow rate to compensate for any periods that varied from the defined average flow rate.

5,794,668

FILLING STREAM ADJUSTING PROCESS

Wolfgang Schroeder, Magdeberg, Germany, assignor to Afuema Abfuellmaschinen GmbH Rosslau, Rosslau, Germany

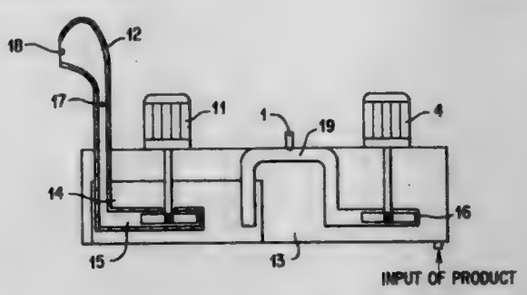
PCT No. PCT/DE96/00337, § 371 Date Oct. 22, 1996, § 102(e) Date Oct. 22, 1996, PCT Pub. No. WO96/26110, PCT Pub. Date Aug. 29, 1996

PCT Filed Feb. 20, 1996, Ser. No. 732,415

Claims priority, application Germany, Feb. 22, 1995, 195 07 831.4

Int. Cl.[6] B65B *1/30;3/28;57/06;57/14*

U.S. Cl. 141—198 **9 Claims**



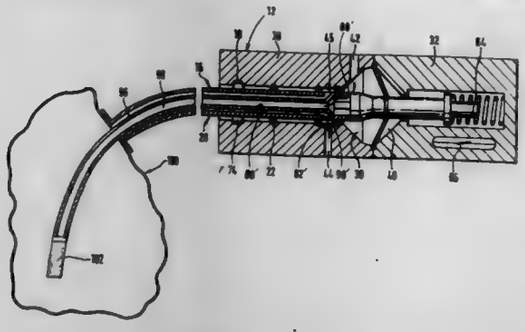
1. A procedure for adjusting a filling jet of flow-controlled automatic filling machines, used for dosing liquids of various viscosities and densities and filling them with a free-flowing directed filling jet into vessels, in which liquid rises in a filling pipe between internal sensors, to determine a basic volume measured at intervals, which receives a consistent liquid quantity for a rising flow in the filling pipe due to the arrangement of an overflow from a leveling container and in which the time for filling the filling pipe is divided into time units commencing with a filling start and finishing upon medium emerging from the filling pipe, in which the basis for filling the volume of the filling pipe is kept constant by an overflow arrangement of the leveling container and a consistent measurement of the viscosity of the liquid and in which a filling pipe rises from the leveling container arranged in a buffer container, in which the leveling container and pumps are assigned to a mutual filling medium bath with the leveling container overflowing at all times to achieve a continuous circuit and a barrier formed by sensors at the rising end of the filling pipe being connected by a control signal to a control device provided by an output signal of a switching amplifier and having an amplified connection with a leveling pump, in which the control device is brought into an operative connection with a position sensor via a control signal and the leveling container in the buffer container offers the option to achieve a continuous circuit on a pressurized side with the leveling container and with the buffer container on a suction side and in which a filling volume is determined by two sensors arranged one above the other at a certain distance in the filling pipe and at the same time by a distance between the two sensors and a certain filling volume, characterized in that, a speed of the filling jet emerging from the filling pipe is determined and stored as a set value and an actual value of the speed of a volume flow emerging from a filling pump is measured by a speed sensor for comparison to adjust the speed of the emerging filling jet and with the output of the pump being changed until the stored set value of the filling jet speed at the volume sensor corresponds with the volume flow speed measured at the speed sensor and that only at this point the filling into the vessels is started.

5,794,669

CONTAINER FOR COLLECTION OF CONCENTRATE

Hans-Dietrich Polaschegg, Oberursel; Walter Pieper, Florstadt, and Daniel Weber, Astoffort, all of Germany, assignors to Fresenius AG, Germany

Continuation of Ser. No. 81,747, Jun. 23, 1993, Pat. No. 5,540,265. This application May 1, 1996, Ser. No. 641,606
Claims priority, application Germany, Jun. 26, 1992, 9217989 U; Feb. 5, 1993, 4303372
Int. Cl.[6] A61M *1/14;39/00*
U.S. Cl. 141—285 10 Claims



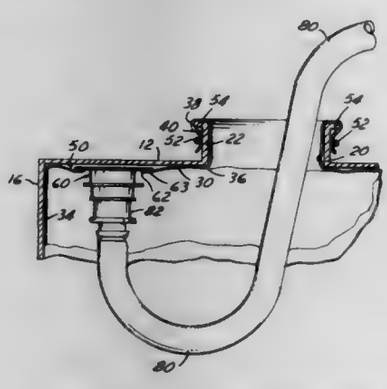
1. A bag for use in apparatus for dialysis to accommodate solid or fluid concentrate for the preparation of dialysis fluid using a dialysis machine, the bag containing solid or fluid concentrate for preparation of dialysis fluid using said apparatus for dialysis and having a bag body and at least one opening, wherein a first plug components is provided on the opening of the bag and sealingly surrounds the opening, said first plug component having an inlet for fluid flowing from the dialysis machine to the bag and an outlet for diluted concentrate going back from the bag to the dialysis machine and including coupling means such as to provide a single connection element connectable with a second complementary plug component provided on the dialysis machine for creating both a first flow path from the dialysis machine of the bag and a second flow path from the bag to the dialysis machine.

5,794,670

TANK LINER AND METHOD OF INSTALLATION

Lee LaFleur, Manistee, Mich., assignor to Custom Packaging Systems, Inc., Manistee, Mich.

Filed Aug. 23, 1996, Ser. No. 701,863
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—314 13 Claims



1. For use within a bulk container having a substantially rigid top container wall, bottom container wall and side container walls and a filler opening in said top container wall, a collapsible container liner comprising,

a collapsible bag of a flexible material having a liner top, a liner bottom, and liner sides which are generally complimentary shaped and adapted to conform to said container walls within said bulk container and a first opening in said top liner wall adapted to be disposed generally coaxially with said filler opening,

a seal adapted to be disposed between said top container wall and said liner top around the periphery of said filler opening and said first opening and adapted to seal off the space between said liner and said container,

a second opening in said liner top spaced from said first opening,

an evacuation outlet sealably attached to said liner top around the periphery of said second opening for evacuating said space through said second opening, and

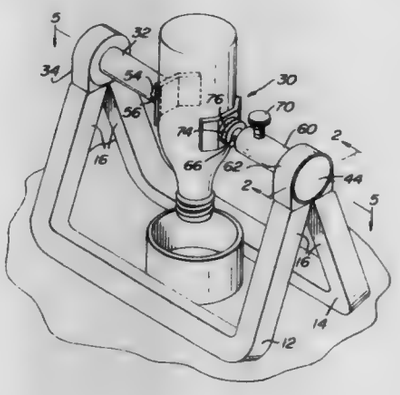
a cap removably and sealably received in said outlet.

5,794,671

RECEPTACLE DRAINER

M. Michelle Smith, P.O. Box 123, Milford Square, Pa. 18935

Filed Feb. 13, 1997, Ser. No. 800,114
Int. Cl.[6] B65B *1/04;3/04;* B67C *3/00*
U.S. Cl. 141—319 7 Claims



1. An apparatus for draining fluid from a receptacle, comprising:

a base frame;

a receptacle support frame coupled to said base frame and comprising

an adjustable trunnion having a mounting end for mounting said adjustable trunnion on said base frame; and

a non-adjustable trunnion having a mounting end for mounting said non-adjustable trunnion to said base frame, wherein the adjustable trunnion is adjusted with respect to said non-adjustable trunnion until said receptacle is held between said trunnions, for enabling said receptacle to be rotated 360° when said receptacle is supported by said receptacle support frame.

5,794,672

FLORAL ARRANGEMENT WATERING FUNNEL

Laurence Goldberg, 7014 Plymouth Rd., Baltimore, Md. 21208

Filed Aug. 1, 1996, Ser. No. 690,834
Int. Cl.[6] B65B *39/00;* B67C *11/04*
U.S. Cl. 141—331 18 Claims

1. A device for watering flower arrangements of cut flowers inserted into a block of closed cell foam, said device comprising a funnel having a central axis, an upper half, an upper end and a lower end, said funnel being frusto-conically shaped from said upper end to said lower end, said lower end being cut at an acute angle to said central axis, wherein said upper end has a peripheral edge with a laterally extending flanged lip therearound, and said



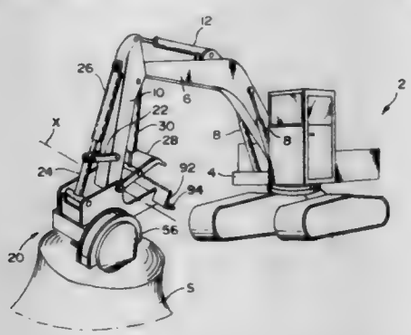
upper half is scalloped, generally circular in plan and symmetrically arranged around said central axis with the scallops being evenly spaced about a periphery of said funnel.

5,794,673

STUMP GRINDER

David E. Milbourn, 54 Milbourn La., Hoquiam, Wash. 98550, and Richard W. Goldy, Montesano, Wash., assignors to David E. Milbourn, Hoquiam, Wash.

Filed Sep. 30, 1996, Ser. No. 720,536
Int. Cl.[6] A01G *23/06*
U.S. Cl. 144—24.12 19 Claims



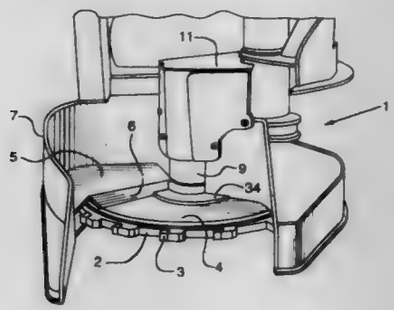
1. A cutting head for a self-propelled machine of a type including an articulated boom structure, and a thumb pivotally attached to an outer end portion of the boom structure and having a free outer end portion, said cutting head comprising a housing pivotally attachable to said outer end portion of the boom structure; said housing including a rear portion having a rearward free end, and a double heel rack extending transversely across said rearward free end, said rack being substantially L-shaped in cross section and having an upper leg positioned to oppose said free outer end portion of said thumb to cooperate with said thumb to grip objects therebetween, and a lower leg positioned and configured to dig into a ground surface when the cutting head is pivoted to tilt said rear portion downwardly, to aid in stabilizing said machine when said machine is moving along sloped ground surfaces.

5,794,674

TREE FELLING DISC SAW HELD WITH LARGE ACCUMULATION AREA

John Kurelek, Brantford, Canada, assignor to Tigercat Industries Inc., Brantford, Canada

Filed Jun. 30, 1997, Ser. No. 886,159
Int. Cl.[6] A01G *23/08*
U.S. Cl. 144—34.1 18 Claims



1. A disc saw tree felling and accumulating head for attachment to a logging vehicle, comprising:

a support frame securable to said vehicle for controlled motion relative thereto;

a circular saw rotatably mounted on said support frame about a generally vertical saw axis for rotation in a generally horizontal plane adjacent the bottom of said head, said saw comprising a saw disc and a number of spaced-apart teeth secured at the circumference of said saw disc, uppermost and lowermost edges of said teeth defining a saw kerf, an exposed front portion of said saw constituting a tree severance area;

a butt plate overlying said saw disc in said severance area, radially inward from said teeth;

an accumulation area for accumulating trees severed by said saw, said accumulation area being at a slightly higher elevation than said butt plate, separated therefrom by a ramp up therefrom, said accumulation area extending above and substantially beyond the circumference of said saw and said teeth, outwardly from said saw axis on one side thereof;

a motor mounted on said frame above said saw disc, connected to drive said saw; and

taker and tucker arms pivotally mounted on said frame to sweep trees from said severance area into said accumulation area.

5,794,675

PLANER WITH POSITIVELY LOCKING CUTTERHEAD

Jaime E. Garcia, Wexford, Pa., assignor to Delta International Machinery Corp., Pittsburgh, Pa.

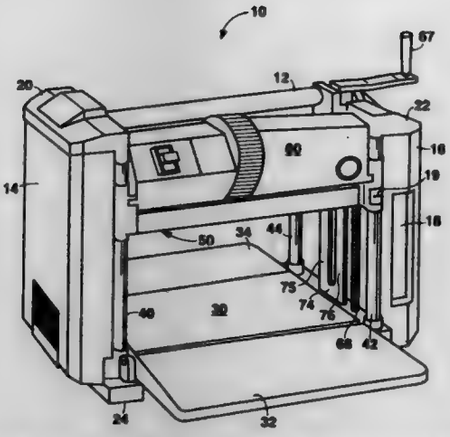
Filed Aug. 9, 1996, Ser. No. 694,945
Int. Cl.[6] B27C *1/02*
U.S. Cl. 144—117.1 20 Claims

1. A planing apparatus for reducing a thickness of a material, comprising:

a frame assembly having a first and second side;

a support means attached to said frame assembly for supporting the material thereon;

a driven cutterhead operably supported by said first and second sides of said frame assembly and being selectively positionable at a desired elevation relative to said support means; and



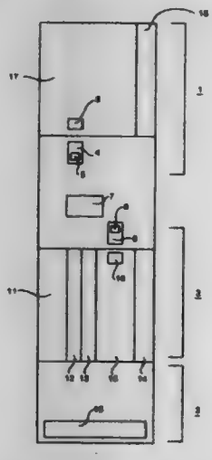
means attached to said frame assembly for selectively locking said cutterhead at said desired elevation.

5,794,676

DETACHABLE BRIEFCASE ORGANIZER

John Hunt Shattuck, 7730 Moritz Lake Dr., Corpus Christi, Tex. 78413

Filed Apr. 29, 1996, Ser. No. 639,624
Int. Cl.[6] A45C *11/26;11/34;11/36*
U.S. Cl. 150—131 7 Claims



1. An organizer case providing means for holding in place small items required by pilots which can be configured in a flat opened arrangement or which can be folded into a closed configuration, said organizer case comprising:

a main panel having a top edge, a bottom edge, and two side edges, and having an interior surface and an exterior surface, wherein said main panel has a first fold region and a second fold region perpendicular to the side edges, a first large segment between the top edge and the first fold region, a second large segment between the first fold region and the second fold region, and a closure flap portion between the third fold region and the bottom edge;

a first plurality of pockets formed on the interior surface of the first large segment by a permanently attached material;

a strip of material attached to the interior surface of the main panel and perpendicular to the side edges of the main panel in the first fold region to form a channel;

a second plurality of pockets formed by material permanently attached to the interior surface of the second large segment, wherein attachment sites attaching the material to the interior surface of the second large segment divide one pocket from another;

a fastening means on the interior surface of the closure flap; and

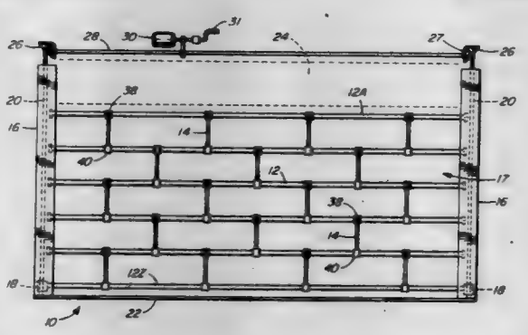
a plurality of fastening means fixedly attached to the exterior surface of the main panel, one of said fastening means being situated so as to join with the fastening means on the interior surface of the closure flap, another of said fastening means being situated so as to join with a complementary fastening means on a target surface.

5,794,677

FOLDABLE SECURITY BAR ASSEMBLY

Moshe Cohen-Ravid, Vancouver, Canada, assignor to Ravco Innovations, Inc., Canada

Filed Mar. 20, 1997, Ser. No. 820,847
Int. Cl.[6] E04F *10/08*
U.S. Cl. 160—35 37 Claims



1. A foldable security bar assembly for an opening, comprising:

a plurality of horizontal bars extending between two channels, the two channels positioned one on each side of the opening, the bars being slidable vertically within the channels and having ends of the bars retained in the channels;

a plurality of connector links joining adjacent bars spaced apart along the bars, each of the connector links having at least one end pivotally connected to one of the horizontal bars;

at least one bar of the plurality of horizontal bars having a connection at each end within each of the two channels to a raising and lowering mechanism in each channel coordinated to raise and lower the at least one bar and keep the at least one bar substantially horizontal;

drive means for the raising and lowering mechanism, and

guide means adjacent the opening associated with the channels to guide the horizontal bars into a folded configuration with alternate bars on opposite sides, and retain the horizontal bars in the folded configuration.

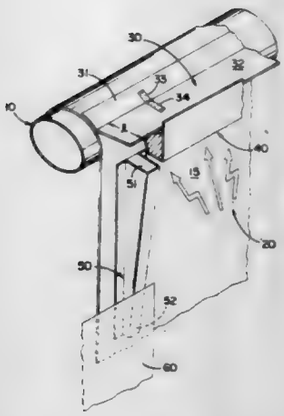
5,794,678

SEALING SYSTEM FOR A ROLLER DOOR

Mark D. Beringer, Sherril, and David P. Leppert, Zwingle, both of Iowa, assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed Feb. 22, 1996, Ser. No. 604,905
Int. Cl.[6] E06B *7/16*
U.S. Cl. 160—41 11 Claims

1. A sealing system in combination with a roller door, the roller door adapted to be disposed adjacent a doorway and including a curtain with a first end and a second end, the first end being attached to a roller, the roller including an axis, such that the curtain is windable onto and unwindable from the roller for selective movement between an unblocking and a doorway-blocking position; the sealing system comprising: a sealing member mounted on the curtain for movement therewith between the unblocking and doorway-blocking positions and including a first flap secured along at least a portion of its length to the curtain, the sealing member including a second flap that is movable relative to the curtain, the sealing member being disposed adjacent to the first



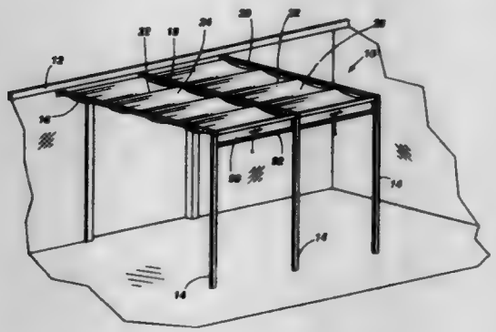
end and disposed such that the second flap moves outwardly from the curtain to engage the seal engaging member as the curtain approaches the doorway-blocking position; a seal engaging member adapted to be fixed adjacent to the doorway and to the curtain, the seal engaging member being spaced from the sealing member when the curtain is wound on the roller and being disposed such that the second flap of the sealing member engages the seal engaging member and seals the space between the curtain and the seal engaging member as the curtain approaches the doorway-blocking position.

5,794,679

CANOPY STRUCTURE FOR SUN SHADE

Marvin E. Williams, and Joseph R. Tartaron, both of Columbus, Ohio, assignors to MarvinGardens, Ltd., Columbus, Ohio

Filed Jan. 15, 1997, Ser. No. 784,256
Int. Cl.[6] E04F *10/00*
U.S. Cl. 160—46 **14 Claims**



1. A canopy comprising:

a) at least three, substantially parallel, laterally spaced rafter members forming a plurality of laterally spaced openings between the rafter members, each rafter member having longitudinally extending tracks on laterally opposite sides;

(b) a plurality of movable cross beams extending laterally between adjacent rafter members, each cross beam having a track-engaging member attached to each end and slidable alone the track;

(c) a plurality of flexible, laterally spaced opaque sheets between and extending longitudinally along the rafters, each sheet attached to the cross beam at spaced locations along the sheet; and

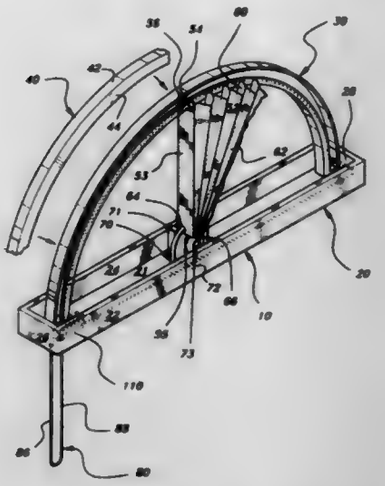
(d) an end lock near at least one end of each track for retaining an endmost cross beam in position when the sheet to which the cross beam is attached is tensioned to straighten the sheet.

5,794,680

RETRACTABLE ARCED WINDOW COVERING

Suli Xue, 217 E. Magna Vista Ave., Arcadia, Calif. 91006

Filed Jan. 8, 1997, Ser. No. 778,618
Int. Cl.[6] E06B *9/06*
U.S. Cl. 160—84.07 **18 Claims**



1. A retractable arced window covering comprising:

a base;

an arced track member including an arced hollow tube having a lateral opening therein, said arced track member rigidly attached to said base;

a rigid member having a hook-shaped upper end pivotally mounted thereon, said upper end slidably mounted within said lateral opening of said arced tube;

an arcuately foldable member having an upper edge, a lower end portion, a first end and a second end, said first end being connected to said rigid member, said second end being connected to said base, said foldable member being adaptable to assume a retracted position, an expanded position, and all positions therebetween; and

a remotely operable cord connected to said upper end of said rigid member, said cord being capable of pulling said rigid member in both directions along said track member.

5,794,681

MOLDING MACHINE

Shigeo Oda; Kazuharu Matsui, both of Toyokawa; Ryoji Kanayama, Toyohashi; Kuniyasu Mori; Kazuo Sugimoto, both of Toyokawa, and Kimikazu Kaneto, Toyohashi, all of Japan, assignors to Sintokogio, Ltd., Nagoya, Japan

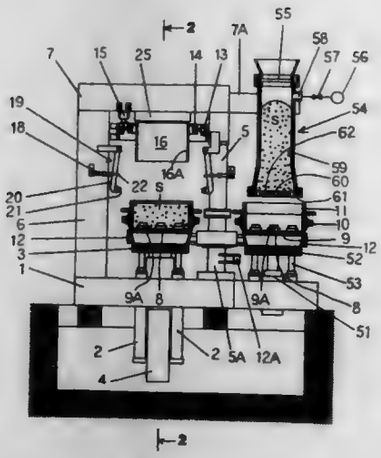
Filed Jun. 3, 1997, Ser. No. 868,442
Claims priority, application Japan, Jun. 7, 1996, 8-168345; Mar. 7, 1997, 9-070467
Int. Cl.[6] B22C *15/02;15/28*
U.S. Cl. 164—195 **11 Claims**

1. A molding machine for producing a mold by pressing molding sand fed into a space defined by a pattern plate and a flask, comprising:

a lifter table for lifting the pattern plate and flask which hold the molding sand; and

a pre-compacting member and a pressing member disposed above the lifter table for horizontal movement and for being inserted into the flask when the lifter table lifts the flask,

wherein the pre-compacting member includes a thin-plate body to be positioned slightly spaced apart from an inner surface of the flask or inner and outer surfaces of a pattern when inserted into the



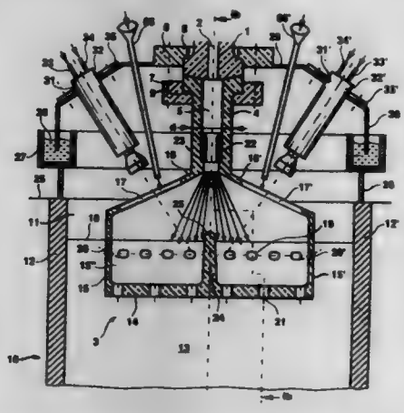
molding sand held in the flask, and wherein the pressing member includes a squeezing body that presses the molding sand from above.

5,794,682

NOZZLE PLANT EQUIPPED WITH SUCH A NOZZLE, FOR THE CONTINUOUS CASTING OF METAL PRODUCTS

Jean-Michel Damasse, Isbergues, and Jacques Barbe, Saint Etienne, both of France, assignors to Usinor Sacilor (Societe Anonyme), Puteaux, France

Filed Oct. 30, 1996, Ser. No. 739,994
Claims priority, application France, Nov. 23, 1995, 95 13903
Int. Cl.[6] B22D *11/14;41/60*
U.S. Cl. 164—437 **15 Claims**



1. A nozzle for introduction of a liquid metal into a mold for the continuous casting of metal products, comprising

a chimney having an upper end connectable by affixing means to an output nozzle of a vessel containing said liquid metal, and a lower end, and a terminal part connected to said lower end of said chimney and provided with outlets for distributing said liquid metal in a casting space defined by said mold, wherein said terminal part includes, in its upper region, at least one opening means for conducting heat to the inside of said terminal part from a heating means to maintain said metal in a liquid state in said terminal part.

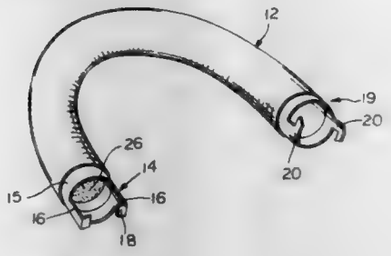
7. A plant for the continuous casting of metal products, including a bottomless mold having intensively internally cooled walls defining a casting space, and a nozzle made of refractory material having an upper end which is connected to a vessel containing a liquid metal, and a lower end for feeding said liquid metal into said casting space, wherein said nozzle includes the structure recited in claim 1.

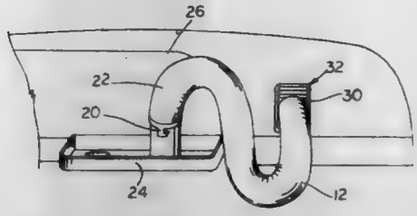
5,794,683

BEVERAGE COOLER FOR AUTOMOBILE

Andrew F. Kutzner, Opelstrasse 28, D64546 - Moerfelden, Germany

Filed Aug. 22, 1996, Ser. No. 702,757
Int. Cl.[6] B60H *1/32;1/12;3/04*
U.S. Cl. 165—41 **12 Claims**





1. A device for heating and cooling beverages used in conjunction with a vehicle air conditioning system in combination with a beverage container, said air conditioning system including an outlet for discharging heated and cooled air into the passenger compartment of the vehicle, said device comprising:

a hose,

one end of said hose removably secured to said outlet; and

means connected to the other end of said hose removably coupling said hose with said beverage container whereby said hose directs air from the vehicle air conditioning system onto said beverage container to affect the temperature of the beverage therein,

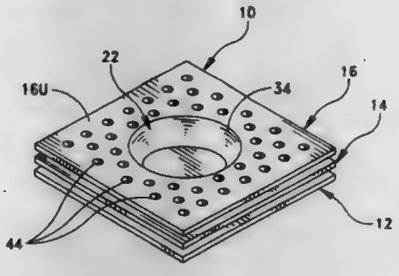
said coupling means including a holder connected to said other hose end and slid over an end of said beverage container to expose another end of said beverage container for drinking.

5,794,684

STACKED FIN HEAT SINK CONSTRUCTION AND METHOD OF MANUFACTURING THE SAME

John Jacoby, Jackson Pond Rd., New Hampton, N.H. 03256

Filed Nov. 8, 1996, Ser. No. 745,751
Int. Cl.[6] F28F *7/00*
U.S. Cl. 165—80.3 **7 Claims**



1. A heat sink construction comprising a plurality of fin elements each having an upper and lower heat dissipating surface, said upper surface including a nesting recess, said lower surface including a nesting shoulder which is complementary in shape to said recess, said fin elements being assembled in interfitting stacked

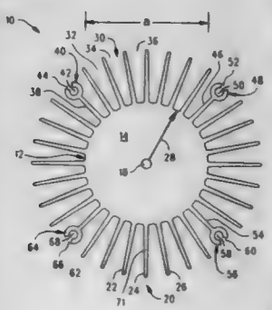
relation such that the shoulder of one fin element is received in nested relation within the recess of an adjacent fin element, said recess having inner side and bottom walls, said shoulder having outer side and bottom walls, said side walls of said recess and said shoulder being inwardly tapered from an outer edge thereof to said bottom wall, said fin elements being assembled such that said outer bottom walls of said shoulders are in intimate facing thermal contact with the inner bottom walls of said recesses and at least part of the outer side walls of said shoulders are in intimate facing thermal contact with the inner side walls of said recesses, said outer side walls of said shoulders of consecutively nested fin elements being consecutively longer in length such that the lower heat dissipating surface of one fin element is positioned in spaced adjacent relation to the upper heat dissipating surface of an adjacent fin element.

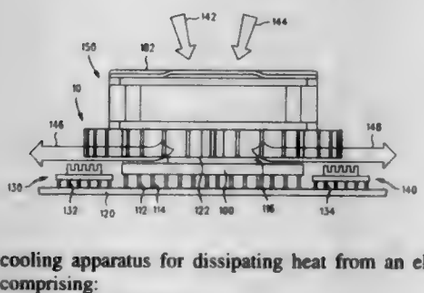
5,794,685

HEAT SINK DEVICE HAVING RADIAL HEAT AND AIRFLOW PATHS

Ronald P. Dean, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 17, 1996, Ser. No. 768,906
Int. Cl.[6] H05K 7/20
U.S. Cl. 165—121 **15 Claims**





1. A cooling apparatus for dissipating heat from an electronic device, comprising:

a heat sink device including

a central base portion having a first surface adapted to contact an exterior portion of said electronic device;

a plurality of heat conducting members extending generally radially outwardly from said central base portion; and

a plurality of air flow paths extending generally radially from said central base portion and defined by said plurality of heat conducting members;

wherein said plurality of heat conducting members each have a first end connected to said central base portion and a second terminal end opposite said first end which is unconnected to said central base portion;

wherein said first end and said second terminal end define a heat conducting member length therebetween and said length of one of said plurality of heat conducting members is different from said length of at least one other of said plurality of heat conducting members; and

wherein said central base portion includes a threaded hole therein.

10. A heat sink device for dissipating heat from an electronic device, comprising:

a central base portion having a first substantially planar contact surface adapted to contact an exterior portion of said electronic device;

a plurality of elongated heat conducting members extending generally radially from said central base portion, each of said heat conducting members including a first surface which is substantially coplanar with said central base portion contact surface; and

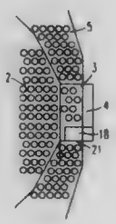
wherein a threaded hole is provided at said second terminal end of at least one of said plurality of elongated heat conducting members.

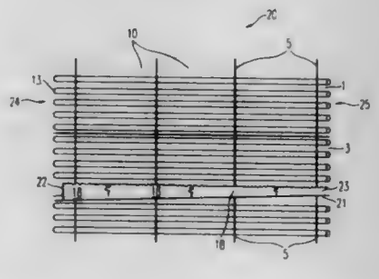
5,794,686

STEAM CONDENSER

Peter Baumann, Sulz, and Christian Stucki, Zürich, both of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Mar. 11, 1997, Ser. No. 814,320
Claims priority, application Germany, Mar. 15, 1996, 196 10 237.5
Int. Cl.[6] F28B 1/00
U.S. Cl. 165—114 **2 Claims**





1. A steam condenser in which steam is condensed on a plurality of tubes (13) through which cooling water flows and which are combined in separate banks (20), each said bank (20) being subdivided into compartments (10) by a plurality of supporting plates (5) arranged perpendicular to the tubes (13), the tubes (13) of each said bank arranged in rows enclosing a hollow space (19) in which an air cooler (3) for a residual-steam/inert-gas mixture is arranged,

a bottom (21) of the air cooler (3) having a slope over an entire length of the tubes so that condensate (23) collecting in the air cooler (3) in each said compartment (10) can flow along said slope through a number of recesses (18) in the supporting plates to an adjacent compartment (10) having an air cooler bottom (21) situated at a lower level,

non-condensable gases which collect in each said compartment (10) flowing from the air cooler (3) via orifices (6) into a header (4) common to all of said compartments and extending over the entire length of the tubes (13),

wherein the air cooler (3) has means (22) for gas-tight and steam-tight closure of the recesses (18) so that said means (22), without impairing the condensate flow through the recesses (18), prevent a direct exchange of the residual-steam/inert-gas mixture in the air cooler (3) between adjacent compartments.

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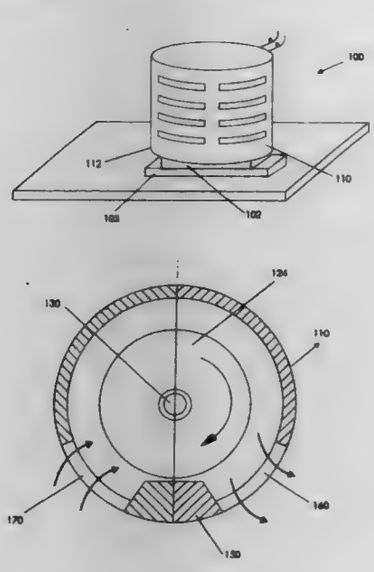
FORCED AIR COOLING APPARATUS FOR SEMICONDUCTOR CHIPS

Leo H. Webster, Jr., Cary, N.C.; Lawrence Shungwei Mok, Brewster, N.Y.; Vinod Kamath, Raleigh, and Mohanlal S. Mansuria, Apex, both of N.C., assignors to International Business Machine Corp.

Filed Aug. 4, 1997, Ser. No. 905,688

Int. Cl.[6] H05K 7/20

U.S. Cl. 165—121 10 Claims



1. A cooling apparatus for a heat-producing device with a flat surface for transferring heat comprising:

a housing including 1) a first portion having a generally flat heat-exchanging surface for engaging said flat surface of said heat-producing device and 2) one or more portions defining narrow slots substantially parallel to and aligned with said flat, heat-exchanging surface, said slot defining portions also defining multiple air-passage openings which extend from the slots externally of said housing for receiving and expelling air;

at least one disk arranged in a respective one of said slots, which disk is mounted to a shaft to rotate therewith about the disk central axis; and

a motor mounted to said housing and coupled to rotate said shaft whereby cooling air is pumped through said slot(s) to remove heat applied at said surface from said housing.

8. A cooling fan apparatus comprising:

a heat conducting housing having a flat surface at one end for engaging a heat source to receive heat therefrom;

said housing having defined therein a hollow central area with a plurality of fins extending parallel to said flat surface;

a motor mounted to said housing and having a shaft extending therefrom to be generally perpendicular to said flat surface;

one or more disks mounted to rotate with said shaft and arranged between said fins so as to cause a pressure differential within said housing;

an intake aperture at a low pressure area of said housing to allow an inflow of cooling air;

an exhaust aperature at a high pressure area of said housing to allow cooling air flowing in at the intake aperature to be removed from said housing whereby cooling of said housing is effected.

5,794,688

HEAT INSULATION AND CORROSION PROTECTION OF THE INNER VESSEL WALL OF A HEAT EXCHANGER

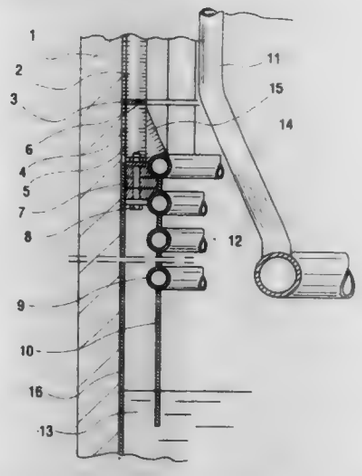
Jürgen Heering, Korschenbroich; Klaus Köhnen, Mülheim; Michael Havlik, Krefeld, and Hermann Knorth, Hünxe, all of Germany, assignors to MAN Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany

Filed Sep. 12, 1996, Ser. No. 713,163

Claims priority, application Germany, Sep. 13, 1995, 195 33 902.9

Int. Cl.[6] F28F 13/00

U.S. Cl. 165—134.1 18 Claims



1. A method for providing heat insulation and corrosion protection of an inner vessel wall of a heat exchanger, comprising the steps of:

providing a substructure disposed adjacent to the inner vessel wall; and

arranging heat insulation and corrosion protection means at the inner vessel wall including one of

introducing wall protection plates provided in segments with circular support rings between them and fastening, said segments to said vessel wall and said substructure by adhesive,

applying a heat-resistant foam material to said substructure for corrosion protection and heat insulation, and

applying a heat-resistant foam material to said substructure for corrosion protection and heat insulation with circular support rings disposed in contact with said heat resistant foam material.

2. A method in accordance with claim 1, wherein a heat insulation protection means is fastened on the inside of the said support rings for heat insulating said support rings.

5,794,689

RADIATOR FOR A MOTOR VEHICLE

Franco Ghiani, Bietigheim-Bissingen, Germany, assignor to BEHR GmbH & Co., Stuttgart, Germany

Filed Mar. 8, 1996, Ser. No. 614,841

Claims priority, application Germany, Mar. 10, 1995, 195 08 570.1

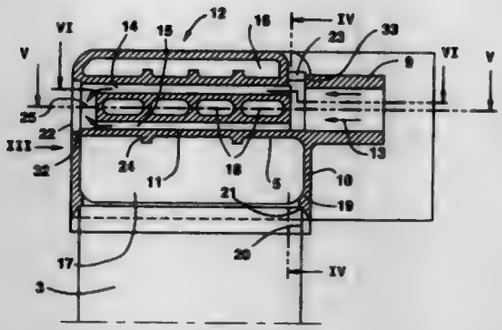
Int. Cl.[6] F28D 7/00

U.S. Cl. 165—140 25 Claims

1. A radiator, particularly for a motor vehicle, comprising:

at least one radiator tank having a chamber with two opposing sides; and

a heat exchanger disposed within the radiator tank, in the radiator-tank chamber, the heat exchanger having a pair of spaced-apart walls forming at least one fluid communication path between the walls, and the spaced-apart walls connecting the chamber sides,



wherein the heat exchanger and the radiator tank each have at least one fluid communication connector extending from one of the chamber sides,

wherein the spaced-apart walls of the heat exchanger are exposed to the radiator-tank chamber.

5,794,690

HEAT EXCHANGER OF AIR CONDITIONER

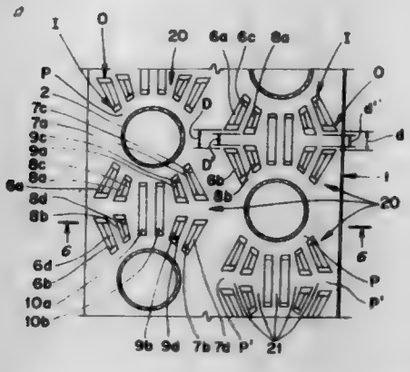
Yeung-Saeng Kim, Inchon, and Baek Youn, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 13, 1996, Ser. No. 600,500

Claims priority, application Rep. of Korea, Feb. 15, 1995, 95-2443

Int. Cl.[6] F28D *1/04*

U.S. Cl. 165—151 **6 Claims**



1. A heat exchanger of an air conditioner comprising generally flat fins arranged in parallel to conduct fluid therebetween in a flow direction, and heat transfer pipes extending through the flat fins and arranged in a zig-zag pattern; each fin including a plurality of slits; the slits arranged in groups, each group disposed between first and second adjacent pipes, the adjacent pipes spaced apart in a transverse direction extending transversely of the flow direction; each group of slits including a first tier of slits, each slit of the first tier arranged generally radially with respect to the first pipe and a second tier of slits each slit of which being arranged generally radially with respect to the second pipe; each slit of the first and second tiers including inner and outer ends, the first end disposed proximate the respective pipe and spaced therefrom by a solid non-slit portion of the fin; the outer ends of the slits in the first tier opposing the outer ends of respective slits of the second tier and spaced therefrom in the transverse direction by a solid non-slit portion of the fin; there being only two tiers of slits in each group of slits; a plurality of the slits of each tier protecting from one side of the fin, and another plurality of the slits of each tier projecting from an opposite side of the fin.

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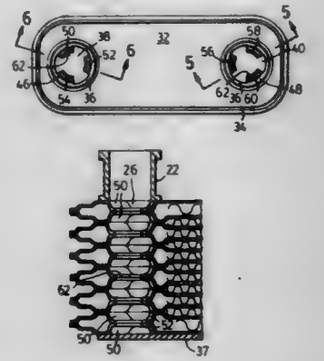
PLATE HEAT EXCHANGER WITH REINFORCED INPUT/OUTPUT MANIFOLDS

Bruce Laurance Evans, Burlington; James Gerrard Sorensen, Georgetown, and Brian Ernest Duke, Carlisle, all of Canada, assignors to Long Manufacturing Ltd., Oakville, Canada

Filed Jan. 6, 1997, Ser. No. 779,313

Int. Cl.[6] F28D *1/03*

U.S. Cl. 165—153 **10 Claims**



1. A heat exchanger comprising:

a plurality of stacked plates arranged in face-to-face pairs, each of said face-to-face pairs including first and second plates, the first plate having a planar central portion, a lower peripheral co-planar edge portion extending below the central portion, and spaced-apart co-planar end bosses extending above the central portion;

the second plate of each face-to-face plate pair having a peripheral edge portion joined to said first plate peripheral edge portion, a central portion spaced from the first plate central portion, and spaced-apart co-planar end bosses extending below the second plate central portion;

the second plate of one plate pair being located back-to-back with a first plate of an adjacent plate pair, respective end bosses being joined together;

the end bosses defining inlet and outlet openings in registration, so that in a stack of back-to-back plate pairs, all inlet openings are in alignment and all outlet openings are in alignment forming respective inlet and outlet manifolds, said openings having inner peripheral edge portions; and

said inner peripheral edge portions at the inlet and outlet openings of each plate pair including opposed, spaced-apart flange segments extending inwardly and being joined together.

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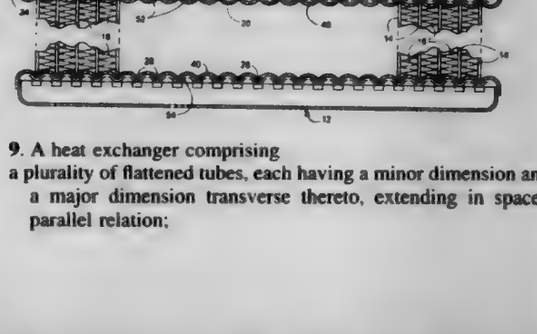
HEADER AND TANK CONSTRUCTION FOR A HEAT EXCHANGER

Mark G. Voss, Brighton, Mich.; Zalman P. Saperstein, Lake Bluff, Ill.; Peter C. Kottal, Racine, and Gregory G. Hughes, Milwaukee, both of Wis., assignors to Modine Manufacturing Co., Racine, Wis.

Filed Oct. 28, 1993, Ser. No. 144,735

Int. Cl.[6] F28F *9/02*

U.S. Cl. 165—175 **14 Claims**



9. A heat exchanger comprising

a plurality of flattened tubes, each having a minor dimension and a major dimension transverse thereto, extending in spaced parallel relation;

fins between and in heat exchange relation with said tubes; and

a pair of spaced parallel elongated headers/tank assemblies between which said tubes extend, at least one of said headers/tank assemblies being a multiple piece header including a header piece and a separate tank piece, said header piece being elongated and having a plurality of slots sized to receive ends of said tubes with the tube major dimensions being generally transverse to the direction of elongation of said header piece, said header piece further including opposed elongated flanges extending along its length, said tank piece being elongated, concave and having opposed elongated flanges extending along its length and nested within the flanges of said header piece and bonded thereto to form a unitary tubular structure, the flanges of the tank piece having alternating crests and valleys, said valleys having a width greater than said tube minor dimension and being aligned with said tube ends;

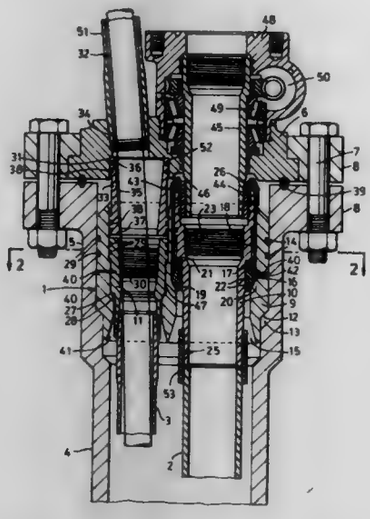
whereby flow to said tubes is not obstructed by said tank flanges because of the valleys therein being aligned with said tube ends to provide reliefs therefor.

5,794,693

DUAL TUBING STRING HANGING APPARATUS

Andrew Wright, Sherwood Park, and Curtis Phillip Ring, Okotoks, both of Canada, assignors to Alberta Basic Industries Ltd., Calgary

Filed May 2, 1996, Ser. No. 641,761
Int. Cl.[6] E21B *33/47*
U.S. Cl. 166—85.5 **27 Claims**



1. An apparatus for hanging a production tubing string and a guide string within a well casing having a wellhead, the apparatus comprising:

(i) a primary hanger shell for supporting said production tubing string and said guide string in said well casing;

(ii) a production mandrel rotatable received within said primary hanger shell, said production mandrel connected to said production tubing string and rotationally hanging said production tubing string within said primary hanger shell such that rotation of said production mandrel causes rotation of the production tubing string; and,

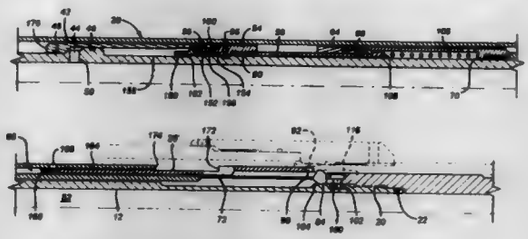
(iii) guide string hanging means connected to and hanging said guide string within said primary hanger shell, said guide string hanging means allowing said guide string to be removed from said well casing independently from the removal of said primary hanger shell, said production mandrel or said production tubing string.

5,794,694

RUNNING TOOL

Sidney K. Smith, Jr., Conroe, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 376,910, Jan. 23, 1995, Pat. No. 5,551,512. This application May 30, 1996, Ser. No. 655,718
Int. Cl.[6] E21B *23/00*
U.S. Cl. 166—212 **32 Claims**



1. A running tool for downhole tubulars, comprising:

a body;

a gripping member on said body, selectively engageable with a groove on the tubular, said gripping member, once engaged to the groove on the tubular, retaining its grip whether the tubular is placed in tension or compression, or under a torque by said body;

a releasing device on said body to defeat the grip of the gripping member;

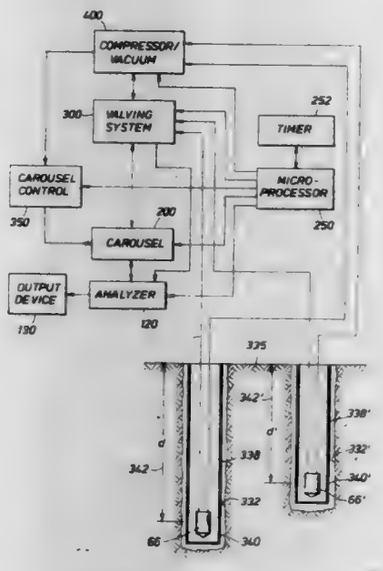
said releasing device further comprising a lockout mechanism to prevent said gripping member from obtaining another engagement of the downhole tubular.

5,794,695

METHOD AND APPARATUS FOR GATHERING AND PREPARING LIQUID SAMPLES FOR ANALYSIS

Roger Peterson, R1 Box 316, Sweeng, Tex. 77480

Filed Aug. 2, 1996, Ser. No. 692,018
Int. Cl.[6] E21B *49/08*
U.S. Cl. 166—264 **21 Claims**



1. A method of inspecting for heavy water in the vicinity of a nuclear facility comprising the steps of:

(a) forming a water well to draw water into the water well from underground water bearing strata in the vicinity of a nuclear facility;

(b) periodically removing with a pump means a measured sample of water from one or more specified depths in said water well, wherein said pump means receives said sample when hydrostatic pressure to which said pump means is exposed exceeds a predetermined value;

(c) sizing the sample so that each sample is sized to a selected size; and

(d) removing the samples to a test site to undergo testing.

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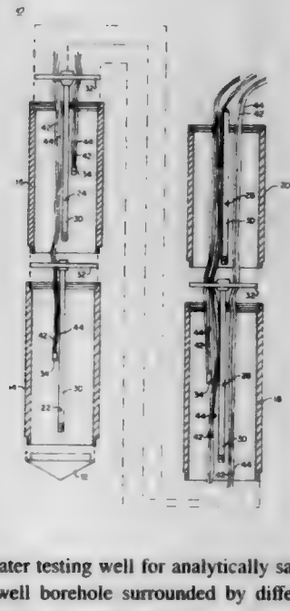
GROUNDWATER TESTING WELL

Thomas Loughborough Gibson, Utica; Paul David Chalmer, Chelsea, and Abdul Shaheed Abdul, Troy, all of Mich., assignors to National Center for Manufacturing Sciences, Ann Arbor, Mich.

Filed Oct. 4, 1996, Ser. No. 720,940

Int. Cl.[6] E21B *49/08*

U.S. Cl. 166—264 **9 Claims**



1. A groundwater testing well for analytically sampling groundwaters from a well borehole surrounded by different subsurface soil zones of interest, and comprising:

a well drive point;

a tubular well casing contacting said well drive point and extending upwardly the length of the well borehole;

a rigid probe assembly stem supported by said well drive point and extending the length of said tubular well casing;

flexible seal elements mounted on said probe assembly;

microporous sampler points positioned within said tubular well casing and intermediate said flexible seal elements to receive groundwaters; and

sample lines connected to said microporous sampler points and extending through openings in said multiple flexible seal elements and to above said tubular well casing, said combined probe assembly stem, flexible seal elements, microporous sampler points, and sample lines being slidably positioned within said tubular well casing with said flexible seal elements being located at approximately the lines of demarcation between the different subsurface soil zones of interest.

5,794,697

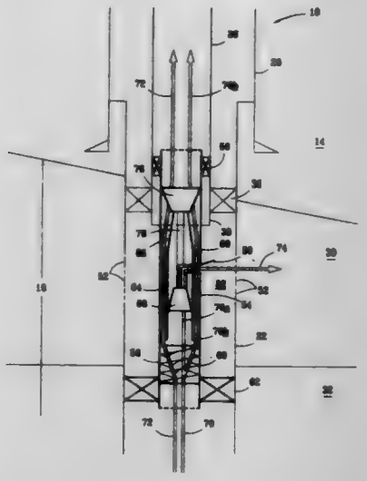
METHOD FOR INCREASING OIL PRODUCTION FROM AN OIL WELL PRODUCING A MIXTURE OF OIL AND GAS

John R. Wolflick, McKinney, Tex.; James L. Cawvey; Jerry L. Brady, both of Anchorage, Ak.; John R. Whitworth, Broken Arrow, Okla., and David D. Hearn, Anchorage, Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 27, 1996, Ser. No. 757,857

Int. Cl.[6] E21B *43/38;43/40*

U.S. Cl. 166—265 **14 Claims**



1. A method for increasing oil production from an oil well producing a mixture of oil and gas through a well bore penetrating an oil-bearing formation containing a gas cap zone and an oil-bearing zone, the method comprising:

a) separating at least a portion of the gas from the mixture of oil and gas in the oil well in an auger separator positioned in a tubular member in fluid communication with the oil-bearing formation and a tubing member extending to a surface to produce a separated gas and an oil-enriched mixture;

b) driving a turbine positioned in the tubular member and connected to a compressor in the tubular member with the oil-enriched mixture and compressing at least a portion of the separated gas in the oil well to a pressure greater than a pressure in the gas cap zone to produce a compressed gas;

c) injecting the compressed gas into the gas cap zone; and

d) recovering at least a major portion of the oil-enriched mixture.

2. A system for increasing oil production from an oil well producing a mixture of oil and gas through a well bore penetrating an oil-bearing formation containing a gas cap zone and an oil-bearing zone, the system comprising:

a) an auger separator positioned in a first tubular member, the first tubular member being in fluid communication with the oil-bearing zone and a surface;

b) a compressor positioned in the first tubular member above the auger separator to receive a separated gas from the auger separator at a compressor inlet;

c) a second tubular member positioned around the compressor and inside the first tubular member to provide a first annular passageway between the first tubular member and the second tubular member to receive an oil-enriched mixture from the auger separator; and

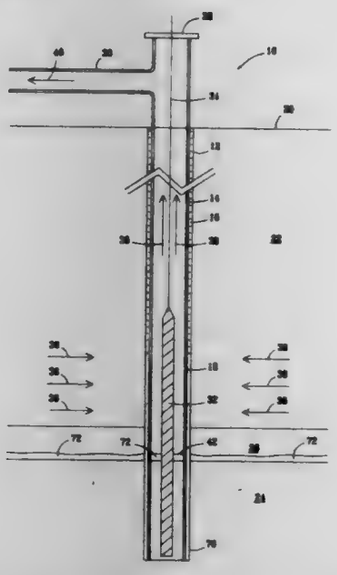
d) a discharge passageway in fluid communication with a discharge from the compressor and an outlet through a wall of the first tubular member.

5,794,698

USE OF OLEOPHILIC WICK FOR REMOVING NON-AQUEOUS LIQUIDS FROM A SUBTERRANEAN FORMATION

Charles T. Roberts, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 9, 1997, Ser. No. 871,794
Int. Cl.[6] E21B *43/00*
U.S. Cl. 166—265 **11 Claims**



1. A method for removing light non-aqueous liquids via a wellbore from at least one of a vadose zone, a capillary fringe zone and a water saturated zone using an oleophilic absorbent wick, the method comprising:

a. positioning a wellbore to extend through at least a portion of the subterranean water-saturated zone;

b. positioning an oleophilic absorbent wick in the wellbore, the wick being positioned with its lower end extending below a liquid level in the wellbore and its upper end extending above the liquid level;

c. reducing the pressure in the wellbore thereby vaporizing light non-aqueous liquids from a portion of the wick extending above the liquid level in the wellbore; and,

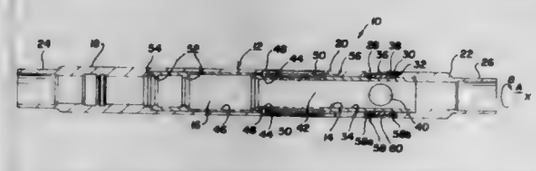
d. withdrawing vaporized light non-aqueous liquids from the wellbore.

5,794,699

METAL-TO-METAL SLIDING SIDE DOOR FOR WELLS

Robert C. Hammett, Garland; Bhanubhai H. Patel, Grand Prairie; William R. Welch, Carrollton, and Ronald K. Churchman, Dallas, all of Tex., assignors to Halliburton Energy Services, Inc., Dallas, Tex.

Filed Nov. 27, 1996, Ser. No. 753,662
Int. Cl.[6] E21B *33/00*
U.S. Cl. 166—332.2 **24 Claims**



1. A sliding side door assembly for use in a well bore having a side bore, the sliding side door assembly comprising:

(a) a housing having a generally tubular shape defining a central axis;

(b) a side port formed in the housing;

(c) a ball seat positioned in the housing adjacent the side port;

(d) a door subassembly operatively engaged with the housing adjacent the side port, the door subassembly further comprising:

(i) a translating sleeve positioned within the housing and adjacent the side port;

(ii) a ball sealing member defining a generally spherical sealing surface that is adapted to engage the ball seat;

(iii) a ball port formed through the ball sealing member; and

(iv) a cooperatively engaged helical track and follower member for translating a driving movement along the central axis through the translating sleeve to a rotational movement of the ball sealing member about the central axis;

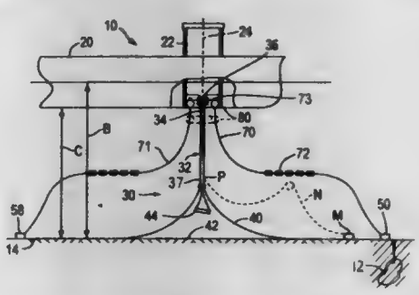
whereby a driving movement acting on the door subassembly in an axial direction along the central axis causes the translating sleeve to rotate the ball sealing member, thereby opening or closing the side port.

5,794,700

CAM FLUID TRANSFER SYSTEM

Jack Pollack, Calabasas Hills, Calif., assignor to Imodco, Inc., Calabasas Hills, Calif.

Filed Jan. 27, 1997, Ser. No. 789,705
Int. Cl.[6] E21B *7/12;33/038*
U.S. Cl. 166—339 **8 Claims**



1. An offshore fluid transfer system which includes a vessel, a turret mounted on said vessel to enable vessel rotation about a largely vertical axis about the turret, and a mooring arrangement that includes a riser having an upper end connected by a universal joint to said turret to permit said riser upper end to pivot about two largely horizontal axes with respect to said turret, said riser having a lower end anchored to the seafloor for transferring fluid between a seafloor base and said turret, comprising:

a fluid coupling mounted on said turret at a location which is spaced from said universal joint;

a hose extending from said fluid coupling to said seafloor base, with said hose being free of connection to said riser.

5,794,701

SUBSEA CONNECTION

Michael Thomas Cunningham, Plantersville; Marcello Rosero, Houston; Jon Buck, Tomball, and Mario R. Lugo, Houston, all of Tex., assignors to Oceaneering International, Inc., Tomball, Tex.

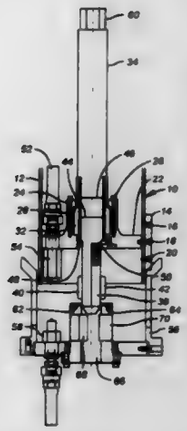
Filed Jun. 12, 1996, Ser. No. 662,809
Int. Cl.[6] E21B *43/013*
U.S. Cl. 166—341 **20 Claims**

1. A subsea connection, comprising:

a female component having at least one first fluid-conducting line extending therefrom;

a male component having at least one second fluid-conducting line and selectively connected to said female component so as to sealingly engage said first and second fluid-conducting lines in flow communication;

said male and female components are configured so they can selectively retain each other by a rotationally operated detent



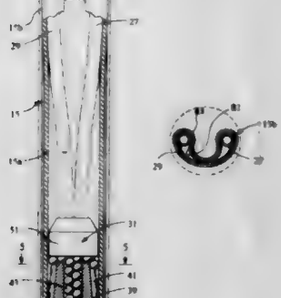
mechanism on said components at a location offset from said first and second fluid-conducting lines.

5,794,702

METHOD FOR CASING A WELLBORE

Philippe C. Nobileau, #4-40 ch du Vinaigrier Villefranche - Corne d'Or, 06300 Nice, France

Filed Aug. 16, 1996, Ser. No. 698,662
Int. Cl.[6] E21B *43/00*
U.S. Cl. 166—380 **38 Claims**



1. A method for encasing a wellbore, comprising:

forming a metal tubular casing which contains at least one string of tubing therein;

forming an intermediate portion of the casing into a generally collapsed configuration and winding the intermediate portion of the casing onto a reel in the generally collapsed configuration;

placing in a lower end portion of the casing an opening tool which has a piston, a forming head, and a pressure chamber below the piston;

deploying the intermediate portion of the casing from the reel and lowering the casing into the well; and

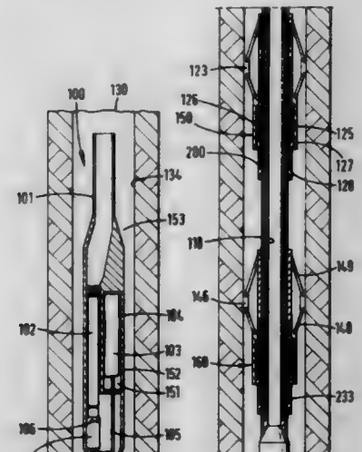
pumping a fluid down the tubing into the pressure chamber, which acts against the piston to push the opening tool upward relative to the casing, causing the forming head to radially open the intermediate portion of the casing from the collapsed configuration into a cylindrical configuration.

5,794,703

WELLBORE TRACTOR AND METHOD OF MOVING AN ITEM THROUGH A WELLBORE

Kenneth R. Newman, Willis; Nelson A. Haver, and David J. Speller, both of Houston, all of Tex., assignors to CTES, L.C., Conroe, Tex.

Filed Jul. 3, 1996, Ser. No. 675,176
Int. Cl.[6] E21B *4/18;23/08*
U.S. Cl. 166—381 **27 Claims**



13. A method for moving an item through a wellbore with a wellbore tractor, the item having a top, a bottom, and a fluid flow bore therethrough from top to bottom, the wellbore extending from earth surface to an underground location, the wellbore tractor system comprising a body connected to the item, first setting means on the body for selectively aid releasably anchoring the system in a wellbore, first movement means having a top, a bottom, and a fluid flow bore therethrough from top to bottom, the first movement means on the body for moving the body and the item, the first movement means having a first power stroke and powered by motive hydraulic fluid flowing therethrough and through the fluid flow bore of the item, and the wellbore tractor system for moving the item through the wellbore at a speed of at least 10 feet per minute, the method comprising

connecting body to the item,

moving the wellbore tractor system and the item into the wellbore,

flowing hydraulic fluid through the fluid flow channel of the item into the fluid flow channel of the first movement means to power the first movement means and thereby move the wellbore tractor systems,

releasably anchoring the wellbore tractor system in the wellbore, and

moving the wellbore tractor system and the item through the wellbore at a speed of at least 10 feet per second.

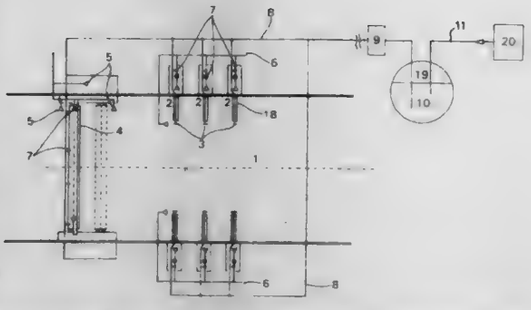
5,794,704

FIRE EXTINGUISHING DEVICE FOR AN ELECTROSTATIC COATING FACILITY

Hermann Brennecke, Darmstadt, and Horst Liere, Eppertshausen, both of Germany, assignors to IRS Industrie Rationalisierungs-Systeme GmbH, Griesheim, Germany

Filed May 8, 1996, Ser. No. 643,441
Claims priority, application Germany, May 12, 1995, 195 17 494.1
Int. Cl.[6] A62C *3/00*
U.S. Cl. 169—54 **10 Claims**

1. A device for extinguishing a fire in an electrostatic coating facility comprising at least one spraying nozzle (3) located in an



electrostatic coating facility, said nozzle being connectable with an extinguishing agent reservoir (**1**) via a conduit (**8**), said extinguishing agent reservoir (**10**) containing desalinated water as the extinguishing agent.

5,794,705

FIRE EXTINGUISHING APPARATUS HAVING A SPRAYING NOZZLE ASSEMBLY

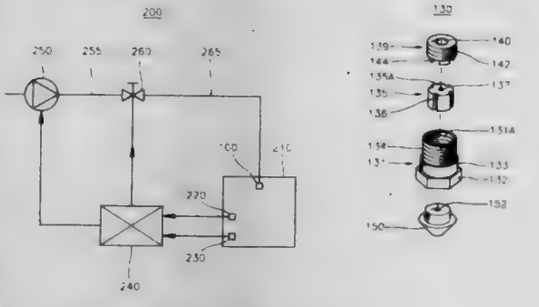
Myung Bae Kim, and Yong Bae Jang, both of Daejeon, Rep. of Korea, assignors to Korea Institute of Machinery and Metals, Daejeon, Rep. of Korea

Continuation-in-part of Ser. No. 626,420, Apr. 2, 1996, abandoned. This application Aug. 27, 1997, Ser. No. 917,731

Claims priority, application Rep. of Korea, Apr. 7, 1995, 95-8033

Int. Cl.[6] **A62C** *37/44*

U.S. Cl. 169—61 **13 Claims**



1. A fire extinguishing apparatus comprising:

a smoke sensor installed in a room for sensing smoke in the room;

a heat sensor installed in the room for sensing temperature in the room;

an electrical control unit connected to both the smoke and heat sensors for generating a control signal when a fire sensing signal is inputted to the electrical control unit from the smoke sensor or the heat sensor;

a remote controlled valve connected to the electrical control unit, the remote controlled valve being opened when the electrical control unit sends the control signal to the remote controlled valve;

a plunger pump for supplying a highly pressurized liquid, the plunger pump being connected to the electrical control unit in order to supply the highly pressurized liquid when the control signal is inputted to the plunger pump from the electrical control unit;

a spraying means for spraying the highly pressurized liquid towards a fire, the spraying means applying a centrifugal force to the highly pressurized liquid passing therethrough, the highly pressurized liquid being transformed into fine particles when sprayed out to the fire;

a first liquid pipe disposed between the plunger pump and the remote controlled valve in order to supply the highly pressurized liquid from the plunger pump to the remote controlled valve; and

a second liquid pipe disposed between the remote controlled valve and the spraying means in order to supply the highly pressurized liquid from the remote controlled valve to the spraying means;

wherein the spraying means including a spraying nozzle assembly, the spraying nozzle assembly comprising a frame having an opening end at an upper portion thereof and a plurality of screw holes at an underside thereof, a cap member connected to the second liquid pipe so as to receive the highly pressurized liquid from the second liquid pipe, and a plurality of nozzle sections which are screw-coupled into the screw holes in order to spray the highly pressurized liquid toward the fire, each screw hole being regularly spaced out apart from each other, the cap member being assembled into the opening end of the frame, each nozzle section including a hollow nozzle body having a center hole and a thread-type hole, a swirler accommodated in the hollow nozzle body in order to apply the centrifugal force to the highly pressurized liquid passing therethrough, a swirler holder which is accommodated in the thread-type hole and contacts with an upper surface of the swirler, and a nozzle tip having an orifice for spraying the pressurized liquid to the fire, the nozzle tip being inserted in a terminal end of the center hole.

5,794,706

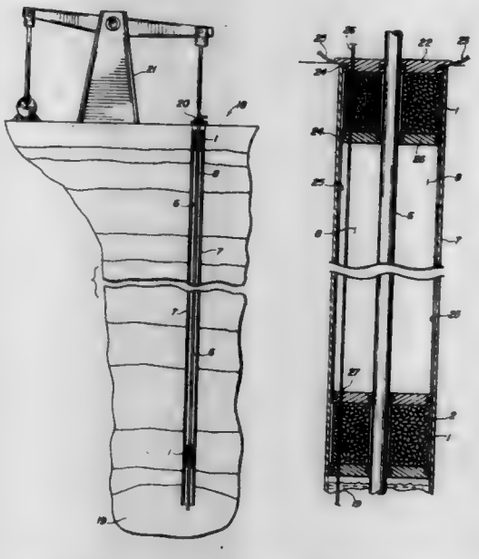
PREVENTION OF CORROSION, FIRE AND EXPLOSION IN OIL WELLS

Shaikh Ghaleb Mohammad Yassin Alhamad, P.O. Box 31590 Riyadh, 11418, Kingdom of Saudi Arabia, Saudi Arabia

Continuation-in-part of Ser. No. 226,954, Apr. 13, 1994, which is a continuation-in-part of Ser. No. 806,901, Dec. 12, 1991, Pat. No. 5,402,852, which is a division of Ser. No. 674,277, Mar. 19, 1991, Pat. No. 5,097,907, which is a division of Ser. No. 417,696, Oct. 5, 1989, Pat. No. 5,001,017, which is a division of Ser. No. 280,317, Dec. 6, 1988, abandoned. This application Jul. 26, 1995, Ser. No. 507,148

Int. Cl.[6] **A62C** *3/06;* **E21B** *35/00*

U.S. Cl. 169—69 **16 Claims**



1. A module for providing protection against corrosion, fire and explosion in a downhole oil well casing having a production pipe concentrically positioned inside said casing and having an annular space between said casing and said pipe, comprising a collar formed from slitted expanded metal net located in said annular space and encircling said pipe.

5,794,707

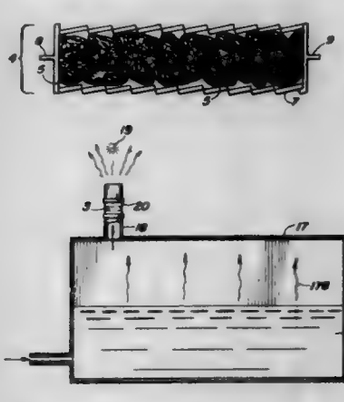
FLAME ARRESTOR

Shaikh Ghaleb Mohammad Yassin Alhamad, P. O. Box 31590, Riyadh, Saudi Arabia, 11418

Continuation of Ser. No. 695,537, Aug. 12, 1996, abandoned, which is a continuation of Ser. No. 226,954, Apr. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 806,901, Dec. 12, 1991, Pat. No. 5,402,852, which is a division of Ser. No. 674,277, Mar. 19, 1991, Pat. No. 5,097,907, which is a division of Ser. No. 417,696, Oct. 5, 1989, Pat. No. 5,001,017, which is a continuation of Ser. No. 280,317, Dec. 6, 1988, abandoned. This application Jan. 27, 1997, Ser. No. 789,509

Int. Cl.[6] A62C *4/02;2/06;3/06*

U.S. Cl. 169—69 4 Claims



1. A flame arrester adapted for placement in a conduit carrying a stream of flammable atmosphere for preventing an external flame at a downstream point in said stream from flashing back in an upstream direction to the source of said flammable atmosphere, said arrester comprising a layer of nested ellipsoids contained between front and back cover screens, said ellipsoids being formed from expanded metal sheets made from magnesium alloy foil having a thickness in the range from 0.01 to 1.0 mm wherein said magnesium alloy foil is coated with an alkaline bichromate.

5,794,708

TRIANGULAR CROSS SECTION TRENCHING APPARATUS FOR EDGING

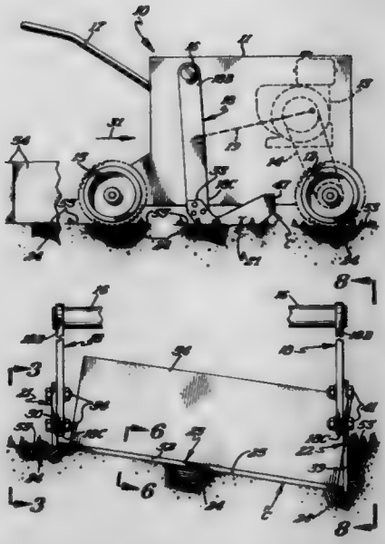
Robert C. Brophy, Raymond, Nebr., assignor to Turfco Manufacturing, Incorporated, Minneapolis, Minn.

Filed Apr. 19, 1996, Ser. No. 634,811

Int. Cl.[6] A01B *45/04*

U.S. Cl. 172—19 11 Claims

1. Mechanism for cutting a trench in turf when moved in a forward direction and adapted for attachment to a cutting machine, comprising a first vertical knife, a second vertical knife substantially parallel to the first vertical knife, each of the first and second vertical knives having a vertical surface, a front sharpened edge, a shank mounting portion and a bottom edge portion, with each of the shank mounting portions having shank means for facilitating the attachment of the respective one of the first and second vertical knives to the cutting machine, with the bottom edge portion of each vertical knife being of a maximum spacing in a vertical downward direction from the respective shank means, and a bottom cutting knife having a first end portion joined to the first vertical knife adjacent to the first knife bottom edge portion, a second end portion joined to the second vertical knife adjacent to the second knife bottom edge portion and a front sharpened edge extending between the first and second vertical knives, with the bottom cutting knife being planar between the first and second end portions, with the maximum spacing of the first vertical knife in a vertical direction being substantially less than the maximum spacing of the second vertical knife in a vertical direction, with the vertical surface of the first vertical knife from the shank mounting portion to the bottom edge portion being generally parallel to the vertical surface of the second vertical knife from the shank mounting portion to the bottom edge portion.



5,794,709

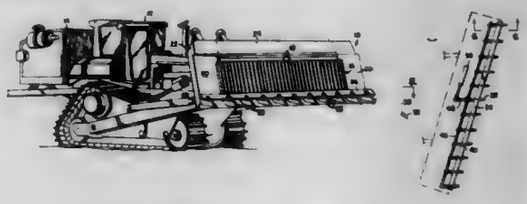
COUNTERMINE BREACHING POWER BLADE

Glen C. Clausen, Rte. 2, Box 12, McPherson, Kans. 67460

Filed Apr. 29, 1996, Ser. No. 639,740

Int. Cl.[6] E02F *5/02;5/22*

U.S. Cl. 172—33 18 Claims



1. A device for clearing a swath within the earth, said device comprising:

a frame for attaching the device to an industrial vehicle;

a rotating track disposed on said frame;

at least one reinforcing panel mounted adjacent an end of said track, said panel protecting said end of said track from binding and damage due to obstacles disposed on the swath being cleared;

a bottom plate disposed beneath said track;

a top protecting shield disposed above said track; and

wherein as said vehicle moves forward, said track and said bottom plate operate to move a layer of earth from in front of said vehicle to a side of said vehicle.

5,794,710

LIGHTWEIGHT ADJUSTABLE TRACK "POWER DOZER"

Grant D. Maxwell, P.O. Box 816, Viking, Alberta, Canada, T0B 4N0

Filed Jun. 14, 1996, Ser. No. 665,221

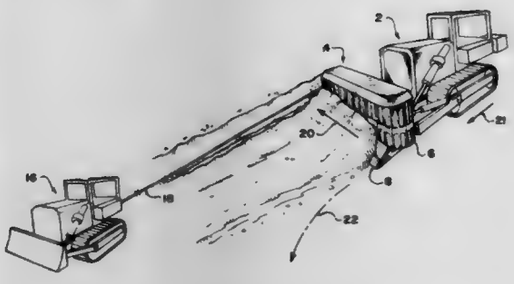
Int. Cl.[6] E02F *5/02;5/22*

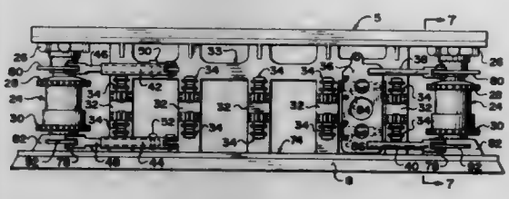
U.S. Cl. 172—33 16 Claims

1. Apparatus for moving earth comprising:

(a) a vehicle:

(b) earth contacting means mounted on said vehicle for moving earth in one direction;





(c) a reversible horizontally travelling endless track earth moving means mounted in association with said earth contacting means for moving earth laterally to said one direction;

(d) a first and second independent direct drive means driving said endless track earth moving means; and

(e) alignment adjusting means located inside the endless track earth moving means and controllable from outside the endless track earth moving means for adjusting alignment of the first independent direct drive means to conform with alignment of the second independent direct drive means.

5,794,711

GROUND FOLLOWING OPENER APPARATUS

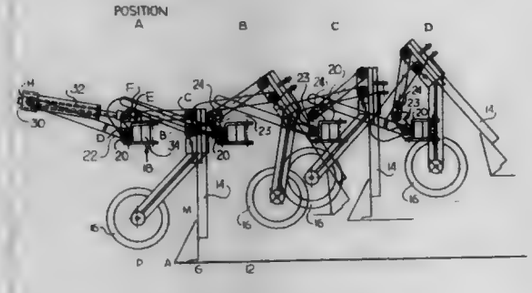
Michael Gerard Slattery, Windsor Gardens, Australia, assignor to Techsearch Incorporated, North Adelaide, Australia

Filed Aug. 2, 1996, Ser. No. 691,984

Claims priority, application Australia, Aug. 4, 1995, PN4603

Int. Cl.[6] A01B *49/06;* **A01C** *5/06*

U.S. Cl. 172—265 **15 Claims**



1. A ground following opener comprising:

a support frame;

a parallelogram means including a plurality of pivotally connected arms defining four corners and pivotally attached to said support frame at a first corner by a first pivot means;

a tyne shank having a free end and supported by said parallelogram means, wherein one of said arms of said parallelogram means supports said tyne shank; an opener means supported at a free end of said tyne shank, wherein the pivotal attachment at the first corner of said parallelogram means allows rotational movement of said parallelogram means independent of said support frame movement such that said opener means passes over the surface of an obstacle in the ground;

a ground following means attached to one arm of said parallelogram means supporting said tyne shank operative to move said parallelogram means as it follows the ground; and

a single bias means pivotally attached at one of its ends to said support frame and also pivotally attached at its other end to one of said arms of said parallelogram means, such that said single bias means urges said opener means into the ground as well as biasing a return of said parallelogram means, tyne shank, ground following means and opener means to the ground following operation after being rotated independent of said frame when said opener means passes over the surface of an obstacle on the ground.

5,794,712

MOBILE FRAME

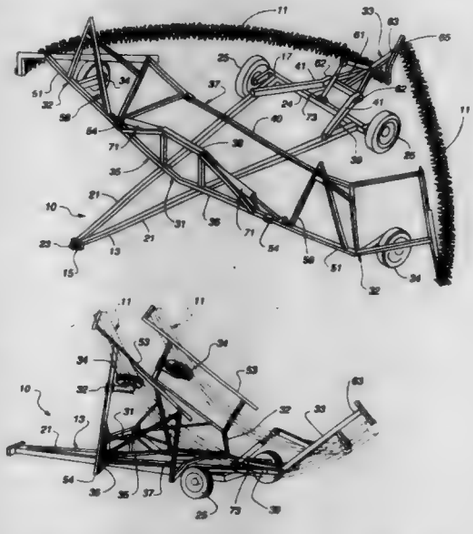
Laurence Colin Phillips, Merredin, Australia, assignor to Innotech Pty Ltd, Merredin, Australia

Filed Jun. 26, 1996, Ser. No. 669,732

Claims priority, application Australia, Jan. 14, 1994, PM3387

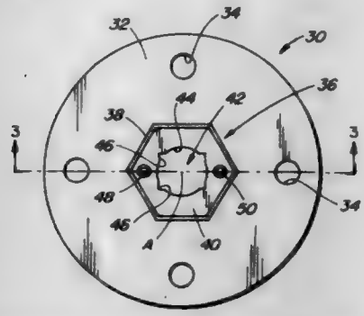
Int. Cl.[6] A01B *73/00;21/04;23/02*

U.S. Cl. 172—459 **18 Claims**



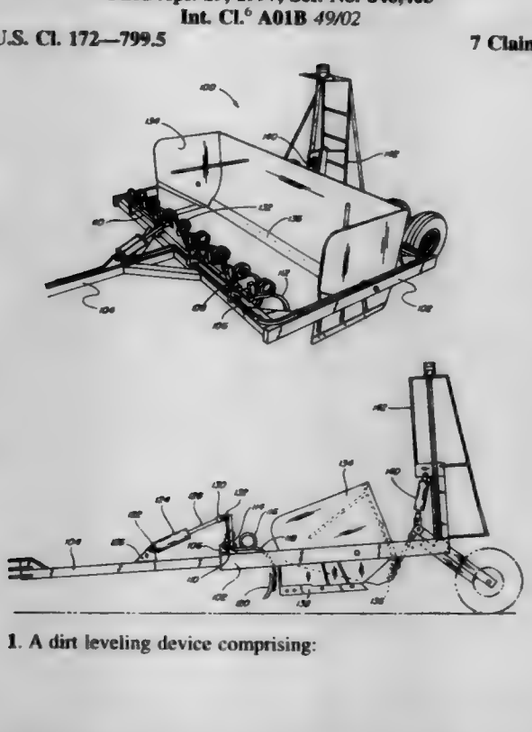
1. A mobile frame for supporting an elongate flexible structure having two ends, the mobile frame having a fore-and-aft axis aligned with the direction of travel thereof and being foldable between a first position in which the elongate flexible structure is supported in a working condition in relation to the ground and a second position in which the elongate flexible structure is supported in a stored condition in relation to the ground, the mobile frame comprising a first frame portion supported for movement over the ground and a second frame portion for supporting one of said ends of the elongate flexible structure, the second frame portion being mounted on the first frame portion for folding movement with respect thereto about a pivot axis between the first position corresponding to the working condition of the elongate flexible structure and the second position corresponding to the stored condition of the elongate flexible structure, the pivot axis being inclined to the fore-and-aft axis of the mobile frame whereby the spacing between the ends of the elongate flexible structure increases at least during some part of movement of the second frame portion from the first position to the second position.

5,794,713
UNIVERSAL HUB ASSEMBLY
Clint Berscheid, Humboldt, Canada, assignor to Ron Lefevre, Saskatoon, Canada
Filed Aug. 15, 1996, Ser. No. 698,426
Int. Cl.[6] A01B *5/00*
U.S. Cl. 172—518 **15 Claims**



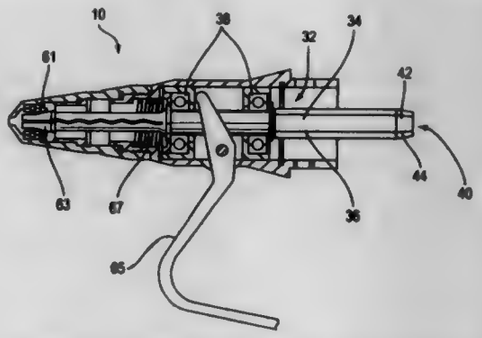
1. A hub for use with a body rotatable about an axis, comprising: a flange portion for abutment against a side wall of the body; a boss portion projecting laterally from one side of said flange portion and receivable within the body, said boss portion having a non-circular peripheral surface defined by a plurality of slightly converging, flat, circumferentially adjacent, side walls which terminate at a flat end face of said boss portion; a bore extending through said flange and boss portions along a hub axis coinciding with the axis of the body, said bore being adapted to receive shafts of different cross-sectional configurations; pin means projecting from said end face on one side of said bore; and recess means extending inwardly of said boss portion from said end face, said pin means and said recess means being diametrically opposed to each other and spaced equidistantly from said hub axis whereby a pin means and recess means of a first hub are respectively engageable with the recess means and pin means of a second hub to align the first hub with the second hub.

5,794,714
FINISH DIRT SCRAPER
Dennis Brown, 12070 Kimber La., Dexter, Mo. 63841
Filed Apr. 29, 1997, Ser. No. 840,405
Int. Cl.[6] A01B *49/02*
U.S. Cl. 172—799.5 **7 Claims**



1. A dirt leveling device comprising:
a frame having at least a front edge, a rear edge, a left edge, and a right edge;
a transverse shaft rotatably attached to the front edge of the frame;
at least one chisel attached to the transverse shaft;
a scoop rotatably attached at an intermediate position along the left and right edges to said frame, said scoop having a lower edge positionable adjacent the ground surface;
a substantially vertical framework attached adjacent the rear edge of said frame;
a hydraulically actuated cylinder having one end attached to said vertical framework and another end to a land leveling blade, the hydraulically actuated cylinder being adapted to control the depth and rotation of said land leveling blade.

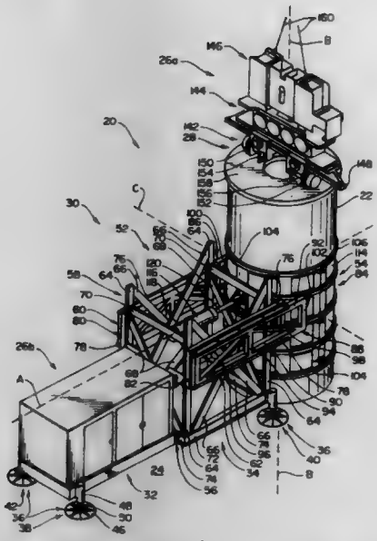
5,794,715
ROTARY TOOL HEAD
Gerould W. Norman, Clearwater, Fla., assignor to Linvatec Corporation, Largo, Fla.
Filed Jul. 8, 1996, Ser. No. 676,759
Int. Cl.[6] A61B *17/56*
U.S. Cl. 173—104 **11 Claims**



1. A rotary drive handpiece and modular tool head, the modular tool head being releasably engageable with the handpiece, a drive mechanism for transmitting torque from the handpiece to the tool head, the drive mechanism comprising a socket and corresponding mating shaft having a longitudinal axis, the shaft having a polygonal cross-sectional shape perpendicular to the longitudinal axis, the socket having a corresponding polygonal shape such that the shaft positively engages the socket, the polygon being multi-sided, the sides of the polygon meeting at a corner between each adjacent pair of sides, one end of the shaft being tapered.

5,794,716
VIBRATORY SYSTEMS FOR DRIVING ELONGATE MEMBERS INTO THE EARTH IN INACCESSIBLE AREAS
John L. White, Kent, Wash., assignor to American Piledriving Equipment, Inc., Kent, Wash.
Filed Jun. 26, 1996, Ser. No. 669,717
Int. Cl.[6] E21B *7/24*
U.S. Cl. 173—189 **21 Claims**

1. A system for driving an elongate member to a desired position in the earth comprising:
vibratory means for generating a vibratory force;
clamp means for fixing at least a portion of the vibratory means to an upper end of the elongate member such that the vibratory means are supported solely by the elongate member;
a structural assembly comprising a support assembly and a bracing assembly; and
a ground engaging assembly for spacing the structural assembly from the earth; wherein
the bracing assembly initially engages a lower end of the elongate member and solely supports the elongate member and the



vibratory means clamped thereto in a desired orientation as the vibratory means applies vibratory forces to the elongate member;

the bracing assembly engages the elongate member such that the vibratory forces move the elongate member into the earth and the earth begins to support the elongate member in the desired orientation;

the bracing assembly is disengaged from the elongate member when the earth is capable of solely supporting the elongate member and the vibratory means; and

after the bracing assembly is disengaged from the elongate member, the vibratory means completes driving the elongate member into the earth to the desired position.

5,794,717

ROCK DRILL PERCUSSION MECHANISM

Roger Robarts Briggs, 23 Leyes Lane, Kenilworth, Warwickshire, CU8 2OD, United Kingdom, and Jarmo Uolevi Leppanen, c/o 11 Junction Road, Industries North, Germiston, 1401, South Africa

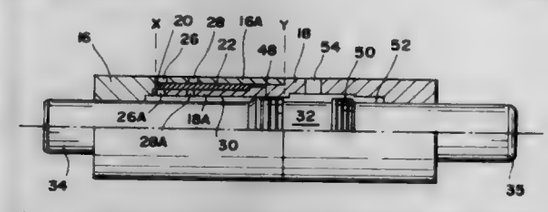
PCT No. PCT/GB94/00837, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO94/23906, PCT Pub. Date Oct. 27, 1994

PCT Filed Apr. 20, 1994, Ser. No. 532,579

Claims priority, application South Africa, Apr. 21, 1993, 93/2780; Apr. 21, 1993, 93/2782

Int. Cl.[6] B25D *9/14*

U.S. Cl. 173—206 **14 Claims**



1. A rock drill with a percussion mechanism which includes a piston, a body in which is formed a chamber, a first cylinder which is located in the chamber, a second cylinder which is engaged with the first cylinder, and a valve, for controlling movement of the piston, which is located in a volume defined by opposing surfaces of the two cylinders, the first cylinder, on an inner side, forming at least part of a sleeve for the piston, and the valve being located on an outer side of the first cylinder and on an inner side of the second cylinder, characterized in that the valve is movable relatively to the first and second cylinders which are stationary relatively to that the body, in that the valve is guided for movement between two limiting positions formed by respective shoulders, and in that stop means is provided to prevent the valve from being removed from the volume.

5,794,718

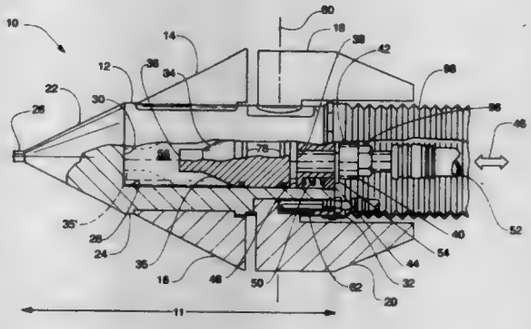
MANEUVERING IMPACT BORING HEAD

W. Thor Zollinger, and Edward W. Reutzel, both of Idaho Falls, Id., assignors to Lockheed Idaho Technologies Company, Idaho Falls, Id.

Filed Mar. 11, 1996, Ser. No. 613,301

Int. Cl.[6] E21B *4/14*

U.S. Cl. 175—19 **22 Claims**



14. An impact boring head, comprising:

a main body having an internal cavity with a front end and a rear end, said main body having a fixed guide vane mounted to said main body and moveable guide vane mounted to said main body aft of said fixed vane;

a striker having a head end and a tail end slidably mounted in the internal cavity of said main body so that said striker can be reciprocated in the internal cavity between a forward position and an aft position; and

a compressible gas contained in the internal cavity between the head end of the striker and the front end of the internal cavity.

5,794,719

GROUND BORING APPARATUS

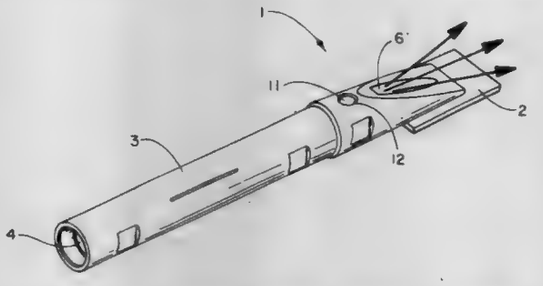
David Edward Holloway, Swansea, United Kingdom, assignor to The Charles Machine Works, Inc., Perry, Okla.

Filed Jan. 15, 1997, Ser. No. 783,649

Claims priority, application United Kingdom, Jan. 17, 1996, 9600892

Int. Cl.[6] E21B *10/38;21/08*

U.S. Cl. 175—21 **20 Claims**



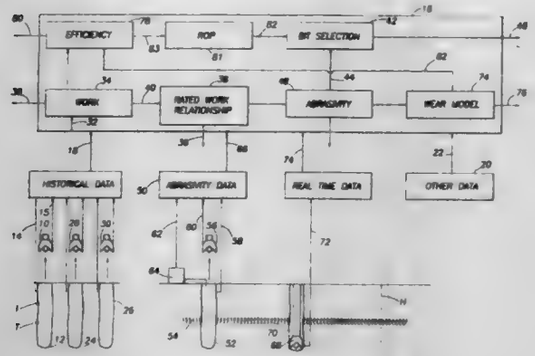
1. Ground boring apparatus which comprises a housing for electrical/electronic apparatus and a coolant flowpath for directing coolant fluid to cool the electrical/electronic apparatus and the housing, said coolant flowpath comprising a relief coolant outlet port and closure means for closing said port, wherein said closure means comprises fusible material arranged to fuse at a predetermined temperature thereby to open said relief outlet port.

5,794,720

METHOD OF ASSAYING DOWNHOLE OCCURRENCES AND CONDITIONS

Lee Morgan Smith, and William A. Goldman, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 25, 1996, Ser. No. 621,411
Int. Cl.[6] E21B *45/00*
U.S. Cl. 175—40 **47 Claims**



1. A method of assaying work of an earth boring bit of a given size and design, comprising the steps of:

drilling a hole with the bit from an initial point to a terminal point through a given formation interval;

recording the distance between the initial and terminal points;

generating a plurality of electrical incremental actual force signals each corresponding to a force of the bit over a respective increment of the distance between the initial and terminal points;

generating a plurality of electrical incremental distance signals, each corresponding to the length of the increment for a respective one of said incremental actual force signals;

processing the incremental actual force signals and the incremental distance signals to produce a value corresponding to the total work done by the bit in drilling from the initial point to the terminal point; and

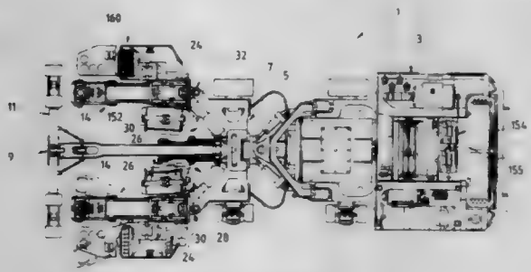
using said value of total work done by the bit in the selection of a bit for drilling a hole in a formation analogous to said given formation interval.

5,794,721

DRILLING APPARATUS

David M. Clonch, Beckley, W. Va.; Jim Gibson, Bristol, and Jeff Looney, Cedar Bluff, both of Va., assignors to Long-Airdox Company, Blacksburg, Va.

Filed Sep. 6, 1996, Ser. No. 708,993
Int. Cl.[6] F21C *11/00*
U.S. Cl. 175—45 **27 Claims**



1. An apparatus for drilling, comprising:

means for drilling a hole;

means for supporting the drilling means;

boom means for connecting the drilling means to the supporting means for movement during a drilling operation; and

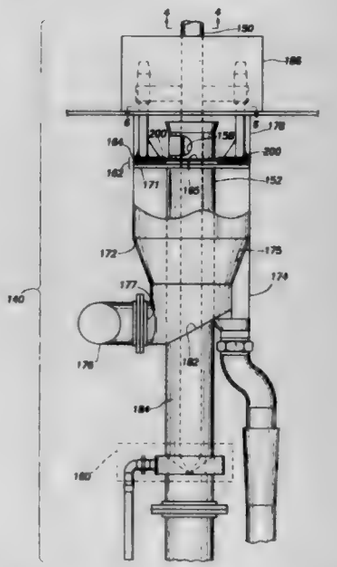
means for controlling the boom means and the drilling means to move the drilling means along a substantially single axis throughout a drilling operation, the controlling means having a reference and means for detecting the position of the boom with respect to the reference.

5,794,722

GUMBO REMOVAL

James E. Armstrong, Crosby, Tex., and Barney J. Hayes, Ventura, Calif., assignors to Sundowner Offshore Services, Inc., Houston, Tex.

Filed Aug. 26, 1996, Ser. No. 703,208
Int. Cl.[6] G21B *21/06*
U.S. Cl. 175—66 **9 Claims**



1. An assembly for use in a system used to drill a well, the system capable of receiving a mixture of drilling fluid and gumbo from downhole of the well, the assembly comprising:

a grating having at least one opening extending through the grating and positioned to intercept the mixture, said at least one opening sized to block the gumbo from passing through said at least one opening and to allow the fluid to pass through said at least one opening;

an arm; and

a motivator connected to move the arm across the grating to remove the gumbo blocked from passing through said at least one opening.

5,794,723

DRILLING RIG

Clifford Caneer, Jr., Cornersville, Tenn., and William V. Dycus, Wytheville, Va., assignors to Boart Longyear Company, Salt Lake City, Utah

Filed Dec. 12, 1995, Ser. No. 567,184
Int. Cl.[6] E21B *15/00*
U.S. Cl. 175—85 **25 Claims**

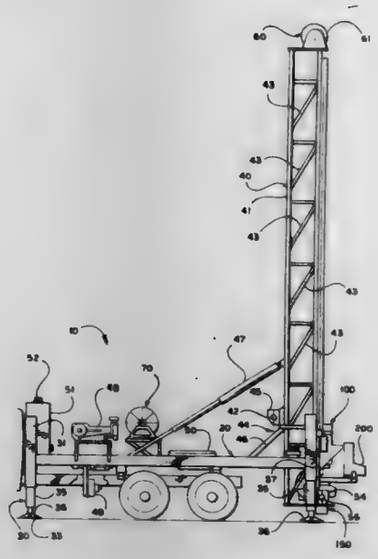
1. An improved drilling rig, comprising:

a mast having an upper end and a lower end;

a drillhead assembly mounted onto said mast for vertical movement therewith;

said drillhead assembly comprising a drive motor assembly and a floating sub, said drive motor assembly being rotated by one or more hydraulic cylinders; and

a break-out tool assembly mounted at said lower end of said mast;



said break-out tool assembly comprising means for grasping and rotating a length of drilling string relative to the floating sub whereby the threaded engagement of the string to the floating sub is loosened.

5,794,724

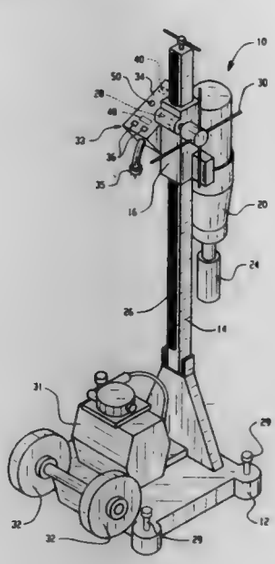
DRILL RIG

Karl H. Moller, Westlake, Ohio, assignor to Diamond Products Joint Venture, Elyria, Ohio

Filed Nov. 6, 1996, Ser. No. 744,515

Int. Cl.[6] E21B *7/02*

U.S. Cl. 175—170 **14 Claims**



1. A drill rig for supporting and driving a core drill bit for drilling openings in concrete and related materials, said drill rig comprising a base, a vertically extending mast, a movable carriage mounted on the mast, an electric powered motor for rotatably driving a core drill bit and a control system for controlling the supply of electric power to said motor, said control system including a motion sensitive device for sensing the unwanted movement of said base and suspending the supply of electrical power to said motor.

5,794,725

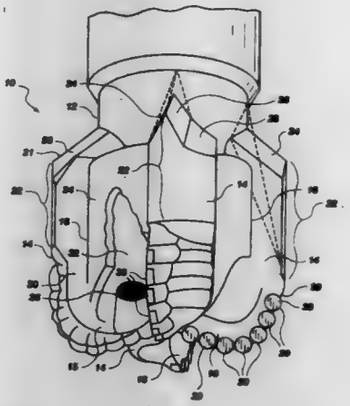
DRILL BITS WITH ENHANCED HYDRAULIC FLOW CHARACTERISTICS

William R. Trujillo, South Salt Lake, Utah; Sean K. Berzas, The Woodlands, Tex.; Craig H. Cooley, Bountiful, and Wayne R. Hansen, Centerville, both of Utah, assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 12, 1996, Ser. No. 631,448

Int. Cl.[6] E21B *10/60*

U.S. Cl. 175—339 **41 Claims**



1. A structure for use in the drilling of a subterranean formation, comprising:

a longitudinally extending body member having a first, lower region and a second, upper region;

a primary flow channel defined on said body member and extending between said first, lower region thereof and said second, upper region thereof; and

a recirculation flow channel defined on said body member and communicating between said second, upper region thereof and said primary flow channel at a location within said first, lower region thereof.

5,794,726

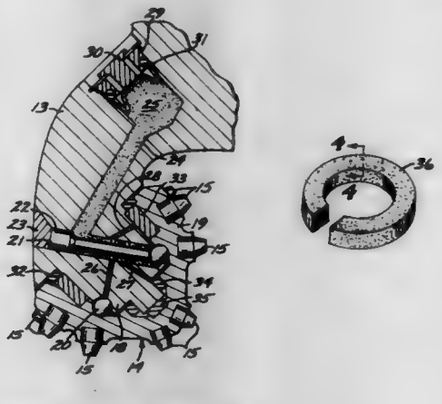
ROTARY ROCK BIT WITH INFILTRATED BEARINGS

Kenneth O. McDowell, DeSoto, Tex., assignor to Dresser Industries, Dallas, Tex.

Filed Apr. 24, 1996, Ser. No. 637,169

Int. Cl.[6] E21B *10/22*

U.S. Cl. 175—371 **18 Claims**



1. A rotary rock bit, comprising:

a rock bit body;

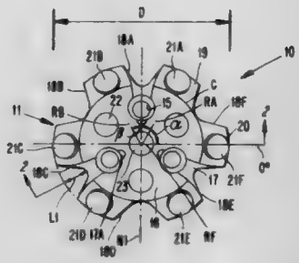
a bearing shaft supported by the rock bit body;

a rotary cutter adapted to be rotatably mounted on the bearing shaft; and

at least one bearing that promotes rotation between the rotary cutter and the bearing shaft, each bearing including a bearing element having

a steel matrix with steel-free volumes distributed therethrough, the steel matrix having a hypoeutectoid composition with more than about 0.40 weight percent carbon, and

an anti-galling alloy residing within the steel-free volumes of the steel matrix, the anti-galling alloy comprising a silver-copper alloy consisting essentially of from about 85 percent to about 95 weight percent silver, balance copper.

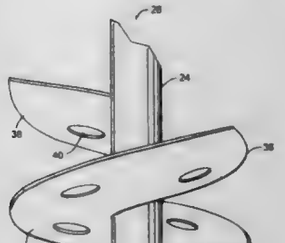


5,794,727

EARTH REMEDIATION AUGER

Richard P. Murray, 608 W. San Marcos Dr., Chandler, Ariz. 85224

Filed Oct. 25, 1996, Ser. No. 740,265
Int. Cl.[6] E21B *10/44*
U.S. Cl. 175—394 **17 Claims**



1. In an earth remediation apparatus configured to bore into and mix tight ground, an earth remediation auger having an axis, said earth remediation auger comprising:

a scraping blade attached to a nose flight and configured to circumferentially scrape soil in a direction substantially perpendicular to said axis; and

a fin cutter attached to said nose flight and configured to score soil in a direction substantially parallel to said axis.

5,794,728

PERCUSSION ROCK DRILL BIT

Göran Palmberg, Sao Paulo, Brazil, assignor to Sandvik AB, Sandviken, Sweden

Filed Dec. 20, 1996, Ser. No. 772,286
Int. Cl.[6] E21B *10/36*
U.S. Cl. 175—400 **11 Claims**

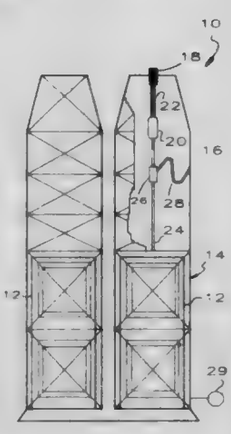
1. A rock drill bit for percussive drilling, comprising a head and a shank connected to the head, the shank having a central boring in which a thread is provided; the thread adapted to cooperate with a corresponding thread in a drill string driven by a top hammer; the boring connected to at least one fluid passage which emerges at least in the vicinity of a front face of the head; the fluid passage connecting to a radially extending first groove formed in the front face; a radially outer end of each first groove connecting to a second groove which extends generally axially rearwardly; wherein at least three of the second grooves are provided and form lands between one another, each land carrying a gauge insert; wherein the gauge inserts are asymmetrically positioned relative to a center axis of the drill bit; and wherein each second groove extends radially inwards at least as far as an imaginary circle which touches radially innermost points of the gauge inserts as viewed in a direction parallel to the axis, wherein a radius line of each gauge insert forms a first angle with a radius line of a first adjacent gauge insert and a second angle with a radius line of a second adjacent gauge insert, the first angle being different from the second angle; each gauge insert having a diameter which is 10–30% of an outer diameter of the rock drill bit, the second groove being substantially V-shaped as viewed in the direction parallel to the axis.

5,794,729

COKER UNIT DRILLING EQUIPMENT

Eldon L. Van Meter, and Lowell L. Pater, both of Corpus Christi, Tex., assignors to Spiralex Corporation, Corpus Christi, Tex.

Filed Jan. 16, 1996, Ser. No. 587,214
Int. Cl.[6] E21B *7/18*
U.S. Cl. 175—424 **15 Claims**



1. In a drilling operation including a drill stem, a drilling assembly on the end of the drill stem and including a downwardly directed pilot nozzle for drilling a vertical pilot hole and an outwardly directed full hole nozzle for enlarging the pilot hole and a pump for delivering high pressure fluid to the nozzle, the improvement comprising means responsive to stopping high pressure fluid flow to the drill stem and then restarting high pressure fluid flow to the drill stem for shifting fluid flow from the pilot nozzle to the full hole nozzle and including

a housing providing a fluid inlet and a fluid outlet having a first passage to the pilot nozzle and a second passage to the full hole nozzle,

a diverter valve body in the housing shiftable between a first position connecting the fluid inlet to the first passage and a second position connecting the fluid inlet to the second passage, and

means mounting the diverter valve body for movement between the first and second positions in response to stopping high

pressure fluid flow to the drill stem and then restarting high pressure fluid flow to the drill stem.

5,794,730

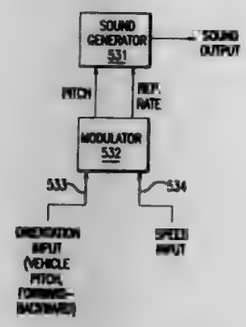
INDICATION SYSTEM FOR VEHICLE

Dean L. Kamen, Bedford, N.H., assignor to DEKA Products Limited Partnership, Manchester, N.H.

Continuation of Ser. No. 474,313, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 384,705, Feb. 3, 1995, which is a continuation of Ser. No. 250,693, May 27, 1994, Pat. No. 5,701,965, which is a continuation-in-part of Ser. No. 21,789, Feb. 24, 1993, abandoned. This application Jun. 23, 1997, Ser. No. 880,574

Int. Cl.[6] B62D *61/12*

U.S. Cl. 180—7.1 **11 Claims**



1. An indication system for a vehicle operated by a human subject, the vehicle having a speed and an orientation, the system comprising:

means for generating a sound output having a pulse sequence, a pitch, and a repetition rate; and

a modulator for modulating one of the pitch and the repetition rate in accordance with speed and the other as a continuous function of orientation.

5,794,731

TENSIONING AND SHOCK-ABSORPTION DEVICE FOR THE IDLER WHEEL OF A TRACKED VEHICLE

Helmut Klaus, Hagen, Germany, assignor to Intertractor AG, Gevelsberg, Germany

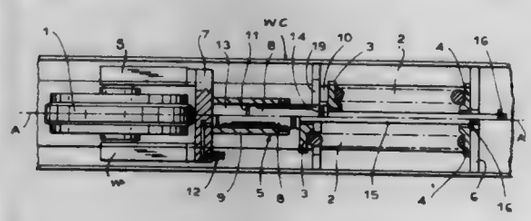
PCT No. PCT/DE94/00524, § 371 Date Jan. 2, 1996, § 102(e) Date Jan. 2, 1996, PCT Pub. No. WO95/02533, PCT Pub. Date Jan. 26, 1995

PCT Filed May 4, 1994, Ser. No. 586,646

Claims priority, application Germany, Jul. 16, 1993, 43 23 912.9; Sep. 11, 1993, 43 30 833.3

Int. Cl.[6] B62D *55/30*

U.S. Cl. 180—9.56 **6 Claims**



1. A shock absorption device mounted to a track-laying vehicle chassis comprising:

a vehicle chassis having a chassis axis;

an idler wheel rotatable about a wheel axis extending horizontally perpendicular to the chassis axis;

a wheel support carrying the idler wheel;

a mounting plate spaced from the wheel support and fixed on the chassis;

spring means extending along the chassis axis for spring-mounting of the idler wheel and including:

a first face plate lying against the mounting plate,

a second face plate spaced axially from the first face plate, and

a helical spring braced between the face plates;

stressing means for compressing the spring and including:

a piston and cylinder unit having a cylinder mounted on the wheel support and a piston reciprocally axially displaceable between a retracted position thereof corresponding to a relaxed state of the spring and an extended position of the piston corresponding to a compressed state of the spring, said piston being braced against said second face plate, and

hydraulic means mounted on the wheel support for actuating the piston, the piston being operative to compress the spring and displace the second face plate toward the first face plate; and

lock means for preventing expansion of the spring upon reaching a desired compression of the spring and removably inserted between the second face plate and the chassis.

5,794,732

APPARATUS AND METHOD FOR STARTING A FUEL CELL VEHICLE

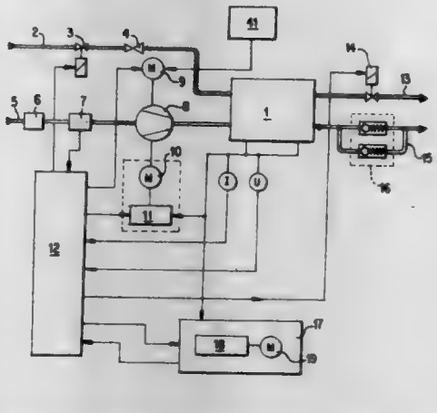
Helmut Lorenz, Unterensingen; Karl-Ernst Noreikat, Esslingen; Thomas Klaiber, Weinstadt; Wolfram Fleck, Erbach; Josef Sonntag, Illertissen; Gerald Hornburg, Elchingen, and Andreas Gaulhofer, Salem, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Continuation of Ser. No. 272,197, Jul. 8, 1994, abandoned. This application Dec. 6, 1996, Ser. No. 761,787

Claims priority, application Germany, Jul. 8, 1993, 43 22 767.8

Int. Cl.[6] H01M *8/18*

U.S. Cl. 180—65.3 **7 Claims**



1. A vehicle comprising an electric drive unit, a fuel cell operatively connected with the drive unit and provided with a feed line in which a compressor is operatively arranged to be driven via an electric motor for compressing oxidant mass flow, the drive unit and the electric motor being operatively configured to be supplied with electrical energy from the fuel cell, a starter motor operatively connected to drive the compressor, and a starter battery configured to supply voltage to the starter motor.

5,794,733

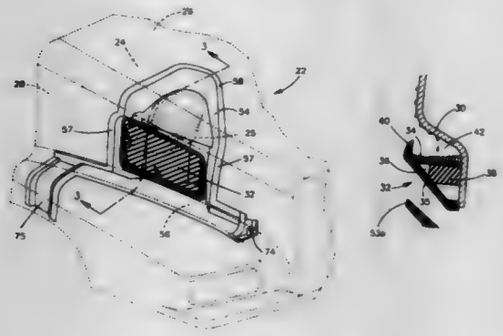
VEHICLE AIR INTAKE AND METHOD

Dennis E. Stosel, Kernersville, and Thomas J. Palenchar, Greensboro, both of N.C., assignors to Volvo GM Heavy Truck Corporation, Greensboro, N.C.

Filed Aug. 16, 1996, Ser. No. 698,853

Int. Cl.[6] B60K *11/00*

U.S. Cl. 180—68.1 20 Claims



1. In a conventional over the highway truck or tractor vehicle having a forwardly located engine and hood, an improved engine air intake system comprising:

a) the hood having a generally vertical side portion defining an air inlet;

b) an apertured grating secured to the hood and positioned in the inlet;

c) a flow diverting wall mounted within the hood and positioned in a generally vertical orientation when the vehicle is in use;

d) the wall being spaced from and generally parallel to the inlet to define a part of a relatively large initial portion of an air flow path from the inlet to the engine and to divert upwardly air flowing inwardly from the inlet;

e) the wall being spaced from an upper part of the hood side portion, the spacing between the wall and the hood upper part being less than the spacing between the wall and the inlet to define a water separating choke in the air flow path above the initial portion, the choke also being an exit from the initial portion whereby to induce water separation from air as the air exits the initial portion; and,

f) structure providing a conduit delineating a portion of the path, the conduit communicating the choke with the engine.

5,794,734

METHOD AND APPARATUS FOR SUPPLYING DRIVING ENERGY TO VEHICLE SUBASSEMBLIES

Ernst-Leo Fahl, Eschweiler, Germany; Albert Haas, Eynatten, Belgium, and Franz Koch, Aachen, Germany, assignors to FEV Motorentechnik GmbH & Co. Kommanditgesellschaft, Aachen, Germany

PCT No. PCT/EP94/02797, § 371 Date Jun. 14, 1995, § 102(e) Date Jun. 14, 1995, PCT Pub. No. WO95/09740, PCT Pub. Date Apr. 13, 1995

PCT Filed Aug. 24, 1994, Ser. No. 446,846

Claims priority, application Germany, Oct. 1, 1993, 43 33 564.0

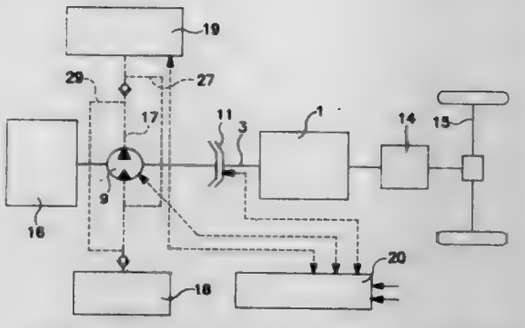
Int. Cl.[6] B60K *25/00*

U.S. Cl. 180—165 17 Claims

1. A method of supplying driving energy required to operate subassemblies of a vehicle, the vehicle having an engine and a braking system including a brake pedal, comprising the following steps:

(a) providing a hydraulic machine, a hydraulic accumulator and a clutch having an engaged state for connecting the engine to the hydraulic machine for driving the hydraulic machine from the engine and a disengaged state for disconnecting the engine from the hydraulic machine;

(b) supplying the subassemblies with the required driving energy at least indirectly from the hydraulic accumulator in a disengaged state of said clutch as long as a predetermined sufficient hydraulic pressure prevails in the hydraulic accumulator;



(c) driving said hydraulic machine by said engine in an engaged state of said clutch as long as a pressure prevailing in the hydraulic accumulator is less than said predetermined sufficient hydraulic pressure for supplying the subassemblies with the required driving energy at least indirectly from the engine and for simultaneously charging the hydraulic accumulator by the hydraulic machine with hydraulic fluid until the predetermined sufficient hydraulic pressure in the hydraulic accumulator is reached; and

(d) for performing steps (b) and (c), controlling the clutch for selectively placing the clutch into the engaged and disengaged state as a function of the prevailing hydraulic pressure in said hydraulic accumulator, the energy requirement of the subassemblies and a braking force represented by the position of the brake pedal.

5,794,735

VEHICLE DECELERATION BY ENGINE CONTROL FOLLOWED BY BRAKE CONTROL

Alfred Sigl, Tokyo, Japan, assignor to Robert Bosch GmbH, Stuttgart, Germany

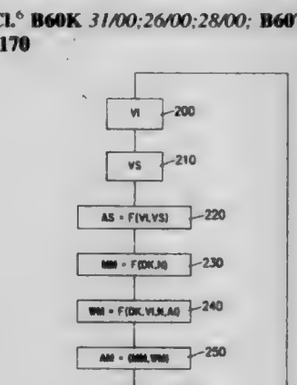
PCT No. PCT/DE94/01264, § 371 Date Jun. 27, 1996, § 102(e) Date Jun. 27, 1996, PCT Pub. No. WO95/13203, PCT Pub. Date May 18, 1995

PCT Filed Oct. 28, 1994, Ser. No. 640,971

Claims priority, application Germany, Nov. 10, 1993, 43 38 399.8

Int. Cl.[6] B60K *31/00;26/00;28/00;* B60T *8/32*

U.S. Cl. 180—170 10 Claims



1. A method for controlling a vehicle, the vehicle including a first control unit for controlling an engine power and a second control unit for controlling a braking power, the first control unit

and the second control unit cooperating to control a travel speed of the vehicle, the method comprising the steps of:

determining an engine torque and a tractive resistance torque;

decreasing the engine power with the first control unit as a function of the tractive resistance torque and the engine torque, in order to decrease the travel speed of the vehicle toward a setpoint speed; and

increasing the braking power with the second control unit if decreasing the engine power does not conform the travel speed to the setpoint speed.

5,794,736

FLUID CONTROL SYSTEM FOR A VEHICLE POWER ASSISTED STEERING MECHANISM

Barry John Millard, Reading, England, assignor to Adwest Engineering Ltd., England

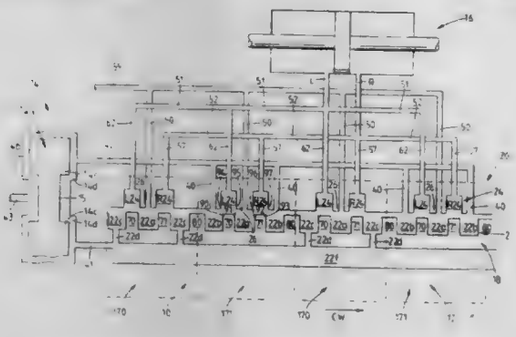
PCT No. PCT/GB94/02113, § 371 Date May 30, 1996, § 102(e) Date May 30, 1996, PCT Pub. No. WO95/09758, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 28, 1994, Ser. No. 624,482

Claims priority, application United Kingdom, Oct. 6, 1993, 9320596

Int. Cl.[6] B62D *5/06*

U.S. Cl. 180—423 **6 Claims**



1. A fluid control system of a vehicle power steering mechanism having a manually driven steering member and a fluid operated member operatively connected to steering means of the vehicle by which steerage of the vehicle is achieved, the control system including a first valve for metering pressurized fluid flow to the fluid operated driving member in response to force required to move the steering means when operating the manually driven steering member, the first valve including at least two independent metering valves each of which are simultaneously operated by the steering member to meter fluid flow selectively to and from the fluid operated driving member at a predefined rate, at least one of the two independent metering valves communicating independently to a drain via a second valve, the second valve being arranged to selectively connect and disconnect said at least one of said two independent metering valves to the drain in response to vehicle speed.

5,794,737

ANTISLIP TRACTION MACHINE

Jianyuan Zhong, and Lei Zhong, both of 303 Room, No.58, XiBei Xin Cun, Wu Xi, 214062, Jiang Su Province, China

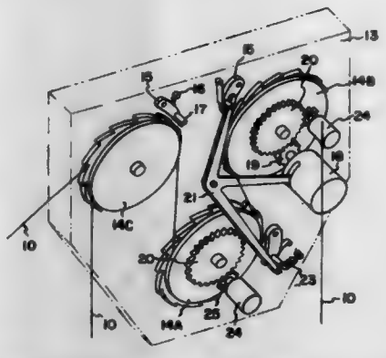
PCT No. PCT/CN94/00064, § 371 Date Feb. 19, 1997, § 102(e) Date Feb. 19, 1997, PCT Pub. No. WO96/06035, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 23, 1994, Ser. No. 793,766

Int. Cl.[6] B66B *11/08*

U.S. Cl. 187—266 **5 Claims**

1. An antislip traction machine for elevator elector comprising driving pulley, driven pulleys, traction wire ropes, speed reducer, electric motor and case, characterized in that said electric motor



(6), speed reducer (7) are mounted at one side of the case (13), the driving pulley (14A) is in the case (13), the driven pulleys (14B, 14C) are adjacent to the driving pulley, on their rim is a ratchet and pawl braking mechanism (15), a centrifugal speed limiter (18) and ratchet and pawl braking mechanism (15) a transmission lever (21) is used for connection, the traction wire rope (10) with its two ends connecting respectively a cage (12) and a counterweight (11) winds round said driving pulley and driven pulleys, said electric motor (6) on the case (13) rotates the driving pulley (14A) via the speed reducer (7), the traction wire ropes (10) obtain, in the rope grooves on the driving pulley (14A),frictional force for driving the cage (12), when the rotation speed of driven pulley exceed a specified value, the centrifugal speed limiter actuates through the transmission lever (21) to make the pawl (15) and ratchet engage to brake, thereby to increase the total frictional force of the traction wire rope (10) to suspend and to stop the cage (12).

5,794,738

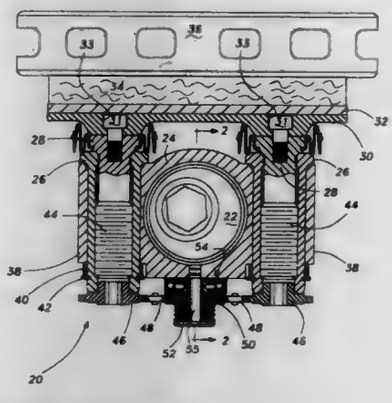
DISC BRAKE WITH GEAR DRIVEN ADJUSTING PISTON

Roberto Forni; Fabio Santinato, and Giovanni Sacchi, all of Novara, Italy, assignors to Rockwell Heavy Vehicle Systems, Inc.

Filed Nov. 12, 1996, Ser. No. 747,141

Int. Cl.[6] F16D *55/16;65/56*

U.S. Cl. 188—71.9 **16 Claims**



1. A disc brake system comprising:

an eccentric to be connected to an actuating source;

an actuating member to be reciprocated by said eccentric when said eccentric is rotated;

a load plate to be attached to a friction material, said load plate being reciprocated upon reciprocation of said actuating member;

at least one adjusting piston for adjusting the relative positions of said actuating member and said load plate to move said load plate toward a wheel component;

a transmission for selectively transmitting rotation of said eccentric to move said adjustment piston, said transmission includ-

ing a gear toothed member selectively engaging gear teeth on an outer housing, rotation of said outer housing causing movement of said adjusting piston; and

said gear toothed member being a circumferential section of a gear including a plurality of gear teeth, there being a plurality of gear teeth on said outer housing engaged by said gear teeth on said gear toothed member, and said gear toothed member selectively rotating with said eccentric to in turn selectively rotate said outer housing through said plurality of said engaging gear teeth.

5,794,739

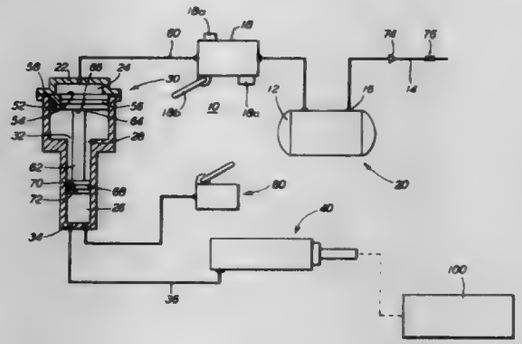
PNEUMATIC PRESSURE OPERATED PARKING BRAKE FOR A RAILWAY VEHICLE BRAKE SYSTEM

Michael E. Ring, Crown Point, Ind.; Scott L. Natschke, Kankakee, Ill., and Michael G. Hawryszkow, Munster, Ind., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jun. 14, 1996, Ser. No. 664,391

Int. Cl.[6] F16D *65/56*

U.S. Cl. 188—153 R **14 Claims**



1. A pneumatic pressure actuated and hydraulically applied railway type freight car parking brake system, said parking brake system comprising:

(a) a source of pneumatic pressure disposed on such freight car for supplying a predetermined volume of air pressure which is at least sufficient to actuate said parking brake system into a brake application position;

(b) a control valve means disposed in fluid communication with said source of said pneumatic pressure and engageable on such freight car in a position to receive said air pressure from said source of said pneumatic pressure for initiating controlled communication of said air pressure in said parking brake system;

(c) a pneumatic pressure to hydraulic pressure intensifier means disposed in fluid communication with said source of said pneumatic pressure and engageable on such freight car in a position for receiving said air pressure from said control valve means, said air pressure being communicated to said intensifier means closely adjacent a closed first end of a first chamber disposed therein;

(d) a second chamber disposed in said intensifier means and connected at an open first end thereof with a radially opposed and partially open second end of said first chamber;

(e) a predetermined volume of hydraulic fluid disposed in said second chamber adjacent a closed second end thereof;

(f) a force transmitting cylinder means disposed on a truck portion of such freight car and connected in fluid communication with said second chamber of said intensifier means;

(g) a piston member disposed for reciprocal movement within said first chamber of said intensifier means, said piston member being linearly displaced when a first surface of said piston member, disposed facing said closed first end of said first chamber, is acted on by said air pressure being communicated to said intensifier means during an application of said parking brake;

(h) a first sealing means disposed around a peripheral portion of said piston member for containing said air pressure being communicated to said intensifier means during said application of said parking brake within that portion of said first chamber located between said first surface of said piston member and said closed first end of said first chamber;

(i) a stem member connected at a first end thereof to a radially opposed second surface of said piston member, said stem member disposed for reciprocal movement within both said first chamber and said second chamber, said stem member being linearly displaced within both said first chamber and said second chamber by movement of said piston member thereby driving said hydraulic fluid in said second chamber to said force transmitting means;

(j) a second sealing means disposed around a peripheral portion of said stem member closely adjacent an axially opposed second end thereof for retaining said hydraulic fluid disposed in said second chamber within that portion of said second chamber located between said second end of said stem member and said closed second end of said second chamber thereby enabling communication of said hydraulic fluid to said force transmitting cylinder means by said linear displacement of said stem member whereby said force transmitting cylinder means exerts a predetermined force on at least one brake beam carrying a pair of brake shoes thereon which are brought into and maintained in frictional engagement with a portion of a respective surface of a tread portion of a pair of wheels during said application of said parking brake;

(k) a pump type auxiliary brake application means connected to said second chamber in said intensifier means closely adjacent said closed second end thereof for enabling said force transmitting cylinder means to so apply said parking brake even in absence of air pressure in said source of pneumatic pressure; and

(j) a simplified locking means in said force transmitting cylinder means, adjustable to accommodate slack in said parking brake system, for holding said parking brake in said application position in event of hydraulic pressure bleeding off.

5,794,740

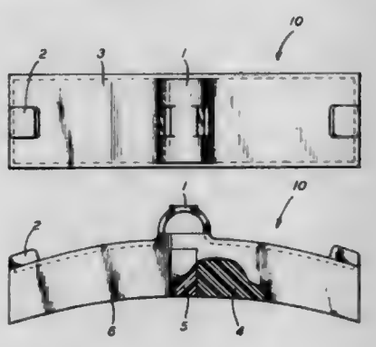
DUAL TYPE COMPOSITION BRAKE BLOCK SPECIFICALLY DESIGNED FOR USE IN PREDETERMINED TYPE BRAKE SYSTEMS

Raj Velayutha, and John R. Travers, both of New South Wales, Australia, assignors to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Aug. 23, 1996, Ser. No. 709,197

Int. Cl.[6] F16D *69/00*

U.S. Cl. 188—251 A **18 Claims**



1. A dual type composition brake block member specifically designed for simultaneously reducing unwanted noise while maintaining required stopping distances in adverse wet conditions in railway vehicle brake systems, said brake block member comprising:

(a) a brake surface having a predetermined configuration and a predetermined surface area;

(b) a first low friction type composition material having a first predetermined friction range, said first low friction type composition material extending over a first predetermined portion of said predetermined surface area of said brake surface, said first predetermined portion extending essentially a full width of said predetermined surface area of said brake surface;

(c) a second high friction type composition material having a second predetermined friction range, said second high friction type composition material extending over a second predetermined portion of said predetermined surface area of said brake surface, said second predetermined portion extending essentially a full width of said predetermined surface area of said brake surface; and

(d) one of said first low friction type composition material and said second high friction type composition material being formed as an at least one discrete insert type member and an opposite one of said first low friction type composition material and said second high friction type composition material being formed around said one of said first low friction type composition material and said second high friction type composition material during production of said brake block member, said one of said first low friction type composition material and said second high friction type composition material being formed as said at least one discrete insert member extends into said opposite one of said first low friction type composition material and said second high friction type composition material to a predetermined depth of said brake block member.

5,794,741

INSTALLATION RING FOR MOUNTING PRESSURIZED FLUID BUFFER DEVICE AND FABRICATION METHOD THEREFOR

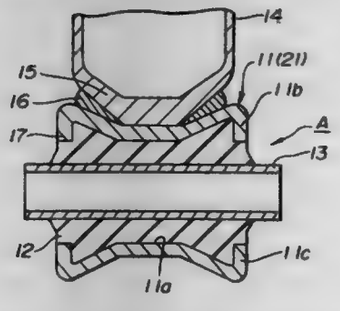
Kimihisa Kasajima, and Seiji Iwasawa, both of Atsugi, Japan, assignors to Nissan Motor Co., Ltd., and Keiaisha Seisakuso Co., Ltd., both of Kanagawa, Japan

Filed Nov. 1, 1995, Ser. No. 551,731

Claims priority, application Japan, Nov. 1, 1994, 6-292267

Int. Cl.[6] R60G *13/00*

U.S. Cl. 188—321.11 **5 Claims**



1. An installation ring for mounting a pressurized fluid buffer device, said installation ring to be retained on an eye bush affixed axially on a mounting shaft, comprising:

a base material having a uniform thickness and being bent along a longitudinal axis of said base material to into an annular shape having a circumferential dimension predetermined for mounting on said eye bush;

a central annular portion of said installation ring being indented such that said central annular portion is smaller in circumference than adjacent portions of an inner circumferential surface of said installation ring; and

inwardly extending annular edge portions defining circumferences of first and second axial end openings of said installation ring, said indented central annular portion and said inwardly extending annular edge portions defining an annular concavity therebetween such that said inner circumference of said installation ring is contoured for securely fitting around said eye bush in an installed position;

wherein a seam which divide an annular continuity of said based material as a result of annular bending of said base material is utilized as an installation position for mounting said buffer device such that an attachment mechanism attaching said buffer device to said installation ring further effects attachment of facing sides of said seam.

5,794,742

VIBRATION DAMPER WITH A KNUCKLE EYE FOR A MOTOR VEHICLE AND A KNUCKLE EYE FOR A VIBRATION DAMPER FOR A MOTOR VEHICLE

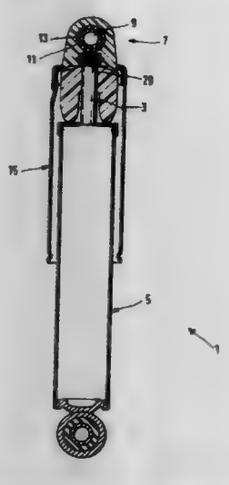
Sabine Lack, Schweinfurt, and Günther Braun, Geldersheim, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Oct. 25, 1996, Ser. No. 736,078

Claims priority, application Germany, Oct. 26, 1995, 195 39 911.0

Int. Cl.[6] F16B *45/00;* **F16F** *9/54*

U.S. Cl. 188—321.11 **17 Claims**



1. A vibration damper assembly for a motor vehicle, comprising:

a vibration damper;

said vibration damper comprising:

a sealed cylinder defining a chamber therein, said cylinder containing a damping fluid;

a piston rod sealingly projecting into said cylinder and being axially displaceable with respect to said cylinder;

a piston being attached to said piston rod, said piston being slidably disposed within said cylinder to sealingly divide said chamber into first and second chambers;

an arrangement for permitting flow of damping fluid between said first and second chambers;

a central longitudinal axis defined through said cylinder, the central longitudinal axis defining a longitudinal direction of said cylinder;

said vibration damper assembly further comprising:

a first end and a second end disposed substantially opposite one another along the longitudinal axis of said vibration damper;

said first end comprising means for connecting to a first element, which first element is external to said vibration damper assembly;

said second end comprising means for connecting to a second element, which second element is external to said vibration damper assembly;

said means for connecting to a first element comprising a knuckle eye;

said knuckle eye comprising:

a first portion comprising a plastic material;

a second portion comprising a plastic material;

at least one receiving opening for receiving, making contact with, and holding a first external element;

said at least one receiving opening being disposed in said first portion;

a sleeve made of metal, said metal sleeve being dimensioned and disposed to reinforce said knuckle eye;

said metal sleeve being disposed in said second portion of said knuckle eye;

a substantially ring-shaped structure being disposed within said first portion to reinforce said knuckle eye;

said substantially ring-shaped structure being disposed about said at least one receiving opening;

said metal sleeve comprising means for connecting said knuckle eye to said vibration damper;

said metal sleeve comprising means for interlockingly connecting with said second portion of said knuckle eye; and

said substantially ring-shaped structure comprising a portion being disposed to surround a portion of said metal sleeve adjacent to said means for interlockingly connecting said metal sleeve with said second portion.

5,794,743

SHOCK ABSORBER OR VIBRATION DAMPER

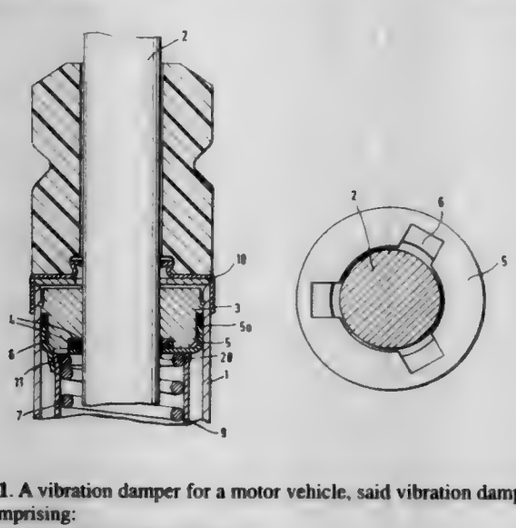
Robert Pradel, Heidenfeld, and Manfred Angles, Oerlenbach, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Apr. 5, 1996, Ser. No. 628,863

Claims priority, application Germany, Apr. 8, 1995, 195 13 [illegible]

Int. Cl.[6] F16F *9/36*

U.S. Cl. 188—322.16 **20 Claims**



1. A vibration damper for a motor vehicle, said vibration damper comprising:

at least one cylindrical body;

said at least one cylindrical body comprising a work cylinder;

a piston being movable within said work cylinder, said piston dividing said work cylinder into two working chambers;

a piston rod connected to said piston and being movable with said piston;

said piston rod having a longitudinal axis disposed in an axial direction along said piston rod;

an arrangement for connecting said work cylinder to a first portion of a motor vehicle;

an arrangement for connecting said piston rod to a second portion of a motor vehicle;

a guide bushing for guiding said piston rod;

a gasket for sealing around said piston rod;

a securing element;

said securing element comprising a ring portion;

said ring portion comprising an arrangement for securing said guide bushing adjacent to said piston rod;

said guide bushing being disposed on said ring portion;

said guide bushing being disposed adjacent to said piston rod;

said ring portion comprising an arrangement for securing said gasket adjacent to said piston rod;

said gasket being disposed on said ring portion;

said gasket being disposed adjacent to said piston rod;

said securing element comprising a plurality of projections;

said plurality of projections extending from said ring portion;

said plurality of projections extending substantially in the axial direction of the longitudinal axis of said piston rod; and

said plurality of projections being configured and disposed to extend from said ring portion towards said piston to engage the outer circumference of said at least one cylindrical body to secure said at least one cylindrical body to said guide bushing.

5,794,744

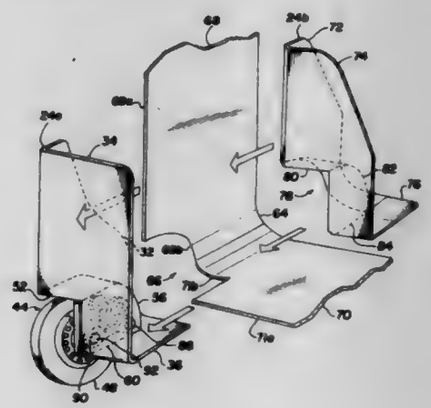
WHEELED LUGGAGE ASSEMBLY

Shin-Fu (Eiken) Lin, Taipei, Taiwan, assignor to Paragon Luggage, Inc., Tustin, Calif.

Filed Nov. 7, 1996, Ser. No. 744,466

Int. Cl.[6] A45C *5/14;13/04*

U.S. Cl. 190—18 A **20 Claims**



1. A wheel assembly for luggage which includes a frame having first and second sidewalls, each having exterior, interior and edge side surfaces with a notch formed in said frame which extends from said edge side surfaces of said first and second sidewalls to interior side surfaces thereof, comprising:

a first subassembly mounted to said exterior side surfaces of said first and second sidewalls;

a second subassembly mounted to said interior side surfaces of said first and second sidewalls;

said first subassembly including first and second flanges and a central wheel well having interior and exterior side surfaces with an aperture extending between the interior and exterior surfaces;

said second subassembly including a central portion and first and second flanges;

said first subassembly mounted to said first and second sidewalls such that said wheel well is received in said notch, said first flange engages said exterior side surface of said first sidewall and said second flange engages said exterior side surface of said second sidewall;

said second subassembly mounted to said first and second sidewalls such that said first flange engages said interior side surface of said first sidewall, said second flange engages said interior side surface of said second sidewall and a space is defined between said wheel well and said central portion;

a wheel mount positioned in said space between said wheel well and said central portion, said wheel mount attached to said interior side surface of said wheel well and including a shaft which extends through said aperture; and

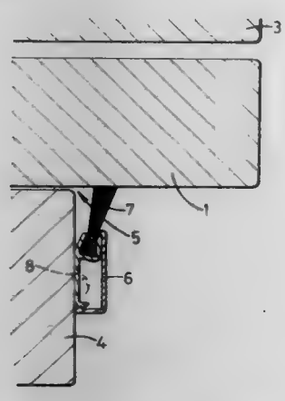
a wheel positioned in said wheel well and mounted on said shaft of said wheel mount.

5,794,745

FINER GUARD FOR A DOOR OF AN ELEVATOR

Nicholas Gore, Hanam, United Kingdom, assignor to Kleeneze Sealtech Limited, Bristol, United Kingdom

Filed Mar. 15, 1996, Ser. No. 616,193
Claims priority, application United Kingdom, Mar. 16, 1995, 95 05 275.9
Int. Cl.[6] B66B *13/06*
U.S. Cl. 187—333 4 Claims



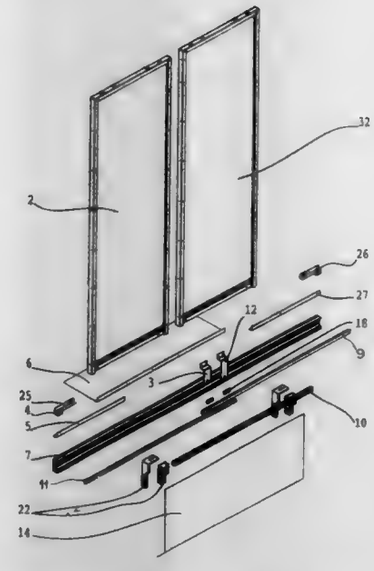
1. In an elevator having an architrave on at least one side of an opening and doors which slide sideways in a vertical plane relative to said architrave, a finger guard comprising a brush carrier, attached to said architrave adjacent at least one of the elevator doors and a brush carried by said carrier and disposed to be directed outward from said architrave and into close adjacency with said at least one elevator door so as to be angled across a corner region between the architrave and the at least one elevator door whereby to provide a guard against fingers being trapped between the at least one door and the architrave in said corner region, an outer end of the brush being cut at an oblique angle to allow the outer end to lie flush with the at least one elevator door.

5,794,746

DOOR SILL ARRANGEMENT IN AN ELEVATOR CAR

Ari Ketonen, Hyvinkää, and Harri Anttila, Jokela, both of Finland, assignors to Kone Oy, Helsinki, Finland

Filed May 28, 1997, Ser. No. 864,674
Claims priority, application Finland, May 28, 1996, 962231
Int. Cl.[6] B66B *13/06*
U.S. Cl. 187—333 13 Claims



9. An elevator landing arrangement comprising:

a profiled sill element provided with an upper groove and a lower groove;

a first elevator door panel and a second elevator door panel;

a first sliding guide attached to said first elevator door panel, said first sliding guide having a first portion located adjacent said upper groove;

a second sliding guide attached to said second elevator door panel, said second sliding guide having a second portion thereof located adjacent said lower groove;

an upper closing element attached to said first portion of said first sliding guide, said upper closing element being located in said upper groove; and

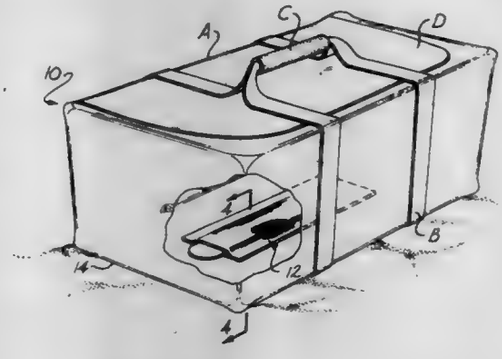
a lower closing element attached to said second portion of said second sliding guide, said lower closing element being located in said lower groove, wherein said first elevator door panel is moveable and said second elevator door panel is moveable, said first elevator door panel being moveable in a first direction opposite to a second direction of movement of said second elevator door panel, whereby when said first and second elevator door panels are moved, said upper and lower closing elements cover said upper and lower grooves in substantially all of an area of the profiled sill located between the first and second elevator door panels.

5,794,747

BAGGAGE SKID PAD WITH ACTUATABLE DRAIN

Frank D. Bryant, Knoxville, Tenn., assignor to Akona Adventure Gear, Knoxville, Tenn.

Filed Dec. 14, 1995, Ser. No. 572,421
Int. Cl.[6] A45C *3/10;5/02;13/00*
U.S. Cl. 190—18 R 9 Claims



7. A flexible bag, comprising:

the bag defining a storage chamber having a base portion, said base portion defining a drain opening;

a screen member carried in said storage chamber and covering said drain opening, said screen member defining a compartment adjacent said base portion of the storage chamber;

a wear-resistant pad connected to said base portion outside of said storage chamber, said pad having a bearing surface for supporting the flexible bag and filter openings recessed inwardly from said bearing surface covering said drain opening for preventing entry of foreign debris into said storage chamber through said drain opening, said filter being in fluid communication with both said compartment and the environment;

said compartment being in fluid communication with said drain opening, and said compartment defining a first side and a second side opposite said first side; and said compartment defining a discharge opening in the storage chamber opposite the drain opening; and

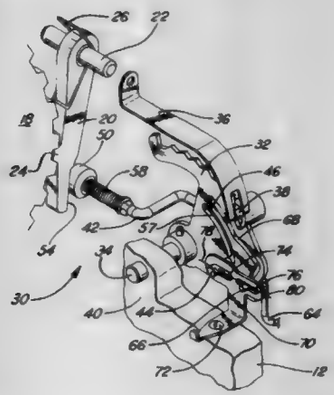
a valve member slidingly carried in said compartment, said valve member being moveable between a first position for substantially blocking fluid communication between said discharge opening and said drain opening and a second position for allowing fluid communication between said discharge opening and said drain opening to thereby allow fluid to drain from said storage chamber to the environment.

5,794,748

PARK LOCK MECHANISM FOR AN AUTOMATIC TRANSMISSION

Bradley Ronald Heuver, Garden City, and Dale Eltinge Martin, Novi, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Oct. 15, 1996, Ser. No. 731,634
Int. Cl.[6] B60T *1/06*; B60K *41/26*
U.S. Cl. 192—4 A **8 Claims**



1. A park lock mechanism for an automatic transmission, with the transmission having a housing, an output shaft rotatably disposed partially within the housing, and a park pawl mechanism operatively connectable with and selectively actuatable by said park lock mechanism; with said park lock mechanism selectively permitting or preventing rotation of the output shaft, said park lock mechanism comprising:

a park apply rod adapted to be longitudinally movable disposed within the housing for silectively actuating the park pawl mechanism, with said park apply rod having first and second ends;

a plate member adapted to be rotatably mounted within the housing and operatively connectable with said park apply rod, said plate member having a cam portion and a lost motion portion, each selectively engageable with said park apply rod upon rotation of said plate member for permitting or preventing rotation of the output shaft, respectively, such that, as said plate member moves upon rotation of said plate member, said cam portion is operative to drive said park apply rod longitudinally and upon further rotation of said plate member, said lost motion portion is operative to prevent said plate member from driving said park apply rod;

a reaction bracket member adapted to be fixed to the housing, with said bracket having a slot formed therein, with said first end of said park apply rod being disposed and moveable within said slot, thereby constraining said park apply rod to longitudinal movement; and,

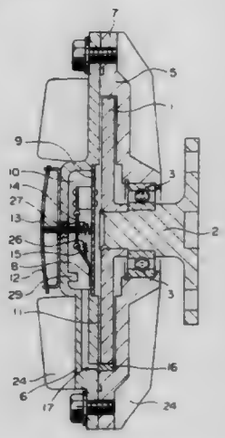
a guide member fixed relative to the transmission housing, said guide member positioning said cam member relative to said park pawl mechanism, with said cam member being constrained exclusively to longitudinal movement.

5,794,749

TEMPERATURE-RESPONSIVE FLUID-TYPE FAN COUPLING APPARATUS

Hideo Ryuu, Nogata-gun, Japan, assignor to Usui Kokusai Sangyo Kaisha Limited, Japan

Filed Sep. 25, 1996, Ser. No. 721,574
Int. Cl.[6] F16D *35/02*
U.S. Cl. 192—58.681 **4 Claims**



1. A temperature-responsive fluid fan coupling apparatus comprising:

a sealing casing having an interior;

a partition plate disposed in said interior of said sealing casing and dividing the interior of said sealing casing into an oil reservoir chamber and a torque transmitting chamber, said partition plate having a supply-adjusting port extending therethrough and providing communication for a thermostable synthetic oil between said oil reservoir chamber and said torque transmitting chamber;

a rotary shaft having a tip end portion extending into said torque transmitting chamber of said sealing casing such that said sealing casing is rotatable relative to said rotary shaft;

a drive disc firmly fixed at said tip end portion of said rotary shaft and disposed in said torque transmitting chamber;

a temperature-responsive member disposed externally of said sealing casing;

a connecting pin connected to said temperature-responsive member and having a portion extending into said oil reservoir chamber of said sealing casing, said connecting pin being movable in response to a change of temperature sensed by said temperature-responsive member;

a valve member provided in said oil reservoir chamber, said valve member having a fixed piece secured to said partition plate and disposed in the oil reservoir chamber, said valve member further having a pressing piece connected to said fixed piece and engaged with said connecting pin such that said pressing piece is displaceable in response to deformation of the temperature-responsive member due to a change of temperature sensed by said temperature-responsive member, said valve member further having a valve piece movably connected to the pressing piece and being bent for selectively covering said supply-adjusting port of said partition plate;

a resilient member interposed between said pressing piece and said partition plate for urging said pressing piece away from said partition plate and against said connecting pin;

at least one spring extending from said fixed piece to said valve piece for urging said valve piece to move relative to said pressing piece and toward said fixed piece;

wherein oil within said torque transmitting chamber, provided between said drive disc, said sealing casing, and said partition plate is increased and decreased by actuation of said valve member to control transmission of rotational torque from said rotary shaft as a driving side to said sealing casing as a driven side; and

wherein said valve member, said connecting pin, said resilient member and said at least one spring cooperate such that said

supply-adjusting port can be instantaneously opened and closed at a set temperature.

5,794,750

TORQUE TRANSMITTING APPARATUS

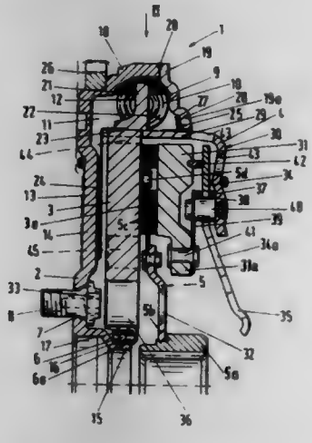
Johann Jäckel, Baden-Baden, Germany, assignor to LuK Lamellen und Kupplungsbau GmbH, Bühl, Germany

Continuation of Ser. No. 316,403, Sep. 30, 1994, abandoned, which is a continuation of Ser. No. 44,031, Apr. 7, 1993, abandoned. This application Nov. 4, 1996, Ser. No. 743,137

Claims priority, application Germany, Apr. 18, 1992, 42 12 954

Int. Cl.[6] E16D *13/00*

U.S. Cl. 192—70.17 **54 Claims**



1. A torque transmitting apparatus comprising a rotary pressure plate; a rotary counterpressure plate coaxial with said pressure plate, said plates having confronting friction surfaces and at least one of said plates constituting a massive part made of a single piece of a metallic material and produced in accordance with one of the methods consisting of extruding, stamping and forging and at least one of said plates having torque transmitting means produced in accordance with one of the methods consisting of (a) stamping and finishing and (b) massive forming; and a clutch disc between said friction surfaces, said pressure plate being movable by energy storing means axially toward said counterpressure plate to thereby clamp said disc between said friction surfaces, said clutch disc having a first thickness as measured between said friction surfaces in the direction of the common axis of said plates and said massive part including a portion disposed at the respective friction surface and having a second thickness exceeding said first thickness.

5,794,751

PISTON FOR TORQUE TRANSMITTING SYSTEMS

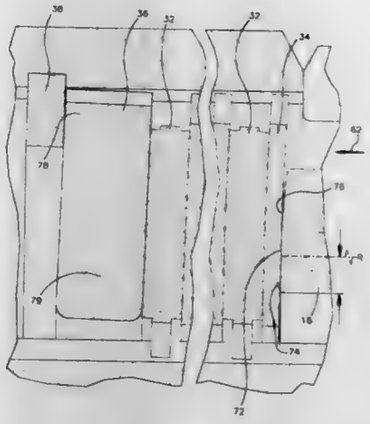
Hormoz Kerendian, Huntersville, N.C., assignor to Sanford Acquisition Company, Bingham Farms, Mich.

Filed Oct. 2, 1996, Ser. No. 724,922

Int. Cl.[6] F16D *25/0638*

U.S. Cl. 192—85 AA **16 Claims**

1. In a torque transmission apparatus including interleaved discs extending along an axis for engaging an inner rotatable member and an outer rotatable member, and a piston located radially between the inner rotatable member and the outer rotatable member for actuating the interleaved discs, the improvement comprising: said piston comprising a working face that applies apply a force to an adjacent one of the discs, said working face extending transverse to said axis between a first side of said piston located adjacent said outer rotatable member and a second side of said piston located adjacent said inner rotatable member, and a support



member spaced along said axis at a location remote from said piston such that said interleaved discs are disposed between said piston and said support member, wherein at least a portion of said working face comprises an arcuate surface that extends from one of said first side and said second side that is more proximal to a radial position of said support member than the other of said first side and said second side effective to produce a substantially uniform pressure distribution across the discs.

5,794,752

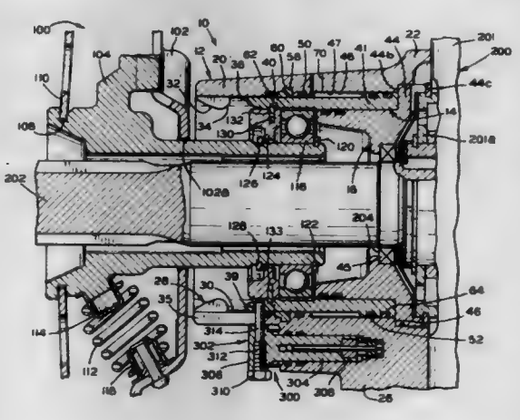
CLUTCH ACTUATOR

Kurt R. Baer, Toledo; George A. Willford, Waterville, and Timothy R. Zuehlke, Toledo, all of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 30, 1996, Ser. No. 775,460

Int. Cl.[6] F16D *23/14;25/08*

U.S. Cl. 192—85 CA **20 Claims**



1. A clutch actuator adapted to operate a clutch comprising:

an outer cylinder housing having at least one ramp formed thereon;

an inner cylinder housing disposed within said outer cylinder to define an annular chamber;

a piston disposed within said annular chamber for movement relative to said outer and inner cylinder housings; and

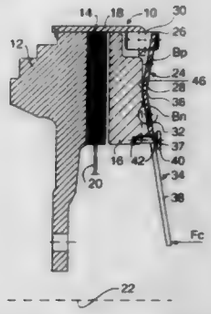
a member mounted on said piston which is adapted to be connected to a portion of a clutch such that movement of said piston causes operation of the clutch, said member being engageable by said ramp formed on said outer cylinder housing when said piston is moved to a predetermined position so as to disconnect said member from said piston.

5,794,753

CONTROLLED FORCE ACTUATOR SYSTEM

Yves J. Kemper, 3 cours des Longs Prés, 92100 Boulogne-Billancourt, France

Filed Jan. 30, 1997, Ser. No. 791,524
Int. Cl.[6] F16D 13/71
U.S. Cl. 192—89.25 4 Claims



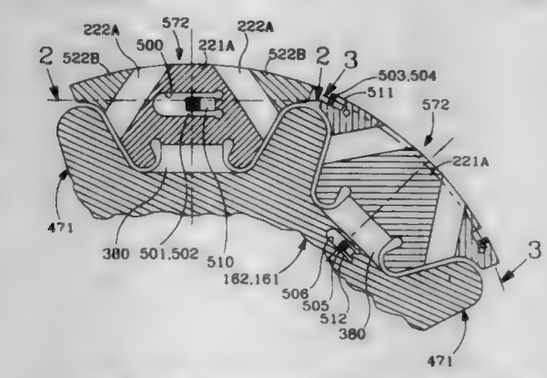
1. In a controlled force actuating system including a positive Belleville spring and a negative Belleville spring arranged in series between a load member and a reaction member, the positive spring being initially in a relaxed condition and the negative Belleville spring being initially in a loaded energy storing condition, the improvement wherein the negative Belleville spring is an outer annular portion of a diaphragm having a peripheral outer edge and at least one integral finger radiating inwardly from the outer annular portion, wherein the positive Belleville spring is an annulus having inner and outer edges, the inner edge of the annulus lying outside the peripheral outer edge of the diaphragm, and including hinge means for pivotally connecting the outer edge of the diaphragm to the inner edge of the annulus, whereby energy stored in the negative Belleville spring may be applied between the load member and the reaction member, through the positive Belleville spring by an axial control force applied to the at least one finger.

5,794,754

LINER SUPPORT DISC FOR A CLUTCH FRICTION WHEEL, ESPECIALLY FOR A MOTOR VEHICLE

Gino Villata, Buttigliera D'Asti, Italy, assignor to Valeo, Paris, France

PCT No. PCT/FR94/01298, § 371 Date Jul. 10, 1995, § 102(e) Date Jul. 10, 1995, PCT Pub. No. WO95/13483, PCT Pub. Date May 18, 1995
PCT Filed Nov. 8, 1994, Ser. No. 481,469
Claims priority, application France, Nov. 9, 1993, 93/13341; Mar. 18, 1994, PCT/FR94/00297; Jun. 21, 1994, PCT/FR9400752
Int. Cl.[6] F16D 13/64
U.S. Cl. 192—107 10 Claims



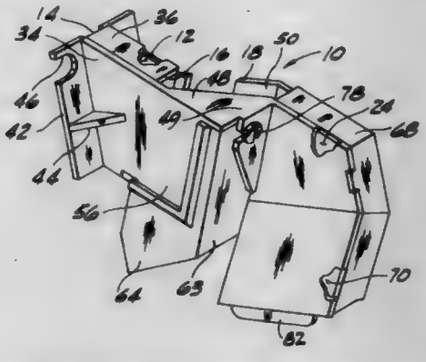
1. A liner support disc for inclusion in a clutch friction wheel of the kind comprising a central portion (161, 162) defining a plane and a peripheral portion divided into radial blades (572) which are adapted to receive friction liners (131, 132), with each of said blades being joined to the central portion through a foot portion (380) and comprising at least one support zone (221A) which is generally parallel to the plane of the central portion, for contact with at least one of the friction liners and for the fastening of the latter, wherein, in order to define blades of the tripod type, at least some of the blades (572) have a central support zone (221A), for contact with one of the friction liners (131, 132) and for the fastening of the latter, and two peripheral support zones (522B) on either side of said central zone (221A) said central support zone (221A) decreasing in width going towards the outer periphery of said liner support disc, and being offset axially with respect to the central portion (161, 162) and to both of said peripheral support zones (522B), and wherein the central support zone (221A) is joined, firstly to the central portion (161, 162) of the liner support disc by means of a tangential bent portion (380) at right angles to the radial axis of symmetry of said tripod blades, and secondly to said peripheral zones through peripheral bent portions (221A) which are oblique with respect to the radial axis of symmetry of said tripod blades, wherein the friction liner (131, 132) is attached directly by adhesion on the said central support zone associated with it, said liner support disc comprises two support discs mounted back to back, at least one of which has blades of the tripod type, wherein one of the friction liners is secured adhesively on the central support zones (221A) of the said tripod blades, while the other friction liner is secured adhesively on the other disc.

5,794,755

COIN CHUTE FOR VENDING MACHINE

Robert John Reese, St. Charles, and George Russell Fink, St. Louis, both of Mo., assignors to Crane Co., Stamford, Conn.

Filed Aug. 26, 1996, Ser. No. 703,364
Int. Cl.[6] G07F 1/04
U.S. Cl. 194—348 14 Claims



1. A coin chute for use with a vending machine for receiving coins and transferring the coins to an electrical coin mechanism and preventing liquid from entering and damaging the electrical coin mechanism, the coin chute comprising:

an upper coin passage in a first generally vertical plane for entry of a coin at the upper end thereof, said upper passage being inclined for downward travel of a coin on edge therein and having a coin outlet at a lower end thereof;

an intermediate coin passage extending at an angle away from one side of the upper passage at the lower end of the upper coin passage, said intermediate coin passage being inclined for downward travel of a coin on edge therein and having a side formed by a first grid extending for at least the entire area of the upper coin passage outlet and adapted for passage therethrough of liquid poured into the upper passage;

a lower coin passage extending down from the lower end of the intermediate passage for receiving a coin dropping down through the upper passage and intermediate passage and for delivery to the electrical coin mechanism, at least a portion of the lower coin passage being in a second plane laterally offset from the first plane;

a drain for draining off liquid passing through the first grid; and

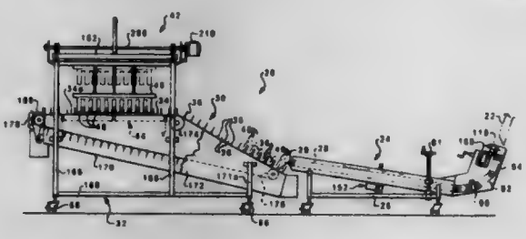
a second grid forming a bottom of the intermediate passage and adapted for passage of liquid therethrough to said drain in a direction generally perpendicular to the first grid.

5,794,756

ARTICLE CONVEYOR AND COLLATOR SYSTEM AND METHOD

James L. Taylor, Arlington; Johnny A. Alanis, Duncanville, and Mark S. Boswell, Grand Prairie, all of Tex., assignors to Project Services Group, Inc., Dallas, Tex.

Filed Mar. 8, 1996, Ser. No. 614,169
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—429 **22 Claims**



1. A conveyor system for transferring discrete articles, such as food packages and the like, said conveyor system comprising:

a first conveyor for receiving discrete articles, seriatim, said first conveyor including a first conveyor member for transporting said articles to a discharge end of said first conveyor, said first conveyor including a stationary frame supporting said first conveyor member between spaced apart support roller means and first drive motor means drivably connected to one of said support roller means for said first conveyor member;

a second conveyor including an endless second conveyor member supported on a frame which is stationary with respect to said frame for said first conveyor, member, said second conveyor member having a plurality of spaced partitions defining article receiving slots therebetween, respectively, said second conveyor member including a receiving end being disposed adjacent said discharge end of said first conveyor for receiving articles in said slots of said second conveyor member from said first conveyor member, said second conveyor including a drive motor drivably connected to said second conveyor member for positively indexing said second conveyor member a predetermined distance of movement corresponding substantially to one slot for receiving said articles seriatim in respective ones of said slots on said second conveyor member;

a third conveyor including a third conveyor member oriented to convey a plurality of articles in a direction transverse with respect to the direction of movement of said second conveyor member and for supporting a plurality of stacked side by side articles thereon; and

a transfer mechanism including rake means operable to transfer a predetermined number of articles from said second conveyor member onto said third conveyor member to form at least one row of said articles on said third conveyor member.

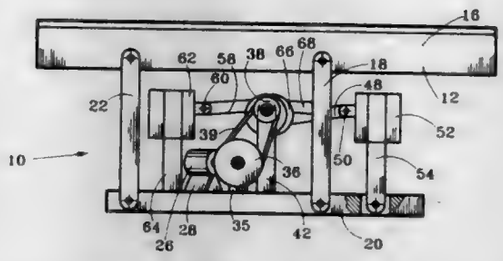
5,794,757

DIFFERENTIAL IMPULSE CONVEYOR AND METHOD

Paul A. Svejkovsky, Rte. 2, Box 338-A, Marquez, Tex. 77865, and John Silvester, Brisbane, Australia, assignors to Paul A. Svejkovsky, Marquez, Tex.

Filed Mar. 15, 1996, Ser. No. 616,448
Int. Cl.[6] B65G *25/00*
U.S. Cl. 198—750.8 **40 Claims**

1. A differential impulse conveyor for moving goods, comprising:



a tray movable in a forward direction at a first speed and in a backward direction at a second speed greater than the first speed to move goods along the tray in the forward direction, the tray having a tray floor for supporting the goods thereon;

a drive motor for moving the tray in the forward direction and the backward direction;

a rotatable drive shaft powered by the drive motor for rotating at a first speed during each first half cycle of rotation and a second speed greater than the first speed during each second half cycle of rotation;

a tray arm interconnected between the drive shaft and the tray, the tray arm initiating forward movement of the tray at a selected angular position of the shaft;

a drive shaft/tray arm pivot for pivotably interconnecting the drive shaft and the tray arm;

a tray arm/tray pivot for pivotably interconnecting the tray arm and the tray;

a plurality of counterweights each movable relative to the tray in response to rotation of the drive shaft;

a plurality of counterweight arms each interconnecting the drive shaft and a respective one of the plurality of counterweights, each counterweight arm initiating forward movement of a respective counterweight at a preselected offset angular position of the drive shaft with respect to both the selected angular position of the drive shaft and other of the plurality of counterweight arms;

a drive shaft/counterweight arm pivot for pivotably interconnecting the drive shaft and each counterweight arm; and

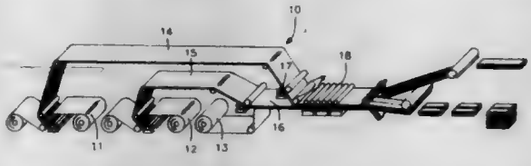
a counterweight arm/counterweight pivot for pivotably interconnecting each of the plurality of counterweight arms with a respective one of the plurality of counterweights.

5,794,758

ROLLER APPARATUS

Lynn Alan Bakker, Elkton, Md.; Chris Alan Ledeker, Newark, Del.; Ernest Lee Bailey, Elkton, Md., and John Ray Young, Newark, Del., assignors to Scapa Group PLC, Blackburn, United Kingdom

Filed May 24, 1996, Ser. No. 653,563
Int. Cl.[6] B65G *13/02*
U.S. Cl. 198—785 **10 Claims**



1. A roller apparatus comprising a core and a tubular mantle located around the core, the tubular mantle having a cylindrical outer surface, a plurality of grooves being provided in the said surface of the tubular mantle, the grooves extending around the circumference of the mantle wherein, with reference to a reference plane extending perpendicular to the axis of rotation of the roller apparatus from the lateral midpoint of the roller apparatus, at least some of a first set of grooves provided adjacent the reference plane are set at a first angle to the reference plane and at least some of a second set of grooves are set at a second angle to the reference

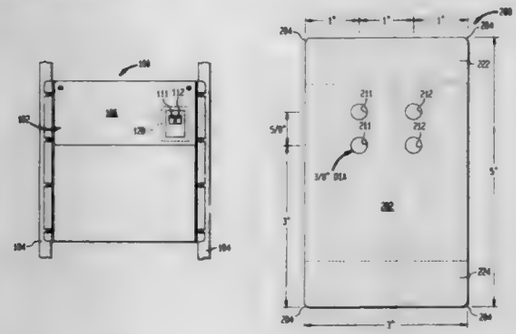
plane, the second set of grooves being spaced further from the reference plane than the first set of grooves and the second angle being larger than the first angle.

5,794,759

PROTECTIVE COVER FOR SWITCHES

James M. Butts, Sterling, Va., assignor to MCI Corporation, Washington, D.C.

Filed Dec. 19, 1996, Ser. No. 769,328
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—43.19 **17 Claims**



1. A protective cover for use on a device having a switch, comprising:

a plate;

a pair of access apertures defined by said plate, wherein one of said pair of access apertures is positioned to enable operation of the switch from a first position to a second position, and the other of said pair of access apertures is positioned to enable operation of the switch from the second position to the first position, wherein an area of each of said pair of access apertures is of suitable size to prevent inadvertent operation of the switch; and

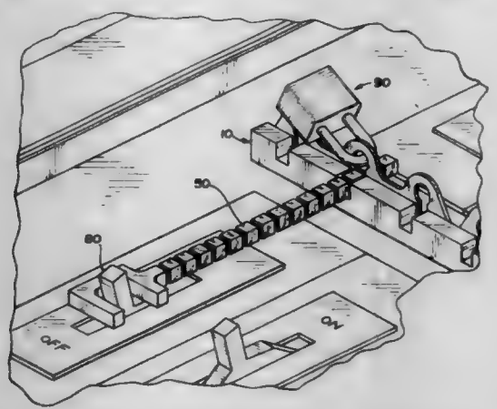
attaching means for attaching said plate to the device in only one orientation.

5,794,760

APPARATUS FOR LOCKING A CIRCUIT BREAKER

Richard L. Alexander, 2106 Longhorn St., Houston, Tex. 77080

Continuation-in-part of Ser. No. 405,590, Mar. 7, 1995, Pat. No. 5,593,020. This application Oct. 10, 1996, Ser. No. 728,838
Int. Cl.[6] H01H *9/28*
U.S. Cl. 200—43.14 **32 Claims**



32. A method for immobilizing a selected breaker switch on a panel face having a column of breaker switches, said method comprising

positioning an elongated base member alongside the column on the panel face, said elongated base member having a transverse groove across an upper face thereof in substantial alignment with the selected breaker switch and a means for defining an elongated aperture across one end of the transverse groove, said defining means being movable from a retracted position which permits a panel door covering the panel face to be positioned in a closed position to an extended position wherein said means defines a first aperture portion and a second aperture portion with the second aperture portion being in axial alignment with the transverse groove of the elongated base member and positioned between the first aperture portion and the panel face;

moving the defining means to the extended position;

positioning an elongated pin having a first end and a second end through the first aperture portion, wherein the elongated pin has an exterior surface which is loosely received by the first aperture portion;

aligning the first end of the pin in a position to immobilize the selected breaker switch;

positioning the elongated pin in the groove and through the second aperture portion, wherein a first portion of the pin has an exterior surface which is closely received by the selected groove and prevents rotation of the pin around its longitudinal axis and a second portion of the pin has an exterior surface which is closely received by the second aperture portion of the defining means and prevents movement of the pin along its longitudinal axis; and

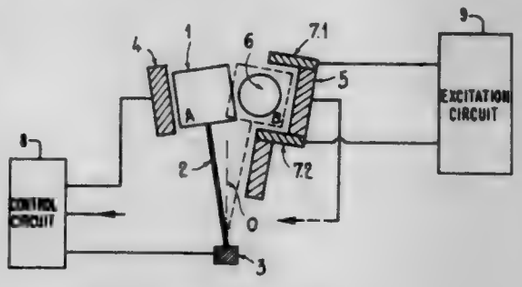
positioning a shackle means through the first aperture portion of the defining means, said shackle means having an exterior surface which is closely received by the first aperture portion of the defining means and is positioned closely adjacent to the exterior surface of the pin, to substantially immobilize the pin in a position to immobilize the selected breaker switch.

5,794,761

SWITCHING DEVICE

Philippe Renaud, Saint-Sulpice; Benjamin Kloeck, Neuchâtel, and Lucien Falco, Cressier, all of Switzerland, assignors to CSEM Centre Suisse D'Electronique et de Microtechnique SA, Neuchatel, Switzerland

Filed Oct. 24, 1995, Ser. No. 547,444
Claims priority, application France, Oct. 25, 1994, 94 12928
Int. Cl.[6] G02B *26/02;6/24;* **H01H** *59/00*
U.S. Cl. 200—181 **25 Claims**



1. A switching device which comprises:

a swinging element that is able to move back and forth between two end positions, the two end positions being on either side of a zero position;

an elastic member connecting said swinging element to a base, said elastic member allowing said swinging element to move back and forth between the two end positions;

stationary actuating electrodes producing electrostatic forces of attraction to said swinging element when said swinging element is at the end positions, the forces of attraction acting away from the zero position; and

a control circuit for controlling the electrostatic forces of attraction;

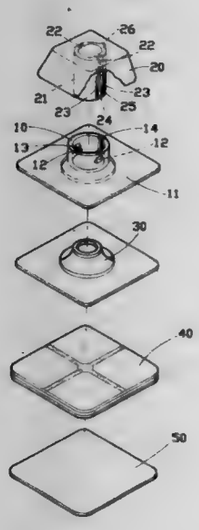
wherein said elastic member provides a return force that acts toward the zero position, the return force being greater than the force of electrostatic attraction produced by said control circuit and one of said actuating electrodes such that said swinging element has a switching time based upon its natural mechanical oscillation frequency.

5,794,762

KEY SWITCH STRUCTURE

Ching Cheng Tsai, Chi Lung, Taiwan, assignor to Chicony Electronics Co., Ltd., Taipei Hsien, Taiwan

Filed Feb. 11, 1997, Ser. No. 798,631
Int. Cl.[6] H01H *13/70*
U.S. Cl. 200—345 **3 Claims**



1. A key switch assembly for a keyboard having pressure-sensitive electric switching means disposed within a keyboard housing, said key switch assembly comprising:

(a) a key switch socket member integrally formed on an upper panel of said keyboard housing, said key switch socket member having an inner wall portion defining a receiving bore projecting axially in an upward direction from the plane of said keyboard housing upper panel, said inner wall portion having formed thereon in spaced manner an axially extended guiding slot and a pair of radially protruding guiding projections, each of said guiding projections being formed with an upwardly exposed bevelled surface; and,

(b) a key top member displaceably coupled to said key switch socket member for actuating responsive to user actuation thereof said pressure-sensitive electric switching means, said key top member having an axially extended key stem coaxially received in said receiving bore of said key switch socket member, said key stem including:

(1) an outer surface portion, said outer surface portion having formed thereon in spaced manner a pair of axially extended guiding rails and a radially protruding guiding rib, said guiding rails being slidably engaged respectively by said guiding projections of said key switch socket member, said guiding rib slidably engaging said guiding slot of said key switch socket member; and,

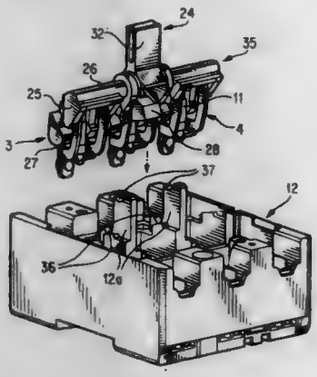
(2) a pair of resilient projections disposed respectively within said guiding rails, each of said resilient projections being suspended substantially within one of said guide rails and extending axially downward to terminate at an end section, said end section being adapted to resiliently engage one of said guiding projections of said key switch socket member.

5,794,763

CIRCUIT BREAKER

Makoto Ogasawara, Tochigi, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jul. 7, 1997, Ser. No. 888,401
Claims priority, application Japan, Jul. 9, 1996, 8-198364
Int. Cl.[6] H01H *23/00*
U.S. Cl. 200—401 **6 Claims**



1. A circuit breaker comprising:

a container having a case and a cover, said case and cover having semi-circular bearing notches facing each other; and

a switch mechanism unit accommodated in the container, said switch mechanism unit comprising,

a handle lever having a rotating shaft, a handle and lever arms, said handle and lever arms protruding perpendicularly in approximately opposite directions relative to the rotating shaft,

a movable contact having a movable contact point at one end with the other end rotatably joined with tips of the lever arms,

a latch disposed to cross the rotating shaft and having a rotating shaft and an engaging arm protruding from the rotating shaft, and

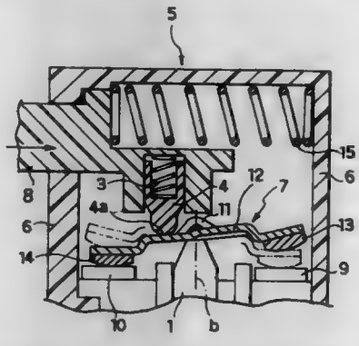
a switch spring having one end attached to the latch and the other end attached to the movable contact, said handle lever and the rotating shaft of the latch engaging the semi-circular bearing notches of the case and the cover so that the switch mechanism unit is rotationally supported and held in the container.

5,794,764

HIGH-SPEED SEESAW BREAKING SWITCH WITH RAISED FULCRUM AND ACCELERATOR RAMP

Hiroyuki Hirose, and Hirotaka Tachibana, both of Kanagawa, Japan, assignors to Satori Electric Co., Ltd., Tokyo, Japan

Filed Nov. 26, 1996, Ser. No. 756,535
Int. Cl.[6] H01H *5/08;13/20;13/52*
U.S. Cl. 200—437 **4 Claims**



1. A high speed seesaw breaking switch comprising:

a casing;

two stationary terminals arranged at a distance from each other and in said casing;

a main and common stationary terminal arranged in said casing between said two stationary terminals;

a movable contact plate arranged on a tip end of said main terminal as a fulcrum point and having a contact at each end of said plate, said contacts being able to be contacted with respective stationary terminals;

an operation member slidingly movable in said casing along an axis;

a first spring biasing said operation member in a returning direction;

a push element arranged on one end of said operation element and aligned perpendicular to said axis; and

a second spring biasing said push element to have an end thereof always slidingly in contact with a surface of said movable contact plate;

said fulcrum point of said movable contact plate being raised vertically higher than a level at which said end of said push element contacts with said movable plate;

said movable contact plate having a ramp-step on said surface engaged by said end of said push element when sliding motion of said operation member causes said end of said push element to slide across said movable contact plate, whereby said sliding motion of said operation member causes accelerated seesaw movement of said movable contact plate so that one of said contacts moves to contact with the respective stationary terminal to provide an electrical connection between said main and common stationary terminal and the respective stationary terminal contacted by said one of said contacts.

5,794,765

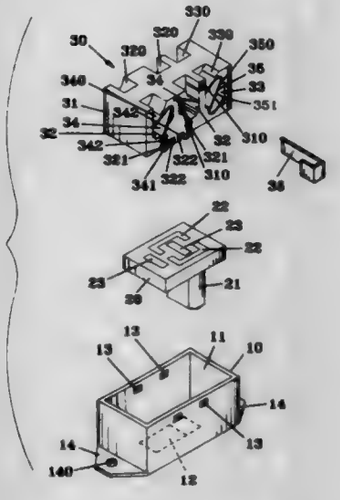
ELECTRIC CONNECTOR ASSEMBLY

Jun-Hsiung Zhen, No. 7, Alley 67, Lane 168, Feng-Dung Road, Feng-Yuan City, Taichung County, Taiwan

Filed Nov. 12, 1996, Ser. No. 747,672

Int. Cl.[6] H01H *15/06*

U.S. Cl. 200—550 **4 Claims**



1. An electric connector assembly, comprising:

a housing (**10**) including a slot (**12**) defined in a bottom thereof;

a slide block (**20**) mounted in the housing, the slide block including an operative rod (**21**) projecting downwardly from an underside thereof and extending through the slot of the housing, the slide block further including two separate first conductive members (**22**) and two separate second conductive members (**23**) mounted to an upper side thereof; and

a plug-in device (**30**) mounted in the housing at a position above the sliding block, the plug-in device including:

a fixing seat (**31**) having two first receiving compartments (**32**) and at least one second receiving compartment (**33**) defined in each of two sides thereof, the fixing seat further including four first accesses (**320**) and at least two second accesses (**330**) defined in an upper side thereof which are in communication with the first receiving compartments and the second receiving compartments, respectively,

a first conductive plate (**34**) mounted in each said first receiving compartment,

a second conductive plate (**35**) mounted in each said second receiving compartment, and

a third conductive plate (**36**) mounted in the housing for electrically interconnecting one said second conductive plate and an associated first conductive plate disposed in an adjacent first receiving compartment;

wherein said associated first conductive plate includes a first end (**340**) attached to the third conductive plate and a second end (**341**) which extends through a bottom wall defining the associated first receiving compartment (**32**) and bearing against the bottom wall defining the associated first receiving compartment, and wherein the second ends (**341**) of the first conductive plates (**34**) are selectively in electrical connection with one of the first conductive members (**22**) and the second conductive members (**23**) upon manual operation of the sliding block via the operative rod (**23**).

5,794,766

ROTARY SWITCH

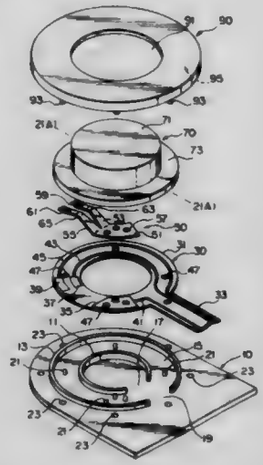
Kozo Morita; Shigeaki Kinoshita; Katsuyuki Tame, and Osamu Nomura, all of Tokyo, Japan, assignors to Teikoku Tsushin Kogyo Co., Ltd., Kawasaki, Japan

Filed Aug. 8, 1996, Ser. No. 694,325

Claims priority, application Japan, Aug. 8, 1995, 7-224666; Dec. 28, 1995, 7-353964

Int. Cl.[6] H01H *19/20*

U.S. Cl. 200—569 **4 Claims**



2. A rotary switch comprising:

a contact forming member including a plurality of switch contacts and one land contact;

an elastic plate including one base portion mounted on said one land contact, a plurality of arm portions protruding from said one base portion, and abutment portions disposed at predetermined positions on said arm portions opposite respective said switch contacts;

a rotor disposed in spaced relation to said elastic plate for rotary movement and including depressor portions for individually depressing respective said arm portions of said elastic plate;

wherein when said rotor is rotated, said depressor portions of said rotor cause respective said arm portions of said elastic plate to be individually depressed, so that said abutment

portions of said arm portions are individually engaged with respective said switch contacts;

where each of said plurality of switch contacts of said one land contact comprises a planar metal plate having a terminal portion at an end thereof extending outwardly therefrom and said contact forming member is constructed by securing said plurality of switch contacts and said one land contact to a stationary member; and

wherein said elastic plate includes two arm portions, and said depressor portions for depressing a first said arm portion and said depressor portions for depressing a second said arm portion are equal in number, and each said depressor portion for depressing said first arm portion and an adjacent said depressor portion for depressing said second arm portion have the same form and are arranged so as to be slightly shifted by a predetermined amount relative to each other in a direction of rotation of said rotor.

5,794,767

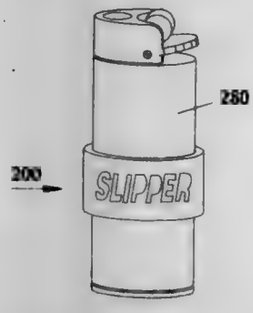
GRIPPING HOLDERS

Earl Wilson, 1025 Wainwright Dr., Oviedo, Fla. 32765

Continuation-in-part of Ser. No. 549,250, Oct. 27, 1995, abandoned. This application Jun. 4, 1997, Ser. No. 868,563

Int. Cl.[6] F21V *33/00*

U.S. Cl. 206—37 **10 Claims**



1. A gripping holder for a disposable cigarette lighter comprising in combination:

a disposable cigarette lighter having a smooth slippery surface; and

an oval 100% rubber sleeve having two parallel sides having curved endwalls with an overall length between the endwalls being approximately 1 & 3/16", the sleeve having a height of approximately 9/16", the wall thickness of approximately 1/8", and equally distant spaced cut-out letters having heights of up to approximately 7/16" on each of the two parallel sides, the cut-out letters forming sharp internal edges on inner walls of the sleeve, wherein the sleeve when slipped over and about the lighter forms a tight grip on the lighter and prevents the lighter from sliding out from shirt pockets and pants pockets.

5,794,768

KEY FINDER SYSTEM AND METHOD

Cheryl J. Skeffington, Mechanicsville, and Kathy S. Walker, Richmond, both of Va., assignors to Key Buddy, Inc.

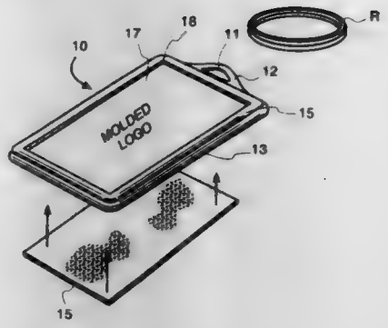
Filed Mar. 4, 1997, Ser. No. 810,071

Int. Cl.[6] A47G *29/10*

U.S. Cl. 206—38.1 **4 Claims**

1. A key finder for assisting a person to rapidly find keys on a key ring in a container such as a purse, briefcase, pouch, sack, or the like comprising in combination,

a rigid fob element having a hole portion for placement on said key ring with said keys and a rigid body portion, said rigid body portion having at least one planer surface, a first recess formed in said planar surface and an endless border surrounding said recess,



a first part of a two-part hook-and-loop fastener assembly having edges, said first part being adhered to said at least one planar surface within said recess to keep the edges of said first part from peeling, and the borders of said recess provide a protective indentation and a smooth polished look, and a means for mounting a second part of said two-part hook-and-loop fastener assembly at a selected location in said container.

5,794,769

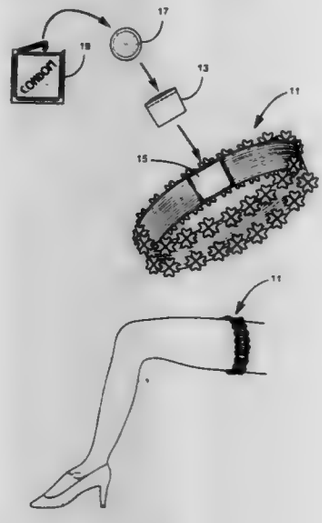
PERSONAL AND EASILY-ACCESSIBLE CARRIER FOR A CONDOM

Robert J. Tomlinson, 81 Devon La., and Cheryl M. Sinnott, 20 Devon La., both of Watsonville, Calif. 95076

Filed Nov. 12, 1996, Ser. No. 753,261

Int. Cl.[6] A45C *11/00*

U.S. Cl. 206—69 **15 Claims**



1. A condom carrier comprising:

a dedicated elastic loop deformable circumferentially; and

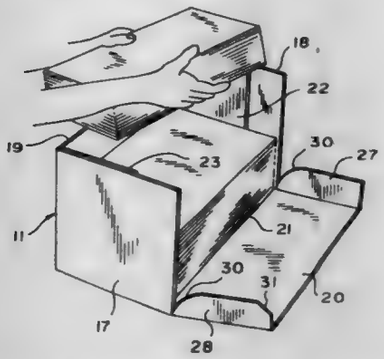
a liquid-impermeable pocket attached to the elastic loop, the liquid-impermeable pocket having a sealable opening with a first side and a second side, including a pre-curved leaf-spring strip mounted along the width of the first side, such that with the leaf-spring strip in its not-deformed state the pocket is held closed, and with the leaf-spring strip deformed in a curve opposite the pre-curved shape the pocket is held open.

5,794,770

EASY OPENING CARTON FOR SHIPPING AND STORING CUT PAPER

John Frederick Plomgren, Norfolk, Va., and Billy P. Cannon, High Point, N.C., assignors to Union Camp Corporation, Lawrenceville, N.J.

Continuation-in-part of Ser. No. 216,959, Mar. 24, 1994, abandoned. This application Dec. 26, 1995, Ser. No. 587,785
Int. Cl.[6] B65D 5/32
U.S. Cl. 206—215 39 Claims



1. A package for shipping and storing a quantity of cut sheets of paper for use in equipment which requires that the moisture content of the paper be within predetermined limits for proper performance of the. equipment, comprising:

a carton containing a quantity of sheets of cut paper, said carton having a bottom wall, a plurality of upstanding side walls each joined along a bottom edge to a respective edge of the bottom wall, an open top, and a removable lid telescopically engaged over the open top;

one of said side walls being unsecured to adjoining side walls and being pivotable about its bottom edge downwardly and away from the carton to an open position when the lid is removed, thereby exposing the cut paper at the top and one side to permit easy access to paper contained in the carton for rapid unloading of the paper from the carton;

said one side wall having inturned flaps on opposite side edges thereof which extend into the carton in contiguous, parallel, overlapping relationship with adjacent side walls when said one side wall is in closed position; and

moisture vapor barrier means associated with the carton for maintaining the moisture content of the cut sheets of paper within predetermined limits under adverse ambient conditions.

5,794,771

PACKAGE FOR COMPONENTS OF HAND MADE CIGARETTES

Marek S. Krawec, Richmond Hill; Edward G. A. Simpson, Aurora, and Jean L. Mailhot, Hawksbury, all of Canada, assignors to Rothmans, Benson & Hedges, Inc., Ontario, Canada

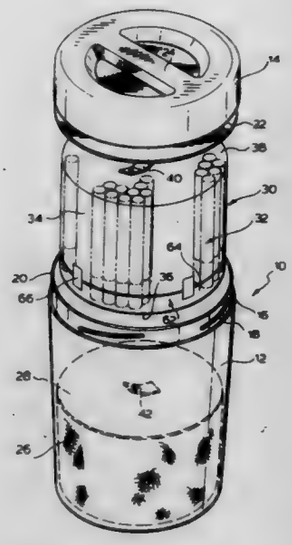
Filed Apr. 25, 1997, Ser. No. 840,704
Int. Cl.[6] B65D 81/22
U.S. Cl. 206—223 6 Claims

1. A packaging system for loose tobacco and pre-made filter tipped cigarette tubes for use in hand making cigarettes comprising:

i) a canister with removable lid having stored therein loose tobacco in its bottom portion; and

ii) a container having stacked therein a plurality of cigarette tubes in number at least equal to a number of cigarettes to be made from said loose tobacco,

iii) said cigarette tube container having an outer perimeter dimension which permits placement of said container in said canister on top of said tobacco with said removable lid in place on said canister.

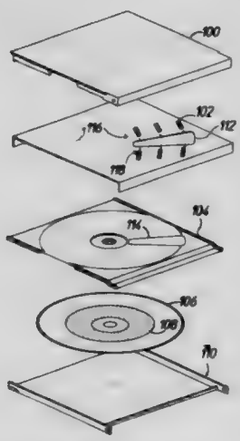


5,794,772

CONTAINER FOR RECORDABLE DIGITAL OPTICAL DISCS WITH WINDOW AND SCALE FOR DETERMINING AVAILABLE SPACE

Bruce A. Makinen, Fort Collins, and Luke Waaler, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 30, 1997, Ser. No. 791,234
Int. Cl.[6] B65D 85/57
U.S. Cl. 206—308.1 3 Claims



1. A container for a data disc, the data disc having at least one surface that is recordable, the surface that is recordable having a visible boundary between a recorded area and an unrecorded area, the container comprising:

an outer box that is transparent;

at least one layer of additional material mounted in the outer box, the additional material capable of remaining in the outer box when the data disc is removed from the container;

a window area in the additional material, the window area positioned so that when the data disc is inside the container, the boundary on the surface that is recordable is visible through the window area; and

a scale, formed on the layer of additional material, adjacent to the window area, the scale indicating a numerical value asso-

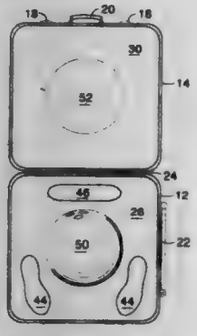
ciated with a location of the boundary on the data disc, the scale visible through the outer box.

5,794,773

BOWLING BALL CARRIER

Patricia L. Moyer, 229 Cedarwood Dr., Maitland, Fla. 32751

Filed Apr. 7, 1995, Ser. No. 418,193
Int. Cl.[6] A63B 47/00
U.S. Cl. 206—315.91 4 Claims



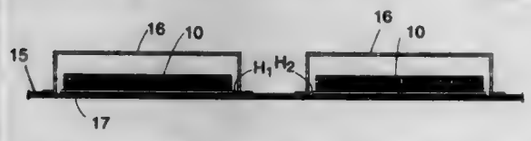
1. A protective bowling ball carrier comprising:
a first container comprising:
a first shell;
a bottom on the first shell; and
four upstanding sides on the first shell;
a second shell;
a bottom on the second shell; and
four upstanding sides on the second shell;
a hinge connecting the first shell and the second shell whereby the first and the second shell are closable container;
means for locking the first and second shell together, in a closed condition located adjacent a common seam between the first and the second shells, on a side opposed to the hinge;
a first handle means connected to the first container proximate said locking means for lifting the first container;
wheel members mounted on an exterior of the first container in the proximity of the hinge;
a second handle member, mounted on the first container, for pulling the first container on said wheel members;
padding means in the first shell and in the second shell forming a second container in the first container when the first container is in the closed condition;
semi-hemispherical bowling ball recesses in the padding means contained in the first shell and in the second shell;
a first shoe-shaped bowling shoe recess in the padding means;
a second shoe-shaped bowling shoe recess in the padding means; and
a bowling accessory recess in the padding means.

5,794,774

DISPOSABLE ORAL HYGIENE APPLICATOR

V. Lorenzo Porcelli, Cedarl La., Ossining, N.Y. 10562

Filed May 12, 1997, Ser. No. 854,320
Int. Cl.[6] B65D 85/62
U.S. Cl. 206—369 7 Claims



1. A supply package for storing a group of circular oral hygiene applicators, each adherable to a finger tip of a user; said package comprising:

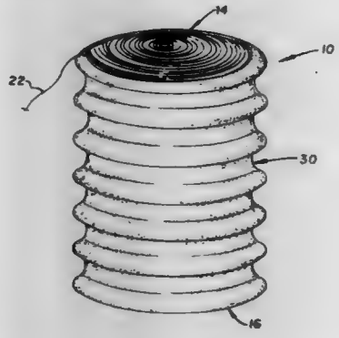
A. a card having an array of holes therein, each forming a cell to accommodate a respective applicator of the group;
B. a metal foil sheet bonded to the underside of the card to close the cells; and
C. a like array of collapsible domes joined to the upper side of the card to enclose the respective cells containing the applicators whereby a selected applicator can be released from the card by pressing and collapsing the dome enclosing the applicator to force the applicator to rupture the metal foil sheet.

5,794,775

PACKAGING CONTAINER FOR ELASTIC FILAR MATERIAL

Elmer Hall, Rte. 7, Box 165, Bassett, Va. 24055

Filed Sep. 24, 1996, Ser. No. 718,941
Int. Cl.[6] B65D 85/04
U.S. Cl. 206—388 9 Claims



1. A packaging container for filar material comprising:
a cylinder having open top and bottom ends and an inner wall comprising a plurality of alternating grooves and ridges, adjacent grooves being completely separated by a ridge, for receiving alternating layers of elongated filar material, said cylinder including at least one removable lid for closing said top end or said bottom end.

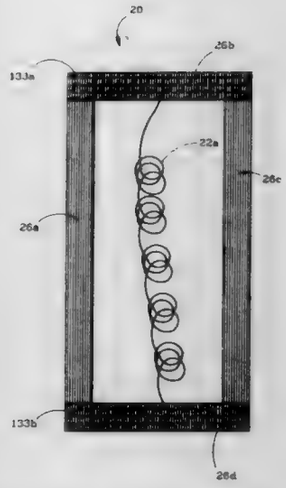
5,794,776

INSTRUMENTATION, SYSTEM, METHOD AND PACKAGE FOR PACKAGING FLACCID FILAMENTS

Arthur P. Corella, 8166 Vanscoy, North Hollywood, Calif. 91602

Continuation of Ser. No. 589,862, Jan. 22, 1996, abandoned. This application May 22, 1997, Ser. No. 861,461
Int. Cl.[6] A61C 15/04
U.S. Cl. 206—388 3 Claims

1. A heat sealed package enclosing a continuous, untangled flaccid filament comprising:
a fully sealed enclosure comprising a compartment determined by opposed first and second continuous heat seals, and opposed third and fourth continuous heat seals generally orthogonal to the first and second heat seals and providing the sealed enclosure;
the filament having an intermediate portion terminating in oppositely disposed end portions, with the intermediate portion being freely housed within the compartment and the oppositely disposed end portions being secured, respectively, by the third and fourth heat seals; and fifth and sixth heat seals being superimposed, respectively, on the third and fourth



pre-formed heat seals for effecting hermetic seals at the interfaces of the oppositely disposed end portions of the filament and the adjacent seal areas.

5,794,777

CONTAINER WITH LIGHT-SHIELDING MEMBER FOR WEB-SHAPED PHOTOSENSITIVE MATERIAL

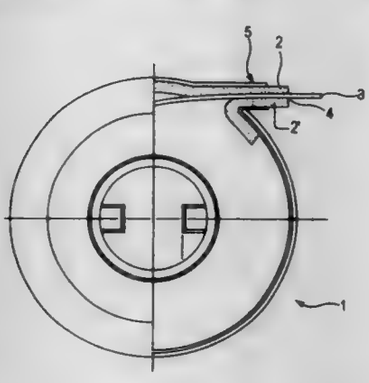
Mutsuo Akao; Tetsuo Nishimura, both of Minami-ashigara, and Kenji Sashihara, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Filed Nov. 29, 1996, Ser. No. 758,457

Claims priority, application Japan, Nov. 29, 1995, 7-335934

Int. Cl.[6] B65D *85/67*

U.S. Cl. 206—409 **19 Claims**



1. A container for a web-shaped photographic photosensitive material comprising a core around which is wrapped a web-shaped photographic photosensitive material, a draw-out opening through which the photosensitive material is drawn out, and a light-shielding member provided in said draw-out opening;

wherein said light-shielding member is dyed with at least one coloring dye having spectral absorption in a spectral sensitivity region of at least a red-sensitive layer of said web-shaped photographic photosensitive material.

17. A light shielding member which is dyed with least one coloring dye having spectral absorption in a spectral sensitivity region of at least one of a red-sensitive layer and red-sensitive sensitizing dye of a photosensitive material.

5,794,778

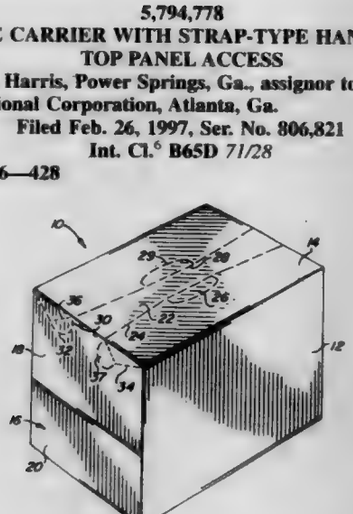
ARTICLE CARRIER WITH STRAP-TYPE HANDLE AND TOP PANEL ACCESS

Randall L. Harris, Power Springs, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed Feb. 26, 1997, Ser. No. 806,821

Int. Cl.[6] B65D *71/28*

U.S. Cl. 206—428 **18 Claims**



1. An article carrier, comprising:

top and bottom panels, opposite side panels and opposite end panels;

the top panel being connected by fold lines to the opposite side panels and the opposite end panels, the top panel and the side and end panels meeting at four upper corners;

the top panel including a handle strap separably connected thereto by lines of weakness, the handle strap extending between either the opposite end panels or the opposite side panels and dividing the top panel into two portions;

the lines of weakness of the handle continuing into either the opposite end panels or the opposite side panels; and

additional lines of weakness extending from the continued lines of weakness substantially toward the upper corners;

whereby severing of the lines of weakness of the handle, the continued lines of weakness and the additional lines of weakness allow the top panel portions to be folded back to provide access to the interior of the carrier.

5,794,779

MULTIFUNCTIONAL CONTAINER

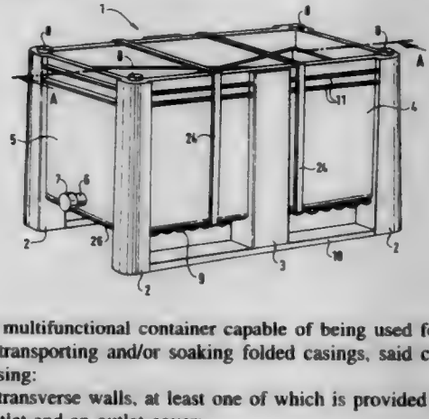
Alois Weinheimer, Alzey, and Dieter Uhlmann, Wiesbaden, both of Germany, assignors to Kalle Nalo GmbH, Wiesbaden, Germany

Filed Mar. 18, 1997, Ser. No. 820,651

Claims priority, application Germany, Apr. 1, 1996, 196 13 063.9

Int. Cl.[6] B65D *85/20*

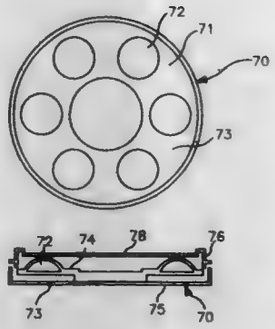
U.S. Cl. 206—443 **15 Claims**



1. A multifunctional container capable of being used for packaging, transporting and/or soaking folded casings, said container comprising:

two transverse walls, at least one of which is provided with an outlet and an outlet cover;

two longitudinal side walls;
a bottom connected to said longitudinal side walls and said transverse side walls, said transverse walls, longitudinal walls and bottom forming an open cavity therewithin;
corner posts located at juncture positions of said transverse and said longitudinal side walls;
at least two middle posts positioned vertically on said longitudinal side walls;
at least one longitudinal brace which joins said two of said corner posts at a lower portion thereof; and
a removable cover which is provided with an inlet and an inlet closure.

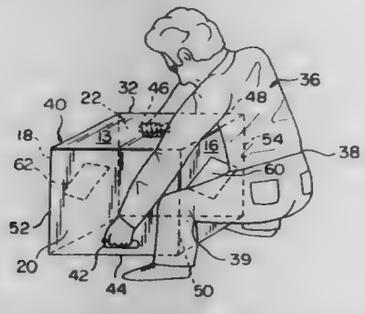


5,794,780

ERGONOMIC PACKAGE CONFIGURATION

Andrew M. Parrella, Middletown, and Richard M. Jones, Loveland, both of Ohio, assignors to EM Industries, Incorporated, Hawthorne, N.Y.

Continuation of Ser. No. 413,829, Mar. 30, 1995, abandoned. This application Apr. 8, 1997, Ser. No. 832,196
Int. Cl.[6] B65D *25/30*
U.S. Cl. 206—459.5 **6 Claims**



1. An ergonomic package configuration, wherein a carton has a top panel, a bottom panel, a back panel, a front panel and first and second lateral side panels with the lateral side panels intersecting the top and bottom panels along top and bottom edges, the improvement comprising:
a first substantially horizontal slot formed in the first lateral side panel proximate the bottom edge of the panel to provide a first hand hold and
a second substantially horizontal slot configured in the second lateral side panel of the carton proximate the top edge thereof, diagonally disposed with respect to the bottom edge, said first slot and said second slot being only two slots in the carton whereby a person gripping the hand holds is encouraged to lift the carton by flexing his or her knees as opposed to lifting the carton by bending his or her back.

5,794,781

BLISTER PACK

Monique Roulin, Aesch, Switzerland; Manfred Gerber, Singen, Germany, and Heinz Oster, Feuerthalen, Switzerland, assignors to Alusuisse Technology & Management Ltd., Switzerland

Division of Ser. No. 548,338, Nov. 1, 1995, Pat. No. 5,695,063. This application May 15, 1997, Ser. No. 856,768
Int. Cl.[6] B65D *83/04*
U.S. Cl. 206—531 **5 Claims**

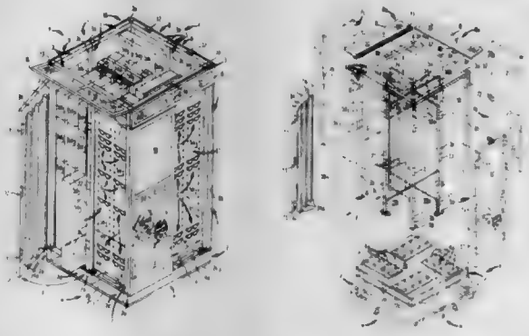
1. Blister packs having a base with a plurality of recesses, a shoulder surrounding the recesses, and a lid foil attached to the shoulder and covering said recesses, where removable contents are accommodated in the recesses and are removed therefrom by pushing said contents through said lid foil, wherein the blister pack features an annular periphery and the recesses are arranged in at least one concentric circle, a lid element covering said base, recesses and lid foil, and the base is relatively rotatable with respect to said lid element, and the lid element features at least one opening through which the contents can be expressed, including a clamping element wherein the base is relatively rotatable within the clamping element, wherein the clamping element holds an information sheet in the blister pack.

5,794,782

MERCHANDISE TRANSPORT, STORAGE AND DISPLAY APPARATUS AND SYSTEM

Mark A. Ascik, Ormond Beach, Fla., assignor to Capo, Inc., Ormond Beach, Fla.

Filed Feb. 16, 1996, Ser. No. 602,660
Int. Cl.[6] B65D *19/00*
U.S. Cl. 206—600 **26 Claims**



1. A merchandise transport, storage, and display apparatus, comprising:
a base assembly;
a frame assembly engaged to said base assembly;
first and second plurality of merchandise receptacles;
positioning means for positioning said first plurality of merchandise receptacles for display of merchandise;
concealing means for concealing said second plurality of merchandise receptacles within said frame assembly, which concealing means comprises at least one panel in movable engagement with said frame; and
wherein said second plurality of merchandise receptacles are stored behind and adjacent to said first plurality of merchandise receptacles.

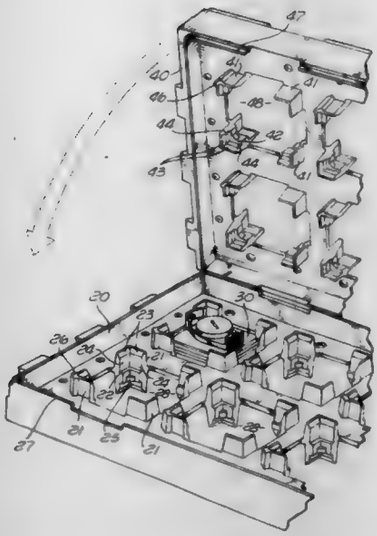
5,794,783

DIE-LEVEL BURN-IN AND TEST FLIPPING TRAY

Troy Carter, Chandler, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 31, 1996, Ser. No. 775,733
Int. Cl.[6] B65D *85/30*
U.S. Cl. 206—725 **6 Claims**

1. An apparatus comprising:



a first set of pockets integrally disposed on a first side of the tray;

a second set of pockets integrally disposed on a second side of the tray such that a one-to-one correspondence exists between the first set of pockets and the second set of pockets;

an upper rim; and

a lower rim, the upper rim and lower rim adapted to mate with lower and upper rims, respectively, of additional trays such that respective first and second sets of pockets are disposed in relation to one another to cause a plurality of carriers in the first set of pockets to transition to the second set of pockets in an inverted orientation responsive to inversion of a mated pair of trays;

wherein each pocket is defined by four risers and four supports, one support integrally formed on an inside base of each riser defining one corner of the pocket and wherein the supports integrally formed on the bases of the risers of the first set of pockets are L-shaped and wherein the supports integrally formed on the base of the risers of the second set of pockets are A-shaped.

5,794,784

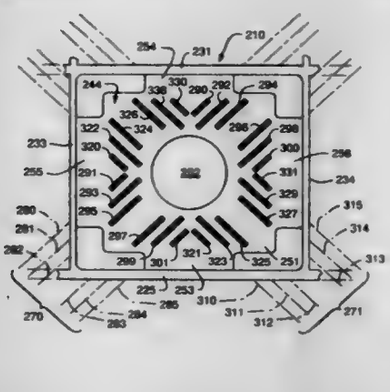
TRAY FOR INTEGRATED CIRCUITS

Robert H. Murphy, Merrimack, N.H., assignor to R. H. Murphy Co., Inc., Amherst, N.H.

Division of Ser. No. 556,550, Oct. 10, 1995, which is a continuation of Ser. No. 165,255, Dec. 10, 1993, abandoned, which is a continuation of Ser. No. 843,622, Feb. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 587,966, Sep. 25, 1990, Pat. No. 5,103,976. This application Dec. 27, 1996, Ser. No. 777,289

Int. Cl.[6] B65D *73/02*

U.S. Cl. 206—725 **32 Claims**



1. A tray for storing a plurality of integrated circuit components wherein each integrated circuit component has a planar housing having edges and first and second parallel housing surfaces and an array of terminal pins of a predetermined length depending from the first housing surface in predetermined column and row positions with predetermined spacings, said tray comprising:

A. first and second pluralities of upstanding planar ribs for engaging the integrated circuit component first housing surface, said first plurality of upstanding ribs lying on a first set of spaced, adjacent parallel rib axes and said second plurality of upstanding ribs lying along a second set of spaced, adjacent parallel rib axes, the rib axes in said first set intersecting the rib axes in the second set and the spacing between adjacent parallel rib axes corresponding to the predetermined spacings between the terminal pin column and row positions, each upstanding rib being positioned relative to an adjacent upstanding rib to align and interpose between different pairs of adjacent terminal pin rows and terminating at an upper edge thereby to define a support for the integrated circuit component; and

B. a framework including first and second intersecting beam means for supporting said plurality of upstanding ribs, said first and second sets of rib axes being oblique to said first and second beam means.

5,794,785

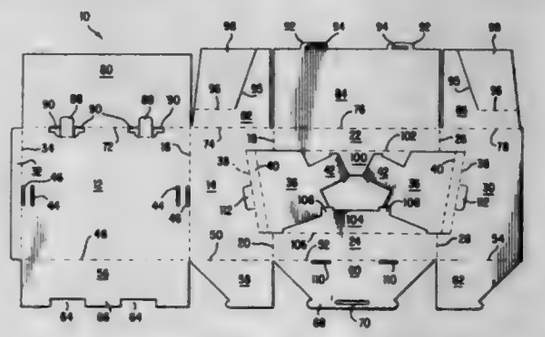
CONTAINER FOR A VANITY TOP OR THE LIKE

Ron M. Simon, Anaheim, Calif., assignor to RSI Home Products, Inc., Anaheim, Calif.

Filed Jun. 26, 1996, Ser. No. 670,566

Int. Cl.[6] B65D *5/50*

U.S. Cl. 206—783 **16 Claims**



1. A packaging container having a top and a bottom for holding and displaying an item, the packaging container comprising:

a back panel having a first lower flap and a first upper flap;

a pair of side panels, each having a second lower flap, a second upper flap and an elongated central flap;

an upper front extension panel having a third upper flap;

a lower front extension panel having a bottom flap; and

a tab connected to the back panel to connect the back panel with one of the pair of side panels,

wherein the other of the pair of side panels is connected to the back panel opposite the tab, wherein the upper front extension panel and the lower front extension panel are connected between the pair of side panels to form a substantially rectangular tube,

wherein the first lower flap, the pair of second lower flaps and the bottom flap are folded to close off the bottom of the packaging container,

wherein the first upper flap, the pair of second upper flaps, and the third upper flap are folded to close off the top of the packaging container,

wherein the pair of elongated central flaps are folded relative to the pair of side panels and are coupled to the back panel to provide a slanted support surface for the item, and

wherein an opening formed between the pair of side panels, the upper front extension panel and the lower front extension

panel between the pair of side panels permits the item to be displayed within the packaging container.

9. A packaging container having a top and a bottom for holding and displaying an item, the packaging container comprising:

a back panel having a first lower flap and a first upper flap;

a first side panel having a second lower flap, a second upper flap and a first elongated central flap;

a second side panel having a third lower flap, a third upper flap and a second elongated central flap;

an upper front extension panel having fourth and fifth upper flaps;

a lower front extension panel having a bottom flap; and

a tab connected to the back panel to connect the back panel with the second side panel,

wherein the first side panel is connected to the back panel opposite the tab, wherein the upper front extension panel and the lower front extension panel are connected between the first and second side panels to form a substantially rectangular tube,

wherein the first lower flap, the second lower flap, the third lower flap and the bottom flap are folded to close off the bottom of the packaging container,

wherein the first upper flap, the second upper flap and the third upper flap, the fourth upper flap and the fifth upper flap are folded to close off a top of the packaging container,

wherein the first and second elongated central flaps are folded relative to the first and second side panels and are coupled to the back panel to provide a slanted support surface for the item, and

wherein an opening formed between the first and second side panels, the upper front extension panel and the lower front extension panel between the first and second side panels permits the item to be displayed within the packaging container.

5,794,786

METHOD AND APPARATUS FOR SORTING SOLIDS BY AIRSTREAM

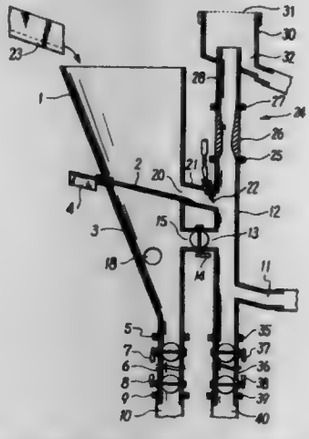
Satoshi Arai; Shinichi Ito; Hiroshi Sakamoto; Eisetsu Oi, and Hiroki Yotsumoto, all of Tsukuba, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 7, 1995, Ser. No. 399,600

Claims priority, application Japan, Mar. 18, 1994, 6-074300

Int. Cl.[6] B07B *9/00*

U.S. Cl. 209—29 **10 Claims**



1. An airstream solid sorting method for sorting slender objects from unslender objects in crushed wastes in a dry state, the method comprising the steps of:

supplying a mixture of slender and unslender objects into an upwardly flaring airstream sorting vessel;

allowing the mixture to flow in the airstream sorting vessel by supplying a turbulent airstream from below through a meshed screen tilted at the bottom of the airstream sorting vessel;

collecting the slender objects stalling and falling longitudinally in a direction in which gravity works and passing through the meshed screen into a slender objects collecting vessel disposed therebelow; and

separating and discharging the unslender objects flowing along the tilted meshed screen.

5,794,787

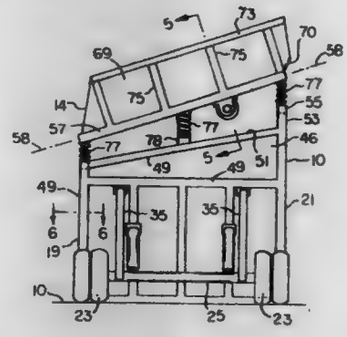
MOBILE GRAVEL SCREENING APPARATUS

Rafe Johnston, R.F.D. #3, Box 366A, Caribou, Me. 04736

Continuation-in-part of Ser. No. 258,220, Jun. 10, 1994, Pat. No. 5,673,893. This application Dec. 11, 1995, Ser. No. 570,108

Int. Cl.[6] B07B *1/49*

U.S. Cl. 209—420 **7 Claims**



1. A mobile aggregate screening apparatus comprising:

a box adapted to rest on the ground surface;

said box comprising a rear wall, a side wall, and a front wall; said front and rear walls having upper edges sloped downwardly in the direction of said box side wall;

a vibratable screen assembly located above said box;

said screen assembly comprising a rectangular frame located in a sloped plane approximately parallel to the plane of said sloped upper edges, a sloped perforated panel positioned on said frame, two upwardly divergent trough walls extending upwardly from said rectangular frame in contiguous relation to said perforated panel, a reinforcement means (73) extending along the upper edge of each said trough wall, and plural struts (75) extending between said frame and each said reinforcement means to absorb loads imposed on the associated trough wall, whereby aggregates deposited onto said trough walls are gravitationally guided onto the perforated panel; and

a rotary counterweight system for vibrating said screen assembly in a generally vertical direction;

said counterweight system comprising two aligned bearings mounted on said rectangular frame, and an elongated shaft supported in said bearings for rotary movement around a rotational axis defined by the bearings;

said elongated shaft having a principal axis offset from the bearing axis, whereby said shaft acts as a counterweight.

5,794,788

METHOD AND DEVICE FOR SORTING MATERIALS

Robert Massen, Am Rebberg 29, 78337 Öhningen, Germany

PCT No. PCT/EP94/01348, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO94/25186, PCT Pub. Date Nov. 10, 1994

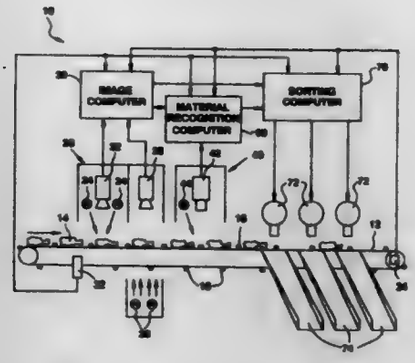
PCT Filed Apr. 28, 1994, Ser. No. 535,052

Claims priority, application Germany, Apr. 30, 1993, 43 14 396.2; Jun. 20, 1993, 43 20 331.0

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—524 **23 Claims**

1. A method for sorting materials, in particular plastic parts, comprising:



conveying items at known conveying speed past a material recognition system which uses non-contact scanning of each item to determine its material type in a measuring field and delivers a signal that identifies the material type and is used in sorting the items according to material type;

conveying the items past an imaging system which takes pictures of the items;

detecting features of colour and/or shape of the items from the pictures using electronic image processing techniques;

deriving position data from the features of colour and/or shape regarding spots on the item at which an undisturbed determination of the material type is possible without disturbance by other material types; and

determining the material type using the material recognition system, wherein determination of the material type is confined to such undisturbed spots as identified by the position data.

5,794,789

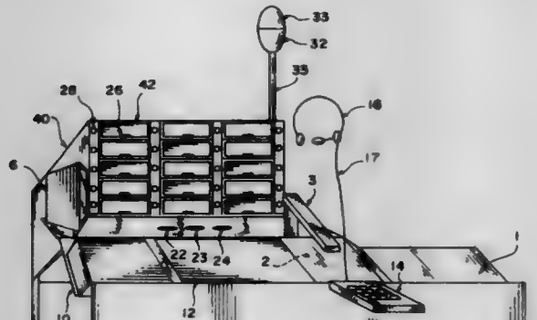
SEMI-AUTOMATED INTEGRATED SORT SYSTEM

William H. Payson, 1121 Arlington Blvd, Apt. 843, Arlington, Va. 22209, and John B. Payson, 309D Woodcreek Dr., Apt. 111, Boling Brook, Ill. 60440

Filed Dec. 13, 1995, Ser. No. 571,805

Int. Cl.[6] B07C *5/00*

U.S. Cl. 209—549 **49 Claims**



1. A package sort system comprising:

a sorter input work station from which packages in a package stream are supplied to a sorter person;

a plurality of manual ports adjacent the sorter input work station for the sorter person to manually insert packages from the sorter input work station for further processing;

a plurality of gates, each associated with at least a corresponding one or more of the manual ports, the gates individually movable between a closed position blocking access to corresponding manual ports and an open position allowing access to corresponding manual ports; and

a computer holding destination information relative to intended destinations of packages in the package stream at the sorter input work station, the computer operably connected to the plurality of gates for allowing access to a particular manual port based on the destination information for a particular package being manually sorted by the sorter person at a given time such that the sorter person may manually insert that package in particular manual port.

5,794,790

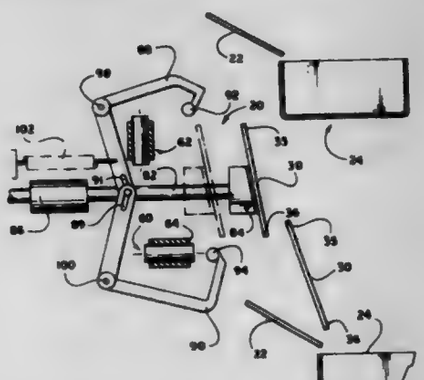
APPARATUS AND METHOD OF SORTING OBJECTS

Henri Bonnet, Atlanta, Ga., assignor to United Parcel Service of America, Inc., Atlanta, Ga.

Continuation of Ser. No. 450,515, May 25, 1995, abandoned, which is a division of Ser. No. 248,057, May 24, 1994, Pat. No. 5,547,063. This application Sep. 22, 1996, Ser. No. 717,941

Int. Cl.[6] B07C *9/00;* **B65G** *47/10*

U.S. Cl. 209—653 **19 Claims**



1. An apparatus for transporting and sorting substantially planar individual items having upper and lower edges, said apparatus comprising:

conveyor means for conveying said planar items in a substantially vertical but slightly inclined orientation by use of a conveyor supporting said lower edge and said upper edge leaning against a substantially vertical surface; and

plunger means for ejecting said planar items away from said conveyor such that said item is ejected from said apparatus with its upper edge leading its lower edge.

5,794,791

COAL CLEANING PROCESS

James Kelly Kindig, Apollo, Pa., assignor to Genesis Research Corporation, Carefree, Ariz.

Division of Ser. No. 271,283, Jul. 6, 1994, abandoned, which is a continuation-in-part of Ser. No. 988,417, Dec. 9, 1992, Pat. No. 5,348,160, which is a division of Ser. No. 775,860, Oct. 15, 1991, Pat. No. 5,314,124, which is a continuation-in-part of Ser. No. 492,312, Mar. 6, 1990, Pat. No. 5,096,066, which is a continuation of Ser. No. 126,419, Nov. 30, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 477,658

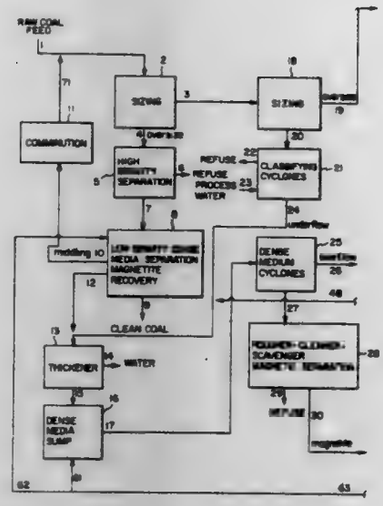
Int. Cl.[6] B04C *5/02;5/04;9/00;* **B03B** *5/34*

U.S. Cl. 209—727 **1 Claim**

1. A process for classifying solid particles according to particle settling velocities comprising:

(a) forming a slurry comprising solid particles to be classified and water;

(b) feeding the slurry to a classifying cyclone, wherein the average velocity of the feed through the inlet orifice by which the slurry enters the cyclone feed chamber is at least about 60 feet per second; and



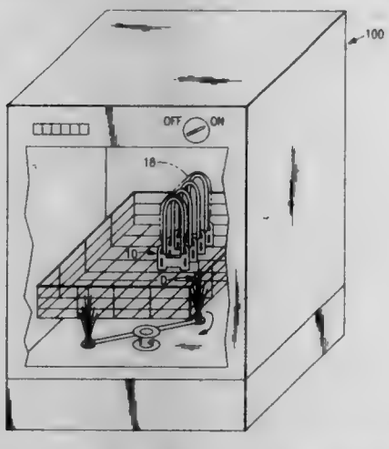
employing a volumetric flowrate of feed into the classifying cyclone such that the residence time of solid particles in the cyclone is sufficient to achieve effective classification of the solid particles.

5,794,792

WASHING AND DRYING RACK FOR RESEABLE BAGS

Robert P. Convertino, 8565 Indian Hill Rd., Manlius, N.Y. 13104

Continuation-in-part of Ser. No. 534,615, Sep. 25, 1995, abandoned. This application Dec. 3, 1996, Ser. No. 763,845
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—12 **10 Claims**



1. An apparatus for use in the cleaning of a plastic bag, comprising:

a base structure which contains an opening for allowing fluid to pass therethrough;

a bag support structure extending from said base structure and being configured

to support a plastic bag in such an orientation that the opening of the bag is in fluid communication with the opening of said base structure, and

to keep the opening of the bag open to permit a flow of fluid into and out of the bag; and

at least one retaining finger for grippingly retaining the bag,

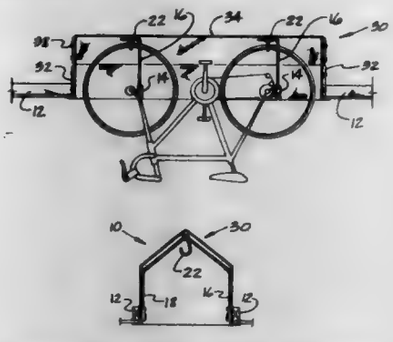
whereby fluid is permitted to pass through said base structure and flow into the plastic bag, and flow out of the plastic bag and pass through said base structure.

5,794,793

BICYCLE STORAGE RACK

Eddy R. Frederick, 2518 N. Wheatridge St., Wichita, Kans. 67223

Filed Aug. 1, 1996, Ser. No. 690,831
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—20 **7 Claims**



1. An overhead bicycle storage rack for hanging a bicycle vertically between the ceiling joists of a building with sufficient head room thereunder, said rack comprising:

a pair of u-shaped brackets, each bracket having a width approximate the spacing between the ceiling joist and a depth approximate the radius of the bicycle wheel, each bracket is positionable laterally between an adjacent pair of ceiling joists;

each bracket having ends which are attachable to a ceiling joist with the remainder of the bracket exending above the ceiling joists; and

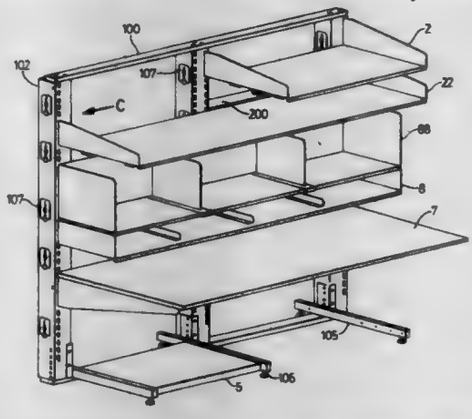
a hanger element supported on each bracket positioned above the ceiling joist for supporting an individual wheel of said bicycle.

5,794,794

MODULAR RACK SYSTEM FOR SUPPORTING ELECTRONIC EQUIPMENT

Leslie Hull, 35 Carlson Drive, Newmarket, Ontario, Canada, L3Y 6A8

Filed Apr. 10, 1996, Ser. No. 630,740
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—26 **5 Claims**



1. A modular rack system for supporting electronic equipment, comprising vertical and lateral frame members cooperating to form a vertical supporting frame, and shelf or rack members supported from the frame for carrying the electronic equipment, wherein the vertical and horizontal frame members respectively comprise vertical and horizontal channel section members with walls defining continuous longitudinal openings at a rear of the frame and cooperating to form a system of interconnected raceways for receiving

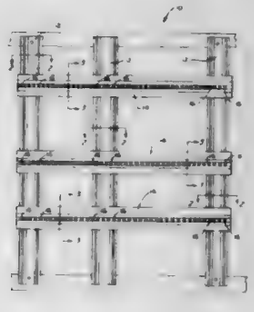
cables for forming connections to and between the electronic equipment, the walls of the channel section members defining ports for passing end connectors of cables, the ports defined in the vertical channel section members including a plurality of vertical spaced ports in the walls of said members, and the raceways formed by the horizontal members communicating with raceways formed by the vertical members through selected ones of said vertically spaced ports.

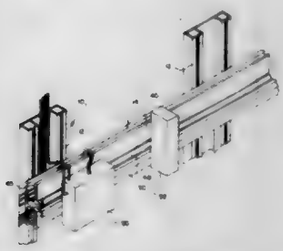
5,794,795

FRAMEWORK SYSTEM FOR ELECTRICAL/ ELECTRONIC CONTROLS

William L. Stemmons, 164 W. 1550 North, Sunset, Utah 84015

Filed Jun. 17, 1996, Ser. No. 663,721
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—26 **6 Claims**





1. A framework system for supporting multiple electrical/ electronic control devices, and comprising:

multiple, spaced-apart vertical tray members which each have a vertically extending wireway zone;

multiple, spaced-apart horizontal tray members which each have at least two horizontally-extending wireway zones; and

multiple fastener devices rigidly securing said horizontal tray members to said vertical tray members, said fastener devices passing through horizontal fastener enclosure zones located in said horizontal tray members.

5,794,796

STORAGE RACK FOR RETAINING SOFTWARE DEVICES HAVING MULTIPLE CONFIGURATIONS

James T. Weisburn, Massillon, Ohio, assignor to Alpha Enterprises, Inc., North Canton, Ohio

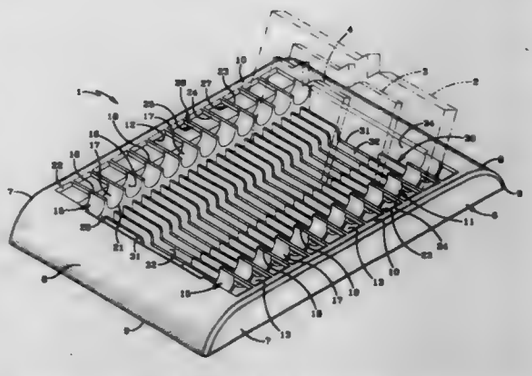
Filed Dec. 20, 1994, Ser. No. 359,593
Int. Cl.[6] A47G *29/00*
U.S. Cl. 211—40 **13 Claims**

1. A storage rack for receiving software in a plurality of software formats, said storage rack comprising:

a body having a pair of spaced apart sidewalls, a pair of end walls extending between said sidewalls, and a top wall;

the sidewalls and end walls defining an opening; and

a platform integrally formed with the body and positioned in said opening formed with a first software support means adapted for supporting software of a first format, and a second software support means adapted for supporting software of a



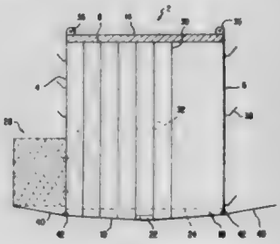
second format, and in which the first software support means and the second software support means are positioned adjacent one another on said platform and within the opening, said first software support means including a side support rack adjacent each sidewall and said second software support means including a central support rack intermediate the side support racks of the first software support means, each of said side support racks including a plurality of laterally extending grooves, each groove being formed with a peak and a trough whereby the side support racks are adapted to accept an edge of the first software format, with the central support rack being positioned below the troughs of the side support racks.

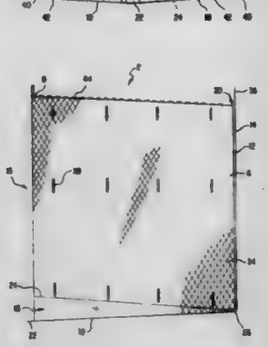
5,794,797

DRYING DEVICE

William Kuntz, Ellicott City, Md., assignor to Eagle Inventors, LLC, Ellicott City, Md.

Filed Mar. 18, 1997, Ser. No. 820,054
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—41.3 **15 Claims**





1. A drying device comprising:

a bottom surface formed of a solid construction having sides which slope inwardly toward a center portion;

a channel disposed adjacent said center portion of said bottom surface;

an extendable and retractable spout disposed adjacent said channel;

a slanted bearing surface for supporting plates or other utensils disposed above said bottom surface, said bottom surface and said bearing surface forming a lower drainage area;

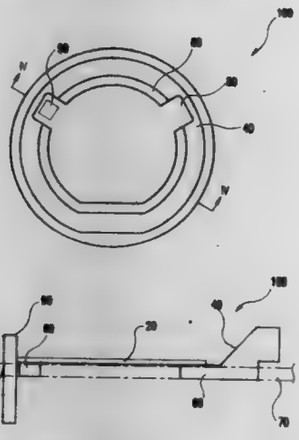
a slanted top surface formed of a solid construction disposed opposite said bottom surface;
a plurality of raised dimples disposed on said top surface;
a first sidewall joining said top and bottom surfaces and disposed substantially perpendicular thereto;
a second sidewall disposed opposite said first sidewall joining said top and bottom surfaces and disposed substantially perpendicular thereto;
a first rear wall joining said top surface, said bottom surface, said first sidewall and said second sidewall;
a second rear wall disposed behind and substantially parallel to said first rear wall, said first and second rear walls forming a rear drainage area;
a plurality of partitions disposed between and substantially parallel to said first and second sidewalls; and
mounting structure for mounting said drying device remote from a kitchen sink.

5,794,798

WAFER HOLDER

Dong-Ho Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 5, 1996, Ser. No. 760,254
Claims priority, application Rep. of Korea, Dec. 29, 1995, 1995-65735
Int. Cl.[6] A47G *19/08*
U.S. Cl. 211—41.18 **5 Claims**





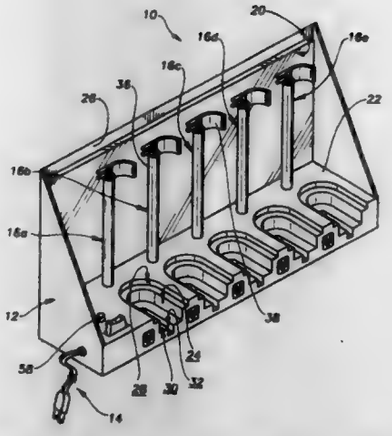
1. A wafer holder, comprising:
a wafer guiding section having a centrally and inwardly inclined surface for stably guiding a wafer;
a wafer support section formed at an inner side of the wafer guiding section and having a flat surface for supporting the wafer;
one or more wafer stopper holes formed between the wafer guiding section and the wafer support section, the wafer stopper holes being wider in the circumferential direction of the wafer support section than in the radial direction; and
one or more of the wafer stoppers inserted in the one or more wafer stopper holes for preventing undesired movement of the wafer.

5,794,799

CURLING IRON ORGANIZER WITH TEMPERATURE DISPLAY

Joyce E. Collins, 7071 Melanie Dr., and Ethel Evans, 2485 W. Belmont St., both of Pensacola, Fla. 32505

Filed Sep. 25, 1996, Ser. No. 719,361
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—70.6 **20 Claims**



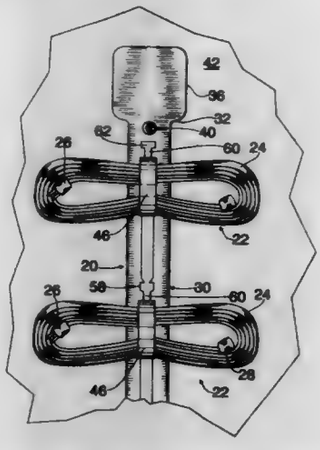
1. A curling iron organizer comprising:
a housing having a plurality of curling iron holding cavities, each sized to receive a handle end of a curling iron at least partially therein;
a power distribution circuit including a plurality of power outlets accessible from an outer surface of said housing;
plurality of curling iron supports extending from said housing, each curling iron support including a tip receiving member constructed of a heat conducting material positioned with respect to one of said plurality of curling iron holding cavities in a manner such that said heated tip end of the curling iron is cradled within said tip receiving member when the handle end of said curling iron is positioned within said respective curling iron holding cavity;
a plurality of temperature display devices, at least one of said plurality of temperature display devices being mounted to a back surface of each of said tip receiving members; and
a reflecting device attached to said housing and positioned with respect to said plurality of temperature display devices in a manner such that a reflection of each temperature display device can be viewed by a user.

5,794,800

DISPLAY STRIP FOR ELONGATED ARTICLES FORMED INTO HANKS

Robert A. Carmo, Placentia, and Kenneth F. Morre, Long Beach, both of Calif., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 291,654, Aug. 17, 1994, abandoned. This application Mar. 13, 1997, Ser. No. 816,231
Int. Cl.[6] A47F *5/08*
U.S. Cl. 211—113 **5 Claims**



1. A device for displaying elongate articles each formed into a multi-turn hank comprising:

a) a flat strap member formed of a flexible plastic material having a uniform thickness and width, a first end and a second end for attachment to said articles arranged to extend transverse to the longitudinal axis of said strap member;

b) at least two tongue members in said strap member each aligned with the longitudinal axis of said strap member, each having a first end and a second end and two substantially parallel marginal edges extending from said first end to said second end and defining a first width therebetween; said at least two tongue members each defined by a severed top edge at said second end and severed marginal edges to permit each of said at least two tongue members to be selectively displaced out of the plane of the strap member about the unsevered first end as a hinge;

c) a locking tab on each of said at least two tongue members adjacent their respective second ends and extending transverse to the longitudinal axis of said strap member and having a second width greater than said first width;

d) a first slot portion adjacent said second end of each of said at least two tongue members having a width substantially equal to said second width; and

e) a second slot portion adjacent said second end of each of said at least two tongue members each communicating with an associated first slot portion, said second slot portions having a width less than said first width whereby said tongue members are each selectively locked in place about a hank arranged to be placed adjacent said device by introducing said locking tab into said first slot portion and moving said tongue into and along said second slot portion.

5,794,801

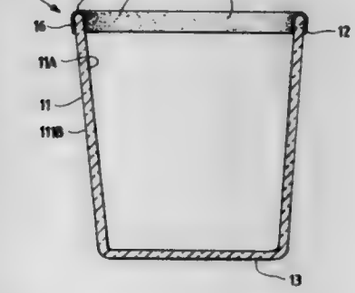
MATERIAL COMPOSITIONS

Jerome Lemelson, 868 Tyner Way, Incline Village, Nev. 89451

Division of Ser. No. 108,103, Aug. 16, 1993. This application Jun. 6, 1995, Ser. No. 468,375

Int. Cl.[6] B24D *3/02*

U.S. Cl. 220—458 **8 Claims**



1. An article of manufacture comprising:

a plurality of stratum bonded together wherein a first of said stratum has an exterior surface;

a synthetic diamond material applied to said surface of said first stratum by chemical vapor deposition; and

a protective coating bonded to said synthetic diamond material, said protective coating selected from the group consisting of chromium, alloys containing chromium, vanadium, tungsten, titanium, molybdenum, and metal alloy containing the same.

5,794,802

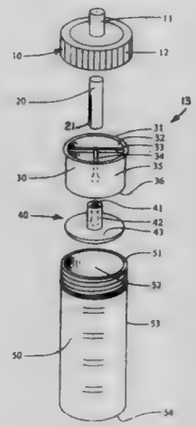
CONTAINER FOR SEPARATION, STORAGE, AND MIXING OF INGREDIENTS

Joseph Caola, 26 Farmington Dr., Shrewsbury, Mass. 01545

Filed Mar. 4, 1997, Ser. No. 812,118

Int. Cl.[6] A61J *9/00*

U.S. Cl. 215—11.1 **5 Claims**



5. An insert for an infant feeding bottle having a chamber, an upper end for receiving a nipple assembly removably connected to the upper end of the bottle, said nipple assembly including and elastomeric nipple, said upper end having an upper access opening, said insert comprising:

(a) a housing having a compartment for storing powdered formula, a top opening to the compartment and a bottom opening to the compartment, said housing being adapted to be inserted into the chamber of said bottle and to be supported on the bottle so that the top opening of said compartment is isolated from said chamber and said bottom opening is exposed to said chamber;

(b) a closure for releasably connected to said housing in a closed position for closing said bottom opening said closure being releasable from said closed position in response to downward pressure on said closure, said closure having a horizontal portion for closing said bottom opening and a vertical which extends upwardly from said horizontal portion, said vertical portion having an upwardly facing cavity; and

(c) an actuator being guided for vertical movement relative to said housing, said actuator having a lower end extending to said closure, said actuator having an upper end which extends above the top opening of said housing for being positioned below said nipple, so that said actuator can be pushed downwardly from said nipple for applying downward pressure to said closure and moving said closure downwardly away from its closed position for connecting said compartment to said chamber.

5,794,803

CHILD-RESISTANT MEASURING CUP CLOSURE AND DISPENSING CONTAINER

William Douglas Sprick, Evansville, Ind., assignor to Rexam Closures, Inc., Evansville, Ind.

Filed Nov. 1, 1996, Ser. No. 742,803

Int. Cl.[6] B65D *55/02;* **B67D** *1/16*

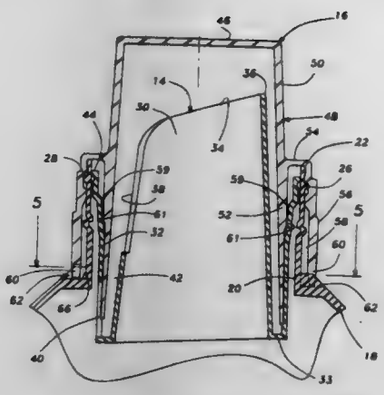
U.S. Cl. 215—217 **4 Claims**

1. A child-resistant liquid containing package comprising:

a container having a neck with external threads adjacent one end of said neck,

a fitment fixed to said neck having a pouring spout projecting from said neck and an annular sheath coaxial with said spout to form an annular cavity between said spout and said neck,

a cup shaped closure having a top and a skirt extending from said top and being disposed in said annular cavity with said



top being positioned axially beyond the end of said spout when said closure is in a closed position,

an outer annular wall spaced radially outward and connected coaxially with said skirt and having an annular lip at one end, threads complementary to said externally threaded neck formed on the interior of said wall adjacent said top, said annular wall adjacent said lip being flexible for deflection radially outwardly at first opposed locations in response to deflection radially inwardly at second opposed locations,

lock members on said annular lip of said skirt adjacent said first opposed locations, and

lock elements on said container for engagement with said lock members at a locked position to prevent unthreading of said closure from said container, said lock members being movable radially outwardly out of engagement with said lock elements to permit unthreading of said closure from said container upon radially inward deflection of said skirt at said second opposed locations for removal of said cup shaped closure to expose said spout;

said closure being rotatable a limited amount from a tightly closed position to said locked position, and

an annular seal on an inner wall surface of said sheath engagable with the outer surface of said skirt of said closure, said seal remaining in sealing engagement with said skirt during rotational and axial movement relative to said neck between said tightly closed and said locked positions of said closure and container, said outer surface from an intermediate portion to a lower portion of said skirt of said closure remaining in contact with said inner wall surface of said sheath during closing movement of closure on said neck to provide a wiping action of liquid from said outer surface.

5,794,804

PHARMACEUTICAL CONTAINER WITH METAL CLOSURES HAVING REDUCED PARTICULATES

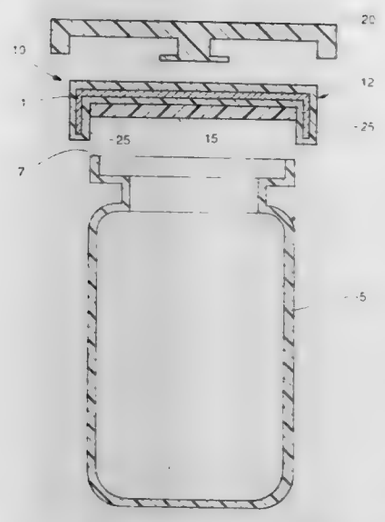
James W. Sloan, Spring City; Charles Papciak, Exton, and William A. Conard, Harleysville, all of Pa., assignors to The West Company, Incorporated, Lionville, Pa.

Division of Ser. No. 374,449, Jan. 18, 1995, Pat. No. 5,622,745, which is a continuation of Ser. No. 340,698, Nov. 16, 1994, abandoned. This application Mar. 31, 1997, Ser. No. 828,869

Int. Cl.[6] B65D *39/00*

U.S. Cl. 215—249 **8 Claims**

1. A pharmaceutical container for storing compositions therein, comprising: a vial for storing pharmaceutical compositions therein, a shell cap for sealing said vial, said shell cap comprising a hollow metallic preform and a solid polymeric coating on substantially all bare metallic surfaces of said preform, wherein the polymeric



coating covers edge portions of said preform and has sufficient thickness and coverage to reduce metal and lacquer particulate formation.

5,794,805

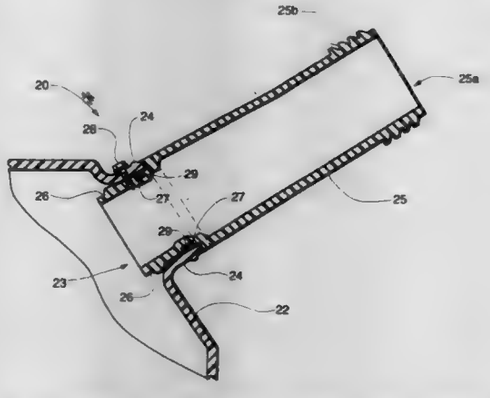
FUEL TANK ASSEMBLY FOR SKID STEER LOADERS

Douglas G. Branham, Leola, Pa., assignor to New Holland North America Inc., New Holland, Pa.

Continuation of Ser. No. 339,054, Nov. 14, 1994, abandoned. This application Oct. 17, 1996, Ser. No. 732,954

Int. Cl.[6] B65D *25/20*

U.S. Cl. 220—86.2 **3 Claims**



1. In an off-road vehicle having a wheeled frame adapted for movement over the ground; an engine supported by said frame to provide operative power for said vehicle; and a fuel tank assembly for storing a supply of fuel for use by said engine, an improved fuel tank assembly comprising:

a molded polymer, hollow tank body having a inlet opening for the introduction of fuel into said tank body, said tank body including a flange extending outwardly from said tank body and defining said inlet opening;

a molded polymer filler tube detachably fastened to said tank body at said inlet opening to form a joint therebetween, said filler tube extending outwardly from said tank body to direct fuel from a remote location into said inlet opening, said filler tube being formed with a neck having a shape corresponding to the shape of said flange and being sized to fit inside said flange to extend into said inlet opening, said filler tube being self supporting;

means for sealing said joint between said filler tube and said tank body to prevent the passage of fuel therebetween; and

a self-tapping screw interengaged between said flange and said neck of said filler tube for detachably connecting said filler tube to said tank body.

5,794,806

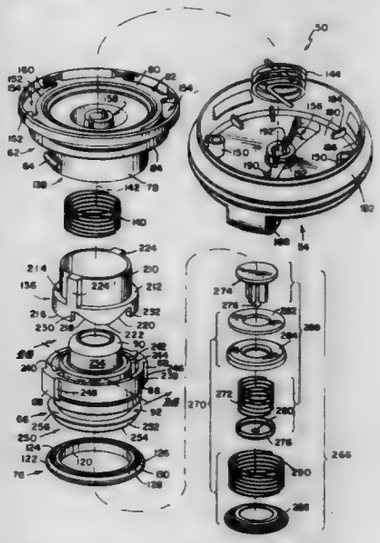
QUICK-ON FUEL CAP

Robert S. Harris, and Jeffery Griffin, both of Connersville, Ind., assignors to Stant Manufacturing Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 239,217, May 6, 1994, Pat. No. 5,480,055. This application Dec. 4, 1995, Ser. No. 566,868

Int. Cl.[6] B65D *51/16*

U.S. Cl. 220—203.26 **54 Claims**



1. A fuel cap for use in the filler neck of a tank, the fuel cap comprising a filler neck closure member, a handle engaged to drive the filler neck closure member, and a torsion spring coupled to the handle and to the filler neck closure member.

5,794,807

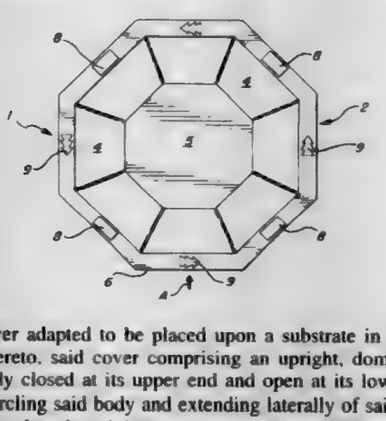
PROTECTIVE COVER FOR EVIDENCE

Thomas W. Kabat, 4165 Manke Rd., Fairgrove, Mich. 48733

Filed Mar. 17, 1997, Ser. No. 819,678

Int. Cl.[6] B65D *45/00*

U.S. Cl. 220—315 **12 Claims**



1. A cover adapted to be placed upon a substrate in overlying relation thereto, said cover comprising an upright, dome-shaped, hollow body closed at its upper end and open at its lower end, a flange encircling said body and extending laterally of said body at said lower end, and retaining means carried by said flange engageable with said substrate and underlying said flange for removably coupling said body to said substrate, said retaining means comprising a finger forming part of and normally coplanar with said flange, said finger having one end deformable out of the plane of said flange to project below said flange.

5,794,808

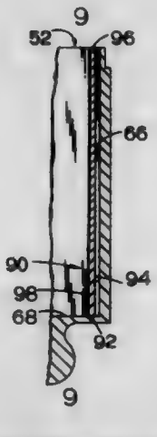
CONTAINER FOR SELF-DEFENSE SPRAY CANISTER

Judith B. Sauget, One Longue Vue Station, Sauget, Ill. 62206

Continuation of Ser. No. 336,286, Nov. 8, 1994, abandoned. This application May 21, 1996, Ser. No. 652,011

Int. Cl.[6] B65D *25/16*

U.S. Cl. 220—400 **28 Claims**



1. A container for a self-defense spray canister, comprising:

a container formed by a wall member, the first wall member having a first outer surface, the first wall member forming a first inner cavity, the first inner cavity having a first open end and a first closed end, an inner bottom surface and an inner side surface;

a cap formed by a second wall member, the second wall member having a second outer surface, the second wall member forming a second inner cavity, the second inner cavity having a second open end and a second closed end, the second inner cavity having a top surface, and a second inner side surface, with a bottom shelf terminating into a first shoulder with the second outer surface and a second shoulder with the second inner side surface;

a step for the bottom shelf, the second shoulder and the inner side surface of the cap, the step located in the first outer surface, whereby the cap is sized and the step being located not to interfere with an actuator on a canister of self-defense spray sitting in the first inner cavity;

means to align the canister within the container as the canister is inserted into the container, the means to align the canister comprising a plurality of substantially rigid ribs along the inner side of the container;

means to compensate for shorter canisters of self-defense spray, and

removable means to compensate for slimmer canisters of self-defense spray.

5,794,809

TRASH CONTAINER WITH AUTOMATIC LINER BAG FEED

Shlomo Shuval, 2124 Acton St., Berkeley, Calif. 94702

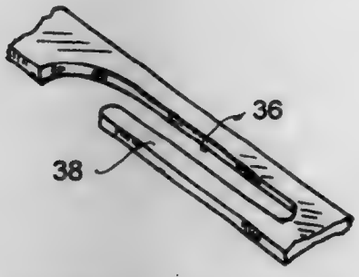
Filed Feb. 18, 1997, Ser. No. 802,028

Int. Cl.[6] B65D *85/59*

U.S. Cl. 220—407 **7 Claims**

1. A trash container with attached liner bag supply, said container comprising:

a container having a floor, a side wall and an open top, said container having a slot at its bottom for admitting liner bags;



means for supporting a box containing at least one roll of interconnected and separable liner bags, said box having an opening aligned with said slot: and

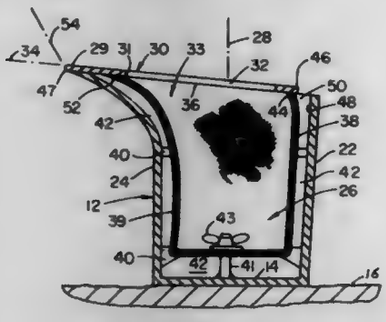
braking means for temporarily locking an empty liner bag for removal of a preceding bag.

5,794,810

SCUTTLE FOR POURING PELLETIZED WOOD FUEL

Carroll G. Hensley, 3769 Highway 11 E., Limestone, Tenn. 37681

Filed Feb. 24, 1997, Ser. No. 804,818
Int. Cl.[6] B65D *21/02*
U.S. Cl. 220—408 **15 Claims**



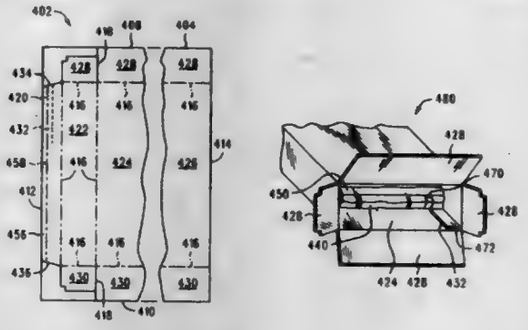
1. A scuttle device for pouring frangible fuel pellets of compacted, formed wood material into a stove hopper through a slot-like entry port, said device comprising first wall means having a first bottom wall section adapted to rest on a building floor or other base and having interconnected first opposing side wall sections and first opposing front and back wall sections extending upwardly from said bottom wall section to form the scuttle device substantially in the general exterior configuration of a coal scuttle or hod having a cavity means formed by said first wall means generally around a vertical axis, generally planar top means provided on the upper portions of said wall sections, said top means having a front portion and a rear portion lying generally coincident with said upper portions of said front and back wall sections respectively, and further having an outer periphery, shoulder means extending generally radially inwardly from said outer periphery in a first plane oriented substantially normal to said axis and radially inwardly terminating to form an access opening to said cavity means, a radially inner edge of said front portion of said top means being formed to provide pouring lip means, stop surface means provided by the underside of said shoulder means adjacent to said access opening, sieve means positioned in said cavity means and provided by second wall means of mesh material having the general configuration of said first wall means and having a second bottom wall section, second opposing side wall sections and second opposing front and back wall sections which have length, width and height dimensions less than the dimensions of the corresponding sections of said first wall means, support means contacting said sieve means and maintaining substantially the entire outer surface of said sieve means at a distance from the inner surface of said first wall means to provide a collection space for receiving and retaining fuel pellet fines, wherein said second wall means is formed to provide upper rim means on said sieve means, said rim means being adapted to lie closely adjacent said stop surface means for allowing passage of said fines into said collection space while preventing spill-over of pellets into said collection space and spill-out of pellet fines from said collection space during the pellet pouring operation, and wherein said rear portion of said top means is formed to provide a fines emptying port at the top back area of the scuttle device.

5,794,811

CARTON, CARTON BLANK AND METHOD FOR FORMING THE CARTON

Joseph C. Walsh, Longmont, Colo., assignor to Graphic Packaging Corporation, Boulder, Colo.

Continuation-in-part of Ser. No. 587,467, Jan. 17, 1996, Pat. No. 5,632,404, and Ser. No. 587,495, Jan. 17, 1996, each which is a continuation-in-part of Ser. No. 352,526, Dec. 9, 1994, abandoned, and Ser. No. 336,982, Nov. 14, 1994, abandoned, each which is a continuation-in-part of Ser. No. 51,628, Apr. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 994,132, Dec. 21, 1992, abandoned. This application Oct. 29, 1996, Ser. No. 741,342
Int. Cl.[6] B65D *5/56*
U.S. Cl. 220—462 **17 Claims**



1. A carton blank comprising:

a unitary sheet of a relatively rigid material having an inner surface and an outer surface;

said unitary sheet of a relatively rigid material having a left side edge, a right side edge, a top edge and a bottom edge;

said unitary sheet of a relatively rigid material having a length extending from said top edge to said bottom edge and a width extending from said left side edge to said right side edge;

said unitary sheet of a relatively rigid material having a plurality of cut and fold lines for dividing said unitary sheet of a relatively rigid material into a back wall panel, a front wall panel, opposite side wall panels, a glue tab panel and top and bottom panels extending outwardly in opposite directions from said front wall, back wall and opposite sidewall panels;

said glue tab panel having a top edge and a bottom edge and a perforated line extending from said top edge toward said bottom edge;

said inner surface of said front wall panel, said back wall panel, said opposite sidewall panels and said glue tab panel having a central body portion, a top body portion and a bottom body portion;

said central body portion located between and spaced from said fold lines between said front wall panel, said back wall panel and said opposite sidewall panels and said top and bottom panels and extending into said glue tab panel;

a generally rectangular sheet of a relatively flexible fluid impervious material having an inner surface and an outer surface with said outer surface having a central body portion, a top body portion a bottom body portion, a left side edge, a right side edge and top and bottom edges;

said generally rectangular sheet of a relatively flexible fluid impervious material having a length and a width correspond-

ing to said length of said width of said unitary sheet of a relatively rigid material;

said central body portion of said rectangular sheet of a relatively flexible fluid impervious material being secured to said central body portion of said front wall panel, said back wall panel said opposite sidewall panels and said glue tab panel;

at least portions of said central body portion of said generally rectangular sheet of a relatively flexible fluid impervious material being secured by an adhesive permitting separation thereof from adjacent portions of said central body portion of said front panel, said back panel, said opposite sidewall panels and portions of said glue tab panel without damage thereto by the application of sufficient force; and

at least portions of said top and bottom body portion of said generally rectangular sheet of a relatively flexible fluid impervious material overlying but not secured to said top and bottom body portion of said front wall panel, said back wall panel, said opposite sidewall panels and said glue tab panel and said inner surface of said top and bottom panels.

5,794,812

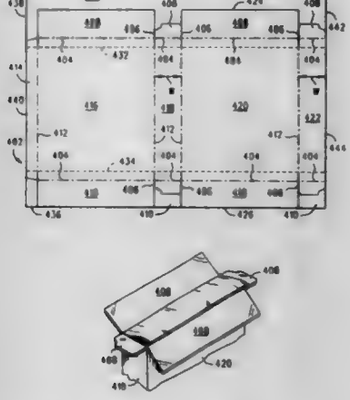
CARTON, CARTON BLANK AND METHOD FOR FORMING THE CARTON

Joseph C. Walsh, Longmont, Colo., assignor to Graphic Packaging Corporation, Boulder, Colo.

Continuation-in-part of Ser. No. 587,467, Jan. 17, 1996, Pat. No. 5,632,404, and Ser. No. 587,495, Jan. 17, 1996, each which is a continuation-in-part of Ser. No. 352,526, Dec. 9, 1994, abandoned, and Ser. No. 336,982, Nov. 14, 1994, abandoned, each which is a continuation-in-part of Ser. No. 51,628, Apr. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 994,132, Dec. 21, 1992, abandoned. This application Oct. 29, 1996, Ser. No. 741,349

Int. Cl.[6] **B65D** *5/56*

U.S. Cl. 220—462 **14 Claims**



1. A carton blank comprising:

a unitary sheet of a relatively rigid material having an inner surface and an outer surface;

said unitary sheet of a relatively rigid material having a left side edge, a right side edge, a top edge and a bottom edge;

said unitary sheet of a relatively rigid material having a plurality of cut and fold lines for dividing said unitary sheet of relatively rigid material into a front panel portion, a back panel portion and opposite sidewall panel portions, a glue tab panel portion, and top and bottom panel portions extending outwardly in opposite directions from said front wall, back wall and opposite sidewall panel portions;

said unitary sheet of a relatively rigid material having a length extending from said top edge to said bottom edge and a width extending in a direction perpendicular to said length;

a sheet of a relatively flexible fluid impervious material having portions thereof superposed over said inner surface of at least said top panel portions and at least portions of said front and back panel portions, said opposite sidewall panel portions and said glue tab panel portion;

securing means extending between said right side edge and said left side edge for securing at least a first portion of said sheet of a relatively flexible fluid impervious material to at least portions of said front and back panel portions, said opposite sidewall panel portions and said glue tab panel portion;

said sheet of a relatively flexible fluid impervious material having a top edge spaced from and parallel to said top edge of said unitary sheet of a relatively rigid material;

said sheet of a relatively flexible fluid impervious material having a left side edge and a right side edge and a width substantially the same as the width between said left side edge and said right side edge of said unitary sheet of a relatively rigid material; and

said top edge of said sheet of a relatively flexible fluid impervious material being spaced from said fold lines between said front, back and opposite sidewall panels and said top panels a distance at least equal to one-half inch greater than the width of one of said opposite sidewall panel portions.

5,794,813

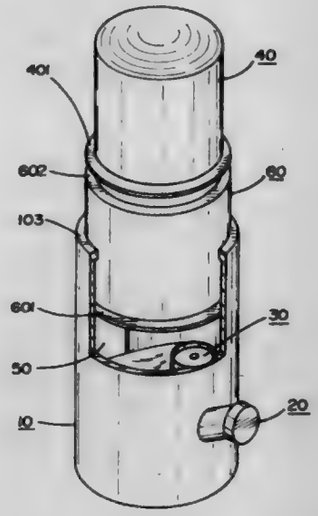
STRUCTURE OF STORING TANK

Chien-Hung Lin, 3F., No. 145-1, Sec. 5, Nan-Ching E. Road, Taipei, Taiwan

Filed Jul. 25, 1996, Ser. No. 686,024

Int. Cl.[6] **B65D** *7/00*

U.S. Cl. 220—565 **7 Claims**



1. A storing tank, comprising:

a lower tank member having a base on a bottom thereof, a top of said base forming a bevel guiding surface above which is a receiving space, a stop flange provided on a top inner periphery of said lower tank member;

an access gate provided on an external wall of said lower tank member, whereby material can be placed into said lower tank member from outside of the lower tank member;

a pushing mechanism provided within said lower tank member adjacent to the access gate whereby material placed through said access gate falls onto said pushing mechanism which pushes the material upwardly onto said bevel guiding surface of said lower tank member;

an upper tank member telescopically connected to said lower tank member and movable relative to said lower tank member, a limiting edge on said upper tank member located so as to be abuttingly stopped by said stop flange of said lower tank when said upper tank member is moved up to an extreme position;

an outlet provided on said lower tank member, a lower edge of said outlet being flush with a lower end of said bevel guiding surface; and an openable lid on said lower tank member for opening and closing said outlet.

5,794,814

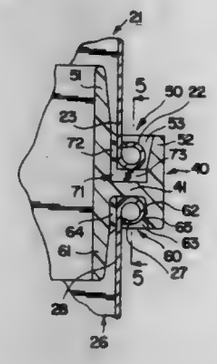
RESILIENT INTERFACE RING FOR METAL CONTAINER

Philip M. Baerenwald, Rockton, Ill., assignor to J. L. Clark, Inc., Rockford, Ill.

Division of Ser. No. 617,476, Mar. 15, 1996, Pat. No. 5,676,272. This application May 23, 1997, Ser. No. 862,732

Int. Cl.[6] B65D *43/06*

U.S. Cl. 220—685 **23 Claims**



1. An interface ring formed of resilient material for use with two container lids having formed edges of identical size and shape so that the container lids do not interfit, the interface ring being adapted to releasably grip said container lids to form a closed container, the interface ring comprising:

opposed upper and lower channels separated by a connecting web, the channels having a size and shape which matches the size and shape of the formed edges, the channels being sufficiently wide to allow insertion of and gripping the formed edge of a container lid to provide a retention force resisting removal thereof,

the overall size of the channels being substantially the same so that the identical formed edges of two lids can fit within the channels in butting relationship separated by the web, the channels being formed so that the retention force for withdrawal of an inserted lid is different between the channels to allow one channel to release before the other channel.

5,794,815

DISPENSERS WITH OPTIONAL SUPPORT OR ATTACHMENT MEANS

Casey L. Carlson, Edina, and Daniel E. Siltberg, White Bear Township, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 19, 1996, Ser. No. 667,527

Int. Cl.[6] A47K *10/24*

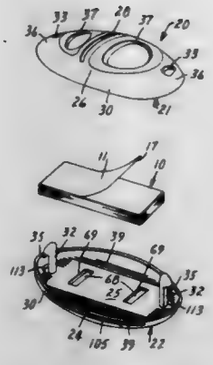
U.S. Cl. 221—45 **24 Claims**

1. An assembly comprising:

a dispenser for flexible sheets from a stack of sheets disposed one on top of another, said dispenser having a support surface adapted for supporting the stack of sheets and including a bottom wall;

a support member including attaching means for releasably attaching said support member to the side of said bottom wall opposite said support surface, retainer portion having a socket opening through the side of the retainer portion opposite the web like portion; and

a weighted base having an arcuate bottom surface adapted to be supported on a generally horizontal surface, and a spherical



portion on the side of the base opposite the arcuate bottom surface removably received in the socket with said retainer portion frictionally and releasably engaging the spherical portion, said base having sufficient weight so that the sheets can be removed from the dispenser with one hand, said retainer portion being easily removable from the base by pulling it off of the spherical portion so that it can be positioned between a user's fingers to support the dispenser along the back surface of the user's hand.

5,794,816

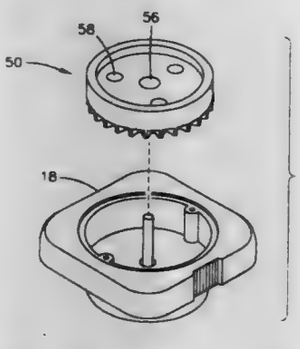
VENDING MACHINE

David B. Pliler, 40880 Via Media, Temecula, Calif. 92591, and Matthew A. Stevens, 1232 E. Elmwood Ave., Burbank, Calif. 91501

Filed May 3, 1996, Ser. No. 642,446

Int. Cl.[6] B65H *3/60*

U.S. Cl. 221—203 **20 Claims**



14. A dispensing apparatus for dispensing bulk capsules, comprising:

a housing having a generally cylindrical receptacle and a dispensing chute communicating with said receptacle;

an article reservoir mounted on said housing above and communicating with said receptacle; and

a rotatable dispensing wheel disposed in said receptacle and adapted to selectively communicate with said dispensing chute and operative to selectively dispense articles from said receptacle to said chute, said dispensing wheel having a plurality of article cavities for receiving and depositing a predetermined quantity of articles in said chute, said cavity defined by a through passage having downwardly diverging walls.

5,794,817

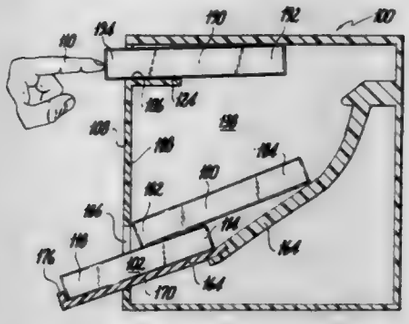
ARTICLE DISPENSER

Vincent Rosa, 86-27 86th St., Woodhaven, N.Y. 11421

Filed Feb. 9, 1996, Ser. No. 599,225

Int. Cl.[6] B65G 59/00

U.S. Cl. 221—281 17 Claims



12. A dispenser for articles, each article having a longitudinal dimension, said dispenser having a front, a back, a top, a bottom, and a storage zone for a plurality of articles, said dispenser comprising:

an opening in the front of said dispenser generally above the storage zone for loading articles into the dispenser,

first support means in said dispenser, mounted on said dispenser adjacent to said opening,

second support means in said dispenser mounted on said dispenser generally at the height of said first support means and spaced from said first support means so that an article that is supported at a first end and a second end of said article by said second support means and said first support means respectively simultaneously, can pass down between said first and said second support means when said article is not supported by said first support means;

said first support means comprising means for holding an article by one end so that the article cannot fall between the first and second support means;

said second support means being further for orienting the longitudinal dimension less than 90° from horizontal;

a first wall, being downward and forward sloping and being mounted in said dispenser below said storage zone so that an article which falls between the first and second support means lands on said first wall.

5,794,818

CONTAINER FOR BULK MATERIALS

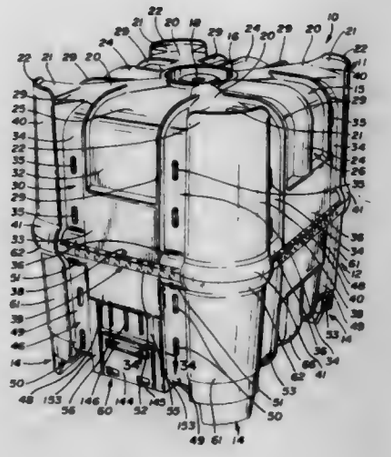
Robert A. Bromwell, Rochester Hills, Mich.; Jack E. Harris, Savannah, Ga.; Alan M. Imboden, Marine City, Mich.; Karl L. Sommer, Lake Orion, Mich., and Thomas G. Witkowski, Shelby Township, Mich., assignors to Romeo-Rim, Inc., Romeo, Mich.

Filed Nov. 9, 1995, Ser. No. 555,611

Int. Cl.[6] B65D 88/02

U.S. Cl. 222—105 55 Claims

1. A container comprising a first section having a top surface, walls extending downwardly from said top surface, and an open bottom; a second section having a bottom surface, walls extending upwardly from said bottom surface to mate with said walls of said first section, and an open top; and elongate clip members slidable



along mating of said walls of said first section and mating of said walls of said second section thereby connecting said mating of said walls of said first section to said mating of said walls of said second section so that said open bottom communicates with said open top to form the container.

5,794,819

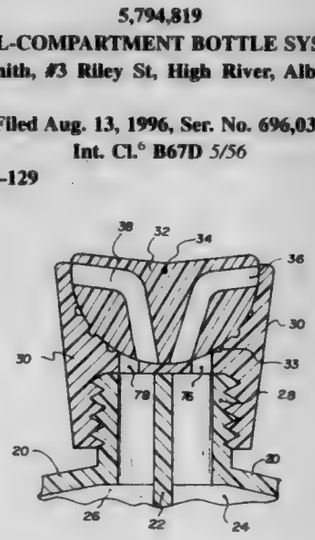
DUAL-COMPARTMENT BOTTLE SYSTEM

Trevor A. Smith, #3 Riley St, High River, Alberta, Canada, T1V-1G5

Filed Aug. 13, 1996, Ser. No. 696,039

Int. Cl.[6] B67D 5/56

U.S. Cl. 222—129 15 Claims



1. A dual-compartment bottle system comprising:

a substantially cylindrical bottle including a vertical partition separating a first compartment and a second compartment which both dispense through a threaded neck of the cylindrical bottle: and

a threaded dispensing cap rotatably secured to the threaded neck thereby selectively dispensing fluids from a desired compartment within the cylindrical bottle; and

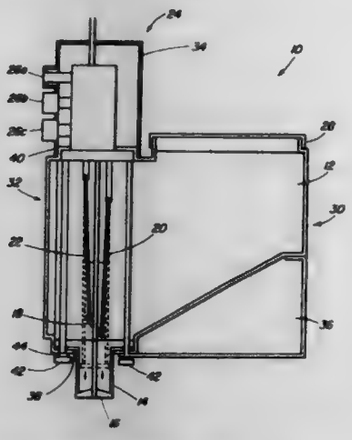
wherein the threaded dispensing cap includes a semi-spherical cavity projecting into a top of the threaded dispensing cap, a first passage projecting from the bottom surface into the semi-spherical cavity, and a second passage projecting from the bottom surface opposite of the first passage and then projecting into the semi-spherical cavity.

5,794,820

DISPENSING MACHINE

Gordon Shabbits, Box 127, Pense, Saskatchewan, Canada, SOG 3W0, and Orville Olm, 45 Kirk Cres, Sasakatoon, Sask, Canada, S7H 3B1

Filed Oct. 17, 1995, Ser. No. 544,101
Int. Cl.[6] B65D 88/54
U.S. Cl. 222—307 33 Claims



33. A dispensing apparatus comprising:

a reservoir having an interior and exterior;

channel having a first end in fluid communication with the interior of the reservoir and a second end in fluid communication with the exterior of the reservoir;

valve sealing the second end of the channel;

a piston member having first and second actuating rods for selectively pivoting the piston member within the channel at a location corresponding to the selected volume, the piston member pivoting between a first position where the piston member is in sealing contact with the channel and a second position where the piston member is out of sealing contact with the channel and for displacing the piston member in a first direction from a resting position for expelling a volume of fluid from the channel through the valve and in an opposite direction for resetting the apparatus;

a tilt cylinder and tilt piston operatively connected the first of said actuating rods for movement of the tilting disk between the first and second positions, the tilt cylinder and piston responsive to gas pressure through a single acting cylinder valve for controlling movement of the tilt piston with respect to the tilt cylinder in a single direction, the single acting cylinder valve responsive to a specific displaced position of the piston member with respect to the resting position;

spring on said first actuating rod for biasing the first actuating rod towards the second position;

displacement cylinder and displacement well operatively connected to the first and second actuating rods for displacement of the tilting disk in the first and opposite directions, wherein movement of the displacement cylinder with respect to the displacement well is responsive to gas pressure through a double acting displacement valve, the displacement valve responsive to a volume selection system,

the volume selection system including:

at least one volume selection lever, the volume selection lever displaceable between a rest position where said system is at rest and an active position;

latch for holding said lever in said active position; displacement valve actuation member responsive to the lever when the lever means is in the active position, the displacement valve actuation member for controlling actuation of the displacement valve;

hinge plate responsive to the lever when the lever is in the active position, the hinge plate for controlling actuation of the tilt valve;

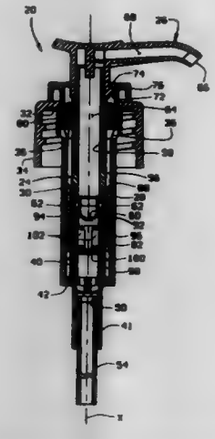
latch release member on the latch plate for disengaging said lever from the latch plate, the latch release member responsive to the displacement of the piston member with respect to the resting position.

5,794,821

RECIPROCATING LIQUID PUMP WITH DISC CHECK VALVE FOR DISPENSING LOTION AND THE LIKE

Donald D. Foster, St. Charles, and Philip L. Nelson, Ellisville, both of Mo., assignors to Contico International, Inc., St. Louis, Mo.

Filed May 7, 1996, Ser. No. 646,441
Int. Cl.[6] G01F 11/06,
U.S. Cl. 222—321.9 18 Claims



1. A manually operated reciprocating fluid pump comprising:

a pump housing having an inner surface, an intake port, and a pump chamber defined at least in part by the inner surface, said pump chamber extending axially within the pump housing;

an intake fluid flow path defined at least in part by the pump housing, said intake fluid flow path providing fluid communication between the intake port and the pump chamber;

a plunger configured for extending axially downwardly into the pump chamber;

a piston on the plunger and slidable within the pump chamber, the piston being configured for sealing engagement with the inner surface of the pump housing all around the piston to seal against leakage of fluid between the inner surface of the pump housing and the piston, the piston being reciprocally and axially slidable within the pump chamber between a bottom stroke position and a top stroke position, the top stroke position being spaced axially above the bottom stroke position;

a priming valve being configured to be open and thereby permit fluid to flow upward through the pump chamber when the piston stroke moves the piston downward from the top stroke position toward the bottom stroke position, the priming valve further being configured to be closed and thereby prevent fluid from flowing upward through the pump chamber when the piston stroke moves the piston upward from the bottom stroke position toward the top stroke position;

a check valve in the intake fluid flow path having a valve seat and a moveable valve member moveable between a closed position in which the moveable valve member seats against the valve seat to seal against fluid leakage from the pump chamber to the intake port and an open position in which at least part of the moveable valve member is spaced away from the valve seat to permit fluid to flow from the intake port to the pump chamber;

a plug seat within the intake fluid flow path; and

a sealing plug configured to seat against the plug seat and seal closed the intake fluid flow path when the piston is in its bottom stroke position to prevent fluid from flowing upward through the intake fluid flow path, the sealing plug being

configured to be unseated from the plug seat when the piston is positioned above its bottom stroke position;

the moveable valve member of the check valve and one of said sealing plug and plug seat being of a single unitary piece.

5,794,822

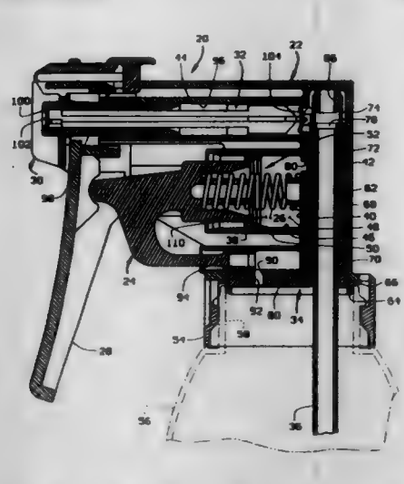
RECIPROCATING FLUID PUMP WITH IMPROVED BOTTLE SEAL

Donald D. Foster, St. Charles, Mo., assignor to Contico International, Inc., St. Louis, Mo.

Filed Apr. 17, 1996, Ser. No. 633,894

Int. Cl.[6] B67D *5/40*

U.S. Cl. 222—383.1 **23 Claims**



1. A manually operated reciprocating fluid pump adapted to be secured to a container's mouth, said fluid pump comprising:

a dispenser body having a pump mechanism, a discharge port, and a discharge liquid flow path providing fluid communication between the pump mechanism and discharge port;

a closure cap connected to the dispenser body and configured for closing the mouth of the container, the closure cap and dispenser body being of a single unitary piece;

a seal assembly having a first portion and a second portion, said first portion being engageable with the container and shaped and configured for providing a fluid-tight seal between the closure cap and the mouth of the container when the closure cap closes the mouth of the container, said second portion having an intake port adapted for fluid communication with liquid contained in the container, the second portion of the seal assembly and the dispenser body defining an intake liquid flow path providing fluid communication between the intake port and the pump mechanism; and

a check valve in the intake liquid flow path configured for permitting fluid flow from the intake port to the pump mechanism and for checking fluid flow from the pump mechanism to the intake port, said second portion of the seal assembly comprising at least part of the check valve.

5,794,823

LIMITED ACTION FLOW CONTROL FLUID DISPENSER

Stephan Roundtree, Dunstable, Mass., assignor to Stainless One Dispensing Systems, Nashua, N.H.

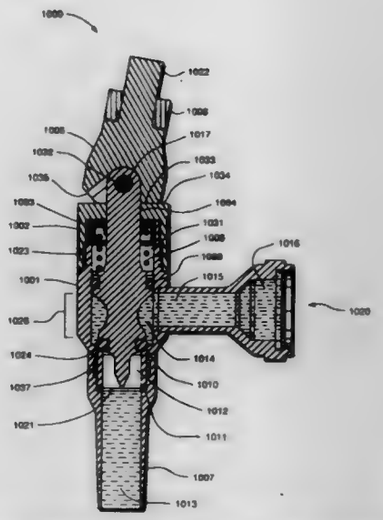
Filed Jul. 31, 1996, Ser. No. 690,553

Int. Cl.[6] B65D *83/00*

U.S. Cl. 222—400.7 **12 Claims**

1. A fluid dispenser comprising:

a housing having a fluid inlet, a fluid outlet, and a cavity, said fluid inlet opening into said cavity, and said cavity opening coaxially into said fluid outlet;



a plunger longitudinally positioned in said cavity, said plunger being slidable between a first position and a second position, said first position permitting fluid to flow from said fluid inlet through said cavity and out of said fluid outlet, and said second position preventing fluid flow,

said plunger having a first end and a second end, a substantially uniformly concave section, a velocity reducing section, a sealing section, and a constant volume section positioned between said first and second ends,

said substantially uniformly concave section being located adjacent said fluid inlet,

said velocity reducing section being located at said first end of said plunger proximate to said fluid outlet,

said sealing section being located between said substantially uniformly concave section and said velocity reducing section, and

said constant volume section being located between said sealing section and said velocity reducing section; and

a nozzle attached to said fluid outlet.

5,794,824

VESSEL FOR CONTAINING LIQUID

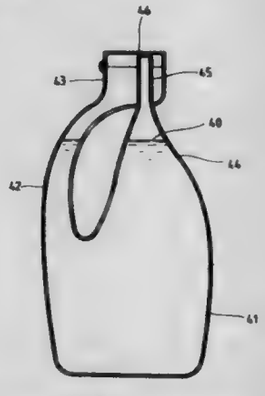
Chang-rock Jeong, 210-41, 4-dong, Seongsu 2-ga, Seongdong-gu, Seoul, Rep. of Korea

Continuation of Ser. No. 411,737, Mar. 30, 1995, abandoned. This application Dec. 27, 1996, Ser. No. 773,861

Claims priority, application Rep. of Korea, Oct. 7, 1992, 1992-19237; Jun. 21, 1993, 1993-10983; Jun. 23, 1993, 1993-11187

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—468 **7 Claims**



1. A vessel for containing liquid comprising:

an oval container having a flat bottom, a body, and a top portion for containing liquid, said body portion having a first and second portion defining a hollow therebetween;

said first portion having a hollow grip portion and said second portion having a hollow tapering neck portion;

said hollow grip portion separated from one side of the body of said container and extended upward through the top of said container and continuous with a circular hollow air intake portion continuous with the top of said grip portion and comprising a first part of the top of said container, wherein air flowing via said circular air intake portion passes through said hollow grip portion and communicates with said body portion of said container; and

said hollow tapering neck portion continuous with the body portion of the container separated from the first portion of said container and extended upward continuous with an elongated cylindrical further-tapered liquid discharge portion with a smaller section than that of said air intake portion for discharging liquid from said container located on the top of said neck portion forming a second part of the top of the container, wherein said liquid discharge portion additionally passes through and is completely contained within said air intake portion continuous with said grip portion providing for the opening of the liquid discharge portion located within the air intake portion so that air is taken into the container surrounding the area at which liquid is discharged from the container and so that the liquid can be smoothly discharged without generating an internal low pressure and a gurgling sound.

5,794,825

APPLICATOR FOR LIQUIDS SUCH AS ADHESIVES

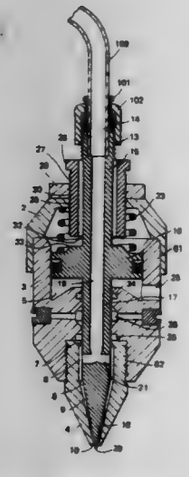
Fergal Anthony Gordon, Kildare, and Martin Justin Fitzpatrick, Dublin, both of Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland

Filed Aug. 28, 1995, Ser. No. 519,991

Claims priority, application Ireland, Sep. 6, 1994, 940697

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—504 **16 Claims**



1. An applicator for a liquid comprising:

a housing having a bore terminating at one end in an outlet aperture;

a plunger received in said bore and mounted for movement between an open position and a closed position, the rear end of the plunger projecting from the other end of the housing, the plunger including a longitudinal bore for supply of liquid to be applied, the plunger being provided with at least one port through which liquid may flow from the bore of the plunger into the bore of the housing, so arranged that when the plunger is in the fully open position the bore of the housing and the bore of the plunger co-operate to provide a streamlined flow path;

means for moving the plunger between the closed position and the open position; and

a seal between plunger and housing to prevent ingress of air;

wherein (a) the seal includes a barrier seal comprised of a liquid and (b) when in the closed position a forward end of the plunger seals said housing outlet aperture, and when in the open position the forward end of the plunger is retracted into the housing.

5,794,826

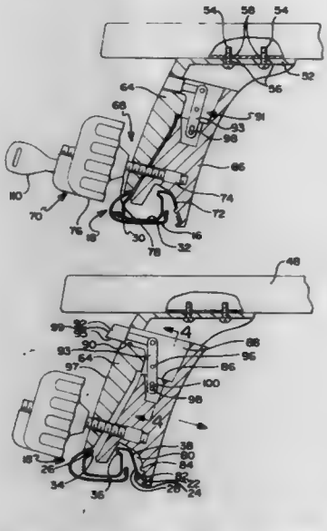
SPLIT STANCHION ARTICLE CARRIER

Gary M. Cronce, Port Huron; Craig A. Stapleton, Troy, and Craig R. Prasatek, Rochester Hills, all of Mich., assignors to Advanced Accessory Systems LLC, Sterling Heights, Mich.

Continuation of Ser. No. 187,391, Jan. 26, 1994, abandoned. This application Aug. 30, 1995, Ser. No. 520,960

Int. Cl.[6] B60R *9/04*

U.S. Cl. 224—321 **1 Claim**



1. A cross bar for a vehicle panel mounted article carrier with longitudinal rails comprising:

a cross rail;

first and second stanchions for supporting said cross rail on the longitudinal rails;

at least one of said first and second stanchions comprising a first jaw secured to said cross bar;

a second jaw, carried by a shelf in said first jaw, at least one of said jaws including an engagement surface for mating with a rail portion;

a retainer for displacing said jaws along said shelf between a closed position at which said first jaw and said second jaw enclose at least a mating portion of one of the longitudinal rails with said engagement surface for attachment to said one longitudinal rail, and an open position separating said first jaw from said second jaw and said engagement surface from said mating rail portion;

an indicator for exposing indicia exteriorly of said at least one stanchion when said retainer secures said jaws in said open position

wherein said indicator comprises a button slidably carried in an exposed bore in one of said jaws; and

wherein said button engages a first lever end, said lever is pivoted at a point intermediate said first end and a second end, and said second end is displaced by engagement with the other of said jaws.

5,794,827

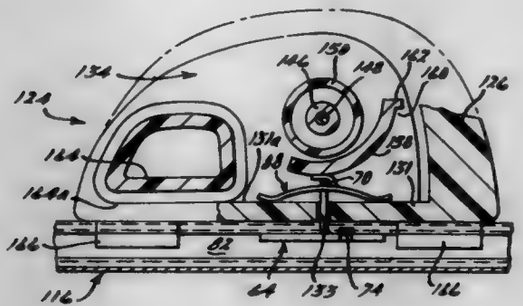
VEHICLE ARTICLE CARRIER

John S. Cucheran, Lake Orion; Donald R. Potter, Clarkston, and Artur K. Rak, Warren, all of Mich., assignors to JAC Products, Inc., Ann Arbor, Mich.

Continuation-in-part of Ser. No. 573,179, Dec. 15, 1995, abandoned. This application Feb. 7, 1997, Ser. No. 797,292

Int. Cl.[6] **B60R** *9/00*

U.S. Cl. 224—321 **14 Claims**



1. A vehicle article carrier for supporting articles above an outer body surface of a vehicle, said vehicle article carrier comprising:

a pair of slats adapted to be secured to said outer body vehicle surface and extending along said outer body vehicle surface generally parallel to one another, each said slat including a channel extending along at least a major portion of the length thereof;

at least one cross bar having a length sufficient to span between said slats when positioned over said slats generally perpendicularly to each said slat;

at least one bracket member secured to each end of said cross bar for supporting said cross bar elevationally above said slats and said outer body vehicle surface, each said bracket member comprising:

a housing having a recess and a base portion, said base portion having an opening formed therein;

a locking member projecting from said base portion and having a neck portion extending through said opening into said recess, said neck portion being moveable in the direction of said opening;

a biasing member operably associated with said locking member for urging said locking member into a locked position relative to an associated one of said slats; and

a manually engageable actuator positioned at least partially within said recess and moveable relative to said housing by one or more fingers of a hand of a user;

said actuator including a camming surface adapted to urge said locking member outwardly of said base portion against a biasing force provided by said biasing member when said actuator is moved in a first direction, to thereby place said locking member in an unlocked position relative to said associated one of said slats, and to allow said biasing member to urge said locking member into a locked position relative to said associated one of said slats when said actuator is moved in a second direction opposite to said first direction.

5,794,828

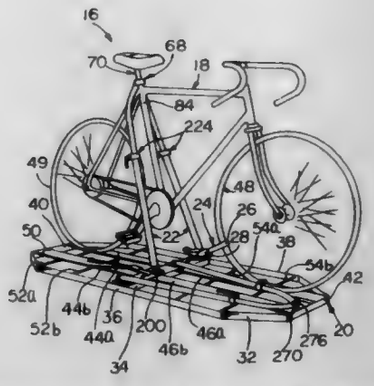
RACKING SYSTEM FOR TRANSPORTING A BICYCLE

Peter V. Colan, 10125 Raindrop Cir., and Randy J. Long, 11963 Bergamot Dr., both of Granger, Ind. 46530

Filed Aug. 12, 1996, Ser. No. 695,587

Int. Cl.[6] **B60R** *9/10*

U.S. Cl. 224—530 **6 Claims**



1. A combination of a racking system and a bicycle, said racking system comprising:

a framework, said bicycle being positioned upon said framework, said bicycle having a seat post;

at least a pair of arms secured to said framework and removably secured to said seat post, said arms extending downwardly from said bicycle to said framework on opposite sides of said bicycle for laterally supporting said bicycle, said arms being adjustable to accommodate bicycles of different sizes and designs, each of said arms are telescoping having an inner tube slidingly inserted into an outer tube, each of said arms further including securing means for securing said inner and outer tube together at a desired arm length; and

tension means connected to said framework and said bicycle for tightening said bicycle to said framework.

5,794,829

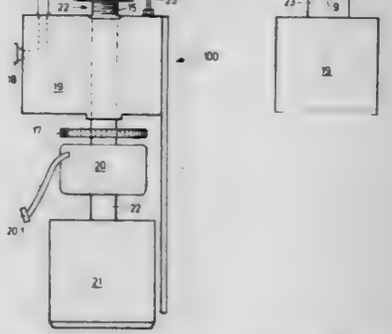
DEVICE FOR LATERAL REGISTER ADJUSTMENT OF A WEB OF MATERIAL

Michael Roger Perrault, 82 Blackwater Rd., Rochester, N.H. 03867

Filed Dec. 26, 1996, Ser. No. 774,160

Int. Cl.[6] **B65H** *23/02;23/038;* **D06C** *3/00*

U.S. Cl. 226—18 **20 Claims**



1. A register adjustment system for providing register adjustment to a web of material, the register adjustment system comprising:

a register correction wheel, a position of the register correction wheel being controlled to deflect a portion of the web of material and adjust a width-of-print of the web of material, the register correction wheel being movably disposed along a path of the web of material;

a control unit;

a first actuating unit connected to the register correction wheel and to the control unit, the first actuating unit actuating the register correction wheel to chance the position of the register correction wheel relative to the web of material, thereby adjusting the width-of-print of the web of material; and

a first position monitoring device coupled to the register correction wheel and to the control unit, the first position monitoring device monitoring a position of the register correction wheel.

5,794,830

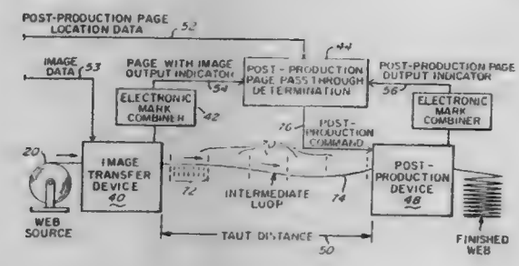
SYSTEM FOR INCORPORATION OF POST-PRODUCTION OPERATIONS TO A WEB OUTPUT FROM AN IMAGE TRANSFER DEVICE

H. W. Crowley, Newton, Mass., assignor to Roll Systems, Inc., Burlington, Mass.

Division of Ser. No. 296,127, Aug. 25, 1994, Pat. No. 5,538,171, which is a division of Ser. No. 848,039, Mar. 9, 1992, Pat. No. 5,344,057, which is a division of Ser. No. 560,127, Jul. 31, 1990, Pat. No. 5,193,727. This application Jun. 7, 1995, Ser. No. 481,740

Int. Cl.[6] B65H *9/00;23/04*

U.S. Cl. 226—24 3 Claims



1. A system for incorporating, in the production of a stream of images by an image transfer device upon a moving web, post-production operations upon the web at various locations, said system comprising: an image transfer device for applying images to a continuous web passing therethrough:

an image transfer device for applying images to a continuous web passing therethrough;

a post-production device located downstream of the image transfer device for performing post-production processes at selected locations of the web received from the image transfer device, a loop of web being disposed between the image transfer device and the post-production device;

a first pulse generator that generates pulses as predetermined length increments of web pass through the image transfer device;

a second pulse generator for generating predetermined pulses as pre-determined length increments of web pass through the post-production device;

a shift resister having a plurality of memory storage blocks, each of the storage blocks storing a value representative of a predetermined number of pulses that, in turn, represents a predetermined section of web, the blocks being arranged from a first block to a last block, the shift register being constructed and arranged so that the values shift downstream from the first block to the last block as the web moves into the post-production device;

means for shifting the values in each of the blocks downstream incrementally by one block as each predetermined section of web passes through the post-production device means for adding a block to the upstream end of the shift register when a section of web is output from the image transfer device before a section of web is input to the post-production device;

means for removing a block from the upstream end of the shift resister when a section of web is input to the post-production device and before a section of web is output from the image transfer device; and

means for reading the value of the downstream block and for instructing the post-production device to perform the post-production process corresponding to the value in the downstream block on the web as the section of web corresponding to the downstream block is input into the post-production device.

5,794,831

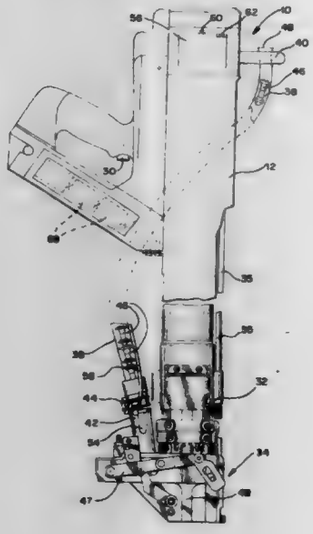
FASTENER DETECTION AND FIRING CONTROL SYSTEM FOR POWERED FASTENER DRIVING TOOLS

G. Michael Velan, Mount Prospect; Richard P. Bolger, Schaumburg; George G. Dewey, Palatine, and E. Jonathan Wendling, Alogonquin, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jul. 12, 1996, Ser. No. 679,526

Int. Cl.[6] B25C *1/08*

U.S. Cl. 227—2 18 Claims



1. A powered tool constructed to drive a driver blade in response to power from a power delivery source so as to impact a fastener and drive it into a workpiece, comprising:

a housing;

a combustion chamber defined within said housing;

means for supplying a combustible fuel to said combustion chamber;

means disposed within said combustion chamber for igniting said combustible fuel supplied to said combustion chamber;

a driver blade disposed within said housing for driving a fastener into a workpiece;

a nosepiece operatively connected to said housing, means defining an aperture within said nosepiece for accepting a fastener, and means for guiding an end of said driver blade toward impact with said fastener;

a fastener supply assembly operatively connected to said housing for supplying fasteners into said nosepiece;

a fastener detector for detecting the presence and absence of a fastener within a portion of a fastener supply path defined by said fastener supply assembly and said nosepiece and for generating signals indicative of said presence and absence of a fastener within said portion of said fastener supply path; and

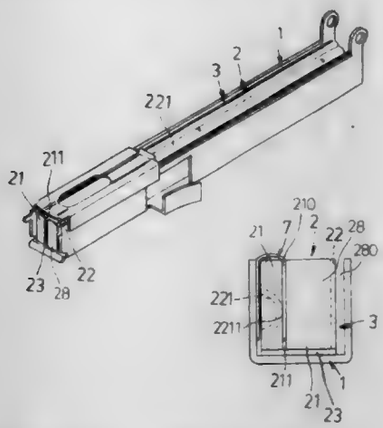
combustion enabling and disabling means responsive to said signals of said fastener detector for enabling said combustible fuel igniting means when said fastener detector detects the presence of a fastener within said portion of said fastener supply path so that operation of said tool and driving of said fastener can take place, and for disabling said combustible fuel igniting means when said fastener detector detects the absence of a fastener within said portion of said fastener supply path so that a blank firing operation of said tool is prevented.

5,794,832

STAPLE MAGAZINE FOR A STAPLER

Tung-I Chen, P.O. Box 82-144, Taipei, Taiwan

Filed May 6, 1997, Ser. No. 841,826
Int. Cl.[6] B25C 5/16
U.S. Cl. 227—109 4 Claims



1. A staple magazine for a stapler comprising:

an outer U-shaped frame; and

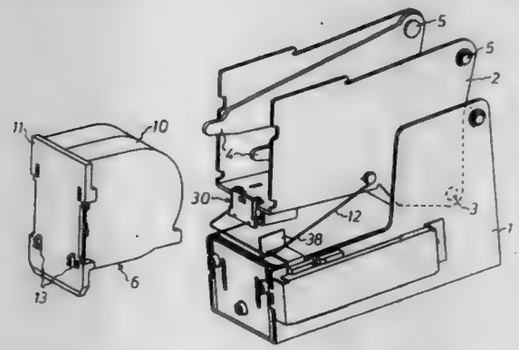
an inner U-shaped frame mounted within said outer U-shaped frame thereby forming two grooves at two sides between said outer and inner U-shaped frames, said inner U-shaped frame having two lateral side walls, a large rectangular stop plate and a small rectangular stop plate, said large and small rectangular stop plates being formed at a front end of said inner U-shaped frame and making an angle of 90 degrees with respect to said side walls, said stop plates being of different width and spaced apart by a vertical slot.

5,794,833

CASSETTE FOR USE IN A STAPLER

Olle Stråât, Hestra, Sweden, assignor to Isaberg AB, Hestra, Sweden

Filed Oct. 6, 1994, Ser. No. 318,602
Claims priority, application Sweden, Apr. 16, 1992, 9201230
Int. Cl.[6] B27F 9/21
U.S. Cl. 227—137 61 Claims



1. A self-contained, replaceable cassette for use in a stapler, said stapler having a base, a stapler head with a frame that is configured to receive the cassette and that is constructed and supported to move relatively toward and away from the base in a stapling operation, and a drive mechanism for reciprocating a staple shaper and a staple driver, said cassette comprising:

a casing containing juxtaposed staple blanks releasably interconnected to form at least one strip of staple blanks;

a reciprocating staple shaper supported on the casing and disposed to successively shape the staple blanks of the strip into substantially U-shaped staples; and

a reciprocating staple driver supported on the casing and disposed to successively release the staples from the strip and drive the staples into an object,

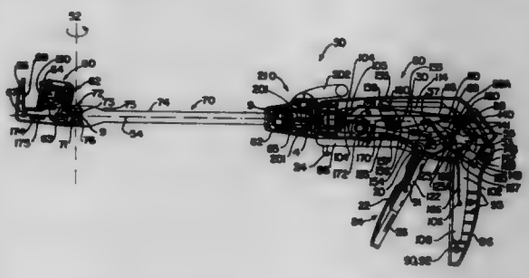
the cassette having portions constructed and disposed to cooperate with the frame of the stapler head, such that the cassette, including the casing, the staple shaper, and the staple driver, is mountable and removable as a unit to and from the frame of the stapler head at a position where the staple shaper and the staple driver can be reciprocated by the drive mechanism of the stapler.

5,794,834

SURGICAL STAPLING INSTRUMENT WITH REMOTELY ARTICULATED STAPLING HEAD ASSEMBLY ON ROTATABLE SUPPORT SHAFT

Steven W. Hamblin; David A. Witt, both of Loveland; Thomas J. Sierocuk; Kirk M. Nicola, both of West Chester; Matthew R. Otten, Cincinnati, and Craig B. Berky, Milford, all of Ohio, assignors to Ethicon Endo-Surgery, Cincinatti, Ohio

Division of Ser. No. 219,846, Mar. 30, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 611,883
Int. Cl.[6] A61B 17/068
U.S. Cl. 227—175.2 6 Claims



6. A surgical instrument for applying one or more surgical fasteners to tissue, comprising:

a fastener applying assembly including fastener holding means for holding one or more surgical fasteners, means for driving said surgical fasteners into the tissue, means for forming said surgical fasteners about the tissue, means for capturing and clamping said tissue prior to forming said fasteners and for releasing said tissue after forming said fasteners;

a shaft assembly for articulatably mounting to the distal end thereof said fastener applying assembly;

an actuator handle assembly mounted to the proximal end of said shaft assembly and including first actuator means for actuating said means for remotely capturing and clamping said tissue, said actuator handle assembly further including second actuator means for actuating said means for driving said surgical fasteners; and

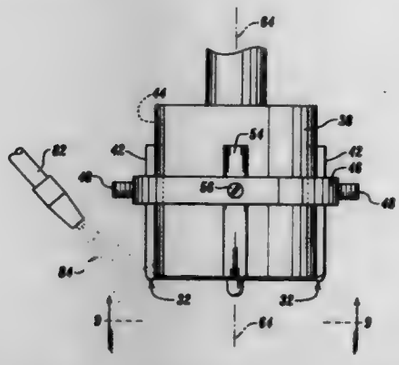
third actuator means for remotely articulating said fastener applying assembly from the proximal end of said shaft assembly including means for translating rotational motion of said third actuator means into articulation motion of said fastener applying assembly; said fastener applying assembly being subject to remote articulation in a plurality of incremental articulation positions and including locking means for locking said fastener applying assembly in each said incremental articulation position upon actuation of said first actuator means.

5,794,835

FRICTION STIR WELDING

Kevin J. Colligan, North Bend, and Steven J. Avila, Puyallup, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 31, 1996, Ser. No. 655,839
Int. Cl.[6] B23K *20/12*
U.S. Cl. 228—2.1 19 Claims



1. In a friction stir welding tool having a non-consumable rotating probe attached to a rotating member, wherein the improvement comprises:

(a) one or more cutting edges; and

(b) one or more support mechanisms for mounting the cutting edges to the member;

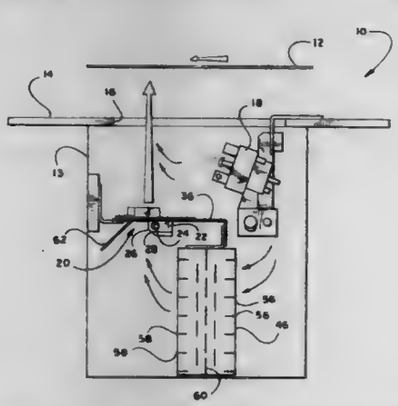
whereby rotation of the member and of the non-consumable probe causes like rotation of the one or more cutting edges which further causes the one or more cutting edges to machine the outer surface of the friction stir weld.

5,794,836

INERT GAS AIR HORN DISTRIBUTION DEVICE

Jeff J. Lin; Peter J. Sinkunas, both of Canton; Myron Lemecha, Dearborn, all of Mich., and Stephen H. P. Wong, Markham, Canada, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 16, 1997, Ser. No. 783,720
Int. Cl.[6] B23K *3/08*
U.S. Cl. 228—33 10 Claims



1. An inert gas air horn distribution device, comprising:

a housing having a cover with an opening;

a flux nozzle mounted in said housing for emitting flux toward said opening in said housing cover;

a knife assembly having an inlet for receiving compressed gas, a face with a coanda profile, and an outlet for directing said compressed gas in a main stream over said face adhering to said coanda profile and upward toward said housing cover opening at a velocity sufficient for entraining surrounding gas in said housing causing said surrounding gas to flow in an entrained stream; and

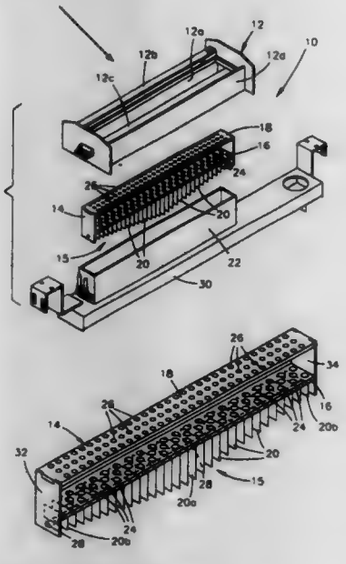
a labyrinth mounted in said housing in said entrained stream to capture flux in said stream and prevent said flux from fouling said knife.

5,794,837

DIRECTIONAL FLOW CONTROL DEVICE FOR A WAVE SOLDERING APPARATUS

Steven William Cottingham, Kokomo; Frank Clyde Spaulding, Sharpsville; Maxwell Geoffrey Davies, Noblesville; Stanley James Pugh, Kokomo, and Robert Arnold Crothers, Noblesville, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Nov. 25, 1996, Ser. No. 756,128
Int. Cl.[6] B23K *3/06*
U.S. Cl. 228—37 20 Claims



1. A flow control device comprising:

outlet means for flowing molten solder therefrom;

a screen member having a pair of spaced-apart parallel panels disposed upstream of the outlet means, each of the panels having apertures through which the solder flows before exiting through the outlet means, each aperture of one of the panels being offset from the apertures of the other panel; and

a baffle member disposed upstream of the apertures in the screen member, the baffle member comprising fins disposed substantially perpendicular to each of the panels, the fins being arranged in at least one row with the fins having lengths that become progressively shorter in a direction away from an approximate midpoint of the row.

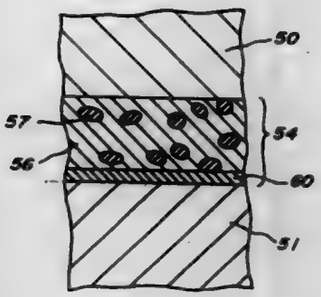
5,794,838

CERAMICS JOINED BODY AND METHOD OF JOINING CERAMICS

Ryusuke Ushikoshi, Tajimi; Hideyoshi Tsuruta, and Tomoyuki Fujii, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jul. 12, 1996, Ser. No. 679,286
Claims priority, application Japan, Jul. 14, 1995, 7-200227
Int. Cl.[6] B23K *31/02;103/16*
U.S. Cl. 228—121 4 Claims

1. A method of joining ceramics, including joining a ceramic first member made of aluminum nitride and a second member made of a ceramics or a metal, forming a metal film on a surface to



be joined of the first member such that the metal film contacts directly with the surface to be joined of the first member, interposing a metallic joining material made of a different material from the metal film between the metal film and the second member, and heating at least the metallic joining material and the metal film in the state that the metallic joining material intervenes between the metal film and the second member thereby to join the first member and the second member.

5,794,839

BONDING MATERIAL AND BONDING METHOD FOR ELECTRIC ELEMENT

Yuji Kimura, Nagoya; Kinya Atsumi, Okazaki; Katsunori Abe, Chita-gun; Noriyuki Matsushita; Michiyo Mizutani, both of Nagoya, and Tetsuo Toyama, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 31, 1995, Ser. No. 509,234

Claims priority, application Japan, Aug. 1, 1994, 6-179935; Oct. 28, 1994, 6-264719; Jun. 7, 1995, 7-140175

Int. Cl.[6] H01L *21/58*

U.S. Cl. 228—123.1 **30 Claims**

1. An electrical bonding assembly comprising:

an electrical element having an electrode;

a pedestal; and

a bonding material bonding said electrode to said pedestal, said bonding material including an alloy consisting essentially of Au-Sn-Ni with Au as a main component;

wherein a composition ratio of Ni is at least 1.3 wt % and said pedestal is composed of a material selected from the group consisting of Au, Ni, Fe and Cu on a surface to which said electrical element is to be bonded.

5,794,840

PROCESS FOR THE PRODUCTION OF PIPES BY THE UOE PROCESS

Gerold Hohl, Neuss, and Gerd Vogt, Meerbusch, both of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

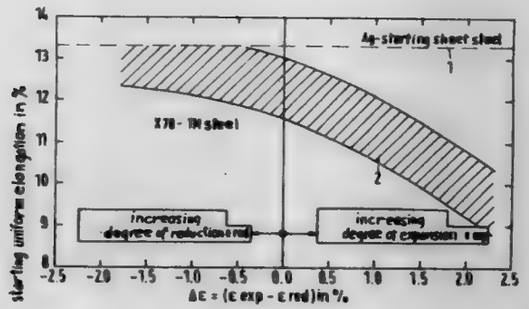
Filed Jun. 4, 1996, Ser. No. 658,091

Claims priority, application Germany, Jun. 14, 1996, 195 22 790.5

Int. Cl.[6] B23K *31/02*

U.S. Cl. 228—151 **3 Claims**

1. A process for producing a pipe pursuant to the UOE process, comprising the steps of: shaping the pipe from a metal sheet; internally and externally welding a seam of the pipe to form a closed circumference; sizing the pipe by cold expansion after the welding step; and conditioning the pipe by cold expansion and cold reduction in a sequence and to a degree of expansion and reduction based on a requirement profile.



5,794,841

Patent Not Issued For This Number

5,794,842

TUBULAR PACKAGING CONTAINERS

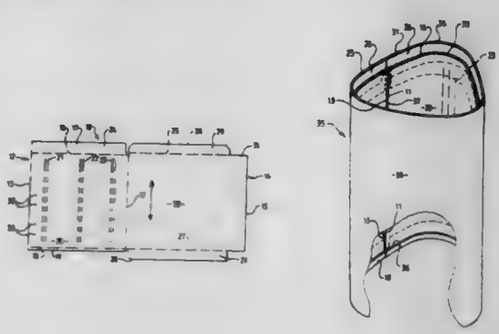
Derek Hallam, Bradford, England, assignor to Concept Packaging Limited, West Yorkshire, England

Filed Oct. 13, 1995, Ser. No. 542,681

Claims priority, application United Kingdom, Oct. 14, 1994, 9420724

Int. Cl.[6] B65D *3/22;3/28*

U.S. Cl. 229—198.2 **16 Claims**



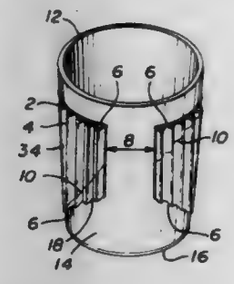
1. A tubular packaging container comprising a body which includes a peripheral wall defining top and bottom openings, at least one of which is suitable for closure by an end member, wherein the body is formed from at least two panels of a suitable card material cut from flat stock and shaped to form a tube with marginal portions of at least one of said panels secured together in overlapping relationship, said panels also being secured together in face-to-face relationship by adhesive distributed across the mutually contacting faces thereof, in which marginal portions of only the external panel are glued together adhesively in overlapping relationship to form the tubular body, whilst corresponding end edges of the internal panel are brought into abutting relationship to define the peripheral dimension of the tubular body.

5,794,843

CUP WRAP

Rafael S. Sanchez, 7486 La Jolla Bl, La Jolla, Calif. 92037

Filed Nov. 8, 1996, Ser. No. 745,852
Int. Cl.[6] B65D *3/28*
U.S. Cl. 229—403 **12 Claims**



1. An insulating cup holder comprising

a flexible planar insulating member configured to a length and width that facilitates covering at least 50 percent and less than 100 percent of the circumference of the outside surface of a cup, said insulating member having an inner surface and an outer surface; and

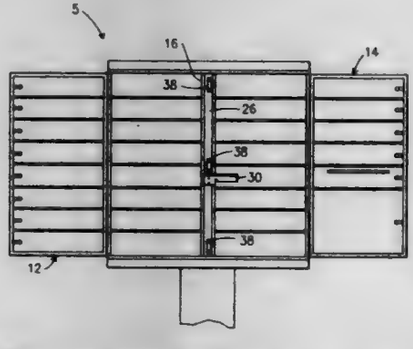
an exposable adhesive layer on the inner surface of said insulating member that facilitates affixing said insulating member to the cup.

5,794,844

MULTI-POINT LOCKING SYSTEM

Kenneth W. Jenkins, Auburndale, Fla., assignor to Cutler Manufacturing Corporation, Lakeland, Fla.

Filed Jan. 7, 1997, Ser. No. 779,821
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—25 **13 Claims**



1. A multiple point latching system for use on a postal box, the postal box having one vertical side and an opposite vertical side, a first master door hingedly coupled along the one vertical side of the postal box, a second master door hingedly coupled along the opposite vertical side of the postal box, and a center partition positioned within the postal box, whereby the first and second master doors close so to meet adjacent the center partition, said latching system comprising in combination:

a latch bar, said latch bar being slidably coupled relative to the center partition, said latch bar including a plurality of latches;

a track member coupled vertically along the center partition, wherein said track member slidably contains said latch bar and facilitates vertical movement thereof;

a plunger assembly, said plunger assembly being coupled to said center partition and applying a force on at least one master door so to force at least one master door open upon an upward movement of said latch bar a sufficient distance to allow said plunger assembly to activate; and

a plurality of latch plates, said latch plates being positioned on at least one master door whereby said latch plates engage respective said plurality of latches on said latch bar so to secure at least one master door in a closed position,

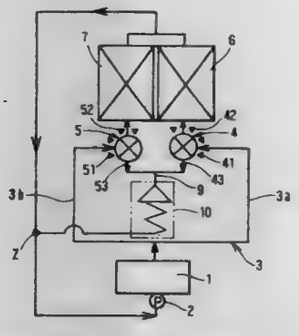
whereby said latch bar is forced upwards to release said plurality of latches and said plunger assembly forces at least one master door open.

5,794,845

FLOW CONTROL DEVICE AND HOT-WATER TYPE HEATING APPARATUS EMPLOYING THE SAME

Koichi Ito; Yoshihiko Okumura, both of Kariya, and Yoshimitsu Inoue, Chiryu, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Apr. 11, 1997, Ser. No. 838,621
Claims priority, application Japan, Apr. 12, 1996, 8-091439; Nov. 8, 1996, 8-296881
Int. Cl.[6] B60H *1/02*
U.S. Cl. 237—12.3 B **14 Claims**



1. A flow control device for controlling a flow of hot-water supplied from a hot-water supply source to a plurality of heating heat exchange portions, said flow control device comprising:

a plurality of flow control valves corresponding to said heating heat exchange portions, respectively,

each of said flow control valves including:

first restriction means for forming a first restriction portion in an inlet for receiving hot water from said hot water supply source,

second restriction means for forming a second restriction portion in an outlet for introducing hot water to said respective heating heat exchange portions,

bypass opening means for forming a bypass opening opened at an intermediate pressure portion between said first restriction portion and said second restriction portion,

a valve body for controlling each opening area of said first restriction portion, said second restriction portion, and said bypass opening, and

a first housing for accommodating said first restriction means, said second restriction means, said bypass opening means, and said valve body; and

valve body driving means for independently driving each of said valve bodies;

wherein said first housing is commonly employed for said plurality of flow control valves and includes therein a bypass passage communicating with said bypass opening and bypassing said plurality of heating heat exchange portions.

5,794,846

MODEL RAILROAD TRACK ALIGNMENT APPARATUS

Michael C. Barrett, Austin, Tex., assignor to Black Bear Construction Company, Inc., Austin, Tex.

Filed Oct. 2, 1996, Ser. No. 720,681
Int. Cl.[6] A63H *19/30*
U.S. Cl. 238—10 E **22 Claims**

1. A joint for supporting model railroad track, the joint comprising:



a first member and second member, the first and second members each comprising:

a frontal end;

a distal end;

a top surface having a top indention proximate the distal end;

a bottom surface having a bottom indention proximate the frontal end;

and wherein a pivotal connector connects the first member and the second member to form a pivotal engagement between the top indention of the first member and the bottom indention of the second member.

5,794,847

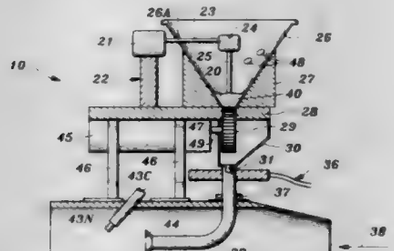
AIR ASSISTED INSECT DISPENSING APPARATUS AND DELIVERY PROCESS

Russell Stocker, 3412 Laguna Ave., Davis, Calif. 95616

Filed Oct. 25, 1996, Ser. No. 738,415

Int. Cl.[6] A62C *5/02*

U.S. Cl. 239—8 **30 Claims**



1. An apparatus for the coating and delivery of beneficial insects which comprises:

a. a hopper for the temporary storage of insects and which hopper has a constricted opening at the bottom in communication with,

b. an insect metering device for controlling the flow of a determinable finite amount of insects from said hopper,

c. a delivery tube having an inlet end and an outlet end, and

d. a tubular chamber having an outlet end and an inlet end for the introduction of air into said chamber, and having at least one fluid injector, disposed within said chamber, for the introduction of a binder solution at a location aft the outlet of the delivery tube, but within said chamber from a source of said solution,

said metering device in communication with the inlet of the delivery tube; the outlet of the delivery tube being flared and said tube being disposed within the chamber and in communication with the interior of said chamber,

whereby when air is introduced through the inlet end of the chamber, an airstream is formed that moves through said chamber, and as insects are metered into said delivery tube they are gravity fed to the chamber to be coated by binder solution entering the chamber through said at least one fluid injector, and then the coated insects are expelled through the outlet end of said chamber.

5,794,848

HYGROSTAT AND SYSTEM

Kenneth Lawrence Nunn, Hampton Park, and Robert Michael Wilson, Beaumaris, both of Australia, assignors to Moss Products Pty Ltd, South Clayton, Australia

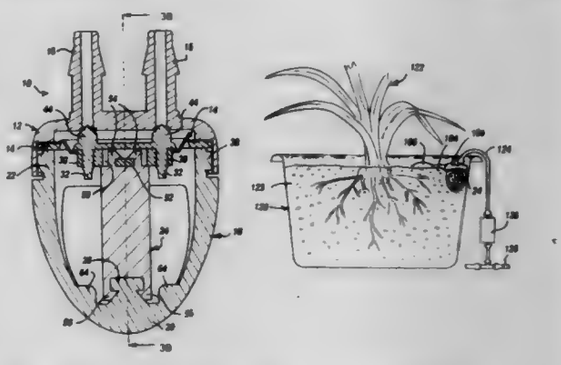
PCT No. PCT/AU96/00002, § 371 Date Jul. 16, 1996, § 102(e) Date Jul. 16, 1996, PCT Pub. No. WO96/21143, PCT Pub. Date Jul. 11, 1996

PCT Filed Jan. 2, 1996, Ser. No. 669,386

Claims priority, application Australia, Dec. 30, 1994, PN0342

Int. Cl.[6] B05B *1/08*

U.S. Cl. 239—63 **10 Claims**



10. A hygrostat adapted for burial in soil, comprising:

a hygroscopic element formed from a coherent polyether block amide copolymer capable of absorbing between 50% and 150% of its own weight in water during immersion in water over a period of 24 hours at 25° C.; and

a water flow-control valve operably connected to the hygroscopic element and operable by the expansion and contraction of the hygroscopic element,

wherein the majority of the hygroscopic element surface is exposed to directly contact the soil upon the hygrostat being buried.

5,794,849

PULSED IRRIGATION CONTROL VALVE WITH PRESSURE RELIEF

Jack E. Elder, 284 Olivewood Ct., Rochester, Mich. 48306

Continuation-in-part of Ser. No. 214,813, Mar. 17, 1994, Pat. No. 5,465,905. This application Nov. 13, 1995, Ser. No. 558,168

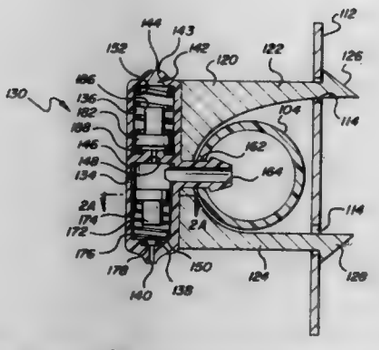
Int. Cl.[6] B05B *1/08*

U.S. Cl. 239—99 **22 Claims**

1. An irrigation control valve for an irrigation system having a working fluid supply tube for supplying a pressurized working fluid to the irrigation control valve, said irrigation control valve comprising:

a control valve body having an accumulation chamber, an inlet passageway for providing fluid communication between the working fluid supply tube and said accumulation chamber and a mist passageway for providing fluid communication between said accumulation chamber and a mist port;

a mist valve assembly interdisposed between said accumulation chamber and said mist passageway and responsive to fluid



pressure in said accumulation chamber to control fluid communication between said accumulation chamber and said mist passageway; and

a pressure relief valve assembly in fluid communication with said accumulation chamber and operably coupled to said inlet passageway to relieve pressure in said accumulation chamber in response to pressure in said inlet passageway.

5,794,850

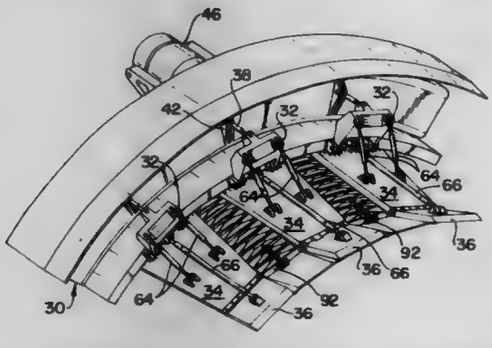
ENCLOSED PRESSURE BALANCED SYNC RING NOZZLE

Jose L. Gutierrez, Jr., Ft. Lauderdale, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 27, 1996, Ser. No. 721,888

Int. Cl.[6] B64C *15/06*

U.S. Cl. 239—127.1 **7 Claims**



4. An axisymmetrical C/D exhaust nozzle for gas turbine engine power plants having a central axis powering STOVL aircraft, said exhaust nozzle including convergent flaps and divergent flaps, a sync ring coaxially disposed relative to said axis for positioning said convergent flaps and said divergent flaps, a hydraulic actuator for actuating said sync ring to change configuration of said exhaust nozzle, said sync ring defining piston means for balancing the loads created by said convergent flaps and said divergent flaps, said exhaust nozzle including concentrically disposed pair of spaced annular static structures, and said sync ring being disposed between said pair of spaced annular static structures whereby the C/D exhaust nozzle is a full hoop mechanism.

5,794,851

NOZZLE SEALING APPARATUS

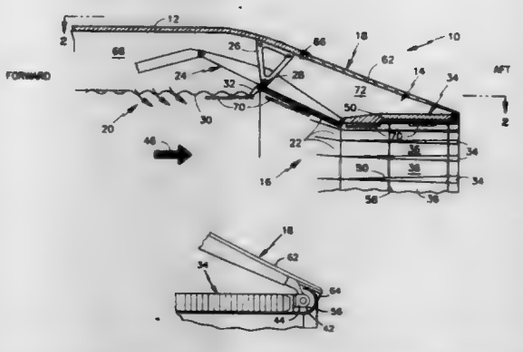
William Kevin Barcza, Palm City, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 7, 1995, Ser. No. 570,172

Int. Cl.[6] B64D *33/08*

U.S. Cl. 239—127.3 **19 Claims**

12. An apparatus for sealing within a nozzle having an external fairing pivotly attached to a divergent section, comprising:



a first aft extension, attached to a divergent flap within the divergent section; and

a second aft extension, attached to a divergent flap seal within the divergent section;

wherein said first and second aft extensions mates with said external fairing, thereby sealing between said divergent section and said external fairing.

5,794,852

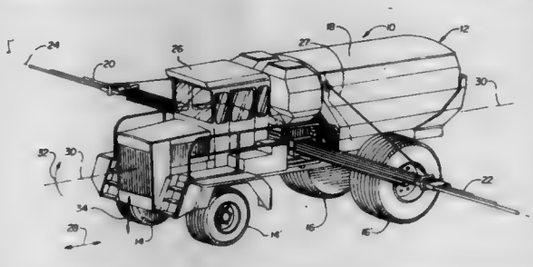
BOOM SUSPENSION ASSEMBLY

Kevin Wald, Montevideo; Robin Carlson, Hopkins, and Richard Moen, Starbuck, all of Minn., assignors to Iboco, Inc., Benson, Minn.

Filed Nov. 8, 1995, Ser. No. 555,638

Int. Cl.[6] B05B *1/20*

U.S. Cl. 239—167 **6 Claims**



1. A boom assembly mounted on a vehicle, the vehicle movable along a travel path, the boom assembly comprising:

a first boom portion pivotally attached to the vehicle;

a second boom portion pivotally attached to the vehicle;

a suspension assembly mounted to the vehicle and movable relative to the vehicle in a direction generally transverse to the travel path;

a first suspension arm coupled to the first boom portion and resiliently coupled to the suspension assembly; and

a second suspension arm coupled to the second boom portion and resiliently coupled to the suspension assembly;

a first resilient coupling system resiliently coupling the first suspension arm to the suspension assembly, the first resilient coupling system including a first bias member coupling the first suspension arm to the suspension assembly and urging the first suspension arm toward a first position relative to the suspension assembly;

a first brace member, pivotally coupled to the vehicle and coupled to the first bias member and the first suspension arm;

wherein the suspension assembly includes:

a swing member comprising a suspension tube, the swing member coupled to the first bias member;

a damper coupled to the swing member to dampen pivotal movement of the swing member relative to the vehicle; and

a bias system coupled to the swing member and configured to bias the swing member to a desired position along its pivotal movement relative to the vehicle;

wherein the first bias member comprises:

a first piston reciprocal within the suspension tube; and

a first spring urging the first piston toward a desired position relative to the suspension tube.

5,794,853

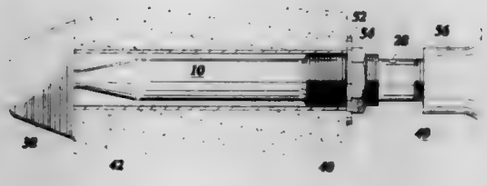
INSTITUTIONAL SPRINKLER HEAD NIPPLE

Lloyd Perkins, 2008 Scottwood Ave., Toledo, Ohio 43612

Filed Aug. 6, 1996, Ser. No. 692,763

Int. Cl.[6] B05B *15/06*

U.S. Cl. 239—208 21 Claims



1. An improved fire sprinkler nipple comprising:

a cylindrical hollow pipe of a first inner diameter and a first outer diameter and having an open inlet end and an open outlet end, the wall of said pipe being swaged down toward the open inlet end to a cylindrical section of a second inner diameter less than the first inner diameter of said pipe, the open outlet end being internally threaded and adapted to receive an externally threaded inlet of an institutional fire sprinkler head, the open inlet end adapted to be joined with a fire sprinkler pipe fixture; and

a cylindrical externally threaded sleeve of an internal diameter slightly greater than the first outer diameter of said cylindrical hollow pipe and having first and second ends, said sleeve received on and secured to said pipe proximate its inlet end, the first end of the sleeve facing the outlet end of said pipe, the sleeve adapted to receive a retaining washer and threaded nut.

5,794,854

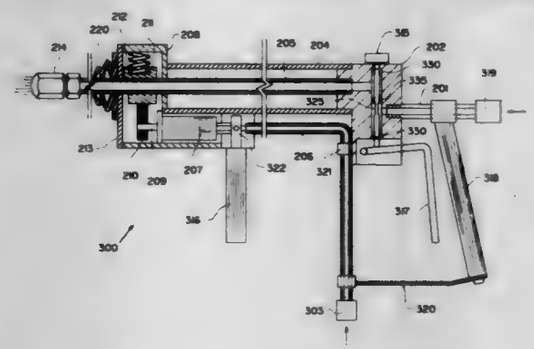
APPARATUS FOR GENERATING OSCILLATING FLUID JETS

Gene G. Yie, Auburn, Wash., assignor to Jetec Company, Auburn, Wash.

Filed Apr. 18, 1996, Ser. No. 634,696

Int. Cl.[6] B05B *9/01*

U.S. Cl. 239—242 17 Claims



10. An oscillating fluid jetting apparatus comprising

a conduit, a follower mounted with respect to said conduit;

a cam, said follower mechanically driven by said cam, a motor, a motor shaft driven by said motor, said motor shaft being mechanically coupled to said cam, said motor shaft secured to said cam at a distance from an axial center of said cam, and said follower having two parallel sides, a guide member positioned on each side of said follower and said guide members parallel with respect to each other.

5,794,855

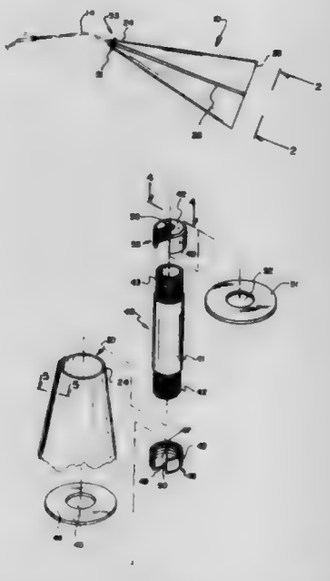
PRECISION CONE-OVERSPRAY PROTECTOR

Bobie C. Ledford, 749 Stallion Cir., Fairfield, Calif. 94533

Filed Dec. 30, 1996, Ser. No. 774,762

Int. Cl.[6] B05B *1/28*

U.S. Cl. 239—288 8 Claims



1. An overspray protection shield for a sprayer head of a spraying system, comprising:

a hollow hood member having a narrow, first end and an enlarged, second end, said hollow hood member being formed of a sheet material having first and second edges, said edges being overlapped to define a seam along said hollow hood member, and means for connecting the overlapped edges together to maintain the shape of the hollow hood member;

attachment means associated with the hood member for mounting the spray head within the hood member adjacent the first end thereof;

wherein the connecting means comprises an adhesive;

wherein the adhesive comprises a double-sided adhesive tape disposed between the overlapped edges; and

adhesive tape disposed over the seam.

5,794,856

AIR ASSIST INJECTOR AND RETAINER SHROUD THEREFOR

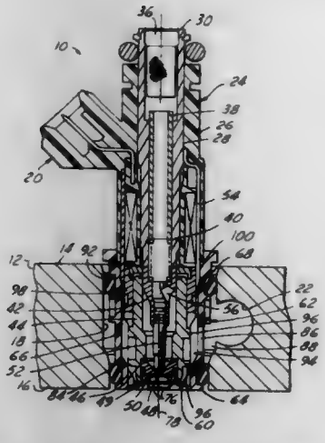
Debora E. Nally, Williamsburg, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

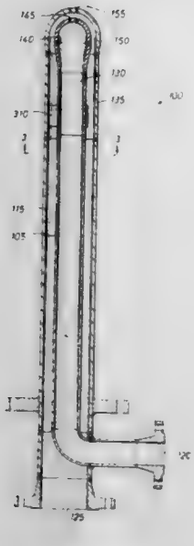
Continuation of Ser. No. 444,496, May 19, 1995, abandoned. This application Apr. 18, 1997, Ser. No. 843,549

Int. Cl.[6] B05B *7/12*

U.S. Cl. 239—408 3 Claims

1. An air assist top feed fuel injector comprising a body having at a first axial end a fuel inlet tube through which fuel is introduced into a fuel passage that extends through said body to a nozzle at a second axial end of said body, electrically controlled valve mechanism for controlling fuel flow through said fuel passage, said mechanism having an armature including a valve member biased toward closing against a valve seat by a spring and openable by





electric actuation of the armature, and a retainer shroud, said injector characterized in that:

said retainer shroud is a tubular-like member having a central bore along a longitudinal axis with a first open end and a second end, a plurality of stepped diameters extending from said first open end, an end cap enclosing said second end, a central seal retainer and a connecting sleeve between said end cap and said retainer;

said first open end having a chamfer means around said central bore;

said end cap including at least one outlet opening therethrough and said connecting sleeve including an external annular groove for retaining an annular seal ring therein;

said connecting sleeve including a radial inlet opening intermediate its ends for admitting air from an external source;

said central seal retainer connecting axially with said sleeve for retaining another annular seal ring therein;

a plurality of equally spaced longitudinally extending ribs axially along the inner wall of said sleeve;

a plurality of radially extending ribs along said end cap, said longitudinally and radially extending ribs forming an enclosed air passage around the body of the injector for delivering air from said radial inlet opening to said outlet opening for mixing with fuel delivered through said nozzle to said outlet opening; and

said retainer shroud being positionable over the nozzle end of the body and sealingly retained to an intermediate portion thereof along said chamfer means.

5,794,857

FEED NOZZLE

Ye-Mon Chen, Sugar Land, and Thomas Shawn Dewitz, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 7, 1995, Ser. No. 399,868

Int. Cl.[6] B05B *7/04*; **C10G** *11/18*

U.S. Cl. 239—430 **9 Claims**

1. A feed nozzle assembly for introducing steam and a heavy petroleum hydrocarbon into a catalytic cracking reactor riser, said feed nozzle assembly comprising:

a. a nozzle body

(1) having a substantially cylindrical inner steam conduit, said inner steam conduit having an inner surface and an outer surface;

(2) having a substantially annular outer heavy petroleum hydrocarbon conduit, said heavy petroleum hydrocarbon conduit;

(a) having an overall outer diameter from about 4 inches to about 9 inches; and

(b) wherein said outer surface of said inner steam conduit forms an inner surface of said annular outer heavy petroleum hydrocarbon conduit;

(3) wherein each of said conduits has an inlet end and an opposite outlet end;

b. a first nozzle tip fixedly attached to said outlet end of said inner steam conduit, for passage of steam out of said inner steam conduit and into a heavy petroleum hydrocarbon passing through said outer heavy petroleum hydrocarbon conduit, thereby resulting in a mixture of steam and heavy petroleum hydrocarbon, said first nozzle tip

(1) having a substantially cylindrical inlet end for attachment to the outlet end of said inner steam conduit;

(2) having an opposite substantially hemi-spherical outlet end, for passage of said steam out of said inner steam conduit and into said heavy petroleum hydrocarbon passing through said outer heavy petroleum hydrocarbon conduit, thereby resulting in a mixture of steam and heavy petroleum hydrocarbon, said hemi-spherical outlet end having a center and;

(a) having two rows comprising a plurality of passageways therein for passage of said steam out of said inner steam conduit and into said heavy petroleum hydrocarbon passing through said outer heavy petroleum hydrocarbon conduit, thereby resulting in a mixture of steam and heavy petroleum hydrocarbon,

(b) wherein an angle formed from said center of said substantially hemi-spherical outlet end through a length of said two rows comprising a plurality of passageways therein is from about 45° to about 120°; and

c. a second nozzle tip fixedly attached to said outer heavy petroleum hydrocarbon conduit, for passage of said mixture of steam and heavy petroleum hydrocarbon out of said feed nozzle assembly wherein said second nozzle tip is adapted to substantially uniformly atomize said mixture of steam and heavy petroleum hydrocarbon into a catalytic cracking reactor riser, said second nozzle tip

(1) having a substantially cylindrical inlet end for attachment to the outlet end of said outer heavy petroleum hydrocarbon conduit;

(2) having an opposite substantially hemi-spherical outlet end said outlet end having a center, for passage of said mixture of steam and heavy petroleum hydrocarbon out of said feed nozzle assembly;

(a) wherein said hemi-spherical outlet end of said second nozzle tip extends beyond said hemi-spherical outlet end of said first nozzle tip,

(b) wherein a distance said hemi-spherical outlet end of said second nozzle tip extends beyond said hemi-spherical outlet end of said first nozzle tip is from about one-quarter inch to about one and one-quarter inches,

(c) said hemi-spherical outlet end of said second nozzle tip having two elongated slits therein for passage of said mixture of steam and heavy petroleum hydrocarbon out of said feed nozzle assembly;

(i) said elongated slits having substantially parallel walls along the length of said elongated slits;

(d) wherein an angle formed from said center of said substantially hemi-spherical outlet end of said second nozzle tip through the length of said elongated slits is substantially contiguous with an angle formed from the substantially spherical center of said substantially hemi-spherical outlet of said first nozzle tip through the width of said two rows comprising a plurality of passageways therein.

5,794,858

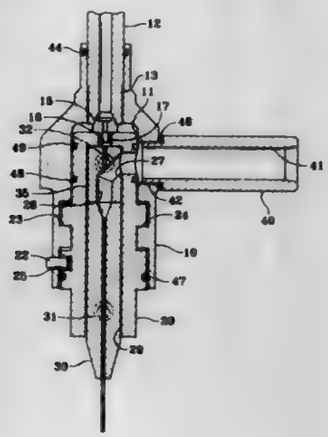
QUICK ASSEMBLY WATERJET NOZZLE

Jose P. Munoz, Brighton, Mich., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed May 29, 1996, Ser. No. 655,066

Int. Cl.[6] B05B *7/14; 7/28*

U.S. Cl. 239—433 **10 Claims**



1. A quick change nozzle assembly for waterjet cutting comprising:

a nozzle cap having an axial cap bore therethrough;

a nozzle tube threadingly engaged in one end of said axial cap bore;

a nozzle body inserted and retained in another end of said axial cap bore;

said nozzle body being further provided with a longitudinal orifice bore and an axial nozzle body bore connected to and having a larger diameter than said longitudinal orifice bore;

an orifice having a nozzle stem disposed in one end of said longitudinal orifice bore;

said nozzle body being further provided with an axial locking means and a means for rotation indexing within said axial cap bore.

5,794,859

MATRIX ARRAY SPRAY HEAD

Lakhi Nandlal Goenka, Ann Arbor; Jay DeAvis Baker, Dearborn, and Hossein Nivi, Novi, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

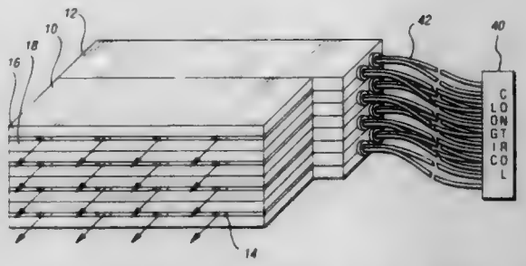
Filed Nov. 27, 1996, Ser. No. 757,354

Int. Cl.[6] B05B *1/14*

U.S. Cl. 239—555 **7 Claims**

1. A matrix array spray head comprising a plurality of nozzles forming a spray head, each of said nozzles mixing a pressurized gaseous propellant and a composition to be applied to a workpiece by the spray head, comprising:

a plurality of plates arranged in a stacked relationship and having channels formed therein for supplying the pressurized gaseous propellant, the composition, and for mixing and spraying the pressurized gaseous propellant and composition;



a plurality of gas supply valves are provided with each being associated with one channel for supplying pressurized gaseous propellant, said gas supply valves each having an independently selectively controlled valve element which is movable between a flow blocking position and a flow position;

a plurality of composition supply valves are provided with each being associated with one channel for supplying the composition, said composition supply valves each having an independently selectively controlled valve element which is movable between a flow blocking position and a flow position; and

a logic control selectively opening gas supply valves and composition supply valves of selected nozzles.

5,794,860

GAS INJECTOR FOR GAS FUELED INTERNAL COMBUSTION ENGINE

Barry Richard Neumann, Hillarys WA, Australia, assignor to Transcom Gas Technologies PTY, Ltd., Western Australia, Australia

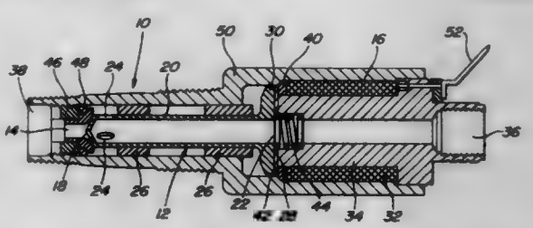
PCT No. PCT/AU93/00672, § 371 Date Oct. 11, 1995, § 102(e) Date Oct. 11, 1995, PCT Pub. No. WO94/15092, PCT Pub. Date Jul. 7, 1994

PCT Filed Dec. 21, 1993, Ser. No. 448,536

Claims priority, application Australia, Dec. 21, 1992, PL6494; Dec. 21, 1992, PL6495

Int. Cl.[6] F02M *51/06*; **F16K** *31/05*

U.S. Cl. 239—585.3 **13 Claims**



1. A gas injector for delivering a controlled quantity of pressurized gas, the injector comprising:

a valve member adapted to move from a first position, in which a port is closed to prevent flow of said gas through the injector, to a second position in which said port is opened to permit a flow of said gas through the injector, said valve member having a hollow elongate valve stem with an opening proximate both ends to allow a flow of said gas through the valve stem;

a solenoid actuator for moving said valve member from said first position to said second position responsive to an electrical control signal wherein said solenoid actuator comprises a coil wound about a stationary, substantially cylindrical magnetic core member, said core member having a hollow interior in fluid communication and coaxial with said hollow valve stem whereby, in use, gas flowing through the injector can help dissipate heat generated by the coil;

wherein said valve member is slidably mounted in the injector with one end of the valve stem adjacent an end face of the

solenoid actuator, said valve stem having an annular flange of magnetic material provided at said one end which faces the end face of the solenoid actuator and forms an armature of a magnetic circuit formed by the solenoid actuator;

wherein the injector is provided with a substantially cylindrical outer casing of magnetic material, a wall of the outer casing being located immediately adjacent said coil and, together with said core member and flange, forming part of the magnetic circuit of the solenoid actuator; and

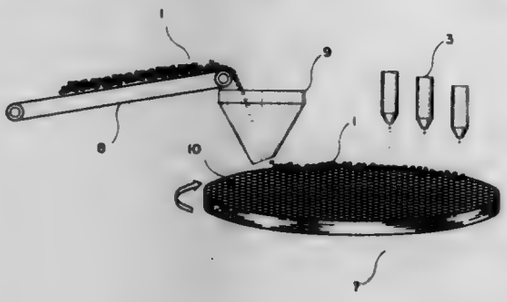
wherein a nonmagnetic separator is provided between an end face of the core member and said annular flange on the valve stem whereby, in use, any residual magnetic force acting on the valve member after said electrical control signal is switched off can be minimized.

5,794,861

PROCESS AND APPARATUS FOR SEPARATING COMPONENTS OF FRAGMENTED VEHICLE TIRES

Darrel Rutherford, Sr., Trenton, Ohio, assignor to D & R Recyclers, Inc., Hamilton, Ohio

Filed Jan. 17, 1996, Ser. No. 587,480
Int. Cl.[6] B02C *19/00*
U.S. Cl. 241—1 **27 Claims**



1. A continuous process for producing crumb rubber from a plurality of pieces of pre-fragmented tire and separating said crumb rubber from the metal cording material of said pieces of pre-fragmented tire, said process comprising the steps of:

a') placing said pieces of pre-fragmented tire onto a rotatable surface; and,

a") rotating said pieces of pre-fragmented tire through at least one processing zone wherein high pressure fluid is directed onto said pieces; and,

a) directing at least one stream of fluid at a sufficiently high pressure onto said pieces of pre-fragmented tire in said at least one processing zone for a sufficient duration to fragment said rubber of said pieces into crumb rubber and to separate said crumb rubber from said cording material of said pieces by washing said crumb rubber away from said cording material and into the flow of effluent fluid, leaving said cording material substantially separate from said effluent fluid and said crumb rubber in said effluent fluid; and

b) separating and recovering said crumb rubber from said effluent fluid.

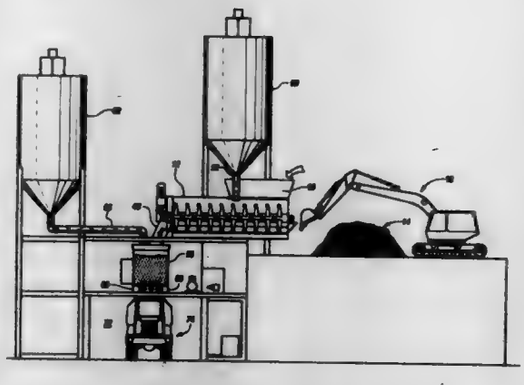
5,794,862

PROCESSING OF WASTE MATERIAL

Irfan A. Toor, Plano, Tex., assignor to Itex Environmental Services, Inc., Addison, Tex.

Continuation of Ser. No. 193,449, Feb. 8, 1994, Pat. No. 5,542,614. This application Oct. 11, 1995, Ser. No. 541,132
Int. Cl.[6] B02C *18/40;23/18*
U.S. Cl. 241—21 **7 Claims**

2. A method for processing waste materials comprising the steps of:



receiving a waste material in a vibrating screen box;

vibrating the vibrating screen box to separate lumps of the waste material that are larger than a predetermined size thereby removing lumps of the waste material of a size larger than the predetermined size from the waste material;

discharging the waste material of a size less than the predetermined size into a mixer;

accumulating a batch of waste material in the mixer;

weighing the batch of waste material to determine an amount of additive to be added to the waste material;

mixing and homogenizing the waste material with the additive in the mixer to form a mixture;

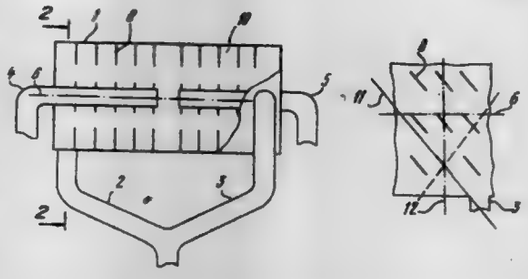
dropping the mixture from the mixer to a processing terminus located below the mixer.

5,794,863

DEVICE FOR DISINTEGRATION OF ARGILLACEOUS MATERIALS

Vladimir Georgievich Kochnev, UL. Kustodieva, D.20, kv.171, 194352 Saint Petersburg, Russian Federation, and Sergey Albertovich Simankin, UL. d.uStinova, D.6, kv .208, 193177 Saint Petersburg, Russian Federation

PCT No. PCT/RU94/00133, § 371 Date Feb. 24, 1997, § 102(e) Date Feb. 24, 1997, PCT Pub. No. WO95/35166, PCT Pub. Date Dec. 28, 1995
PCT Filed Jun. 22, 1994, Ser. No. 765,299
Int. Cl.[6] B03B *5/32*
U.S. Cl. 241—40 **2 Claims**



1. A device for disintegration of argillaceous materials, comprising:

a cylindrical housing;

a feed pipe fitted tangential to the housing;

a discharge pipe; and

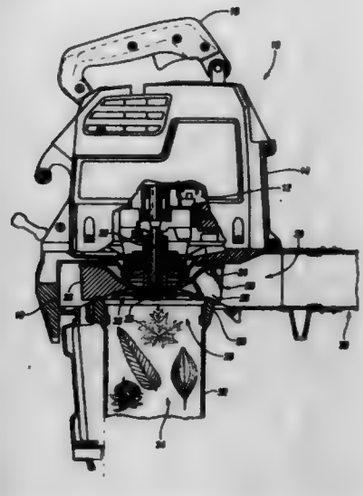
a plurality of vanes, spaced within the housing circumferentially and axially, being mounted on an inner cylindrical surface of the housing between an outlet of the feed pipe and an inlet of the discharge pipe, with each vane arranged in a manner such that an angle, between tangent to the inner cylindrical surface of the housing in a plane of said vane and a plane perpendicular to an axis of the housing, is between 0 and 60 degrees.

5,794,864

PORTABLE LAWN AND GARDEN MULCHING VACUUM

John D. Hammett, and Richard W. Trevino, both of Shreveport, La., assignors to WCI Outdoor Products, Inc., Cleveland, Ohio

Continuation of Ser. No. 508,737, Jul. 28, 1995, abandoned. This application Oct. 10, 1996, Ser. No. 728,770
Int. Cl.[6] B02C *13/28*
U.S. Cl. 241—56 11 Claims



1. Portable apparatus for shredding yard waste comprising:

a source of rotary power;

a fan housing carrying any impeller coupled to the source of rotary power, rotation of the impeller causing air to flow into the fan housing through an intake opening defined through the fan housing and out of the fan housing through an exit opening;

a handle for carrying the fan housing and source of rotary power in an elevated position above the ground;

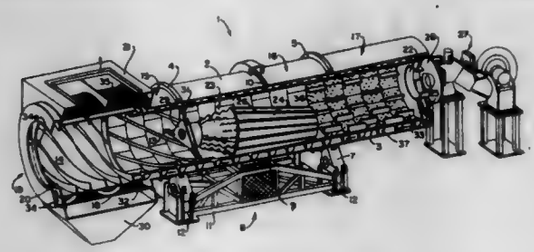
means for shredding yard waste connected to the impeller, the means for shredding yard waste including a flailing blade pivotally coupled for rotation with the impeller, a second flailing blade pivotally coupled to the impeller, and a fixed blade coupled with the impeller and in fixed orientation between the first and second flailing blades.

5,794,865

ROTARY CRUSHER/RECLAIMER FOR RECLAIMING AND RECLASSIFYING SAND AND RELATED AGGREGATES FROM LUMP MATERIALS

Charles J. Didion, and Michael S. Didion, both of St. Charles, Mo., assignors to Didion Manufacturing Company, St. Peters, Mo.

Filed Jul. 25, 1995, Ser. No. 506,815
Int. Cl.[6] B02C *19/12*
U.S. Cl. 241—74 5 Claims



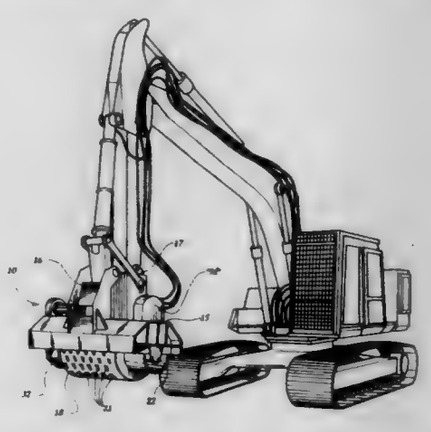
1. A rotary crusher/reclaimer drum for reclaiming and reclassifying sand and related aggregates from lump materials, said drum being substantially horizontally disposed for rotation for reclaiming lump materials, which comprises an inner cylinder having a first end and a second end, said inner cylinder forming a first chamber, a crushing chamber, and an attrition chamber, along its length, and concentric with said inner cylinder an outer cylinder which extends beyond the inner cylinder at the first end of the inner cylinder to form an intake compartment, the intake compartment being of larger diameter to receive the lump material and having high profile segmented helical flight to advance the lump material without substantial surges into the first compartment of the inner cylinder, said intake compartment having a diameter larger than the diameter of the inner cylinder, said first compartment of the inner cylinder containing means for breaking the lump material into smaller pieces and means to advance the smaller pieces into the crushing chamber where the lump material is crushed into further smaller pieces, the smaller pieces of lump material passing into the attrition chamber, said attrition chamber having at least a partially perforated cylinder wall where high tumbling action further reduces the size of the pieces to particulate matter so as to pass a substantial portion of the material through its perforations, said inner cylinder at its back end having a debris exit, said debris exit being of smaller diameter than the diameter of the inner cylinder, any material not passing through the perforations of the attrition chamber leaving the attrition chamber through the debris exit, a conveying vane provided intermediate the inner and outer cylinder for movement longitudinally of any particular matter deposited therein, a screen surrounding the intake chamber, and said particulate matter moved by the conveying vane being deposited onto the screen for further classification of the particular matter, the matter remaining on the screen being recycled back into the intake compartment, a base incorporating drive means supporting the drum and driving the drum in rotation, a lump crusher provided within the crushing chamber, the lump crusher comprising a length of weighted material forming a crushing means and disposed for partially resting upon the inner surface of the inner cylinder, the crushing means being urged into rotation by the turning of the inner cylinder of the rotary reclaiming drum, one end of the crushing means pivotally suspended approximately centrally of the inner cylinder, suspension means pivotally holding the one end of the crushing means to the inner cylinder, the suspension means including a series of flexible links supporting the one end of the crushing means within the inner cylinder.

5,794,866

CUTTER DEVICE FOR CLEARING AND MULCHING TREES

Rickey D. Shinn, 904 Horizon Ct., Concord, N.C. 28027

Continuation of Ser. No. 658,709, Jun. 5, 1996, Pat. No. 5,692,689. This application Sep. 2, 1997, Ser. No. 921,787
Int. Cl.[6] B02C *13/06*
U.S. Cl. 241—101.72 27 Claims



1. A cutter device for being attached to an end of a movable working arm of a self-propelled vehicle for clearing and mulching trees, said cutter device comprising:

(a) a rotatably-mounted drum;

(b) a plurality of spaced cutter teeth attached to an axially-extending peripheral surface of said drum for engaging and grinding the trees;

(c) a shield covering a portion of said drum for containing the deflection of wood debris outwardly from said drum during operation, and said shield having an interior wall spaced apart from said cutter teeth and cooperating with said rotating drum to define a debris flow path through the device;

(d) at least one deflector plate attached to the interior wall of said shield, and extending inwardly into the debris flow path in a direction towards the cutter teeth of said drum, and along a notional line generally tangent to the peripheral surface of said drum; and

(e) the interior wall of said shield and said deflector plate collectively forming a mulch zone in an area between the cutter teeth and said shield and upstream of the deflector plate for slowing the movement of debris along the flow path, and deflecting the debris back into contact with said cutter teeth for being further cut and reduced in size.

5,794,867

DEVICE FOR WINDING OF YARN PACKAGES

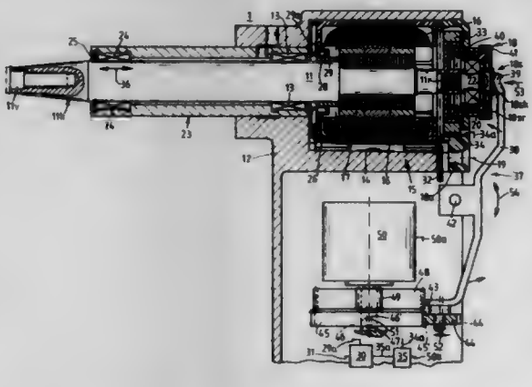
Ferdinand-Josef Hermanns, Erkelenz; Wilhelm Zitzen, and Ulrich Wirtz, both of Mönchengladbach, all of Germany, assignors to W. Schlafhorst AG & Co., Germany

Filed Oct. 20, 1994, Ser. No. 326,608

Claims priority, application Germany, Oct. 25, 1993, 43 36 312.1

Int. Cl.[6] **B65H** *54/00;59/00;57/28;* **H02K** *49/00*

U.S. Cl. 242—18 DD **10 Claims**



1. In a textile bobbin winding machine, a device for winding yarn packages at a work station of the winding machine, the improvement comprising:

a motor including a stator and a rotor,

a bobbin winder work station housing having a recess formed therein, said recess having said stator received and retained therein,

a friction roller assembly comprising a shaft and a friction roller removably mounted on said shaft for surface driving of yarn packages during winding thereof, one end of said shaft extending axially from said friction roller into said recess in said bobbin winder work station housing, said shaft being mounted directly to said rotor, and

means disposed within said bobbin winder workstation housing for radially mounting said shaft to rotatably support said shaft.

5,794,868

SPIN WINDING MACHINES

Peter Busenhart, Wiesendangen; Kurt Wetter, Hagenbuch, both of Switzerland, and Willi Kretzschmar, Grosswallstadt, Germany, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

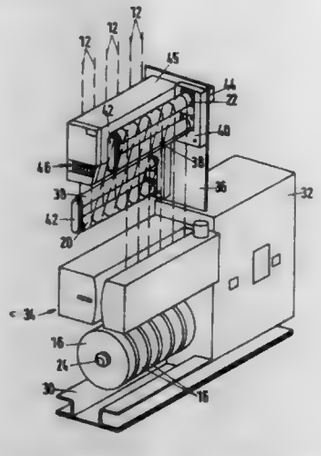
PCT No. PCT/CH95/00211, § 371 Date Jul. 22, 1996, § 102(e) Date Jul. 22, 1996, PCT Pub. No. WO96/09425, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 21, 1995, Ser. No. 648,158

Claims priority, application Switzerland, Sep. 21, 1994, 2863/94

Int. Cl.[6] **B65H** *54/02*

U.S. Cl. 242—35.5 R **9 Claims**



1. Apparatus for advancing and winding endless filamentary threads comprising a floor upon which a person may stand while attending to the threads; a winding machine including a chuck rotatably mounted above said floor and having a length sufficient for the winding thereon of multiple coaxial cylindrical thread packages spaced apart from one another lengthwise of said chuck; means for rotating said chuck; a driven thread advancing roll above said winder chuck less than 2500 mm above said floor so that a single person standing on said floor can attend to the threading-in of both said roll and said winding machine; and a plurality of stationary thread guides between said thread advancing roll and said chuck, said thread guides being arranged in a row parallel to said chuck with each of said thread guides being positioned above a location where a corresponding one of said thread packages is to be wound, and said thread advancing roll being long enough and being spaced far enough above said thread guides to allow each of the threads to pass from a surface portion of said roll to a respective thread guide along a path having an inclination of less than about 15 degrees relative to a vertical axis through the thread guide to prevent unacceptable tension differences between the threads of said plurality of threads.

5,794,869

PAPER WINDING DEVICE FOR PHOTOGRAPHIC PRINTER

Shigeyuki Takano; Akira Okuma, and Yasuhito Suzuki, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, and Fuji Photo Optical Co., Ltd., Saitama, both of Japan

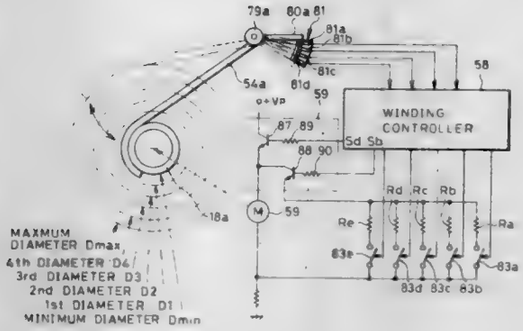
Continuation of Ser. No. 658,016, Jun. 4, 1996, abandoned, which is a continuation of Ser. No. 265,216, Jun. 24, 1994, abandoned. This application Jul. 7, 1997, Ser. No. 889,087

Claims priority, application Japan, Jun. 25, 1993, 5-155500

Int. Cl.[6] **G11B** *15/56;* **G03B** *1/58;21/43*

U.S. Cl. 242—331.5 **7 Claims**

1. A paper winding device for winding up photographic paper after exposure on a take-up spool in a photographic printer by rotating said take-up spool, said paper winding device comprising:



a DC motor for rotating said take-up spool, wherein said DC motor applies a braking force to the take-up spool when said DC motor is deactivated;

a detection device for detecting a diameter of a paper roll wound on said take-up spool;

a plurality of resistors having different resistances, means for connecting one of said resistors in parallel with said DC motor when said DC motor is deactivated; and

means for selecting one of said plurality of resistors to be connected in parallel with said DC motor in accordance with the paper roll diameter in order to increase the braking force on said take-up spool as the paper roll diameter increases, thereby to reduce variation in paper winding amount within a time from deactivation of said DC motor to a time of actual stopping of said take-up spool.

5,794,870

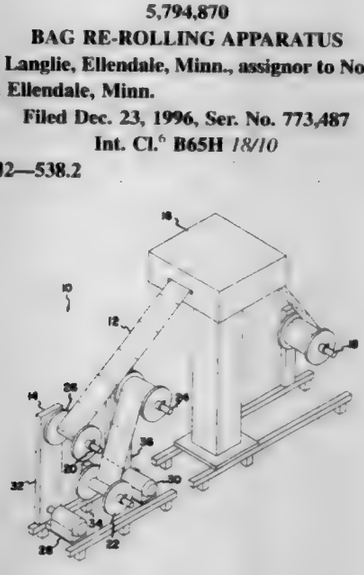
BAG RE-ROLLING APPARATUS

Ronald H. Langlie, Ellendale, Minn., assignor to North Central Plastics, Ellendale, Minn.

Filed Dec. 23, 1996, Ser. No. 773,487

Int. Cl.[6] B65H *18/10*

U.S. Cl. 242—538.2 **9 Claims**



1. A web re-rolling apparatus, comprising:

a frame;

a first spindle on the frame for rolling a web onto a first spool;

a second spindle on the frame for accepting the first spool onto which the web has been rolled, said second spindle and said first spool being rotatable in a first direction;

a third spindle on the frame for rolling the web from the second spindle onto a second spool, said third spindle and said second spool being rotatable in a second direction opposite said first direction;

wherein the first and third spindles are motor-driven.

5,794,871

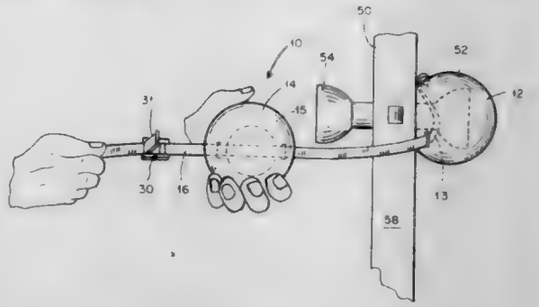
REMOVABLE PORTABLE DOOR LOCK

Thomas Willetts, 5 Regal Ct., St. James, N.Y. 11780

Filed Feb. 18, 1997, Ser. No. 802,304

Int. Cl.[6] E05C *19/18*

U.S. Cl. 292—288 **9 Claims**



1. A removable door lock, comprising:

a) an exterior member comprising a substantially hollow body having an open end, said body dimensioned to fit over and substantially cover a door knob;

b) a strap having a first end and a second end, said first end being coupled to said exterior member;

c) an interior member arranged on said strap so that it is movable along said strap toward and away from said exterior member, said interior member being a substantially hollow body having an open end, said body dimensioned to fit over and substantially cover a door knob; and

d) selectively engageable means for preventing said interior member from moving along said strap away from said exterior member.

5,794,872

FILM FEEDING APPARATUS

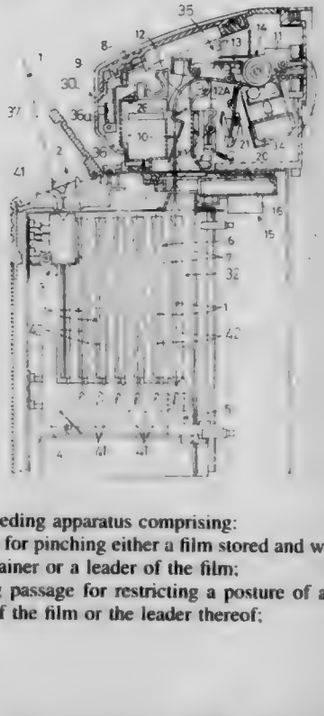
Yasunobu Shimamura, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 24, 1996, Ser. No. 717,810

Claims priority, application Japan, Sep. 25, 1995, 7-245681

Int. Cl.[6] G03D *3/08*; **B65H** *20/00*; **G03B** *1/56*

U.S. Cl. 242—332.2 **11 Claims**



1. A film feeding apparatus comprising:

a roller pair for pinching either a film stored and wound within a film container or a leader of the film;

a restricting passage for restricting a posture of a non-pinched portion of the film or the leader thereof;

wherein the roller pair is disposed in such a manner that the film or the leader thereof is entrained about one roller of the roller pair in an arcuate form toward an upstream side in a film feeding direction relative to a pinching position of the roller pair, and also the roller pair is disposed in such a manner as to cause the film container to apply its own weight as a tension on the film or the leader thereof;

with driving rotation of the roller pair pinching the film or the leader thereof, the film is withdrawn from the film container held at a holding portion to be fed to a film processing section; and

the restricting passage of the one roller is curved along an entraining passage of the one roller for the film or the leader thereof as the restricting passage is viewed in a direction of an axis of the one roller.

5,794,873

MAGNETIC RECORDING-REPRODUCTION APPARATUS HAVING MOVABLE REEL SUPPORTS

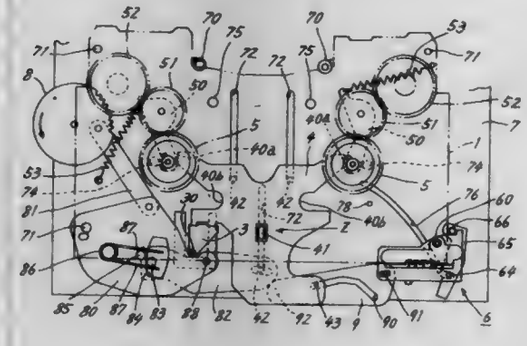
Toshihide Hamaguchi, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 21, 1996, Ser. No. 701,169

Claims priority, application Japan, Aug. 22, 1995, 7-213634; Sep. 20, 1995, 7-241710; Oct. 6, 1995, 7-259959

Int. Cl.[6] G11B *23/04;5/008*

U.S. Cl. 242—336 **3 Claims**



1. A magnetic recording-reproduction apparatus, comprising a reel support moving mechanism for moving reel supports in corresponding relation with two kinds of large and small cassettes different in spacing between reels and formed with respective unlocking apertures for fitting therein a common unlocking member for unlocking the reels, wherein the reel support moving mechanism comprises a pair of pivotal levers pivotably supported on a chassis and each supporting the reel support rotatably on a free end thereof, a slide member provided on the chassis reciprocatingly movably for controlling the rotation of the pivotal levers and moving the reel supports to two different positions corresponding respectively to the large and small cassettes and a drive gear for driving the slide member, and pressure contacting means, disposed between the drive gear and the slide member, for positioning and holding the slide member in two cassette loading positions by pressing contact, with the rotation of the drive gear,

wherein in the two cassette loading positions, the slide member is capable of contacting the free ends of the pivotal levers, the free ends of the pivotal levers being pressed against respective stopper pins on the chassis, and the pressure contacting means comprises an intermediate lever operably coupled with the drive gear, a movable lever pivoted at a central portion thereof to a free end of the intermediate lever and engaged with the slide member, and a spring member provided on the intermediate lever and engaged with the movable lever for biasing the movable lever in the direction of pressing the slide member into contact with the pivotal levers.

5,794,874

TAPE GUIDING POLE ANGLE ADJUSTING MECHANISM

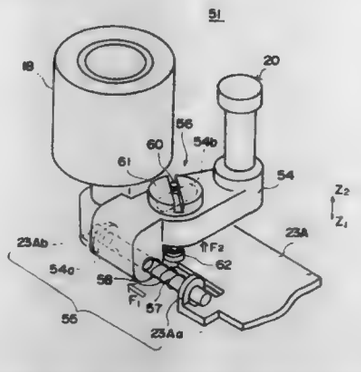
Keiichi Setsumasa, and Ryoichi Annen, both of Atsugi, Japan, assignors to Mitsumi Electric Co., Ltd., Japan

Filed Dec. 19, 1996, Ser. No. 769,546

Claims priority, application Japan, Dec. 26, 1995, 7-339730

Int. Cl.[6] G03B *23/02*

U.S. Cl. 242—346.1 **8 Claims**



1. A tape guiding pole angle adjusting mechanism for a magnetic tape recording/reproducing apparatus, the tape guiding pole angle adjusting mechanism comprising a rotatable arm, a sub-arm adapted for adjustable connection to the rotatable arm, connecting means for adjustably connecting the sub-arm to the rotatable arm, a tape guiding pole fixedly attached to the sub-arm such that the tape guiding pole has an inclination angle with respect to the rotatable arm, and adjusting means for manually adjusting the inclination angle of the tape guiding pole with respect to the rotatable arm, whereby engagement of a magnetic tape with the tape guiding pole can be controlled, preventing damage to the tape.

5,794,875

BELT RETRACTOR FOR A VEHICLE SAFETY BELT SYSTEM

Johannes Schmid, Schwäbisch Gmünd, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

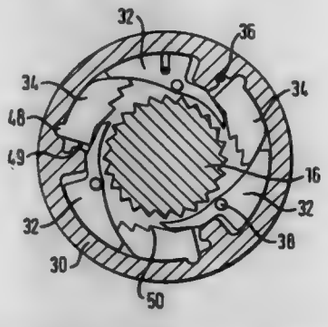
PCT No. PCT/EP96/01361, § 371 Date Dec. 10, 1996, § 102(e) Date Dec. 10, 1996, PCT Pub. No. WO96/32304, PCT Pub. Date Oct. 17, 1996

PCT Filed Mar. 28, 1996, Ser. No. 750,488

Claims priority, application Germany, Apr. 11, 1995, 195 13 724.8

Int. Cl.[6] B60R *22/46*

U.S. Cl. 242—374 **9 Claims**



1. A belt retractor for a vehicle safety belt system comprising a locking device for a belt drum (**14**) and a rotary belt pretensioner drive (**20**), said drive being able to be connected drivingly with a drive pinion for the belt drum (**14**) via a coupling having pawls (**34**) able to be shifted between a rest position out of engagement with the drive pinion (**16**) and a working position in engagement

with the drive pinion (**16**), wherein said coupling pawls (**34**) are able to be moved positively both out of the rest position into the working position and furthermore from the working position into the rest position by running against cam surfaces rotating in relation to them and said coupling pawls (**34**) are provided with a guide in ramp (**40**) and with a guide out ramp (**42**) and said cam surfaces are formed as guide in surfaces (**44**) and guide out surfaces (**46**), which cooperate with said guide in ramps (**40**) and, respectively, said guide out ramps (**42**).

5,794,876

SEAT BELT RETRACTOR WITH PRETENSIONER

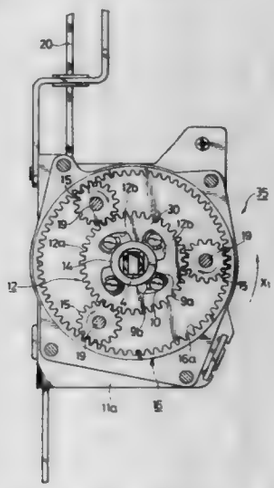
Kenichi Morizane, and Katsuyasu Ono, both of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 498,916, Jul. 6, 1995, abandoned. This application Mar. 17, 1997, Ser. No. 819,721

Claims priority, application Japan, Jul. 6, 1994, 6-177662; Apr. 28, 1995, 7-129157

Int. Cl.[6] B60R *22/46*

U.S. Cl. 242—374 **11 Claims**



1. A seat belt retractor with a pretensioner, comprising:

a drive mechanism;

a rotating member operably rotated in a first direction of rotation by said drive mechanism;

a retractor base;

a take-up spindle rotatably supported on said retractor base and biased in a webbing-winding direction;

a rotary drive member operably rotated in the same direction as said first direction of rotation about said take-up spindle by a rotation of said rotating member in said first direction;

a clutch mechanism disposed between said rotary drive member and said take-up spindle to transmit a rotation of said rotary drive member in said first direction of rotation to said take-up spindle, said clutch mechanism normally maintaining said rotary drive member and said take-up spindle in a non-connected state but, when said rotary drive member rotates in said first direction of rotation, bringing said rotary drive member and said take-up spindle into a connected state;

a speed-increasing gear transmission arranged between said rotating member and said rotary drive member so that a rotation of said rotating member is transmitted at an increased speed to said rotary drive member, wherein said speed-increasing gear mechanism comprises:

an internal gear mounted on said retractor base,

a plurality of planetary gears rotatably supported by pins, which are arranged on said rotating members and maintained in meshing engagement with said internal gear, and

an external gear arranged on an outer periphery of said rotary drive member and maintained in meshing engagement with said planetary gears;

wherein a rotation of said rotary drive member caused by a rotation of said rotating member in said first direction of rotation effects a rotation of said take-up spindle in said webbing-winding direction.

5,794,877

RETRACTOR FOR SEAT BELT

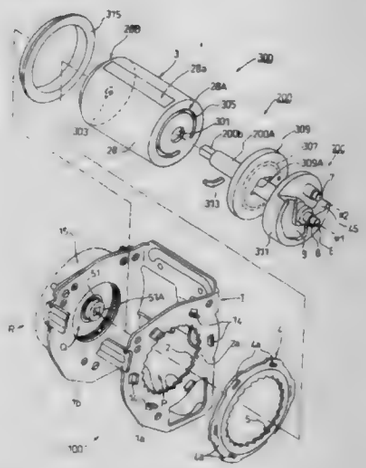
Katsuyasu Ono; Masuo Matsuki, and Satoshi Hirase, all of Kanagawa, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Feb. 18, 1997, Ser. No. 801,498

Claims priority, application Japan, Feb. 16, 1996, 8-052644; Apr. 23, 1996, 8-123950; Nov. 25, 1996, 8-313507

Int. Cl.[6] B60R *22/28*

U.S. Cl. 242—379.1 **15 Claims**



1. A retractor for a seat belt comprising:

a retractor base;

a shaft rotatively attached to said retractor base;

a bobbin which is secured to an end of said shaft and around which a webbing is wound;

a locking member secured to the other end of said shaft;

an emergency locking mechanism for inhibiting rotation of said locking member in a direction in which said webbing is drawn out in an emergency of a vehicle; and

a rotation restriction mechanism disposed between said bobbin and said locking member to restrict the amount of torsion of said shaft to a predetermined amount when rotation of said locking member has been inhibited by said emergency locking mechanism;

wherein said rotation restriction mechanism includes:

a guide portion being formed in one of said bobbin and said locking member and being elongated in a direction in which said shaft is rotated for a predetermined length; and

a lock piece which is movable along said guide portion.

5,794,878

DEVICE FOR PREVENTION OF SLAP-BACK LOCK OF INERTIA REEL

Christopher Carpenter, Tempe; Lindsay P. Zollinger, Phoenix, both of Ariz.; Michael J. Freeman, Romeo, Mich.; James C. Warrick, Tempe, and Willard F. Hagan, Gilbert, both of Ariz., assignors to Am-Safe, Inc., Phoenix, Ariz.

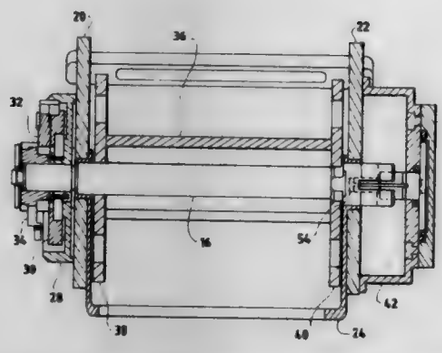
Filed May 20, 1997, Ser. No. 861,882

Int. Cl.[6] B60R *22/28*

U.S. Cl. 242—381 **11 Claims**

1. A seat restraint system used to protect a seat occupant from sudden decelerations, the seat restraint system comprising:

a supporting frame having two opposite walls;



an inertia reel mounted on said supporting frame, said inertia reel having

a cylindrical spool,

a shaft having a first and a second opposite ends, said shaft supporting said spool and said two opposite ends of said shaft being mounted on said two opposite walls of said supporting frame such that said spool and said shaft rotate on a perpendicular axis to said two opposite walls;

a webbing attached to said shaft, said webbing being reeled or unreeled around said spool depending on the direction of the rotation of said spool;

a damping disk attached to said first opposite end of said shaft;

a spring cup having at least one wall, said spring cup being attached to said supporting frame and having a spring having a first end attached to said spring cup and a second end attached to said first opposite end of said shaft proximate said damping disk such that said spring creates rotational force to cause said spool to rotate;

a damping housing having a wall attached to said at least one wall of said spring cup forming a damping chamber between said at least one wall of said spring cup and said wall of said damping housing encasing said damping disk; and

wherein said damping chamber is filled with a high viscosity fluid which causes a fluid damping force against said damping disk when said damping disk is rotated.

5,794,879

VEHICULAR SEAT BELT RETRACTOR

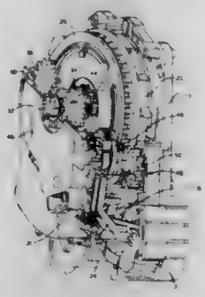
Andreas Huber, Durlangen, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed May 6, 1997, Ser. No. 851,963

Claims priority, application Germany, May 6, 1996, 296 08 209.0 U

Int. Cl.[6] **B60R** *22/41;22/415*

U.S. Cl. 242—382.2 **6 Claims**



1. A belt retractor for vehicular seat belts comprising

a belt reel rotatably mounted in a frame;

a locking mechanism for selective blocking of belt reel rotation; and

an activating mechanism for said locking mechanism with a control disk restrictedly rotatable with respect to the belt reel, the locking mechanism being activatable by rotation of said control disk relative to said belt reel;

a planetary gear including a sun wheel connected to said belt reel for joint rotation, an annular gear secured to said frame and at least one planet wheel having an external toothing mating with said sun wheel and said annular gear, said planet wheel having at least one switching cam; and

a switching toggle mounted to swivel between a normal position and a locking position, said switching toggle being moveable into said locking position by said switching cam of said planet wheel to inhibit said activating mechanism.

5,794,880

ROPE DRUM

Gunnar Liljedahl, Pellvägen 4, Luleå, Sweden

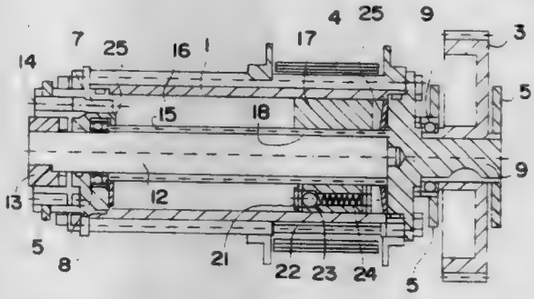
PCT No. PCT/SE94/01100, § 371 Date Jul. 2, 1996, § 102(e) Date Jul. 2, 1996, PCT Pub. No. WO95/19813, PCT Pub. Date Jul. 27, 1995

PCT Filed Nov. 18, 1994, Ser. No. 669,349

Claims priority, application Sweden, Jan. 19, 1994, 9400139

Int. Cl.[6] **B65H** *75/30;* **B66D** *5/18*

U.S. Cl. 242—396 **3 Claims**



1. Improvements in a driven barrel of a winch device to stop a rope to be unwound from the barrel when the rotation speed of said barrel increases over a certain value in one direction, said driven barrel including a closed cylindric space which is concentric with said barrel and accommodates a piston, which is movable on an axis from one end of said cylindric space to the other in non-rotatable connection with the inside of the barrel, said axis having first screw threads and said piston having a center bore with second screw threads meshing with said first screw threads of the axis, wherein said cylindric space contains a fluid and said piston is given a leak from one side to the other side of said piston, said leak being in the form of a canal through said piston in its axial direction, said canal accommodating a valve means including a ball freely movable in said canal and said ball closes against a valve seat in said canal against the force of a spring when the flow rate in a direction opposite to said spring force causes a pressure drop high enough to overcome said spring force.

5,794,881

GEL TENSIONING DEVICE

Nigel Evans, Sutton Coldfield, United Kingdom, assignor to Light & Sound Design, Ltd., Birmingham, England

Filed Apr. 18, 1996, Ser. No. 634,658

Int. Cl.[6] **B65H** *23/04;18/08*

U.S. Cl. 242—410 **22 Claims**

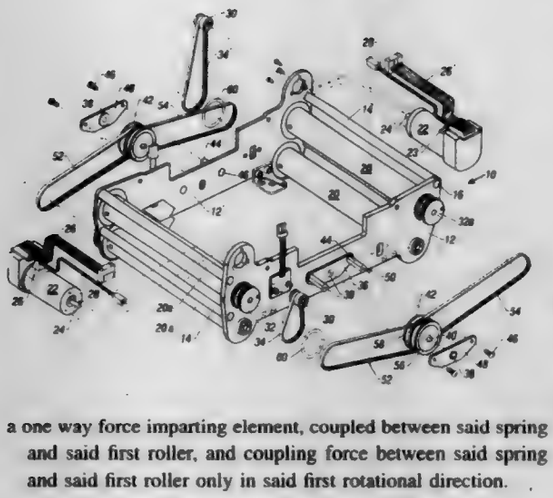
1. A sheet tensioning device, comprising:

a frame;

a first roller and a second roller rotatably mounted on said frame;

a rotation device coupled to one of said rollers and operating to rotate said one of said rollers;

a spring connected in a way to maintain a tension in a first rotational direction between said first and second rollers, said spring being of a type that could be damaged by force in a second rotational direction, and



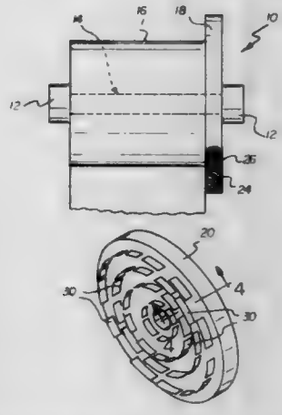
a one way force imparting element, coupled between said spring and said first roller, and coupling force between said spring and said first roller only in said first rotational direction.

5,794,882

TOILET PAPER ROTATION LIMITER HAVING A PLURALITY OF RIDGES ARRANGED IN A PLURALITY OF CONCENTRIC CIRCLES

Leonard J. Lewis, 2141 Crotona Ave. Apt. 5F, Bronx, N.Y. 10457

Filed Apr. 4, 1997, Ser. No. 833,161
Int. Cl.[6] B65H *23/08*
U.S. Cl. 242—423.1 **1 Claim**



1. The toilet paper roll rotation limiter for limiting rotation of a roll of toilet paper, so as to prolong use of the roll comprising, in combination:

a toilet paper roll holder defined by two outer brackets adapted for securement to a wall surface and a spool removably disposed between the two outer brackets, the spool adapted to hold the roll of toilet paper thereon for distribution of the toilet paper achieved by rotation of the roll;

a rotation limiter comprised of a circular member having an aperture through a central portion thereof, the circular member having a foam interior and a plastic exterior, the aperture receiving an end of the spool therethrough for positioning between one of the two outer brackets and the roll of toilet paper; and

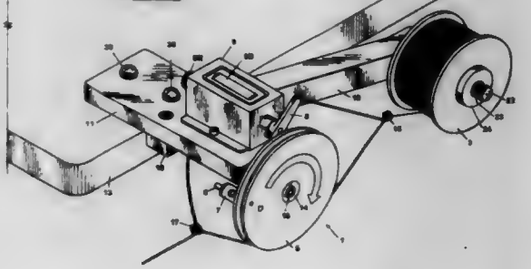
a plurality of outwardly extending ridges disposed on an interior surface of the circular member for engaging the roll of toilet paper, the plurality of outwardly extending ridges are arranged in a plurality of concentric circles, and each of said concentric circles having a different radius.

5,794,883

UNITARY BULK FISHLINE AND CARRIER AND LINE MEASURING DEVICE

Richard R. MacEwen, 712 Dream Catcher La., Hesperus, Colo. 81326

Filed Apr. 10, 1997, Ser. No. 838,806
Int. Cl.[6] B65H *49/26;59/04;75/02*
U.S. Cl. 242—423.2 **20 Claims**



1. A device for supplying fishing line to a fish reeling device from a bulk fishing line spool and measuring the length of line pulled from the spool by the reeling device comprising:

a T-shaped support having a stem portion and a crossed portion at one end of the stem portion,

a spindle member at the other end of said stem portion extending horizontally during normal use on one side of the stem parallel to said crossed portion,

manually releasable retaining means on said spindle member for rotatably retaining a spool of bulk fishing line on the spindle member for unwinding line from the spool and including friction means for applying friction to the spool to provide a preselected drag to the spool during unwinding of line to prevent spool overrun and keep the line in tension,

said crossed portion of the T-shaped support having a first end extending from said stem on said one side and parallel to said spindle,

a circumferentially grooved round pulley rotatably supported on said first end of the crossed portion with its axis of rotation being parallel to said spindle,

said pulley having a shallow groove of semicircular cross section and an inner circumference of predetermined length at the bottom of the groove,

guiding means extending from said support and having a line-encirclable manually line-threadable guide portion between said spindle and said pulley at the plane of the pulley for guiding line from the spool to tangentially enter said groove,

said pulley groove being manually accessible to enable line extending from said guide portion to be manually wrapped once around the pulley in frictional contact in said groove with the line extending further to the reeling device to drive the pulley when the line is pulled during reeling,

line length indicating means coupled to said pulley for counting revolutions of the pulley as line is pulled from the spool for

computing and indicating reeled line length based on said the predetermined length of said inner circumference of the groove.

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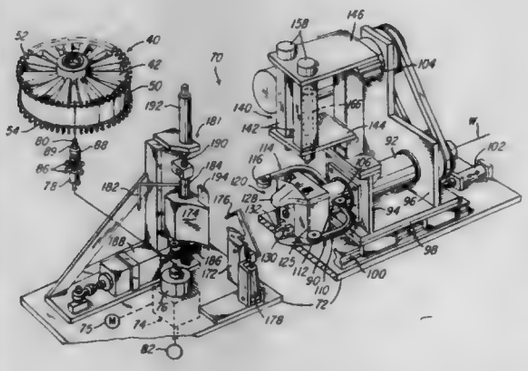
STATOR WINDING APPARATUS WITH SELECTIVELY MOVABLE COIL FORMER

Patrick A. Dolgas, Clermont County; Ballard E. Walton, Bethel Township, and Larry E. Staton, Clark County, all of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Division of Ser. No. 17,111, Feb. 12, 1993, Pat. No. 5,394,046, which is a continuation-in-part of Ser. No. 950,262, Sep. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 948,399, Sep. 21, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,425

Int. Cl.[6] B65H *81/06*

U.S. Cl. 242—433.3 **13 Claims**



1. An apparatus for winding a stator core for a permanent magnet motor, said stator core having first and second end faces each having outer margins spaced by and joined to a cylindrical outer wall having a center axis, a first set of axially-outwardly projecting coil-retaining members in mutually-spaced relation on the outer margin of said first end face, and a second set of axially-outwardly projecting coil-retaining members on the outer margin of said second end face, individual ones of said coil-retaining members of said second set being aligned with individual ones of said coil-retaining members of said first set, said apparatus comprising:

an indexing mechanism to which said stator core is adapted to be clamped;

a carriage movable between a first position remote from said stator core and a second position adjacent said stator core;

a rotatable flier mounted on said carriage, said flier drawing wire from a source of wire under tension and rotatable when said carriage is moved to said second position to wind coils of wire around individual pairs of said first set of said coil-retaining members and aligned pairs of said second set of coil-retaining members; and

a winding form assembly mounted on said carriage including a first coil former selectively movable between a first position remote from said stator core and a second position over and confronting one of said end faces of said stator core, said first coil former when in said second position having surfaces located in the path of said wire being wound so that a portion of one of said coils of wire extending over said one of said end faces is wound closer to said center axis than if said first coil former were in said first position.

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WEAVING LOOM WITH A FABRIC WINDING MANDREL TROLLEY

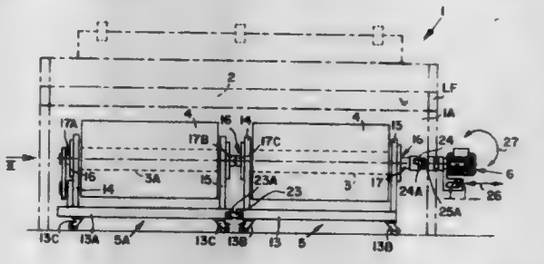
Jiri Husek, Varnsdorf; Valdemar Honcu, Rumburk, and Alfred Beer, Jablonec n.N, all of Germany, assignors to Lindauer Dornier Gesellschaft mbH, Lindau, Germany

Filed Mar. 21, 1997, Ser. No. 822,297

Claims priority, application Germany, Mar. 22, 1996, 296 05 339.2

Int. Cl.[6] B65H *18/04*

U.S. Cl. 242—533.8 **16 Claims**



1. A weaving loom comprising a loom frame, a fabric winding space (**1A**) in said loom frame (**LF**), at least one trolley (**5**) fitting into said fabric winding space of said weaving loom, at least one fabric winding mandrel rotatably mounted in said trolley, a single drive (**6**, **6'**) mounted for driving one or more fabric winding mandrels, and a releasable coupling between said single drive and said fabric winding mandrel (**6**, **6'**) so that the same drive can be coupled to one or more fabric winding mandrels, said single drive comprising a mounting device (**6A**, **6B**, **6C**, **6D**, **6E**, **6F**) for securing said single drive to said loom frame (**LF**) in a position adjustable manner, and wherein said mounting device comprises a mounting shaft (**6D**) rotatable in a bushing (**6G**) secured to said loom frame (**LF**) for a first angular adjustment (**28**) of said single drive (**6**) about a vertical axis (**LA**), and a bracket (**6A**) with an elongated guide hole (**6B**), a guide pin securing said single drive to said bracket (**6A**) for a linear back and forth adjustment (**26**) by a sliding movement of said guide pin in said guide hole (**6B**), said guide pin (**6C**) further permitting a second angular adjustment (**27**) of said drive (**6**) about said guide pin (**6C**).

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ROTATABLY RELEASABLE WIRE REEL CADDY

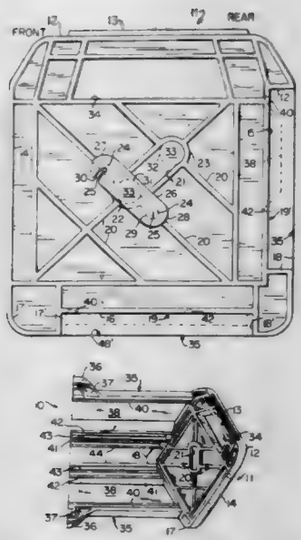
David T. Cook, 2771-25 Monument Rd., Unit 345, Jacksonville, Fla. 32225

Filed Jul. 8, 1996, Ser. No. 676,852

Int. Cl.[6] B65H *16/06*

U.S. Cl. 242—594.3 **20 Claims**

1. A reel holder comprising an elongated frame, said frame including first and second side frame members and a pair of spaced apart end walls respectively connected to said frame members, an elongate rod having opposite end portions each disposed in a respective one of said end walls, said elongate rod carrying at least one reel thereon, and support means for movably mounting said rod to said frame at first and second positions, said rod being movable in a direction perpendicular to a longitudinal axis of said frame between said first and second positions, said first and second side frame members being spaced away from said rod a sufficient distance to avoid contact of a portion of each of said side frame members with said at least one reel carried on said rod when said rod is in said first position, said second side frame member having a portion thereof in contact with said at least one reel carried on said rod when said rod is in said second position without removal of said rod from either of said end walls to provide vertical resting support for said at least one reel independently of said rod, said rod being uniformly movable toward and away from both said side frame members, each said end wall having a first and second surface for selectively engaging a horizontal surface with said rod being in said first position when each said end wall first surface is



engaged with the horizontal surface and a in said second position when each said end wall second surface is engaged with the horizontal surface.

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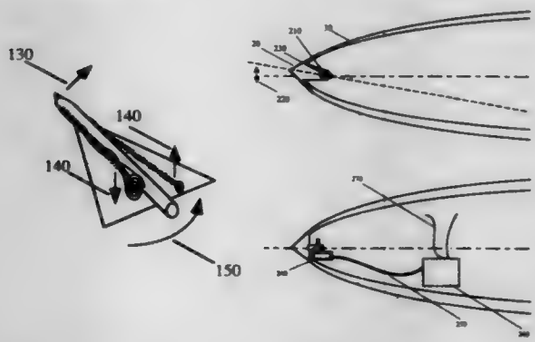
STAGNATION POINT VORTEX CONTROLLER

Narayanan M. Komerath, 5390 Bannergate Dr., Alpharetta, Ga. 30202; Leigh Ann Darden, 1150 Collier Rd. NW. Apt. A13, Atlanta, Ga. 30318; John C. Magill, 11 Langmaid Ave. #1, Somerville, Mass. 02145, and Kevin G. Peterson, P.O. Box 2612, Kalispell, Mont. 59903

Filed Nov. 17, 1995, Ser. No. 559,811

Int. Cl.[6] B64C *9/00*

U.S. Cl. 244—75 R **1 Claim**



1. A method of imparting desired attitude control moments to an object moving through a fluid at an angle of attack of at least 10 degrees relative to the direction of motion of the object by controlling the structure of leeside vortices generated by motion of the object through the fluid, said method comprising the step of selectively displacing the stagnation point of fluid flow in the vicinity of the leading end of the object to control the point at which the vortices are generated and thus to control the structure and dynamics of the vortices as they move rearwardly from the stagnation point and over control surfaces of the object;

wherein the step of selectively displacing the stagnation point comprises moving at least a portion of the leading end of the object angularly relative to the direction of motion of the object through the fluid; and

wherein the leading end of the object is generally cone shaped and wherein the step of moving at least a portion of the leading end of the object comprises moving the apex of the cone shaped leading end.

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SYSTEM FOR REMOVING INCIDENT HEAT FROM AIRCRAFT DURING FLIGHT

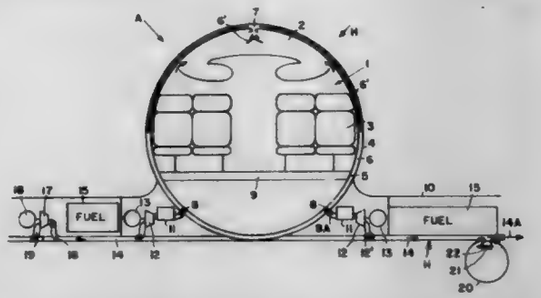
Wilhelm Lutzer, Hamburg, Germany, assignor to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Nov. 15, 1996, Ser. No. 751,055

Claims priority, application Germany, Nov. 17, 1995, 195 42 843.9

Int. Cl.[6] B69C *1/00*

U.S. Cl. 244—117 A **22 Claims**



1. In an aircraft having a fuselage with an outer skin, at least one cabin interior panel arranged in said fuselage to bound a pressurized cabin in said aircraft, and a wing extending from said fuselage; an improved system for removing from said aircraft heat generated by at least one of aerodynamic friction heating of said fuselage outer skin, compression heating at a stagnation point and a stagnation edge of said fuselage outer skin, compression heating of cabin air that is compressed to a pressure level of said pressurized cabin, and solar heating of said fuselage outer skin;

wherein said improved system for removing heat comprises a first air channel between said cabin interior panel and said fuselage outer skin, a cabin air exhaust outlet opening through said cabin interior panel into said first air channel to enable an airflow to flow from said pressurized cabin into and along said first air channel, a first air channel outlet arranged to allow said airflow to flow out of said first air channel, an expansion turbine having an air inlet and an air outlet, with said air inlet connected to said first air channel outlet, and a second air channel arranged in said wing along a bottom of said wing and having a second air channel inlet and a second air channel outlet, with said second air channel inlet connected to said expansion turbine air outlet.

5,794,889

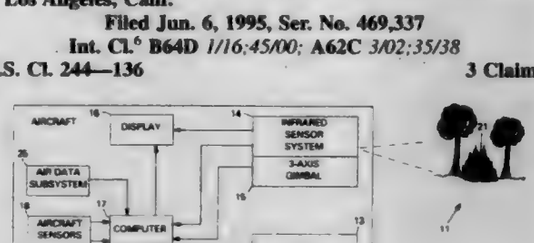
FIRE RETARDANT DELIVERY SYSTEM

James D. Bailey, Tucson, Ariz., assignor to Raytheon Company, Los Angeles, Calif.

Filed Jun. 6, 1995, Ser. No. 469,337

Int. Cl.[6] B64D *1/16;45/00;* **A62C** *3/02;35/38*

U.S. Cl. 244—136 **3 Claims**



1. A fire retardant delivery system for delivering fire retardant onto a fire, said system comprising:

an aircraft;

a fire retardant storage and ejection system disposed on the aircraft;

a stabilized three axis gimbal system disposed on the aircraft for providing signals indicative of angle and angle rates of a gimbal with respect to an axis of the aircraft;

an infrared sensor system disposed on the stabilized three axis gimbal system;

a display coupled to the infrared sensor system for displaying an image produced thereby to a pilot of the aircraft;

aircraft sensors disposed on the aircraft for providing signals indicative of the velocity, altitude, and dive angle of the aircraft;

a computer coupled to the infrared sensor system, to the aircraft sensors, and to the fire retardant storage and ejection system, for computing a line of sight distance Rmn between the aircraft and the hot spot using aircraft velocity Va and line of sight angular rotation rate $\dot{\epsilon}n$ in accordance with the equation:

$$Rmn = \frac{Va \sin(\epsilon n - \gamma)}{\dot{\epsilon} n}$$

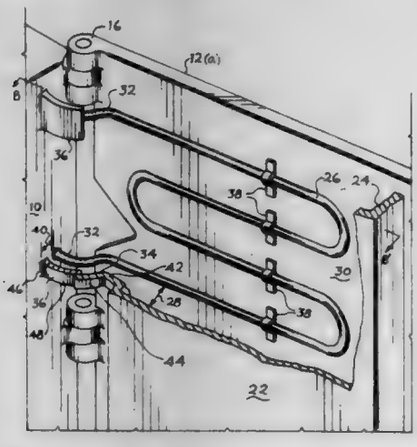
for computing an optimal release point for ejecting fire retardant from the aircraft onto the fire and for outputting a start signal to the pilot providing an indication to manually release the fire retardant.

5,794,890

SHIELDED RADIATOR

Leo H. Jones, Jr., Rancho Palos Verdes, and Christopher J. Cooper, Lakewood, both of Calif., assignors to Hughes Electronics Corporation, Los Angeles, Calif.

Filed Dec. 22, 1995, Ser. No. 577,445
Int. Cl.[6] B64G 1/50
U.S. Cl. 244—163 **13 Claims**



1. A radiator panel comprising:

a) a first radiator surface;

b) at least one pipe, mounted on the first radiator surface;

c) at least one bumper shield positioned over said first radiator surface at a first stand-off distance from the pipe; and

d) at least one hinge, hingedly attached at a first panel edge, said hinge hingedly attachable to a spacecraft so that the radiator panel may be stored in a stored position against a wall of said spacecraft, said radiator panel able to swing on an axis defined by the hinge to a deployed position where the radiator panel surface extends away from said spacecraft;

e) at least one gap shield attached over each gap section of the pipe located in a gap between the radiator panel and the spacecraft, said gap shield from the gap section by a second stand-off distance, wherein:

f) the pipe comprises two flexible ends that may be attached to the spacecraft, the flexible ends allowing the pipe to bend flexibly when the radiator panel swings from its stored position to its deployed position; and

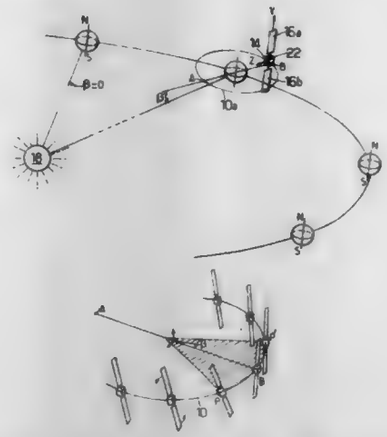
g) the bumper shield and the gap shield are adapted to protect the pipe from impacts by micrometeoroids and the like.

5,794,891

METHOD OF CONTROLLING THE ATTITUDE CONTROL FOR SATELLITES ON AN ORBIT INCLINED RELATIVE TO THE EQUATOR

Bernard Polle, Saint-Orens; Marcel Billand, route de Clozolles, and Benoit Hanin, Saint Foy D'Aigrefeuille, all of France, assignors to Matra Marconi Space France, Paris, France

Filed Jan. 3, 1996, Ser. No. 582,441
Claims priority, application France, Jan. 6, 1995, 95 00126
Int. Cl.[6] B64G 1/24
U.S. Cl. 244—164 **10 Claims**



1. A method of controlling the attitude of a satellite placed on a non-heliosynchronous earth orbit in a plane that is inclined relative to the equatorial plane of the earth, said satellite having a structure, solar panels apt to be rotated with respect to said structure about an axis of rotation and having two radiators each fixed on one of two opposed faces of the satellite structure which are orthogonal to the rotation axis, one of the radiators having greater emissivity than the other, comprising the steps of:

maintaining a yaw axis Z bound to the structure of the satellite and orthogonal to said rotation axis aimed towards the earth;

maintaining solar panels of the satellite in an optimum orientation relative to the sun by rotating them about said rotation axis Y; and

at least during periods of each year when an angle β between a sun-earth direction and the plane of the satellite orbit lies between two predetermined values, rotating the satellite structure about the yaw axis so as to maintain the radiators in a plane substantially parallel to a direction toward the sun so long as the satellite is remote from an orthogonal projection of the sun direction onto the satellite orbit plane, and bringing the satellite structure into an orientation symmetrical to that which it had previously relative to the plane containing said projection and the sun direction by rotating said structure about the yaw axis Z at a predetermined reference speed in such a manner as to ensure that the radiator of higher emissivity is in shadow.

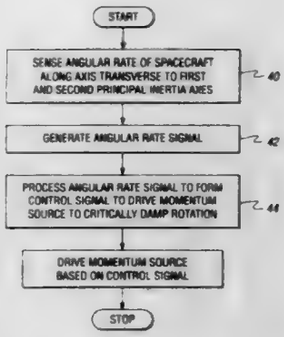
5,794,892

CRITICAL NUTATION DAMPLING ON SPINNING BODIES VIA MOMENTUM WHEELS OR SIMILAR DEVICES

Jeremiah O. Salvatore, Redondo Beach, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Oct. 25, 1995, Ser. No. 548,158
Int. Cl.[6] B64G 1/28; 1/38
U.S. Cl. 244—165 **17 Claims**

1. A method of damping nutation of a spacecraft having a desired spin axis along a first principal inertia axis, the spacecraft having a momentum source oriented along a second principal inertia axis perpendicular to the first principal inertia axis, the method comprising the steps of:



sensing an angular rate of the spacecraft along an axis transverse to both the first principal inertia axis and the second principal inertia axis, and generating an angular rate signal representative of the angular rate;

processing the angular rate signal to form a control signal, the control signal representative of a desired torque to drive the momentum source, the desired torque having a first additive component proportional to a derivative of the angular rate to critically damp the nutation under an at least second order model of the spacecraft, and a second additive component proportional to a momentum stored in the momentum source to inhibit a conversion of the nutation into a tilt of the desired spin axis; and

driving the momentum source in dependence upon the control signal.

5,794,893

ELASTOMERIC TRANSITION FOR AIRCRAFT CONTROL SURFACE

Joseph B. Diller, Hurst, Tex., and Nicholas F. Miller, Jr., St. Charles, Mo., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 487,953

Int. Cl.[6] B64C *3/52*

U.S. Cl. 246—213 **9 Claims**



1. An aircraft wing assembly, comprising:

a main wing portion having a top portion and a bottom portion;

a variable contour control surface having a top portion and a bottom portion, said variable contour control surface having a forward end and a trailing edge, said control surface attached at the forward end to the main wing portion for movement of the control surface relative the main wing portion, said top and bottom portions of said main wing portion tapering to an outboard edge and said top and bottom portions of said variable contour control surface tapering to an outboard edge; and

upper and lower elastomeric transition sections joining the top and bottom portions, respectively, of the control surface to the corresponding top and bottom portions of the main wing portion at the forward end, said upper and lower elastomeric transition sections tapering to an outboard edge which extends between the outboard edges of the main wing portion and the variable contour control surface.

5,794,894

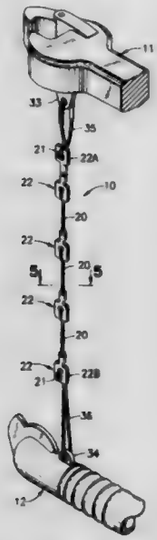
SELECTIVELY ADJUSTABLE SUSPENSION SUPPORT

Zdenek A. Fremund, Wayne, N.J., assignor to Carl Stahl Sava Industries, Inc., Riverdale, N.J.

Filed Mar. 21, 1997, Ser. No. 822,466

Int. Cl.[6] F16L *3/00*

U.S. Cl. 248—53 **20 Claims**



1. A selectively adjustable suspension support for suspending a supported member from an overhead support member at a selected distance below the overhead support member, the adjustable suspension support comprising:

an elongate flexible suspension member having a longitudinal length extending between a first end and a second end;

a retainer affixed to the suspension member adjacent each of to the first end and the second end; and

a plurality of separate, discrete receivers affixed to the suspension member, spaced apart along the length of the suspension member, each receiver including a catch for receiving and capturing one of the retainers in the receiver, whereby capture of the one retainer within a selected receiver establishes the distance between the overhead support member and the supported member.

5,794,895

DEVICE FOR SECURING AND GUIDING CABLES AND CONDUITS IN SWITCHGEAR CUBICLES

Horst Besserer, Herborn, and Hans-Ulrich Deusing, Herborn-Seelbach, both of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Herborn, Germany

PCT No. PCT/EP96/00871, § 371 Date Mar. 20, 1997, § 102(e) Date Mar. 20, 1997, PCT Pub. No. WO96/30979, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 1, 1996, Ser. No. 809,253

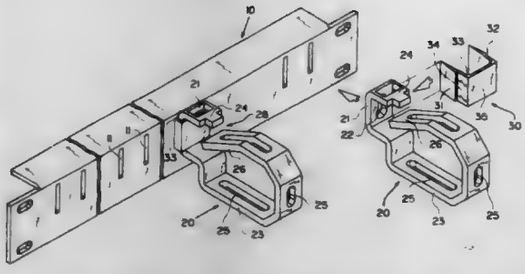
Claims priority, application Germany, Mar. 29, 1995, 195 11 464.7

Int. Cl.[6] H02B *1/052; 1/20*

U.S. Cl. 248—73 **15 Claims**

1. In a device for securing and guiding cables in switchgear cabinets, having a securing bracket which is releasably connected with one of a support, a plate and a rail of the switchgear cabinet by a fastening plate, which receives the cables, and having a bracket section which projects away from the fastening plate and has an angled end section, overlapped by a covering section which projects away from the fastening plate while exposing an insertion opening, the improvement comprising:

an arresting bracket (**30**) overlapping the fastening plate (**21**) of the securing bracket (**20**), a plurality of lateral legs (**31**, **32**) of the arresting bracket (**30**) embodied as arresting legs secured



in correspondingly spaced and dimensioned arresting slits (**11**) of one of the support, the plate and the rail (**10**), and a clear space between the lateral legs (**31**, **32**) of the arresting bracket (**30**) and a distance between the arresting slits (**11**) corresponding to a width of the fastening plate (**21**) of the securing bracket (**20**).

5,794,896

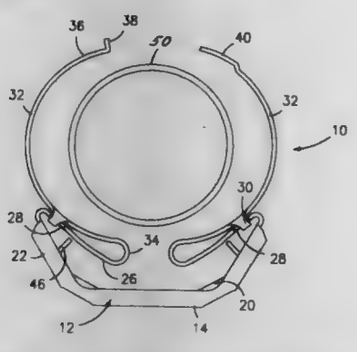
PIPE CLAMP

Charles S. Hungerford, Jr., 153 East Ave., New Canaan, Conn. 06840

Continuation-in-part of Ser. No. 229,670, Apr. 19, 1994, Pat. No. 5,478,033. This application Nov. 15, 1995, Ser. No. 542,260

Int. Cl.[6] **F16L** *3/08*

U.S. Cl. 248—74.3 **3 Claims**



1. A pipe clamp for supporting a pipe, comprising:

a base;

a pair of support element sections extending from the base;

a pair of clamp members;

deflection means interconnecting said pair of support element sections and said pair of clamp members;

tab means on each of said pair of support element sections projecting toward each of said deflection means for supporting said deflection means.

5,794,897

TRANSMISSION LINE HANGER, A METHOD OF ATTACHING THE HANGER AND THE RESULTING ASSEMBLY

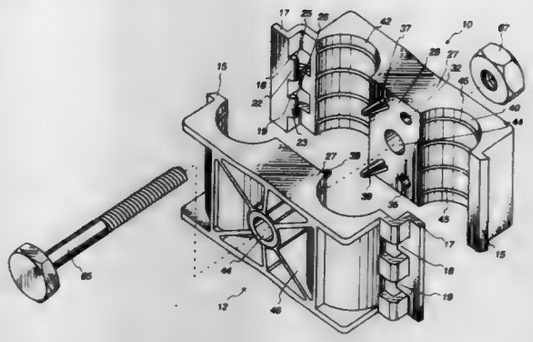
Michael J. Jobin, Elgin; Randall L. Grigoletti, Frankfort; James R. Gentile, Chicago; Hugh R. Nudd, Mokena, all of Ill., and John Williamson, Lowell, Ind., assignors to Andrew Corporation, Orland Park, Ill.

Filed Apr. 22, 1996, Ser. No. 635,755

Int. Cl.[6] **F16L** *3/08*

U.S. Cl. 248—74.4 **22 Claims**

1. A hanger kit for attaching at least one transmission line to a supporting structure, the transmission line having an outside surface with a first side and a second side, said first side being opposite to said second side, said hanger comprising:



a first gripping element for engaging the first side of the transmission line;

a second gripping element for engaging the second side of the transmission line;

snapping means for connecting said first gripping element to said second gripping element to form a clamping structure for loosely clamping the transmission line between said first gripping element and said second gripping element, said snapping means consisting of a first member and a second member, said first member being attached to said first gripping element, said second member being attached to said second gripping element; and

means for moving said first element toward said second element of the clamping structure to tightly clamp the transmission line and for securing said clamping structure to the supporting structure.

5,794,898

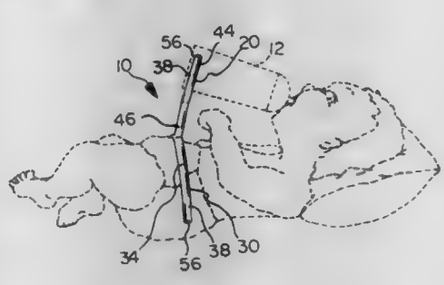
NURSING BOTTLE PROPPING APPARATUS

Monica Bradley, and Ronald Bradley, both of 11351 NW. 29th St., Sunrise, Fla. 33323

Filed Jan. 16, 1996, Ser. No. 585,731

Int. Cl.[6] **A47D** *15/00*

U.S. Cl. 248—102 **8 Claims**



8. An apparatus for propping a nursing bottle so that an infant child can drink from the bottle, comprising:

an apparatus mounting portion comprising at least two mutually diverging first flexible members, each said first flexible member comprising a skeleton segment of ductile material for bending by hand beyond its elastic limit to reshape and thereby conform to and fit against the waist of an individual child for abutting the sides of the torso of an infant child to removably secure said apparatus to the child with friction engagement;

a bottle holding portion;

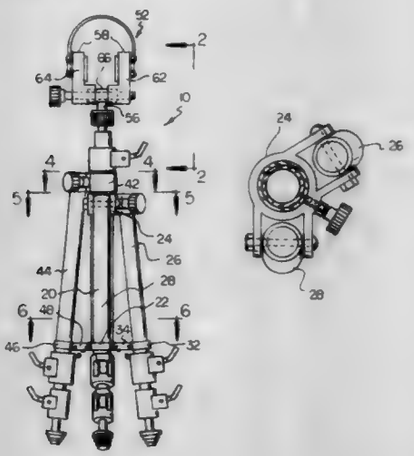
and connecting means interconnecting said apparatus mounting portion and said bottle holding portion.

5,794,899

HUNTING TRIPOD

George Michael Tamllos, 310 N. Main St. P.O. Box 6, Vernon, Utah 84080

Filed Jul. 19, 1996, Ser. No. 683,901
Int. Cl.° F16M *11/00*
U.S. Cl. 248—166 **3 Claims**



1. A mounting device for use in conjunction with a firearm, the mounting device comprising in combination:

a cylindrical main shaft having an upper extent, a lower extent and an intermediate extent therebetween, a ring brace secured to the lower extent of the main shaft;

a bipod assembly having a bipod slider ring slidably positioned upon the cylindrical main shaft, a first bipod leg having an upper extent, a lower extent and an intermediate extent therebetween, the upper extent of the first bipod leg pivotally secured to the bipod slider ring, a second bipod leg having an upper extent, a lower extent and an intermediate extent therebetween, the upper extent of the second bipod leg pivotally secured to the bipod slider ring at a location opposite of the upper extent of the first bipod leg, a first leg brace slider ring slidably positioned upon the first bipod leg, a first leg brace having a first end pivotally secured to the first leg brace slider ring and a second end pivotally secured to the ring brace, a second leg brace slider ring slidably positioned upon the second bipod leg, a second leg brace having a first end pivotally secured to the second leg brace slider ring and a second end pivotally secured to the ring brace, a retracted orientation defined by the bipod slider ring being positioned at the upper extent of the main shaft, an extended orientation defined by the bipod slider ring being positioned adjacent the lower extent of the main shaft;

a tripod assembly having a tripod slider ring slidably positioned upon the main shaft at a location above the bipod slider ring, a tripod leg having an upper extent, a lower extent and an intermediate extent therebetween, the upper extent of the tripod leg being pivotally secured to the tripod slider ring, a leg brace slider ring being slidably secured upon the tripod leg, a leg brace having a first end pivotally secured to the leg brace slider ring and a second end pivotally secured to the ring brace, a retracted orientation defined by the tripod slider ring being positioned at the upper extent of the main shaft, and an extended orientation defined by the tripod slider ring being positioned at the lower extent of the main shaft;

a firearm mounting means secured to the upper extent of the main shaft, the mounting means comprises a ball portion extending upwardly from the upper extend of the main shaft, an interconnection piece having a lower socket opening and an upper supporting shaft, the ball rotatably secured within the lower socket opening of the interconnection piece;

a vise member having a first L-shaped member and a second L-shaped member with an intermediate element slidably interconnecting the two L-shaped members, adjustment means to effects movement of the second L-shaped member away from the first L-shaped member;

a first C-shaped retaining element secured to the first L-shaped member, a second C-shaped retaining element secured to the second L-shaped member, a firearm securing strap having a first end and a second end and an intermediate extent therebetween, a first pair of rubber stops slidably positioned upon the first end of the strap, a second pair of rubber stops slidably positioned upon the second end of the strap, the first pair of stops being positioned on opposite ends of the first C-shaped retaining member to thereby secure the first end of the strap to the first C-shaped retaining member, the second pair of stops being positioned on opposite ends of the second C-shaped regaining member to thereby secure the second end of the strap to the second C-shaped retaining member.

5,794,900

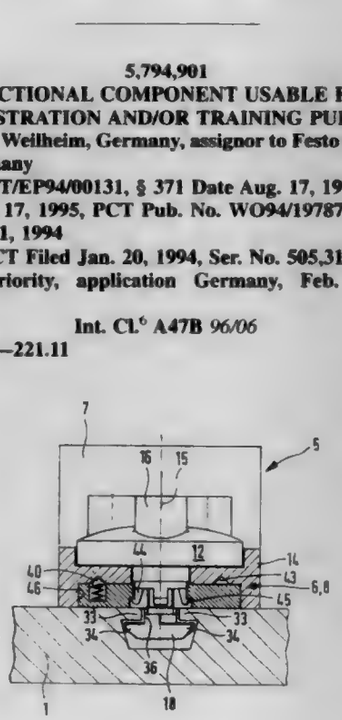
Patent Not Issued For This Number

5,794,901

FUNCTIONAL COMPONENT USABLE FOR DEMONSTRATION AND/OR TRAINING PURPOSES

Albert Sigel, Weilheim, Germany, assignor to Festo KG, Esslingen, Germany

PCT No. PCT/EP94/00131, § 371 Date Aug. 17, 1995, § 102(e) Date Aug. 17, 1995, PCT Pub. No. WO94/19787, PCT Pub. Date Sep. 1, 1994
PCT Filed Jan. 20, 1994, Ser. No. 505,316
Claims priority, application Germany, Feb. 18, 1993, 9302385 U
Int. Cl.° A47B *96/06*
U.S. Cl. 248—221.11 **9 Claims**



1. A functional component adapted to be releasably secured to a mounting face of a support base, said component comprising:

a base body, said base body having a lower face adapted for engagement with the mounting face of the support base;

a clamping device cooperating with said base body and adapted for engagement with the support base whereby said base body is secured to the support base;

an actuating element for operating said clamping device, said clamping device including a clamping element in mechanical communication with said actuating element, said clamping element defining an axis of rotation extending through said base body and perpendicular to said lower face, said clamping element including a clamping head rotatable about said axis via said actuating element between a released position and a locked position and translatable through a distance along said axis;

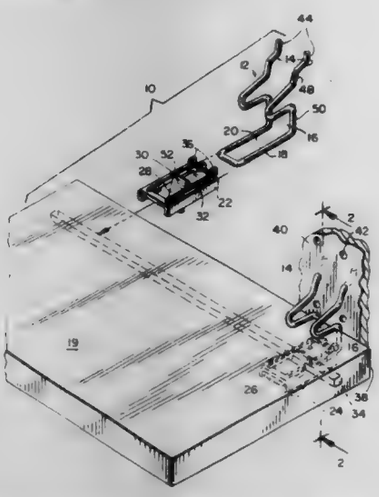
at least one centering element provided on said lower face for positioning said base body on the support base, said centering element located radially outside said axis and adjustable thereabout with respect to said base body.

5,794,902

SHELF BRACKET FOR USE WITH A GROOVED SHELF

Eric F. Henry, Rutherford, and Jonathan D. Lewis, Martinsville, both of N.J., assignors to HMG Worldwide In-Store Marketing, Inc., New York, N.Y.

Filed Jan. 6, 1997, Ser. No. 779,166
Int. Cl.[6] A47G 29/02
U.S. Cl. 248—250 12 Claims



1. A bracket assembly for mounting a shelf having a groove formed therein to a supporting structure, said bracket assembly comprising:

a frame defining a slot for receiving an edge of the shelf, said frame having a substantially horizontal support portion having an upper surface defining the bottom of said slot, and an attachment leg having a first end connected to said support portion and a second end configured for engagement with the supporting structure for attaching said frame to the supporting structure; and

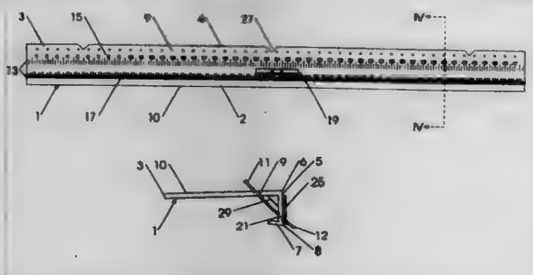
a base plate releasably mountable to said support portion, said base plate having an upwardly extending hook for engagement with the groove in the shelf when the edge of the shelf is received in said slot on said base plate, and an arm connected to said hook and extending downwardly from said base plate below said support portion of said frame, said arm being biased to a first position in which said hook is in said groove when the shelf is in said slot and moveable to a second position when said hook is disengaged from the groove so that the shelf can be removed from said frame.

5,794,903

SECURING APPARATUS

Max R. Peterson, II, 6563 River Clyde Dr., Highland, Md. 20777

Filed Jun. 19, 1996, Ser. No. 665,979
Int. Cl.[6] F16M 13/00; A47B 96/06
U.S. Cl. 248—300 12 Claims



1. An apparatus for securing free standing structures to a support surface, comprising:

a J-shaped elongated body including a first leg, a second leg perpendicularly attached to the first leg, and means for spacing a free standing structure from a support surface, wherein the means for spacing includes a projection, perpendicularly attached to the second leg and generally parallel to the first leg such that the means for spacing forms a third leg of the J-shaped elongated body;

the first leg includes a first longitudinal axis and a plurality of holes through which a fastening device may pass;

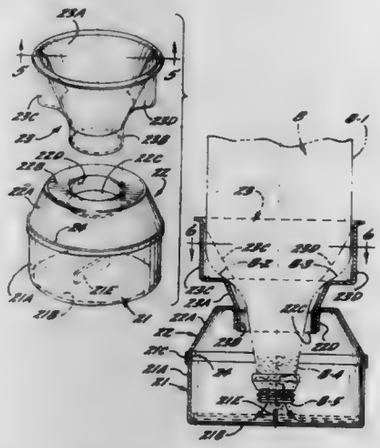
the second leg includes a second longitudinal axis, an inner and outer surface, and a plurality of holes through which a fastening device may pass.

5,794,904

HOLDER FOR INVERTED BOTTLES

Carl L. Hackley, 9214 Bright Leaf Pl., Charlotte, N.C. 28269

Continuation-in-part of Ser. No. 288,833, Aug. 11, 1994, abandoned. This application Nov. 28, 1995, Ser. No. 563,441
Int. Cl.[6] A47K 1/08
U.S. Cl. 248—311.3 3 Claims



1. A holder for supporting any inverted bottle selected from a group of bottles wherein there are bottles of different sizes and shapes, the holder comprising:

(a) a base comprising a bottom wall and a continuous side wall extending from the bottom wall;

(b) an upper portion having an opening at one end and a spout at the other end of lesser diameter than the opening at said one end, the upper portion including a circular wall and means for supporting inverted bottles of different sizes and shapes,

(c) a mid-portion shaped and sized at one end to receive the spout of the upper portion and shaped and sized at its opposite end to register with the side wall of the base, and

(d) an abutment on the bottom wall of the base and in alinement with the spout in assembled relation, whereby inverted bottles that extend through the spout will be spaced from the bottom wall of the base for drainage.

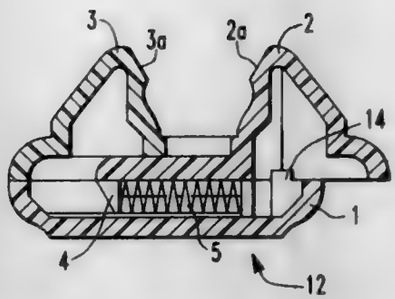
5,794,905

DEVICE FOR SUPPORTING ROD-LIKE OBJECTS

Herbert Richter, Drosselweg 8, 75331 Engelsbrand, Germany

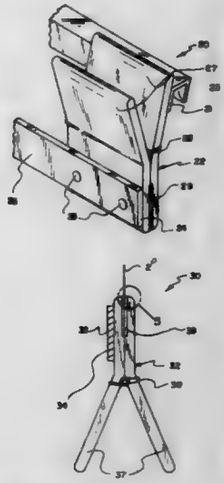
Filed Mar. 12, 1997, Ser. No. 815,724
Int. Cl.[6] A47G 1/10
U.S. Cl. 248—316.4 4 Claims

1. A holder for supporting rod-like articles, comprising: a base body, a stationary clamping jaw firmly mounted on said base body, a movable clamping jaw slideably supported on said base body so as to be movable from and toward said stationary clamping jaw, said base body having an elongated recess formed therein so as to extend in the direction of movement of said movable clamping



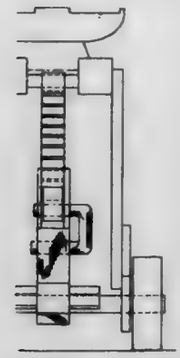
jaw, and said movable clamping jaw having a cover plate extending therefrom along said base body into said stationary clamping jaw and having at its distal end a nose-like projection extending downwardly into said elongated recess, and a compression spring disposed in said elongated recess, said elongated recess having front and rear end walls at opposite longitudinal ends thereof between which said compression spring is disposed and said front end wall adjacent said nose-like projection being provided with a gap sufficiently wide to permit passage of said nose-like projection such that said compression spring is engaged and compressed by said nose-like projection when said movable clamping jaw is moved away from said stationary clamping jaw.

5,794,906
SIGN SUPPORT SYSTEM
David Harris, 225 Southview Dr., Delran, N.J. 08075, and Ken Resavy, 853 Orchard Ave., Runnemede, N.J. 08078
Filed Jul. 1, 1996, Ser. No. 672,971
Int. Cl.[6] A47G *1/00*; F16M *13/00*
U.S. Cl. 248—317 **4 Claims**



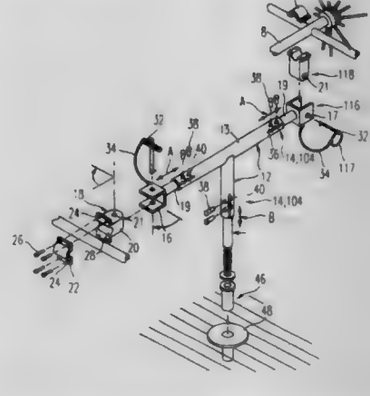
1. A Sign Support System comprising:
a hanger clamp assembly attached to a number of hanger clamps by a channel attachment means for hanging the clamp assembly the hanger clamps further being attached to a clamp bar, the clamp assembly further having a number of spring biased clamp handles held together by a clamp spring, the hanger clamps further having clamp grips for grabbing a sign;
a stabilizer bar assembly;
a telescopic applicator assembly;
a number of hooks;
the hanger clamp assembly adapted for fastening to a top of a sign;
the stabilizer bar assembly adapted to fasten to a bottom of the sign;
and the telescopic applicator assembly adapted to lift the sign up into the air to hang on the hooks.

5,794,907
JACK SUPPORT
Joseph C. Bellia, 217 Hazel Dr., Pittsburgh, Pa. 15228
Filed Apr. 3, 1996, Ser. No. 627,885
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—354.7 **3 Claims**



1. In combination, a standard hydraulic floor jack with a detachable safety jack support to prevent said jack from lowering inadvertently in the event of a hydraulic failure, wherein said jack includes a main wheel bottom axle and an upper support shaft which moves in variable vertical spaced relationship to said bottom axle when said jack is operated, said jack support comprised of an extensible and contractible body having a lower end with an upper strut which adjustably raises and lowers relative to said lower end, a concave notch configuration on an upper end of said strut and on a bottom end of said lower end for respectively engaging and nesting with said upper and bottom jack shafts, said notch configuration on said bottom end further including a c-clip for guiding said bottom notch configuration on to said bottom axle.

5,794,908
WHEELCHAIR FISHING PIVOT
Garvin Lane East, Caruthers, Calif., and Johnnie Bruce Scott, III, Arlington, Va., assignors to Paralyzed Veterans of America, Washington, D.C.
Filed Aug. 12, 1997, Ser. No. 909,873
Int. Cl.[6] A47B *97/00*
U.S. Cl. 248—503.1 **11 Claims**



1. An apparatus for pivotably mounting a wheelchair to a flat platform, comprising:
a pivot assembly pivotably mounted onto the platform, said assembly comprising:
a connecting mechanism releasably interconnecting a portion of said wheelchair with the platform wherein said connecting mechanism includes a universal joint yoke, a quick release universal joint coupler and a quick release pin interconnecting

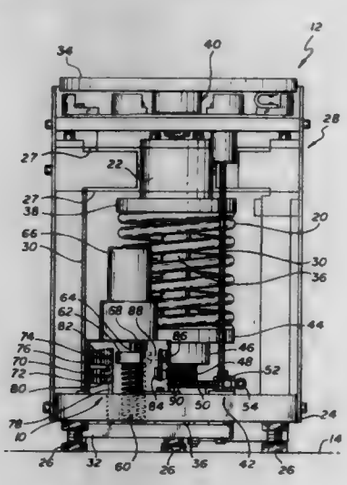
said yoke with said coupler wherein said coupler is connectable to said portion of said wheelchair.

5,794,909

AUTO-ADJUST APPARATUS FOR A VIBRATION ISOLATION SYSTEM

David L. Platus, Los Angeles, and Donald A. Durran, Manhattan Beach, both of Calif., assignors to Minus K Technology, Inc., Inglewood, Calif.

Filed Sep. 16, 1996, Ser. No. 714,412
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—550 21 Claims



1. An automatic adjustment apparatus for adjusting the optimum equilibrium position of an axial-motion isolator for supporting an object in an equilibrium position relative to a base which includes a support spring for providing stiffness and force supporting capability in an axial direction operatively connected to a negative-stiffness-producing apparatus for producing negative stiffness in the axial direction to allow the support spring and negative-producing-apparatus combine to produce low axial stiffness to suppress the transmission of vibratory motion between the object and base, the automatic adjusting apparatus comprising:

a control spring having first and second ends operatively connected in parallel with the support spring, wherein translation of said second end of said control spring relative to said first end changes the force carried by said support spring and the equilibrium position of the object relative to the base:

sensor means for sensing a deviation in the equilibrium position of the object relative to the base from the optimum equilibrium position of the object relative to the base and providing an electrical signal indicating such deviation; and

control means for translating the second end of said control spring relative to said first end to correct the deviation of the equilibrium position of the object from the optimum equilibrium position.

5,794,910

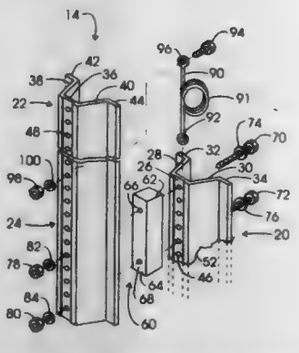
SIGN POST WITH BREAKAWAY SPLICE

Mark S. Granger, 285 Longfellow Ave., Worthington, Ohio 43085

Filed Apr. 1, 1996, Ser. No. 626,126
Int. Cl.[6] E01F *9/018*
U.S. Cl. 248—548 3 Claims

1. A signpost, comprising:

a lower support component for anchoring positioning below a surface of terrain and having an upper portion for extension a predetermined distance above said surface with a first connecting surface of predetermined first widthwise configuration having apertures therein longitudinally spaced apart a predetermined spacing distance;



an upper support component having an upper end for supporting connection with a sign and a lower end with a second connecting surface of second predetermined widthwise configuration having apertures therein spaced apart said predetermined spacing distance;

a stress transfer bar having a widthwise extent corresponding with one said predetermined first and second widthwise configuration to define contact surfaces, spaced apart a thickness dimension, each being positionable in substantially continuous stress transferring contact with one said first and second connecting surface, said transfer bar having two parallel fastener receiving channels extending normally to said contact surfaces and spaced longitudinally apart along the length of said stress transfer bar a predetermined integer multiple of said predetermined spacing distance selected to structurally retain said upper support component upon said lower support component in the presence of wind loads upon said sign;

first and second fasteners exhibiting predetermined tensile breakaway characteristics, each extending through one said receiving channel, retaining said first and second connecting surfaces in abutment against said contact surfaces; and

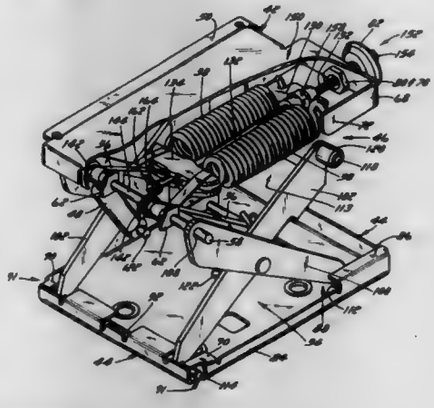
a flexible run-away strap having one end bolted to said lower support component upper portion, an opposite end bolted to said upper component lower end, and having a coiled intermediately disposed storage portion of predetermined length.

5,794,911

ADJUSTABLE VEHICLE SEAT SUSPENSION

Kevin E. Hill, Mequon, Wis., assignor to Milsco Manufacturing Company, Milwaukee, Wis.

Filed Feb. 5, 1996, Ser. No. 597,019
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—588 34 Claims



1. A suspension for a seat comprising:

(a) a base acting as a support for the suspension;

(b) a platform underlying and carrying the seat;

(c) a scissors linkage in operable communication with said base and said platform spacing said platform a distance from said base;

(d) an elongate inelastic flexible member operably connected to said scissors linkage;

(e) a spring operably connecting said inelastic flexible member to one of said base and said seat platform; and

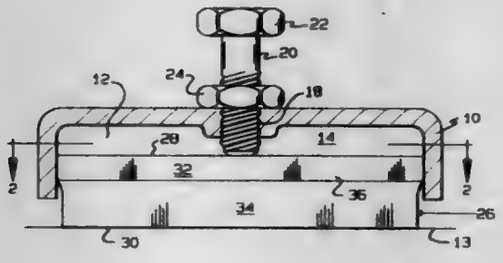
(f) a cam-shaped pulley carried by said scissors linkage having an elliptical outer profile against which said flexible inelastic member bears for opposing a decrease in said distance between said platform and said base.

5,794,912

CONSTANT HORIZONTAL NATURAL FREQUENCY VIBRATION ISOLATION MOUNT PAD INSERT

Wayne H. Whittaker, Horton; Kevin C. Putman, and John R. Richter, both of Jackson, all of Mich., assignors to Unisorb, Inc., Jackson, Mich.

Filed Feb. 20, 1997, Ser. No. 803,081
Int. Cl.[6] F16M *11/24*; F16F *7/00*
U.S. Cl. 248—638 **5 Claims**



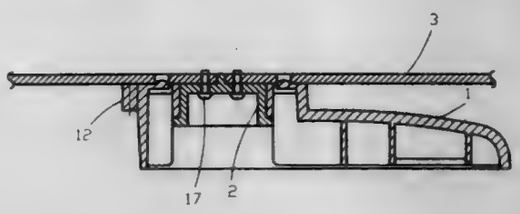
1. In combination, a vertically adjustable vibration isolation mount pad insert having a constant horizontal natural frequency and a mount pad having a cavity having a lower open end and defined by vertical wall surfaces defining an inner periphery, said mount pad insert comprising a rigid core having end and side edges defining a periphery and a lower side and an upper side, said mount pad insert further comprising an elastomer body mounted on said core having an upper side, a lower side, a first upper periphery and a second lower periphery, a recess defined in said elastomer body adjacent said upper side of the elastomer body of a peripheral configuration complementary to said periphery of said rigid core, said core being received within said recess, said elastomer first upper periphery being in horizontal alignment with said core and corresponding to the configuration of said mount pad cavity inner periphery, said elastomer first upper periphery engaging said vertical wall surfaces of said mount pad, said elastomer body including a predetermined dimension of elastomeric material located between all locations of said core periphery and said first upper periphery, said elastomer body second lower periphery extending from said cavity lower open end and having a peripheral dimension that is less than a peripheral dimension of said first periphery such that a lower portion of said elastomer body is sufficiently spaced at all locations from said mount pad cavity vertical wall surfaces to prevent engagement of said lowe portion of said elastomer body therewith when said first periphery has been replaced with the phrase when said elastomer body is vertically loaded whereby horizontal vibrations are damped solely through said elastomer first upper periphery in engagement with said vertical wall surfaces of said mount pad.

5,794,913

FOOT ASSEMBLY FOR COMPUTER MAINFRAMES

Hsin Chien Ho, 20-1F, 268, Sec. 1, Wen-Hua Rd., Pan Chiao City, Taipei, Taiwan

Filed Dec. 24, 1996, Ser. No. 772,534
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—688 **3 Claims**



1. A foot assembly for an electrical device housing comprising:

a plurality of feet each of said feet having a planar plate at a bottom side thereof, a gear disposed on a top of one end thereof, and a substantially circular hole at a central portion thereof, with an inner rim extending around the hole, said gear having a plurality of elastic elements each having a protrudent block at an inner side thereof;

a sleeve located in said substantially circular hole in each of said feet, said sleeve having a flange at a bottom end thereof with at least one positioning block at a top end thereof, said at least one positioning block having a plurality of through holes, said sleeve being fitted into said circular hole of each of said feet such that said flange abuts the inner rim of each of said feet; and

at least one positioning hole receiving said at least one positioning block of said sleeve, a plurality of threaded holes aligned with said through holes of said sleeve, and a plurality of annularly distributed positioning apertures for engaging said protrudent blocks of said elastic elements located on a bottom side of a housing whereby said at least one positioning block of said sleeve is inserted into said at least one positioning hole and a plurality of screws pass through said through holes of said sleeve into said threaded holes of said housing so that said feet are secured on the bottom side of the housing such that said protrudent blocks of said elastic elements fit into selected ones of the plurality of said positioning apertures to enable said feet to be rotatable relative to the housing, said annularly distributed positioning apertures being located to allow said protrudent blocks of said elastic elements to fit into said positioning apertures after rotating the associated foot about a predetermined angle, whereby said feet may be rotatably turned so as to be concealed under the bottom side of said housing to facilitate storage and transportation.

5,794,914

WEDGE SECURING DEVICE

Jonathan R. Woodward, Salt Lake City, Utah, assignor to Black Diamond Equipment Ltd., Salt Lake City, Utah

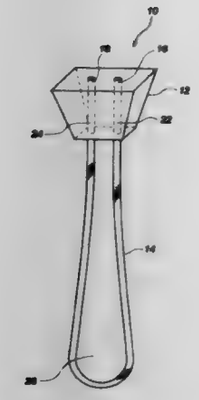
Continuation of Ser. No. 515,094, Aug. 14, 1995, abandoned. This application Jun. 20, 1997, Ser. No. 880,115
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—925 **14 Claims**

1. A wedge securing device for mountain climbing, the device comprising:

a wedging body having at least six sides including four sides, a top side, and a bottom side, at least two opposing sides of the at least six sides being inclined toward one another in a wedge-shaped fashion, the wedging body for wedging between at least two surfaces;

at least two voids formed in the wedging body including a first void and a second void, the at least two voids having interior sidewalls defining the at least two voids;

at least one flexible cable having a first end secured in the first void and a second end secured in the second void, the flexible



cable forming a connection means extending from the wedging body for attaching an object thereto; and

the interior sidewalls of the first void and the second void being closed upon the first end and the second end of the flexible cable respectively, thereby clamping and attaching the flexible cable to the wedging body.

5,794,915

SAFETY RELIEF VALVE ASSEMBLY FOR A FLUID DISPLACEMENT APPARATUS

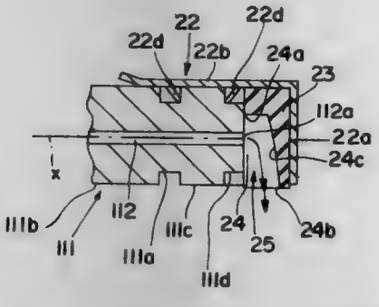
Hidehiko Shimizu, Sawa-gun, and Masashi Yaguchi, Takasaki, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Dec. 10, 1996, Ser. No. 762,732

Claims priority, application Japan, Dec. 13, 1995, 7-346646

Int. Cl.[6] F16K *47/00*

U.S. Cl. 251—127 **12 Claims**



1. A safety relief valve assembly for use in a fluid displacement apparatus having a housing, said assembly comprising:

a valve mechanism, including at least one relief port connected to said housing, for releasing a gas from said fluid displacement apparatus when the pressure in said fluid displacement apparatus exceeds a predetermined pressure level;

a control means detachably mounted on said valve mechanism so as to cover said relief port and to direct the flow of the gas toward a predetermined design direction; and

an elastic member forcibly disposed between said valve mechanism and said control means, and having a groove facing said relief port, said groove and said valve mechanism collectively forming a passage for directing the gas.

5,794,916

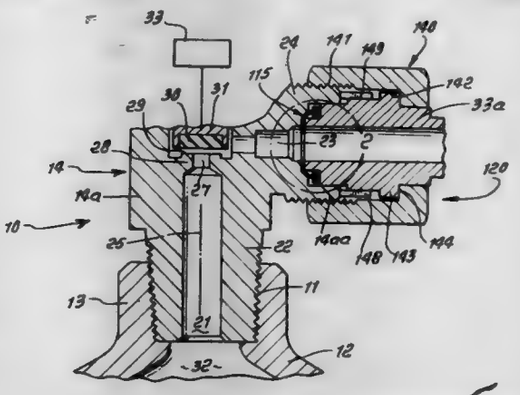
HIGH PRESSURE FLUID VALVE SEALING APPARATUS

Robert F. Miller, Arcadia, Calif., assignor to Vemco Corporation, San Dimas, Calif.

Filed Apr. 25, 1997, Ser. No. 846,135

Int. Cl.[6] F16K *51/00*

U.S. Cl. 251—148 **10 Claims**



1. In a valve unit to control the flow of high-pressure fluid, comprising

a) a housing having a fluid inlet and a fluid outlet,

b) a flow port in the housing communicating between the inlet and outlet,

c) control means for controlling fluid flow through said flow port,

d) tubular means connected to said housing to receive fluid flowing through said outlet,

e) said housing defining a tapered annular shoulder bounding an annular recess at said outlet, and said tubular means defining an annular nose received in said recess,

f) a thin metallic sealing washer clamped between said tapered annular shoulder and said nose,

g) and said washer having a skirt carried by said tubular means in a washer aligning position relative to said nose.

5,794,917

COOLANT VALVE FOR A TOOL TURRET

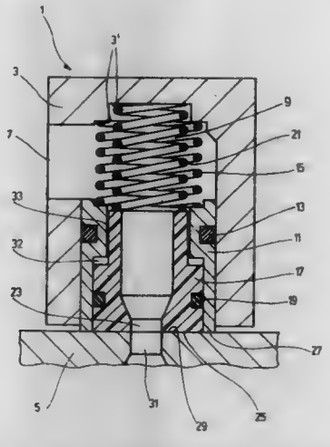
Detlef Dieter Sahm, Reichenbach, and Rolf Wezel, Metzingen, both of Germany, assignors to Sauter Feinmechanik GmbH, Metzingen, Germany

Filed Apr. 24, 1996, Ser. No. 637,282

Claims priority, application Germany, May 9, 1995, 195 16 980.9

Int. Cl.[6] F16K *3/02*; B23B *29/24*; B23Q *11/10*

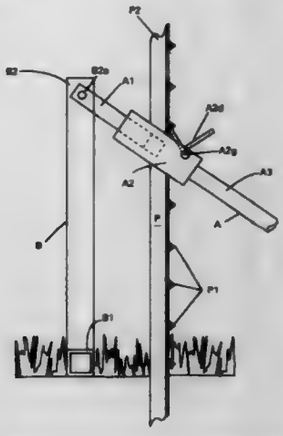
U.S. Cl. 251—176 **18 Claims**



1. A valve for use between relatively movable first and second parts, comprising:

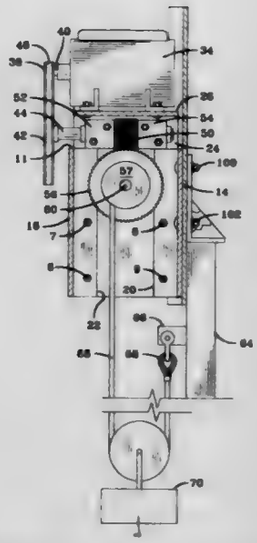
a valve housing provided on said first part;
a valve body movably mounted in said valve housing, said valve body having a sealing surface and a discharge opening in said sealing surface, said sealing surface having an area portion adjacent said discharge opening in a direction of movement of the first and second parts relative to one another, said area portion having a first dimension in said direction on each side of said discharge opening;
a wiper coupled to said valve housing; and
a valve seat provided on said second part, said valve seat having a seat surface and a valve passage opening on said seat surface, said valve passage having a diameter, each said first dimension being greater than said diameter.

5,794,918
FENCE POST PULLER APPARATUS
M. G. Price, 3800 Stoneridge Rd., Austin, Tex. 78739
Filed Nov. 20, 1996, Ser. No. 752,832
Int. Cl.[6] E21B *19/00*
U.S. Cl. 254—30 **4 Claims**



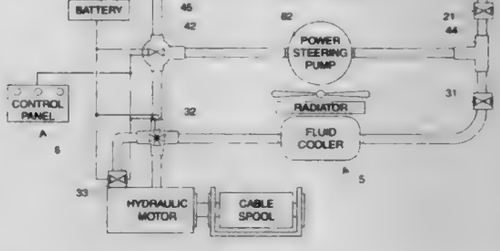
1. An apparatus for removing posts comprising:
a) a fulcrum stand;
b) an action arm movably connected on one end to the fulcrum stand;
c) a receiving means connected to the action arm for encompassing an object to be pulled;
d) an action handle attached to the receiving means so that the object to be pulled is between the action handle and the fulcrum stand; and
e) a movable grip means connected to the action handle for engaging the object to be pulled as the action arm is raised.

5,794,919
COMPACT POWER HOIST
Chester J. Hauck, Columbus, Ohio, assignor to Aqua Marine Supply, Millersport, Ohio
Filed Feb. 27, 1997, Ser. No. 806,740
Int. Cl.[6] B66D *1/00*
U.S. Cl. 254—343 **8 Claims**



1. A compact hoist comprising:
(a) a support housing including a plurality of legs joined together to form a cylinder enclosing a space on all but opposed top and bottom sides, said support housing also including a removably attached support panel extending at least partially across the top side of the support housing and a mount for attaching the support housing to a pier in an operable position in which the bottom side faces downwardly;
(b) a reel mounted at least partially within the support housing space, and fixed to a reel axle journalled to the support housing;
(c) a cable extending vertically downwardly from attachment to the reel through an opening in the bottom side;
(d) a worm gear, mounted at least partially within the support housing space to a worm gear axle journalled to the support housing;
(e) a first gear, mounted at least partially within the support housing space, fixed to the reel axle and meshing with the worm gear; and
(f) a rotary motor mounted to the support panel, said motor having a driveshaft substantially parallel to the worm gear axle and drivingly linked to the worm gear axle.

5,794,920
HYDRAULIC WINCH ASSEMBLY USING A VEHICLE STEERING PUMP
Gale A. Kronberger, 3026 Little Shield, Cheyenne, Wyo. 82009
Continuation of Ser. No. 600,334, Feb. 13, 1996, abandoned, which is a continuation-in-part of Ser. No. 300,361, Sep. 1, 1994, abandoned. This application Nov. 11, 1997, Ser. No. 967,450
Int. Cl.[6] B66D *1/08*
U.S. Cl. 254—361 **7 Claims**



1. A hydraulic winch assembly for use with a vehicle's steering system comprising:
a. a hydraulic motor;
b. a cable spool;
c. the hydraulic motor configured to drive the cable spool;
d. a first fluid diverting means adapted for hydraulic connection between a discharge of a vehicle steering pump and the hydraulic motor;
e. the first fluid diverting means adapted to divert full fluid flow to a vehicle power steering box when the first fluid diverting

means is in a first position, and to divert full fluid flow to the hydraulic motor when the first fluid diverting means is in a second position;

f. a second fluid diverting means adapted for hydraulic connection between the first fluid diverting means and an inlet of the vehicle steering pump;

g. the second fluid diverting means adapted to divert full fluid flow from the first fluid diverting means to an inlet of the hydraulic motor and to divert full fluid flow from an outlet of the hydraulic motor to the inlet of the vehicle steering pump when the second fluid diverting means is in a primary position;

h. the second fluid diverting means adapted to divert full fluid flow from the first fluid diverting means to the outlet of the hydraulic motor and to divert full fluid flow from the inlet of the hydraulic motor to the inlet of the vehicle steering pump when the second fluid diverting means is in a secondary position;

i. the second fluid diverting means adapted to divert full fluid flow from the first fluid diverting means to the inlet of the vehicle steering pump, bypassing the hydraulic motor and permitting fluid flow between the inlet of the hydraulic motor and the outlet of the hydraulic motor through the second fluid diverting means so that manual operation of the winch is permitted, when the second fluid diverting means is in a tertiary position;

j. a shutoff valve adapted for hydraulic connection between the second fluid diverting means and the hydraulic motor to stop fluid flow through the hydraulic motor, thereby providing braking of the hydraulic motor;

k. a first control means for switching the first fluid diverting means between the first position and the second position;

l. a second control means for switching the second fluid diverting means between the primary, the secondary and the tertiary positions; and

m. a third control means for closing the shutoff valve and simultaneously switching the second fluid diverting means to the tertiary position to provide braking of the hydraulic motor.

5,794,921

MASONRY FENCE SYSTEM

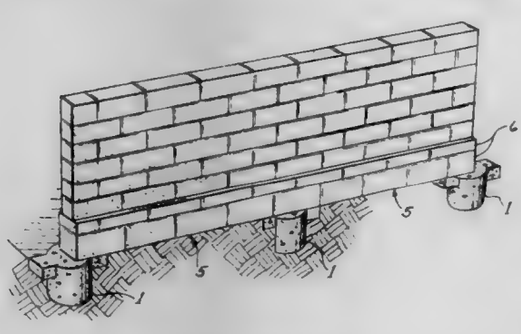
Harold H. Greenberg, Tucson, Ariz., assignor to Harold & Edith Greenberg Family Revocable Trust, Prescott, Ariz.

PCT No. PCT/US93/10892, § 371 Date Dec. 27, 1996, § 102(e) Date Dec. 27, 1996, PCT Pub. No. WO95/13442, PCT Pub. Date May 18, 1995

PCT Filed Nov. 12, 1993, Ser. No. 652,541

Int. Cl.[6] E04H *17/14;* **E02D** *27/32*

U.S. Cl. 256—19 **15 Claims**



1. A masonry fence system comprising:

(a) a plurality of courses of masonry blocks extending along a fence line;

(b) a plurality of concrete piers each extending into the ground and terminating substantially at grade level to provide a bearing surface, said piers spaced at predetermined intervals along said fence line;

(c) an above ground rigid foundation member extending along grade level between adjacent piers in contact with the bearing surfaces of said piers and supported by said piers substantially at grade level, said foundation member contacting and supporting a bottom course of said fence;

(d) a plurality of anchoring members extending into said piers and secured to said foundation member for anchoring said foundation member to said piers;

(e) a plurality of post tensioning rods spaced along said fence line at selected intervals, each secured at one end thereof to said foundation member and extending upwardly through voids in the masonry block and terminating above a predetermined course of block; and

(f) means for tensioning said rods to compress the masonry block.

5,794,922

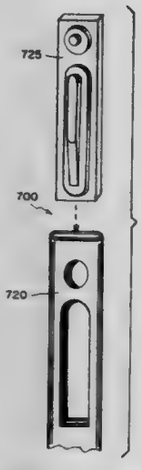
FENCE SLATS WITH LOCKING PORTIONS

Don A. Meglino, and James V. Meglino, both of 100 Frank Rd., Hicksville, N.Y. 11802

Continuation-in-part of Ser. No. 766,287, Dec. 13, 1996. This application Feb. 14, 1997, Ser. No. 800,039

Int. Cl.[6] E04H *17/00*

U.S. Cl. 256—34 **19 Claims**



1. A fence slat receivable in a channel formed by interwoven wires of a chain link fence, said fence slat comprising:

a substantially hollow elongated body comprising a front sidewall, said front sidewall comprising first and second front apertures extending therethrough; and

an insertable locking member comprising first and second outwardly extending front stops, said insertable locking member insertable at least partially in said elongated body so that said first and second front stops extend through said first and second front apertures, respectively.

5,794,923

DRESSAGE ARENA

Michelle Bartlett, 16979 9th Line, R.R. #3, Mount Albert, Ontario, Canada, LOG 1MO

Filed Mar. 10, 1997, Ser. No. 814,644

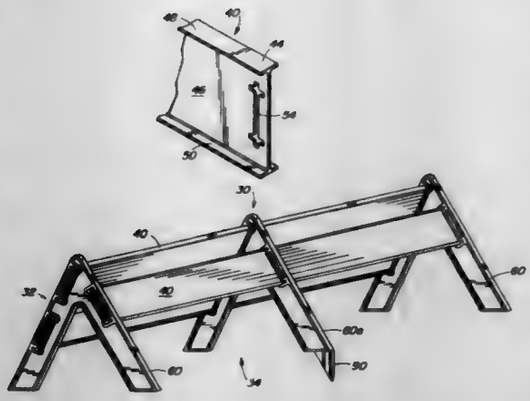
Int. Cl.[6] E04H *17/14*

U.S. Cl. 256—64 **17 Claims**

1. A dressage arena fence module comprising:

(a) at least two brackets;

(b) at least one rail comprising first locking means integral therewith, said first locking means comprising at least two apertures formed through said rail, spaced from the periphery of said rail, wherein said apertures are of a preselected size and shape; and,



(c) rail coupling means integral with said brackets for coupling said rail to said brackets and comprising second locking means cooperating with said first locking means for releasably locking said rail to said brackets, said second locking means of said bracket comprising at least one tab of a preselected size and shape corresponding to said aperture of said rail whereby at least one tab of said bracket is insertable into and removeable from at least one aperture of said rail such that said at least one tab is frictionally engaged within said at least one aperture in a mating snap fit relationship to releasably lock said rail to said bracket.

5,794,924

PNEUMATIC OR HYDROPNEUMATIC SPRING SYSTEM

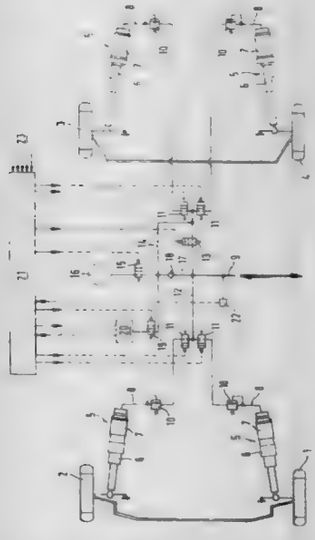
Dieter Stolpp, Aichwald, Germany, assignor to Mercedes-Benz AG, Germany

Filed Feb. 3, 1997, Ser. No. 794,518

Claims priority, application Germany, Feb. 1, 1996, 196 03 593.7

Int. Cl.[6] B60G *17/04*

U.S. Cl. 267—64.11 **13 Claims**



1. A pneumatic or hydropneumatic spring system useable for a motor vehicle, comprising a plurality of separate spring units, a valve-controlled pneumatic or hydraulic line system disposed between the spring units so as to selectively connect and cut-off the spring units to and from one another or to be selectively connected with one of a pneumatic pressure source, a hydraulic pressure source and an outlet, wherein the line system has a central in-and-out line with a pressure sensor operatively arranged therein and valves of the line system being so arranged that at least one of system parts and system areas can be connected separately with the in-and-out line, and signals of the pressure sensor are utilized to monitor integrity of the system and of constituent parts thereof and to cut off any damaged ones of the spring units from the feed of pneumatic or hydraulic medium so that the other ones of the spring units are utilized to stabilize the motor vehicle.

5,794,925

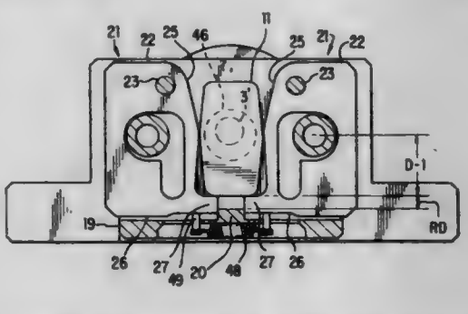
APPARATUS FOR HOLDING A LOCK ASSEMBLY AND SHEARING THE ASSEMBLY PINS THEREOF

Steven Albert Fantl, Colgate, and Robert Douglas Weis, New Berlin, both of Wis., assignors to Master Lock Company, Milwaukee, Wis.

Filed Sep. 14, 1995, Ser. No. 528,175

Int. Cl.[6] B25B *5/04*

U.S. Cl. 269—237 **6 Claims**



1. A holding device for objects of different sizes comprising:

a) a horizontal base defining a first support;

b) a pair of guide members with upper and lower ends and opposed horizontally spaced surfaces between which said objects are to be positioned for supporting on one of said first support and a second support;

c) a support arm on the lower end of each guide member, with the arm of one guide member extending toward the arm of the other guide member;

d) said guide members being pivotally mounted relative to and above said base and extending downwardly toward said base for pivoting movement relative to said base between a first closed position with said arms defining said second support spaced in vertical alignment above said first support and a second open position spaced laterally of said first support to provide access between said arms to said first support for supporting an object.

5,794,926

DEVICE FOR OPENING PRINTED PRODUCTS AND APPARATUS FOR PROCESSING PRINTED PRODUCTS

Egon Hansch, CH-Wetzikon, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Jan. 12, 1996, Ser. No. 586,196

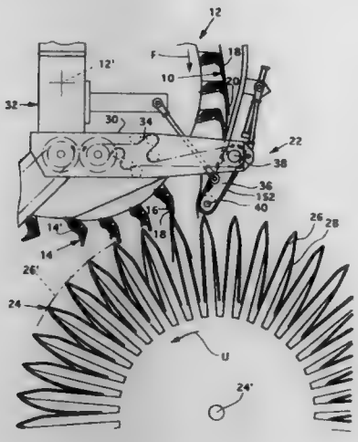
Claims priority, application Switzerland, Jan. 13, 1995, 101/95

Int. Cl.[6] B65H *39/00*

U.S. Cl. 270—52.26 **13 Claims**

1. A device for opening printed products comprising:

a carrying body rotatable about an axis, the carrying body having a first and a second rotational position;



a flow duct subjected to pneumatic pressure for the first rotational position of the carrying body; and

a suction head removably connectable to the carrying body and connected to the flow duct; and

a pnuematically controllable gripper also removably connectable to the carrying body and connected to the flow duct.

5,794,927

SHEET CONVEYING APPARATUS

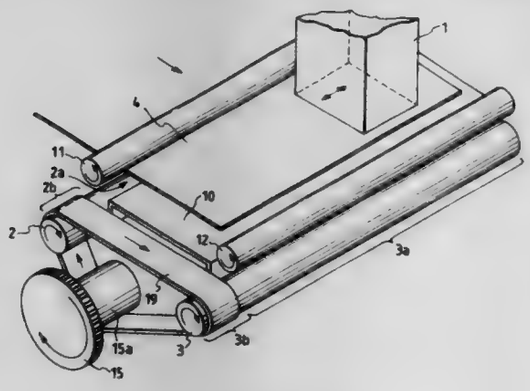
Haruo Uchida, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 552,959

Claims priority, application Japan, Nov. 7, 1994, 6-272316

Int. Cl.[6] B65H *5/22*

U.S. Cl. 271—3.18 **74 Claims**



1. A sheet conveying apparatus comprising:

a convey rotary member having a driven portion and a convey portion for conveying a sheet;

a drive pulley having a drive shaft; and

a belt wound between (i) an outer peripheral surface of said driven portion of said convey rotary member and (ii) an outer peripheral surface of said drive pulley for transmitting a rotational force to said convey rotary member or an outer peripheral surface of a drive shaft of said drive pulley, a diameter of said convey portion being substantially the same as a diameter of said driven portion, and the rotational force of said drive pulley being transmitted to said convey rotary member by said belt.

5,794,928

LARGE CAPACITY PAPER FEEDER FOR AN IMAGE FORMING APPARATUS

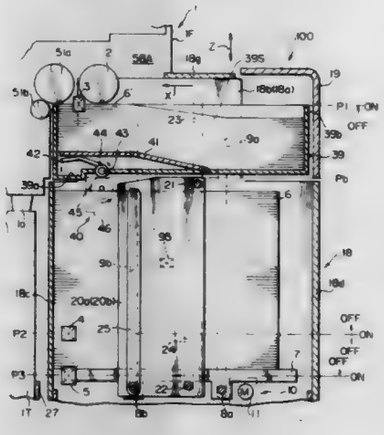
Yoshiyuki Araseki, Kakuda; Takenobu Kamada, Sendai, and Hitoshi Kimura, Ogawara-machi, all of Japan, assignors to Tohoku Ricoh Co., Ltd., Miyagi-ken, Japan

Filed Feb. 13, 1996, Ser. No. 601,158

Claims priority, application Japan, Mar. 20, 1995, 7-061406

Int. Cl.[6] B65H *3/44; 1/22*

U.S. Cl. 271—9.08 **10 Claims**



1. A dual mode paper feeder for an image forming apparatus and having a single paper feeding means positioned at a paper feed opening for feeding a paper from a top of a paper stack at a paper feed position in an intended direction of paper feed, while separating the paper from other papers when operating in a tray mode of operation and feeding another paper from a plurality of papers in a cassette when operating in a cassette mode of operation, said paper feeder comprising:

a casing constituting an outside frame member of said paper feeder;

a pair of side fences disposed in said casing and movable up and down for positioning opposite edges of the paper stack in a widthwise direction perpendicular to the intended direction of paper feed;

a frame supporting said pair of side fences such that said pair of side fences are movable up and down between a predetermined upper position and a predetermined lower position of said casing;

biasing means for constantly biasing said frame upward relative to said casing;

a tray loaded with the paper stack and movable up and down between an upper limit position facing the paper feed position and a lower limit position remotest from the upper limit position, and for selectively causing said frame to move downward when said tray is moved downward;

tray driving means for moving said tray between the upper limit position and the lower limit position; and

cassette supporting means mounted on said casing for removably supporting the cassette which is capable of being loaded with said plurality of papers, wherein said plurality of papers need not be identical in size to said paper in said paper stack,

wherein when said tray is lowered to the lower limit position, a space is formed between a top of said frame and the paper feeding means for mounting the cassette to be used in said cassette mode of operation.

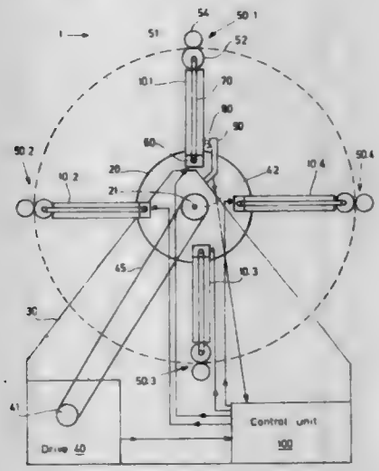
5,794,929
VARIABLE VELOCITY PROFILE DECELLERATION DEVICE

Richard Daniel Curley, Dover, and Kevin Lauren Cote, Durham, both of N.H., assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris, Inc., Dover, N.H.

Continuation-in-part of Ser. No. 468,894, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 103,842, Aug. 9, 1993, Pat. No. 5,452,886. This application Feb. 15, 1996, Ser. No. 601,669

Int. Cl.[6] B65H *5/34*

U.S. Cl. 271—270 **5 Claims**



1. A variable profile deceleration device, comprising:
a drum rotatably mounted on a first axis;
a drive for rotating the drum;
a plurality of rotary grippers mounted to the drum, each rotary gripper including an upper roller mounted on a second axis and a lower roller mounted on a third axis;
a respective gripper drive corresponding to each rotary gripper, each gripper drive rotating the upper and lower rollers of a respective rotary gripper;
a control unit having a respective output coupled to each gripper drive for controlling the rotation of the lower and upper rollers of the rotary gripper corresponding to the respective gripper drive.

5,794,930
APPARATUS FOR FEEDING THE GATHERING SEGMENT OF A GATHER-STITCHER

Alfred Glanzmann, Reiden, and Heinz Boss, Strengelbach, both of Switzerland, assignors to Grapha-Holding AG, Hergiswil, Switzerland

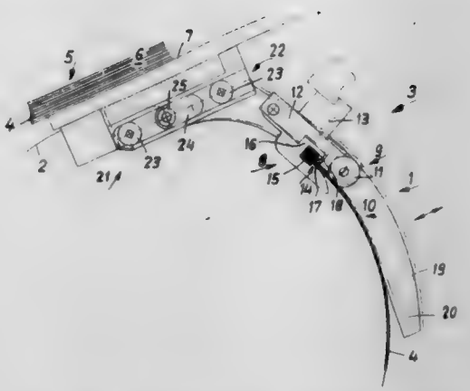
Filed Dec. 11, 1995, Ser. No. 570,555

Claims priority, application Switzerland, Dec. 14, 1994, 03 780/94

Int. Cl.[6] B65H *5/02*

U.S. Cl. 271—277 **12 Claims**

1. In an apparatus for loading a gathering segment of a gather-stitcher with printed sheets, the apparatus including: a rotating conveyor drum defining a circulating path for the printed sheets; a stop apparatus disposed on the circulating path of the printed sheets and including a stop for stopping the printed sheets; a guide arrangement including a guide device disposed upstream of the stop apparatus and together with the conveyor drum forming a guide gap for receiving the printed sheets; the gathering segment of the gather-stitcher constituting a work region of an opening apparatus facing away from the stop apparatus for moving the printed sheets away from the stop apparatus in an opposite direction, the improvement wherein:



the guide device is displaceable for automatically adjusting the guide gap in front of the stop in dependence of a thickness of the respectively conveyed printed sheets.

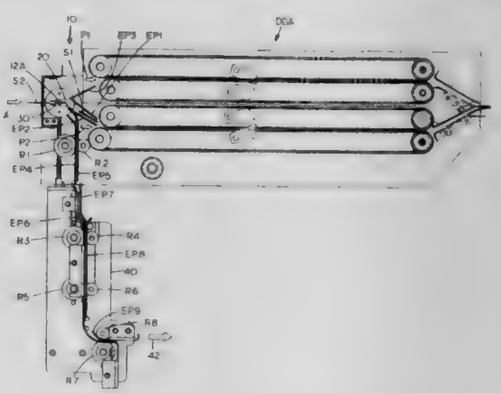
5,794,931
GUIDE APPARATUS AND METHOD FOR SELECTIVELY GUIDING SHEETS INTO A PREDETERMINED PATH

Robin L. Heilman, Willow Springs, and Joseph G. Melber, Jr., Apex, both of N.C., assignors to Bell & Howell Mail Processing Systems, Durham, N.C.

Filed Dec. 20, 1996, Ser. No. 771,586

Int. Cl.[6] B65H *39/10*

U.S. Cl. 271—303 **15 Claims**



1. A guide apparatus for selectively guiding sheets into a first, second or third conveying path, said apparatus comprising:
(a) a guide member comprising at least a pair of spaced-apart divert plates maintained parallel with respect to one another, said divert plates being selectively pivotal in at least a first position for guiding sheets into a first conveying path by deflection of sheets with an outer side of one of said divert plates, a second position for guiding sheets into a second conveying path by passage of sheets between said divert plates, and a third position for conveying sheets into a third conveying path by deflection of sheets with an outer side of another of said divert plates; and
(b) a movement mechanism for selectively and simultaneously positioning said divert plates into said at least first, second and third positions;
(c) whereby sheets advanced to said guide member can be selectively guided into the first, second or third conveying paths by selective positioning of said guide member by said movement mechanism.

5,794,932

DEVICE FOR A TABLE GAME WITH MULTIPLE CHESS-BOARDS SUPERIMPOSED ONE UPON THE OTHER, AND SPATIAL MOVEMENTS

Fiori Gastone, via Tuscolana 937 - 00174, Rome, Italy

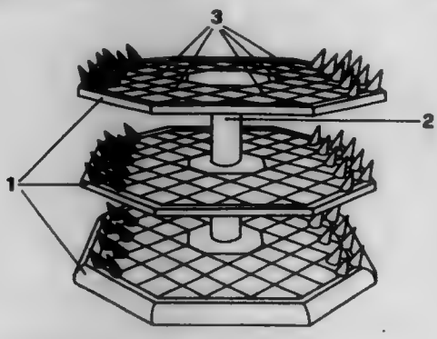
PCT No. PCT/IT93/00076, § 371 Date Oct. 17, 1994, § 102(e) Date Oct. 17, 1994, PCT Pub. No. WO94/21342, PCT Pub. Date Sep. 29, 1994

PCT Filed Jul. 20, 1993, Ser. No. 318,781

Claims priority, application Italy, Mar. 24, 1993, RM93A0185

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—241 2 Claims



1. A board game, comprising;

a support structure;

three transparent game-boards joined with said support structure so as to be vertically separated from one another and such that an upper playing surface of each gameboard defines a respective one of a first, second and third horizontal plane, wherein the external shape of the upper playing surface of each game board is defined by a multi-sided peripheral edge, and each of said game-boards having two sets of parallel paths with said sets being arranged orthogonal to each other on the playing surfaces with a plurality of the paths extending diagonally off from peripheral edges of the playing surface on which said paths are formed;

a first series of game pieces which first series includes a first, a second and a third game piece type with the three game piece types being different;

a second series of game pieces that is visually distinct from said first series and includes first, second and third game piece types which correspond with the first, second and third game piece types of said first series, and

wherein said support structure includes a column positioned centrally with respect to said first, second and third game boards, and wherein each of the game boards provides a similar sized playing surface and each playing surface has a similarly shaped peripheral edge.

5,794,933

ENHANCED PLAYING CHIP FOR WORD GAMES

William Chalfin, and Julia M. Chalfin, both of 1435 E. 101 St., Brooklyn, N.Y. 11236

Filed Feb. 9, 1995, Ser. No. 385,421

Int. Cl.[6] A63F *3/00*

U.S. Cl. 273—272 5 Claims

1. A word game set for playing a word game on a gameboard having a crossword grid for two or more players where players alternately form words on the crossword grid to score points, the game set comprising:

a plurality of basic playing chips, each basic playing chip having a letter and number value thereon for placement on said crossword grid to form words:

at least one enhanced playing chip comprising a chip frame partitioned into at least a first region and a second region;

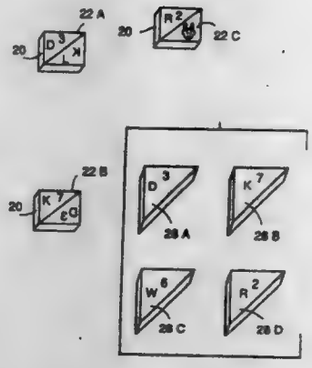
a plurality of labels, each label containing a letter and a number value, wherein at least two of said labels containing different letter and number values are removably disposed onto said first and second regions, respectively, to form a user-defined, enhanced playing chip with an alternative letter and an alternative number value,

wherein players may alternate picking playing chips and forming words on a crossword grid with said playing chips;

wherein said at least one enhanced playing chip may be placed on said crossword grid and selectively oriented to form a word with:

said letter from said first region with a corresponding number value being added to a player's score; and

said alternate letter from said at least a second region with said corresponding alternate number value being added to a player's score.



5,794,934

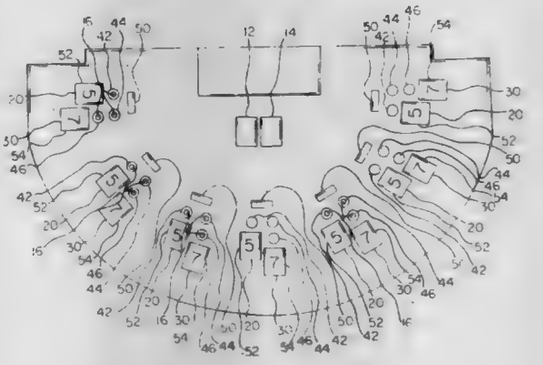
CARD GAME METHOD

James C. Malcolm, 1770 South Ocean Blvd., Apartment 204, Pompano Beach, Fla. 33062

Filed Jan. 11, 1996, Ser. No. 584,405

Int. Cl.[6] A63F *1/00*

U.S. Cl. 273—292 11 Claims



1. A method of playing cards comprising the steps of:

a player placing a first wager of any amount and a second wager of a fixed amount;

a dealer providing at least one player card to said player to form a first hand;

the dealer providing an opportunity for said player to evaluate said first hand to decide whether to place a third wager;

resolving said first wager based upon the rank of said first hand;

where said player decides to place said third wager, showing said player at least one common card to provide a combined hand including said first hand and said at least one common card;

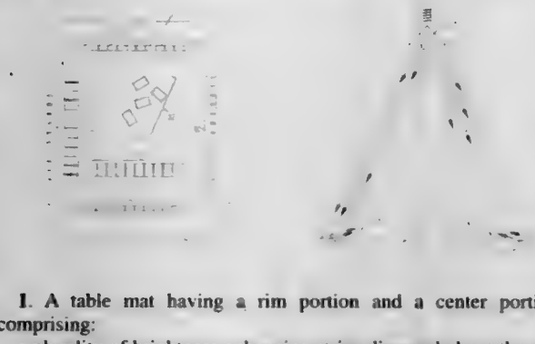
and resolving said second and third wagers based upon the rank of said combined hand.

5,794,935

BRIGHTNESS ENHANCING STRIP AND MAT FOR GAME TABLES

Allen Kwok Wah Lo, 5022 Hidden Branches Dr., Dunwoody, Ga. 30338

Filed Jun. 16, 1997, Ser. No. 874,471
Int. Cl.[6] A63F 9/00
U.S. Cl. 273—309 7 Claims



1. A table mat having a rim portion and a center portion comprising:

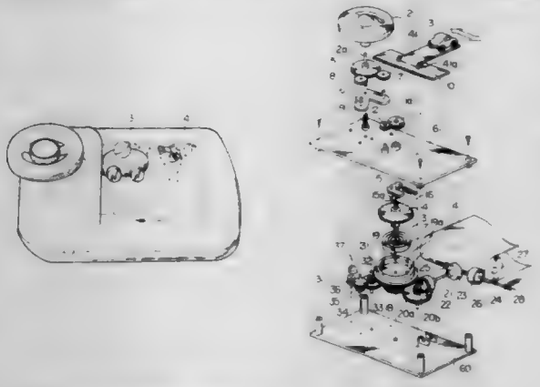
a plurality of brightness enhancing strips disposed about the rim portion of said mat, said strips having an upper surface and a lower surface, said strips having a plurality of light reflecting facets for reflecting light rays towards the center portion of said mat when said mat is illuminated by at least one light source located above said mat.

5,794,936

GAME APPARATUS

Katsumi Kakizaki, Tokyo, Japan, assignor to Toybox Corporation and Imagic, Inc., Tokyo, Japan

Filed Aug. 5, 1997, Ser. No. 905,965
Claims priority, application Japan, Aug. 27, 1996, 8-008639 U
Int. Cl.[6] A63F 9/14
U.S. Cl. 273—442 7 Claims



1. A game apparatus comprising:

an operation member;

a movement body for moving reciprocally in accordance with an operation of the operation member;

a spiral spring used as a power source;

a spiral spring winding-up mechanism for winding up the spiral spring by the operation of the operation member so as to store an energy in the spiral spring;

a rotating member which has a display of a path for the movement body and is rotatable; and

a power transmitting gear for transmitting the stored energy of the spiral spring to the rotating member to rotate;

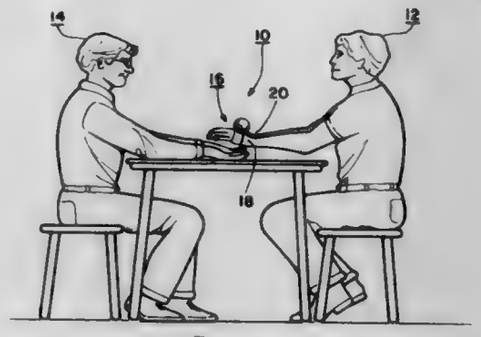
wherein one end of the spiral spring is engaged with a shaft of the spiral spring winding-up mechanism, which is rotated by the operation of the operation member, and the other end of the spiral spring is engaged with the power transmitting gear so as to enable rotation of the rotating member while the spiral spring is wound up.

5,794,937

APPARATUS AND METHOD FOR USE IN A HAND GAME

Albert Alexander Robbs, III, Redondo Beach, Calif., assignor to Tom Thumb Toys, Las Vegas, Nev.

Filed Jun. 24, 1996, Ser. No. 667,941
Int. Cl.[6] A63B 67/00
U.S. Cl. 273—447 7 Claims



1. A method for playing a game which comprises the steps of:

providing a first and second player, each said player having at least one playing hand;

securing a harness to said at least one playing hand of said first player;

selectively positioning a capture object on said harness;

placing said at least one playing hand of said first player proximate to said at least one playing hand of said second player; and

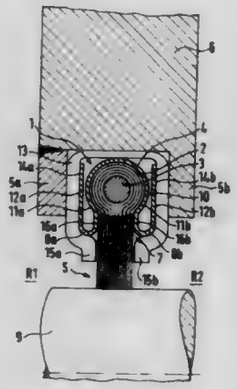
attempting to capture said capture object from said first player by said second player.

5,794,938

BRUSH SEAL SECURED BY A C-SHAPED CLAMPING RING

Hermann Höfner, München, and Alfred Mayr, Röhrmoos, both of Germany, assignors to Mtu Motoren-Und Turbinen-Union München GmbH, Munchen, Germany

Filed Dec. 17, 1996, Ser. No. 775,710
Claims priority, application Germany, Jan. 8, 1996, 296 00 193.7
Int. Cl.[6] F16J 15/447
U.S. Cl. 277—53 8 Claims



1. A brush seal for sealing a gap between two spaces at different pressures on opposite sides of a rotor and a stator, said brush seal

comprising a plurality of bristles and mounting means for mounting said bristles in the stator to project substantially radially therefrom, across said gap, to contact said rotor, said mounting means comprising an annular core, and a clamping ring having an annular slot, said clamping ring engaging a stack of said bristles to clamp said bristles around said core in U-shaped fashion with legs of said bristles extending through said annular slot towards said rotor, said clamping ring including a C-shaped section which clamps the bristles against said core and reverse bend portions at opposite ends of said C-shaped section, said reverse bend portions being axially spaced from one another to form said annular slot through which said legs of the bristles extend, said clamping ring further including anchor portions extending radially from said reverse bend portions in a direction away from said annular slot, said anchor portions being formed as backing elements which are seated in said stator.

5,794,939

THIN FACED BALANCED SEAL

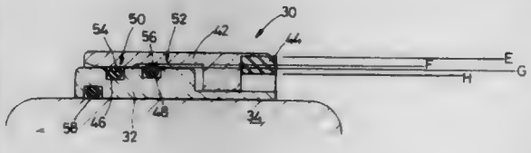
Andrew John Parkin, Rotherham, United Kingdom, assignor to AES Engineering, Ltd., Rotherham, United Kingdom

Filed Jan. 11, 1996, Ser. No. 584,051

Claims priority, application United Kingdom, Jan. 9, 1995, 9500340

Int. Cl.[6] F16J *15/34*

U.S. Cl. 277—81 R **20 Claims**



1. A cartridge-mounted mechanical seal comprising:

a sleeve component; and

a rotary component carrying a rotary seal face;

said sleeve component having an outer surface portion comprising first and second surface regions, said rotary component having an inner surface portion comprising first and second surface regions, said first surface regions and said second surface regions of said sleeve component and said rotary component being opposed respectively;

a first sealing ring forming a first seal between said first regions of said sleeve component and said rotary component, said first sealing ring being captively seated within one of said sleeve and rotary components constrained against axial motion, said first sealing ring forming said first seal of a first diameter;

a second sealing ring forming a second seal between said second regions of said sleeve component and said rotary component, said second sealing ring being captively seated within one of said sleeve and rotary components thereby being constrained against axial motion, said second sealing ring forming said second seal of a second diameter;

said first diameter being less than said second diameter;

said first surface region of said rotary component being separated from said rotary seal face by said second surface region of said rotary component; and

said second surface region of the sleeve component being able to pass through said first surface region of the rotary component during assembly of the seal.

5,794,940

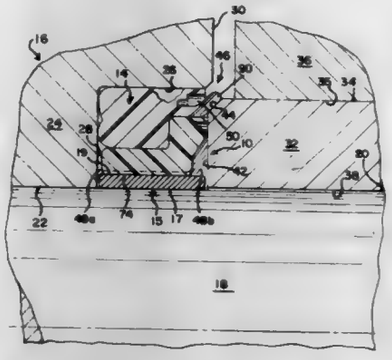
END FACE SEAL WITH SACRIFICIAL WEAR-IN EXCLUDER

Gerd Ludwig Brueggmann, Hickory Hills, Ill., assignor to SKF USA Inc., Elgin, Ill.

Filed Sep. 10, 1996, Ser. No. 711,604

Int. Cl.[6] F16J *15/32*

U.S. Cl. 277—92 **12 Claims**



12. A sealed mechanism comprising, in combination, a generally cylindrical shaft unit, an end cap positioned over said shaft unit in snug, fluid-tight relation, a cylindrical counterbore and a counterbore end face formed in said cap to receive a portion of a seal assembly, a bushing positioned over said shaft and being separated therefrom by a radial working clearance to accommodate lubricant, said bushing having an annular end face surface of intended contact with a seal ring to form a dynamic fluid seal, and a seal assembly positioned within a region defined by said cap counterbore, a primary seal ring and a combination load applying and secondary seal ring associated with said primary seal ring, said primary seal ring having an annular body formed from an abrasion-resistant, stiff but resilient material, and being of generally L-shaped cross section, so as to include radial and axial flanges, said radial flange including at least one axially outer end face with a portion forming a primary seal band on said annular end face surface of said bushing, and a radially extending, axially inner seating surface, said axial flange having a radially outwardly directed, axially extending cylindrical seating surface, and a radially inwardly directed cylindrical surface disposed in facing relation to one of said machine parts, said secondary sealing ring being made from an elastomer and including a generally radially extending axially outer seating surface in at least partial contact with said axially inner seating surface on said primary seal ring, a cylindrical, radially inwardly directed surface seated on said primary seal ring axial flange, an inclined surface extending radially outwardly and toward said counterbore end face and a radially outer cylindrical surface contacting said cylindrical counterbore, said seal assembly further including a flexible, abradable excluder lip extending in use axially outwardly of said secondary seal ring body, and into sealing contact with a portion of said bushing lying radially outwardly of said primary seal band.

5,794,941

PISTON RING ASSEMBLY

John C. Lahrman, Richmond, Ind., assignor to Dana Corporation, Toledo, Ohio

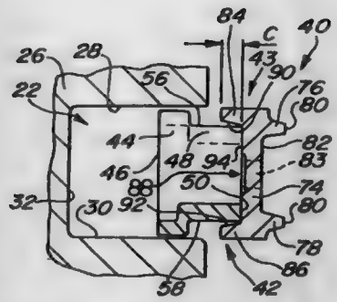
Filed Jun. 1, 1995, Ser. No. 456,360

Int. Cl.[6] F16J *9/06*

U.S. Cl. 277—175 **13 Claims**

1. A piston ring assembly adapted to engage an annular groove of a piston body, the piston body axially adapted to reciprocate within a cylinder having an inner cylinder wall defining a bore that receives the piston body, the assembly comprising:

an annular, split, double-offset, expander spring with an inner periphery and an outer periphery, a first wave portion extending about said inner periphery and a second wave portion



extending about said outer periphery, the axial extent of said second wave portion being less than the axial extent of said first wave portion, wherein said first wave portion has a generally sinusoidal shape and said second wave portion has a generally trapezoidal shape; and

a split annular piston ring having a generally H-shaped cross section with a thin central web, said ring including a pair of axially spaced radially outwardly extending projections that terminate in a cylinder wall-engaging surface, a channel defined by said projections and said web, a pair of axially spaced radially inwardly extending rails, and a slot defined by said rails and said web, whereby said second wave portion of said expander spring engages said slot of said piston ring.

5,794,942

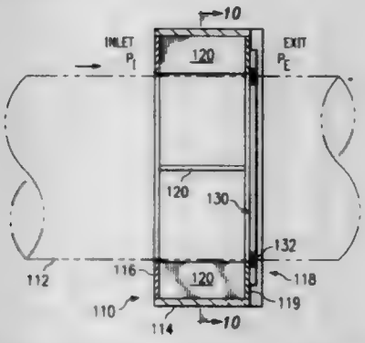
MODULATED PRESSURE DAMPER SEALS

John M. Vance, Bryan, Tex., and Richard R. Shultz, Groton, Conn., assignors to The Texas A&M University System, College Station, Tex.

Continuation of Ser. No. 233,043, Apr. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 2,336, Jan. 8, 1993, abandoned. This application Aug. 20, 1996, Ser. No. 712,639

Int. Cl.[6] F16J *15/447*

U.S. Cl. 277—303 **14 Claims**



1. Apparatus for maintaining a fluid barrier between areas along a rotating shaft having a fluid flow along the shaft and for damping vibrational displacement of the shaft, the apparatus comprising:

a housing disposed about the shaft;

a plurality of partitioning walls forming, in part, a plurality of pressure cavities around the shaft and adjacent to the housing and shaft, the partitioning walls positioned to maintain a pressure differential between adjacent pressure cavities to allow fluid pressure around the shaft to vary for damping vibrational displacement of the shaft, the fluid pressure varying in response to modulation of fluid flow entering and exiting the cavities;

means for modulating the fluid flow entering the cavities with respect to the vibrational displacement of the shaft;

means for allowing the fluid flow to exit the cavities with less modulation, with respect to the vibrational displacement of the shaft, than the modulation, with respect to the vibrational displacement of the shaft, of the fluid flow entering the cavities;

wherein the means for modulating the fluid flow entering the cavities comprises a first sealing blade attached to the housing with a first clearance and attached upstream of the means for allowing the fluid flow to exit the cavities; and

wherein the means for allowing the fluid flow to exit the cavities comprises a brush seal for allowing the exiting fluid flow to exit the cavities and also allows the exiting fluid flow to exit the cavities substantially unmodulated.

5,794,943

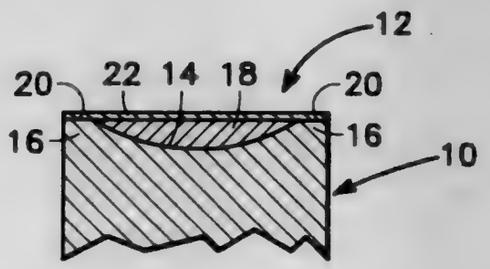
PISTON RINGS PARTICULARLY SUITED FOR USE WITH CERAMIC MATRIX COMPOSITE PISTONS AND CYLINDERS

Steven Donald Atmur, Riverside, and Thomas Edward Strasser, Corona, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Division of Ser. No. 515,924, Aug. 16, 1995, Pat. No. 5,660,399. This application Mar. 19, 1997, Ser. No. 820,932

Int. Cl.[6] F16J *9/28*

U.S. Cl. 277—441 **26 Claims**



1. A sealing system for an engine comprising:

a cylinder made of a ceramic matrix composite material;

a piston disposed within said cylinder;

an incomplete circular piston ring made of a metal alloy and disposed around said piston wherein said ring has an outer peripheral edge spanning a perimeter of said circular ring and a single inner concave longitudinal groove, wherein said outer peripheral edge is in sliding contact with said ceramic matrix material of said cylinder;

an erosion-resistant material disposed throughout said inner concave groove spanning the perimeter of said ring for imparting hardness to said ring to enable it to withstand erosion from said sliding contact with said ceramic matrix composite material of said cylinder; and

a friction reducing material disposed on said outer peripheral edge completely overlying said erosion-resistant material.

5,794,944

MONEY MACHINE

Le Roy Roberts, R.D. #1, Box 173R, Breezewood, Pa. 15533

Filed Jul. 12, 1996, Ser. No. 682,854

Int. Cl.[6] A63B *71/02*; **E04B** *1/34*

U.S. Cl. 273—447 **10 Claims**

1. A device comprising:

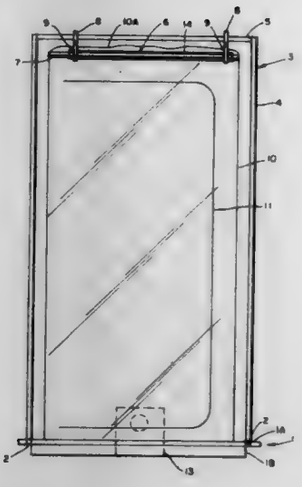
a base;

a frame mounted on said base;

a bag support attached to said frame;

a bag; and

a blower;



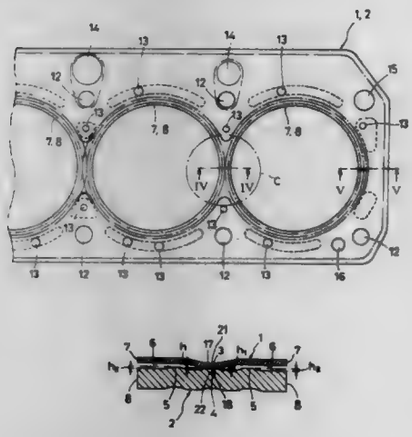
said bag including an entry way, a top, a bottom, ventilation means, support flaps.

5,794,945

METAL GASKET

Kenji Kubouchi; Yutaka Furuta, and Kazuyuki Geshi, all of Osaka, Japan, assignors to Nippon Gasket Co., Ltd., Osaka-fu, Japan

Filed Nov. 22, 1996, Ser. No. 755,146
Int. Cl.[6] F16J *15/08*
U.S. Cl. 277—593 **8 Claims**



1. A metal gasket comprising:

a bead base plate made of an elastic metal plate and formed with first beads around parallelly arranged first holes; and

a sub-plate having parallelly arranged second holes aligned with the first holes and stacked on the bead base plate,

the sub-plate having a thickness two to five times the thickness of the bead base plate,

the sub-plate having

second beads opposing the first beads of the bead base plate and adapted to contact the first beads to provide a sealing function,

third beads being arranged inside the second beads and around the second holes and having a sealing function and a stopper function to prevent total compression of the first beads of the bead base plate, and

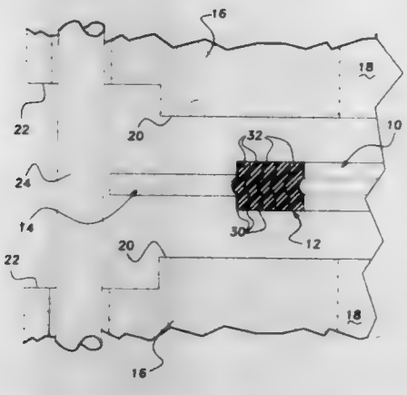
stepped portions being arranged outside the second beads and around the second holes and having a sealing function.

5,794,946

SPIRAL WOUND GASKET

Richard Scott Owen, Houston, Tex., assignor to Lamons Metal Gasket Co., Houston, Tex.

Continuation of Ser. No. 651,691, May 21, 1996, abandoned. This application Aug. 19, 1997, Ser. No. 914,699
Int. Cl.[6] F16J *15/12*
U.S. Cl. 277—610 **7 Claims**



1. A spiral wound gasket for low load sealing of a fluid conductor, said gasket comprising:

of multiple windings forming a spiral gasket ring, said spiral gasket ring including interspersed windings of metal having a predetermined width and a sealant having a width greater than said width of said metal winding;

an outer guide ring mounted to an outer periphery of said spiral gasket ring;

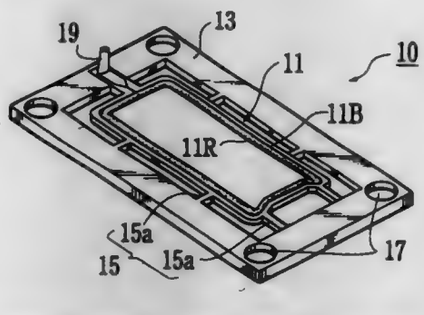
said guide ring having a predetermined axial width, said metal windings have width greater than the axial width of said outer guide ring such that said metal winding projects a significant distance on both sides of said guide ring and said sealant winding protecting a significant distance on both sides of said metal winding.

5,794,947

SEALING MATERIAL FOR ASSEMBLY

Toru Shimizu, Hachioji, Japan, assignor to Three Bond Co., Ltd., Japan

Continuation of Ser. No. 611,971, Mar. 6, 1996, abandoned, which is a continuation of Ser. No. 168,763, Dec. 16, 1993, abandoned. This application Apr. 25, 1997, Ser. No. 845,645
Claims priority, application Japan, Jan. 4, 1993, 5-000042
Int. Cl.[6] F16J *15/02*
U.S. Cl. 277—630 **5 Claims**



1. A seal for use in the assembly, said seal comprising:

a packing being formed in a predetermined shape from an elastic material to be adapted for sealing engagement between opposite faces of said assembly, the elastic material including a rubber which is being selected from the group consisting of natural rubber, synthetic rubber and silicone rubber;

a core being provided in said packing and being formed of a thermoplastic resin to have substantial rigidity such that said core can maintain the predetermined shape of said packing; and

a removable base being integrally formed of the same thermoplastic resin with said core through a plurality of narrow leaves such that said base supports said packing and is easily removed from said core by a cutting operation, said base being formed into a shape so that when said packing is between opposite faces of said assembly, said base extends a selected distance outside of said assembly such that said base can be removed from said core when opposite faces of said assembly are mated.

5,794,948

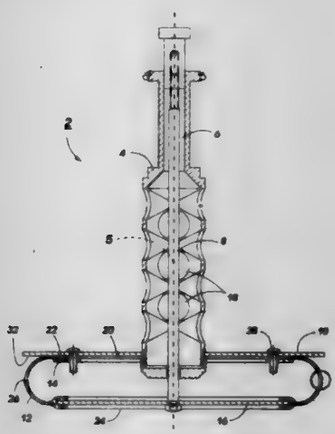
CHUCK ASSEMBLY

Peter J. Schmitt, Ontario; Eugene A. Swain, Webster; Kamran U. Zaman, Pittsford, and Alan D. Smith, W. Henrietta, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1996, Ser. No. 745,543

Int. Cl.[6] B05C *13/02*; B23B *31/40*

U.S. Cl. 279—2.17 **9 Claims**



1. A chuck assembly defining a longitudinal axis for internally holding a hollow substrate comprising:

(a) a stationary top pressing member;

(b) a bottom pressing member movable along the longitudinal axis;

(c) an elastic bag defining an opening, a top region, a side wall, and a bottom region, wherein the bag is stretchable along the longitudinal axis and a portion of the top region adjacent the side wall is immobilized against the stationary top pressing member during the stretching of the bag and a portion of the bottom region is coupled to the bottom pressing member;

(d) a width changing apparatus movable along the longitudinal axis, wherein the width changing apparatus is operatively coupled to the bottom pressing member, wherein the bag forms a hermetic seal inside the substrate; and

(e) a material in contact with the portion of the top region of the bag adjacent to the side wall to immobilize the portion of the top region adjacent to the side wall against the stationary top pressing member during the stretching of the bag.

5,794,949

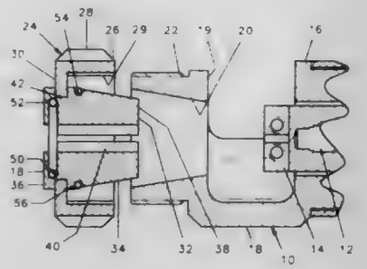
COLLET

Kenneth R. Pierce, N. Barrington, Ill., assignor to The E. H. Wachs Company, Wheeling, Ill.

Division of Ser. No. 564,781, Nov. 29, 1995, Pat. No. 5,605,084. This application Feb. 21, 1997, Ser. No. 803,575

Int. Cl.[6] B23B *31/20*

U.S. Cl. 279—46.7 **2 Claims**



1. A collet comprising in combination;

a plurality of wedge segments;

each of said wedge segments having an inner surface and an outer surface;

said outer surface of each of said segments defining a portion of a frustoconical surface;

said inner surface of each of said segments defining a portion of a cylindrical surface;

a tubular member having an inner surface;

a flange on one of said tubular member and said segments and a groove in the other of said tubular member and said segments, said groove complementary to said flange whereby said wedge segments are retained in mutual alignment within said tubular member with said inner surfaces defining a cylindrical center opening and said outer surfaces defining a frustoconical surface as a result of the mating of said flange into said groove for said plurality of wedge segments;

a second groove in said inner surface of each of said wedge segments, and

an O-ring in said second grooves of said wedge segments for spreading said wedge segments radially outward and against said inner surface of said tubular member and thereby holding said segments in assembled relationship within said tubular member.

5,794,950

IN-LINE SKATE BRAKE

John E. Svensson, Vashon; Dodd H. Grande, Seattle; Hans D. Grande, Des Moines, all of Wash., and Shin B. Min, Pusan, Rep. of Korea, assignors to K-2 Corporation, Vashon, Wash.

Filed Jul. 12, 1996, Ser. No. 679,076

Int. Cl.[6] A63C *17/14*

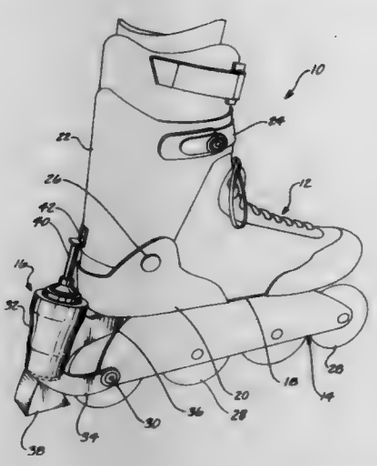
U.S. Cl. 280—11.2 **10 Claims**

1. A brake assembly for an in-line skate having a base, a cuff pivotally secured to the base, and wheels secured to the base for rolling on a riding surface, the brake assembly comprising:

a) a tab secured to the cuff, said tab having a lower contact surface;

b) a slide housing fixedly secured to a rear end of the base behind the wheels;

c) an elongate member having a lower end slidably received within the slide housing, said elongate member being movable between a lower position and an upper position, said elongate member being normally positioned in said upper position and having an upper end positioned adjacent the lower contact surface of said tab, said tab being positioned on said cuff such that rearward pivotal movement of said cuff results in engagement of said lower contact surface with said upper end of said elongate member and movement of said elongate member to said lower position, and forward pivotal



movement of said cuff resulting in disengagement of said lower contact surface from said upper end of said elongate member; and

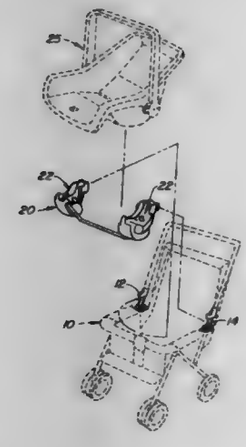
d) a brake element positioned below said slide housing and operatively coupled to said lower end of said elongate member for moving said brake element into frictional engagement with the riding surface in response to movement of said elongate member to said lower position.

5,794,951

CHILD'S STROLLER WITH MANUALLY OPERABLE ACCESSORY LATCH ASSEMBLY

Scott Corley, Stow; Michael Carnahan, Bedford, and Joel Wennerstrom, Akron, all of Ohio, assignors to Century Products Company, Macedonia, Ohio

Filed Oct. 25, 1996, Ser. No. 738,225
Int. Cl.[6] B62B *7/14*
U.S. Cl. 280—30 **4 Claims**



1. In combination:

a child's stroller having a frame structure with a spaced pair of frame members, one of said frame members including a latch support post, the other one of said frame members including a pivot support post; and

a latching assembly for removable attachment to said stroller frame structure, said latching assembly including a manually operable latching mechanism for releasable attachment to said latch support post and a pivoting mechanism for pivotal engagement with said pivot support post,

said latch support post including a bearing surface and a latching boss,

said latching mechanism including an engagement surface and a latching pawl engagable with said latching boss,

said pivot support post including a bearing surface,

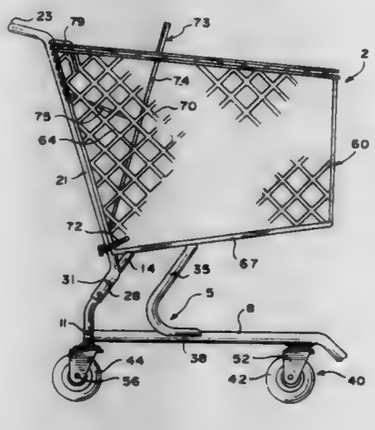
said pivoting mechanism including a laterally spaced pair of arm portions joined by a curved surface portion to define a pivot surface, the spacing between said arm portions being greater than the diameter of said bearing surface of said pivot support post so that said pivot mechanism can be inserted onto said bearing surface of said pivot support post and rotated about said pivot support post until said engagement surface of said latching mechanism engages said bearing surface of said latch support post, whereby engagement between said latching pawl and said latching boss locks said latching mechanism to said stroller.

5,794,952

SUPPORT ASSEMBLY FOR A PLASTIC BASKET OF A SHOPPING CART

Alan Kern; Scottlan Henry, and Chris Johnson, all of Richmond, Va., assignors to Rehrig International, Inc., Richmond, Va.

Filed Sep. 23, 1996, Ser. No. 710,854
Int. Cl.[6] B62B *3/02*
U.S. Cl. 280—33.991 **31 Claims**



1. A shopping cart comprising:

a cart frame having wheels and a pair of laterally spaced upstanding tubular posts;

at least one handle defining member attached to said cart frame;

a plastic basket including a pair of side panels, a front panel, a bottom panel and a rear panel, each of said side panels having an opening at an upper portion thereof; and

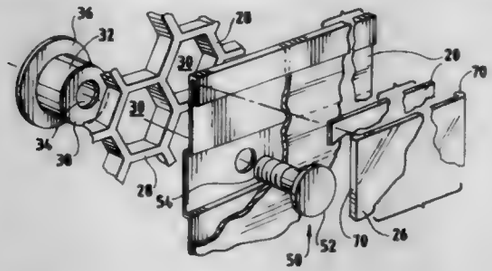
a pair of basket supporting members, each of said basket supporting members being separate from the other and each including a first end portion extending through a respective opening in a side panel and a second end portion engaging and secured to a respective post, said first and second end portions being bent relative to the posts and side panels such that, when the supporting members are located with their first and second end portions in a respective side panel opening and engaging a respective post, the retaining members individually hold a respective side panel tightly against a post and prevent each side panel from separating from its respective post.

5,794,953

SHOPPING CART WITH ADVERTISING CARD MOUNT TO PLASTIC BASKET IN IMPROVED MANNER

Val-Jean Duchene, Broken Arrow, and James F. Reinbold, Norman, both of Okla., assignors to Unarco LLC, Atlanta, Ga.

Filed Jun. 19, 1996, Ser. No. 666,007
Int. Cl.[6] B62B *3/00*
U.S. Cl. 280—33.992 17 Claims



15. A shopping cart comprising a wheeled chassis, a handle structure, and a basket fastened to the wheeled chassis and to the handle structure, the basket comprising a front panel molded from a plastic material and two side panels molded therefrom, each of the front and side panels having a generally uniform lattice of polygonal structures, each of the polygonal structures bordering a polygonal aperture, an advertising card covering a portion of a panel selected from the front and side panels, and means including a plug pressed tightly into an associated one of the polygonal apertures and a fastener pressed into a hole in the plug fastening the advertising card to the selected panel.

5,794,954

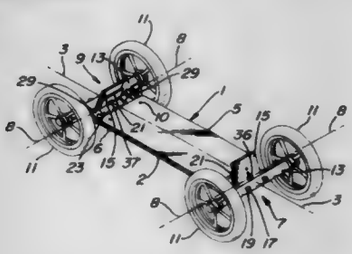
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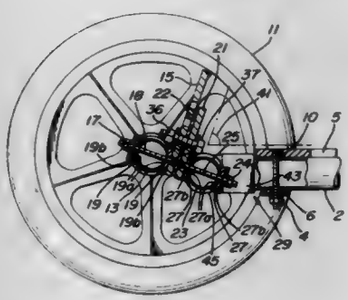
5,794,955

MOUNTAIN BOARD

Raymond G. Flynn, 1902 Wharton Rd., Jenkintown, Pa. 19046

Filed Jun. 27, 1996, Ser. No. 673,820
Int. Cl.[6] B62M *1/00*
U.S. Cl. 280—87.042 22 Claims





1. A steerable wheeled riding board, comprising:

an elongated platform having a planar support surface for support of a rider of the board, said platform being tiltable about its long axis;

first and second wheel sets having ground engaging wheels, said wheel sets being disposed at opposite ends of said platform, said wheel sets having first and second axles respectively extended transversely of said long axis, said ground engaging wheels being rotatably mounted on said axles;

a first steering means for imparting a steering motion to said first wheel set in accordance with tilting motions of said platform about said long axis, said first steering means comprising a first steering plate mounted on said platform adjacent to said first wheel set, said first steering plate having a first horizontally extending axis extending perpendicularly to said long axis and parallel to said planar support surface, said first steering plate being disposed about said first horizontally extending axis at an angular orientation other than 90° to said long axis;

a first axle plate fixed to said first axle and extended parallel thereto, said first axle plate being extended parallel to and in overlapping relationship with said first steering plate; and

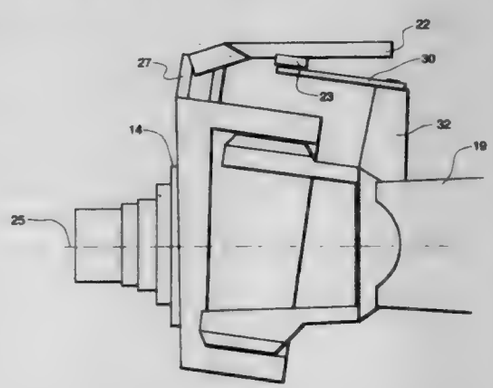
first pivot means pivotally interconnecting said first steering plate and said first axle plate for imparting steering motion to said first axle in accordance with tilting motions of said platform imparted in response to shifting of the weight of the rider relatively to said long axis.

5,794,956

PIVOTABLE FENDER FOR TRACTORS

Joseph C. Hurlburt, Lancaster, and Gilbert W. Linde, New Holland, both of Pa., assignors to New Holland North America, Inc., New Holland, Pa.

Filed Jul. 16, 1997, Ser. No. 895,294
Int. Cl.[6] B62D *25/18*
U.S. Cl. 280—156 19 Claims



1. In a tractor having a chassis supported above the ground by ground engaging wheels, including a pair of transversely opposed steerable front wheels pivotally mounted on a front axle connected to said chassis, said front wheels being pivotally movable relative to said front axle through a steering movement to provide changes in direction of movement of said chassis, each of said front steerable wheels having a fender associated therewith, each said fender being mounted for steering movement with the corresponding said front wheel, the improvement comprising:

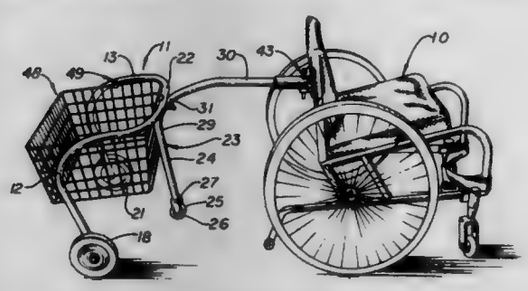
each said fender being supported on a fender pivot mechanism that effects a lagged rate of pivotal movement of each said fender relative to the corresponding said front wheel upon a turning movement thereof.

5,794,957

TRAILER FOR A WHEELCHAIR

Stephen P. Mendon, Salida, Colo., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Mar. 12, 1996, Ser. No. 615,035
Int. Cl.[6] B62K *27/00*
U.S. Cl. 280—204 **14 Claims**



1. A trailer for quick releasable attachment to a wheelchair having at least one vertical support member comprising:

a pair of spaced side supports having a basket secured therebetween, each side support having a bottom end terminating in a rotatable wheel, said side supports being interconnected by a support bar; and

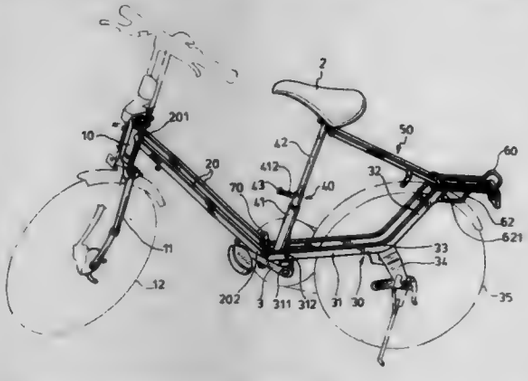
a wheelchair connecting member connected to said support bar at a point of connection having a downwardly extending portion terminating in a rotatable wheel and an elongated portion extending from the point of connection of said support bar to said wheelchair connecting member terminating in an apertured end which may be releasably coupled to said wheelchair, said wheelchair connecting member, said downwardly extending portion and said elongated portion being of one integral piece of tubing.

5,794,958

FOLDABLE BICYCLE FRAME

Yun-Lung Hsiao, 4F, No. 3, Lane 70, Hsueh-Cheng Rd., Tu-Cheng City, Taipei Hsien, Taiwan

Filed Oct. 22, 1996, Ser. No. 735,272
Int. Cl.[6] B62K *15/00*
U.S. Cl. 280—287 **6 Claims**



1. A foldable bicycle frame comprising:

a head tube adapted to be coupled with a front fork for carrying a front bicycle wheel;

a downtube unit having a front end connected to said head tube, and a rear end;

a chain stay unit having a horizontal front end portion connected foldably to said rear end of said downtube unit and adapted to be mounted with a crank arm assembly, an inclined vertical rear end portion, and a middle portion that is between said front and rear end portions and that is provided with means for carrying a rear bicycle wheel thereon;

a telescopic seat unit having a top end adapted to be mounted with a bicycle seat thereon and a bottom end connected pivotally to said front end portion of said chain stay unit; and

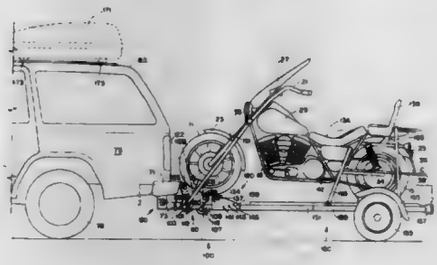
a seat stay unit having a front end pivoted to said top end of said seat unit and a rear end pivoted to said rear end portion of said chain stay unit.

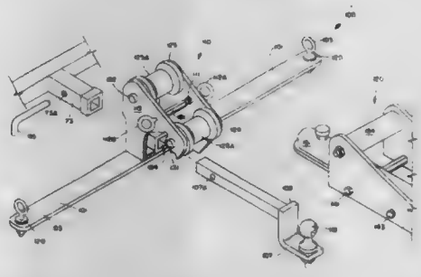
5,794,959

TRAILER HITCH ASSEMBLY, AND DUAL PURPOSE TRAILER UTILIZING SUCH HITCH ASSEMBLY

Carl John Scheef, Jr., 950 Jeter Rd., Argyle, Tex. 76226

Filed May 31, 1995, Ser. No. 454,751
Int. Cl.[6] B60D *1/24*
U.S. Cl. 280—400 **9 Claims**





6. An apparatus for use in hauling a wheeled vehicle having a wheel on a trailer having a tongue behind a towing vehicle, the apparatus comprising:

(a) a hitch adapted to be affixed to said towing vehicle, and adapted to receive said tongue;

(b) a wheel cradle adapted to be supported by said towing vehicle and adapted to receive said wheel of said wheeled vehicle, with the cradle further adapted to position at least a portion of the wheel of wheeled vehicle between the hitch and the towing vehicle,

wherein the wheel cradle comprises a set of parallel side members spaced apart by a lateral support member adapted to receive the wheel of the wheeled vehicle between the side members onto the lateral support; and

wherein the lateral support member comprises a cylindrically shaped roller for receiving the wheel of the wheeled vehicle.

5,794,960

CHASSIS WITH CONVERTIBLE GOOSENECK

Gerald A. Sill, Edgerton, and Gary L. Fenton, Stoughton, both of Wis., assignors to Stoughton Trailers, Inc., Stoughton, Wis.

Filed Feb. 23, 1996, Ser. No. 604,822
Int. Cl.[6] B62D *53/06*
U.S. Cl. 280—441.2 **10 Claims**

1. A convertible chassis for hauling shipping containers having tunnel sections of varying depths, the chassis comprising:

a wheel assembly,

a frame supported on the wheel assembly, said frame including a pivot shaft pivotally mounted on the frame, a first stop mem-



ber mounted on the shaft for pivotal movement with the shaft, and a second stop member mounted on the frame for movement relative to the pivot shaft, the second stop member being engageable with the first stop member to restrict pivotal movement of the pivot shaft, and

a conversion apparatus supported on the frame, the conversion apparatus including a rail, the rail having an engagement surface, the engagement surface being engageable with the tunnel section of a shipping container, the rail being moveable with the pivot shaft between a first position and a second position, the rail being selectively secured in one of the first and second positions by engagement between the first stop member and the second stop member.

5,794,961

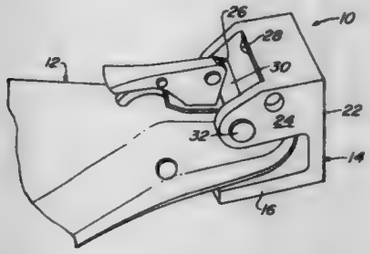
ANTI-THEFT DEVICE FOR TRAILER

Raymon A. Niswanger, Granbury, Tex., assignor to Blaylock Industries, Inc., Fort Worth, Tex.

Filed Jul. 15, 1996, Ser. No. 679,964

Int. Cl.[6] B60D *1/60*

U.S. Cl. 280—507 **13 Claims**



1. An anti-theft device that attaches to the trailer tongue of a trailer having a flange on a lower end which defines a width of the trailer tongue, and a socket for receiving a tow ball of a trailer hitch, and wherein the device can be used on different size trailer tongues having different widths, the device comprising:

a base;

a socket insert that projects from the base and is received within the socket of the trailer tongue;

a back plate extending upward from a rearward edge of the base;

a pair of side members that are joined to the back plate and oriented so that the trailer tongue must be passed between the side members for insertion and removal of the socket insert from the trailer tongue socket, each side member having at least one hole formed therein; wherein

each side member has a lower end spaced above the base, defining a vertical space between each side member and the base for accommodating trailer tongues having different widths; and

a retaining rod which inserts into the holes of the side members so that the retaining rod extends between the side members adjacent to the trailer tongue to prevent the passage of the trailer tongue between the side members and thus prevent removal of the socket insert from the trailer tongue socket.

5,794,962

LONGITUDINALLY ADJUSTABLE BASE FOR SKI BINDING

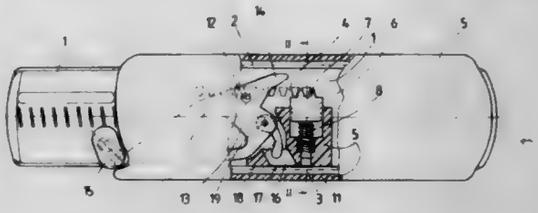
Roland Bardin, Varennes Vauzelles, and Michel Thevenet, Coulanges les Nevers, both of France, assignors to Look Fixations S.A., France

Filed Sep. 23, 1996, Ser. No. 717,693

Claims priority, application France, Oct. 10, 1995, 95 12112

Int. Cl.[6] A63C *9/00*

U.S. Cl. 280—607 **6 Claims**



1. A base intended to receive a ski binding thereon, said base being longitudinally adjustable, including a slider (**1**) fixed to the ski and having an interior side, with a row of notches (**4**; **21**) parallel to the axis of the slider and a fitted plate (**5**; **31**) sliding on the slider and bearing a latch (**6**; **20**; **33**) engaged, through the action of a spring, in at least one notch of the slider, in such a way as to immobilize the plate on the slider, as well as a fitted release lever (**13**; **25**; **37**) pivoting on the plate around a shaft perpendicular to the plate, wherein the latch (**6**; **20**; **33**) comprises a fitted part separate from the lever, sliding transversely to the plate, and in which the binding base includes a mobile part (**16**; **27**; **43**) for removal of play between the plate and the slider, the mobile part being mounted in such a way to be moved by action on the release lever.

5,794,963

BINDING DEVICE AND A BINDING DEVICE/BOOT ASSEMBLY

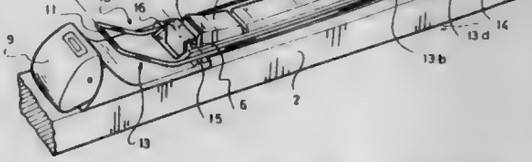
Francois Girard, Veyrier Du Lac, France, assignor to Salomon S.A., Metz-Tessy, France

Filed Sep. 5, 1996, Ser. No. 707,474

Claims priority, application France, Sep. 6, 1995, 95 10587

Int. Cl.[6] A63C *9/08*

U.S. Cl. 240—615 **26 Claims**



1. A binding device for binding a boot to a sporting item, the boot having a latching member at a front end of the boot, said device comprising:

a binding body adapted to be secured to the sporting item, said binding body including a housing adapted to receive the latching member of the boot;

a latch to latch the latching member of the boot in said housing;

a control member connected to said latch for moving said latch from a latching position, for latching the latching member of the boot in said housing, to an unlatching position, for allowing unlatching of the latching member of the boot from said housing, and for moving said latch from the unlatching position to the latching position;

an indexing device to index the front end of the boot on said binding body by positioning the latching member of the boot

with respect to said housing of said binding body, said indexing device comprising an element spaced from said housing a distance substantially equal to a distance between the front end of the boot and the latching member of the boot.

5,794,964

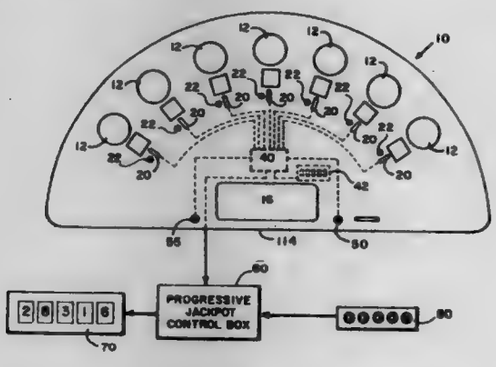
APPARATUS FOR PROGRESSIVE JACKPOT GAMING

Daniel A. Jones, and James P. Suttle, both of Las Vegas, Nev., assignors to Progressive Games, Inc., Ft. Lauderdale, Fla.

Continuation of Ser. No. 486,700, Jun. 7, 1995, Pat. No. 5,544,893, which is a continuation of Ser. No. 337,661, Nov. 9, 1994, Pat. No. 5,626,341, which is a division of Ser. No. 40,925, Mar. 31, 1993, Pat. No. 5,364,104, which is a division of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,836,553. This application Aug. 9, 1996, Ser. No. 695,275

Int. Cl.[6] A63F *1/00;9/24*

U.S. Cl. 273—309 **41 Claims**



38. In a live casino card game table, said table having a plurality of player locations at which a player receives playing cards from a dealer to play said live casino table card game;

a plurality of sensors, one sensor associated with a corresponding one of said player locations, for sensing placement of a gaming token wagered by a player; and

a plurality of light indicators, one indicator associated with a corresponding one of said player locations, for visually indicating that a player has wagered a gaming token.

5,794,965

STABILIZER LINK

Robert W. Stuker, Bollingbrook, and Frederick Winkler, Morton Grove, both of Ill., assignors to Mohawk Manufacturing & Supply Co., Inc., Niles, Ill.

Continuation-in-part of Ser. No. 503,427, Jul. 17, 1995. This application Sep. 4, 1996, Ser. No. 708,356

Int. Cl.[6] B60G *21/00*

U.S. Cl. 280—665 **51 Claims**

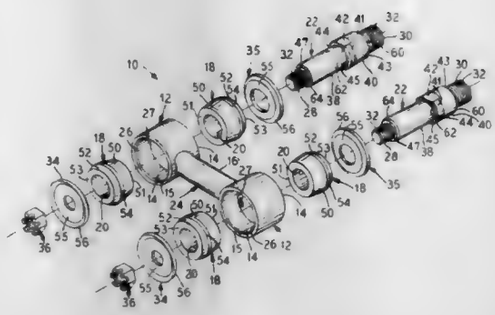
1. A stabilizer link comprising:

a) a cylinder defining a pair of contiguous bores opening in opposite directions, the pair of bores defining an axis;

b) a stem associated with the cylinder for mounting the cylinder on a vehicle;

c) a pair of bushings, each bushing received into a respective bore, each bushing defining a channel;

d) a shaft received into the channels of the pair of bushings; and



e) at least one fastening element for securing the shaft within the channels of the pair of bushings.

5,794,966

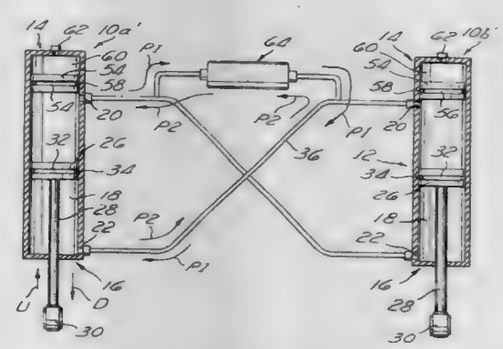
VEHICULAR SUSPENSION SYSTEM

Kenneth J. MacLeod, 111 Fleurance, Laguna Niguel, Calif. 92677

Continuation of Ser. No. 596,718, Feb. 5, 1996, abandoned. This application Jun. 2, 1997, Ser. No. 867,716

Int. Cl.[6] B60G *11/26*

U.S. Cl. 280—714 **14 Claims**



1. In a vehicular suspension system having at least one pair of shock absorbers, wherein each of the shock absorbers of the pair includes a housing defining top and bottom ends and a fluid filled interior chamber, upper and lower ports in communication with the interior chamber, and a piston disposed in the interior chamber which is reciprocally movable through upward and downward strokes therewithin, the improvement comprising:

fluidly connecting the lower port of a first shock absorber of the pair to the upper port of a second shock absorber of the pair via a first fluid line; and

fluidly connecting the lower port of the second shock absorber to the upper port of the first shock absorber via a second fluid line;

a valve member which is fluidly connected to the first and second fluid lines, and is selectively actuatable between open and closed positions such that:

fluid flows between the lower port of the first shock absorber and the upper port of the second shock absorber, and between the lower port of the second shock absorber and the upper port of the first shock absorber when the valve member is in the closed position;

fluid flows between the upper and lower ports of the first shock absorber, and between the upper and lower ports of the second shock absorber when the valve member is in the open position; and

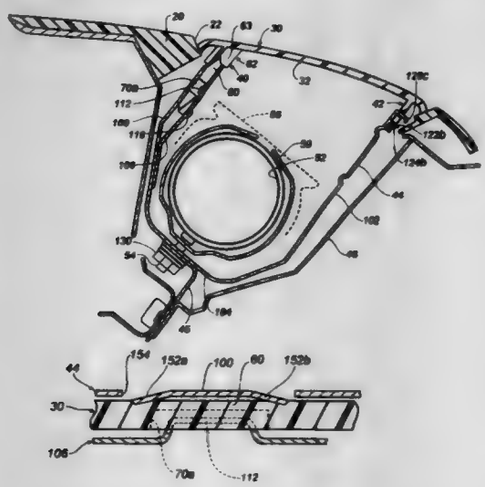
an acceleration sensor electrically connected to said valve member and adapted to facilitate the selective actuation thereof between the open and closed positions.

5,794,967

PASSENGER AIR BAG MODULE WITH MEANS FOR RETAINING AN AIR BAG DEPLOYMENT DOOR TO A HOUSING

Gregory B. Manire, Oxford, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Aug. 2, 1996, Ser. No. 691,761
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—728.3 **11 Claims**



11. An assembly for an air bag (**56**) comprising:

a housing (**44**) including a first wall (**100**), an opposite second wall (**102**), and a flexible third wall (**106**) secured to the first wall (**100**) defining a space (**150**) therebetween, one of the first wall (**100**) and the third wall (**106**) including a plurality of first holding members (**112**), the first wall having formed thereon at least one locking tab (**152***a*,*b*) for frictionally locking a portion of a cover (**30**) in place after the cover has been located between the first and third walls;

the cover (**30**) which encloses the housing, includes a hinge portion (**40**) received in the space (**150**), engageable with the first holding members (**112**), the hinge portion being deformable to receive the at least one locking tab, the cover further including a seam portion (**42**) including first means (**76**, **82***a–c*), engageable with the second wall, and a tear seam (**80**), for tearing apart in response to deployment forces generated by an inflating air bag.

5,794,968

AIR BAG DEVICE

Tadashi Yamamoto, and Norinari Nagata, both of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Division of Ser. No. 602,447, Feb. 16, 1996, Pat. No. 5,630,612. This application Mar. 5, 1997, Ser. No. 811,880
Claims priority, application Japan, Feb. 22, 1995, 7-33796
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **5 Claims**

1. An air bag module comprising:

a folded air bag;

an inflator for inflating said air bag;

an air bag holder for holding said air bag and inflator, said air bag holder having a securing piece at an upper end of a vertical wall thereof; and

a cover for covering said air bag;

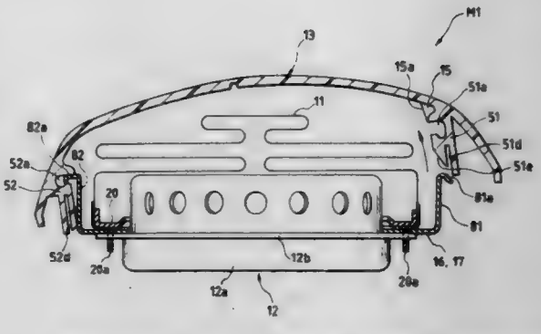
a bracket for reinforcing a connection of said air bag, inflator, air bag holder and cover;

wherein said cover comprises:

a top portion having a pair of divisible doors;

a pair of first side walls extending downwardly from said top portion and disposed parallel with a disposition direction of said pair of doors, said first side wall having a first groove for receiving a periphery of said bag holder and a second groove for receiving an end of said bracket; and

a pair of second side walls extending downwardly from said top portion and disposed perpendicular with a disposition direction of said pair of doors, said second side wall having an insertion hole for receiving a securing projection extending downwardly from the periphery of said bag holder.

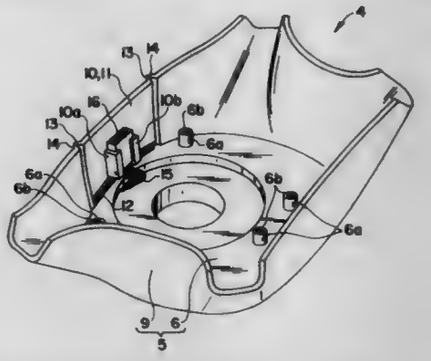


5,794,969

STEERING WHEEL WITH AIR BAG DEVICE

Katsunobu Sakane, Ichinomiya, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Aug. 9, 1996, Ser. No. 694,909
Claims priority, application Japan, Aug. 11, 1995, 7-205652
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—731 **7 Claims**



1. A steering wheel and air bag device comprising:

a steering wheel main body;

an inflator located on said steering wheel main body, said inflator having a first connector member;

a cover enclosing said inflator and including a side wall at least a portion of which is openable;

a second connector member fixed on said side wall openable portion, said second connector member being connected to said first connector member.

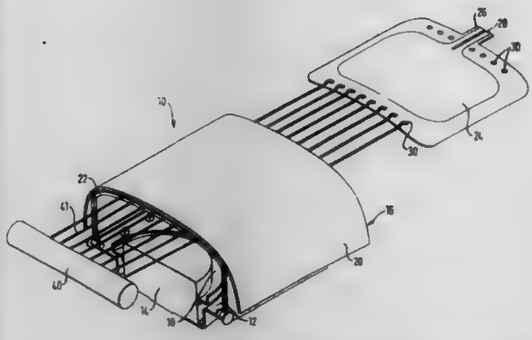
5,794,970

GAS BAG MODULE

Anton Fischer, Heuchlingen, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed May 13, 1997, Ser. No. 855,137
Claims priority, application Germany, May 15, 1996, 296 08 809 U
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—731 **7 Claims**

1. A gas bag module for a vehicle steering wheel, comprising a gas bag, a gas bag cover and a switching foil located in said gas bag cover, said switching foil being mounted in said gas bag cover



in such a way that it is detachable and replaceable without said gas bag cover having to be dismantled.

5,794,971

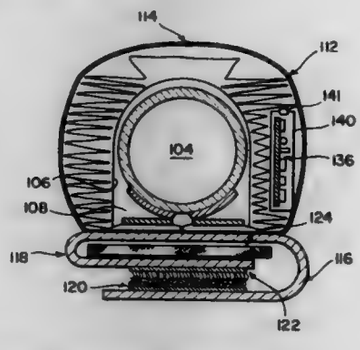
PORTABLE AIR BAG

L. E. Bailey Boydston, Pacifica, and George Wojdylak, Fresno, both of Calif., assignors to Double Eagle, Ltd., Inc., Fresno, Calif.

Continuation-in-part of Ser. No. 415,070, Mar. 31, 1995, which is a continuation of Ser. No. 941,165, Sep. 4, 1992, abandoned. This application Jun. 28, 1995, Ser. No. 495,929

Int. Cl.[6] B60R *21/18*

U.S. Cl. 280—733 **11 Claims**



1. A portable air bag device, comprising:

an enclosure;

an attachment associated with said enclosure for releasably connecting the air bag device to a vehicle restraint belt of a vehicle;

an air bag connected to said enclosure and stored within said enclosure prior to activation, said air bag including an envelope disposed within said air bag;

a pressurized gas container contained within said envelop disposed within said air bag;

a controllable release valve connected to said gas container;

a sensing device for sensing a deployment condition; and

a control device operatively connected to said sensing device, said control device controlling the operation of said controllable release valve for deploying said air bag.

5,794,972

ACTIVELY OVERRIDABLE PASSENGER CONSTRAINT SYSTEM

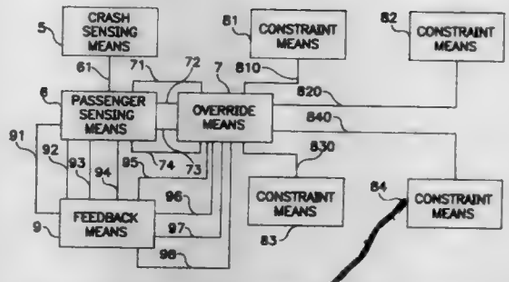
Lawrence F. Katzin, 324 Westridge Dr., Raleigh, N.C. 27609

Filed Aug. 8, 1996, Ser. No. 694,208

Int. Cl.[6] B60R *21/32*

U.S. Cl. 280—735 **16 Claims**

1. An actively overridable passenger constraint system for a vehicle comprising:



a crash sensing means for sensing when the vehicle is in a collision that exceeds a predetermined impact level, the crash sensing means being adapted to output an activation signal upon the occurrence of a collision exceeding said predetermined impact level;

at least one constraint means for constraining passengers when said activation signal is received, a single constraint means comprising an air bag mounted within the vehicle in a folded, deflated condition and an inflating means for rapidly inflating said air bag and thus cushioning and protecting any passengers located proximate to said air bag;

an override means, connected in parallel circuits between the crash sensing means and each constraint means, for selectively disabling selected ones of said constraint means, thus placing selected constraint means in a disabled status; and

a feedback means connected in circuit with the override means comprising a plurality of visual indicator means for reporting the operative status of each constraint means, said indicator means positioned in a spatial pattern that replicates the spatial positioning of the individual constraint means locations;

whereby a rapid, visual inspection of the indicator means results in an unambiguous, spatially related feedback of each constraint means status.

5,794,973

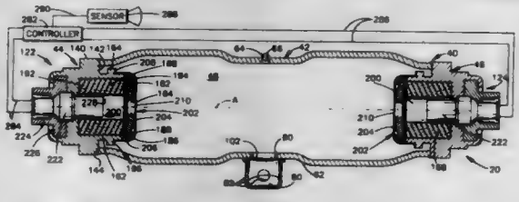
DUAL STAGE AIR BAG INFLATOR

John P. O'Loughlin, Mesa, and James R. Hocking, Chandler, both of Ariz., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Dec. 4, 1996, Ser. No. 760,392

Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—737 **26 Claims**



1. An apparatus for inflating an air bag, said apparatus comprising:

a cylindrical container defining a chamber for storing inflation fluid at a first pressure, said container comprising a tubular housing having a longitudinal central axis and a pair of end walls fixed to axially opposite ends of said tubular housing, said tubular housing having an opening at a location intermediate said end walls;

a rupturable closure extending across the opening in said tubular housing, said closure rupturing in response to the pressure of the inflation fluid in the chamber increasing from the first pressure to a predetermined second pressure; and

a pair of inflation fluid heating assemblies, each of the inflation fluid heating assemblies located at a different one of said end walls of said container and at least partially located in the chamber, each of said inflation fluid heating assemblies comprising:

an actuatable igniter supported by one of said end walls; and

an ignitable material surrounding an end of said igniter;

said igniter in one inflation fluid heating assembly, when actuated, igniting said ignitable material in said one inflation fluid heating assembly to produce combustion products which are released into the chamber to heat the inflation fluid and increase the pressure of the inflation fluid in the chamber to the predetermined second pressure for rupturing said closure;

said igniter in the other inflation fluid heating assembly, upon actuation, igniting said ignitable material in said other inflation fluid heating assembly to produce combustion products which are released into the chamber to further heat and further increase the pressure of the inflation fluid in the chamber.

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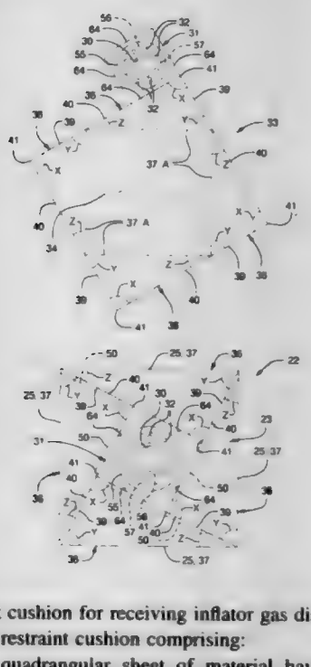
INFLATABLE RESTRAINT CUSHION

Robert Raymond Niederman, Dayton, and James Lloyd Webber, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 25, 1996, Ser. No. 755,192

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—743.1 **15 Claims**



1. A restraint cushion for receiving inflator gas discharged from an inflator, the restraint cushion comprising:

a generally quadrangular sheet of material having a central portion and four corner portions extending from the central portion, each corner portion having a fold line adjacent the central portion and each corner portion having two free edges extending from the fold line and intersecting each other to form a point;

a mounting portion extending from one of the corner portions, the mounting portion having a cushion opening therein for receiving inflator gas therethrough to inflate the cushion, the mounting portion having outer edges being spaced apart from the cushion opening; and

the corner portions being folded about the fold lines in overlying relationship to the central portion and in mating relationship to corresponding outer edges of the mounting portion, each of the corner portions having one of the free edges joined to one of the outer edges of the mounting portion and each of the free edges being spaced apart from the cushion opening.

5,794,975

MOTOR VEHICLE IMPACT PASSENGER PROTECTION ARRANGEMENT

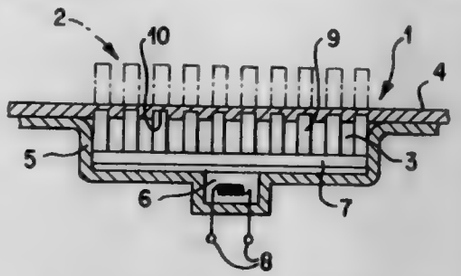
Matthias Nohr, Stuttgart, and Herbert Mehren, Goldtaeleweg, both of Germany, assignors to Daimler-Benz AG, Germany

Filed Jan. 27, 1997, Ser. No. 789,014

Claims priority, application Germany, Jan. 25, 1996, 196 02 600.8; Dec. 27, 1996, 196 54 447.5

Int. Cl.[6] B60R *21/04*

U.S. Cl. 280—753 **3 Claims**



1. Motor vehicle impact protection arrangement which is rendered operative in a defined protection area only in an event of a signalled impact danger of an impact, comprising

an energy-absorbing material which, when prior to the signalled impact danger is arranged in a closed space covered by the defined protection area,

at least one of openings and predetermined weak points provided in the defined protection area and configured to be broken open or deformed by pressure exercised by the energy-absorbing material, through or into which the energy-absorbing material emerges after the signalled impact danger and form an energy-absorbing elevation, and

a pressure generator configured to be actuatable by an impact signal and arranged relative to the energy-absorbing material so that, in an actuated state, the pressure generator exercises pressure on the energy-absorbing material to cause the energy-absorbing material to emerge to the energy-absorbing elevation wherein the predetermined weak points are configured as cups one of formed and molded on one side into a thin wall of a vehicle.

5,794,976

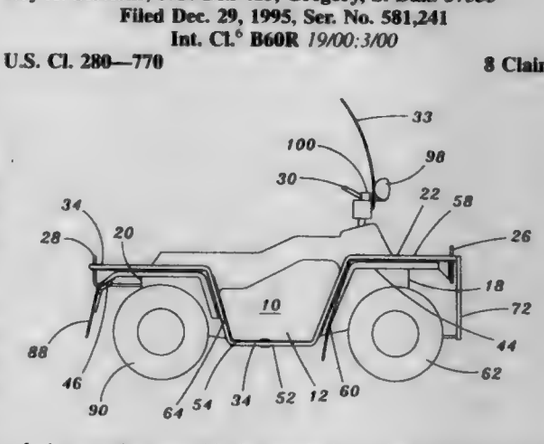
SAFETY SHIELD FOR ALL TERRAIN VEHICLES

Roy A. Stevicks, P.O. Box 413, Gregory, S. Dak. 57533

Filed Dec. 29, 1995, Ser. No. 581,241

Int. Cl.[6] B60R *19/00;3/00*

U.S. Cl. 280—770 **8 Claims**



1. A protective assembly for attached to a four wheel all terrain vehicle having a frame, chassis, sides, a front end having headlights, a back end, a hood and a rear deck, both of which contain horizontally disposed carriers, steering means and a saddle: which protective assembly provides a lowering of the center of gravity of at least of 0.5% to the all terrain vehicle and, comprises a front end

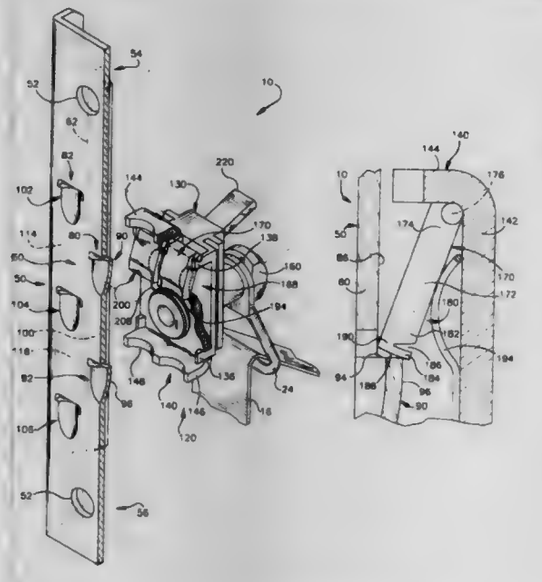
protector dimensioned to protect substantially all of the front end: side rails having front and back ends which are adapted to be mounted parallel to and spaced away from the sides of the all terrain vehicle which side rails have areas shaped to receive and have mounted thereon auxiliary front and rear fenders and a debris deflecting running board where the auxiliary front and rear fenders and the debris deflecting running board are fabricated from a semi-flexible resilient material and with the auxiliary front and rear fenders and the debris deflecting running board being continuously connected.

5,794,977

D-RING HEIGHT ADJUSTER

Matthew C. Frank, Troy, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jan. 15, 1997, Ser. No. 783,193
Int. Cl.[6] B60R *22/20*
U.S. Cl. 280—801.2 **19 Claims**



1. A vehicle seat belt guide assembly comprising:

a base mountable on a portion of a vehicle, said base including a wall and including first and second columns of projections which project in a first direction from said wall on opposite sides of an axis of said assembly, each one of said first projections being spaced apart axially from each one of said second projections;

a carriage supported on said base for axial sliding movement relative to said base;

a seat belt guide on said carriage;

a first latch on said carriage, said first latch being movable between a disengaged condition movable axially past said first projections and an engaged condition engageable with one of said first projections to block axial movement of said first latch and said carriage relative to said base;

a second latch on said carriage, said second latch being movable between a disengaged condition movable axially past said second projections and an engaged condition engageable with one of said second projections to block axial movement of said second latch and said carriage relative to said base;

biasing means for biasing said first and second latches into the engaged condition; and

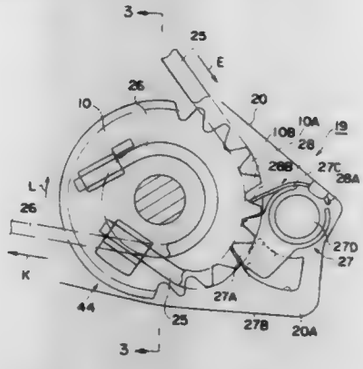
release means for moving said first and second latches to the disengaged condition.

5,794,978

RETURN PREVENTING DEVICE AND BUCKLE PULL-OUT PREVENTING DEVICE

Seiji Nishide, Aichi-ken, Japan, assignor to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi-ken, Japan

Filed Dec. 29, 1995, Ser. No. 580,851
Claims priority, application Japan, Jan. 27, 1995, 7-011982
Int. Cl.[6] B60R *22/46*; **F16D** *41/12*
U.S. Cl. 280—806 **9 Claims**



1. A return preventing device preventing return, in an opposite direction, of an object driven when a vehicle suddenly decelerates, comprising:

a rotating body rotatable in a first direction and in a second direction opposite to said first direction, said rotating body connected to a drive device for generating a drive force that rotates said body, such that when said rotating body is rotated in said first direction, said rotating body transmits the drive force to the object so as to drive the object;

a gear connected to said rotating body and rotating integrally with said rotating body;

a rotation-preventing pawl mounted by a pivotal mounting so as to be meshable with said gear by pivoting in a third direction for preventing rotation of said rotating body in said second direction when meshed with said gear; and

synchronizing means for pivoting said rotation-preventing pawl in said third direction so as to make said rotation-preventing pawl mesh with said gear substantially synchronously with rotation of said rotating body in said second direction, including

an elastic member formed from a plate spring having an end which engages teeth surfaces of said gear and pivots said rotation-preventing pawl in said third direction to make said rotation-preventing pawl mesh with teeth of said gear due to rotation of said rotating body in said second direction, wherein said plate spring circumscribes said pivotal mounting of said pawl.

5,794,979

METHOD AND STRUCTURE FOR MOUNTING A FUEL TANK

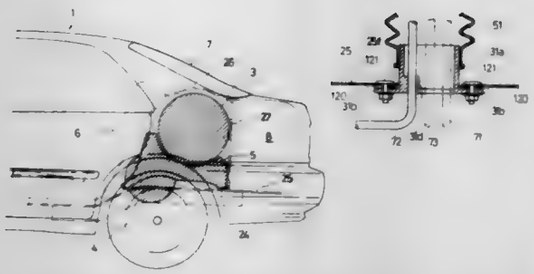
Tatsuo Kasuga, and Eisei Higuchi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,971
Claims priority, application Japan, Sep. 30, 1994, 6-259580; Sep. 30, 1994, 6-259581
Int. Cl.[6] B60P *3/22*
U.S. Cl. 280—834 **1 Claim**

1. A method for mounting a fuel tank storing a compressed fuel gas on an automobile, comprising:

a tank installing step wherein said fuel tank is placed on a tank supporting frame and tightened to said frame by a belt;

a pipe and seal installing step, wherein at least one pipe and at least one leak preventing seal are mounted to the tank;



a frame fixing step wherein said tank supporting frame installed with said fuel tank is mounted and fixed on a car body; and

a pipe connecting step wherein said at least one pipe is connected to pipes mounted on a side portion of said automobile,

wherein said frame fixing step includes the step of inserting said tank supporting frame installed with said fuel tank through a car body opening and the step of fixing said tank supporting frame on a rear floor of the car body, wherein said at least one pipe passes through said rear floor of the car body.

5,794,980

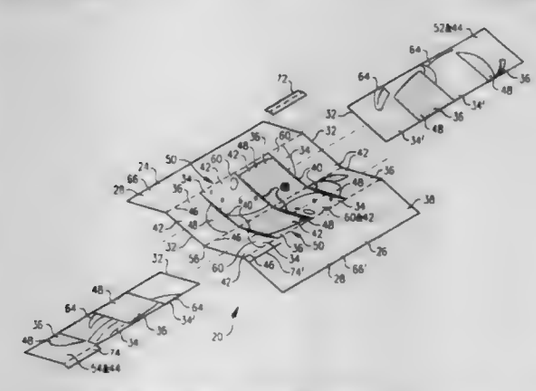
FOLDING APPARATUS

Karen Robbins Bigler, P.O. Box 64334, Tacoma, Wash. 98464

Filed Mar. 18, 1996, Ser. No. 615,992

Int. Cl.[6] B42D *1/00*

U.S. Cl. 281—2 **21 Claims**



1. An apparatus comprising the combination of:

(a) at least one generally planar primary sheet having an upper side and a reverse side, said primary sheet having a plurality of cuts, slits, or slots therein to segment at least a portion of said primary sheet into a plurality of panels, said panels defining a warp;

(b) at least two generally planar strips of sheet material that define a weft, each strip having a corresponding upper side and a reverse side, said strips being woven with said plurality of panels through said cuts, slits, or slots, woven combination of said primary sheet and said strips defining a woven mat, said mat having an upper side and a reverse side, said plurality of panels having creases, folds, or pleats therein positioned between adjacent strips, said upper side of said mat forming a first upper surface, said reverse side of said mat forming a first reverse surface;

(c) first indicia printed or appearing upon said upper side of said primary sheet or upon said upper side of said strips to form a message or object upon said first upper surface of said mat, said mat capable of forming a closed mountain fold on said upper side of said mat between adjacent strips, said adjacent strips capable of being separated at or near an apex of said mountain fold on said upper side of said mat to reveal a hidden upper side of said mat;

(d) second indicia printed or appearing upon said hidden upper side of said mat, said second indicia being generally hidden from view when said mat does not form said closed mountain fold on said upper side of said mat or when said adjacent strips are not separated to reveal said hidden upper side of said mat;

(e) third indicia printed or appearing upon said reverse side of said primary sheet or upon said reverse side of said strips to form a message or object upon said reverse surface of said mat, said mat capable of forming a closed mountain fold on said reverse side of said mat between adjacent strips, said adjacent strips capable of being separated at or near an apex of said mountain fold on said reverse side of said mat to reveal a hidden reverse side of said mat; and

(f) fourth indicia printed or appearing upon said hidden reverse side of said mat, said fourth indicia being generally hidden from view when said mat does not form said closed mountain fold on said reverse side of said mat or when said adjacent strips are not separated to reveal said hidden reverse side of said mat.

5,794,981

PACKAGING SYSTEM FOR PROTECTION AGAINST THEFT BY OVERLABELING

Frank E. Flynn, Scranton, Pa., assignor to LPS Industries Inc., Moonachie, N.J.

Filed Feb. 19, 1997, Ser. No. 802,056

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—109 **10 Claims**

1. A labeled package comprising:

a package,

a label adhered to said package; and

covering said label, an adhesive transparent film comprising a film of transparent material having two major surfaces, a coating of adhesive material on one major surface for adhering to said label and a coating of antiadhesive material on the other major surface for resisting theft by overlabeling.

5,794,982

MECHANICAL PIPE JOINT WITH LINERS

Herbert J. Green, P.O. Box 6639, Kingwood, Tex. 77325; Major G. Butler, Rte. 1, Box 356, Huntsville, Tex. 77340; Shafagat Fahrazovich Tahautdinov, Beloglazov Street, 11-a, 423400 Almetyevsk, Tatarstan, Russian Federation; Ampir Shaibakovich Syrtlanov, Sultanov Street, 24-26, 450000 Ufa, Bashkortostan, Russian Federation; Magsum Mudarisovich Zagirov, Golog Street, 66-56, 423200 Bugulma, Tatarsan, Russian Federation; Ivan Fedorovich Kalachev, Alisha Street, 14-69, 423200 Bugulma, Tatarstan, Russian Federation, and Alexander Leongardovich Voider, Tukhachevsky Street, 10-125, 423200 Bugulma, Tatarstan, Russian Federation

Filed Nov. 6, 1995, Ser. No. 554,197

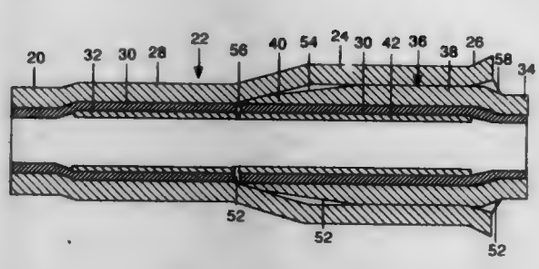
Int. Cl.[6] F16L *9/14*

U.S. Cl. 285—55 **6 Claims**

1. A pipe with a pipe end prepared for assembly as a portion of a mechanical pipe joint, comprising:

a. a socket on the end of said pipe, preformed by a hydraulic means,

b. said socket including a socket flare section having an outwardly extending taper with an inside diameter greater than an outside diameter of a pin calibrated section of a pin on a second pipe, prepared for insertion into said socket.



c. said socket including a socket bell section having an inside diameter less than said outside diameter of said pin calibrated section of said pin on said second pipe, to form an interference fit with said pin calibrated section of said pin on said second pipe when said pin is inserted into said socket,

d. said socket including a socket calibrated section with an inside diameter greater than an inside diameter of said pipe and equal to an inside diameter of said pin calibrated section of said pin on said second pipe,

e. a liner preformed by a extrusion means and pulled through said pipe utilizing a winching means with a end point inside said pipe on outside edge of said socket calibrated section,

f. a clamp equal in length to said socket calibrated section of said pipe, elongated against an inside wall of said liner by a hydraulically driven expansion means, securing said liner to said socket calibrated section of said pipe and positioned inside said pipe with a start point and an end point exactly matching a start point and an end point of said socket calibrated section, and

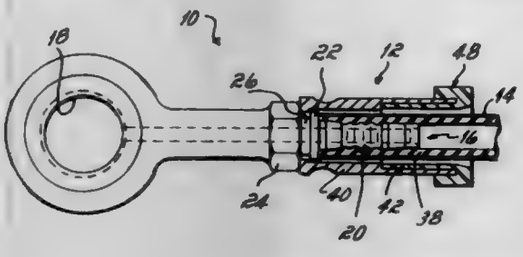
g. an inside wall of said clamp positioned to create a continuous and substantially flush surface with said inside wall of said liner as it extends along inside wall of said pipe outside of the area occupied by said socket.

5,794,983

CLAMPING SLEEVE FOR PRESSURE HOSES

Michael Peter Melvin, Schramberg, Germany, assignor to Lucas Industries public limited company, Great Britain

Filed Feb. 11, 1997, Ser. No. 802,339
Int. Cl.[6] F16L *9/14*
U.S. Cl. 285—55 **15 Claims**



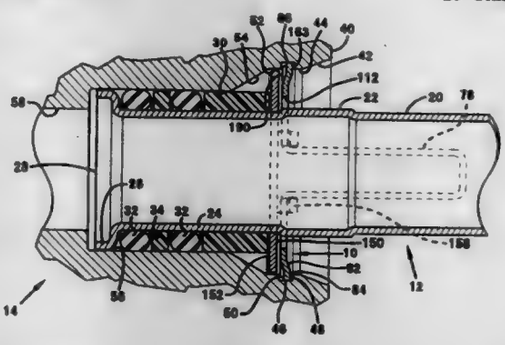
1. A clamping sleeve (12) for joining a pressure hose (14) having a braided metal sheathing with a fitting (10) having a connecting stud (20) adapted to receive said pressure hose (14) in a sliding-on fashion, the clamping sleeve (12) comprising a tubular metal base member (40) having an end facing towards said fitting (10) and having an opposite inlet end, the length of the clamping sleeve (12) being sufficient to fully surround the connecting stud (20), characterised in that the base member (40) is provided, at least in the region of the inlet end, with an essentially tubular plastic insert (42) extending at least to the inlet end of the base member (40), wherein the inner diameter of an axially inner end portion of the plastic insert (42) corresponds at least essentially to the inner diameter of a portion of the base (40) which extends axially adjacent to the plastic insert (42), and wherein the inner diameter of an axially outer end portion of the plastic insert (42) constantly increases up to the axially outer end.

5,794,984

QUICK CONNECTOR

Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Bloomfield Hills, Mich.

PCT No. PCT/US93/11281, § 371 Date May 14, 1996, § 102(e) Date May 14, 1996, PCT Pub. No. WO95/14187, PCT Pub. Date May 26, 1995
PCT Filed Nov. 16, 1993, Ser. No. 648,103
Int. Cl.[6] F16L *55/00*
U.S. Cl. 285—91 **25 Claims**



1. A quick connector used to couple a male conduit to a female receptacle, said female receptacle having a bore centrally extending therethrough defined by an inside surface therein, said quick connector comprising:

a body segment defining an aperture with an inner edge, said inner edge adapted to surround a predetermined portion of said male conduit;

a radial member including at least one gap and defining an aperture with an interior edge, said body segment coupled with said radial member;

interface portions for engaging said female receptacle, said interface portions extending from said radial member;

at least one leg member extending from said radial member clear of said aperture within said body segment, said at least one leg member extending from said radial member such that said leg member is orientated substantially parallel with a longitudinal axis of said male conduit; and

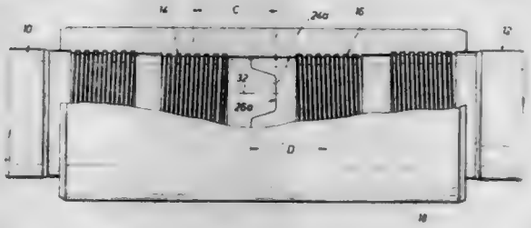
said leg member accessible from outside the female bore, said interface portions being insertable into said bore of said female receptacle when said radial member being at least partially compressed toward the male conduit, said radial member upon expansion urging said interface portions radially outward to be engagably coupled within said female receptacle, said interface portions being disengagable from said female receptacle by at least partially compressing said leg member whereby said quick connector can be longitudinally removed from said female receptacle.

5,794,985

THREADED PIPE CONNECTION

David L. Mallis, The Woodlands, Tex., assignor to Hydril Company, Houston, Tex.

Continuation of Ser. No. 409,330, Mar. 23, 1995, abandoned. This application Dec. 2, 1996, Ser. No. 759,288
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—93 **9 Claims**



7. In a threaded pipe connection for connecting two joints of pipe having externally threaded pin ends, one pin having external

right-hand threads and the other pins having external left-hand threads, an internally threaded coupling having right and left-hand threads for mating with the threads on the pins, an internal pressure seal ring positioned to provide a seal between the ends of the pins and a plurality of mating lugs and grooves on the ends of the pins to hold the pins from relative rotation when the connection is made up, the improvement comprising an external metal-to-metal seal between each pin and the coupling adjacent each end of the coupling to isolate the threads of the connection from the ambient environment thus sealing off the pipe annulus from external pressure due to hydrostatic head, and means for allowing the coupling to float to the center of the connection to energize the external seals when the pins and lugs are properly aligned and the threads are in phase.

5,794,986

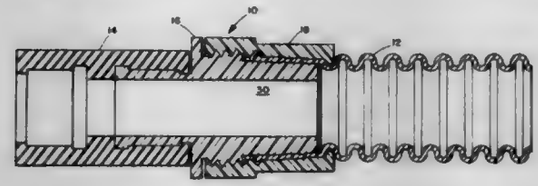
SEMI-DISPOSABLE VENTILATOR BREATHING CIRCUIT TUBING WITH RELEASABLE COUPLING

Guy Gansel, San Clemente, and Susumu Takabayashi, Oceanside, both of Calif., assignors to Infrasonics, Inc., San Diego, Calif.

Continuation of Ser. No. 306,373, Sep. 15, 1994, abandoned. This application Aug. 5, 1996, Ser. No. 692,378

Int. Cl.[6] F16L *55/00*

U.S. Cl. 285—173 **6 Claims**



1. A conduit for a ventilator breathing circuit, comprising:

tubing made of a thermoplastic material having a tensile modulus greater than 400 psi and that does not deform when subjected to a temperature of 270° F. for 20 minutes;

a compression coupler including at least two concentrically disposed tubular members selectably movable in an axial direction relative to one another, said tubular members having respective surfaces radially adjacent to one another and movable in a radial direction with respect to one another in response to relative axial movement of said tubular members for compressively engaging a portion of said tubing between said respective surfaces, one of said tubular members having a fitting; and

an elastomeric endpiece stretchably connected over said fitting and frictionally gripping said fitting, said elastomeric endpiece having a tensile modulus less than 200 psi.

5,794,987

FLEXIBLE JOINT FOR A CULVERT

Yoshinori Asanuma, Tokyo, Japan, assignor to Seibu Polymer Kasei Kabushiki Kaisha, Japan

Division of Ser. No. 563,948, Nov. 29, 1995, Pat. No. 5,704,657. This application May 14, 1997, Ser. No. 855,929

Claims priority, application Japan, Dec. 12, 1994, 6-332048

Int. Cl.[6] F16L *51/02*; **F21D** *11/15*

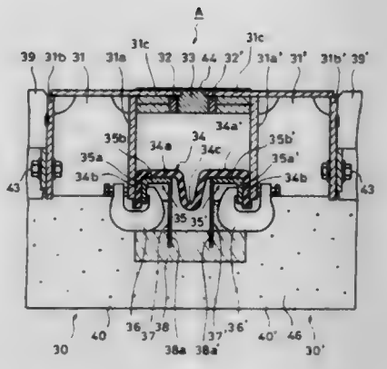
U.S. Cl. 285—224 **3 Claims**

1. A flexible joint for a culvert comprising:

a pair of annular connecting members;

a flexible sealing member of a short cylindrical configuration made of rubber or a synthetic resin with end portions thereof being fixed to said connecting members;

bearing means provided radially inwardly of said flexible sealing member with end portions thereof being fixed to said connecting members for supporting said flexible sealing member to prevent inward deformation of said flexible sealing member,



said bearing means consisting of a pair of support members of a short cylindrical configuration each having an annular connecting section, a cylindrical outer peripheral support section extending normally from the outer end portion of the connecting section for preventing inward deformation of the flexible sealing member, and a side wall section extending inwardly from the end portion of the outer peripheral support section opposite to the connecting section side,

the end portions of the flexible sealing member being clamped between the connecting section of the support members and the connecting members by means of C-clamps.

5,794,988

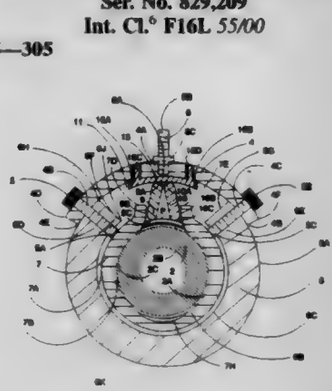
GRIP COUPLING

Ajit Singh Gill, 4169 Bennion Rd., Salt Lake City, Utah 84119

Continuation-in-part of Ser. No. 784,572, Jan. 21, 1997, abandoned, which is a continuation-in-part of Ser. No. 766,347, Dec. 16, 1996, abandoned. This application Mar. 31, 1997, Ser. No. 829,209

Int. Cl.[6] F16L *55/00*

U.S. Cl. 285—305 **15 Claims**



1. A coupling for joining to an end portion of a pipe wherein the end portion of the pipe has an outside diameter and a circumferential groove distant away from the end of pipe, comprising;

a coupling body to closely receive an end portion of a pipe therein and to extend over the end portion of the pipe a distance beyond the outer edge of the groove constructed farthest away from the end of the pipe;

a resilient open-ended ring having a natural inside diameter less than the outside diameter of the end of the pipe;

means movably mounting the resilient open-ended ring in the coupling body for radial movement away from the pipe received in the coupling body and opposite radial movement toward the pipe received in the coupling body, whereby when the resilient open-ended ring moves toward the pipe to its natural diameter it engages the groove to secure the coupling body to the pipe and when the resilient open-ended ring moves away from the pipe to assume a larger diameter than its natural diameter it disengages the groove so the pipe can be removed from the coupling body;

means responsive to applied radial force for moving the resilient open-ended ring with respect to the coupling body to increase its diameter from its natural diameter; and

means operable by a user to apply radial force to the means responsive to applied radial force for moving the resilient open-ended ring.

5,794,989

CONSTRUCTION FOR COUPLING TWO TUBES

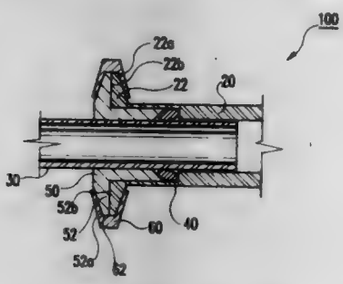
Kyu-Bok Ryu, and Bong-Hee Park, both of Yong In, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 3, 1997, Ser. No. 826,595

Claims priority, application Rep. of Korea, Apr. 4, 1996, 1996-10216

Int. Cl.[6] **F16L** *17/02*

U.S. Cl. 285—345 **1 Claim**



1. A construction for coupling two tubes, the two tubes including a telescoped tube and an enclosing tube, the construction comprising;

a first annular flange protruding radially outward from the enclosing tube, the first annular flange having opposite tapered and flat surfaces;

the telescoped tube inserted in the enclosing tube so as to be in contact with an inside cylindrical inner surface of the enclosing tube;

a first seal member inserted between an outer surface of the telescoped tube and an outside cylindrical inner surface of the enclosing tube, the first seal member providing a first barrier to prevent fluid from leaking;

a second seal member inserted between and contacting both the outer surface of the telescoped tube and the outside cylindrical inner surface of the enclosing tube, the second seal member being inserted after the first seal member has been inserted and providing a second barrier to prevent fluid from leaking, and having a second annular flange protruding radially outward from an exposed end of the second seal member, the second annular flange having opposite tapered and flat surfaces; and

a coupler for coupling the first annular flange of the enclosing tube to the second annular flange of the second seal member by their respective flat surfaces, the coupler having a recess for accommodating the coupled first and second annular flanges, the recess having tapered inner surfaces that are in continuous contact with the respective tapered surfaces of the coupled first and the second annular flanges.

5,794,990

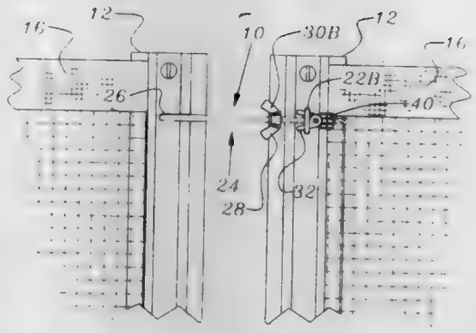
SAFETY LATCH FOR POOL FENCE

Donald L. Coppedge, Stuart, Fla., assignor to Protect-A-Child Pool Fence Systems, Pompano Beach, Fla.

Filed Jan. 13, 1997, Ser. No. 782,127

Int. Cl.[6] **E05C** *1/04*; **E04H** *17/14*

U.S. Cl. 292—153 **7 Claims**



1. A stretched-panel fence comprising a plurality of panels, each of the panels extending respectively between two poles of a plurality of poles, the fence comprising an end closure removably attaching a first of the poles associated with a first panel but nut with a second panel, to a second of the poles associated with the second panel, the closure comprising:

an aperture associated with the first pole;

an elongate threaded fastener comprising a rod having two ends, the first of the two ends attached to the second pole, the threaded fastener further comprising:

a first stop means adjacent the second of the two ends of the rod,

a second stop means adapted move along the rod; and

an expandable member adapted to threadably move along the rod between the first stop means and the second stop means;

wherein the expandable member has a collapsed state and an open state, the expandable member adapted to pass through the aperture when in the collapsed state, the expandable member not passing through the aperture when in the open state.

5,794,991

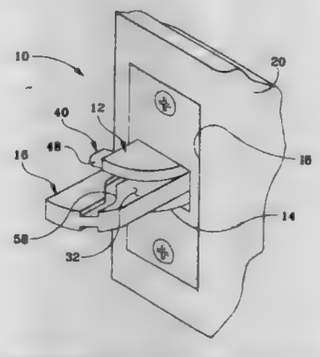
INTERLOCKING DEAD BOLT WITH PROJECTING PINS

Jon M. Smallegan; L. C. Derek Chamberlain, and Dario L. Pompeii, all of Colorado Springs, Colo., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Jun. 3, 1996, Ser. No. 656,751

Int. Cl.[6] **E05C** *1/12*

U.S. Cl. 292—169 **20 Claims**



1. In a lock assembly of a door preparation comprising at least one spring latch member and a spring for spring biasing the at least one spring latch member within a door jamb bore of a door jamb between an extended position in which the spring latch member is for being extended outwardly from the door preparation and into the door jamb bore, and a retracted position in which the spring latch member, when the door is being opened, engages a strike plate of the door jamb and is moved inwardly within the door preparation for allowing the door to be opened, and a dead bolt which operates independently from the spring latch member and is linearly movable between a retracted position in which it is within the door preparation and an extended position in which it is extended within the door jamb bore for locking the door, said spring latch member being located on one side of said dead bolt

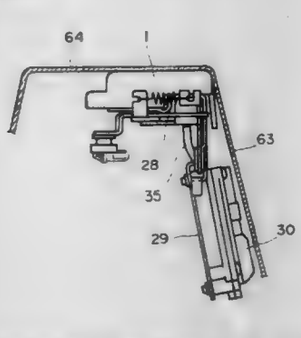
and having a planar surface facing a planar surface of the dead bolt, wherein the improvement comprises a projecting pin movable between a first position in which the projecting pin is disposed generally between the spring latch member and dead bolt and a second position in which the pin projects laterally outwardly from a peripheral edge of the spring latch member when the dead bolt is moved to its extended position to engage the strike plate, and means for moving the projecting pin between its first and second positions.

5,794,992

PROTECTED VEHICLE DOOR LATCH DEVICE

Fumihiro Yoneyama, Yamanashi-ken, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1996, Ser. No. 751,515
Claims priority, application Japan, Nov. 17, 1995, 7-324095
Int. Cl.[6] E05C *3/06*
U.S. Cl. 292—216 **8 Claims**



1. A door latch device for use with a door of a vehicle body comprising:

a latch body fixed at its front side to the door;

a latch rotatably attached to the latch body for engaging with a striker fixed to the vehicle body;

a ratchet rotatably attached to the latch body for maintaining the engagement between the latch and striker by engaging with the latch;

an opening mechanism for releasing the ratchet from the latch;

a locking mechanism displaceable between a locked condition for disabling an opening operation of the opening mechanism and an unlocked condition for enabling the opening operation of the opening mechanism;

said opening mechanism and said locking mechanism being disposed on a rear side of the latch body;

a stationary plate attached to the rear side of the latch body having a portion projecting rearwardly from an interior side of the rear side of the latch body;

an actuator for displacing the locking mechanism between the locked condition and the unlocked condition, said actuator having a substantially closed housing which is fixed to the portion of the stationary plate projecting rearwardly at a position spaced away from the latch body out of contact with the latch body, an output shaft projecting from the housing toward the portion of the stationary plate projecting rearwardly, and an output lever fixed to the output shaft and coupled to the locking mechanism; and

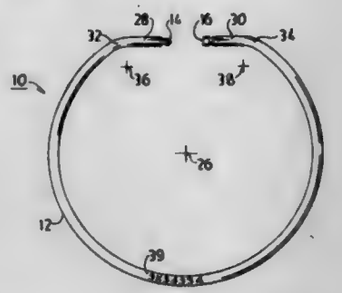
a gap formed between the housing and said portion of the projecting rewarding stationary plate projecting rearwardly, wherein said output lever is located in the gap.

5,794,993

TAMPER-EVIDENT RING

George H. Eckerdt, Rochester, N.Y., assignor to Key Systems, Inc., Rochester, N.Y.

Continuation of Ser. No. 387,279, Feb. 13, 1995, abandoned. This application Feb. 18, 1997, Ser. No. 801,553
Int. Cl.[6] B65D *27/30*
U.S. Cl. 292—307 R **10 Claims**



1. A tamper-evident key ring comprising:

a split ring permanently bent into an annular shape and having a constant cross-sectional diameter along a length between first and second ends and means for securing said first and second ends by crimping comprising;

a male fitting formed at said first end;

an axially symmetric female fitting formed at said second end;

said split ring together with said male and female fittings forming a single undivided body fashioned from a single piece of material;

said male and female fittings being interconnectable for forming a joint having a cross-sectional diameter no larger than said constant cross-sectional diameter of the split ring;

said male fitting having an enlarged head portion joined to said first end through a narrowed neck portion;

said female fitting including a socket portion that is sized for encompassing said head and neck portions of the male fitting said male and female fittings being sized for freely sliding in an overlap relationship prior to being crimped;

said enlarged head portion being joined to said narrowed neck portion with a ledge that forms a right-angle interface between said head and neck portions;

said male and female fittings being engageable by a crimp formed in said female fitting engaging said ledge formed in the male fitting and together forming a permanent connection preventing said male and female fittings from being pulled apart along said length of the ring;

said engagement between said male and female fittings also preventing said male and female fittings from being pulled apart along said length of the ring without a detectable change to one of said fittings; and

said female fitting being encircled by a groove for guiding a crimping tool.

5,794,994

INSIDE DOOR HANDLE UNIT FOR AUTOMOTIVE VEHICLE

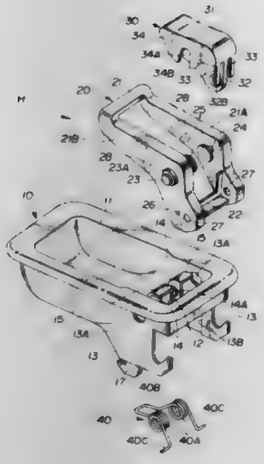
Masazumi Miyagawa, Yokohama; Satoru Nishizawa, Yokosuka, and Takayuki Sano, Fujisawa, all of Japan, assignors to OHI Seisakusho Co., Ltd., and Nissan Motor Co., Ltd., both of Yokohama, Japan

Filed Aug. 8, 1996, Ser. No. 693,527
Int. Cl.[6] E05B *3/00*
U.S. Cl. 292—336.3 **9 Claims**

2. An inside door handle unit for an automotive vehicle, comprising:

a body adapted to be attached to a door of the vehicle;

an inside door handle rotatably supported to said body and pivotal around an axis, said handle being adapted for connection to a door lock device;



a door lock knob rotatably supported to said body and pivotal around an axis, said door lock knob being adapted for connection to the door lock device;

a spring for biasing said handle in one rotational direction of said handle;

first pivot means including first and second counterpart means rotatably engageable with each other to provide a first pivotal connection, said first and second counterpart means forming part respectively of said body and handle and located at a first side of said inside door handle unit, and third and fourth counterpart means rotatably engageable with each other to provide a second pivotal connection, said third and fourth counterpart means forming part respectively of said body and handle and located at a second side of said inside door handle unit, the second side being opposite to the first side, said first to fourth counterpart means being located on the axis around which said handle is pivotal; and

second pivot means including fifth and sixth counterpart means rotatably engageable with each other to provide a third pivotal connection, said fifth and sixth counterpart means forming part respectively of said body and said lock knob and located at the first side of said inside door handle unit, and seventh and eight counterpart means rotatably engageable with each other to provide a fourth pivotal connection, said seventh and eighth counterpart means forming part respectively of said body and said lock knob and located at the second side of said inside door handle unit, said fifth to eighth counterpart means being located on the axis around which said lock knob is pivotal,

wherein said body includes a tub-shaped section formed with a through-hole located near an end of said body; said handle includes a generally U-shaped main body section extending through the through-hole of said body; said lock knob is located inside said main body section of said handle; each of said first to eighth counterpart means of said first and second pivot means is one of a projection and a hole to which said projection is rotatably engageable.

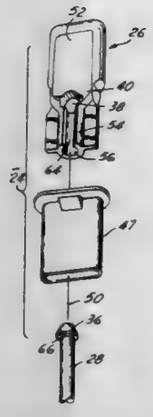
5,794,995

PIVOTABLE AND ROTATABLE DOOR LOCK BUTTON ASSEMBLY

Robin C. Creesy, Westland, and Conrad F. Hempel, Farmington Hills, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Jul. 26, 1995, Ser. No. 506,714
Int. Cl.[6] E05B *3/00*
U.S. Cl. 292—348 **11 Claims**

1. In a vehicle door having an interior section defined by a door outer panel and a trim panel, and having a door lock mechanism mounted within the interior section movable between a lock position preventing the door from opening and an unlock position allowing the door to open, a door lock button assembly comprising:



a control rod adapted for mechanical connection on a first end thereof to the door lock mechanism for effecting a change in the door lock mechanism between the lock position and the unlock position when the control rod is moved between a first position and a second position, respectively;

a button member adapted to extend outwardly from the interior section through an opening in the trim panel to allow an operator to grasp a surface thereof to move the control rod between the first and second positions, the control rod pendulumingly mounted on a second end thereof to the button member so as to permit a predetermined angle of swivel with respect to the button member; and

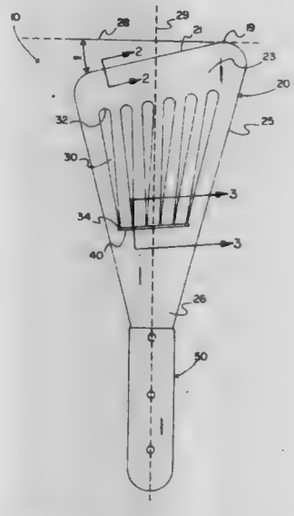
the button member having a sleeve extending therefrom with a frusto-conically shaped groove therethrough for receiving a portion of the second end of the control rod therein, the groove having a narrower end placed toward the button member so as to allow the control rod to swivel through the predetermined angle there.

5,794,996

SPATULA

Tota Mohabir, 283 Pharmacy Avenue, Scarborough, Ontario, Canada, M1L 3G1

Filed Jul. 31, 1997, Ser. No. 903,603
Int. Cl.[6] A47J *43/28*
U.S. Cl. 294—7 **8 Claims**



1. A spatula, comprising:

a handle member;

a substantially planar spatula head member having a longitudinal axis, a transverse axis, a front edge, a pair of substantially straight lateral sides, a rear end portion, an upper surface, and a lower surface, said handle member being coupled to said rear end portion, said lateral sides being flared from said rear end portion towards said front edge such that said front edge has a front edge length greater than a length of said rear end portion, said length of said rear end portion being substantially equal to a width of said handle, said front edge being orientated at an angle from said transverse axis;

a plurality of drainage slots being extended through said spatula head member, each said drainage slot having a front end and a rear end, each said drainage slot rear end being extended towards said spatula head rear end portion, each said drainage slot being tapered towards said drainage slot rear end; and

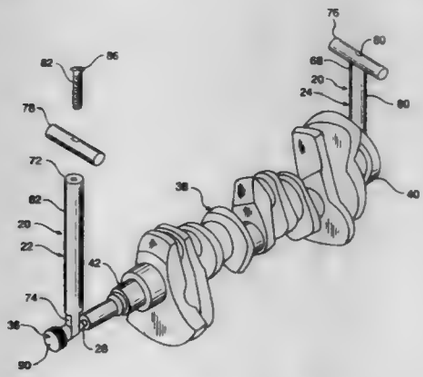
a substantially straight ridge being extended from said spatula head upper surface.

5,794,997

CRANKSHAFT MANIPULATION DEVICE

Fred L. Lewton, Jr., 245 Cheyenne Rd., Virginia Beach, Va. 23462

Filed Jul. 16, 1996, Ser. No. 680,965
Int. Cl.[6] B25B *27/14*; **B65G** *7/12*
U.S. Cl. 294—15 **20 Claims**



1. A crankshaft manipulation toolkit comprising:

a. a plurality of studs capable of being threadably engaged in a crankshaft;

b. a plurality of rods each having a certain length and a first end and a second end, the second end of each rod forming a hole through which a stud may be placed;

c. a plurality of knobs, each forming internal, threaded bores in a manner such that said knobs may be threadably attached to said studs and capable of retaining said rods between said knobs and said crankshaft; each of said knobs also forming threaded holes in a manner so as to receive set screws capable of retaining said studs within said knobs;

d. a plurality of set screws threadably attachable to said knobs capable of retaining said rods within said knobs; and

e. a plurality of handles, attached to said first ends of said rods.

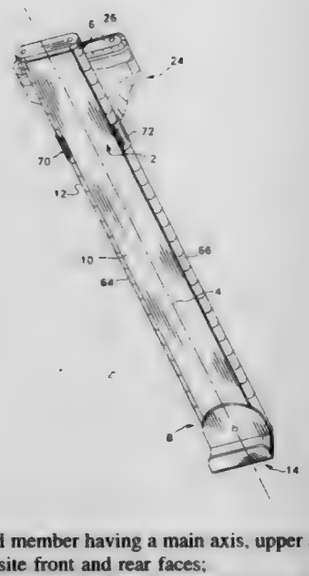
5,794,998

CARRYING AND HANDLING TOOL FOR CONSTRUCTION BOARDS

Clément Lapierre, 432, 2e Rue Saint-Hélène-de-Bagot, Québec, Canada, J0H 1M0

Filed Sep. 9, 1997, Ser. No. 926,061
Int. Cl.[6] B65G *7/12*; **B66F** *11/00*
U.S. Cl. 294—15 **20 Claims**

1. A carrying and handling tool for construction boards, comprising:



an elongated member having a main axis, upper and lower ends, and opposite front and rear faces;

a board support element rotatably attached to the lower end of the elongated member to rotate about a rotation axis projecting substantially perpendicularly from the front face of the elongated member, the board support element having a substantially flat support surface projecting perpendicularly with respect to the front face of the elongated member, to receive an edge of a construction board;

spring means for rotatably biasing the board support element about the rotation axis towards a central angular position where the support surface is perpendicular to the main axis of the elongated member; and

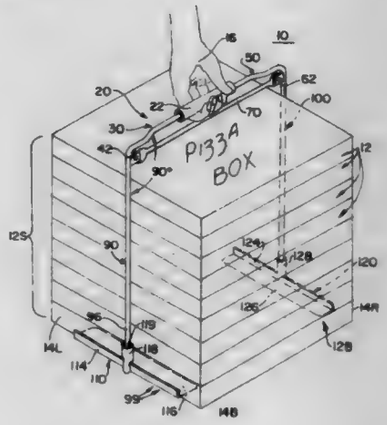
a handle attached to the elongated member at an upper location thereof with respect to the board support element, the handle having a handgrip portion extending offset from the rear face of the elongated member.

5,794,999

PIZZA BOX CARRIER

Luigi Corsaro, 5 Webster Pl., Edison, N.J. 08817

Filed Feb. 11, 1997, Ser. No. 799,706
Int. Cl.[6] B65G *7/12*
U.S. Cl. 294—16 **3 Claims**



1. A box carrier for carrying a stack of boxes which includes a plurality of formed and stacked boxes, said boxes having side walls and covers, comprising:

a) a handle assembly for carrying said stack of boxes including a handle member, a pair of pivotally mounted horizontal

members being pivotally connected to said handle member, a pair of pivot members and a cross bar;

b) each of said horizontal members being pivotally connected at one end to said handle member by attachment rings and at the other end connected to one of said pivot members; said pivot members being connected to said cross bar; said attachment rings being pivotally mounted on a cross member connected to said handle member;

c) a pair of vertical arm members connected at their upper ends to said pivot members of said handle assembly; said handle assembly being operable for moving said vertical arm members between a gripping position and a non-gripping position; and

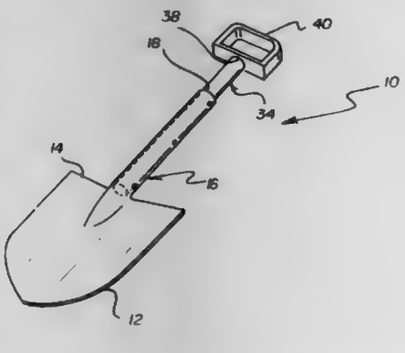
d) a pair of horizontal carry arm members; said vertical arm members at their lower ends being connected respectively to said pair of horizontal carry arm members for engaging and holding the bottommost box of the stack; so that when said handle member and said crossbar are moved together said vertical arm members move about said pivot members to a non-gripping position; and when said handle member is pulled upwardly, said vertical arm members move about said pivot members to a gripping position.

5,795,000

EXTENDABLE SHOVEL TOOL

Frederick Aldorasi, 22-25 77th St. Apt. 1-A, Jackson Hts., N.Y. 11370

Filed Mar. 24, 1997, Ser. No. 823,336
Int. Cl.[6] A01B *1/22*
U.S. Cl. 294—57 **1 Claim**



1. An extendable shovel tool for use in compact spaces comprising in combination:

a generally rectangular shovel blade member being slightly convex, the shovel blade member having a rear end with a cylindrical handle member projecting therefrom, the shovel and handle are of uniform construction, the handle member having a length of about 38½ inches, the cylindrical handle member having an opening leading into an interior portion thereof, the cylindrical handle member having at least three holes proportionately spaced along the length thereof, the three holes form a first hole, a second hole and a third hole, the first hole being spaced from the rear end, the third hole being spaced from the opening of the cylindrical handle member, the second hole being symmetrically spaced from the first and second hole;

an elongated tubular member with an interior end and an exterior end, the exterior end of the tubular member having a D-handle fixedly attached thereto, the tubular member being sized for positioning within the cylindrical handle member, the tubular member being capable of increasing and decreasing the operable length of the cylindrical handle member by sliding lengthwise within the cylindrical handle member; and

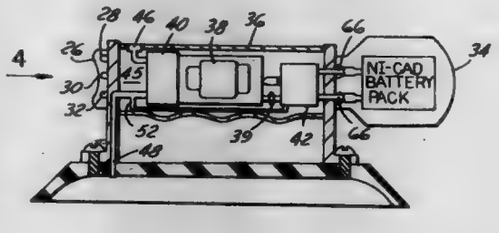
a button with a bias means being mounted within the tubular member for placing the button in protracted and retracted positions with respect to the tubular member, the button being spaced from the interior end of the tubular member, the button being retracted when the tubular member is positioned within the cylindrical handle member, the button being protracted when the button engages one of the holes of the cylindrical handle member when the tubular member is positioned therein, the button being capable of locking the tubular member within the cylindrical handle member when protracted through one of the holes.

5,795,001

VACUUM DEVICE FOR HANDLING ARTICLES

Stephen H. Burke, 5801 Turnberry Ct., Commerce Township, Oakland County, Mich. 48382

Filed Dec. 18, 1996, Ser. No. 769,048
Int. Cl.[6] B25J *15/06*; **B66C** *1/02*
U.S. Cl. 294—64.1 **14 Claims**



1. A hand held device for manipulating articles having a generally vacuum sustaining face, comprising:

a suction cup having pliable side walls,

a handle portion attached to said suction cup, said handle including an electric motor and a pump mechanically coupled to said motor, wherein said pump is connected to said suction cup by way of a channel, whereby said electric motor is adapted to activate said pump causing said pump to evacuate air from a space defined between the suction cup and a surface of said generally vacuum sustaining face of said article, wherein said motor is a bi-directional motor and includes a motor shaft which rotates about an axis, wherein said shaft is mechanically coupled to said pump and wherein said bi-directional motor includes a switch adapted to direct said bi-directional motor to rotate said motor shaft in a first direction about said axis and wherein said switch is adapted to direct said bi-directional motor to rotate said motor shaft in a second direction.

5,795,002

GRIPPING DEVICE

Robert A. Boron, Chicago, Ill., assignor to Inventionworks, Inc., Chicago, Ill.

Filed Sep. 10, 1996, Ser. No. 711,247
Int. Cl.[6] B25B *9/02*
U.S. Cl. 294—99.2 **15 Claims**

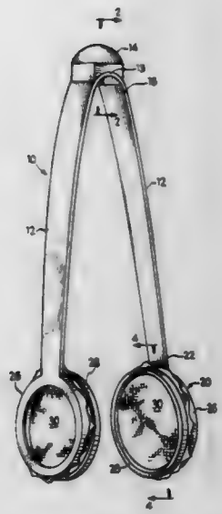
1. An article-holding device for releasably grasping and retaining a substantially solid and/or irregularly-shaped object, said article-holding device comprising:

at least one handle member having a proximal end and a distal end;

gripping means operably associated with said distal end of said at least one handle member, said gripping means including at least one elastomeric region for grasping and retaining said substantially solid and/or irregularly-shaped object;

said elastomeric region including a frame means having a frame portion, a top portion, and a substantially open portion;

said elastomeric region further including a substantially taut sheet member extending substantially across at least a portion of said substantially open portion substantially proximate said top portion of frame means; and



said sheet member being of material sufficiently resilient to substantially and elastically confrom to the shape of the object to be grasped and retained by said device.

5,795,003

APPARATUS FOR GRIPPING AND WEIGHT-DIFFERENT CLAMPING OF WORKPIECES, BAR GUIDES AND THE LIKE TO BE HELD OR MOVED RELATIVE TO A LOCATION

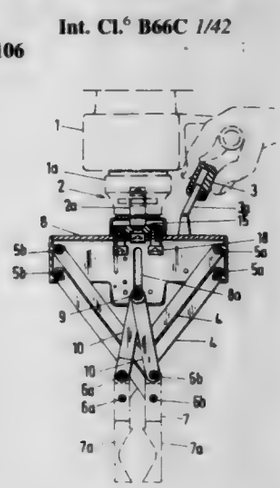
Klaus Klemens Nerger, Neukirchen-Vluyn, and Josef Saeftel, Castrop-Rauxel, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Jun. 26, 1996, Ser. No. 672,079

Claims priority, application Germany, Jun. 28, 1995, 195 25 018.4

Int. Cl.[6] B66C *1/42*

U.S. Cl. 294—106 **29 Claims**



1. An apparatus for gripping and weight-dependent clamping of workpieces, comprising:

a carrying frame having a guide slot; upper pairs of hinge-bolts mounted on the carrying frame;

pairs of parallel rods having an upper end connected to the upper pairs of hinge-bolts;

connection pieces;

pairs of lower hinge-bolts that connect a lower end of the parallel rods to the connection pieces;

gripping elements connected to the connection pieces, the gripping elements being configured so that a distance relative to one another in an end position is dependent upon an effective length and position of the guide slot;

a pair of struts, each strut being linked at a lower end to a lower hinge-bolt; and

a control bolt centrally adjustable between the rods in the guide slot in the carrying frame, the struts being mounted in an articulated manner on the control bolt.

5,795,004

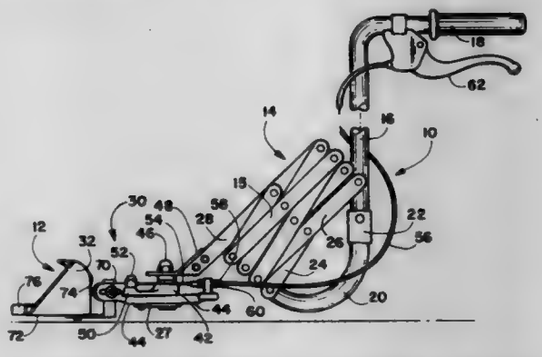
HAND HELD DEVICE FOR ELEVATING OBJECTS

John Zimmerman, 7576 Normal Ave., Apt. C, La Mesa, Calif. 91941

Filed Aug. 8, 1997, Ser. No. 908,917

Int. Cl.[6] B25J *1/06*

U.S. Cl. 294—119 **13 Claims**



1. A scooping and lifting apparatus for scooping an object from a floor-like surface and lifting the object to within reach of a user's hands, which comprises:

a scooping assembly having a scooping means movable between an open scooping position and a closed holding position for scooping and holding an object;

an elongated member having a proximal end to be held by a user's hand;

lifting means secured between the distal end of said elongated member and said scooping means for lifting said scooping means to a position adjacent to a user's hands in response to said distal end being pressed against a surface;

means for actuating said scooping means; and

means for actuating said lifting means.

5,795,005

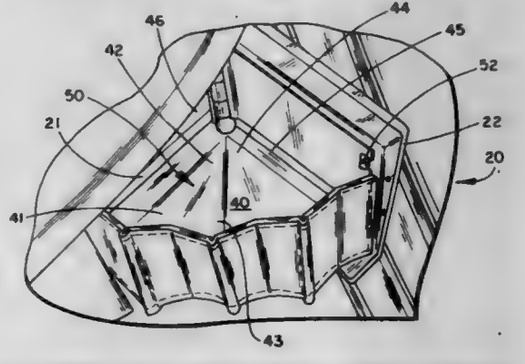
FOLDING STORAGE COMPARTMENT

Nicolas A. Garfias, Holland, Mich., and Stephan D. Faulkes, Greenlands, England, assignors to Prince Corporation, Holland, Mich.

Filed Nov. 12, 1996, Ser. No. 747,451

Int. Cl.[6] B60R *7/04*

U.S. Cl. 296—37.5 **20 Claims**



5. A foldable storage compartment for a vehicle comprising:

a cover for pivotally mounting to an opening in a vehicle panel for movement in a generally vertical plane;

a floor having multiple hinged sections coupled to said cover; and

a flexible sidewall coupled to an edge of said cover generally orthogonal to said floor for movement to a collapsed position when said cover is closed and an extended position when said cover is opened to define a storage area.

5,795,006

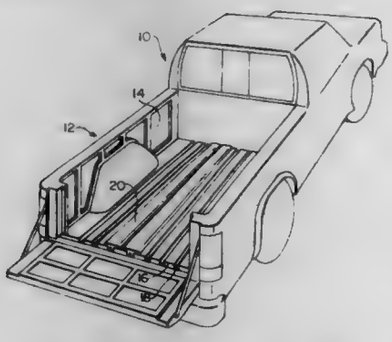
ANTI-SKID VEHICLE CARGO BED INSERT

John D. Beckstrom, P.O. Box 427, Ashville, N.Y. 14710

Filed Jul. 22, 1996, Ser. No. 683,968

Int. Cl.[6] B60R *13/01*

U.S. Cl. 296—39.2 **17 Claims**



1. An anti-skid vehicle cargo bed insert for use in the cargo bed of a vehicle, the cargo bed having alternating ridges and valleys, said anti-skid vehicle cargo bed insert comprising:

a generally planar base portion having a top surface bounded by first and second edges, and a bottom surface opposite said top surface, a width of said base portion being sufficient to cover one of said valleys and at least a portion of one of said ridges; and

at least one leg extending from said bottom surface of said base portion at a location remote from said first and second edges, said at least one leg formed so as to fit within a valley of the cargo bed.

5,795,007

AUTOMOBILE'S LUGGAGE FLOOR STRUCTURE

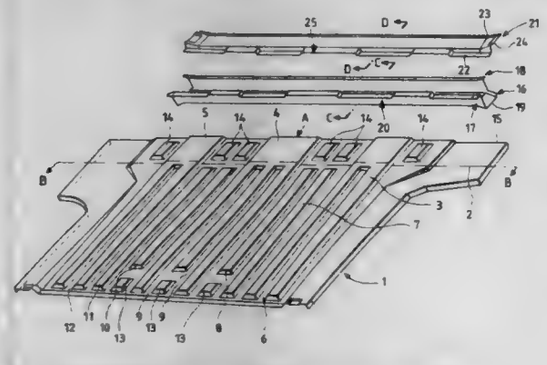
Tetsuya Yamamoto, Kanagawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Jul. 30, 1996, Ser. No. 689,078

Claims priority, application Japan, Jul. 31, 1995, 7-243984

Int. Cl.[6] B62D *33/00*

U.S. Cl. 296—39.2 **4 Claims**



1. An automobile's luggage floor structure comprising:

a luggage floor panel having a cutting portion located proximate to a rear end;

a plurality of first beads formed in said luggage floor panel and extending through said cutting portion and to said rear end of said luggage floor panel; and

a plurality of second beads formed in said luggage floor panel and having narrower widths than said plurality of first beads and extending substantially parallel to said first beads, said second beads not extending through said cutting portion of said luggage floor panel;

wherein a sectional configuration of said cutting portion is similar to an end profile of said rear end.

5,795,008

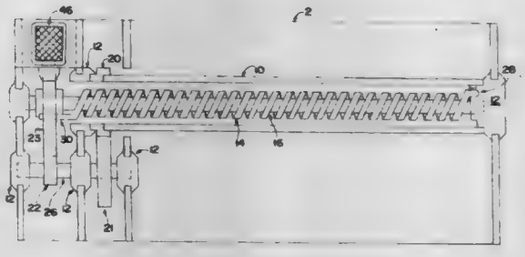
PROTECTIVE COVER FOR MOTORCYCLES AND THE LIKE

John M. Allen, 5661 E. Presidio Rd., Scottsdale, Ariz. 85254

Filed May 15, 1996, Ser. No. 647,750

Int. Cl.[6] B60J *11/00*

U.S. Cl. 296—98 **20 Claims**



17. A mechanism for storing a retractable protective cover inside a housing adapted for attachment to a motorcycle comprising:

(a) spring means for pulling a quantity of a flexible material forming a protective cover into the housing, the spring means being coupled to the housing;

(b) spool means, surrounding the spring means and rotationally mounted in the housing, for taking up the material of the protective cover; and

(c) gearing means, coupled to and outside the spool means and the spring means, for causing the spring means to make a fraction of a rotation in a compressional direction for each full rotation of the spool means when the material is withdrawn from the housing.

5,795,009

REMOVABLE SHADE FOR MOTORCYCLE

James W. Sack, 1734 Dahlia St., Denver, Colo. 80220, and James H. Shortén, 5809 E. Calle del Ciervo, Tucson, Ariz. 85750

Filed Feb. 27, 1997, Ser. No. 807,377

Int. Cl.[6] B62J *17/00*

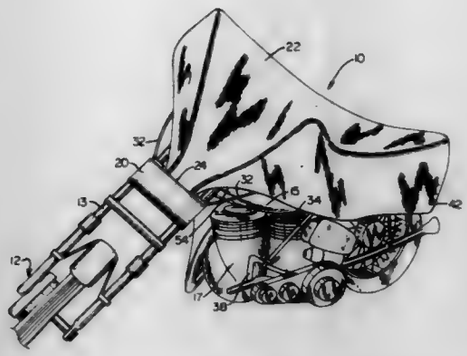
U.S. Cl. 296—78.1 **16 Claims**

1. A removable protective shade for shielding a motorcycle from the sun, comprising:

a flexible sheet for generally taut extension over the handlebars and seat portion of a motorcycle having front rounded corners including means for releasably receiving grip ends of said handlebars;

attachment means disposed around the periphery of said sheet being connectable to selected parts of said motorcycle thereby retaining said sheet over said handlebars and seat portion; and

a storage pouch affixed to a front end of said sheet for releasably storing said sheet therein and including means for detachable



connection of said pouch to a frontal portion of said motorcycle.

5,795,010

SUNVISOR PROVIDED WITH MEANS FOR AUTOMATICALLY RETURNING THE PANEL TO A STABLE POSITION

Benoît Dalbard, Mirecourt, France, assignor to Rockwell BCS-France, Mirecourt, France

Filed Aug. 9, 1996, Ser. No. 695,002
Claims priority, application France, Aug. 18, 1995, 95 09912
Int. Cl.[6] B60J *1/02*
U.S. Cl. 296—97.13 **1 Claim**



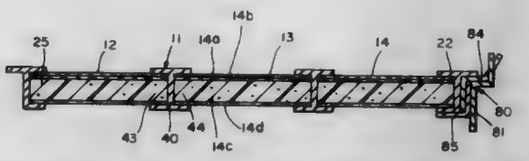
1. A sunvisor for the cabin of a motor vehicle, said sunvisor comprising a rigid panel hinged on a bent arm designed to be mounted to the roof of the vehicle, and means effective when the panel is positioned in a range of angles adjacent to two stable positions relative to said arm for allowing the panel to return automatically to said stable positions, one of which is a position in which the panel is pressed down against the roof of the vehicle, wherein the arm includes two converging flats, each capable of cooperating with a respective, associated spring element secured to the panel in order to constitute said return means, and wherein the range of angles on at least one side of each stable position is greater than 45°, as a result of which said two flats and associated spring elements define two stable positions on either side of an angular position of the panel in which the component of the impact force from the impact standards test sphere lies in the mid plane of the panel, said flats and said spring elements being disposed in such a way that if the panel is positioned between the two stable positions the panel will return automatically to the one or the other of the stable positions.

5,795,011

TONNEAU COVER

Rich Flentge, Rte. 7, Box 129, Benton, Ky. 42025

Filed Jun. 5, 1996, Ser. No. 658,551
Int. Cl.[6] B60P *7/02*
U.S. Cl. 296—100 **23 Claims**



1. A tonneau cover for an open truck bed, said bed having side walls and a closed end wall having a top surface, said tonneau cover comprising:

a plurality of panel members, each panel member having an upper thin steel sheet, an adjacent fiberglass layer, a core layer and a bottom fiber glass layer;

a plurality of I-shaped cross rails, each cross rail having two receiving channels for receiving a panel member;

an outer frame, said outer frame formed by a plurality of h-shaped rail members, each receiving channel for receiving a panel member, said outer frame further formed by a plurality of corner connectors, each corner connector having a receiving channel for receiving ends of said h-shaped rail members; and,

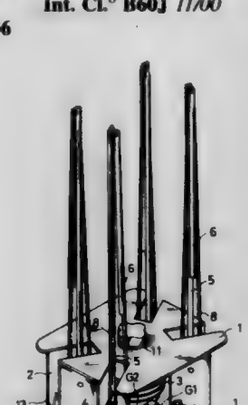
a hinge assembly, said hinge assembly having a base member connected to said top surface of said truck bed and a pivoting member connected to said h-shaped rail member, said base member having a slot and said pivoting member having a tongue for loosely fitting into said slot to pivotably support said tonneau cover and permit removal of said tonneau cover from said open bed.

5,795,012

COLLAPSIBLE CAR SHIELD STRUCTURE

Nick Liou, No. 8, Alley 15, Lane 8, Ta-Tung W. Rd., Taoyuan, and Michael Kann, No. 29-9, Sec. 5, Nan-King E. Rd., Taipei, both of Taiwan

Filed May 20, 1996, Ser. No. 650,651
Int. Cl.[6] B60J *11/00*
U.S. Cl. 296—136 **15 Claims**



1. A collapsible car shield structure, comprising:

a main body formed with a number of slots each having at least two upstanding side plates;

a primary worm having an axle and centrally pivotally mounted to the main body in an upright manner through said axle;

a plurality of large belt pulleys respectively firmly fixed on the upstanding side plates of the slots of the main body;

a plurality of primary legs, each having a proximal end and a distal end, said proximal end having a worm gear attached thereto and being pivoted between the two side plates of each of the slots with a short shaft, the worm gear being engaged with said primary worm to be driven thereby;

a plurality of secondary legs, each having a proximal end and a distal end, the proximal end having a small belt pulley attached thereto and being pivoted to the distal end of the respective primary leg with a short shaft; and

a plurality of driving belts respectively extending between one of the large belt pulleys and one of the small belt pulleys.

5,795,013

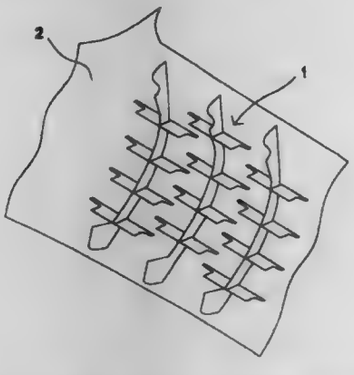
ENERGY ABSORBING TRIM, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

James Keller, Dublin; Anthony Spataro, Bellefontaine, and Allen White, Dublin, all of Ohio, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1996, Ser. No. 667,845

Int. Cl.[6] B60R *71/04*

U.S. Cl. 296—188 **21 Claims**



1. An energy absorbing trim for a vehicle, comprising:

a panel shaped to cover a rigid structural member of a body of the vehicle;

a plurality of separate fins provided on one face of said panel in an aligned arrangement; and

a stabilizer also provided on said face of said panel and interconnecting said fins to each other for lateral stability;

said trim including a single said stabilizer interconnecting said plurality of said fins in said aligned arrangement; and

said stabilizer extending through longitudinally intermediate portions of said separate fins such that opposite ends of each said fin project away from said stabilizer.

5,795,014

VEHICLE ROOF STRUCTURE

Steven Patrick Balgaard, Fenton, Mich., assignor to General Motors Corporation, Detriot, Mich.

Filed Dec. 9, 1996, Ser. No. 762,660

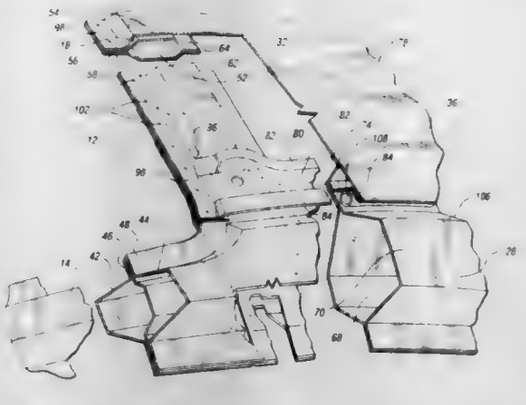
Int. Cl.[6] B62D *25/06*

U.S. Cl. 276—210 **4 Claims**

1. A roof structure for a vehicle body including a roof opening defined by a pair of spaced side rails each having a flange extending inwardly and vertically offset below the roof surface and front and rear headers each having a flange defining a window opening:

a roof outer panel overlying the roof opening and having outer side edges which overlie the inwardly extending flanges of the side rails and fore and aft edges which overlie the front and rear headers and the flanges thereof;

an inverted hat-shaped reinforcement rail underlying the outer side edges of the roof outer panel and including inwardly and outwardly directed flanges abutting against the roof outer



panel, said reinforcement rails also including a base wall abutted against the flanges of the side rails;

a hem flange attaching the outermost portion of the side edges of the roof outer panel to the reinforcement rail by hem flanging the roof outer panel over the outwardly directed flange of the reinforcement rails;

an adhesive acting between the base wall of the reinforcement rails and the inwardly directed flanges of the side rails;

and a plurality of spot welds acting as the fore and aft edges of the roof outer panel and the flanges of the front and rear headers.

5,795,015

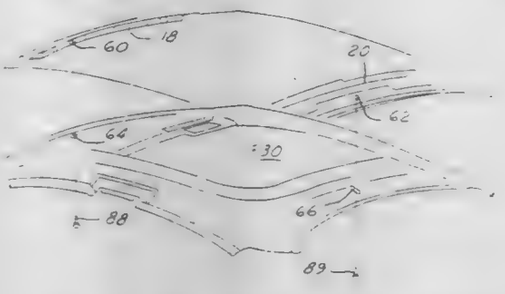
HEADLINER ASSEMBLY AND LOCATING METHOD

Edward J. Corpe, Grosse Ile; Debbie Duffey, Canton, and Jeffrey D. Elliott, Novi, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Continuation of Ser. No. 664,722, Jun. 17, 1996, abandoned. This application Oct. 27, 1997, Ser. No. 960,121

Int. Cl.[6] B60R *13/02*

U.S. Cl. 296—214 **11 Claims**



1. An automotive body and headliner assembly, comprising:

a headliner having first and second locating holes therethrough; and

a vehicle body including a roof assembly having a roof outer panel and front and rear roof headers spaced longitudinally along the outer panel, a pair of bodyside assemblies each having a door opening with a peripheral flange, a pair of A-pillar assemblies, said A-pillar assemblies and bodyside assemblies being secured to said roof assembly, and said roof assembly defining the top of a windshield opening; and

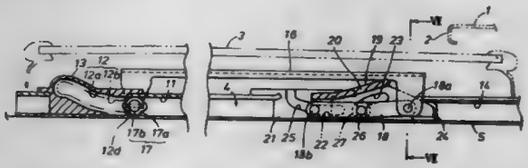
locating means comprising a 2-way locator and a 4-way locator provided on the body for locating the headliner with respect to the body, said locating means being alignable with the locating holes in the headliner.

5,795,016

AUTOMOTIVE SLIDE ROOF SYSTEM

Joji Otake, Tochigi-ken, Japan, assignor to Yachiyo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1996, Ser. No. 709,347
Int. Cl.[6] B60J 7/053
U.S. Cl. 296—223 7 Claims



1. An automotive slide roof system for selectively closing an opening provided in a fixed roof of a vehicle, comprising:

a pair of guide rails fixedly secured to a vehicle body, and extending along either side of said opening;

front and rear sliders guided by said guide rails and supporting a slide panel for movement along a fore-and-aft direction of said vehicle; and

a lifting mechanism provided between each of said rear sliders and said slide panel for moving a rear part of said slide panel vertically with a drive force applied thereto by a push-pull cable;

said lifting mechanism comprising:

a moveable cam slot member securely attached to said rear slider and provided with a first cam slot;

a fixed cam slot member securely attached to said guide rail and provided with a second cam slot; and

a link member having a rear end pivotally attached to said slide panel, a forward end slidably received in a horizontal slot formed in said moveable cam slot member, and an intermediate part having an engagement pin received in both said first and second guide slots;

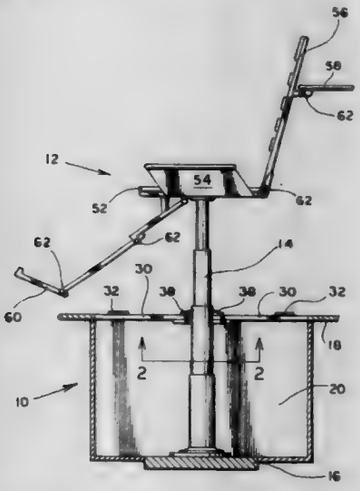
a rear end of said second cam slot being provided with an open end for allowing said engagement pin to move out of said second cam slot as said link member along with said slide panel moves further rearward.

5,795,017

STOWABLE FISH FIGHTING CHAIR

Matthew K. Zimmerman, and Lee H. Zimmerman, both of 1265 Danbury NW., North Canton, Ohio 44720

Filed Nov. 18, 1996, Ser. No. 746,863
Int. Cl.[6] A47C 9/06
U.S. Cl. 297—15 13 Claims



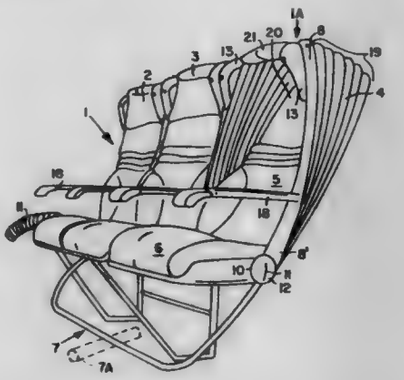
6. A chair assembly for a boat, the chair assembly being storable below a deck surface on the boat and comprising a chair, a lifter to move said chair between a first position below the deck surface of the boat and a second position above the deck surface of the boat, and a door assembly including a pair of doors, each of said doors being capable of being pivotally carried by the deck surface of the boat such that each door may be selectively pivoted to an open position which allows said chair to be moved above and below the deck surface and to a closed position wherein each of said doors engages said lifter to provide support to said lifter when said chair is in said second position.

5,795,018

PASSENGER SERVICE TERMINAL PARTICULARLY IN PASSENGER CABIN OF AN AIRCRAFT

Markus Schumacher, and Andrew Muin, both of Buxtehude, Germany, assignors to Daimler-Benz Aerospace Airbus GmbH, Hamburg, Germany

Filed Sep. 16, 1996, Ser. No. 714,204
Claims priority, application Germany, Sep. 14, 1995, 195 33 981.9
Int. Cl.[6] A47C 7/16;29/00
U.S. Cl. 297—184.17 20 Claims



1. An aircraft passenger seat comprising a support (7), a seat mounted on said support, a backrest (5), a hinge (10) hinging said backrest to said support (7), a bail (8) comprising a head section (21) and two side rods interconnected by said head section and extending downwardly to said hinge (10), a flexible hood (19) having a first edge secured to said bail (8) and a second edge secured to said backrest, each of said side rods of said bail comprising a rod end (8') rigidly secured to said hinge (10) so that moving the backrest rearwardly extends said hood, and at least one passenger service and comfort component selected from the group consisting of an oxygen mask (16), an oxygen generator (23), an air nozzle (17), a reading light (14) and a loudspeaker installed in said bail.

5,795,019

Patent Not Issued For This Number

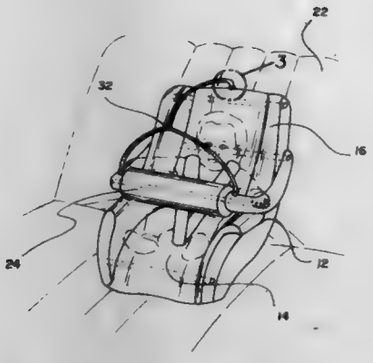
5,795,020

CHILD SAFETY SEAT WITH A HEAD PROTECTOR

Frank Sirico, 40 Frank St., Lindenhurst, N.Y. 11757

Filed Sep. 25, 1997, Ser. No. 936,954
Int. Cl.[6] B60N 2/28
U.S. Cl. 297—256.15 3 Claims

1. A new child safety seat with a head protector for providing added protection in the event of an automobile accident comprising, in combination:



a child's car seat having a seat portion, a seat back portion, and opposing sidewalls the car seat dimensioned for receiving a child therein, the seat back portion having a loop disposed on a rear surface thereof, the loop dimensioned for receiving an existing car seat belt therethrough for securement of the car seat on an existing automobile seat, the car seat further including a safety bar pivotally coupled with said opposing side walls, the safety bar extending across the seat portion;

a plurality of steel reinforcement bars extending through the opposed side walls of the car seat in a spaced relationship, a single steel reinforcement bar extending through the safety bar; and

a head protecting frame coupled to the car seat, the head protecting frame including an arcuate upper bar coupled to an upper edge of the car seat, the upper edge of the seat having a female quick connect secured thereto, the arcuate upper bar having a male quick connect on an upper end thereof for coupling with the female quick connect, the head protecting frame including an inverted U-shaped lower bar secured to a lower end of the arcuate upper bar, the inverted U-shaped lower bar having branched free ends thereof secured to the safety bar.

5,795,021

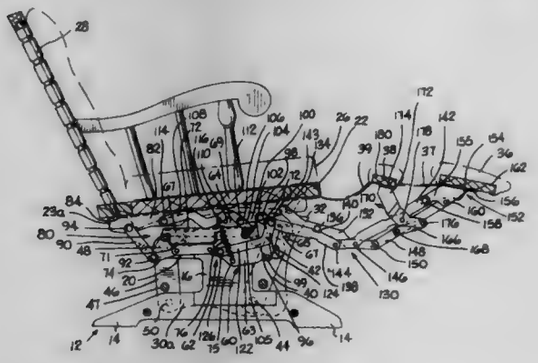
GLIDING RECLINING CHAIR

W. Clark Rogers, P.O. Box 1740, Denton, N.C. 27239

Continuation of Ser. No. 541,672, Oct. 10, 1995, abandoned. This application Oct. 23, 1997, Ser. No. 957,409

Int. Cl.[6] A47C *3/02; 1/038*

U.S. Cl. 297—281 **18 Claims**



1. A reclining seating unit, comprising:

a base configured to rest on an underlying surface;

a generally horizontally-disposed seat positioned above said base, said seat including a pair of rails attached to a lateral portion thereof, each of said rails having an arcuate lower edge of a preselected curvature;

a pair of side panels supported on said base each of which includes an arcuate upper edge positioned directly beneath and closely adjacent a respective seat rail lower edge, said arcuate upper edge having a preselected curvature that substantially matches the preselected curvature of a respective said seat rail lower edge;

at least one footrest panel; and

a reclining mechanism interconnecting said seat, said side panels, and said at least one footrest panel for relative movement therebetween, said reclining mechanism being configured so that said seating unit is movable between an upright position and a reclined position, wherein in said upright position, said seat is disposed at a first pitch angle relative to said underlying surface and is positioned in a first forward orientation relative to said side panels, and said at least one footrest panel is generally upright and is positioned below a forward portion of said seat, and wherein in said reclined position, said seat is disposed at a second pitch angle relative to said underlying surface that differs from said first pitch angle and is positioned in a second rearward orientation relative to said side panels, and said at least one footrest panel is generally horizontally disposed and is positioned forwardly of said seat; and

wherein, as said seating unit moves between said upright and reclined positions, said seat rail lower edges move rearwardly relative to said side panel upper edges substantially along paths defined by the preselected curvature of the seat rail lower edges and remain in closely adjacent noncontacting relationship with said side panel upper edges such that said seat is wholly supported above said side panels by said reclining mechanism.

5,795,022

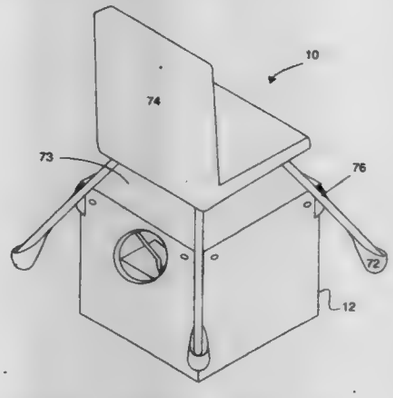
APPARATUS FOR PROVIDING MOBILITY AND FLOATATION-LIKE EFFECT TO A SEAT OR CHAIR

Michael A. Brown, Dayton, Ohio, assignor to Southpaw Enterprises, Inc., Dayton, Ohio

Filed Jun. 11, 1996, Ser. No. 661,441

Int. Cl.[6] A47C *1/00*

U.S. Cl. 297—314 **7 Claims**



1. An apparatus for providing universal mobility to a seat and imparting a floatation-like sensation thereto, including:

a base operably disposed beneath the seat, wherein the seat has at least one leg extending therefrom;

means connected to the leg for supportively retaining the leg member in an elastic manner and for providing universal mobility and a floatation-like effect to the seat; and

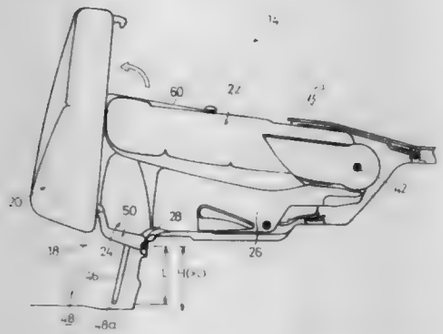
means for adjusting the degree of mobility of the retaining means.

5,795,023

HEADREST STORAGE MECHANISM FOR MOTOR VEHICLE SEAT

Tetsuya Kayumi, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 719,838, Sep. 30, 1996, abandoned. This application Nov. 10, 1997, Ser. No. 967,096
Claims priority, application Japan, Oct. 6, 1995, 7-259941
Int. Cl.[6] B60N *2/32;2/36*
U.S. Cl. 297—331 **7 Claims**



1. A headrest storage mechanism for a motor vehicle seat, comprising:

a seat having a seat cushion angularly movable about a pivot, a backrest angularly movable about a shaft, and a headrest detachably mounted on said backrest, said headrest having a pair of unitary stays extending downwardly from said headrest;

a headrest storage space defined between said seat cushion and said backrest when the seat cushion is lifted forward and the backrest is lowered forward toward the seat cushion, with said headrest having said stays detached from said backrest;

a pair of supporting arms mounted on an underside of the seat cushion and attached to said pivot, said supporting arms extending across said headrest storage space for supporting the headrest in a given attitude when the seat cushion is lifted forward; and

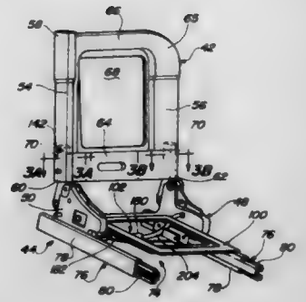
said headrest positioned in said headrest storage space, when said headrest and said pair of stays are detached from said backrest with said headrest supported on said pair of supporting arms and said pair of stays extending downwardly from said headrest past said pair of supporting arms toward a floor of a vehicle.

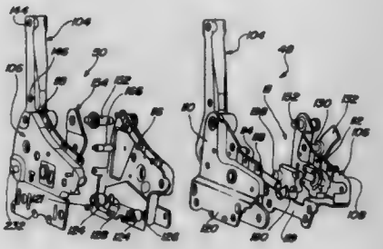
5,795,024

CLAM-SHELL PIVOT ASSEMBLY FOR A STRUCTURES VEHICLE SEAT

Cecil A. Collins, Sterling Heights; John F. Whalen, Macomb, and Timothy J. Schmidt, Jr., Clawson, all of Mich., assignors to Fisher Dynamics Corporation, St. Clair Shores, Mich.

Continuation of Ser. No. 810,307, Feb. 28, 1997, which is a continuation-in-part of Ser. No. 565,987, Dec. 1, 1995, Pat. No. 5,711,577. This application Apr. 22, 1997, Ser. No. 837,751
Int. Cl.[6] B60N *2/12*
U.S. Cl. 297—361.1 **23 Claims**





20. A structured vehicle seat, comprising:

a lower seat structure;

a seatback frame defining an upwardly extending channel;

a safety belt restraint system mounted to and carried by the structured vehicle seat; and

a pivot arm interconnecting said seatback frame to said lower seat structure, said pivot arm including a first arm plate connected to a second arm plate to define a clam-shell pivot arm, said pivot arm having a seatback mounting portion extending within said upwardly extending channel and being non-rotatably interconnected to said seatback frame, and said pivot arm has a seat mounting portion pivotally interconnected to said lower seat structure for rotation about a pivot axis;

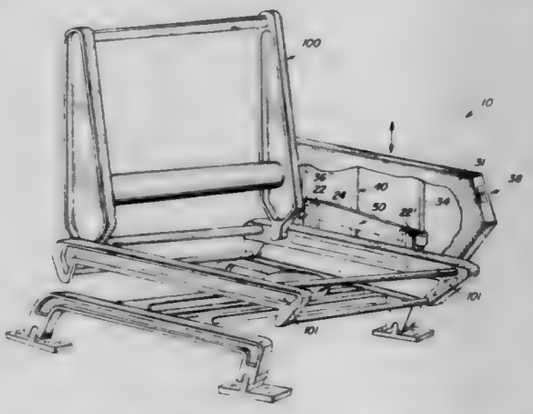
whereby said pivot arm is operative for interconnecting said seatback frame to said lower seat structure such that said seatback frame is selectively adjustable to a plurality of angular positions.

5,795,025

RETRACTABLE ARMREST FOR AN AIRCRAFT SEAT

Patrick Murphy, Miami, Fla., assignor to Aircraft Modular Products, Inc., Miami, Fla.

Filed Aug. 30, 1996, Ser. No. 708,029
Int. Cl.[6] A47C *7/54;* **B60N** *2/46*
U.S. Cl. 297—411.36 **17 Claims**



1. An improved, retractable armrest for an aircraft seat of the type including a frame, said improved, retractable armrest comprising:

a mount assembly, said mount assembly being adapted to be fixedly secured to the frame of the aircraft seat,

said mount assembly including at least one guide member,

a retraction assembly, aid retraction assembly including a generally horizontal support structured to generally define an upper support surface,

said retraction assemble further including at least one guide element structured to b slidably engaged with said guide member of said mount assembly so as to guide generally

vertical movement of said retraction assembly relative to said mount assembly between an extended position and a retracted position,

lock means for locking said retraction assembly in said extended position, said lock means being releasable so as to permit movement of said retraction assembly into said retracted position upon a gentle but affirmative lifting force being applied to said retraction assembly when in said extended position,

retraction resistance means for resisting a slight, momentary upward movement of aid retraction assembly from said extended position so as to prevent accidental release of said lock means, while still permitting facilitated release of said lock means, and

said lock means comprising:

a lock rod pivotally secured to said retraction assembly and structured and disposed to extend towards said mount assembly,

a retention segment protruding outwardly from generally a lower end of said lock rod,

a guide assembly operably coupled to said mount assembly, said guide assembly including a guide track structured and disposed to receive said retention segment of said lock rod slidably therein,

said guide track being further structured to retain said retention segment of said lock rod in an elevated position, and thereby maintain said retraction assembly to which said lock rod is s cured in said extended position, until said retraction assembly, and therefore said retention segment of said lock rod, are lifted relative thereto to release the retention thereof from with said guide track,

said guide track including an entry track, a central retention region, and an exit track, and

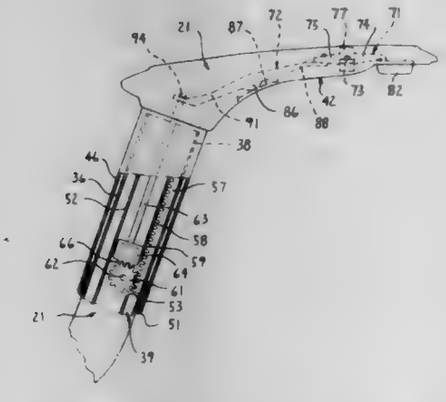
said guide track further including a biased flap disposed over an outlet of said exit track and structured to permit said retention segment to exit said exit track therethrough without permitting re-entry of said retention segment into said exit track therethrough.

5,795,026

HEIGHT ADJUSTABLE CHAIR ARM

Joel Dral, Holland, and Larry Wilkerson, Comstock Park, both of Mich., assignors to Haworth, Inc., Holland, Mich.

Filed Jun. 6, 1997, Ser. No. 870,127
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.36 **20 Claims**



8. In a chair having a seat assembly and a pair of height-adjustable chair arm assemblies disposed adjacent opposite sides of said seat assembly, the improvement wherein each of said chair arm assemblies comprises:

a vertically elongate arm upright which is fixed relative to said seat assembly;

an arm rest assembly having a vertically elongate support member lengthwise movably supported by said arm upright and a horizontally elongate arm rest mounted on an upper end of said support member, said arm rest projecting generally horizontally away from said support member in a longitudinal direction;

a releasable height-adjustment mechanism co-acting between said arm upright and said support member for fixedly positioning said support member relative to said arm upright at any one of a plurality of selectable height positions, said height-adjustment mechanism including disengagement means comprising an actuator member which is movable vertically in a first direction for disengaging said height-adjustment mechanism to permit movement of said arm rest assembly; and

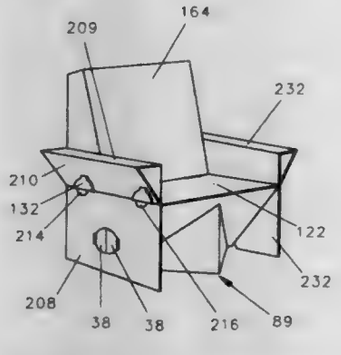
an actuator mechanism disposed within said arm rest which includes a plurality of levers which are pivotally connected to said arm rest, said plurality of levers being serially connected together in end-to-end relation and including first and second levers pivotally connected to said arm rest so as to pivot about respective first and second pivot axes, said first lever having opposite first and second ends connected respectively to said actuator member and an adjacent end of said second lever such that pivoting of said second lever about said second pivot axis effects pivoting of said first lever about said first pivot axis to move said actuator member in said first direction, said first lever being horizontally elongate and having a pivot part which abuts against an opposing surface of said arm rest to define said first pivot axis, said first lever being supported in said arm rest solely by the connection of said first and second ends to said actuator member and said second lever.

5,795,027

FURNITURE MADE OF FOLDABLE MATERIALS

John R. Howard, Northwoods, and Robert W. Machacek, Lombard, both of Ill., assignors to NEWance, Inc., Addison, Ill.

Filed Feb. 28, 1997, Ser. No. 808,636
Int. Cl.[6] A47C *7/00*
U.S. Cl. 297—440.12 **5 Claims**



1. A plurality of blanks of stiff foldable material for assembly into a chair comprising in combination,

at least one foldable blank to form a generally rectangular three dimensional member having a top, a back and defining opposing parallel sides,

a second blank comprising a center panel, a first side panel, a second side panel, and a back panel,

each of said first side panel, said second side panel and said back panel joining along a side thereof to a side of said center panel,

said second blank having scorings between said panels thereof,

said center panel of said second blank sized to fit across said top of said three dimensional member with said first side panel and said second side panel of said second blank along said opposing parallel sides of said three dimensional member,

a third blank comprising a center panel, a first side panel and a second side panel,

said center panel, said first side panel and said second side panel of said third blank having heights greater than the height of said three dimensional member,

means for retaining an inner surface of said first side panel of said second blank against one of said opposing sides of said three dimensional member,

means for retaining an inner surface of said first side panel of said third blank against an outer surface of said first side panel of said second blank,

means for retaining an inner surface of said second side panel of said second blank against the other of said opposing sides of said three dimensional member,

means for retaining an inner surface of third side panel against an outer surface of said second side panel,

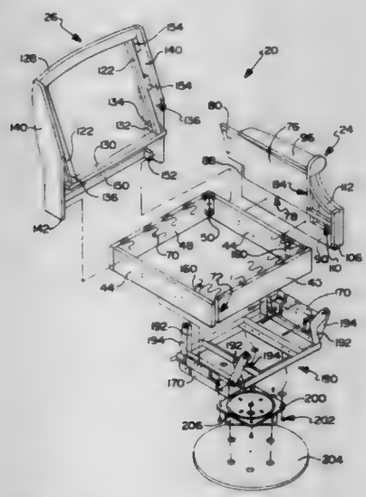
whereby said center panel of said third blank will maintain said back panel of said second blank in an elevated orientation to form a chair with said top of said three dimensional member forming a seat and said elevated back panel of said second blank forming the back thereof.

5,795,028

MODULAR CHAIR AND METHOD

Ralph J. Dussia, Jr., Lasalle; Gerald E. Roberts, Monroe; Margaret A. Hoffman, Rockwood, all of Mich.; William A. Calvert, Jr., Elmore, Ohio; Duane T. Dutkievic, Monroe, Mich.; Charles R. West, Monroe, Mich., and Adam E. Thayer, Monroe, Mich., assignors to La-Z-Boy Incorporated, Monroe, Mich.

Filed Apr. 17, 1996, Ser. No. 633,427
Int. Cl.[6] A47C *7/00*
U.S. Cl. 297—440.14 **30 Claims**



1. A modular chair comprising:

a seat deck having a pair of laterally spaced side rails abuttingly engaging a rear cross member, and interconnected to a front cross member;

bracket means for securing said side rails to said rear cross member at a rear portion of said seat deck, and for securing said side rails to said front cross member;

a base operably interconnected to said seat deck;

a left side frame assembly and a right side frame assembly for engaging said side rails of said seat deck, each of said side frame assemblies forming an individual modular component; and

a seat back assembly for engaging said seat deck and said side frame assemblies, said seat back assembly forming an individual modular component;

said left and right side frame assemblies including an inner side frame panel having a horizontal ledge formed on a lower surface thereof for engaging a top surface of said side rails, and a rearwardly extending tab for engaging a rectangular space defined in said seat back assembly;

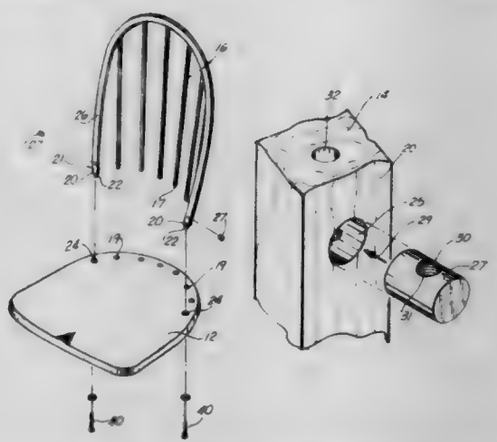
whereby said side frame assemblies and said seat back are operably interconnected with said seat deck and said base for creating an interlocking engagement for enhancing the structural integrity of said modular chair.

5,795,029

MOUNTING BRACKET FOR A COLLAPSIBLE WINDSOR CHAIR

Mark Ma, 1415 Martens Dr., Hammond, La. 70401

Filed Aug. 8, 1996, Ser. No. 695,111
Int. Cl.[6] A47C *7/00*
U.S. Cl. 297—440.16 **2 Claims**



1. A chair of the type comprising a chair back positionable onto a chair bottom, with the chair back comprising at least a pair of back members insertable into bores in the chair bottom, the chair comprising:

a) first and second end portions of the back members insertable into the bores of the chair bottom, each of the back members including a first longitudinal bore in the end portions of the back members, a second bore transverse to the longitudinal bore in each of the end portions of the back members;

b) a peg member insertable into each transverse bore, the peg member further comprising a threaded bore which aligns with the longitudinal bore when the peg member is positioned within the transverse bore;

c) a bolt member insertable into each longitudinal bore through the bore of the chair bottom for engaging the peg member inserted therein; and

d) support members positionable on an underside of the chair bottom under the bores of the chair bottom, each support member further including a central body portion that is bubbled outward from the chair bottom and including a bore for accommodating the bolt member therethrough, so that as the bolt member is threaded into the transverse bore of the peg member, the bolt member engages the central bubbled portion of the support member and the end portions of the back members are pulled into the bores of the chair bottom.

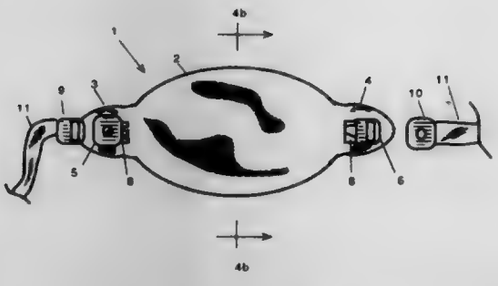
5,795,030

ABDOMEN-PROTECTIVE ADAPTER FOR SEAT BELTS

Karl W. Becker, P.O. Box 671593, Chugiak, Ak. 99567

Filed Sep. 24, 1996, Ser. No. 719,151
Int. Cl.[6] A47C *31/00*; A47D *15/00*; B60R *21/00*
U.S. Cl. 297—488 **15 Claims**

1. A seat belt pad for connection to a two-point seat belt system, said two-point seat belt system having a buckle-end, a clip end, and a seat belt having a length, said seat belt pad comprising:



a) a central pad, having a first side and a second side, being oppositely disposed, and having a central cavity therein, said central pad also has a first plurality of internal straps, wherein each strap has a length, within said central pad and being fixedly attached thereto, and a second plurality of internal straps, wherein each strap has a length, within said central pad and being fixedly attached thereto, said first plurality of internal straps having a center portion, whereby the center portion of the first plurality of internal straps forms a first loop that protrudes from the first side of said central pad, and further such that said second plurality of internal straps has a center portion, whereby the center portion of the second plurality of internal straps forms a second loop that protrudes from the second side of said central pad, whereby said first loop forms a first connection end and said second loop forms a second connection end;

b) a buckle, fixedly attached to said first connection end, whereby said buckle is positioned to removably connect to the clip end of said two-point seat belt system; and

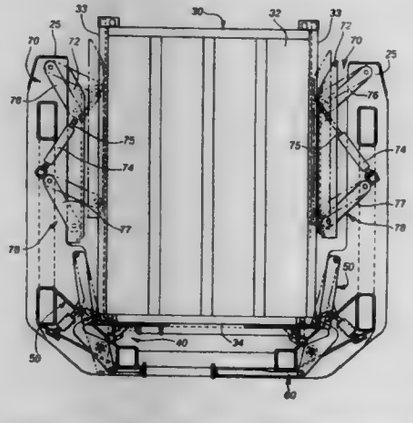
c) a clip, fixedly attached to said second connection end, whereby said clip is positioned to removably connect to the buckle end of said two-point seat belt system.

5,795,031

TOP-DUMPING CONTAINER HANDLER

LeRoy G. Hagenbuch, 502 W. Northgate Rd., Peroia, Ill. 61614; Jamie L. Adams, 219 Everett, East Peoria, Ill. 61611, and James D. McPhail, 810 E. Moneta, Peoria Heights, Ill. 61614

Filed Jan. 22, 1996, Ser. No. 589,264
Int. Cl.[6] B60P *1/12*
U.S. Cl. 298—17.6 **24 Claims**



22. A top dumping container handler for receiving and dumping at least one container wherein each container has at least one lid movable between a closed position for covering the interior of the container and an open position for permitting access to the interior of the container, the handler comprising:

a cradle for supporting the container;

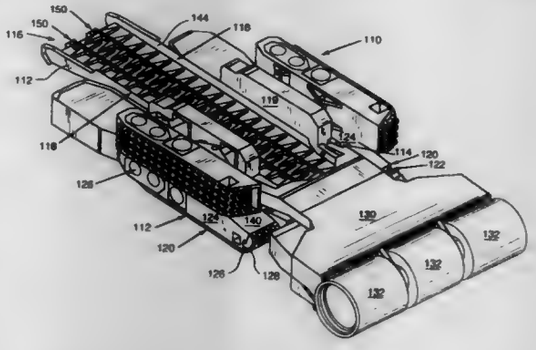
an arm assembly spaced from the lid and pivotally attached to the cradle for moving the lid between the closed and open positions wherein the arm assembly comprises an arm for selectively engaging the lid in response to an actuator operatively attached to the arm for moving the arm wherein the arm is attached to the cradle for moving between a rest position in which the arm does not engage the lid, an intermediate position in which the arm engages the lid in the closed position, and an extended position in which the arm engages the lid in the open position in response to the actuator.

5,795,032

MINING MACHINE WITH MULTIPLE PROPULSION MEMBERS

Joseph J. Zimmerman, Franklin, Pa., assignor to Joy MM Delaware, Inc., Wilmington, Del.

Filed Jun. 17, 1996, Ser. No. 664,685
Int. Cl.[6] E21B *29/22*
U.S. Cl. 299—33 **11 Claims**



1. A mining machine, comprising:

an elongated frame member having a front portion, a rear portion, a top portion and two lateral sides;

mining means operably attached to said front portion of said elongated frame member for dislodging material from a seam upon contact therewith to form an entry therein having a floor, a roof and two side walls;

at least one first propulsion means attached to said elongated frame member for propelling said mining machine on a surface;

at least one second propulsion means pivotally attached to a corresponding lateral side of said elongated frame member and being selectively pivotable between a first extended position wherein said second propulsion means engages a corresponding side wall of said entry and a second retracted position wherein said second propulsion means is adjacent said corresponding lateral side of said elongated frame member such that said second propulsion means does not engage said corresponding side wall of said entry;

pivot means attached to said elongated frame member and each said second propulsion means for selectively pivoting each said second propulsion means between said first extended position and said second retracted position; and

conveying means operably supported on said elongated frame member for conveying said dislodged material from said front portion of said elongated frame member to said rear portion thereof for discharge therefrom.

5,795,033

Patent Not Issued For This Number

5,795,034

METHOD OF PRODUCING A WELDED ASSEMBLY

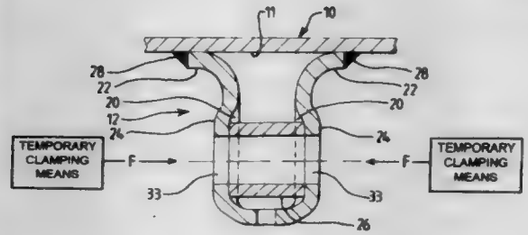
John Sayer, Bridgnorth, England, assignor to GKN Sankey Limited, Telford, United Kingdom

Filed May 24, 1995, Ser. No. 449,691

Claims priority, application United Kingdom, May 25, 1994, 9410516

Int. Cl.[6] B60B 21/06

U.S. Cl. 301—9.2 4 Claims



1. A welded wheel construction comprising:

a wheel rim having an inner surface, a wheel disc, and a plurality of U-shaped lugs for mounting said wheel disc to said wheel rim at said inner surface using respective threaded fasteners applying a compressive force F to said lugs;

each of said U-shaped Lugs having a reinforced central boss and feet directed outwardly from said reinforced central boss and said feet having respective feet ends, said reinforced central boss resisting said compressive force F;

said lugs spaced around said wheel rim with only said respective feet ends of said feet engaging solely said inner surface of said wheel rim and said feet otherwise not engaging said wheel rim;

temporary clamping means applied to said reinforced central boss applying a temporary clamping force F substantially equal to said compressive force F and opposed by said reinforced central boss to move and maintain said feet in a compressed set position with said feet ends on said inner surface while welding said feet ends at respective weld joints to said inner surface of said wheel rim;

said feet being deflected from said compressed set position upon the removal of said temporary clamping force to provide resultant stresses in said weld joints; and

said resultant stresses in said weld joints being relieved upon applying said threaded fasteners to said wheel disc and reinforced central boss to return said feet to said compressed set position, whereby the weld joints are subjected to reduced stresses when said threaded fasteners are applying said compressive forces F compared to if the lugs had not been subject to said temporary clamping force F during welding of said weld joints.

5,795,035

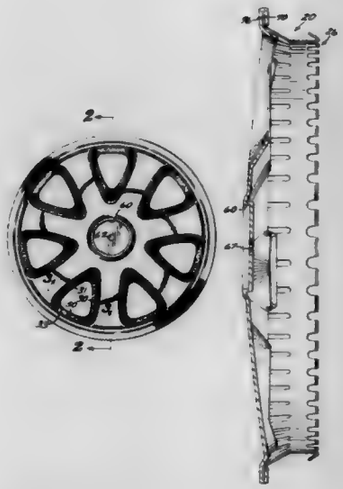
WHEEL COVER SIMULATING CAST ALUMINUM WHEEL

Everett Fuller, Orange, Calif., assignor to Coyote Enterprises, Inc., Anaheim, Calif.

Continuation of Ser. No. 532,075, Sep. 22, 1995, abandoned, which is a continuation-in-part of Ser. No. 239,567, May 19, 1994, Pat. No. 5,457,886. This application Jul. 18, 1997, Ser. No. 896,681

Int. Cl.[6] B60B 7/00

U.S. Cl. 301—37.32 14 Claims



1. A machined aluminum wheel cover assembly for attachment to a tire wheel to simulate a selected spoke pattern of a machined cast aluminum wheel and comprising:

a self supporting contoured wheel cover for covering said wheel, said cover being constructed of an aluminum alloy sheet stock for disposition in covering relationship projecting radially outwardly from the center thereof to a peripheral edge and having axially inner and outer sides;

a plurality of indentations formed in said wheel cover arranged in a pattern corresponding with openings between said spokes on said machined cast aluminum wheel and formed by respective axially inwardly projecting lips extending from respective apexes arranged in a circular pattern and diverging radially outwardly to respective radially outside peripheral lip sectors to thereby cooperate in simulating the configuration of the openings between said spokes;

a mechanical attachment device on said wheel cover for attaching said wheel cover to said tire wheel to support said cover from said wheel to be disposed in covering relationship; and

a spiral groove pattern on said outer side of said cover to thereby cooperate with said plurality of indentations to simulate the appearance of said machined cast aluminum wheel whereby said wheel cover may be attached to said wheel by said mechanical attachment device to be held by said device in covering relationship over said wheel.

5,795,036

BICYCLE REAR WHEEL

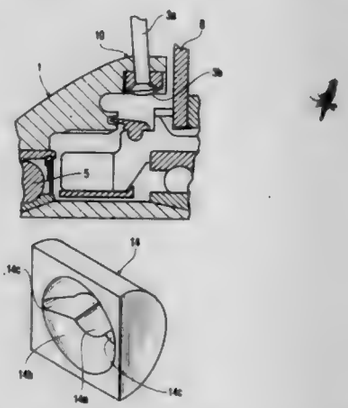
Valentino Campagnolo, Vicenza, Italy, assignor to Campagnolo S.r.l., Vicenza, Italy

Filed May 14, 1996, Ser. No. 645,869

Claims priority, application Italy, May 26, 1995, T095A0425; Dec. 29, 1995, T095A1058

Int. Cl.[6] B60B 1/14

U.S. Cl. 301—59 5 Claims



1. A bicycle rear wheel comprising a hub and two series of spokes for connecting opposite ends of the hub to a wheel rim, said opposite ends of said hub being provided with annular axially

extending flanges having inner and outer surfaces for connection to the spokes, wherein each flange has an axially facing annular surface with a plurality of cavities extending inwardly from said annular surface and extending radially of the flange from said inner surface to said outer surface, wherein each spoke has a straight end portion received within a respective cavity and an enlarged head on said straight end portion disposed in an enlarged portion of each cavity located in the inner surface of the flange to prevent radial outward movement of said head, wherein said hub has at least one sprocket mounted on one end of said hub and said cavities in the flange adjacent said at least one sprocket extend along inclined directions with respect to a radial direction with the spokes arranged to cross each other two by two, and wherein said hub is provided with axial retaining means for preventing said end portion of each spoke from moving axially out of a respective cavity, said axial retaining means being comprised of a ring mounted on said hub for engagement with a part of the end portion of each spoke which projects outwardly of said hub,

wherein a force distributing member is interposed between the head of each spoke and the respective enlarged portion of each cavity,

wherein said force distributing member has a semi-cylindrical body disposed in said enlarged portion of each cavity, and

wherein said enlarged portion of each cavity has a complementary semi-circular cross-section and said semi-cylindrical body has a tapered central hole for engagement with the head of a spoke.

5,795,037

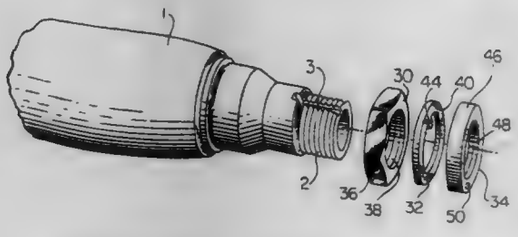
CONTROLLED POSITION AXLE NUT SYSTEM AND METHOD TO PRELOAD TAPERED ROLLER BEARINGS

George Allan Hagelthorn, Dearborn, Mich., assignor to Hub Nut Corporation, Lafayette, Ind.

Continuation-in-part of Ser. No. 203,827, Mar. 1, 1994. This application May 23, 1996, Ser. No. 652,298

Int. Cl.[6] B60B *21/00*

U.S. Cl. 301—124.1 **20 Claims**



1. An axle nut system for preloading roller bearings comprising:

an axle having roller bearings mounted thereon, said axle having an end portion, said end portion having threads thereon of a predetermined pitch which include outboard thread faces and inboard thread faces;

an inner member having threads thereon of a predetermined pitch being mounted on said end portion of said axle, said inner member abutting against at least a portion of said bearings and establishing a compressive preload on said bearings;

an intermediate member mounted on the end portion of said axle and abutting against said inner member, said intermediate member being fixed against rotation relative to said end portion of said axle;

an outer member mounted on said end portion of said axle and abutting against said intermediate member, said outer member being connected to said end portion of said axle to prevent outward movement of said inner member and said intermediate member when said inner member is rotated in an opposite direction to which said inner member was initially rotated with respect to said axle during which said inner member threads are engaged with said inboard thread faces of the axle threads so that said inner member becomes tightly immovable with respect to the intermediate and outer members while retaining the compressive preload condition on said bearings.

5,795,038

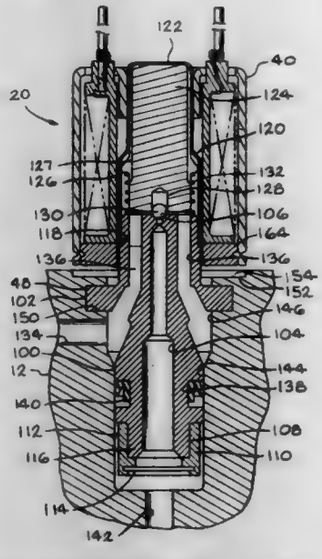
HYDRAULIC VALVE CONTROL UNIT FOR VEHICULAR ANTI-LOCK BRAKE AND TRACTION CONTROL SYSTEMS

Edward N. Fuller, Manchester; Herbert L. Linker, Jr., Dexter; Gerald M. Sivulka, and Wendell D. Tackett, both of Ann Arbor, all of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Continuation-in-part of Ser. No. 511,900, Aug. 7, 1995, abandoned, and a continuation-in-part of Ser. No. 511,973, Aug. 7, 1995, Pat. No. 5,681,097, each which is a continuation-in-part of Ser. No. 198,365, Feb. 18, 1994, Pat. No. 5,439,279. This application Aug. 6, 1996, Ser. No. 692,483

Int. Cl.[6] B60T *8/36*

U.S. Cl. 303—119.2 **47 Claims**



1. An anti-lock brake control unit for a braking system of an automotive vehicle having a master brake cylinder providing a pressurized brake fluid to slave cylinders of wheel brake assemblies in response to the depression of a brake actuator by an operator of the automotive vehicle, said control unit comprising:

an isolation valve having an internal portion, an external portion and a radial flange intermediate said internal and external portions, said external portion including an armature displaceable in response to a magnetic field to change said isolation valve from an open state to a closed state;

a hold/dump valve having an internal portion, an external portion and a radial flange intermediate said internal and external portions, said external portion including an armature displaceable in response to a magnetic field to change said hold/dump valve from a closed state to an open state; and

a valve body housing having a plurality of cylindrical cavities, wherein an internal portion of one of said isolation and hold/dump valves is received in each cavity, each cavity further having

(i) a counterbore forming a shoulder at the bottom thereof for seating a radial flange of one of said isolation and hold/dump valves, and

(ii) a swaged annular lip extending over a seated radial flange of one of said isolation and hold/dump valves, said swaged annular lip mechanically securing said radial flange against said shoulder and to said valve body housing and forming at least a secondary fluid seal between said radial flange and said valve body housing;

said valve body housing further having at least one inlet port for receiving pressurized brake fluid from the master cylinder, a

plurality of outlet ports for transmitting pressurized brake fluid to the slave cylinders of the wheel brake assemblies, at least one low pressure accumulator, and internal passageways connecting said at least one inlet port to an input of said isolation valve, for connecting an output of said isolation valve to an input of an associated hold/dump valve and to an associated one of said outlet ports and for connecting the output of said hold/dump valve to said at least one low pressure accumulator and for connecting said at least one low pressure accumulator to an input of said pump and for connecting an output of said pump to said input of said isolation valve.

5,795,039

BRAKE SYSTEM WHICH MAINTAINS BRAKE FORCE DISTRIBUTION UPON SYSTEM MALFUNCTION WHILE PARTIALLY DISABLING ANTI-LOCK AND TRACTION SLIP

Helmut Fennel, Bad Soden; Norbert Ehmer, Eschborn; Alexander Kolbe, Gross-Zimmern; Robert Schmidt, Rennerod, and Thomas Proger, Rödermark, all of Germany, assignors to ITT Automotive Europe GmbH, Germany

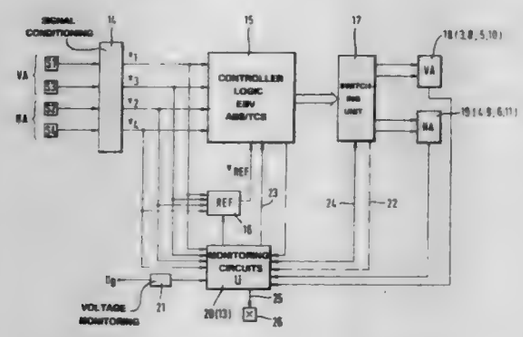
PCT No. PCT/EP95/01467, § 371 Date Jan. 14, 1997, § 102(e) Date Jan. 14, 1997, PCT Pub. No. WO95/29829, PCT Pub. Date Nov. 9, 1995

PCT Filed Apr. 19, 1995, Ser. No. 732,399

Claims priority, application Germany, Apr. 29, 1994, 44 14 980.8

Int. Cl.[6] B60T *8/04;8/00*

U.S. Cl. 303—122.05 **9 Claims**



1. A brake system for a vehicle comprising:

a plurality of wheel sensors individually associated with front wheels and rear wheels of the vehicle for determining the rotational behavior of the individual wheels;

a plurality of wheel brakes individually associated with the front wheels and the rear wheels of the vehicle;

a plurality of valves for controlling pressure fluid flow to and from said wheel brakes;

means for evaluating determinations of the rotational behavior of the individual wheels to determine a vehicle reference speed and to generate braking pressure controls for said valves;

at least one of:

(a) an anti-lock control system, and

(b) a traction slip control system;

means for controlling distribution of pressure fluid flow to said wheel brakes;

means for monitoring the brake system and:

(a) for at least partially disconnecting control of the brake system in response to at least one of:

(1) defects and malfunctions, and

(2) control and driving situations, and

(b) upon at least one of:

(1) failure of a wheel sensor, and

(2) presence of an incorrect wheel sensor determination:

(i) the vehicle reference speed determination is based on the rotational behavior determinations of those wheel sensors which are intact, and

(ii) both wheel brakes associated with the rear wheels are controlled synchronously when a wheel sensor associated with a rear wheel is defective,

for controlling distribution of pressure fluid flow to said wheel brakes while at least limiting at least one of anti-lock control and traction slip control, and

(c) when a supply voltage drops below a first predetermined limit value, but remains in excess of a second predetermined lower limit value, for controlling distribution of pressure fluid flow to said wheel brakes while at least limiting at least one of anti-lock control and traction slip control.

5,795,040

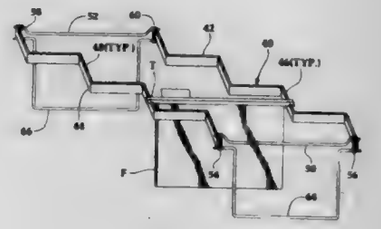
HANGING FILE HOLDER SUPPORT DEVICE

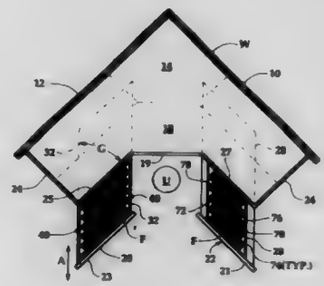
Mary C. Simmons, 5637 N. Key, Sebring, Fla. 33872

Filed Nov. 26, 1996, Ser. No. 756,457

Int. Cl.[6] A47B *63/00*

U.S. Cl. 312—184 **7 Claims**





1. For an angular drawer, a hanging file folder support device positionable for use within the drawer which has a generally flat upright facing panel, upright parallel drawer side panels, an upright back and a horizontal bottom panel, the facing panel, drawer side panels and the back, when viewed from above, defining a parallelogram having included acute angles, said support device comprising:

two substantially identical hanging file folder upper support rails held spaced apart by an elongated slender cross frame disposed between each corresponding ends of said support rails, said support rails defining substantially coplanar upper margins having a plurality of spaced pairs of substantially orthogonally oriented zigzag portions extending along said support rails as viewed from above, said upper margins being substantially coplanar, said support rails and said cross frames substantially defining a parallelogram similar to that of the drawer;

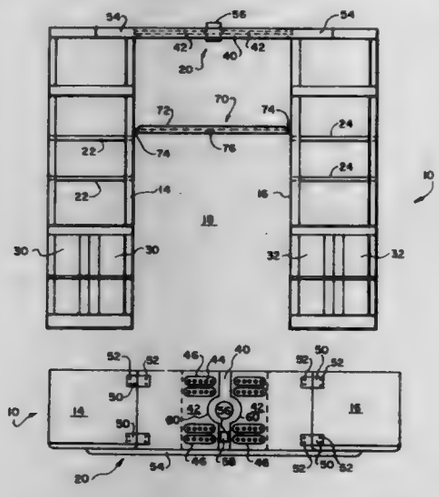
upright support members each connected at each upper end thereof to each end of said support rails, said upright support members capable of resting atop the drawer bottom panel for supporting said support rails above the drawer bottom panel whereby a hanging file folder may be supported between each pair of zigzag portions.

5,795,041

HOME THEATER BRIDGE

Michael E. Weaver, Jamestown, N.Y., assignor to Bush Industries, Inc., Jamestown, N.Y.

Filed Apr. 14, 1997, Ser. No. 833,236
Int. Cl.[6] A47B *45/00*
U.S. Cl. 312—205 **16 Claims**



1. A cabinet structure for receiving a television set having a fixed height and width, the structure comprising:

a pair of adjustable, spaced towers defining an adjustable television set receiving area between the towers, said pair of spaced towers including trim members; and

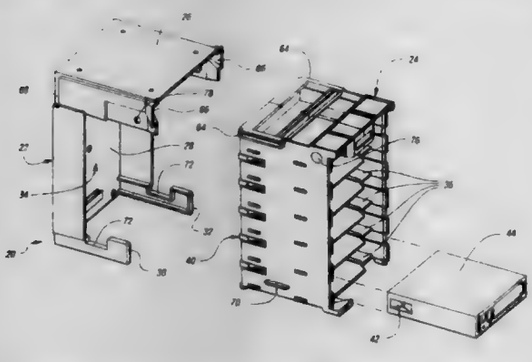
an adjustable bridging means spanning the towers for determining the horizontal distance between the towers, said bridging means including a center plate, at least one adjustable end plate adjustably attached to said center plate and a single, one-piece trim member spanning at least between the spaced towers, wherein said trim member of said adjustable bridging means is aligned with said trim members of said pair of spaced towers, and wherein said trim member of said bridging means includes a groove on a back surface of said trim member which slidably receives each said end plate.

5,795,042

RECEIVER AND MAGAZINE ASSEMBLY FOR STORAGE LIBRARY SYSTEM

John S. Todor, Arvada, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Aug. 12, 1997, Ser. No. 909,703
Int. Cl.[6] G11B *15/68*; **E05B** *53/00*
U.S. Cl. 312—221 **15 Claims**



1. A storage library system for storing cartridges, each cartridge having a notch formed therein, the system comprising:

a receiver forming an opening therein and including an actuator member; and

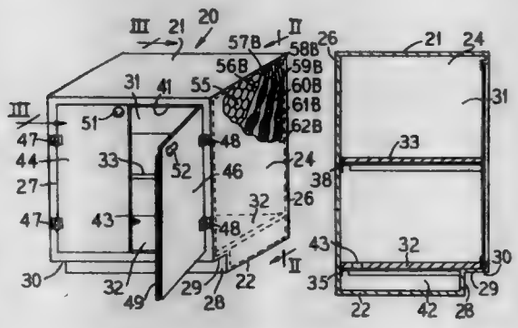
a magazine adapted for engagement within the receiver opening and having a plurality of cells formed therein for receiving the cartridges, wherein the magazine includes a locking member engageable with the actuator member to facilitate locking member movement between locked and unlocked positions with respect to the notch of each cartridge for automatically locking and unlocking the cartridge in each of the plurality of cells as the magazine is moved with respect to the receiver.

5,795,043

CORROSION-RESISTANT STORAGE CABINET

Daryl Johnson; Dennis Johnson, and David Johnson, all of Melrose Park, Ill., assignors to The Protectoseal Company, Bensenville, Ill.

Filed Nov. 1, 1996, Ser. No. 741,787
Int. Cl.[6] A47B *77/06*
U.S. Cl. 312—229 **9 Claims**



1. A plastic cabinet for storing corrosive materials comprising in combination:

(a) wall means comprising opposed top and bottom walls, a pair of opposite side walls and opposed front and back walls that define therewithin an interior chamber and that are connected together at all adjoining edge regions;

(b) said front wall comprising a perimetrically extending frame, a central aperture within said frame, and door means for said aperture, said door means including hinge means comprised of plastic and associated with respective portions of said frame and said door means for opening and closing said door means over said aperture;

(c) bottom shelf positionable in said chamber in upwardly spaced, adjacent relationship to said bottom wall, said bottom shelf being insertable into, and removable from, said chamber through said central aperture, said bottom shelf including support means comprised of plastic for supporting said bottom shelf relative to said wall means when said bottom shelf is positioned in said chamber, said bottom shelf when so positioned in said chamber defining therebeneath in combination with adjacent portions of said wall means a sump for receiving and holding corrosive material released in said chamber above said bottom shelf, said bottom shelf including at least one opening through which said released corrosive material can pass from said chamber into said sump;

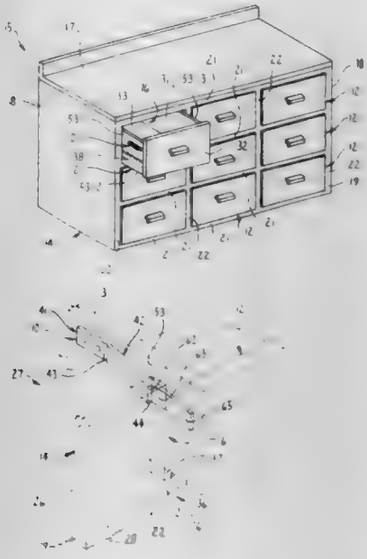
(d) said wall means, said door means, and said bottom shelf each incorporating honeycomb core means comprised of plastic, each said honeycomb core means having opposed faces, each said face being bonded to at least one layer comprised of glass fiber-reinforced plastic; and

(e) said plastic being corrosion resistant.

5,795,044
DRAWER SAFETY LOCK

Stephen W. Trewhella, Jr., Plainwell, and James B. Greene, Otsego, both of Mich., assignors to Glassmaster Controls Co., Inc., Kalamazoo, Mich.

Filed Dec. 31, 1996, Ser. No. 775,830
Int. Cl.[6] A47B 88/00
U.S. Cl. 312—333 20 Claims

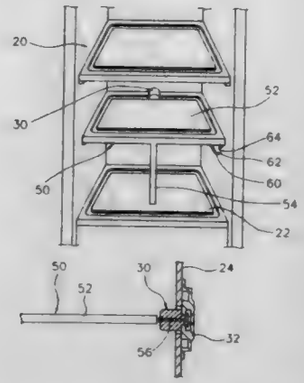


1. In a cabinet housing having a cabinet wall which has a forward facing surface, at least one opening formed through said cabinet wall, and a cabinet component slidably received through said opening, said cabinet component and said cabinet housing including support means for slidably supporting said cabinet component in said cabinet housing so as to be slidable between an open position extending outwardly of said cabinet wall and a closed position disposed substantially within an interior of said cabinet housing, comprising the improvement wherein said cabinet component includes spaced apart side walls and a bottom wall which define exterior surfaces of said cabinet component and a front wall which extends between said side walls, said cabinet housing including an edge member disposed adjacent to one of said exterior surfaces, latch means being mounted to said one exterior surface proximate said front wall for releasably engaging said edge member to prevent opening of said cabinet component past a partially open position, said cabinet component being movable from said closed position to said partially open position a distance which is a small fraction of the distance between the open and closed positions, said latch means having a rear latch section connected to said exterior surface and a front latch section which extends outwardly and forwardly away from said rear latch section and is hingedly connected to said rear latch section so as to be movable inwardly from an engagement position to a disengagement position, said front latch section including a forward facing engagement surface which engages said edge member when in said engagement position to prevent said opening of said cabinet component past said partially open position, said latch means further including a release member which extends forwardly from said engagement surface, said front latch section and said release member being spaced outwardly away from said rear latch section, said release member being disposed rearwardly of said front wall and extending forwardly past said edge member when said cabinet component is in said partially open position so as to be accessible between said cabinet housing and said front wall from an exterior thereof to permit manual movement of said front latch section to said disengagement position to disengage said latching means from said edge member and permit sliding of said cabinet component to said open position.

5,795,045
REFRIGERATOR HAVING A SWING SHELF

Sang-Moo Lee, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 5, 1996, Ser. No. 692,191
Claims priority, application Rep. of Korea, Aug. 4, 1995, 1995-24188
Int. Cl.[6] A47B 96/06
U.S. Cl. 312—408 8 Claims

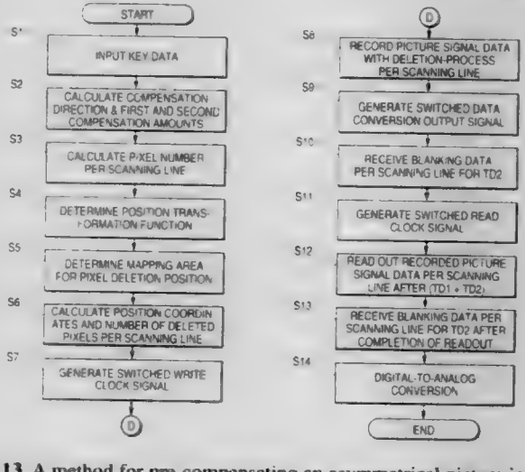


1. A refrigerator having a swing shelf comprising:
said swing shelf having a horizontal plate transversely installed within a cooling chamber for retaining stored items thereon and a vertical plate perpendicularly projected from the central portion of said horizontal plate;
shelf support means separably joined to the inside of said cooling chamber for supporting said swing shelf; and
guiding means for guiding the clockwise/counterclockwise swing motion of said swing shelf in view of a front side of the cooling chamber.

5,795,046
METHOD FOR PRE-COMPENSATING AN ASYMMETRICAL PICTURE IN A PROJECTION SYSTEM FOR DISPLAYING A PICTURE

Seong-Jae Woo, Kyeongki-Do, Rep. of Korea, assignor to Daewoo Electronics, Ltd., Seoul, Rep. of Korea

Filed Nov. 13, 1996, Ser. No. 747,088
Claims priority, application Rep. of Korea, Nov. 13, 1995, 95-40955
Int. Cl.[6] G03B 21/14
U.S. Cl. 353—69 20 Claims



13. A method for pre-compensating an asymmetrical picture in a projection system for displaying a picture, said method comprising the steps of:

(i) inputting a key data corresponding to a projection angle setting signal when a central axis of a projection lens installed in a projector for projecting a magnified picture onto a screen is arranged at an upward or downward projection angle with respect to the screen;

(ii) determining a compensation direction and calculating a maximum compensation amount and a compensation amount in units of a block on the basis of the key data inputted in step (i);

(iii) calculating a number of pixels in units of a scanning line of the picture;

(iv) determining a position transformation function on the basis of the compensation amount in units of a block and the number of pixels in units of a scanning line respectively calculated in steps (ii) and (iii)

(v) determining a pixel deletion position mapping area on the basis of the position transformation function determined in step (iv) and a predetermined position function; and

(vi) calculating the position coordinates of deleted pixels in units of a scanning line and a number of the deleted pixels in units of a scanning line on the basis of the position transformation function and the pixel deletion position mapping area respectively determined in steps (iv) and (v);

(vii) generating a switched write clock signal having a pixel deletion time interval of A, in synchronization with main clock signal, in accordance with a pixel deletion position mapping area determined in step (v) and with the position coordinates of deleted pixels calculated in step (vi);

(viii) recording picture signal data with pixels deleted therefrom in units of a scanning line in accordance with the position coordinates of deleted pixels calculated in step (vi) and the compensation direction determined in step (ii), in response to the switched write clock signal generated in step (vii), in order to generate a picture shaped in reverse to the picture to be projected onto the screen;

(ix) generating a switched data conversion output signal in synchronization with the main clock signal in order to have a time delay corresponding to one half of the maximum compensation amount calculated in step (ii);

(x) receiving blanking data in units of a scanning line by the switching operation, responsive to a second switching control signal, for the time interval corresponding to one half of the compensation amount in units of a block, prior to when the picture signal data having pixels deleted therefrom in units of a scanning line is read out;

(xi) generating the switched read clock signal in synchronization with the main clock signal in order to have the time delay corresponding to one half of the sum of the maximum compensation amount and the compensation amount in units of a block, calculated in step (ii);

(xii) reading out the picture signal data recorded in step (viii) in units of a scanning line in response to the switched read clock signal generated in step (xi); and

(xiii) receiving the blanking data by the switching operation, responsive to the second switching control signal, for the time interval corresponding to one half of the compensation amount in units of a block and beginning from a point in time when in step (xii), reading out the recorded picture signal data in units of a scanning line has finished; and

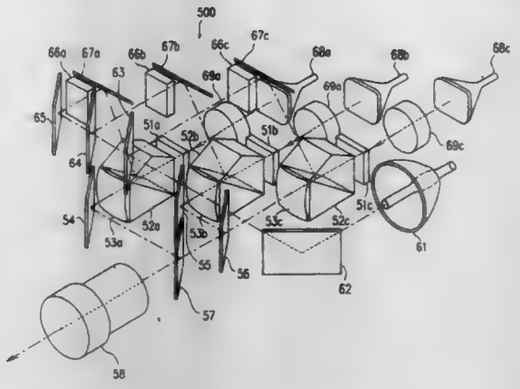
(xiv) converting the picture signal data having the blanking data added thereto and being formed in steps (x) to (xiii), into an analog signal in response to the switched data conversion output signal generated in step (ix), and outputting a converted picture signal data.

5,795,047

PROJECTION LENS AND PROJECTION DISPLAY APPARATUS

Shinya Sannohe, and Yoshito Miyatake, both of Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 7, 1995, Ser. No. 568,473
Claims priority, application Japan, Dec. 9, 1994, 6-306100
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—81 **41 Claims**



26. A projection display apparatus comprising:

a light source for radiating reading light containing three primary color components;

color separation means for separating the reading light radiated from the light source into three primary color beams;

three reflection light valves; and

a projection lens having: a main lens group including sequentially from a screen side a first lens group which has a negative power, a second lens group which has a weaker power than that of the first lens group, and a third lens group which has a positive power: three auxiliary lenses which have identical characteristics and a positive power; three polarizer-beam splitters which are transparent prisms, the three auxiliary lenses being respectively positioned close to or cemented to faces of the polarizer-beam splitters on a side of the third lens group; two dichroic mirrors; and at least one plane mirror; and

three light writing means for forming an optical image on each of the reflection light valves,

wherein the three primary color light beams output from the color separation means are incident upon the corresponding reflection light valves through the three polarizer-beam splitters of the projection lens,

light beams reflected by each of the reflection light valves are incident upon the corresponding auxiliary lenses through the corresponding polarizer-beam splitters, and

light beams output from the three auxiliary lenses are combined into one light beam by the at least one plane mirror and the two dichroic mirrors and incident upon the main lens group,

whereby optical images formed on the reflection light valves are projected on the screen by the light write means.

5,795,048

OVER HEAD PROJECTOR APPARATUS AND CONTROL METHOD

Sachio Umei, Tokyo, Japan, assignor to Samsung Aerospace Industries, Ltd., Kyeongsangnam-do, Rep. of Korea

Filed Feb. 9, 1996, Ser. No. 598,957
Claims priority, application Japan, Feb. 17, 1995, 7-029003
Int. Cl.[6] G03B *21/14*
U.S. Cl. 353—122 **7 Claims**

1. An over head projector, comprising:

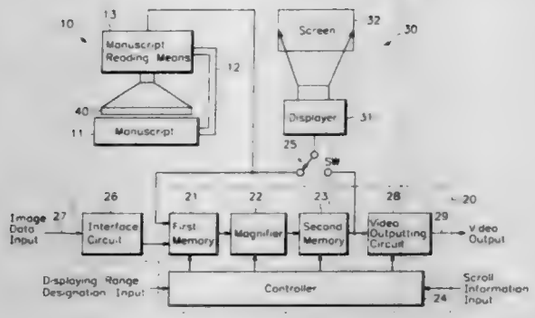


image inputting means for inputting an image data of a manuscript;

a projecting optical system for projecting said image data to a screen at a first magnification; and

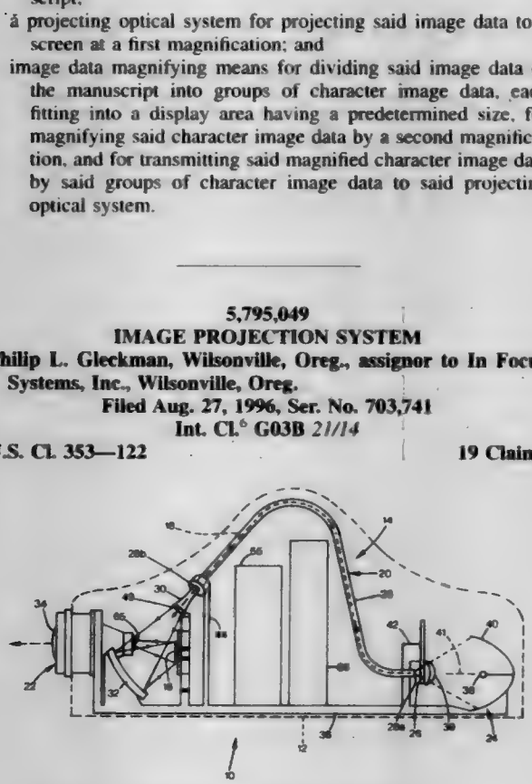
image data magnifying means for dividing said image data of the manuscript into groups of character image data, each fitting into a display area having a predetermined size, for magnifying said character image data by a second magnification, and for transmitting said magnified character image data by said groups of character image data to said projecting optical system.

5,795,049

IMAGE PROJECTION SYSTEM

Philip L. Gleckman, Wilsonville, Oreg., assignor to In Focus Systems, Inc., Wilsonville, Oreg.

Filed Aug. 27, 1996, Ser. No. 703,741
Int. Cl.[6] G03B 21/14
U.S. Cl. 353—122 **19 Claims**



1. An image projector optical system comprising:

a light source;

a nonimaging device defined by a edge ray method positioned downstream of the light source;

a light valve positioned downstream of the nonimaging device;

a front lens system positioned downstream of the light valve;

wherein light from the light source is projectable through the nonimaging device onto the light valve.

5,795,050

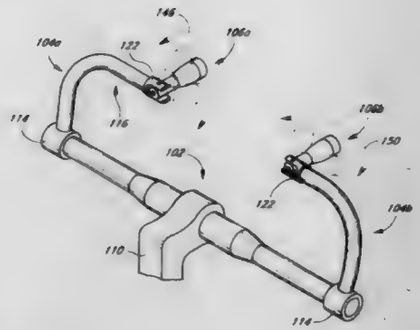
BICYCLE HANDLEBAR LIGHT

Russell E. Carter, 29001 Jasmine Creek La., Highland, Calif. 92346

Continuation of Ser. No. 514,600, Aug. 14, 1995, Pat. No. 5,580,152. This application Aug. 6, 1996, Ser. No. 692,589
Int. Cl.[6] B62J 6/04
U.S. Cl. 362—72 **5 Claims**

1. A light assembly for a bicycle having handlebars, said light assembly comprising:

a power source dimensioned so as to be positioned within each of the handlebars of said bicycle;



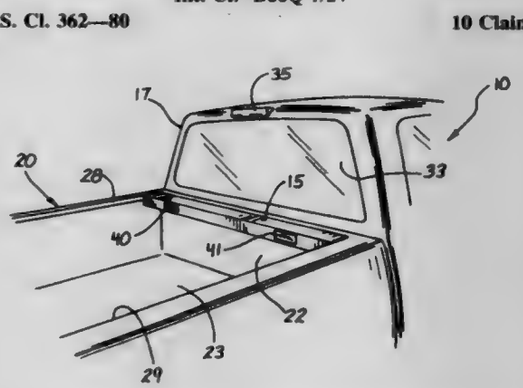
a headlight housing a light source, electrically connected to said power source, wherein the light source is configured to be mounted at a first end of the handlebar so that the light source produces a beam of light that shines in a path of forward travel of the bicycle and wherein the light source is configured to be adjustable with respect to the handlebar permitting selective illumination of the path of forward travel of the bicycle.

5,795,051

TRUCK LIGHTING SYSTEM

Norman D. Galanski, 4316 Thatch Ave., Bakersfield, Calif. 93313

Filed Dec. 31, 1996, Ser. No. 775,327
Int. Cl.[6] B60Q 1/24
U.S. Cl. 362—80 **10 Claims**



1. A lighting system for a truck wherein the truck includes a cab and a truck bed to the rear of the cab, the truck bed including a bottom wall and side walls having a top section and a front wall to the rear of the cab and a tail gate moveable between a closed and down position and the tail gate having a top section which is at about the same level as the top of the side walls, the lighting system comprising:

a light supporting member supported between the side walls of the truck and in contact with the front wall of the truck bed,

the supporting member including an upper wall portion which is at essentially the same level as the top section of the side walls,

separate spaced light means supported by said supporting member and positioned below the top section of said side wall such that the lights are located below the top section of said tail gate, and

switch means located in the cab for turning said lights on and off whereby said lights when turned on illuminate the truck bed.

5,795,052

LAMP DRIVING CONTROL APPARATUS AND METHOD FOR A WASHING MACHINE

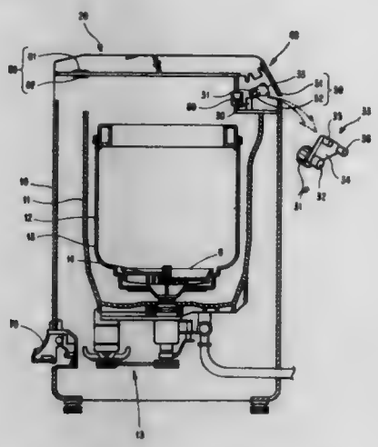
Ssi Chol Choi, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 8, 1996, Ser. No. 746,337

Claims priority, application Rep. of Korea, Nov. 9, 1995, 1995-40471

Int. Cl.[6] D06F *39/00*

U.S. Cl. 362—91 8 Claims



1. A lamp driving control apparatus for use in a washing machine, which washing machine includes a main body, a door mounted to the main body, a door motor for opening and closing the door and a lamp that is turned on when the door is opened in order to illuminate an interior of the main body, the control apparatus comprising:

a door open sensor for sensing whether the door is opened by a predetermined angle corresponding to a fully opened door; and

a controller for turning on the lamp when the door is opened beyond the predetermined angle corresponding to the fully opened door.

5,795,053

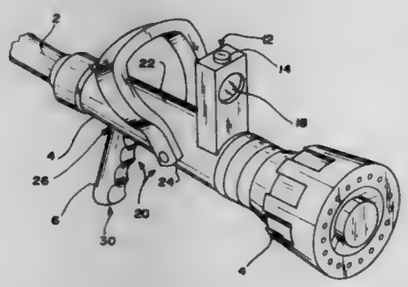
ILLUMINATED FIRE HOSE RESCUE NOZZLE

Adam Benson Pierce, 44 Arrandale Ave., Great Neck, N.Y. 11024

Filed Dec. 9, 1996, Ser. No. 762,281

Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—96 11 Claims



1. An illuminating fire hose rescue nozzle comprising: a nozzle for terminating a fire hose, an illuminating device having a light source enclosed within a housing, a mounting means for mounting said illuminating device to said nozzle such that light from said light source is directed in the direction that water exits the nozzle, and a power means for providing power to said illuminating device, where the mounting means is attached to the power means and to the illuminating device and where the mounting means additionally electrically connects the power means to the illumination device; and

wherein the mounting means is further comprised of a band which is further defined as an elongated flexible strip having a first attachment means and a second attachment means disposed at each end of the band and wherein the first attachment means removably and matingly attaches to the second attachment means for securing the band in a fixed size about the nozzle, and wherein the band further includes a power transfer means which is fixedly and integratedly attached to the band and where the power transfer means and the band are fixedly attached and electrically connected to the power means and the illuminating device.

5,795,054

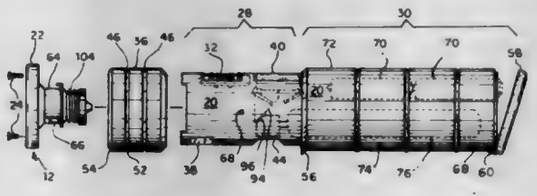
GUARDLIGHT

Donald J. Booty, Jr., Chicago, Ill., assignor to Phorm Concept & Design, Inc., Chicago, Ill.

Filed Mar. 5, 1997, Ser. No. 811,881

Int. Cl.[6] F21V *33/00*

U.S. Cl. 362—96 20 Claims



1. A guardlight comprising:

a body with a predetermined configuration, and having a frontal lens section, a uniformly recessed collar section, and a handle section;

said frontal lens section including:

a lens cover containing a flat primary lens, a parabolic reflector with a rectangular aperture in its bottom surface, and a lamp; said recessed collar section including:

a sliding lamp switch on a top surface proximate to said frontal lens section for activating said lamp;

a depressible button switch on a top surface proximate to said handle section for activating an ejection of gas;

a curved secondary light lens on a bottom surface positioned proximate to said frontal lens section;

an aperture on said bottom surface positioned proximate to said handle section and contiguous to a spray nozzle means;

and a slidable collar having a curved ternary light lens positioned at its forward edge and on its bottom surface; and said handle section including:

batteries enclosed in an upper chamber of said handle section;

a gas cylinder having a gas valve means enclosed in a lower chamber of said handle section; and

an end cap enclosing said upper and lower chambers;

whereby a user can defend against an attack by an assailant by sliding said lamp switch forward to activate the lamp, sliding said collar forward to expose said depressible button switch while tilting the lightguard up to illuminate and to activate the ejection of gas from said gas cylinder by depressing said depressible button switch.

5,795,055

COMBINED TOOL CASE AND FLASHLIGHT

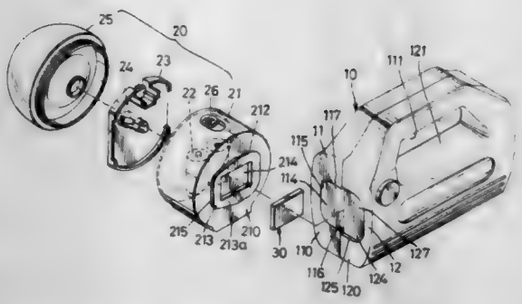
Hsuan-Sen Shiao, No. 15-1, La. 369, Min-Chuan Rd., Pei Dist., Taichung City, Taiwan

Filed Nov. 18, 1997, Ser. No. 972,716

Int. Cl.[6] A45C *15/06*

U.S. Cl. 362—156 5 Claims

1. A combined tool case and flashlight, comprising:



a tool case having a housing portion, a cover portion hinged to said housing portion, and a fastener to fasten said cover portion to said housing portion, said housing and cover portions having first and second connecting ends, respectively, said first and second connecting ends having first and second cavity halves which complement one another to confine a receiving space when said cover portion is closed;

a flashlight unit including a cell housing having opposite front and rear ends, a bulb mounted to said front end, a lamp shade connected to said front end to cover said bulb, and a joint portion formed integrally with said rear end of said cell housing, said joint portion projecting rearwardly from said rear end into said receiving space; and

a magnet provided on said rear end of said cell housing adjacent to said joint portion;

said first connecting end of said housing portion and said joint portion of said cell housing having interlocking means which prevents release of said joint portion from said tool case in a first direction toward said front end of said cell housing and which permits a release movement of said joint portion in a second direction which is perpendicular to said first direction, said second connecting end of said cover portion having push means which pushes said joint portion in a third direction opposite to said second direction when said cover portion is closed.

5,795,056

ARRANGEMENT OF A LAMP IN AN OPENING OF A REFLECTOR OF A MOTOR VEHICLE HEADLIGHT

Ralf Seiger, Lippstadt, Germany, assignor to Hella KG Hueck & Co., Lippstadt, Germany

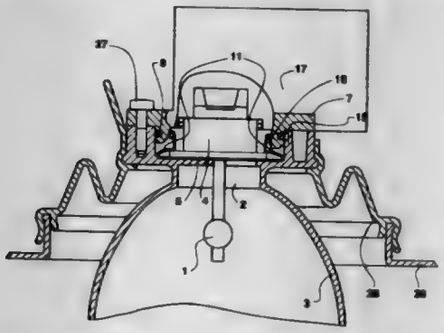
PCT No. PCT/EP95/03713, § 371 Date May 28, 1996, § 102(e) Date May 28, 1996, PCT Pub. No. WO96/12138, PCT Pub. Date Apr. 25, 1996

PCT Filed Sep. 21, 1995, Ser. No. 649,666

Claims priority, application Germany, Oct. 12, 1994, 44 36 409.1

Int. Cl.[6] B60Q *1/00*; F21K *27/00*; H01R *33/00*

U.S. Cl. 362—263 **12 Claims**



1. Assembly for holding a lamp (1) in an opening (2) of a reflector (3) of a motor vehicle, in which: the lamp (1) is mountable in the opening in a mounting direction from a rear side of the reflector (3) with a socket (4) of the lamp (1) engaging a first supporting surface (5) of the reflector (3); a cover (7) for closing the opening (2) is releasably attached to the rear side of the reflector (3); and a spring holding element (8) is tensioned, when the lamp (1) is mounted, against the cover (7) and grips behind the socket (4) of the lamp (1) for pressing the socket (4) against the first supporting surface (5) of the reflector (3);

wherein a first portion (9) of the spring holding element (8) positioned beside the opening (2) is affixed to the reflector (3) even when the cover (7) is not attached to the reflector; a second portion (10) of the spring holding element engages the cover (7) when the cover (7) is attached to the reflector; and a third portion (11) of the spring holding element, which grips behind the socket (4) of the lamp (1), presses the socket (4) of the lamp (1) against the first supporting surface (5) of the reflector (3).

5,795,057

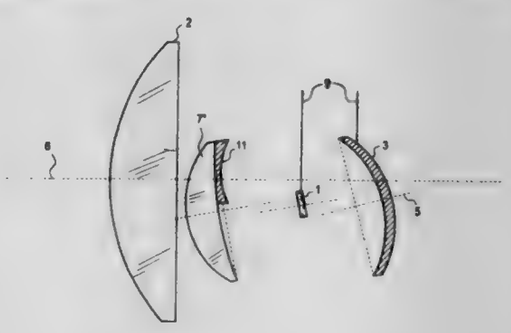
ASYMMETRICAL LAMP

Dedo Weigert, Munich, Germany, assignor to Dedo Weigert Film GmbH, Munich, Germany

Continuation-in-part of Ser. No. 422,882, Apr. 17, 1995, Pat. No. 5,674,001. This application Mar. 20, 1997, Ser. No. 821,655

Int. Cl.[6] F21V *13/04*

U.S. Cl. 362—268 **8 Claims**



1. A lamp comprising:

a main lens having a main-lens optical axis;

a reflector having reflector main axis, said reflector being arranged to be offset from the main-lens optical axis and said reflector main axis being inclined relative to the main-lens optical axis; and

at least one light source arranged between the reflector and the main lens;

wherein a center of the light source is arranged offset from the main-lens optical axis and offset from the reflector main axis;

wherein an additional lens is arranged between the light source and the main lens to be offset from the main-lens optical axis whereby an additional-lens main axis of the additional lens is inclined to the main-lens optical axis; and

wherein said lamp further includes a mirror covering a portion of said additional lens for reflecting light from said light source back toward said reflector.

5,795,058

COLOR IMAGE PROTECTION APPARATUS

Keith James Owen, Birmingha, United Kingdom, assignor to Light & Sound Design, Ltd., Edinburgh, United Kingdom

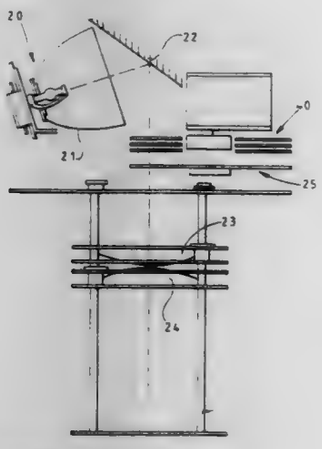
PCT No. PCT/GB93/01700, § 371 Date Feb. 14, 1995, § 102(e) Date Feb. 14, 1995, PCT Pub. No. WO94/04951, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 11, 1993, Ser. No. 381,967

Claims priority, application United Kingdom, Aug. 15, 1992, 9217392

Int. Cl.[6] F21V 9/00

U.S. Cl. 362—293 21 Claims



1. A light beam projector comprising:

a light source,

an optical system for concentrating light from said light source into a beam;

a transparency, having a glass substrate capable of withstanding high temperatures, said substrate having selected areas thereof coated with layers of dielectric material such that it acts as a dichroic filter, said transparency situated in said light beam in such a position relative to said optical system that a focused image of a pattern on the transparency can be formed; and

a colour changer such that light passing through clear areas of the transparency is coloured by said colour changer and light passing through the coated areas of the transparency has a colour determined by the substrative mixing effect of the colour changer and the coated areas of the transparency.

5,795,059

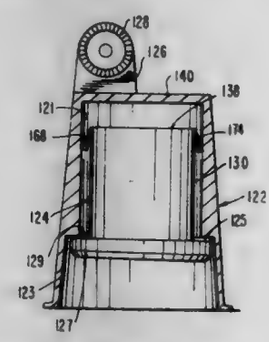
PUSH-IN LAMPHOLDER MOUNTING SYSTEM

Stanley S. Brenner, East Northport, and Charles Chase, East Meadow, both of N.Y., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Jan. 18, 1996, Ser. No. 588,191

Int. Cl.[6] F21P 1/00

U.S. Cl. 362—368 11 Claims



1. A lighting fixture comprising:

a. a rigid lampholder means for receiving an electrical lamp therein and applying AC power thereto by means of electrical conductors to cause said electrical lamp to be illuminated;

b. a rigid body means having a cavity therein extending from a first open end to a second substantially closed end;

c. said lampholder means positioned in said cavity of said body means to permit an electrical lamp inserted through said body means first end to be received in said lampholder means and to permit said electrical conductors to exit said body means at said second substantially closed end;

d. locking means mounted on said lampholder means to engage a wall of said body means defining said cavity to prevent removal of said lampholder means from said body means;

e. at least two groove means in the wall of said body means defining said cavity extending between said first open end and said second substantially closed end, said at least two groove means are positioned in line with one another on opposite portions of said wall of said body means defining said cavity; and

f. at least a portion of said locking means engages said wall in said at least two groove means to prevent rotation of said lampholder means within said body means.

5,795,060

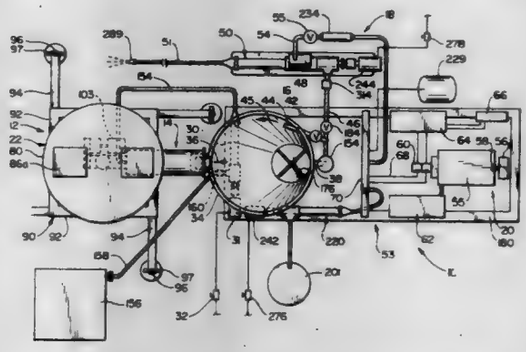
METHOD AND APPARATUS FOR CONTINUOUS PRODUCTION OF COLLOIDALLY-MIXED CEMENT SLURRIES AND FOAMED CEMENT GROUTS

Patrick J. Stephens, 1276 Chuckanut Dr., Bellingham, Wash. 98225

Filed May 17, 1996, Ser. No. 650,921

Int. Cl.[6] B28C 5/08; 7/04

U.S. Cl. 366—2 23 Claims



1. An apparatus for high-capacity production of high-fluidity cement slurry which is substantially free of aggregate material, said apparatus comprising:

means for providing a supply of hydraulic cement dust at an adjustable, metered rate;

means for providing a supply of water at an adjustable, metered rate;

means for mixing said metered supply of cement dust with said metered supply of water to produce an initial cement slurry having a water-to-cement ratio which is precisely adjustable by adjusting said metered rates at which said water and cement dust are provided thereto; and

means for colloidally mixing said initial cement slurry which is produced by said mixing means so as to produce a high-fluidity colloidally-mixed hydraulic cement slurry which is substantially free of aggregate material.

5,795,061

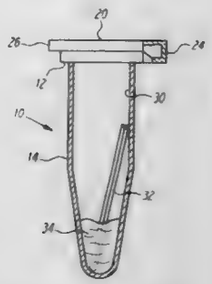
VORTEX MIXING IMPLEMENT FOR SAMPLE VESSELS

Daniel Perlman, Arlington, Mass., assignor to Brandeis University, Waltham, Mass.

Continuation-in-part of Ser. No. 590,552, Mar. 19, 1996, abandoned. This application Mar. 14, 1997, Ser. No. 818,600

Int. Cl.[6] B01F *13/00*

U.S. Cl. 366—130 19 Claims



1. A method for improving the efficacy of vortex-mixing a sample comprising a liquid, and not interfering with subsequent centrifugation of said sample, wherein a mixing implement and said sample are placed inside a microcentrifuge tube or sample vessel, and wherein following vortex-mixing of said sample, the presence of said mixing implement in said vessel does not substantially interfere with fractionation of said sample by centrifugation, comprising the steps of:

providing a straight wand-shaped mixing implement, wherein the length of said mixing implement is greater than the maximum inner diameter of said vessel but less than the maximum inner height of said vessel when sealed, so that said mixing implement is constrained to remain substantially upright within said vessel, and wherein the surface of said mixing implement is configured and arranged to be free of substantial depressions and concave blemishes which could trap sedimenting solid material contained in said sample during centrifugation,

placing said sample and said mixing implement in said vessel,

positioning said vessel in a holder and/or adapter element of a vortex-mixing machine, and

commencing said vortex-mixing, wherein said mixing implement moves and/or gyro-rotates rapidly around the inner sidewall of said vessel to accelerate the mixing process.

5,795,062

MILKSHAKE MACHINE

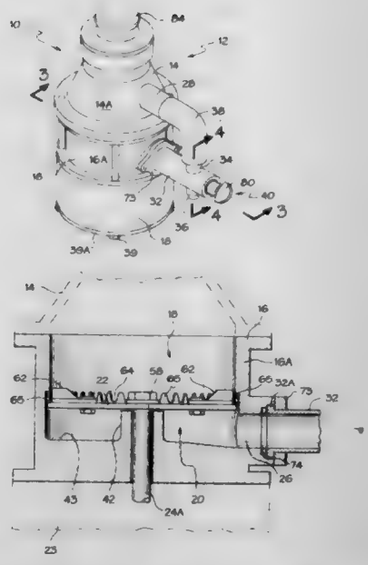
Kevin M. Johnson, Natick, Mass., assignor to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.

Filed Oct. 3, 1996, Ser. No. 724,771

Int. Cl.[6] B01F *15/02;7/26*

U.S. Cl. 366—136 20 Claims

1. A conventional, commercially-available impeller-type waste disposer modified to be an apparatus, such as a milkshake machine, for mixing solids and liquids into a flowable mixture suitable for drinking, said disposer comprising (a) a housing having an upper opening for receiving ingredients to be ground into a flowable mixture and a dishwasher drain inlet, said housing defining both an upper chamber having a cylindrical inner wall with a plurality of shredding surfaces and a lower chamber located beneath the upper chamber and having a discharge outlet, (b) a rotatable impeller disk disposed within said housing separating the upper chamber and the lower chamber, said impeller disk having its peripheral margin rotating in close proximity to the inner wall of the upper chamber and defining a discharge gap therebetween, said impeller disk further having a plurality of impellers mounted thereon near the periphery thereof such that, as said impeller disk is rotated, the ingredients in the upper chamber are mixed together and driven against the shredding surfaces on the inner wall of the upper chamber, pass through the discharge gap into the lower chamber,



and are expelled through the discharge outlet, and (c) a motor for rotating the impeller disk, wherein said modifications comprise:

a discharge conduit connected at one end to the discharge outlet and having a return port and a discharge spout at its opposite end;

a return conduit connected at one end to the return port of the discharge conduit and at its opposite end to the dishwasher drain inlet; and

a valve mechanism intermediate the return port and the discharge spout of said discharge conduit, said valve mechanism having a diverter movable between a return position wherein ingredients expelled into said discharge conduit are diverted through said return port into said return conduit and returned to the upper chamber for further processing and a discharge position wherein ingredients expelled into said discharge conduit are diverted out of the discharge spout.

5,795,063

METHOD AND APPARATUS FOR THERMAL IMPEDANCE EVALUATION OF PACKAGED SEMICONDUCTOR COMPONENTS

Filip Christiaens, Bornem, Belgium; Luc Tielemans, Simmerath, Germany; Luc De Schepper, Hasselt, and Eric Beyne, Heverlee, both of Belgium, assignors to Interuniversitair Micro-Elektronica Centrum VZW, Louvain, Belgium

Filed Oct. 19, 1995, Ser. No. 543,867

Claims priority, application Belgium, Oct. 19, 1994, 09400949

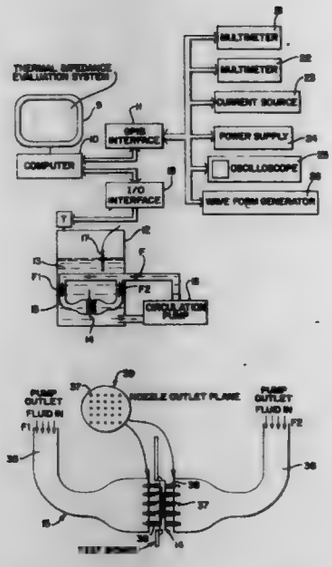
Int. Cl.[6] G01N *25/20;25/18*

U.S. Cl. 374—43 14 Claims

1. An apparatus for evaluating the thermal impedance of a packaged semiconductor chip comprising:

a thermostatic bath containing a fluid, said packaged semiconductor chip being immersed in said fluid;

means for creating at least one liquid jet impinging on said packaged semiconductor chip; and



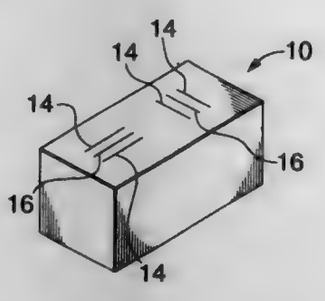
at least one measuring unit for measuring the temperature of said fluid in said bath.

5,795,064

METHOD FOR DETERMINING THERMAL PROPERTIES OF A SAMPLE

Nancy Mathis, Fredericton, Canada, assignor to Mathis Instruments Ltd., Fredericton, Canada

Filed Sep. 29, 1995, Ser. No. 536,454
Int. Cl.[6] G01N *25/18*
U.S. Cl. 374—44 **5 Claims**



1. A method for determining a thermal conductivity ratio of a sample in both a machine direction and a transverse direction, comprising the steps of:

providing a measuring device having a flat surface with at least one electroconductive member in a transverse direction and at least one electroconductive member in a machine direction;

applying a steady current at an initial voltage through said at least one electroconductive member in each direction to elevate the temperature of each of said electroconductive members in each direction in the absence of thermal guarding;

contacting, at a selected flat surface on said sample, each of said electro conductive members in each direction;

determining an amount of voltage change from said initial voltage by each of said electroconductive members for both said transverse direction and said machine direction; and

combining the voltage changes to generate a thermal conductivity ratio from the determined voltage changes for said machine direction and said transverse direction.

5,795,065

TEMPERATURE-TIME-PRESSURE DETECTOR

William L. Barham, P.O. Box 863, Mount Airy, N.C. 27030

Filed Jan. 31, 1997, Ser. No. 792,649
Int. Cl.[6] G01K *11/06;3/04;13/00;* **G01L** *7/10*
U.S. Cl. 374—106 **5 Claims**



1. A temperature-time detecting device for a closed zone comprising a sealed discoidal-shaped capsule of transparent material adapted for vertical orientation within the zone, said capsule being formed of two opposed circular shell walls sealed around a common rim and having portions defining therebetween a central core region and an annular chamber surrounding said central core region and concentric therewith, said core region containing a mass of a distinctly visible fusible indicating material having a substantially defined melting point at least as high as a temperature to be detected and being separated from said annular chamber by a spacer ring, said spacer ring holding the shell walls spaced apart and being penetrated at generally uniformly circumferentially spaced points by radial ports for passage of fused indicating material at a rate such that substantially complete migration of the fused material from said central core region to the annular chamber occurs over a time interval generally corresponding to the time to be detected.

5,795,066

Patent Not Issued For This Number

5,795,067

ENHANCED PROTECTIVE LENS COVER FOR AN INFRARED THERMOMETER

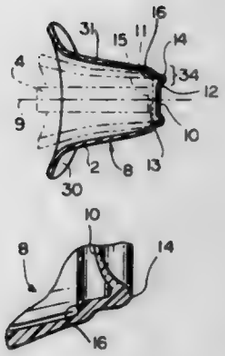
Jacob Fraden, San Diego; Joseph P. Brown, Valley Ctr.; Robert P. Lackey, Carlsbad, all of Calif.; Randall R. Howe, Eaton, Colo.; Heinz Bultges, Eppstein, Germany; Wolfram Debus, Kronberg, Germany; Gunther Bautz, Ulm, Germany, and Helmut Franke, Wehrheim, Germany, assignors to Thermoscan, Inc., San Diego, Calif.

Filed May 7, 1996, Ser. No. 643,841
Int. Cl.[6] G01K *1/08;* **A61B** *5/00;6/00;1/227*
U.S. Cl. 374—158 **25 Claims**

1. A cover for use with an infrared thermometer to provide a sanitary barrier between said thermometer and a patient, said cover comprising:

an infrared transparent film window;

a hollow tubular sidewall having means for attaching said cover to said thermometer wherein said sidewall is configured to provide a repeatably consistent placement of said film window when attached to said thermometer so as to establish optical alignment with said window and an infrared sensor within said thermometer; and



a collar linking said film window and said sidewall wherein said collar receives forces applied to said sidewall and acts to prevent the translation of these forces from said sidewall into a stretching force applied against said film window.

21. A process for assessing temperature by measuring infrared radiation in a sanitary manner, said process comprising the steps of:

placing a cover over a probe of an infrared thermometer;

placing said probe and cover assembly into a patient's ear canal;

exposing a sensor in said thermometer to infrared radiation from a tympanic membrane within said ear canal;

converting said sensed infrared radiation into a value corresponding to the temperature of said membrane; wherein said cove comprises a sidewall and a film window linked together by a collar structure and said collar structure provides means to prevent forces applied to said sidewall from adversely distorting or stretching said film window.

5,795,068

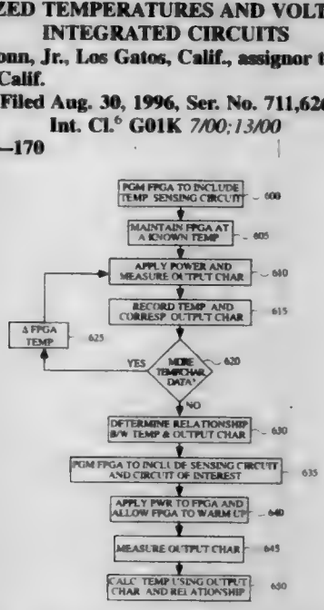
METHOD AND APPARATUS FOR MEASURING LOCALIZED TEMPERATURES AND VOLTAGES ON INTEGRATED CIRCUITS

Robert O. Conn, Jr., Los Gatos, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Aug. 30, 1996, Ser. No. 711,626

Int. Cl.[6] G01K *7/00;13/00*

U.S. Cl. 374—170 **11 Claims**



1. A method for measuring an operating temperature of a region of a programmable logic device, wherein the programmable logic device is configurable using configurable elements to provide specified logic functions, the method comprising:

configuring a set of the configurable elements in the region of the programmable logic device to include a temperature-sensing circuit and a circuit of interest, the temperature-sensing circuit having a characteristic that varies with temperature according to a known relationship;

measuring the characteristic of the temperature-sensing circuit; and

determining the temperature of the region, and therefore of the circuit of interest, based on the measured characteristic and the known relationship.

5,795,069

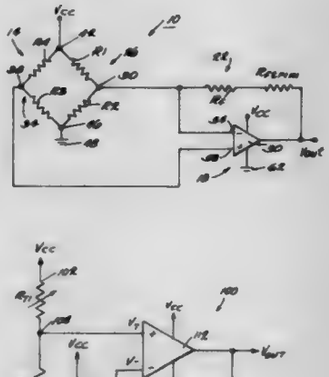
TEMPERATURE SENSOR AND METHOD

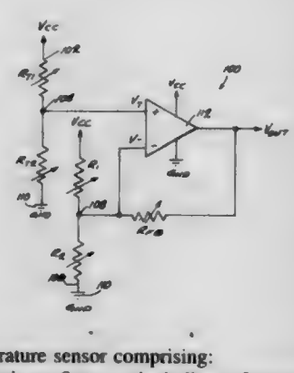
Michael F. Mattes, Janesville; James D. Seefeldt, DeForest, and Paul B. Rozgo, Janesville, all of Wis., assignors to SSI Technologies, Inc., Janesville, Wis.

Continuation-in-part of Ser. No. 286,784, Aug. 5, 1994, abandoned. This application Jan. 2, 1997, Ser. No. 778,164

Int. Cl.[6] G01K *7/00*

U.S. Cl. 374—183 **28 Claims**





1. A temperature sensor comprising:

a bridge having a first arm including a first and a second doped polysilicon resistor and a first node between said first and second resistor, and a second arm including a third and a fourth doped polysilicon resistor and a second node between said third and fourth resistors, wherein said resistors generate a differential voltage at said first and second nodes that is functionally related to ambient temperature;

an amplifier in communication with said bridge having as an input said differential voltage, said amplifier having a gain that is adjustable in response to variations in ambient temperature, and said amplifier having an electrical signal output that is related to the ambient temperature; and

a doped polysilicon feedback resistor connected between said input and said output of said amplifier, said feedback resistor having a predetermined temperature coefficient such that as the ambient temperature varies, the resistance of said feedback resistor varies to automatically adjust said gain of said amplifier.

5,795,070

THERMOMETER

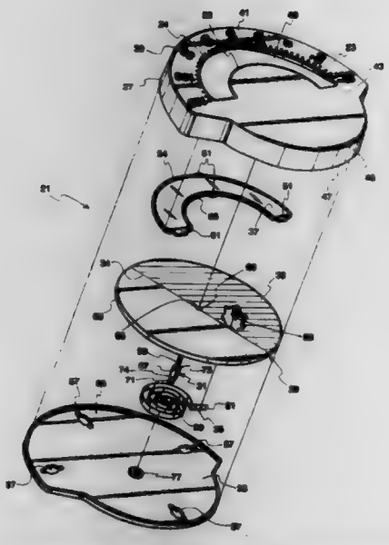
Robert C. Geschwender, 3855 Orchard St., Lincoln, Nebr. 68503

Continuation of Ser. No. 573,156, Dec. 15, 1995, abandoned. This application Jun. 6, 1997, Ser. No. 870,251

Int. Cl.[6] G01K *5/62;5/68*

U.S. Cl. 374—206 **17 Claims**

1. A thermometer comprising:



a housing having a face plate, a central cavity in the face plate, a window on the face plate, a temperature scale operatively associated with and fixed in relation to the window, and a mounting plate having a central aperture,

a shaft extending substantially orthogonally from the face plate to the mounting plate with the front end of the shaft being retained in the cavity in the face plate and the rear end of the shaft extending through the aperture in the mounting plate;

a member mounted on a medial portion of the shaft and rotatable with respect thereto, the member having a colored region thereon with a boundary which is visible through the window at any temperature within the range of a temperature scale, the region being sufficiently large so that the colored region disappears in the window to one side of the boundary when the boundary is visible in the window, the member having a substantially unidimensional edge having a contact point with the medical portion of the shaft where the member is mounted to minimize friction between the shaft and the member; and

a bimetal, coil spring having one end connected to the medial portion of the shaft and the other end connected to the member, the shaft being connected to the face plate so that changes in temperature cause the spring to rotate the member without causing the shaft to rotate.

5,795,071

STANDING POUCH

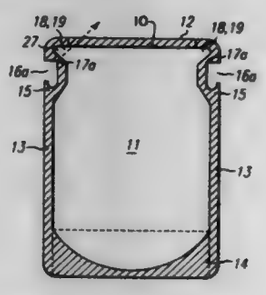
Hitoshi Sasaki, and Shoji Igota, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 653,702, May 23, 1996, abandoned, which is a continuation of Ser. No. 332,783, Nov. 1, 1994, abandoned. This application Aug. 20, 1997, Ser. No. 914,755

Claims priority, application Japan, Jul. 20, 1994, 6-009899

Int. Cl.[6] **B65D** *30/10;30/16*

U.S. Cl. 383—200 **7 Claims**



1. A standing pouch comprising:

a standing pouch body having a recess portion formed on an upper part of a side of the body and spaced from a removable upper corner of the body, said body also including a spaced part front and rear sheet and a bottom seal portion interconnecting said front and rear sheet, said recess portion having an upper side forming an aperture angle θ in a range of 30° to 120° with respect to a back portion of the recess and said recess portion being surrounded by an upper widened portion of the body, said back portion of the recess portion and said upper side of the recess portion wherein a spout is formed upon removal of said removable upper corner of the body wherein the upper corner of the body includes a removable corner member which extends from an upper side corner portion of said recess portion, said corner member crossing said upper side of said recess portion and wherein said upper side corner portion includes a notch formed therein which intersects with said removable corner member and wherein an engaging portion is located at one of an underside portion of the recess and a back portion of the recess, said engaging portion being engagable with an opening of a container to which a fluid material contained in the pouch is transferrable.

5,795,072

BEARING STRUCTURE FOR HARD DISK DRIVE

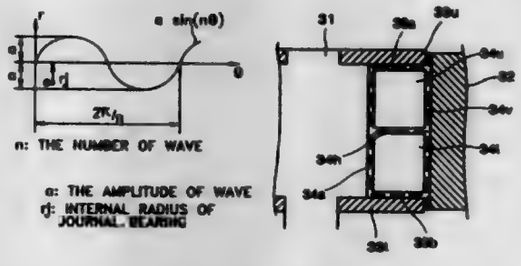
Tae-yeon Hwang, Sungnam, Rep. of Korea, assignor to Samsung Electro-mechanics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 29, 1996, Ser. No. 739,456

Claims priority, application Rep. of Korea, Jul. 25, 1996, 1996 30436

Int. Cl.[6] **F16C** *32/06*

U.S. Cl. 384—100 **10 Claims**



1. A bearing structure for a hard disk drive comprising:

a first thrust bearing for forming a first thrust air bearing for supporting a hub in an axial direction; and

first and second journal bearings disposed around a shaft for forming a journal air bearing for supporting the hub with respect to the shaft in a radial direction, air passages being formed between the first and second journal bearings and between the journal bearings and the hub.

5,795,073

RADIAL AND THRUST BEARING SYSTEM

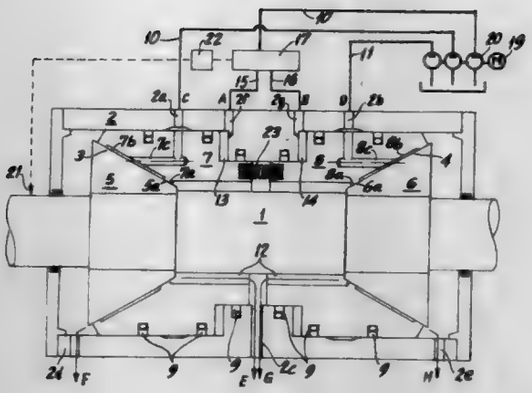
Thomas Arvidsson, Sherman St., Muncy, Pa. 17756, and Steve A. Rowland, 2995 Le Courbusier, Laval, Quebec, Canada, H7L 3M3

Filed Mar. 18, 1996, Ser. No. 617,338

Int. Cl.[6] **F16C** *32/06*

U.S. Cl. 384—110 **4 Claims**

1. Radial and thrust bearing system for a main load-bearing shaft (**1**) of an axial mill refiner with two hydrostatic, radial and thrust bearings (**3**,**4**), axially movable relative to a surrounding bearing housing (**2**), and each comprising a flange (**5**,**6**) joined to the shaft (**1**) and having a pressure surface (**5***a*,**6***a*), a ring chamber bearing (**7**,**8**), which has a surface (**7***a*,**8***a*) facing the pressure surface (**5***a*,**6***a*), and an annular groove (**7***b*,**8***b*) therein, said surface (**7***a*,**8***a*)



forming with the pressure surface (5*a*,6*a*) inner and outer sealing gaps on either side of the annular groove and said groove with the pressure surface (5*a*,6*a*) forming a ring chamber (7*b*,8*b*) to which hydraulic fluid is fed under pressure from a source of hydraulic fluid and said ring chamber bearing (7,8) forming with the bearing housing (2) a chamber (13,14) hydraulically pressurized, said chamber pressing the ring chamber bearing (7,8) against the pressure surface (5*a*,6*a*), whereupon the two ring chamber bearings (7,8) are pressed in mutually opposite directions by means of a control valve (17) disposed, in cooperation with a sensor (21) sensing the position of the shaft (1) relative to the bearing housing (2), to control the amount of hydraulic fluid supplied to each chamber (13,14) and the hydraulic pressure acting on each bearing (3,4) to permit taking up of loads varying in size and direction on the shaft (1) while retaining axial displaceability thereof, wherein at least one of the flanges (5,6) can be removed from the shaft (1) and that the pressure surfaces (5*a*,6*a*) face in mutually opposite directions and each form an angle with the shaft which is essentially non-perpendicular (90°).

5,795,074

GROOVED HYDRODYNAMIC THRUST BEARING

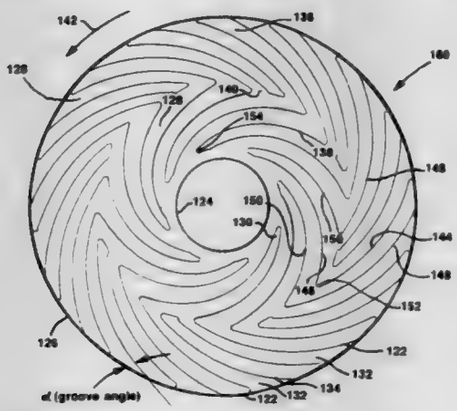
Mohamed M. Rahman, San Jose; Hans Leuthold, Santa Cruz, and Wesley Clark, Watsonville, all of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

PCT No. PCT/US96/16155, § 371 Date Dec. 9, 1996, § 102(e) Date Dec. 9, 1996, PCT Pub. No. WO97/25543, PCT Pub. Date Jul. 17, 1997

PCT Filed Oct. 8, 1996, Ser. No. 750,486

Int. Cl.[6] F16C *32/00*

U.S. Cl. 384—123 **12 Claims**



1. A grooved hydrodynamic thrust bearing comprising first and second bearing surfaces being rotatable relative to one another and having a bearing fluid therebetween,

the first bearing surface defining a plurality of continuous lands extending from an inner radius of the first bearing surface to an outer radius of the first bearing surface,

adjacent ones of the continuous lands defining between them a continuous groove having an approximately constant depth and extending in unbroken fashion between the inner radius and the outer radius,

the continuous groove comprising an undivided portion defined in an inner annulus of the first bearing surface and a divided portion defined in an outer annulus of the first bearing surface, the continuous groove being divided in the divided portion by an intermediate land located between the adjacent continuous lands,

the divided portion of the continuous groove communicating in unbroken fashion with the undivided portion of the continuous groove.

5,795,075

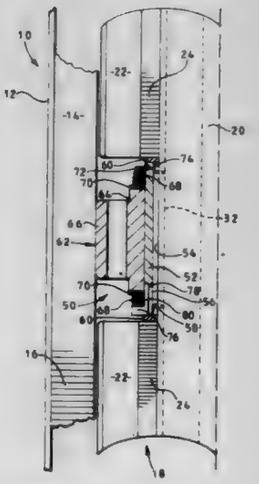
SPRING CARTRIDGE ROTOR BEARING

Arthur I. Watson, Fredericksburg, Tex., assignor to Camco International Inc., Houston, Tex.

Filed Sep. 4, 1996, Ser. No. 707,552

Int. Cl.[6] F16C *33/04*

U.S. Cl. 384—215 **9 Claims**



1. A spring cartridge rotor bearing for use in an electric motor having a shaft passing through a first motor rotor section and an adjacent second motor rotor section, comprising:

a sleeve mounted to the shaft between the first and the adjacent motor rotor sections with a first end of the sleeve in contact with the first rotor section and with a second end of the sleeve in contact with the second rotor section;

a bearing having a bore extending therethrough with the sleeve received therein; and

spring means on the sleeve to bias the bearing to a generally neutral position on the sleeve.

5,795,076

TILT PAD HYDRODYNAMIC BEARING FOR ROTATING MACHINERY

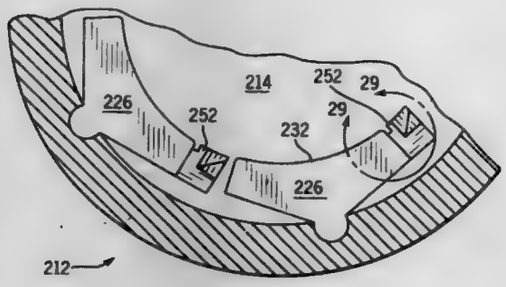
James H. Ball, New Berlin, and Thomas R. Byrne, Port Washington, both of Wis., assignors to Orion Corporation, Grafton, Wis.

Continuation of Ser. No. 542,521, Oct. 13, 1995, abandoned. This application Apr. 30, 1997, Ser. No. 848,986

Int. Cl.[6] F16C *17/06*

U.S. Cl. 384—307 **45 Claims**

1. A lubrication device that directs the flow of a lubricating fluid in a journal bearing that has a plurality of tilting pads, comprising:



a base;

a first ridge that extends from said base;

a second ridge, adjacent to said first ridge, that also extends from said base, said second ridge forming an included angle with said first ridge that is less than 180 degrees.

5,795,077

TILTING PAD JOURNAL BEARING

Richard Gozdawa, Newtown, United Kingdom, assignor to Welsh Innovations Limited, Cardiff, Wales

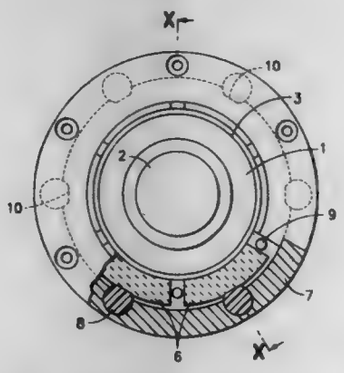
PCT No. PCT/GB95/02527, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO96/13672, PCT Pub. Date May 9, 1996

PCT Filed Oct. 26, 1995, Ser. No. 836,506

Claims priority, application United Kingdom, Oct. 26, 1994, 9421569

Int. Cl.[6] F16C *17/03*

U.S. Cl. 384—312 **20 Claims**



1. A tilting pad journal bearing for supporting a shaft, which bearing comprises:

a) an annular housing locatable around the shaft;

b) a plurality of movable bearing pad members, each having an arcuate inner bearing surface and an opposed arcuate outer surface, said members being disposed around said housing such that in use said inner bearing surfaces make bearing contact with the shaft or a component attached to the shaft;

c) movement restricting means coupled to said housing for restricting circumferential movement of said bearing pad members relative to said housing; and

d) a plurality of inwardly projecting pivot members located in said housing, each being disposed contiguous with a respective bearing pad member, and each having a concave pivot surface portion arranged to complementarily abut said outer arcuate surface of said bearing member such that each bearing pad member is pivotable about a respective pivot surface portion.

5,795,078

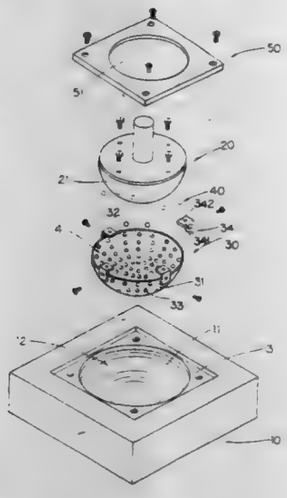
ROTARY AND ANGULAR MOVEMENT BALANCEABLE ASSEMBLY

Alvin Yi Li, 21723 E. Winners Circle, Walnut, Calif. 91789

Filed Mar. 29, 1996, Ser. No. 624,994

Int. Cl.[6] F16C *19/00*

U.S. Cl. 384—498 **15 Claims**



1. A rotary and angular movement balanceable assembly, comprising

a first balancer member having a circular concave race surface which defines a receiving cavity above said circular concave race surface;

a second balancer member having a circular convex race surface and a size smaller than that of said receiving cavity of said first balancer member;

a ball bracket having a circular concave inner surface and a circular convex outer surface, said circular concave inner surface having an inner radian angle equal to that of said circular convex race surface of said second balancer member, said circular convex outer surface having a radian angle equal to said concave race surface of said first balancer member, said ball bracket being affixed to said second balancer member to define a ball receiving chamber between said circular convex race surface of said second balancer member and said circular concave inner surface of said ball bracket, a plurality of ball retaining round apertures being equally spaced and uniformly distributed on said ball bracket and extending from said circular concave inner surface to said circular convex outer surface respectively;

a plurality of identical balls each having a diameter slightly smaller than that of each of said ball retaining round apertures, said plurality of identical balls being respectively disposed on said ball retaining round apertures within said ball receiving chamber in order to distribute said plurality of identical balls over said ball bracket, wherein a portion of each of said balls is extended through said corresponding ball retaining round aperture to expose outside while permitting rolling movement; and

a supporting means which is a cover board having a size larger than said receiving cavity and a central hole which has a diameter smaller than that of said second balancer member, said second balancer member and said ball bracket affixed thereon being disposed in said receiving cavity of said first balancer member, wherein said circular convex outer surface of said ball bracket is abutted upon said circular concave race surface of said first balancer member with said plurality of balls in rolling contact with said circular concave race surface of said first balancer member, said supporting means being mounted on said first balancer member and in a position above said receiving cavity so as to retain said second balancer member and said ball bracket affixed thereon within said receiving cavity of said first balancer member, so that

said second balancer member is able to process rotary and angular movement in respect with said first balancer member.

5,795,079

SHAFT BEARING IN A ROCK AND GROUND-DRILLING MACHINE

Gunnar Jonsson, Tiby, and Ulf Nordqvist, Stockholm, both of Sweden, assignors to Atlas Copco Craelius AB, Sweden

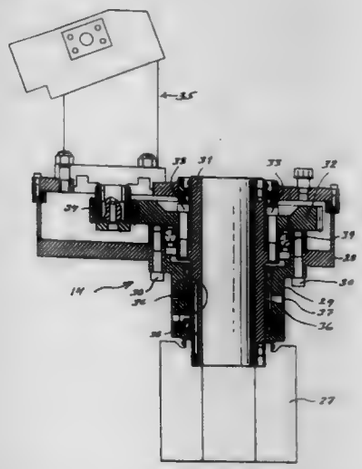
PCT No. PCT/SE94/01184, § 371 Date Jun. 7, 1996, § 102(e) Date Jun. 7, 1996, PCT Pub. No. WO95/16101, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 8, 1994, Ser. No. 663,216

Claims priority, application Sweden, Dec. 10, 1993, 9304120

Int. Cl.[6] E21C *1/10*

U.S. Cl. 384—547 **5 Claims**



1. A shaft bearing in a rock and ground-drilling machine comprising a gear housing (**14**) in which there is journalled a shaft (**31**) which surrounds a drill string (**23**) in the manner of a sleeve and which is affixed to the drill string by means of a chuck (**27**) connected to the shaft (**31**), wherein the chuck is operated by means of pressure fluid which is delivered to the chuck (**27**) through the medium of a commutator (**36**) acting between the gear housing (**14**) and the shaft (**31**), characterized in that the shaft (**31**) is journalled in the gear housing (**14**) by means of one single rolling bearing (**39**); and in that the commutator (**36**) lies resiliently against the gear housing (**14**) and is flexible with regard to sideways movement of the shaft (**31**).

5,795,080

NEEDLE BEARING RETAINER AND A NEEDLE BEARING

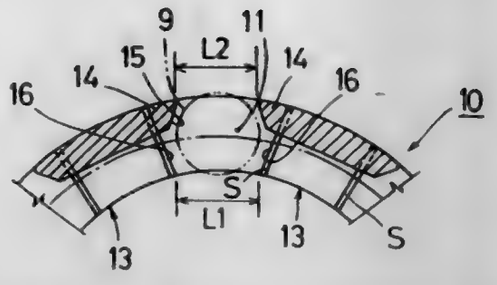
Yoshitsugu Fujiwara, Kishiwada; Hirotsugu Okuse, Chofu, and Masahiro Noguchi, Fussa, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Jan. 30, 1996, Ser. No. 593,872

Claims priority, application Japan, Jan. 30, 1995, 7-012741; Jan. 24, 1996, 8-009994

Int. Cl.[6] F16C *33/46*

U.S. Cl. 384—580 **9 Claims**



1. A needle roller bearing retainer comprising:

a cylindrical member with an inner circumference and an outer circumference;

a plurality of pockets disposed circumferentially in said cylindrical member, each pocket includes a longitudinal center line;

a plurality of stay portions, each stay portion is disposed between two pockets of said plurality of said pockets;

a plurality of pairs of projections disposed in each pocket, each projection extends from a stay portion towards a longitudinal center line and includes an angled planar wall portion, each pair of projections defines a tapered opening in each pocket which narrows in a direction towards said inner circumference, each projection at said inner circumference is spaced apart from a respective opposing projection for a predetermined first distance; and

a pair of protrusions disposed in each pocket and between at least two pairs of projections, each protrusion extends from a stay portion towards a longitudinal center line and includes a beveled planar wall portion adapted to contact a needle roller, each pair of protrusions defines a first tapered opening in each pocket which widens in a direction towards said inner circumference, each protrusion at said outer circumference is spaced apart from a respective opposing projection for a predetermined second distance, whereby each stay portion substantially increases strength of said retainer while said protrusions substantially reduce scraping of lubricant off of a needle roller.

5,795,081

LINE PRINTER

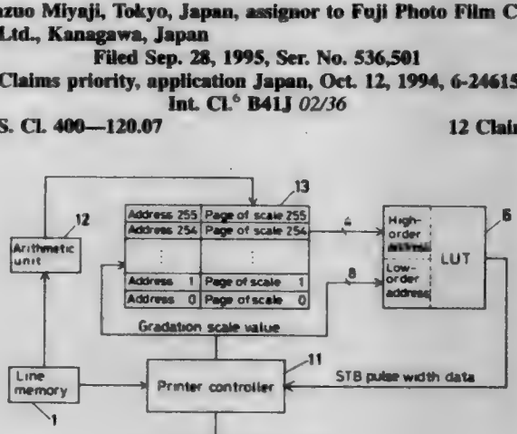
Kazuo Miyaji, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 28, 1995, Ser. No. 536,501

Claims priority, application Japan, Oct. 12, 1994, 6-246156

Int. Cl.[6] B41J *02/36*

U.S. Cl. 400—120.07 **12 Claims**



1. A line printer comprising:

means for receiving gradation scale values of pixels for one line to be printed;

memory means for storing a plurality of tables for correcting a density variation caused by common resistance unevenness;

arithmetic means, coupled to said means for receiving, for arithmetically obtaining a number of printing elements to be operated for each particular gradation scale value for printing from the gradation scale values of the pixels for one line received by said receiving means;

storage means, coupled to said arithmetic means, for storing the number of printing elements to be operated as obtained by said arithmetic means for each particular gradation scale value; and

means for retrieving an optimal table from said plurality of tables stored in said memory means on the basis of the number of printing elements obtained by said arithmetic means stored in said storage means and the gradation scale values,

the gradation scale values being provided from said means for receiving to said printing elements in parallel for printing.

5,795,082

PRINTING SYSTEM UTILIZING INKS OF DIFFERENT DENSITIES, CARTRIDGE USED THEREFOR, AND METHOD OF RECORDING IMAGES

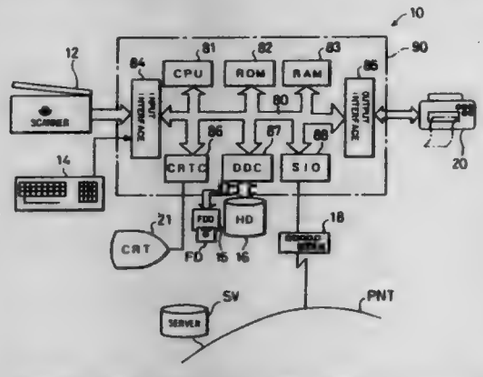
Kazumichi Shimada, and Toshiaki Kakutani, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 25, 1997, Ser. No. 882,289

Claims priority, application Japan, Jun. 27, 1996, 8-188233; Oct. 18, 1996, 8-297608

Int. Cl.[6] B41J *2/36*

U.S. Cl. 400—120.09 **34 Claims**



1. A printing system having a head, from which at least two inks of different densities are dischargeable, and recording a multi-tone image by a distribution of dots by said at least two inks of different densities, said printing system comprising:

input means for inputting tone signals of said original image to be printed;

definition means for defining a recording characteristic that starts formation of dots by a higher-density ink in a range of said tone signals lower than a specific tone signal which gives a maximum recording density of dots by a lower-density ink;

specifying means for specifying existence and non-existence of dots by said at least two inks of different densities according to said tone signals, based on said recording characteristic; and

regulating means for regulating discharge of each ink from said head, so as to realize a tone expression according to said existence and non-existence of dots by said at least two inks of different densities.

5,795,083

THERMAL TRANSFER RIBBON CASSETTE

Brendan Francis Gallagher, Ipswich, United Kingdom, assignor to Imperial Chemical Industries PLC, United Kingdom

PCT No. PCT/GB95/00075, § 371 Date Feb. 5, 1997, § 102(e) Date Feb. 5, 1997, PCT Pub. No. WO95/19889, PCT Pub. Date Jul. 27, 1995

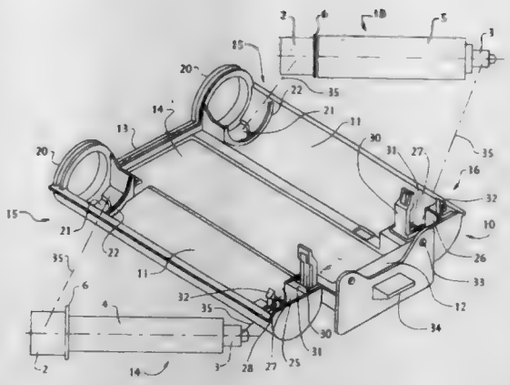
PCT Filed Jan. 16, 1995, Ser. No. 693,081

Claims priority, application United Kingdom, Jan. 20, 1994, 94010550

Int. Cl.[6] B41J *35/28*

U.S. Cl. 400—207 **12 Claims**

1. A thermal transfer ribbon cassette for use in a thermal transfer printer, the cassette comprising a supply spool, a take-up spool and



a moulded casing; each spool having end portions and a bobbin portion on which is wound one end of the transfer ribbon, the moulded casing having locating means for engaging the spool end portions while the spools are in parallel and spaced apart positions with the transfer ribbon extending between them, and means to retain the spools in such positions while the ribbon is progressively transferred from the supply spool to the take-up spool during printing, wherein said means for retaining each spool comprises a closable gate connected to the casing by an integrally moulded hinge.

5,795,084

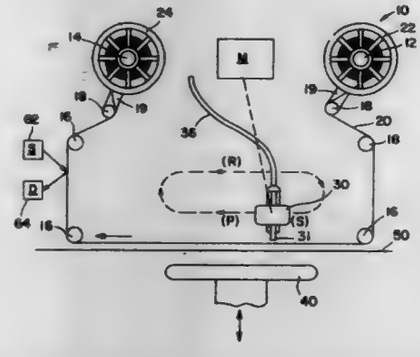
METHOD AND APPARATUS FOR LOW COST THERMAL PRINTING

Paul R. Harding, Ewell, England; Donald Van Erden, Wildwood, and James W. Stone, Northbrook, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Continuation of Ser. No. 249,785, May 26, 1994, abandoned. This application Nov. 20, 1995, Ser. No. 574,571

Int. Cl.[6] B41J *33/14*

U.S. Cl. 400—225 **51 Claims**



1. A thermal printer for depositing a thermally sensitive ink from a single use print ribbon onto a print area of a printed medium, the print ribbon having the thermally sensitive ink disposed adjacent to the print area of the printed medium, the thermal printer comprising:

a print head having a linear array of individual heating elements selectively energizable to generate heat, the individual heating elements disposed adjacent to the print ribbon;

means for moving the print head in a print stroke, wherein the print head is moved in relation to the print ribbon and the printed medium, and during the print stroke, the individual heating elements are selectively energized to heat a first portion of the print ribbon which deposits thermally sensitive ink onto the print area of the printed medium and forms a print image on the print ribbon; and

a first motor for displacing the print ribbon an incremental displacement interval after a print stroke to position a second

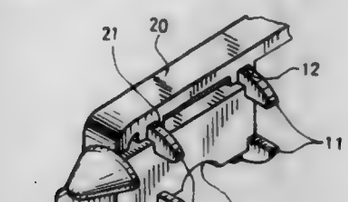
portion of the print ribbon adjacent to the first portion of the print ribbon, the second portion having at least one segment where the ink has been removed by a prior print stroke, so that the second portion of the print ribbon may be selectively heated by the print head during a subsequent print stroke, the first and second portions being followed by subsequent portions, the resulting print image having gaps due to the segments having removed ink.

5,795,085

CORRECTION TAPE

Kwang-Ho Yoo, 103-1102 Hyundae Apt., 1037 Mansu-dong, Namdong-ku, Inchun, Rep. of Korea

Filed Mar. 5, 1997, Ser. No. 811,688
Int. Cl.[6] B44C *7/00*
U.S. Cl. 400—248 **1 Claim**



1. A correction tape consisting of a first roller to which correction tape has been rolled, in an inner face of an outer casing having a tape exit at a front part; a second roller to which the tape released and used is to be rolled; and a tape guide which guides the correction tape into the exit formed at the front part, wherein a concave groove (**13**) is formed at a bottom face; and including at least one revolving part (**11**) formed at a front face and upper and lower face of a rear end, around the concave groove (**13**); and at an outer face of the revolving part (**11**) of a rear upper face, a tape guide (**1**) having a protrusion (**12**) for adjusting angle is combined with an inserting groove (**21**) of the inner face of the outer casing (**20**) in order to be revolved, said outer casing (**20**) having a magnifying glass part for viewing the concave groove (**13**); and the inner face of the inserting groove (**21**) having fitting grooves (**2**) at regular intervals.

5,795,086

TAPE PRINTING DEVICE

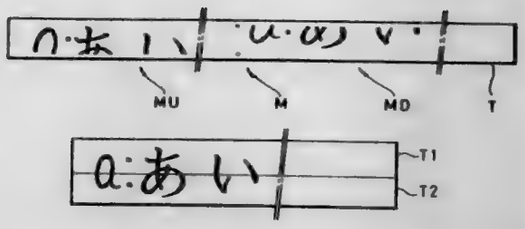
Kenji Watanabe; Takanobu Kameda; Chieko Aida; Tomoyuki Shimmura, all of Tokyo; Yoshiya Toyosawa, Suwa; Hiroyasu Kurashina, Suwa, and Takeshi Hosokawa, Suwa, all of Japan, assignors to King Jim Co., Ltd., and Seiko Epson Corporation, both of Japan

PCT No. PCT/JP95/02432, § 371 Date Sep. 23, 1996, § 102(e) Date Sep. 23, 1996, PCT Pub. No. WO96/16812, PCT Pub. Date Jun. 6, 1996
PCT Filed Nov. 29, 1995, Ser. No. 682,716
Claims priority, application Japan, Nov. 29, 1994, 6-294219; Nov. 29, 1994, 6-294220; Nov. 30, 1994, 6-296362; Dec. 7, 1994, 6-303359
Int. Cl.[6] B41J *15/16*
U.S. Cl. 400—615.2 **5 Claims**

1. A tape printing device for printing one or more lines of input character strings on tape, comprising:

reduced numeric-character input receiving means for receiving a (1/M)-scale reduced numeric-character input, said reduced scale character size being equal to (1/M) of a size of a full-size character, wherein M is an integer of 2 or more; and

printing means for printing contiguous M of (1/M)-scale reduced numeric characters by using the character size of said full-size character in case that a character string to be printed contains consecutive N of (1/M)-scale reduced numeric characters (N is an integer which is 1 or more) and for printing (1/M)-scale reduced numeric characters, the number of which is not more than (M−1), by using the character size of said full-size character when (1/M)-scale reduced numeric characters, the number of which is not more than (M−1), are left at a beginning or last part of a character string to be printed.

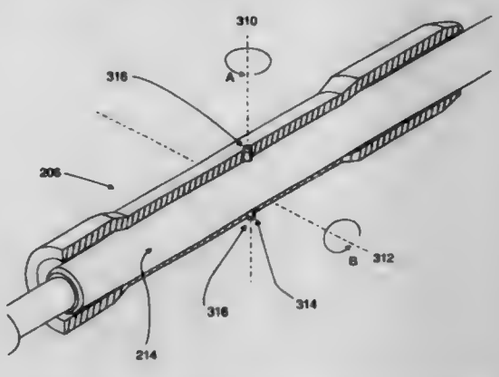


5,795,087

PIVOTING ROLLER FOR SKEWLESS DOCUMENT FEED

David Campbell Brower, Wake Forest; Robert Andrew Myers, Cary, and Jeff David Thomas, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1997, Ser. No. 842,617
Int. Cl.[6] B41J *13/02*
U.S. Cl. 400—636 **19 Claims**



1. A document feeding assembly for a document printer, comprising:

a pressure roller axle having a first axis;

a pressure roller having a second axis, coupled to said pressure roller axle, said pressure roller pivoting between a first counterclockwise position a second intermediate position, and a third clockwise position; and

a feed roller placed against said pressure roller,

wherein said first axis and said second axis are substantially collinear when said pressure roller is in said second position,

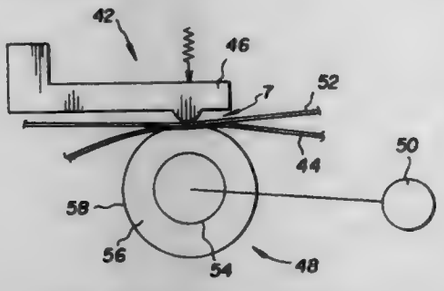
wherein said first axis is at an angle to said second axis when said pressure roller pivots in either said first counterclockwise position or said third clockwise position, and wherein said feed roller has a third axis, and said first axis of said pressure roller is substantially parallel to said third axis of said feed roller.

5,795,088

PLATEN ROLLER SLEEVED WITH HEAT SHRINKING TUBE FOR IMPROVED COLOR REGISTRATION IN A PLATEN-DRIVE RESISTIVE THERMAL PRINTER

Xin Wen, Rochester, and Joseph C. Olsovsky, North Chili, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 8, 1996, Ser. No. 748,464
Int. Cl.[6] B41J *11/057*
U.S. Cl. 400—662 33 Claims



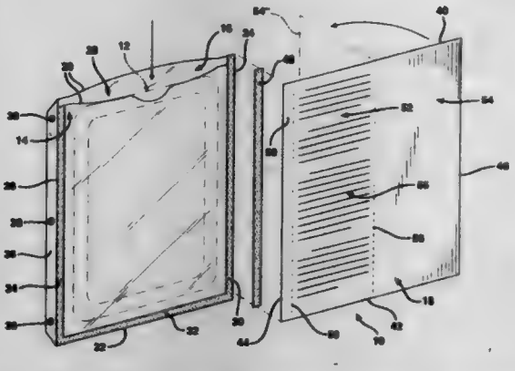
1. In a resistive thermal printer, a cylindrical platen roller for supporting a receiver medium on which an image is to be formed, the roller having an inner core and means for improving the registration of an image formed on a receiver medium, said means comprising an outer sleeve formed of a heat shrunk material having a frictional surface finish thereon.

5,795,089

TRANSPARENCY SHEET PROTECTOR

Bon S. Ong, P.O. Box 4247, Torrance, Calif. 90510

Filed Oct. 15, 1996, Ser. No. 730,356
Int. Cl.[6] B42F *13/00*
U.S. Cl. 402—79 15 Claims



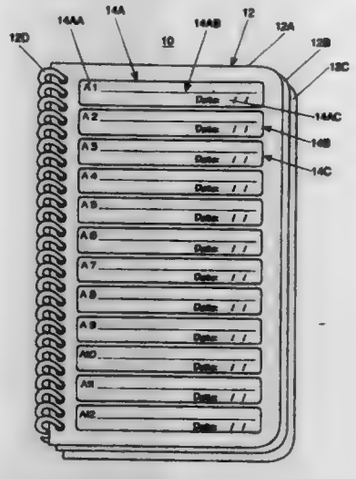
1. A device for protecting a transparent display sheet bearing material thereon for projected display comprising first and second transparent, protective sheets of generally rectangular configuration, each having a top edge and a bottom edge and a pair of side edges, wherein one of said side edges is a connecting edge, and said side edges of each of said transparent, protective sheets are greater in length than said top and bottom edges thereof, and said connecting edges of said protective sheets are mutually adjacent to each other, and said transparent, protective sheets are disposed in mutually overlying relationship and are secured together along said connecting edges, and further comprising a generally rectangular, opaque backing sheet having a top edge, a bottom edge, and a pair of side edges, one of which is a connecting edge, and said backing sheet is at least as large as each of said transparent, protective sheets and is joined along its connecting edge to said connecting edges of said transparent, protective sheets, and said opaque backing sheet is divided into a panel adjoining said connecting edges and a panel remote from said connecting edges by a longitudinal panel delineating fold between its top and bottom edges.

5,795,090

PHOTOGRAPH LOG

Jenny Jackson, 4613 Framington Ct., Indianapolis, Ind. 46254

Filed Oct. 7, 1996, Ser. No. 726,537
Int. Cl.[6] B42F *13/00*
U.S. Cl. 402—79 6 Claims



1. A photograph log (10) comprising:

A) at least one first page (12A);

B) a plurality of first photograph log labels (14A) which are each removably attached to the at least one first page (12A) by a non-permanent adhesive applied at a first photograph log label under side (14AD), the plurality of first photograph log labels (14A) comprises a first photograph log label frame number (14AA) indicia printed on a first photograph log label top side (14AE) which correlates to the camera film frame (16AA), each plurality of first photograph log labels (14A) further comprises a first photograph log label frame description (14AB) area printed on the first photograph log label top side (14AE) wherein an user writes information about the picture taken which correlates to the camera film frame (16AA), each plurality of first photograph log label (14A) consists of a first photograph log label frame date (14AC) printed on the first photograph log label top side (14AE) wherein the user writes the date when the picture was taken; the plurality of first photograph log label (14A) functions to record information about each camera film frame (16AA) taken by a camera (16).

5,795,091

RECLINE LATCH SYSTEM FOR COLLAPSIBLE STROLLER

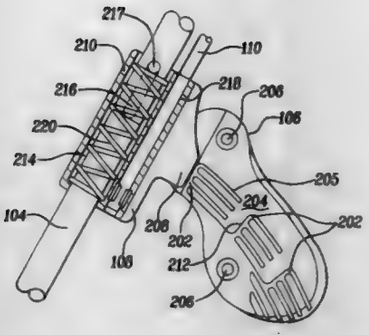
Baku Kakuda, Reading, and James A. Sack, Elverson, both of Pa., assignors to Graco Children's Products Inc., Elverson, Pa.

Continuation of Ser. No. 738,237, Oct. 25, 1996. This application Feb. 26, 1997, Ser. No. 806,426
Int. Cl.[6] B25G *3/18*
U.S. Cl. 403—325 18 Claims

1. A stroller, said stroller having a frame and a reclinable passenger support movable between at least one up position and a down position, the stroller comprising:

a plate member connected to the frame for retaining the reclinable passenger support in the up position, said plate member including a plurality of stops, each stop having a face portion and a sloped portion including a plurality of ribs perpendicularly disposed relative to said face portion;

a slidable member connected to the reclinable passenger support, wherein the slidable member is slidable between a first position and a second position; and an engagement portion disposed on the slidable member, wherein the engagement



portion is adapted to cooperate with the plate member when the slidable member is in the first position

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5,795,092

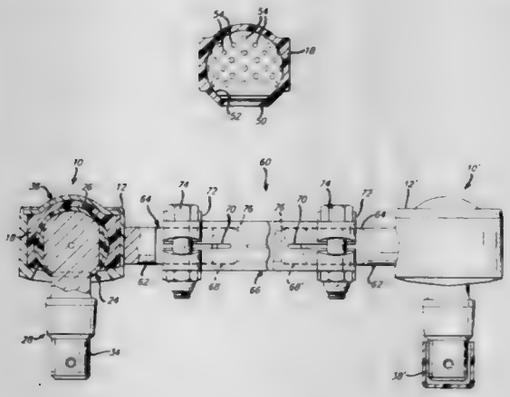
INTERNALLY SEALED PIVOTAL JOINT ASSEMBLY

Kevin J. Jaworski, Norwalk, and Steven Luzsicza, Huron, both of Ohio, assignors to The Pullman Company, Milan, Ohio

Filed Dec. 6, 1996, Ser. No. 761,540

Int. Cl.[6] F16C *11/06*

U.S. Cl. 403—56 **25 Claims**



25. An assembly comprising:

a link including an eyelet at each opposing end; at least one eyelet having an aperture extending therethrough;

a bearing socket disposed in the eyelet, the socket having a first opening proximate to a first end of the aperture and a second opening proximate to a second end of the aperture, the socket having a generally spherical inner surface upon which a plurality of lubricant reservoirs are positioned; and,

a ball stud journal having a ball portion thereof disposed in the socket in sliding contact with the spherical inner surface, a first stud end thereof extending through the first opening and through the first end of the aperture and a second stud end thereof extending through the second opening and through the second end of the aperture, the first and second stud ends being capable of conical movement with respect to the eyelet due to the sliding contact between the spherical inner surface and the ball portion of the ball stud journal.

5,795,093

SUBSEA CLAMP

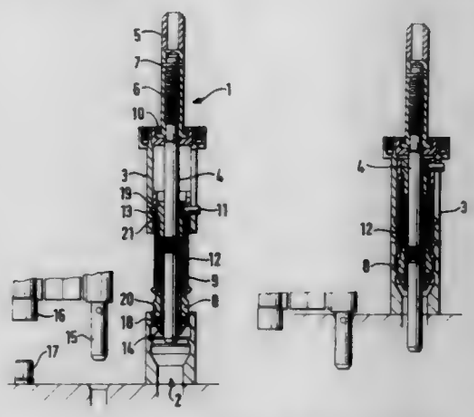
Russell Seaton, London, and Philip Michael Howe, Berkshire, both of Great Britain, assignors to Kvaerner FSSL Limited, London, United Kingdom

Filed Nov. 27, 1996, Ser. No. 757,767

Claims priority, application United Kingdom, Dec. 6, 1919, 9524976.9

Int. Cl.[6] B25G *3/18*

U.S. Cl. 403—322 **15 Claims**



1. A screw action clamp assembly for clamping subsea structures, the assembly including a clamp for attachment to a first subsea structure and an anchorage receptacle for attachment to a second subsea structure, the clamp comprising:

a clamp head;

a rotatable drive member threadingly engaged with said clamp head for relative contracting and extending longitudinal travel with respect thereto in response to rotation of the drive member, the clamp head having an end portion for insertion into the anchorage receptacle; and

a locking member having first and second ends, the first end being located more remote from the end portion of the clamp head and having a detent that engages to cause the locking member to be carried by the drive member during said relative longitudinal travel until relative contracting travel advances the second end of the locking member into abutment with a projection on the end portion of the clamp head and push-releases the detent at the first end of the locking member disengaging the locking member from relative travel with the drive member;

and in which the anchorage receptacle has a mouth portion through which the end portion of the clamp head and the second end of the locking member can pass into the anchorage receptacle when the second end of the locking member and the projection on the end portion are separated, and through which removal from the receptacle is prevented when said second end is abutting said projection.

5,795,094

COMPOSITE METALLIC TENSION FITTING

Elbert Lee McKague, Jr.; Ronald Kendall Cox, and John Edward Phillips, all of Fort Worth, Tex., assignors to Lockheed Martin Corporation, Fort Worth, Tex.

Filed Nov. 19, 1996, Ser. No. 752,323

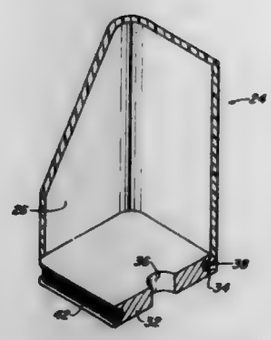
Int. Cl.[6] F16B *5/12*

U.S. Cl. 403—335 **24 Claims**

1. A composite structural member comprising:

a rigid structural body formed from composite sheet material;

a loading member having an outer periphery and being configured for applying loads thereto, the composite sheet material overlaying the loading member about the outer periphery, and wherein the outer periphery of the loading member has an undercut portion formed therein; and



a lip formed from a portion of the composite sheet material which projects into and engages the undercut portion of the outer periphery of the loading member so that the loading member is securely held in place relative to the sheet material when loads are applied to the loading member so that the loads are transferred through the loading member to the sheet material.

5,795,095

SIMULTANEOUS LEFT TURN VEHICULAR INTERSECTION

Kenneth G. Heller, P.O. Box 1219, Meadow Vista, Calif. 95722

Filed Oct. 29, 1997, Ser. No. 960,743
Int. Cl.[6] E01C *1/00*
U.S. Cl. 404—1 **20 Claims**



1. An intersection for right-hand vehicular traffic accommodating four intersecting roadways at grade, having an intersection center, and in each roadway comprising:

a) Incoming and outgoing main lanes for flow of incoming and outgoing traffic relative to said center, said lanes meeting said center at two locations;

b) A left turn lane complex positioned between said main lanes consisting of oppositely directed passages for flow of incoming and outgoing left turn traffic relative to said center, said passages crossing at an interchange zone some distance removed from said center, said zone dividing the incoming passage into a turnout lane and a left turn lane, and dividing the outgoing passage into a receiving lane and a merging lane, said left turn lane and receiving lane joining said center at a first and second left turn junction respectively, said first junction being to the left of said second junction viewed by a driver approaching said center, and the remote ends of said turnout and merging lanes joining said incoming and outgoing main lanes respectively;

c) A track through said center connecting said incoming main lane in one roadway with said outgoing main lane in the roadway opposite;

d) A track through said center connecting said first left turn junction with a corresponding second left turn junction of the roadway to the left;

e) Traffic control means at said interchange zone; and

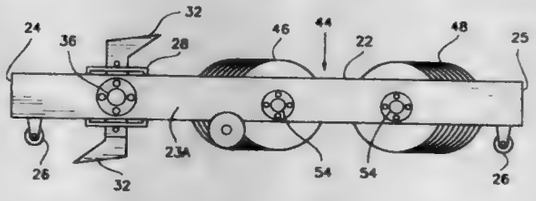
f) Traffic signal means located where said incoming main lane meets said center and at said first left turn junction timed so as to permit traffic to flow along said main lanes in the first pair of opposed roadways in a first phase, along said main lanes in the opposed pair in the cross direction in a second phase, and to make simultaneous protected left turns from, and optionally U-turns in all four roadways, with said main lane flow stopped, in a third phase of a three-phase signal cycle, which then repeats itself.

5,795,096

ROAD RESURFACING SYSTEM

Larry G. Culver, Sherwood Park, Canada, assignor to LCI International Inc., Sherwood Park, Canada

Filed Sep. 9, 1996, Ser. No. 708,827
Int. Cl.[6] E01C *21/00*
U.S. Cl. 404—90 **19 Claims**



1. A road resurfacing device, comprising:

a frame having first and second sides and a front end and a back end;

ground engaging supports at least at each of the front and back ends for supporting the frame on the ground;

a ripper bar extending from the first sire to the second side, the ripper bar having plural depending teeth spaced along the ripper bar;

a separator extending from the first side to the second side and located nearer to the back end than the ripper bar for separating fine material from coarse material ripped up by the ripper bar;

the separator comprising a first set of ground turning discs mounted on a first shaft, the first shaft being mounted for rotation on the frame;

first shaft rotation means to rotate the first shaft in a direction of travel opposed to the direction of travel of the frame over the ground; and

means to attach the frame to a vehicle.

5,795,097

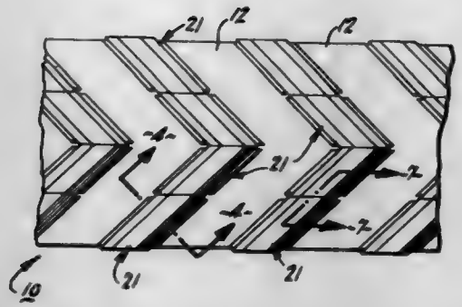
TRANSFER STATION WHEELS

James O. Caron, Modesto, and Scott F. P. Caron, Salida, both of Calif., assignors to Caron Compactor Company, Modesto, Calif.

Continuation of Ser. No. 404,343, Mar. 15, 1995, abandoned. This application May 20, 1997, Ser. No. 859,014
Int. Cl.[6] E01C *19/23*
U.S. Cl. 404—121 **11 Claims**

1. An improved transfer station wheel for mounting on a powered vehicle which operates along a hard brittle surface such as concrete to provide reduction of the waste volume through demolition of solid waste at transfer station sites, the combination comprising:

a rigid cylindrical body supported for rotation from such vehicle's chassis and having cleat assemblies carried by the body,



the cleat assemblies being elongate and arranged end to end in a segmented array disposed in a chevron configuration along said cylindrical body,

each cleat assembly having a hollow metallic base portion welded to said cylindrical body and a hard, durable, long wearing non-metallic wear tip fixedly secured to said base portion, said wear tip being formed from a material having a hardness and density insufficient to chip or erode the concrete floor surfaces of such transfer station and sufficiently hard for demolition of solid wastes,

said non-metallic wear tip protruding generally radially outwardly from said base portion, a compaction face substantially narrower than said base portion on the outer distal surface of the non-metallic wear tip, each cleat assembly including sloping upwardly converging outer side walls extending radially outwardly from the cylindrical body sufficiently in a given direction to join with said compaction face,

transverse end walls extending between the ends of said side walls,

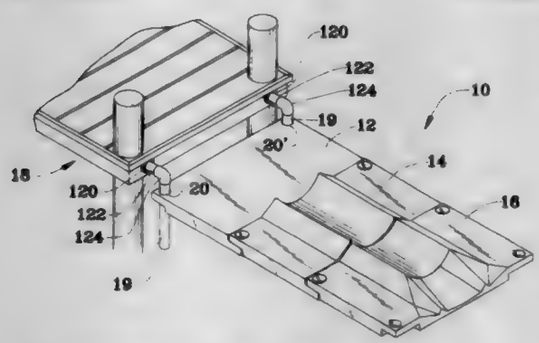
and means disposed in a medial portion of said base portion extending between said end walls serving to engage a complimentary shaped portion of said wear tip for securing said wear tip to said base portion and serving to resist twisting forces imparted to said wear tip.

5,795,098

MODULAR WATERCRAFT SUPPORT STRUCTURE

David Rueckert, 18860 Loxahatchee River Rd., Jupiter, Fla. 33458

Filed Mar. 3, 1997, Ser. No. 808,003
Int. Cl.[6] B63C *5/04*
U.S. Cl. 405—7 **13 Claims**



1. A watercraft support device, said device comprising:

at least one cradling platform, said cradling platform being a substantially-rectangular rigid structure having an upper surface spaced apart from a lower surface by a first sidewall, a second sidewall, a front wall, and a back wall; said front wall having a cradling platform frontal linking arm that extends therefrom, said frontal linking arm having an inclined bottom surface and sharing said upper surface, said first sidewall, and said second sidewall of said cradling platform; said back wall having a cradling platform rearward linking arm that extends therefrom, said rearward linking arm having an inclined top surface and sharing said lower surface, said first sidewall, and said second sidewall of said cradling platform;

at least one ramp platform, said ramp platform being a substantially-rectangular rigid structure having an upper surface spaced apart from a lower surface by a first sidewall, a second sidewall, a front wall, and a back wall; said front wall having a ramp platform frontal linking arm that extends therefrom, said frontal linking arm having an inclined bottom surface and sharing said upper surface, said first sidewall, and second sidewall of said ramp platform; said back wall having a ramp platform rearward linking arm that extends therefrom, said rearward linking arm having an inclined top surface and sharing said lower surface, said first sidewall, and second sidewall of said ramp platform;

linking means for interlocking said linking arms of said platforms together; and

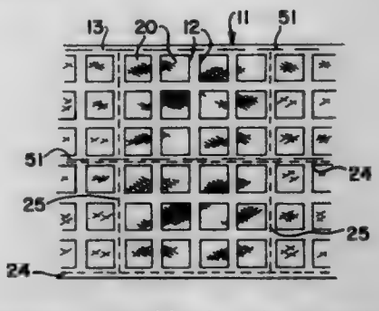
attachment means for securing said support device to a dock.

5,795,099

APPARATUS TO CONTROL BEACH EROSION

James W. Parker, 307 C St., St. Augustine Beach, Fla. 32084

Filed Apr. 12, 1996, Ser. No. 631,375
Int. Cl.[6] E02B *3/06*
U.S. Cl. 405—28 **13 Claims**



1. An apparatus to control beach erosion comprising an elongated barrier adapted to be positioned along the shore line generally parallel to a body of water, the apparatus comprising a mesh material having a number of mesh apertures permeable to water and impermeable to sand particles of average size or smaller and a support grid coextensive with said mesh material in all directions and having gate apertures larger than said mesh apertures, said gate apertures of sufficient size to allow relatively unimpeded flow of water therethrough, said mesh material and said support grid mounted between support posts, said mesh material comprising flaps which are larger than said gate apertures, where said flaps abut against said support grid such that said flaps open in only one direction.

5,795,100

SUBTERRANEAN WATER COLLECTION AND DELIVERY DEVICE AND SYSTEM

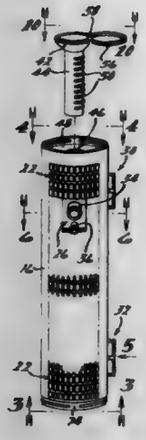
Jeffrey K. Thomas, Commerce Township, and Frank J. Walker, Birmingham, both of Mich., assignors to Morgan Concepts, Inc., Bingham Farms, Mich.

Filed Jul. 26, 1996, Ser. No. 687,634
Int. Cl.[6] E02B *13/00*
U.S. Cl. 405—45 **21 Claims**

1. A subterranean plant root water collection and delivery device, comprising:

an enclosure member including a plurality of apertures and having an interior volume within which surrounding ground water is collected;

a porous insert member insertable within the interior volume of the enclosure member and substantially occupying the entire interior volume for facilitating collection and delivery of the ground water to a root area of at least one plant while



substantially preventing surrounding ground material from entering the interior volume of the enclosure member, whereby the enclosure member is buried at a predetermined depth in close proximity to the root area of the at least one plant such that the plurality of apertures provide ingress for the surrounding ground water to the interior volume along a length of the enclosure member and whereby the plurality of apertures provide egress along the length for delivering the water to an area adjacent the root area: and

a bottom lip member of the enclosure member engaging a top lip member of a second plant root water collection and delivery device.

5,795,101

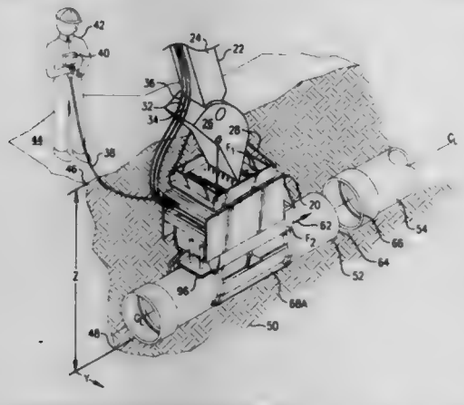
PIPE LAYING ROBOT APPARATUS AND METHOD FOR INSTALLING PIPE

Frank N. Bill, 4737 S. 107th, Seattle, Wash. 98178

Filed Jul. 26, 1996, Ser. No. 686,859

Int. Cl.[6] F16L *1/00*

U.S. Cl. 405—154 **18 Claims**



1. A grasping apparatus for handling an elongated workpiece, such as a pipe section, the grasping apparatus designed to be suspended from a selected lifting device and adapted to grasp and manipulate the elongated workpiece for lifting, moving, or setting the elongated workpiece, said grasping apparatus comprising:

(a) a first frame;

(b) a second frame, said second frame displaceably secured to said first frame;

(c) a rotator, said rotator adapted to angularly rotate said second frame about a normally vertical axis of rotation with respect to said first frame;

(d) two or more grapplers, said two or more grapplers connected to said second frame in opposing juxtaposition and moveable between (i) an open position wherein said grasping apparatus is lowered to position said two or more grapplers to straddle an elongated workpiece, and (ii) a closed position wherein said two or more grapplers engage and securely grasp an elongated workpiece;

(e) a pitch actuator adapted to displace said second frame with respect to said first frame in an up or down pitching movement, and thereby move said elongated workpiece in an up or down pitching movement;

(f) a linear displacement actuator, said linear displacement actuator adapted to displace said second frame with respect to said first frame, and thereby displace an elongated workpiece in a linear direction substantially along a centerline of a linear working axis, and wherein said linear working axis is substantially along the centerline of said elongated workpiece when said workpiece is securely grasped by said two or more grapplers.

5,795,102

MARINE AND SUBMARINE APPARATUS

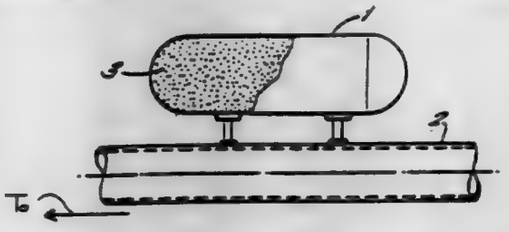
Terrence Jeffrey Corbishley, The Downs, 108 Heath Rd., Petersfield, Hampshire, GU31 4EL, United Kingdom

Continuation of Ser. No. 374,607, Jan. 23, 1995, abandoned. This application Jan. 27, 1997, Ser. No. 789,065

Claims priority, application United Kingdom, Aug. 12, 1992, 9217060; Aug. 12, 1992, 9217061; Oct. 6, 1992, 9221020

Int. Cl.[6] F16L *59/14;11/133*

U.S. Cl. 405—171 **47 Claims**



1. Marine or submarine apparatus comprising an impermeable enclosure, characterised in that the enclosure is tightly packed with hollow microspheres which are compacted to a density at which the microspheres:

cease to flow and act more like a solid within the impermeable enclosures;

carry moments and forces applied externally to said impermeable enclosure;

carry shear stress; and

exert pressure on the impermeable enclosure.

5,795,103

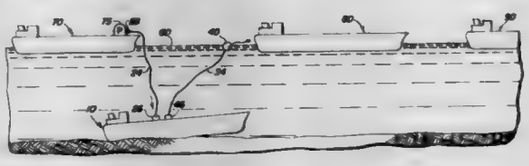
OIL TANKER AND METHOD FOR RECOVERING OIL FROM SUBMERGED OIL TANKER

Doroteo C. Gaerlan, No. 46 T. Arguelles St., Sta. Mesa, Manila, Philippines

Filed Feb. 26, 1996, Ser. No. 607,205

Int. Cl.[6] B63B *35/00*

U.S. Cl. 405—188 **7 Claims**



5. An oil tanker comprising:

(a) a hull having at least one oil-containing compartment;

(b) an inlet communicating with said at least one compartment, said inlet having a flexible inlet line with one end attached to said inlet and a free end and with floating means associated exterior of said at least one compartment;

(c) a discharge communicating with said at least one compartment, said discharge having an attached flexible discharge line with one end attached to said discharge and a free end with floating means associated therewith exterior of said at least one compartment; and

(d) means maintaining said inlet line, discharge line and floating means exterior of said at least one compartment whereby said inlet and discharge lines will be caused to be deployed to rise to the surface upon said vessel being submerged.

5,795,104

WATERGLASS-BASED MATERIAL FOR SEALING PURPOSES AND PROCESSES FOR HARDENING WATERGLASS MATERIALS

Rudolf E. Schanze, Roermonder Strasse 111A, D-41379 Bruggen, Germany

Filed Aug. 20, 1996, Ser. No. 699,911

Claims priority, application European Pat. Off., Aug. 30, 1995, 95113610

Int. Cl.[6] C09K *17/00;* **E02D** *3/12*

U.S. Cl. 405—263 **41 Claims**

1. A waterglass-based material comprising components A and B and optionally further additives, wherein:

a) component A comprises alkali silicate waterglass having an SiO_2:alkali metal silicate molar ratio of 2.1–4; and

b) component B comprises at least one fast-acting hardening agent selected from the group consisting of esters, lactones, lactams, inorganic or organic acids, anhydrides, nitrites, amides and acid chlorides, and additionally,

as a hardening retarder, at least one other hardening agent which acts more slowly than the fast-acting hardening agent and is selected from the group consisting of butylene carbonate and a mixture of different dialkyl carboxylates selected from the group consisting of dimethyl succinate, dimethyl glutarate and dimethyl adipate;

wherein the waterglass-based material has a total water content of 10–60% by weight, and wherein the waterglass-based material has a silica content of 7–42% by weight.

5,795,105

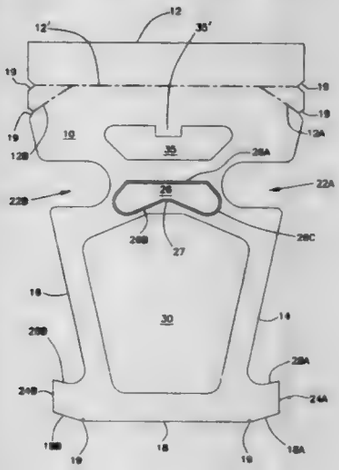
COMPOSITE MASONRY BLOCK

Theodore E. Guth, St. Louis Park, Minn., assignor to Anchor Wall Systems, Inc., Minnetonka, Minn.

Continuation-in-part of Ser. No. 130,298, Oct. 1, 1993, which is a continuation-in-part of Ser. No. 56,986, May 4, 1993, which is a continuation-in-part of Ser. No. 957,598, Oct. 6, 1992. This application Jun. 7, 1995, Ser. No. 474,097

Int. Cl.[6] E02D *29/02;* **E04C** *1/00*

U.S. Cl. 405—284 **25 Claims**



1. A masonry block comprising a front surface, a back surface, first and second sides, and a top surface and a bottom surface, said block comprising one or more protrusions positioned on said block top surface each of said protrusions comprising a side surface, said protrusion side surface circumscribing said protrusion, wherein said protrusion side surface has an angle of at least about 20° from vertical, each of said protrusions positioned on said block top or bottom surface so as to mate with an opening of an adjacently positioned block and wherein each of said protrusion and said insets have relative sizes adapted to permit relative rotation of the protrusion and the inset within which it is mated, whereby serpentine walls may be constructed from a plurality of such blocks.

5,795,106

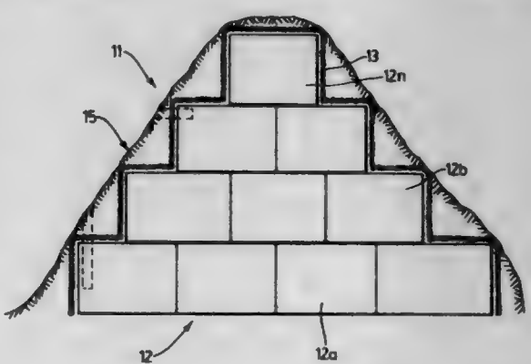
RETAINING WALL SYSTEM AND METHOD OF CONSTRUCTION THEREOF

Ian M. Herd, P.O. Box 1451, Pine Bluff, N.C. 28373

Filed Apr. 1, 1996, Ser. No. 617,727

Int. Cl.[6] E02D *17/09*

U.S. Cl. 405—284 **20 Claims**



1. A retaining wall system comprising:

a plurality of distinct scrap tire bales, each said bale including a plurality of scrap tires compressed together to form a block having generally planar surfaces to facilitate stacking of a plurality of said bales in relatively close proximity to one another each said block being bound together with at least one binding strap, said bales being arranged with respect to each other to define a wall structure having an outer surface; and

a structural material positioned about said wall structure and over said outer surface to form a continuous outer wall structure.

5,795,107

ROD HANDLING METHOD

Michael Edmondson, Wenona, and Brad Neilson, Gwynneville, both of Australia, assignors to Cram Australia Pty Ltd., New South Wales, Australia

Filed Sep. 27, 1996, Ser. No. 721,908

Claims priority, application Australia, Sep. 28, 1995, PN5714

Int. Cl.[6] E21D *20/00*

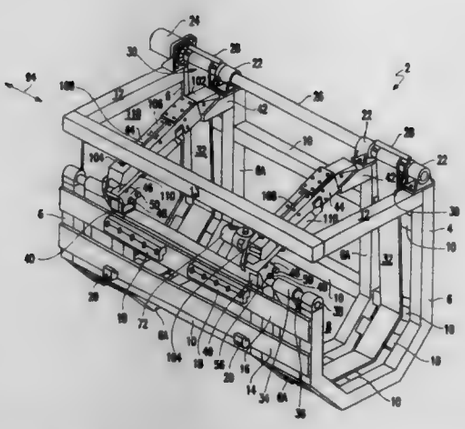
U.S. Cl. 405—303 **11 Claims**

1. A method of handling and transferring a rod from a storage means to outside thereof, said method including the steps of:

(a) moving said rod from a storage area to a gate mechanism co-operating with said storage area;

(b) holding said rod in said gate mechanism;

(c) preventing said rod from exiting said gate mechanism, either out of said storage means or back into said storage means;



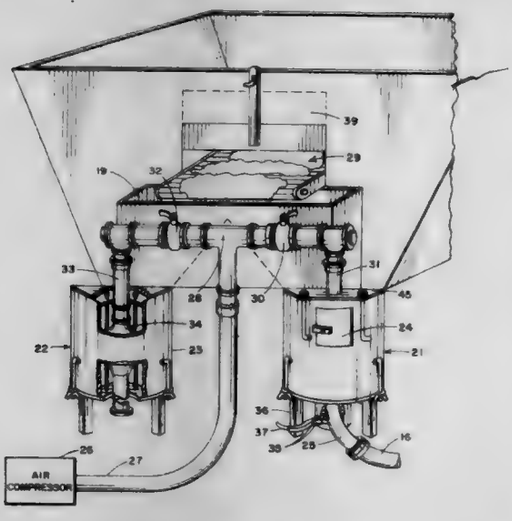
(d) holding said rod by a holding means while in said gate means. so as to transfer said rod out of said gate mechanism.

5,795,108

METHOD OF MOVING AND PLACING GRANULAR MATERIALS

Roger G. Lightle, 309 St. Lucie La., Ft. Pierce, Fla. 34946

Filed Jul. 16, 1996, Ser. No. 680,815
Int. Cl.[6] B65G *53/08*
U.S. Cl. 406—48 **7 Claims**



1. A method of placing granular material onto a golf course comprising the steps of:

loading said granular material into a hopper;

directing said granular material from said hopper into a pair of sand guns;

spinning said granular material in each said sand gun;

directing said granular material in each said sand gun into a flexible hose connected to each said sand gun;

directing compressed air from a common air source into each said sand gun and into each said flexible hose to thereby direct said granular material in each said sand gun through each said flexible hose;

directing said granular material passing through each said flexible hose through an exit nozzle on each said flexible hose; and

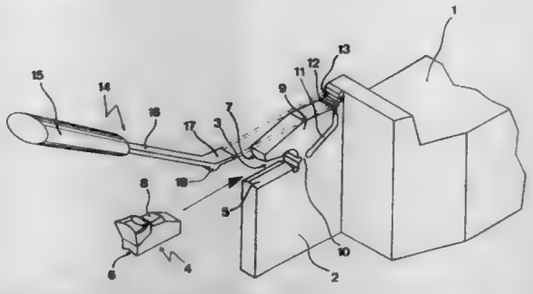
injecting water into each said exit nozzle from a separate water supply hose connected to each said exit nozzle and into said granular material being dispensed for dispensing said granular materials and the water from said nozzle whereby said granular materials and the water from a remote location are distributed through said flexible hoses onto a predetermined site.

5,795,109

BLADE-TYPE TOOL HOLDER FOR CUTTING INSERTS

Anders Jonsson, and Klas Forsström, both of Gävle, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Nov. 8, 1996, Ser. No. 746,265
Claims priority, application Sweden, Nov. 9, 1995, 9503964
Int. Cl.[6] B23B *29/14*
U.S. Cl. 407—72 **19 Claims**



1. A blade-type holder for a cutting insert, comprising a blade body which includes:

a front slot open at a forward end thereof and closed at a rearward end thereof, the front slot being bordered by top and bottom surfaces, the top surface disposed on a clamping portion of the blade body, and the bottom surface disposed on a base portion of the blade body;

a rear slot having a closed front end spaced rearwardly from the closed rear end of the front slot, such that a portion of the body disposed between the closed rear end and the closed front end forms a spring hinge between the base portion and the clamping portion, the spring hinge constructed to apply a force biasing the top surface of the front slot toward the bottom surface; and

a shoulder disposed rearwardly of a rear end of the clamping portion and defining a downwardly facing surface adapted to define a fulcrum for an end of a bending key to enable a pressing portion of the bending key to elastically pivot the rear end of the clamping portion downwardly about the spring hinge, and counter to the force of the spring hinge, whereby the top surface of the front slot is raised away from the bottom surface, the force of the spring hinge causing the top surface to be lowered when the bending key is released.

5,795,110

NO MAR DEPTH STOP

John Wirth, Jr.; Jay L. Sanger, and Mark K. McCool, all of Casper, Wyo., assignors to Woodworker's Supply, Inc., Casper, Wyo.

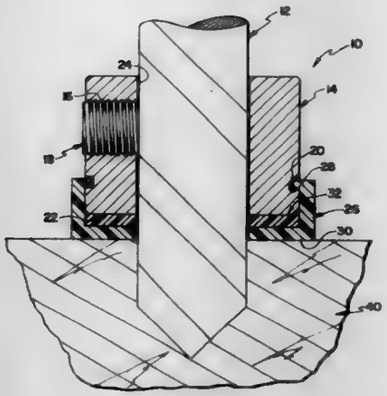
Filed Aug. 1, 1996, Ser. No. 690,980
Int. Cl.[6] B23B *49/00*
U.S. Cl. 408—110 **20 Claims**

1. A depth stop for selective attachment to a cutting tool to regulate tool depth, said depth stop comprising:

a cylindrical sleeve body having an annular end face and an aperture defined axially therethrough for selectively receiving the cutting tool;

means for selectively detachably fixing said body to the cutting tool at a selected longitudinal position along the cutting tool so that said body is not rotatable with respect to the cutting tool;

a cap mounted to said body so as to cover at least a portion of said end face and so as to be rotatable with respect to said body about an axis of rotation of the cutting tool, said cap being formed from a polymer having a low coefficient of friction; and



an annular ring disposed between said cap and said end face.

5,795,111

REAMER WITH STEPPED KNIFE

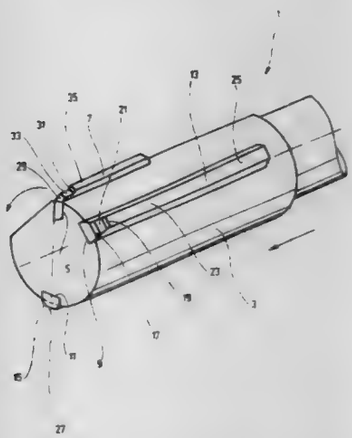
Dieter Kress, Aalen, and Friedrich Häberle, Lauchheim, both of Germany, assignors to Mapal Fabrik fur Prasisionswerkzeuge, Germany

Filed May 13, 1996, Ser. No. 648,228

Claims priority, application Germany, May 15, 1995, 195 18 241.3

Int. Cl.[6] B23B *51/00*

U.S. Cl. 408—224 **36 Claims**



1. A reamer for precision machining of surfaces of bore holes, the reamer comprising:

a rotatable support having a longitudinal direction and an exterior;

a knife plate on the support, extending along the longitudinal direction of the support and projecting radially above the exterior; the knife plate and the support having a front end with reference to the feed direction;

the knife plate having first and second longitudinally separate cutting regions:

the first cutting region being toward the front end of the reamer and being of shorter radial height above the exterior;

the second cutting region being rearward of the first cutting region and being of taller radial height;

a step in the knife plate between the different height first and second cutting regions, whereby both of the first and second cutting regions can machine a surface of a hole.

5,795,112

METHOD FOR COMPENSATING A COMPONENT OF A MACHINE TOOL FOR DISPLACEMENT CAUSED BY HEAT

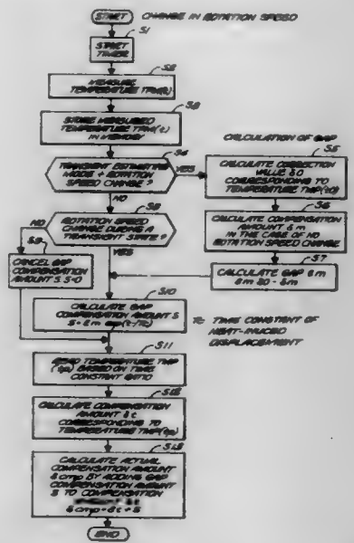
Harumitsu Senda, Aichi-ken, Japan, assignor to Okuma Corporation, Aichi-pref., Japan

Filed Sep. 20, 1996, Ser. No. 710,781

Claims priority, application Japan, Sep. 22, 1995, 7-244708

Int. Cl.[6] B23B *35/00*; B23Q *15/18*

U.S. Cl. 409—131 **9 Claims**



1. A method of compensating a component of a machine tool for displacement caused by heat, comprising the steps of

measuring the temperature of a component of a machine tool subject to heat deformation based on the output of at least one temperature sensor,

estimating the heat-induced displacement of the component based on an instantaneous temperature measurement when the heat-induced displacement is in a stationary state, in which the temperature of the component is stabilized, and estimating the heat-induced displacement based on the relationship between the elapsed time from the beginning of a transient state and measured temperature, when the heat-induced displacement is in a transient state due to a change in the operating condition of the machine tool, and

compensating for the heat-induced displacement of the machine tool based on the estimate.

5,795,113

OPTICAL UNIT FOR IMAGE PROJECTION AND TOOL INCORPORATING SAME

Barry D. Wixey, Finksburg, and Robert P. Welsh, Hunt Valley, both of Md., assignors to Black & Decker Inc., Newark, Del.

Filed Aug. 7, 1996, Ser. No. 693,730

Int. Cl.[6] B23C *1/12*

U.S. Cl. 409—210 **18 Claims**

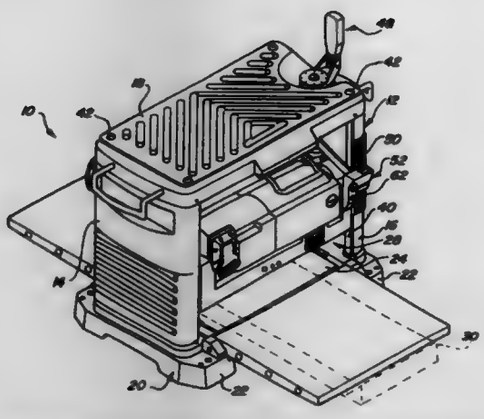
1. An apparatus for performing a forming operation on a work piece, the apparatus comprising:

a frame;

a translatable component including a work piece forming element, said translatable component mounted within the apparatus for selective bi-directional movement along a path of travel;

a work piece support surface disposed relative to said translatable component so as to define a selectively adjustable work piece opening therebetween;

a scale carried by said frame adjacent to said translatable component, said scale being marked with indicia incrementally



representing the position of the translatable component relative to the work piece; and

an optical unit attached to said translatable component, said optical unit adapted to project an image of said scale, said optical unit including an optical element having at least a first side, a second side, and a third side, said optical unit further including a first locating line positioned relative to the first side and a second locating line positioned relative to the third side, said first and second locating lines appearing co-linear with respect to each other when the image is viewed at a predetermined angle through the third side.

5,795,114

MACHINE TOOL

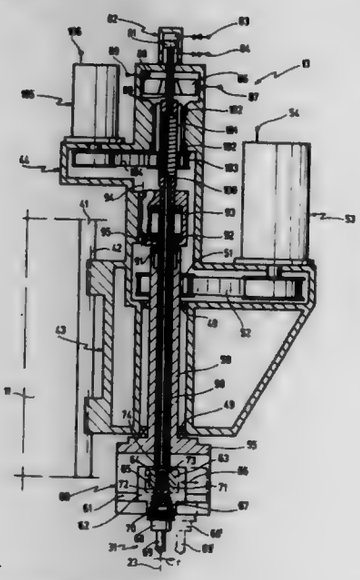
Anton Richard Schweizer, Wurmlingen, and Peter Grund, Trossingen, both of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Germany

Filed Aug. 26, 1996, Ser. No. 702,952

Claims priority, application Germany, Sep. 2, 1995, 195 32 397.1; Oct. 5, 1995, 195 37 070.8

Int. Cl.[6] B23C *1/00*

U.S. Cl. 409—233 **12 Claims**



1. A machine tool comprising:

at least one spindle having a spindle axis,

a spindle rotor mounted at said spindle for rotation about said spindle axis,

a tool receptacle arranged at said spindle rotor for receiving a tool in non-rotatable relationship, and

clamping means, said clamping means being movable in the direction of said spindle axis by rotation of said spindle rotor for clamping said tool in said tool receptacle;

wherein the movement of said clamping means in the direction of said axis is produced via a spindle drive which is actuated by rotation of said spindle rotor;

wherein a spreading member is provided in the tool receptacle for positive gripping and clamping of the tool, the spindle drive comprising an externally threaded section on the spreading member and an internally threaded section on the tool receptacle, the latter being nonrotatably joined with the spindle rotor.

5,795,115

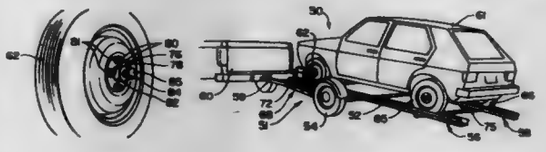
APPARATUS FOR ON-LOADING AND/OR OFF-LOADING A VEHICLE ON A VEHICLE CARRIER AND RELEASEABLY LATCHING THE VEHICLE THERETO

Joe H. Collins, 87749 Collins La., Springfield, Oreg. 97478

Filed Jun. 6, 1995, Ser. No. 482,975

Int. Cl.[6] B60P *7/08*

U.S. Cl. 410—22 **12 Claims**



1. Apparatus for releasably precluding movement of a motorized wheeled vehicle of the type having a suspension system including wheel assemblies mounted on opposite ends of a vehicle axle relative to a vehicle carrier when fully loaded thereon, said apparatus comprising, in combination:

a) a vehicle carrier for supporting and transporting a motorized wheeled vehicle;

b) a first retainer element mounted on at least one of the wheel assemblies on the motorized wheeled vehicle and protecting laterally outward therefrom;

c) at least one retainer assembly fixedly mounted on said vehicle carrier and positioned thereon so as to be located outboard of each wheel assembly upon which a respective said first retainer element is mounted, each said at least one retainer assembly including a second retainer element;

d) one of said first and second retainer elements comprising a male element and the other of said first and second retainer elements comprising a female element shaped complementally with respect to said male element and adapted to receive and captively retain said male element; and,

e) a releasable device for precluding rearward movement of the motorized wheeled vehicle relative to each said retainer assembly and said vehicle carrier;

whereby, when the motorized wheeled vehicle is fully loaded on said vehicle carrier and said first and second retainer elements are inter-engaged and coacting, the motorized wheeled vehicle is fixedly, but releasably, secured to and captively retained on said vehicle carrier through the vehicle's suspension system.

5,795,116

ARRANGEMENT IN A ROTATABLE DEVICE TO PROTECT AGAINST OVER-TIGHTENING

Peter Frank, Struth-Helmershof; Klaus Kraft, Asbach; Erwin Nitz, Schmalkalden, all of Germany, and Magnus Aspeby, Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden

PCT No. PCT/SE95/00362, § 371 Date Mar. 10, 1997, § 102(e) Date Mar. 10, 1997, PCT Pub. No. WO95/29343, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 5, 1995, Ser. No. 727,572

Claims priority, application Sweden, Apr. 25, 1994, 9401394

Int. Cl.[6] F16B *31/00;23/00*

U.S. Cl. 411—6 **8 Claims**



1. A torque limiting device for a rotatable device, comprising:

a clip of a basic cylindrical shape adapted to be inserted into a bore in the rotatable device, the clip has an axially extending slot which is adapted to be compressed to a certain extent when the clip is inserted into the bore in order to confer to the clip a springing effect on the cylindrical wall of the bore, and

the clip including a socket which is a through-hole of hexagonal or square cross-section, whereby the slot extends axially from one end to the other of the clip and radially from an outer surface of the clip to the socket.

5,795,117

RESIN MOLDING PRODUCT WITH A NUT RECEIVING PORTION

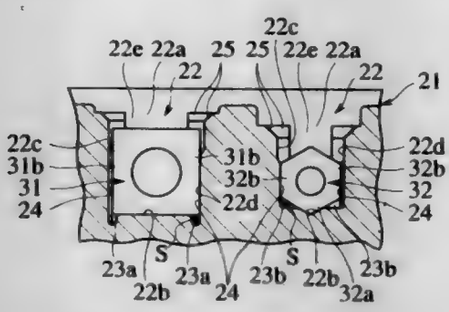
Katsuhiko Onoda, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Apr. 25, 1997, Ser. No. 847,604

Claims priority, application Japan, Apr. 30, 1996, 8-109581

Int. Cl.[6] F16B *39/02*

U.S. Cl. 411—92 **6 Claims**



1. A resin molding product with a nut receiving portion, comprising:

a recess to be fitted with a nut in a direction perpendicular to the screw axis of said nut, said recess being composed of a pair of right and left side walls which abut against outer parallel faces of said nut to prevent said nut from being rotated, a pair of front and rear walls which abut against front and rear end faces of said nut, a bottom wall to butt against an outer lower end portion of said nut to adjust a depth of insertion of said nut, and an opening to receive said nut and which is opposite to the bottom wall;

a notch formed in said front wall for inserting a bolt to be meshed with said nut to be fitted in said recess;

a rib formed in at least one of said right and left side walls, the rib holding said nut while the rib is pressed and crushed by an outer parallel face of said nut when the nut is fitted into said recess; and

a space formed on said bottom wall of said recess for gathering scrap of said rib scraped when said nut is fitted into said recess.

5,795,118

TACKING DEVICE

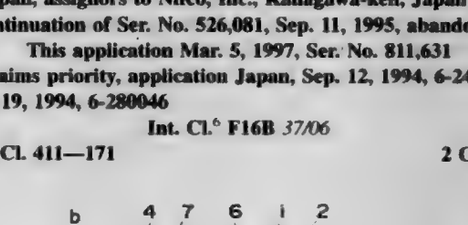
Hiroshi Osada, and Hiroyuki Nakaya, both of Yokohama, Japan, assignors to Nifco, Inc., Kanagawa-ken, Japan

Continuation of Ser. No. 526,081, Sep. 11, 1995, abandoned. This application Mar. 5, 1997, Ser. No. 811,631

Claims priority, application Japan, Sep. 12, 1994, 6-243374; Oct. 19, 1994, 6-280046

Int. Cl.[6] F16B *37/06*

U.S. Cl. 411—171 **2 Claims**



1. A tacking structure comprising a first member formed of a thermoplastic resin; a second member to be tacked to said first member;

a tacking member formed of a thermoplastic resin compatible with that of a thermoplastic resin forming said first member to be attached, said tacking member having a fusible plate and a pin having a bulged tip and projecting from a lower surface of the fusible plate; and

a retaining member which is formed of another material having a sufficient rigidity greater than a material of the tacking member, having a substantially cylindrical body provided with a plurality of catches on its outer circumference;

the tacking member being rotated at a high rotating speed or vibrated with the fusible plate when pressed against said first member so that an upper surface of the fusible plate will be fused by frictional heat to weld the tacking member to said first member, the pin being inserted in a central hollow of the retaining member so that an expanded tip of the pin is caught by the retaining member to combine the tacking member and the retaining member, and the retaining member being forced into a hole formed in said second member so that the catches engage with the edge of the hole for attachment of said first member to said second member;

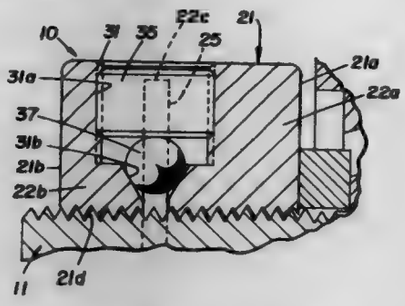
wherein the fusible plate of the tacking member is provided on its upper surface with a small rigid conical positioning protrusion at a center of the upper surface, and a plurality of concentric circular ridges formed about the positioning protrusion, and the tacking member is joined to the first member at a predetermined position by rotational friction welding.

5,795,119

ADJUSTABLE LOCK NUT

Willy J. Goellner, Rockford, Ill., assignor to Advanced Machine & Engineering Co., Rockford, Ill.

Continuation-in-part of Ser. No. 608,724, Feb. 29, 1996, Pat. No. 5,634,753. This application Feb. 10, 1997, Ser. No. 797,111
Int. Cl.[6] F16B *39/22*
U.S. Cl. 411—288 11 Claims



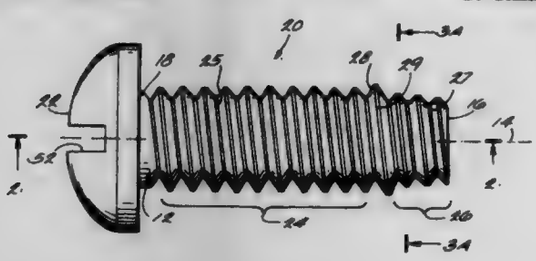
1. An adjustable lock nut adapted to be lockingly secured on a threaded member comprising: a one-piece annular body having a body axis, first and second end faces, an internally threaded axial bore extending between the end faces, and a circumferential outer surface, the body having a narrow annular internal groove opening intermediate the ends of said internally threaded axial bore, the internal groove extending generally radially outwardly from the axial bore and having an outer edge disposed inwardly of the circumferential outer surface, the annular body having a set of circumferentially spaced radial bores extending inwardly from the circumferential outer surface, the radial bores of the set each having an axis disposed in a plane normal to the body axis and bisecting the internal groove, the radial bores of the set each including an internally threaded outer end portion having a diameter substantially larger than the width of the internal groove and a threadless conical inner end portion, each conical inner end portion of the radial bores of the set being configured to form semi-conical recesses in the body at opposite sides of the internal groove adjacent said axial bore, an externally threaded screw in the internally threaded outer end portion of each radial bore of the set, and wedge means in each radial bore of the set actuated by said screws and engageable with the semi-conical recesses for applying separating forces thereto.

5,795,120

REDUCED-FRICTION THREAD FORMING OR THREAD CUTTING SCREW

Donald R. Hurdle, N 1313 Cottage Dr., Oostburg, Wis. 53070

Filed May 13, 1996, Ser. No. 644,954
Int. Cl.[6] F16B *25/00;* B23B *51/00*
U.S. Cl. 411—386 20 Claims



1. A screw for creating threads in a workpiece, the screw comprising:

a cylindrical shank;

a work holding portion on the cylindrical shank having a plurality of helical threads of a substantially constant crest diameter, a substantially constant root diameter, a substantially constant pitch diameter, and circular cross-section located thereon;

a lead portion located at a first end of the cylindrical shank having at least a portion of a helical thread located thereon;

a forming portion intermediate the work holding portion and the lead portion and having at least one full thread located thereon having a crest diameter which is greater than the crest diameter of the plurality of helical threads on the holding portion, a root diameter which is larger than the root diameter of the plurality of helical threads on the holding portion, and a pitch diameter which is proportionally greater than the pitch diameter of the threads on the holding portion; and

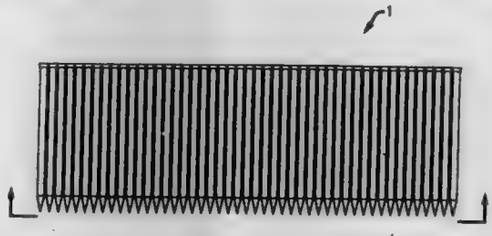
a coupling means located at a second end of the cylindrical shank opposite the first end and capable of coupling with a driving tool.

5,795,121

IMPACT-DRIVEN PLASTIC FASTENERS

Pamela S. Tucker, and Nancy Showers, both of Austin, Tex., assignors to Utility Composites, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 198,845, Feb. 18, 1994, Pat. No. 5,547,325. This application Aug. 15, 1996, Ser. No. 698,580
Int. Cl.[6] F16B *15/08;* B65D *85/24;* B21G *3/00*
U.S. Cl. 411—442 21 Claims



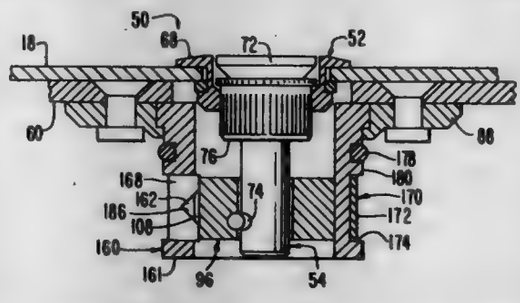
1. A plastic impact driven fastener pack mountable in an impact driving fastener machine and comprising impact driven fasteners made from a plastic composite having a compression strength greater than about 20,000 psi and a flexural modulus greater than about 1.2×10^6 psi.

5,795,122

ADJUSTABLE QUICK CONNECT FASTENER FOR ACCOMMODATING PANELS OF VARIOUS THICKNESSES

Ned C. Bowers, 7400 Ola Cir., Mt. Dora, Fla. 32757

Continuation-in-part of Ser. No. 550,369, Oct. 30, 1995, Pat. No. 5,716,180, which is a continuation-in-part of Ser. No. 309,685, Sep. 21, 1994, abandoned. This application Aug. 11, 1997, Ser. No. 909,303
Int. Cl.[6] F16B *21/00;21/02*
U.S. Cl. 411—551 33 Claims



1. A fastener for holding together first and second elements, wherein each element has an aperture for receiving the fastener, a first side in engagement with the other of said elements, and a second side facing away from the other of said elements, comprising:

a grommet having an opening and a radially outward extending flange for engaging the second side of said first element;

a stud having opposite ends, a head at one of said ends, and a cross pin adjacent to the other of said ends, said stud being received in the opening of the grommet; and

a receptacle including a first member for securement to the second element, a second member defining an end facing said grommet and means for receiving the cross pin of the stud, means for connecting said second member to said first member for movement relative to said first member, and means for fixing said second member from movement relative to said first member, wherein said cross pin receiving means comprises a central opening in said second member and diametrically opposed cam and locking surfaces open to said central opening, said stud extending into said central opening, and said cross pin being engageable with said cam and locking surfaces, and said cam and locking surfaces are defined in curved slots n said second member, each said slot having an open end extending through the end of the second member facing the grommet.

5,795,123

METHOD AND A DEVICE FOR TRANSFERRING LOAD UNITS BETWEEN TWO CARRIERS

Sten Lövgren, Ösika Tallhackevägen 53, Onsala S-439 33, Sweden

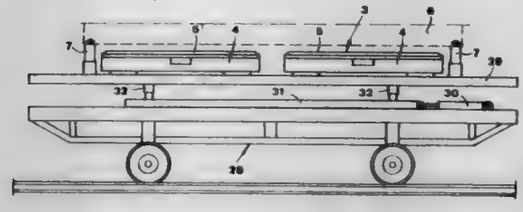
PCT No. PCT/SE95/00869, § 371 Date Jan. 15, 1997, § 102(e) Date Jan. 15, 1997, PCT Pub. No. WO96/02445, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 18, 1995, Ser. No. 765,806

Claims priority, application Sweden, Jul. 18, 1994, 9402504

Int. Cl.[6] B60P *1/64*

U.S. Cl. 414—343 **13 Claims**



5. A device for transferring load units (6) between two carriers, a first (1) of said carriers comprising a transfer arrangement (3) including at least one arm (4) which is extendible and retractable respectively in a transverse direction relative to the first carrier and which forms a path of movement for a carrying member (5) included in the transfer arrangement, said carrying member (5) being guidedly moveable along the arm and adapted to carry the load unit which is displaced, whereas the second (2*a*, *b*) of the carriers comprise securing members (7) for securing the load unit in question by engaging with corresponding securing members (8) on the load unit, characterized in that the securing members (7) of the second carrier (2*a*, *b*) are arranged to be adjustably moveable vertically in order to elevate and lower respectively a load unit resting on the securing members and that the vertical adjustability of the securing members is adapted to the transfer arrangement (3) such that a load unit resting on the securing members may be lowered, from an elevated position, such that the load of the load unit is transferred from the securing members to the carrying member introduced under the load unit and the load unit may be displaced transversely by means of the carrying member away from the second carrier without hindrance from the securing members, the securing members being arranged to be able to take over, on elevation thereof, the load of a load unit resting on the carrying member by engaging with the securing members of the load unit and elevating the load unit so that a carrying member is displaceable away from the position under the load unit along the arm.

5,795,124

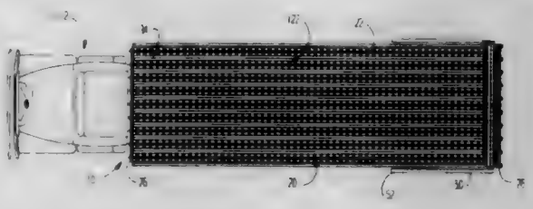
SELF-LOADING MATERIAL HAULER AND DISTRIBUTOR

Jerry J. Kitten, Rte. 2, Box 6, Slaton, Tex. 79364, and Wayne Hurt, Slaton, Tex., assignors to Jerry J. Kitten

Filed Jun. 5, 1996, Ser. No. 658,371

Int. Cl.[6] B60P *1/36*

U.S. Cl. 414—489 **10 Claims**



1. A land vehicle for the loading, transporting, and dispersing of bulk materials, said vehicle having:

(a) a frame, at least partially supported by at least two ground engaging wheels connected to said frame, a bed pivoted to the frame, said bed including front and rear ends, and a deck on the bed forming a surface between said ends;

(b) a conveyor system including fewer than eleven parallel chains, each of said chains having a centerline and comprising a continuous loop of links, wherein each link is connected to adjacent links by a roller hinge, said conveyor means also including at least two horizontal shafts, said chains positioned about said shafts, said chains forming an upper surface and a lower surface, said conveyor system also including a plurality of horizontal bars attached to said chains at right angles thereto;

(c) said conveyor system mounted to said bed such that the shafts are perpendicular to a line connecting the front and rear ends of the bed, at least one of said shafts at said front end and at least one of said shafts at said rear end, wherein said upper surface is above the deck and said lower surface underneath the deck;

(d) a conveyor drive means connected to at least one of said shafts for translating said chains in forward or rearward directions along the upper surface of the chains by imparting a rotational motion to said horizontal shafts;

wherein the improved vehicle comprises:

(e) a plurality of elongated ridges on said deck, located parallel to said chains, and extending from an area near the front end of the bed to an area near the rear end of the bed, said ridges interspersed between said chains, and constructed so as to separate and channel bulk material in translational motion over said deck;

(f) said bars having a length and a midpoint of the length, and said chains having a uniform distance from the centerline of one chain to the centerline of each adjacent chain;

(g) the length of said bars measuring at least about ¾ the centerline distance between chains; and

(h) said conveyor system including:

(1) a plurality of sprocket wheels journalled about the horizontal shafts, said sprocket wheels engaging the links in said chains;

(2) a plurality of disks fixed about the horizontal shaft at the rear end of the bed, each disk having an edge, and a plurality of valleys located on the edge of each disk and aligned perpendicular to the radial axis of said disk;

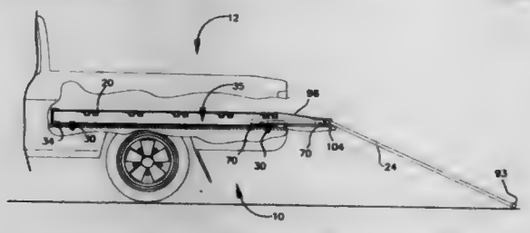
(3) said disks interspersed between said chains;

(4) said disks rotating with the rotation of said sprocket drive wheels, such that the rotational velocity of the disks corresponds to the translational velocity of the chains.

5,795,125
TRUCK RAMP ASSEMBLY

Charles D. Walkden, P.O. Box 2017, Homer, Ak. 99603

Filed Jul. 10, 1996, Ser. No. 677,845
Int. Cl.[6] B65G 67/02
U.S. Cl. 414—537 5 Claims



1. An adjustable extendable ramp apparatus for mounting on a truck or other vehicle comprising:

a platform assembly having a top, opposing sides, a closed front end and an open rear end, and a hollow interior, said interior having a pair of longitudinally extending track members formed on opposite sides thereof and a plurality of evenly spaced transverse support members underneath said top, and mounting means for securely mounting said platform assembly to said vehicle;

a sliding platform contained within said platform assembly, said sliding platform having a pair of upstanding sidewalls, front and rear pairs of opposing wheels rotatably connected to said sidewalls, a single horizontal panel, said horizontal panel extending between and attached to a lower interior portion of said sidewalls of said sliding platform so as to form an open space between said sidewalls above said horizontal panel thereby providing clearance between said top and said horizontal panel, said pairs of wheels adapted to roll within said track members thereby allowing said sliding platform to be slidably displaced in the longitudinal direction within said hollow interior of said platform assembly;

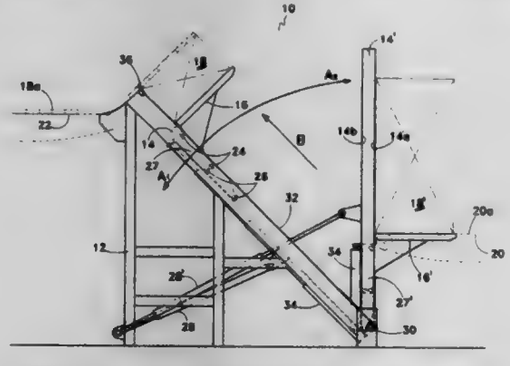
an extendable ramp connected to said sliding platform and movable therewith between a fully extended position and a fully retracted position, said ramp having a pair of wheels on opposite sides thereof at a first end and a handle at a second end and also having an extension member pivotally connected to said ramp,

whereby clearance between said top panel and said horizontal panel of said sliding platform facilitates extension and contraction of said under heavy load conditions.

5,795,126
TILT HOIST WITH MULTIPLE INDEPENDENT ROTATABLE MASTS

William R. Newnes, Salmon Arm, Canada, assignor to Newnes Machine Ltd., Salmon Arm, Canada

Filed Mar. 20, 1997, Ser. No. 822,621
Int. Cl.[6] B65G 59/02
U.S. Cl. 414—796.7 4 Claims



1. A tilt hoist for breaking down lumber stacks comprising:

an inclined planar sheeted surface;

first and second inclinable hoisting members, said first and second inclinable hoisting members independently selectively inclinable between a vertical lumber stack receiving position and first and second inclined positions,

wherein said first inclined position is generally coplanar with said inclined planar sheeted surface,

and wherein said second inclined position is below said first inclined position;

a first hoisting arm extending generally perpendicularly from, and selectively positionable along, said first inclinable hoisting member,

said first hoisting arm for receiving a first stack of lumber thereon when said first inclinable hoisting member is in said vertical lumber stack receiving position and for selectively positionable upwards translation of said first stack of lumber over said inclined planar sheeted surface when said first inclined hoisting member is in said first inclined position, whereby consecutive tiers of said first stack of lumber may be discharged from an upper edge of said inclined planar sheeted surface;

a second hoisting arm extending generally perpendicularly from, and selectively positionable along said second inclinable hoisting member, said second hoisting arm for receiving a second stack of lumber thereon when said second inclined hoisting member is in said vertical lumber stack receiving position and for selectively positionable upwards translation of said second stack of lumber over said inclined planar sheeted surface when said second inclined hoisting member is in said first inclined position, whereby consecutive tiers of said second stack of lumber may be discharged from said upper edge of said inclined planar sheeted surface,

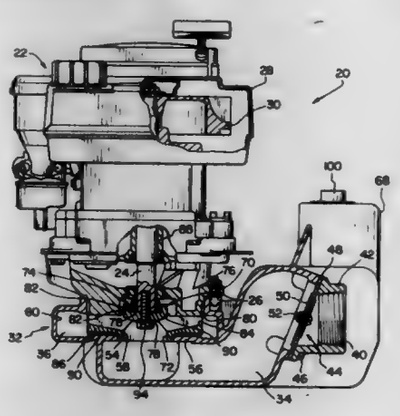
whereby said first and second stacks of lumber may be sequentially discharged from said upper edge of said inclined planar sheeted surface when said first and second inclinable hoisting members are alternatingly inclined to said first inclined positions for said selectively positionable upwards translation of said first and second lumber stacks on said first and second hoisting arms respectively,

and wherein said first and second inclinable hoisting members are alternatingly inclinable to said second inclined position, whereby said first and second hoisting arms may be selectively positioned in a downwards direction along said first and second inclinable hoisting members respectively beneath said second and first hoisting arms respectively.

5,795,127
VERTICAL SHAFT SELF-PRIMING CENTRIFUGAL PUMP

David M. DeClerck, Utica, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Oct. 18, 1996, Ser. No. 732,701
Int. Cl.[6] F04B 17/00
U.S. Cl. 415—106 6 Claims



4. A centrifugal pump, comprising:

an engine having a vertically disposed drive shaft and a flywheel;

a pump housing, said engine being attached to said pump housing with said drive shaft extending downwardly into said pump housing; and

an impeller attached to said vertical drive shaft and rotatable within said pump housing, said impeller having a plurality of vanes, said vanes engaging a medium being pumped and forcing the medium radially outward upon rotation of said impeller;

said impeller having a central hub area, said impeller, including a shroud wherein the thickness of said shroud in an axial direction at the outer circumference of said impeller is greater than the thickness of said shroud at a position radially intermediate the hub area and the outer circumference to thereby peripherally weight said impeller.

5,795,128

CONTROL DEVICE FOR A PIVOT INTEGRATED IN A MANIFOLD

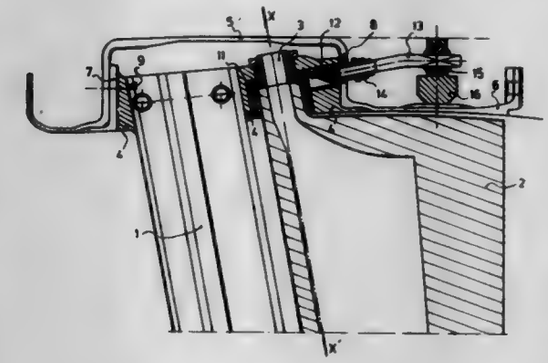
Frédéric Paul Elchstadt, Livry/Seine, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma", Paris, France

Filed Mar. 11, 1997, Ser. No. 814,340

Claims priority, application France, Mar. 14, 1996, 96 03283

Int. Cl.[6] F01D *17/16;9/06*

U.S. Cl. 415—160 **6 Claims**



1. A control device for a pivot of a variably settable movable vane comprising:

a platform which is fixed to an air manifold by upstream and downstream flanges, said platform provided with a bore for receiving said pivot;

means for pivotally mounting said pivot in said bore;

a link for rotating said pivot to swivel said movable vane and thereby vary the setting thereof; and,

means connected to said link for controlling the swivelling of said movable vane;

wherein said means for pivotally mounting said pivot include a hollow friction bush fixed in said bore, said hollow bush having a slit extending partly around the bush in a circumferential direction, said link having an upstream end part which projects through said slit and wherein said link extends into an interior of said hollow bush.

5,795,129

CENTRIFUGAL PUMP FOR THE DELIVERY OF HOT MEDIA

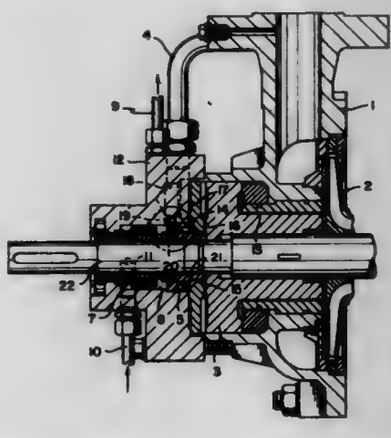
Jörg Urban, Ludwigshafen; Hans-Dieter Strum, Gerolsheim, and Waldemar Schwartz, Hessheim, all of Germany, assignors to KSB Aktiengesellschaft, Frankenthal, Germany

Filed May 20, 1996, Ser. No. 650,527

Claims priority, application Germany, May 20, 1995, 195 18 564.1

Int. Cl.[6] F04D *29/08*

U.S. Cl. 415—170.1 **8 Claims**



1. A centrifugal pump seal arrangement for the delivery of hot media comprising:

a shaft;

a centrifugal pumping chamber;

at least one sliding ring seal disposed in a sliding ring seal chamber adjacent to said shaft;

a fluid cooling circuit to cool fluid disposed in said sliding ring seal chamber;

a seal element disposed adjacent to a rotating part of the pump so as to form a seal between said sliding ring seal chamber and said centrifugal pumping chamber, and

a pressure compensation device disposed between said sliding ring seal chamber and said centrifugal pumping chamber.

5,795,130

HEAT RECOVERY TYPE GAS TURBINE ROTOR

Kiyoshi Suenaga, and Yoshikuni Kasai, both of Takasago, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

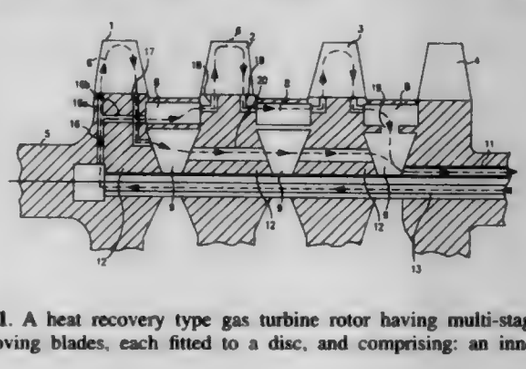
PCT No. PCT/JP96/03416, § 371 Date Jul. 8, 1997, § 102(e) Date Jul. 8, 1997, PCT Pub. No. WO97/19256, PCT Pub. Date May 29, 1997

PCT Filed Nov. 21, 1996, Ser. No. 860,589

Claims priority, application Japan, Nov. 24, 1995, 7-305668

Int. Cl.[6] F04D *29/58*

U.S. Cl. 416—95 **1 Claim**



1. A heat recovery type gas turbine rotor having multi-stage moving blades, each fitted to a disc, and comprising: an inner

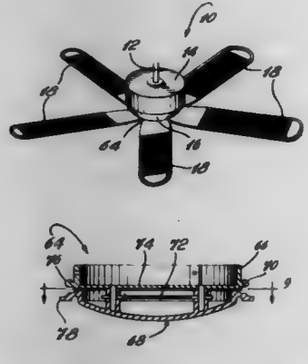
cavity and an outer cavity provided between each said disc; a blade cooling passage erecting from a root portion of each of said moving blades except a rearmost stage moving blade and making U-turn at a tip portion thereof; a cooling steam supply passage extending from a rear portion of the rearmost stage moving blade to a leading edge portion of a foremost stage moving blade in said gas turbine rotor; a bifurcation passage provided in the disc portion of the foremost stage so as to connect at its proximal end to said cooling steam supply passage and to bifurcate at its distal end so that one bifurcation thereof connects to one end of said blade cooling passage and the other bifurcation connects to said outer cavity which is adjacent thereto; a blade return passage provided in the disc portion of the foremost stage so as to connect at its proximal end to the other end of said blade cooling passage and at its distal end to said inner cavity which is adjacent thereto; a cavity connecting passage for connecting each said inner cavity; a return passage extending along said cooling steam supply passage from said inner cavity of the rearmost stage moving blade; a blade connecting passage provided in each said disc except the discs of the foremost stage and the rearmost stage for connecting said blade cooling passage and said outer cavity which is adjacent thereto; an inter-cavity passage for connecting said outer cavity and said inner cavity which are both adjacent to the rearmost stage moving blade.

5,795,131

FAN AIR CLEANER

Paul E. Crowhurst, Beaconsfield, and David Lekhtman, Morin Heights, both of Canada, assignors to ClairIon Inc., Beaconfield, Canada

Filed May 23, 1996, Ser. No. 652,388
Int. Cl.[6] F04D *29/70*
U.S. Cl. 416—146 R **18 Claims**



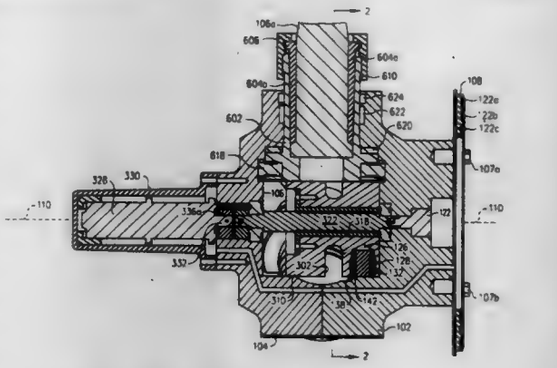
11. A fan, comprising: a plurality of radially extending fan blades, wherein at least one fan blade comprises a first surface and a parallel second surface defined by a peripheral edge including side edge segments, the at least one fan blade including at least a cavity open to the first and second surfaces, and at least one filter unit adapted to be seated in the at least one cavity such that, as the fan is operated, the at least one filter unit will be in a substantially perpendicular plane to a direction of airflow created by the fan for filtering airborne particles from the airflow, and wherein the fan includes a fixed frame, an ion emitter mounted to the fixed frame, whereby airborne particles that become charged passing through an electrically charged field created by the ion emitter on the frame of the fan will be attracted to the at least one filter unit in the at least one fan blade.

5,795,132

VARIABLE PITCH PROPELLER

James Lance Wheeler, Arlington, Wash., assignor to Something Else Limited Liability Co., Duvall, Wash.

Filed Apr. 7, 1995, Ser. No. 418,528
Int. Cl.[6] B64C *11/34*
U.S. Cl. 416—147 **6 Claims**



1. A propeller assembly comprising

a plurality of blades rotatable about a rotation axis, each blade also rotatable about a longitudinal axis and having a pin parallel to and spaced from said longitudinal axis;

an actuator movable along a first path and having at least one region for receiving said pin wherein movement of said actuator along said first path results in rotation of said blade about said longitudinal axis; and

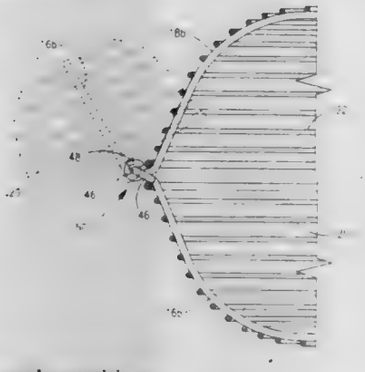
a controllable driver, capable of being in an active state or an inactive state, said controllable driver, when in said active state, being coupled to said actuator by a connector which is non-integral with said actuator to move said actuator along said rotation axis, said driver when in said inactive state rotating about said rotation axis.

5,795,133

HINGED FAN GUARD WITH SNAP FIT

D. Lee Hill, Olathe, Kans.; Jimmy D. Vanfossan, Gladstone, Mo., and Steven E. Woosley, Palestine, Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 9, 1996, Ser. No. 762,365
Int. Cl.[6] F04D *29/18*
U.S. Cl. 416—247 R **18 Claims**



1. A fan guard comprising:

a front fan guard member having an outer periphery;

a rear fan guard member having an outer periphery;

a first loop positioned at said outer periphery of said front fan guard member;

a second loop positioned at said outer periphery of said rear fan guard member, wherein said first and second loops mate with each other, thereby forming a hinge for hingedly attaching said front and rear fan guard members.

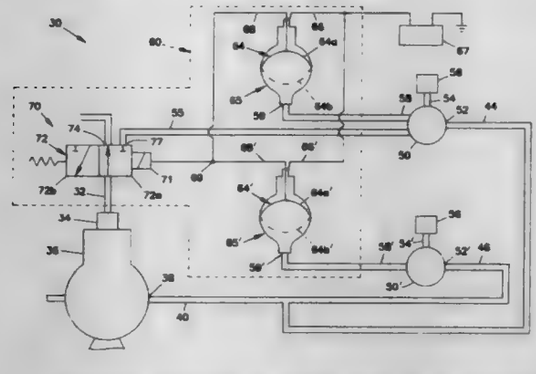
5,795,134
PRESSURIZED AIR SYSTEM

Michael Richard Malecha, Lonsdale, Minn., assignor to Air-Lite Transport, Inc., Hudson, Wis.

Continuation-in-part of Ser. No. 254,862, Jun. 6, 1994, Pat. No. 5,533,866. This application May 17, 1996, Ser. No. 649,451

Int. Cl.[6] F04B *49/06*

U.S. Cl. 417—44.9 **12 Claims**



1. A pressurized air system of the type having an air compressor which supplies compressed air to at least one reservoir when the air compressor is actuated, and wherein the reservoir delivers compressed air to a set of air-actuated components, wherein the improvement comprises a control system for controlling the air compressor, the control system comprising:

a. an actuator operatively connected to the air compressor, said actuator forcing compressed air to flow from the air compressor to the reservoir when air pressure in the air reservoir decreases to at least a predetermined minimum, and said actuator interrupting the flow of compressed air from the air compressor to the reservoir when air pressure in the air reservoir increases to at least a predetermined maximum;

b. a controller operatively connected to said actuator for providing a control signal to said actuator, the control signal indicative of air pressure in the air reservoir;

c. said actuator including:

i. a valve having a first position and a second position with said actuator forcing compressed air to flow from the air compressor to the reservoir when said valve is in said first position and said actuator interrupting the flow of compressed air from the air compressor to the reservoir when said valve is in said second position; and

ii. an electric valve setter for moving said valve between the first position and the second position, said electric valve setter responsive to the control signal.

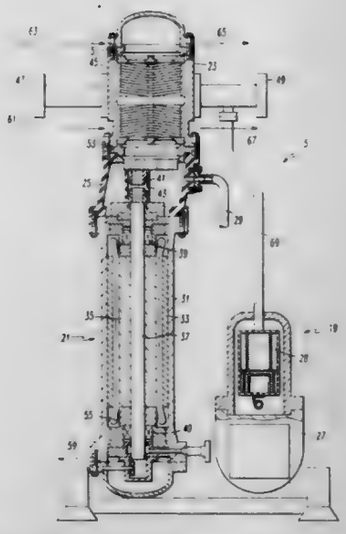
5,795,135
SUB-SEA PUMPING SYSTEM AND AN ASSOCIATED METHOD INCLUDING PRESSURE COMPENSATING ARRANGEMENT FOR COOLING AND LUBRICATING FLUID

Charles P. Nyilas, Monroeville; Clifford H. Campen, Jr., Pittsburgh, and Joseph M. Kujawski, Export, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 5, 1995, Ser. No. 567,558

Int. Cl.[6] F04D *17/00*

U.S. Cl. 417—53 **14 Claims**



1. A sub-sea pumping system connected to a wellhead for pumping an effluent from a seabed well, comprising:

a submerged pump connected to said wellhead for pumping said effluent at a predetermined pump pressure,

a submerged electrical canned motor unit including a housing for operating said pump,

a single medium means for delivering a single medium fluid to said submerged pump and said submerged electrical canned motor for cooling and lubricating said pump unit and said electrical canned motor, and

a submerged pressure compensator means outside the housing of the submerged electrical canned motor, in fluid flow communication with the submerged pump and the submerged electrical canned motor, responsive to said pump pressure, and including means for pressurizing said single medium fluid at a pressure above said pump pressure for conveying said single medium fluid through said submerged pump and said submerged electrical canned motor.

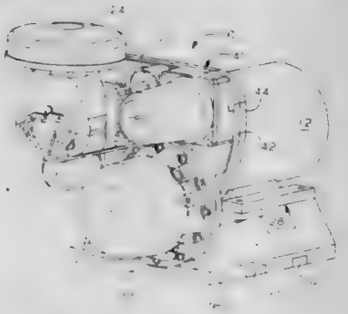
5,795,136
ENCAPSULATED ROTARY SCREW AIR COMPRESSOR

Oleif Olsaker; James T. Ferentinos, and Dale A. Schultz, all of Michigan City, Ind., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 566,527, Dec. 4, 1995, abandoned. This application Jan. 8, 1997, Ser. No. 779,554

Int. Cl.[6] F04B *39/02;* **F04C** *29/02*

U.S. Cl. 417—295 **13 Claims**



1. A compressor system comprising:

a prime mover,

a compressor,

a power transmission means connecting the prime mover to the compressor for permitting the prime mover to drive the compressor,

a lubrication circuit for supplying lubricant to the compressor,

the lubrication circuit having a plurality of discrete functional components therein connected by a flow path, the plurality of discrete functional components including a fluid filter, a fluid reservoir, and an air/lubricant separator,

a base means for coupling said prime mover to said compressor,

the base means including a first and second mating member, each of which is integrally cast to form part of an enclosed cavity therein for receiving the power transmission means,

that cavity also defining the flow path between the functional components of the lubrication circuit, and

each of the functional components of the lubrication circuit including a component housing, removably attached to the base means, for segregating the lubricant flow for that component.

5,795,137

WATER PUMP FOR INTERNAL COMBUSTION ENGINES

Godo Ozawa, Utsunomiya; Hidetada Fukushima; Toshihiko Nishiyama, both of Oyama; Akihumi Hukui, Saitama, and Masaki Shinohara, Oyama, all of Japan, assignors to Komatsu Ltd., Tokyo, Japan

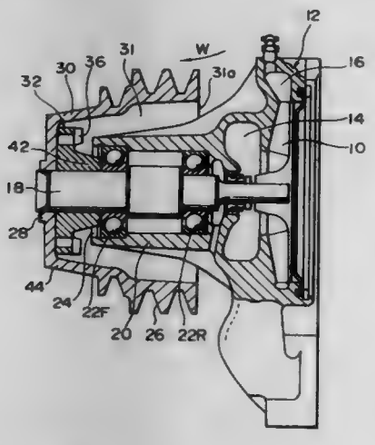
PCT No. PCT/JP94/01576, § 371 Date Apr. 8, 1996, § 102(e) Date Apr. 8, 1996, PCT Pub. No. WO95/10696, PCT Pub. Date Apr. 20, 1995

PCT Filed Sep. 26, 1994, Ser. No. 624,495

Claims priority, application Japan, Oct. 8, 1993, 5-059704 U

Int. Cl.[6] F04B *17/05*

U.S. Cl. 417—362 17 Claims



1. A pump comprising:

a pump housing;

an impeller shaft;

bearings positioned in said pump housing for mounting said impeller shaft;

a cup-shaped hood having a mounting end and a pulley end, a pulley formed on an outer circumferential surface of said pulley end, said mounting end being mounted on said impeller shaft so that said cup-shaped hood encloses a portion of said pump housing and defines a space between said portion of said pump housing and said cup-shaped hood and so that rotation of said pulley is transmitted to said impeller shaft; and

a boss positioned within said cup-shaped hood and being mounted so that said boss rotates with said impeller shaft and said cup-shaped hood, said boss having a fan integrally formed on an outer circumferential portion of said boss so that an inflow of dust through said space into said bearings is prevented by an airflow created by rotation of said fan;

wherein said cup-shaped hood is provided with a number of blowout holes in the portions thereof which are radially adjacent to an outer circumference of said fan.

5,795,138

COMPRESSOR

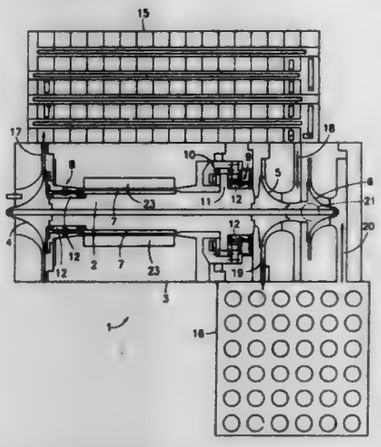
Richard Gozdawa, 2 Shortbridge Street, Newtown, Powys, United Kingdom

Filed Mar. 7, 1995, Ser. No. 399,509

Claims priority, application United Kingdom, Sep. 10, 1992, 9219167; Mar. 8, 1994, 9404436

Int. Cl.[6] F04B *17/03*

U.S. Cl. 417—243 10 Claims



1. A compressor comprising:

a) a rotatable shaft having spaced apart portions;

b) drive means arranged to rotate said shaft, said drive means comprising an electric motor having a rotor mounted on said shaft;

c) a plurality of impeller rotor stages mounted on respective spaced apart portions on the shaft;

d) intercooler means provided intermediate said impeller rotor stages; and

e) journal bearing means for said shaft, said journal bearing means comprising at least one tilting pad journal bearing arranged to be self generating and air or gas lubricated, and having bearing pads provided with a ceramics bearing surface.

5,795,139

SWASH PLATE TYPE REFRIGERANT COMPRESSOR WITH IMPROVED INTERNAL LUBRICATING SYSTEM

Hayato Ikeda; Masanobu Yokoi, both of Kariya; Hiromi Michiyuki, Anjo; Hisato Kawamura, Kariya; Hirofumi Satoh, Kariya, and Noriyuki Shintoku, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Mar. 14, 1996, Ser. No. 615,104

Claims priority, application Japan, Mar. 17, 1995, 7-059415; Jan. 30, 1996, 8-013890

Int. Cl.[6] F04B *1/16;1/18*

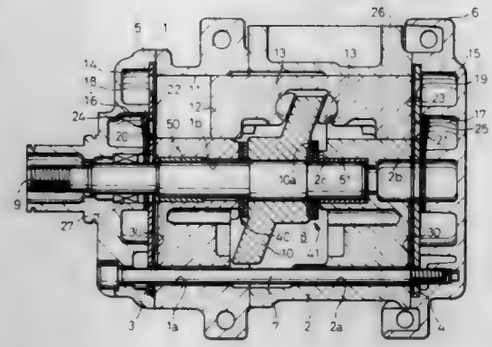
U.S. Cl. 417—269 24 Claims

1. A refrigerant compressor incorporated in a climate control system for implementing compression of a refrigerant gas containing therein lubricating oil, comprising:

a suction chamber means for the refrigerant gas before compression;

a discharge chamber means for the refrigerant gas after compression;

an operating chamber means having a variable volume chamber therein varying between a first predetermined volume position and a second reduced volume position, the variable volume chamber of said operating chamber means receiving therein the refrigerant gas from said suction chamber means during a volume expanding phase varying the volume thereof to said first predetermined volume position, and compressing the refrigerant gas during a volume reducing phase varying the



volume thereof from said first predetermined volume position to said second reduced volume position;

a compressing-operation-drive means for driving said operating chamber means to alternately vary the volume thereof between the first predetermined volume position and the second reduced volume position;

a suction port means for providing a fluid communication between said suction chamber means and the variable volume chamber of said operating chamber means;

a discharge port means for providing a fluid communication between said discharge chamber means and the variable volume chamber of said operating chamber means;

a suction valve means for opening and closing said suction port means, said suction valve means opening said suction port means during said volume expanding phase of said operating chamber means to thereby allow the refrigerant gas before compression to flow from said suction chamber means into said operating chamber means; and

a lubricating oil passageway means for permitting the refrigerant gas containing therein the lubricating oil to pass by a lubricated means arranged to be in association with said compressing-operation-drive means, said lubricating oil passageway means having one end brought into communication with said operating chamber means in synchronism with opening of said suction valve means and the other end formed to be in constant communication with a predetermined region in said compressor in which a pressure higher than a pressure in said operating chamber means during said volume expanding phase prevails.

5,795,140

RECIPROCATING COMPRESSOR HAVING CRANKSHAFT WITH LUBRICATION-CONDUCTING GROOVES ON AN OUTER PERIPHERY THEREOF

Sun Ik Jin, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 7, 1996, Ser. No. 729,691

Claims priority, application Rep. of Korea, Oct. 13, 1995, 95-35404

Int. Cl.[6] **F04B** *17/00*

U.S. Cl. 417—372 **7 Claims**

1. A reciprocating compressor, comprising:

a housing forming a hermetically sealed space, with oil stored at a bottom thereof;

a cylinder disposed in the space and forming a compression chamber;

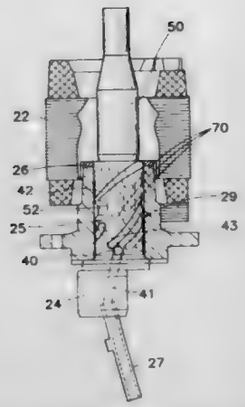
a piston mounted in the compression chamber;

a bearing disposed in the space;

an electric motor disposed in the space;

a vertical crankshaft including an outer peripheral contact surface rotatably mounted in the bearing and connected to the motor to be rotated thereby;

a crank journal eccentrically connected to the crankshaft and connected to the piston to convert rotation of the crankshaft into reciprocation of the piston, the crank journal including an internal oil supply passage;



an oil pickup tube extending downwardly from the crank journal and into the stored oil to feed oil upwardly to the internal oil supply passage in response to rotation of the crankshaft;

an oil groove formed in the contact surface and communicating with the internal oil supply passage to conduct oil and lubricate the contact surface;

a race formed in the contact surface in circumferentially spaced relationship to the oil groove for reducing the size of the contact surface; and

an oil reservoir formed in the contact surface and intersecting the oil groove, the reservoir extending circumferentially for less than the entire circumference of the contact surface.

5,795,141

SCROLL TYPE COMPRESSOR HAVING ANTI-ROTATION PIN MEMBERS

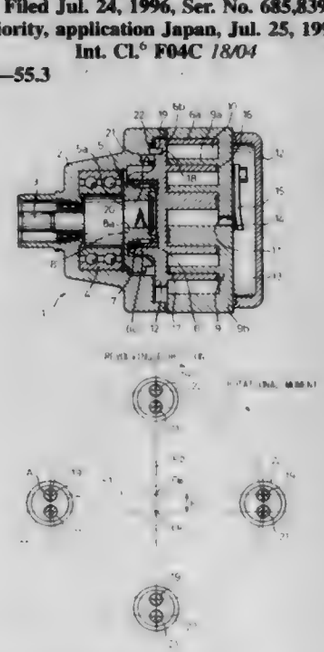
Yasuhiro Oki, Okazaki, and Shigeru Hisanaga, Kariya, both of Japan, assignors to Nippondenso, Co., Ltd, and Kabushiki Kaisha, both of Kariya, Japan

Filed Jul. 24, 1996, Ser. No. 685,839

Claims priority, application Japan, Jul. 25, 1995, 7-189533

Int. Cl.[6] **F04C** *18/04*

U.S. Cl. 418—55.3 **8 Claims**



1. A scroll type compressor, comprising:

a housing having inlet and outlet openings;

a shaft pivotably supported with respect to the housing;

a fixed scroll connected within the housing and having an end plate, the fixed scroll having a spiral member on the end plate of the fixed scroll;

a movable scroll incorporated within the housing and having an end plate, the movable scroll including a spiral member on the end plate of the movable scroll to eccentrically engage with the fixed scroll, and having a rotating center and a revolving center;

a compression chamber formed by the fixed scroll and the movable scroll; and

a plurality of anti-rotation devices, each of the plurality of anti-rotation devices comprising:

a pin member arranged on the end plate of the movable scroll, and projecting from an opposite side of the end plate of the movable scroll from the spiral member of the movable scroll;

an associated pin member arranged on the housing, projecting toward the movable scroll, and facing the pin member of the movable scroll; and

an annular ring member having an inner surface and surrounding the pin members of the movable scroll and the housing,

wherein, to reduce rotation of the movable scroll, at least one of the pin members of the movable scroll is disposed on a first line and downstream of the associated pin member of the housing in the rotating direction, when the volume ratio of the compression chamber is from 10 to 22 percent of the volume of the compression chamber at the time of the conclusion of the suction of medium and a rotating moment acting on the movable scroll due to compression of the medium is greatest, the first line passing through the rotating center and being perpendicular to a second line, the second line passing through the rotating center and the revolving center, said anti-rotation devices permitting the inner surfaces of the ring members to contact the pin member of the movable scroll and the pin member of the housing to thereby prevent the movable scroll from rotating about the rotating center.

5,795,142

HYDRAULICALLY BALANCED VANE CELL PUMP

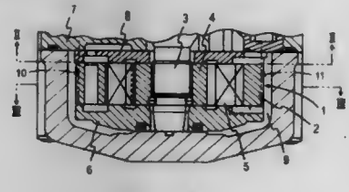
Johann Merz, Schwäbisch Gmünd, Germany, and Masao Yasuda, Yokohama, Japan, assignors to ZF Friedrichshafen AG., Friedrichshafen, Germany

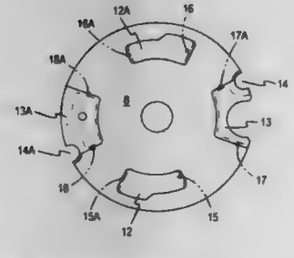
Filed Jan. 13, 1997, Ser. No. 785,134

Claims priority, application Germany, Jan. 11, 1996, 196 00 740.2

Int. Cl.[6] F04C *15/00*

U.S. Cl. 418—133 **1 Claim**





1. A vane cell pump comprising:

a housing,

a control plate and an end plate located in the housing;

a rotor fixed to a shaft and having slits and a cam ring, both of which are enclosed by the control and end plates;

radially displaceable vanes guided in the slits of the rotor;

the cam ring, the control plate and end plate are retained in the housing by means of pins;

a suction chamber and a compression chamber machined into the face of the control plate and a suction chamber and a compression chamber machined into the face of the end plate which is in opposing relationship to the face of the control plate which includes the suction chamber and the compression chamber,

each suction and compression chamber being provided with control edges, and

wherein the control edges of the suction and compression chambers in the end plates are recessed inwardly relative to the control edges of the suction and compression chambers in the control plate whereby the control edges of the control plate perform the control function of controlling flow of oil in the pump.

5,795,143

POSITIVE DISPLACEMENT PUMP APPARATUS

William Wesley Martin, South Perth, Australia, assignor to QVP Pty Ltd., Fremantle, Australia

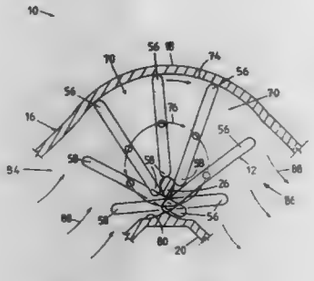
PCT No. PCT/AU94/00584, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO95/09973, PCT Pub. Date Apr. 13, 1995

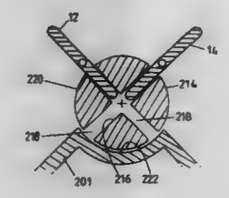
PCT Filed Sep. 29, 1994, Ser. No. 619,604

Claims priority, application Australia, Oct. 1, 1993, PM1554; Oct. 13, 1993, PM1754

Int. Cl.[6] F04C *2/344*

U.S. Cl. 418—227 **1 Claim**





1. A positive displacement pump apparatus comprising

(a) a housing formed of a housing wall including a wall portion;

(b) a drive shaft extending through said wall portion;

(c) a rotatable disc disposed in said housing and being secured to said drive shaft to be rotated by said drive shaft;

(d) a vane mounted eccentrically on said disc for travel along a circular arc as the disc rotates; said vane having a vane axis and being rotatable relative to said disc about said vane axis;

(e) a gearing disposed in said housing; said gearing coupling said vane with said drive shaft for effecting rotation of said vane about said vane axis, whereby said vane moves, in said circular arc, through a positive displacement portion of movement and a non-positive displacement portion of movement; and

(f) an idler roller positioned in said housing; said idler roller defining a slot through which said vane passes in said non-positive displacement portion of movement.

5,795,144

FUEL-FIRED BURNERS

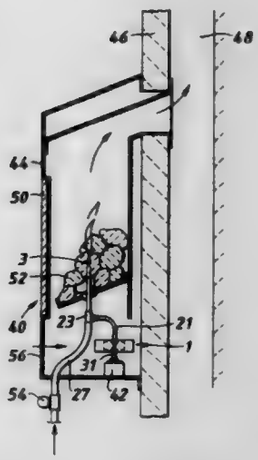
Ming-Biu Tung, London, Great Britain, assignor to British Gas plc, London, Great Britain

Filed Oct. 7, 1996, Ser. No. 726,931

Claims priority, application United Kingdom, Oct. 6, 1995, 9520450

Int. Cl.[6] F23C 11/04

U.S. Cl. 431—1 15 Claims



1. A fuel fired burner for use in a solid fuel effect fire, the burner having at least one burner port supplied with a fuel for supporting a decorative effect flame, in which the port is connected to a power driven means for automatically and continually varying the aeration of the fuel/air mixture which emerges from the burner port by varying the air flow to said burner port, such that the flame supported by the burner port is of continually changing visual appearance.

5,795,145

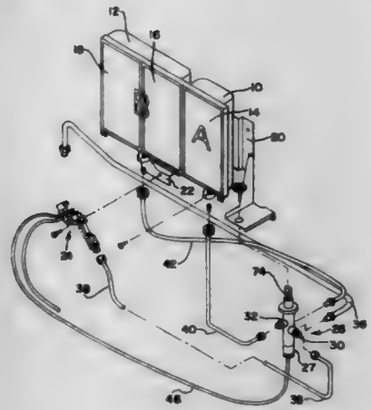
METHOD AND APPARATUS FOR CONTROLLING GAS FLOW TO CERAMIC PLAQUE BURNERS OF DIFFERING SIZES

John S. Manning; Christopher P. Hollis; James L. Jacobs, and Ralph E. Pratt, all of Bowling Green, Ky., assignors to DESA International, Bowling Green, Ky.

Filed May 22, 1997, Ser. No. 861,950

Int. Cl.[6] F23Q 9/08

U.S. Cl. 431—280 8 Claims



1. An apparatus for controlling ignition of a first plaque burner and a larger second plaque burner mounted in substantial coplanar adjoining relationship with the first plaque burner to achieve "Low", "Medium" and "High" heat settings in series, said apparatus comprising:

(a) a first plaque burner and a second larger plaque burner mounted in substantial coplanar adjoining relationship with the first plaque burner;

(b) a pilot light assembly mounted in the vicinity of the first plaque burner;

(c) a valve housing having an inlet opening and first, second and third outlet openings;

(d) a valve spindle mounted in said valve housing for movement to establish sequentially an "Off" position, a "Pilot" position, a "Low" position, a "Medium" position and a "High" position;

(e) a first conduit communicating said first outlet opening with said pilot light assembly;

(f) a second conduit communicating said second outlet opening with said first plaque burner;

(g) a third conduit communicating said third outlet opening with said second plaque burner;

(h) said valve spindle having a first exit aperture adapted to be in communication with (i) said first outlet opening as the spindle is moved consecutively between the "Pilot", "Low", "Medium" and "High" positions, and (ii) said third outlet opening when said spindle is in its "Medium" and "High" positions and a position intermediate the "Low" and "Medium" positions;

(i) said valve spindle having a second exit aperture adapted to be in communication with said second outlet opening when said spindle is in its "Low" position and when the spindle is in an intermediate position between its "Low" position and its "Medium" position;

(j) said valve spindle having a third exit aperture adapted to be in communication with said second outlet opening when the spindle is located in its "High" position; and

(k) said valve spindle including passageway means communicating said inlet opening with said first, second and third exit apertures thereby to establish gas flow paths between the inlet opening and (i) the pilot light assembly when the spindle is in all of its positions except the "Off" position, (ii) the first plaque burner only when the spindle is in the "Low" position, (iii) the second plaque burner only when the spindle is in its "Medium" position, and (iv) the first and second plaque burners when the spindle is in its "High" position.

5,795,146

FURNACE CHAMBER HAVING EDUCTOR TO ENHANCE THERMAL PROCESSING

Gary A. Orbeck, Windham, N.H., assignor to BTU International, Inc., North Billerica, Mass.

Filed May 23, 1996, Ser. No. 653,709

Int. Cl.[6] F27B 3/22

U.S. Cl. 432—176 21 Claims

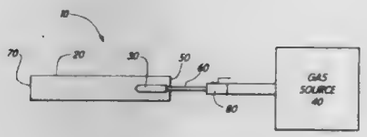
1. A furnace for thermally processing product comprising:

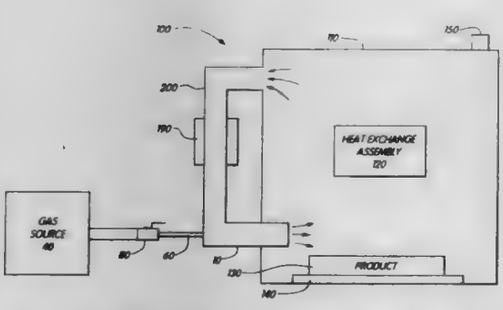
a furnace housing including a furnace inlet;

a support assembly disposed within said housing for supporting the product to be thermally processed;

a heat exchange assembly disposed within said furnace housing to change the temperature of the product; and

an eductor comprising a tubular body having an annular inlet at one end and an outlet at the other end, a nozzle in communication with a pressurized gas source providing high velocity gas via a conduit, the nozzle located concentrically within the annular inlet of the tubular body, the nozzle disposed to direct the high velocity gas along the tubular body and entrain gas through the annular inlet into the high velocity gas, the outlet of said eductor located inside said furnace housing to provide circulation of gas within said furnace housing and disposed sufficiently adjacent to the product supported on said support





assembly to direct gas flow across a surface of the product to lower a partial pressure of volatiles outgassing from the product.

5,795,147

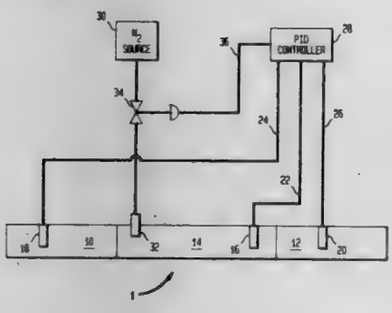
FURNACE HAVING REGULATED FLOW RATE OF INERTING GAS

Neeraj Saxena, Murray Hill, N.J.; Colin John Precious, Rotherham, and Paul Francis Stratton, Bradley Huddersfield, both of England, assignors to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 563,145, Nov. 27, 1995, abandoned. This application Jun. 11, 1996, Ser. No. 661,679

Int. Cl.[6] F27B *5/04*

U.S. Cl. 432—205 **8 Claims**



1. A furnace comprising:

inlet and outlet sections;

a central processing section located between said inlet and outlet sections;

said central processing section having at least one inlet for an inerting gas to flow into said central processing section and then towards said inlet and outlet sections for preventing ingress of air into said central processing section;

control means for supplying said inerting gas to said at least one inlet and at a flow rate sufficient to at least inhibit air from entering said central processing section;

said control means responsive to a control signal for controlling said flow rate of said inerting gas;

at least first and second sensing means located within said central processing section and at least one of said inlet and outlet sections, respectively for generating at least first and second output signals referable to oxygen concentrations within said central processing section and said at least one of said inlet and outlet sections; and

a PID controller responsive to said at least first and second output signals for generating said control signal, said PID control programmed such that an integral error term is equal to a first time average of said the oxygen concentrations of said central processing section less an oxygen concentration set point and each of the proportional and differential error terms is equal to a second time average of said oxygen concentrations of said central processing section and said at least one of said inlet and outlet sections less said oxygen concentration set point.

5,795,148

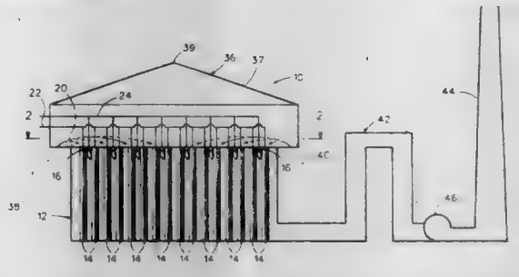
INDUCED DRAFT FURNACE AIR ADDITION METHOD AND APPARATUS

Stephen Paul DiMartino, Sr., Schnecksville, Pa.; Peter George Goldstone, Woking, England; David Brian Letch, Oostvoorne, Netherlands, and Nasim Hassan Malik, Wimbeldon, England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 12, 1996, Ser. No. 614,431

Int. Cl.[6] F27B *5/16*; F23N *3/00*

U.S. Cl. 432—200 **10 Claims**



1. A method for elimination of external atmospheric disturbances from affecting the performance of a down-fired induced draft furnace wherein air is introduced into burners used in the furnace through a penthouse type structure comprising the step of:

modifying the penthouse type structure to permit entry of said air into said furnace in a manner to equalize pressure of said air across the entirety of said penthouse type structure and distribute said air evenly to all of said burners.

5,795,149

DEVICE FOR ATTACHING AN ORTHODONTIC UNIT AND AN ORTHODONTIC UNIT INCORPORATING SUCH DEVICE

Charles Eric Elkouby, Paris, France, assignor to AIDA International, Montreuil, France

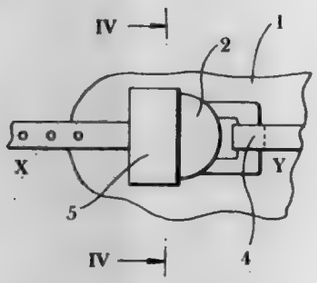
PCT No. PCT/FR94/01551, § 371 Date Jul. 10, 1996, § 102(e) Date Jul. 10, 1996, PCT Pub. No. WO95/18578, PCT Pub. Date Jul. 13, 1995

PCT Filed Dec. 29, 1994, Ser. No. 676,111

Claims priority, application France, Jan. 11, 1994, 94 00187

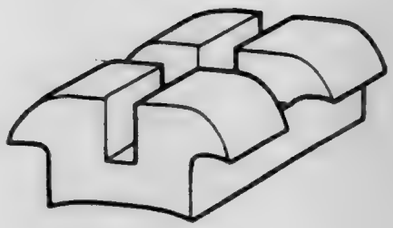
Int. Cl.[6] A61C *7/00*

U.S. Cl. 433—5 **12 Claims**



1. In combination, an orthodontic traction unit and a device for attaching said orthodontic traction unit, wherein:

said orthodontic traction unit comprises a unit body and a yoke;
said device for attaching said orthodontic traction unit comprises:
a protective pad defining a plane;
a flexible buckle affixed to said pad, said flexible buckle and a median portion of said yoke of said traction unit forming a connection, said connection allowing said traction unit body to pivot within said plane of said pad with respect to said flexible buckle; and
means affixed to said pad and affixed to said traction unit for limiting pivoting of said traction unit.

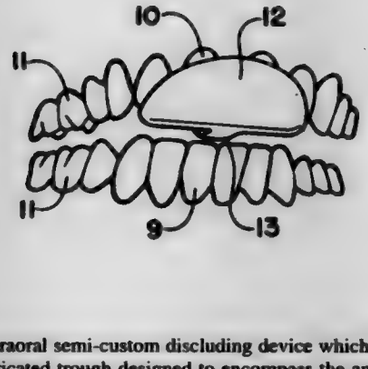


5,795,150

INTRAORAL SEMI-CUSTOM DISCLUDER DEVICE AND METHOD

James P. Boyd, 800 W. Long Lake, No. 135, Bloomfield Hills, Mich. 48302

Filed Mar. 3, 1997, Ser. No. 885,887
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—6 **8 Claims**



1. An intraoral semi-custom discluding device which comprises:
a prefabricated trough designed to encompass the anterior maxillary incisors;
a dome on said trough extending distally when in a wearer's mouth;
said dome configured to contact at least one lower anterior incisor when in place in said wearer's mouth prior to any contact between upper and lower posterior teeth; and
a quantity of acrylic resin in said trough molded to conform to the shape of anterior maxillary incisors;
whereby said trough is releasably retained in the mouth by said molded acrylic resin.

5,795,151

GLASS MATERIAL, LIVING TISSUE REPLACEMENT, AND ORTHODONTIC PART

Toru Nonami; Chihiro Takahashi, and Tatsuji Sano, all of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

PCT No. PCT/JP95/02419, § 371 Date Jul. 9, 1996, § 102(e) Date Jul. 9, 1996, PCT Pub. No. WO96/16683, PCT Pub. Date Jun. 6, 1996
PCT Filed Nov. 28, 1995, Ser. No. 669,319
Claims priority, application Japan, Nov. 30, 1994, 6-321358; Aug. 4, 1995, 7-219849
Int. Cl.[6] A61C *3/00;8/00*
U.S. Cl. 433—8 **13 Claims**

1. A glass material for use in the preparation of living tissue replacements and orthodontic parts, comprising silicon oxide, magnesium oxide, aluminum oxide, and titanium oxide as main components, the content of these components, when calculated as SiO_2, MgO, Al_2O_3, and TiO_2, respectively, and expressed by percent by weight, being

SiO_2 40 to 65% by weight,
MgO 9 to 30% by weight,
Al_2O_3 8 to 31% by weight, and
TiO_2 6 to 15% by weight,
the material satisfying expression I:

$$\{100-(A+S+T)\}/S \geqq 0.340 \quad \text{I:}$$

wherein A, S and T are contents in % by weight of Al_2O_3, SiO_2, and TiO_2, respectively, and Expression II:

$$(S+M)/4 > 100-(S+M+A+T) \quad \text{II:}$$

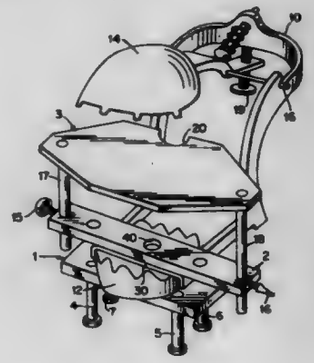
wherein M is a content in % by weight of MgO, and being substantially free of fluorine.

5,795,152

ACCESSORY DEVICE FOR A DENTAL ARTICULATOR AND METHOD FOR USE IN FABRICATING DENTAL PROSTHETICS

Marc J. Glatt, 4325 Regalwood Ter., Burtonsville, Md. 20866

Filed Mar. 28, 1997, Ser. No. 828,361
Int. Cl.[6] A61C *11/00*
U.S. Cl. 433—60 **9 Claims**



1. An accessory device for use with various types of dental articulators including a simple hinge type articulator, said accessory device comprising: a base; a middle plate attached to said base; a work surface, substantially parallel and adjustably attached to said middle plate; and means for attaching said device to various types of dental articulators wherein said means includes a model mounting piece for providing a substantially flat surface upon which said middle plate is secured when using the accessory device with a simple hinge type articulator.

5,795,153
DEVICE AND METHOD FOR REMOVING DEPOSITS FROM TEETH

Peter Rechmann, Dellestrasse 79, Duesseldorf-Unterbach, Germany, 40627

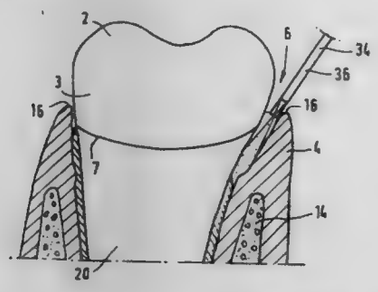
PCT No. PCT/EP94/03950, § 371 Date Jun. 17, 1996, § 102(e) Date Jun. 17, 1996, PCT Pub. No. WO95/16404, PCT Pub. Date Jun. 22, 1995

PCT Filed Nov. 29, 1994, Ser. No. 663,225

Claims priority, application Germany, Dec. 17, 1993, 43 43 218.2

Int. Cl.[6] A61C *15/00*

U.S. Cl. 433—216 **20 Claims**



1. A device for the removal of deposits on teeth (2) comprising a laser light source for generating a pulsed laser light beam (25), said laser light source including a light conductor (26) leading to a hand held applicator (28), means for adjusting the wavelength of said laser light source to a value in the range from 300 to 600 nm in correspondence to absorption behavior of the deposits such that said deposits are selectively removed, the laser light source having an energy density of 0.5 to 10 J/cm^2 in the light spot, said applicator (28) enclosing the pulsed laser light beam (25) in a liquid let (30), said applicator (28) being constructed and arranged to discharge the pulsed laser light beam (25) and the liquid let (30) coaxially, and said applicator (28) includes a discharge tip having a diameter substantially within the range of 1 to 1.5 mm to allow introduction thereof into a gingival pocket (6) of an associated tooth.

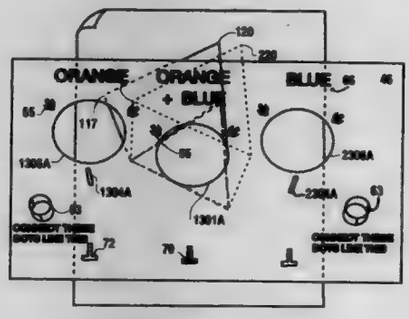
5,795,154
ANAGLYPHIC DRAWING DEVICE

Gail Marjorie Woods, 617 Thomas St., Apt. 7, Three Rivers, Mich. 49093

Continuation-in-part of Ser. No. 499,362, Jul. 7, 1995, abandoned. This application Apr. 18, 1997, Ser. No. 844,258

Int. Cl.[6] G09B *11/00*

U.S. Cl. 434—87 **24 Claims**



1. A device for producing anaglyphic drawings on a copy sheet that will appear three dimensional when viewed through glasses having a first lens for allowing a predominant transmission therethrough of a color in a first color range and a second lens for allowing a predominant transmission therethrough of a color in a second color range, the second color range being separate from the first color range comprising:

(a) a stencil sheet having component stencil designs therein which when taken together comprise:

(i) a first eye view stencil design of a stereogram: and

(ii) a second eye view stencil design of the stereogram;

(b) a register aligning the copy sheet with the component stencil designs and with a fused design, said fused design being the first eye view of the stereogram horizontally shifted relative to the second eye view of the stereogram, so that any elements of the stereogram that would appear to be within the plane of the copy sheet are superimposed, such that the component stencil designs that comprise the first eye view stencil design can be successively transferred in register to the copy sheet with a drawing instrument depositing color in the second color range; and the component stencil designs that comprise the second eye view stencil design can be successively transferred in register with a drawing instrument depositing color in the first color range.

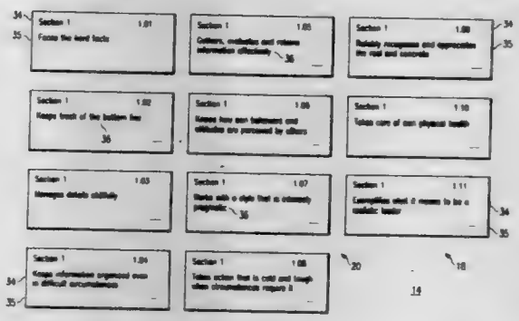
5,795,155
LEADERSHIP ASSESSMENT TOOL AND METHOD

Palmer Morrel-Samuels, Sylvan, Mich., assignor to Electronic Data Systems Corporation, Plano, Tex.

Filed Apr. 1, 1996, Ser. No. 625,969

Int. Cl.[6] G09B *19/18;19/00;3/00;7/00*

U.S. Cl. 434—107 **20 Claims**



1. An assessment tool for measuring effectiveness of a target, comprising:

a first part having a plurality of independently movable objects each displaying a statement directed toward a characteristic of said target, the characteristic related to said target's effectiveness; and

a second part associated with the first part having at least one inquiry directed toward verifiable performance of said target.

5,795,156
HOST DEVICE EQUIPPED WITH MEANS FOR STARTING A PROCESS IN RESPONSE TO DETECTING INSERTION OF A STORAGE MEDIA

Peter M. Redford, Los Gatos, and Donald S. Stern, San Jose, both of Calif., assignors to TV Interactive Data Corporation, San Jose, Calif.

Division of Ser. No. 269,492, Jul. 1, 1994, Pat. No. 5,624,265. This application Nov. 1, 1995, Ser. No. 551,686

Int. Cl.[6] G09B *19/00*

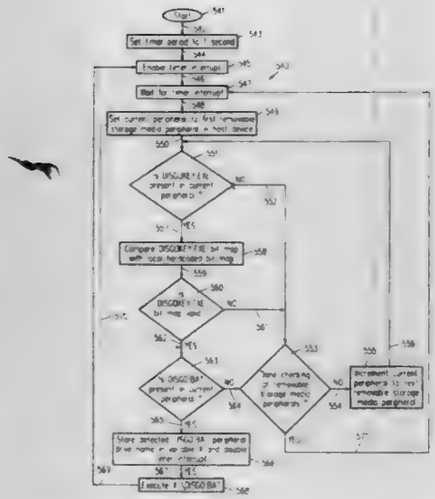
U.S. Cl. 434—118 **12 Claims**

1. A host device comprising:

a peripheral having an output lead;

means for automatically loading an initialization file;

means for detecting insertion of a storage media into said peripheral, said means for detecting being operatively coupled to said output lead of said peripheral and to said means for automatically loading, wherein said means for detecting



detects each insertion after automatic loading of said initialization file by said means for automatically loading;

means for checking for a file other than said initialization file, said means for checking being operatively coupled to said means for detecting, wherein said means for checking checks for said file in response to each detection by said means for detecting; and

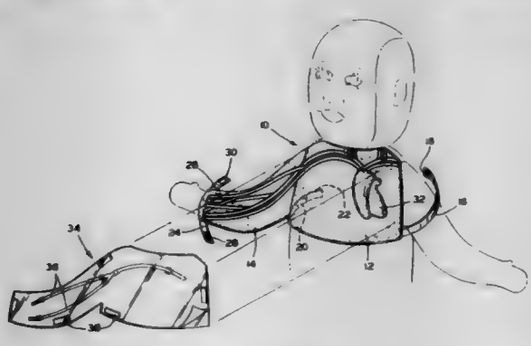
means for starting up a process, said means for starting up being operatively coupled to said means for checking, wherein said means for starting up starts a new process in response to each time said means for checking finds the file being checked.

5,795,157

MEDICAL TEACHING AID

Alice H. Weber, 1904 Mount Vernon Blvd., Toledo, Ohio 43607, and Katherine L. Miller, P.O. Box 267, Cambridge City, Ind. 47327

Filed Jun. 24, 1997, Ser. No. 881,447
Int. Cl.[6] G09B *23/30*
U.S. Cl. 434—269 **15 Claims**



1. A medical teaching aid, comprising:

a primary overlay, representing a portion of the human body;

means for releasably securing the primary overlay to a supporting structure;

indicia on the primary overlay depicting human anatomical features;

a secondary overlay formed of a transparent sheet material, said secondary overlay including one or more tubes affixed thereto, said tubes cooperating graphically with the indicia on the primary overlay when said secondary overlay is superposed over the primary overlay; and

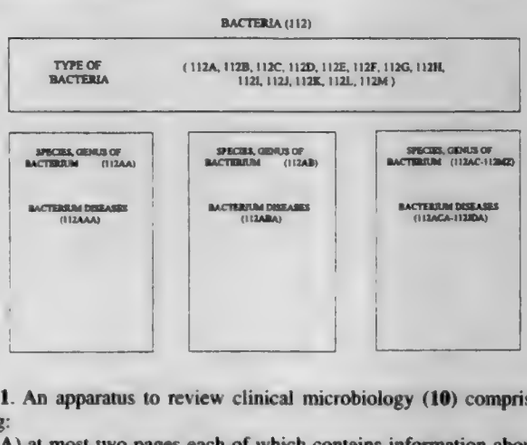
means for releasably securing the secondary overlay to the primary overlay.

5,795,158

APPARATUS TO REVIEW CLINICAL MICROBIOLOGY

Peter Warinner, P.O. Box 470, Freeport, N.Y. 11520

Filed Dec. 2, 1996, Ser. No. 759,055
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—295 **30 Claims**



1. An apparatus to review clinical microbiology (**10**) comprising:

A) at most two pages each of which contains information about a microorganism, and each of which is selected from a group consisting of at least one written page (**12A**) and at least one blank page (**12B**) alternating in sequence with the at least one written page (**12A**), and at least one one-half written page (**12A**) comprising one-half blank page (**12B**) thereon, the blank page (**12B**) functions as a tablet for a user to write notes thereon, the blank page (**12B**) further functions to prevent the user from being distracted by information contained on a following written page (**12A**);

B) a plurality of sections (**16**) presented on the written pages (**12A**);

C) at least one category (**14**) is presented within each of the plurality of sections (**16**), each of the at least one category (**14**) having at least one microorganism presented therein according to a feature selected from a group of features consisting of disease and common distinguishing, each microorganism is presented individually and entirely on a single written page (**12A**), each of the at least one category (**14**) having a color coding (**20**) functioning as a memory aid for an user;

D) at least one chapter (**18**) is presented within each of the at least one category (**14**);

E) a cross reference is presented at an end of each of the plurality of categories (**16**); and

F) a General Cross Reference (**124**) is presented at the end of the plurality of sections (**16**).

5,795,159

MERCURY REMOVAL METHOD AND APPARATUS

Stephen Alden Rails, Great Lakes, and William Corry Roddy, Grayslake, both of Ill., assignors to The United States of America as represented by The Secretary of The Navy, Washington, D.C.

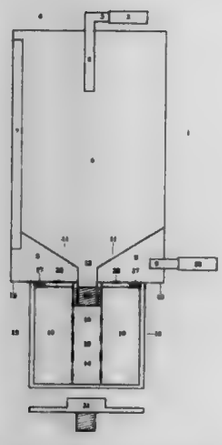
Filed Feb. 2, 1996, Ser. No. 595,689
Int. Cl.[6] A61C *17/04*
U.S. Cl. 433—92 **2 Claims**

1. An apparatus for separating insoluble particulate material from dental waste water comprising:

a main chamber having a top, sides and a bottom, said bottom being the lowest point of said chamber with respect to the earth;

a vacuum source for placing said main chamber under vacuum;

an input line connected to the top of said main chamber for bringing dental waste water containing suspended solids to said main chamber by the vacuum created, the end of said input line being inside the main chamber;



a vacuum continuation line on one side of said main chamber having a opening to said main chamber higher with respect to the bottom of the main chamber than the end of the input line thereby causing the separation by gravity of the water and solids from gaseous components of said waste water, said continuation line connected to an output chamber located peripherally of the main chamber;

a funnel forming the bottom of said main chamber wherein the narrow end of the funnel protrudes through the bottom of said main chamber and forms a knob, said narrow end of the funnel directs said waste water through a separable connection into a central collection well of a removable filter located lower than the main and output chambers;

said central well having a wall separating said well from filter media surrounding said well;

perforations through the wall of the central well so waste water and suspended material flow into the filter media;

an exit from the filter media connected to said output chamber; and

exhaust means connected to said output chamber and to said vacuum source for removing effluent from said apparatus and maintaining vacuum in said apparatus.

5,795,160

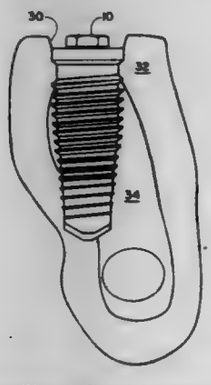
TAPERED DENTAL IMPLANT IN A STEPPED ORIFICE

Jack A. Hahn, 910 Barry La., Cincinnati, Ohio 45229, and Steven J. Fix, 1000 Via Viento La., Corona, Calif. 91720

Filed Feb. 6, 1997, Ser. No. 795,875

Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—174 **4 Claims**



1. A method of installing a dental implant comprising the steps of:

drilling a stepped endosseous orifice in the maxilla or mandible of the patient in which the implant is to be installed; and

inserting into said orifice a tapered implant, the tapered implant being so constructed and configured as to define a proximal end, a cylindrical portion adjacent to the proximal end, a frustoconically tapered portion tapering from the major diameter D at the proximal end of the implant to a minor diameter d proximate the distal end of the implant; said orifice being step drilled such that the orifice less than or equal to respective portions of the implant to be installed adjacent such steps for laterally compressing the cancellous tissue to form a tight fitting sleeve of bone around the implant without exerting undue lateral force bone into which implant is installed.

5,795,161

APPARATUS AND METHOD FOR CALCULATING AN ABSOLUTE TIME AT WHICH AN EVENT OCCURRED

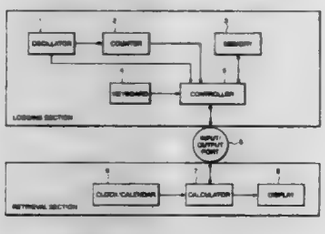
Peter S. Vogel, 28 Adeline Street, Faulconbridge NSW 2776, Australia

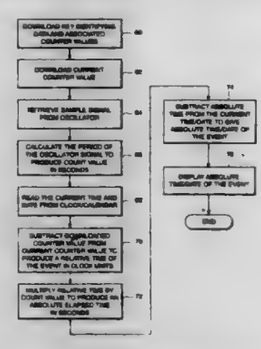
Continuation-in-part of Ser. No. 684,894, May 29, 1992, Pat. No. 5,453,015. This application Jun. 7, 1995, Ser. No. 484,898

Claims priority, application Australia, Oct. 20, 1988, PJ1083; WIPO, Oct. 20, 1989, PCT/AU89/00457

Int. Cl.[6] G09B *3/00*

U.S. Cl. 434—350 **2 Claims**





1. A method of calculating the absolute time at which an event occurred using a calculating device, comprising the steps of:

i) outputting a signal indicative of a number of elapsed time units by a timer, said number of elapsed time units being incremented based on a periodic signal;

ii) receiving a first value representing a number of said time units output from said timer at a time at which the event occurred;

iii) receiving a second value representing a number of said time units output from said timer at a time when a method of calculating a absolute time at which an event occurred is performed;

iv) subtracting said first value from said second value to give a third value;

v) receiving said periodic signal representative of a period of said time units; vi) measuring an absolute time period of said periodic signal to determine a clock period of said time units; vii) multiplying said third value by said clock period to determine an absolute elapsed time; and viii)subtracting said absolute elapsed time from a current time to yield an absolute event time.

2. Apparatus for calculating the absolute time at which an event occurred, comprising:

a timer for outputting a signal indicative of a number of elapsed time units, said number of elapsed time units being incremented based on a periodic signal; and

a calculator adapted to:

i) receive a first value representing a number of time units output from said timer at a time at which the event occurred;

ii) receive a second value representing the number of said time units output from said timer at a time when a calculation to determine an absolute time at which an event occurred is performed;

iii) subtract said first value from said second value to give a third value;

iv) receive said periodic signal representative of a period of said time units;

v) measure an absolute time period of said periodic signal to determine a clock period of said time units;

vi) multiply said third value by said clock period to determine an absolute elapsed time value; and

vii) subtract said absolute elapsed time value from a current time to yield an absolute event time.

5,795,162

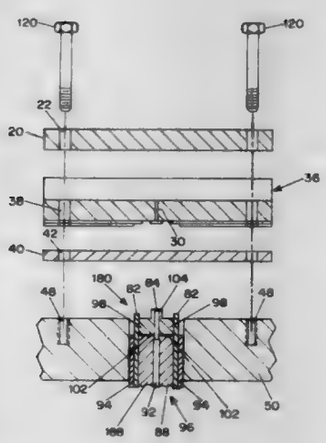
RF FLEX CIRCUIT TRANSMISSION LINE AND INTERCONNECTION METHOD

William R. Lambert, Morris, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Mar. 28, 1996, Ser. No. 623,087

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—63 **21 Claims**



1. An interconnection system comprising:

a circuit board having signal conductors for carrying electrical signals said signal conductors being embedded within said circuit board;

at least one contact pad coupled to one of said signal conductors via a conduction element defining a through-hole;

a ground layer disposed over portions of said circuit board such that an opening is formed between said ground layer and said contact pad;

a compression interconnect having a first and a second outer surface, said first outer surface of said interconnect releasably disposed next to said contact pad of said circuit board;

a radio frequency flex circuit having at least one contact pad coupled to a signal conductor, said contact pad releasably disposed next to said second outer surface of said elastomeric compression interconnect; and

a plurality of interstitial ground lines positioned adjacent said signal conductor of said flex circuit.

5,795,163

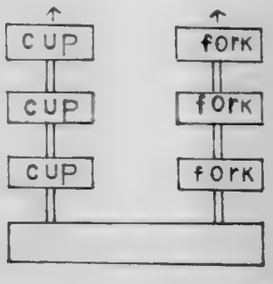
EDUCATIONAL DEVICE TO TEACH THE SEVERELY MENTALLY HANDICAPPED

Frank J. Alioto, P.O. Box 92243, Lakeland, Fla. 33804

Continuation of Ser. No. 657,283, Jun. 4, 1996. This application Oct. 24, 1997, Ser. No. 960,091

Int. Cl.[6] G09B *1/36;1/16;* **A63H** *33/06*

U.S. Cl. 434—171 **1 Claim**



1. A special education kit used in the teaching of basic reading skills to the severely mentally retarded, the kit comprising:

a plurality of blocks, a plurality of joining members, a plurality of connecting members and at least one base -number;

said plurality of blocks each having a plurality of faces, including ajoining face on each of said blocks having ajoining aperture sized and configured to receive one of said joining members, and a connecting face having a connecting apeltule sized and configured to receive one of said connecting members two types of blocks, a first type of block having a letter on only one of its faces, and a second type of block having a pictorial representation associated with a word or group of words on only one of its faces;

said plurality of joining members each defined by a peg which is sized and configured to be inserted into and releasably held in the joining apertures on the joining faces of the blocks;

said plurality of connecting members each defined by a rod which is sized and configured to be inserted into and releasably held in the connecting apertures on the connecting faces of the blocks;

said joining members and said connecting members having differing configurations such that the joining members can only be inserted into. and releasably held in the joining apertures and the connecting members can only be inserted into and releasably held in the connecting apertures;

said at least one base member dimensioned and arranged to support and stabilize a plurality of blocks, joining members and connecting members when assembled, said base member having a flat top surface with a connecting aperture on one end thereof, sized and configured to receive and releasably hold one of said connecting members therein;

said plurality of blocks configured to be joined by said joining members only in a horizontal direction; and

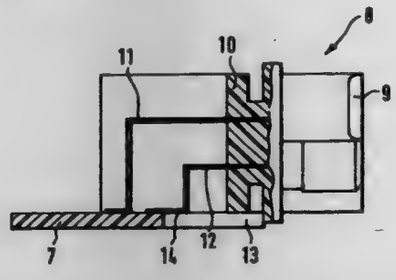
said kit adapted to be assembled such that said first type of blocks having letters are joined to form words or groups of words, and said second type of blocks have pictorial representations which are associated with the word or group of words formed by the first type of blocks; and wherein the assembly includes the connecting members connecting the word or group of words formed by the first type of blocks and said pictorial representations of the second type of blocks in a spaced relationship.

5,795,164

ASSEMBLED PRINTED CIRCUIT BOARD

Erwin Flachslaender, Calw-Stammheim, Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 7, 1996, Ser. No. 745,914
Claims priority, application Germany, Nov. 15, 1995, 195 42 540.5
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—79 7 Claims



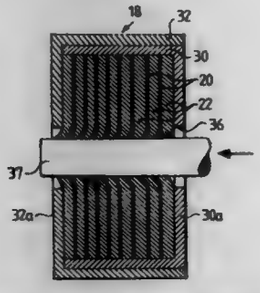
1. An assembled printed circuit board having at least one surface mounted component, said component having an array of parallel rows of connecting pins soldered to a same side of the circuit board on which said component is surface mounted, said array of parallel rows including an inner pin row and an outer pin row, said outer pin row occluding said inner pin row from access by a soldering instrument from said same side of the circuit board, wherein, adjacent to the inner pin row, an opening is provided through said circuit board, said opening having adequate cross-section to enable said soldering instrument to access said inner pin row from a side of the circuit board remote from the component.

5,795,165

ELECTRODE CONNECTOR JACK FOR AN IMPLANTABLE MEDICAL ELECTRICAL STIMULATOR

Per Jarl, Järfälla, Sweden, assignor to Pacesetter AB, Solna, Sweden

Filed Jun. 3, 1996, Ser. No. 657,327
Claims priority, application Sweden, Jun. 6, 1995, 9502057
Int. Cl.[6] H01R 4/58
U.S. Cl. 439—86 16 Claims



1. An electrical connector jack for an implantable cardiac stimulator, for making an electrical connection with a contact pin at an end of an electrode cable, said electrical connector jack comprising:

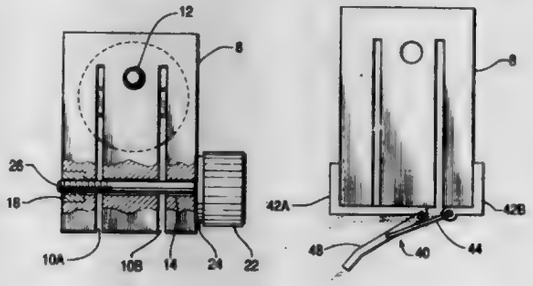
at least one disc shaped means, having a longitudinally extending opening adapted to receive a contact pin, containing a planar layer of electrically conductive material having a contact surface disposed in said opening for making electrical contact with said contact pin, said disc-shaped means having planar layers of insulating, elastic material respectively disposed on opposite sides of and parallel to said layer of electrically conductive material and at least in a region of said contact surface, said layers of insulating elastic material and said layer of electrically conductive material being collectively elastically deformed radially and longitudinally by said contact pin as long as said contact pin is inserted into said opening for producing a continuous surface of the electrically conductive material and the insulating material pressing against said contact pin for making an electrical connection with said contact pin while simultaneously protectively sealing said contact surface of said electrically conductive material.

5,795,166

SELF CONTAINED CHILD RESISTANT ELECTRICAL PLUG SAFETY LOCK

Lewis D. Meixler, 11 Cherry Brook La., E. Windsor, N.J. 08520

Filed Feb. 23, 1995, Ser. No. 393,204
Int. Cl.[6] H01R 13/44
U.S. Cl. 439—134 8 Claims



1.

a A solid resilient plug prong receiving unit, having a front plug prong receiving surface, a base surface, a rear surface, a first side surface, and a second side surface; said receiving unit having two parallel slots receptive of the parallel prongs of an electrical plug, the slots extending perpendicularly inward from said base surface and traversing from said front surface to said rear surface; forming a first branched region adjacent to said first side, a second branched region centered between said parallel slots, and a third branched region adjacent to said second surface, the three branched regions forming a trifurcated portion of said receiving unit; a first aperture centered between said perpendicular slots extending perpendicularly into said front plug prong receiving surface receptive of a plug grounding prong; and

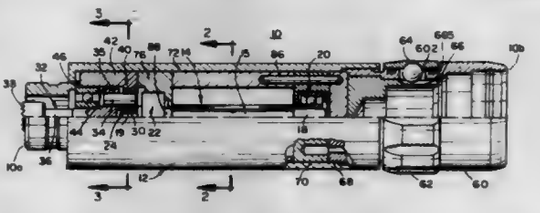
b compressive means for applying, sufficient force on the blades of said electrical plug inserted into said block to prevent the withdrawal of said electrical plug, said compressive means specifically designed to be operable without the need for external apparatus.

5,795,167

AIR DRIVEN LOW SPEED DENTAL HANDPIECE MOTORS

Tod H. Brenner, Lancaster, Pa., assignor to Den-Tal-Ez, Inc., Audubon, Pa.

Filed Sep. 30, 1996, Ser. No. 724,137
Int. Cl.[6] F16H 3/44; A61C 1/02
U.S. Cl. 433—100 5 Claims



1. An adjustable air driven dental handpiece motor comprising:

a tubular housing;

a rotor with a plurality of vanes supported for rotation within a chamber within the housing;

a valve member within the housing;

a valve plate within the housing between the valve member and the chamber, a first air passageway extending through the valve plate to the chamber and a second air passageway separate from the first air passageway extending from the chamber through the valve plate to the valve member; and

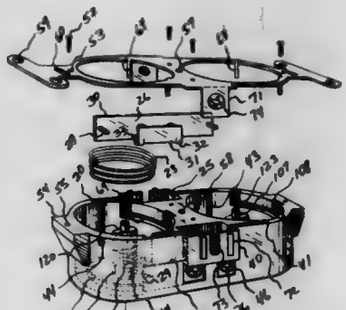
the valve member having an end face contacting the valve plate, an air supply opening through the valve member and the end face and an air exhaust opening spaced from the air supply opening at the valve member end face, the air supply opening includes a central slot defined by two circumferentially extending, concentrically located outer and inner walls connected by radius walls at their circumferential ends, and at least two, generally semicircular recesses in the valve member end face, one recess at each circumferential end of the central slot, at least one of the valve member and the valve plate being rotatable within the housing.

5,795,168

PROTECTIVE GROUNDING ELECTRICAL RECEPTACLE WITH REPOSITIONAL PLUG ACCEPTORS

Jerry R. Duhe, 4107 Arbordale La., NW, Albuquerque, N. Mex. 87107

Filed Feb. 16, 1996, Ser. No. 602,711
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **4 Claims**



1. A female electric power receptacle for receiving a male electric power plug having conductive terminals, said female receptacle comprising:

a receptacle body having at least one substantially cylindrical chamber, said chamber having a bottom,

a locking system coaxially disposed within said chamber, said system being fixed to the bottom of said chamber and having an upper portion that is noncylinendrical,

a first conductive connector mounted on said receptacle body to engage the powered conductor of a conductor pair,

a second conductive connector mounted on said receptacle body, said second conductor engaging the neutral conductor a conductor pair,

a first contact member connected to said first conductive connector and disposed inside said chamber,

a second tubular contact member to said second conductive connector, said second member being disposed inside said chamber spaced apart from said first member,

a cylindrical plug receptor adapted to fit within said chamber to receive the terminals of said male electric power plug, said receptor having an to receive said locking system, said receptor being annularly positioned on said system and adapted to rotate between detent positions and to move up and down within limits within said chamber,

a first conductive peripheral channelway contact disposed on said receptor and adapted to make electrical contact with said first contact member when said receptor is rotated in said chamber,

a second conductive peripheral channelway contact disposed on said receptor and adapted to make electrical contact with said second contact member when said receptor is rotated on said member within said chamber,

a spring disposed between the bottom of the chamber and the bottom of the plug receptor, whereby the receptor is biased upward when the plug receptor is rotated to said detent position, and

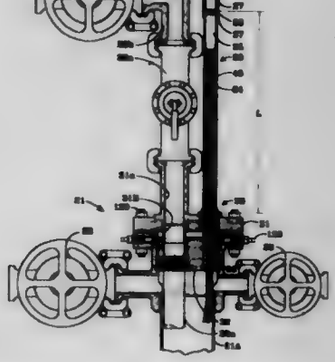
a pair of movable conductive contacts disposed within said plug receptor, said contacts being disposed adjacent to said connectors of said male electrical power plug, said movable contacts being in mechanical contact with the noncylindrical portion of the locking system, whereby said member grippingly engages said connectors when said plug receptor is rotated and moved up and electrical power flows from the female receptacle to the male plug.

5,795,169

ELEVATED ELECTRICAL CONNECTOR ASSEMBLY

Lehman Thoren Reed, 3219 Candlewood Dr., Bakersfield, Calif. 93306

Filed Dec. 3, 1996, Ser. No. 758,781
Int. Cl.[6] H01R *4/60*
U.S. Cl. 439—191 **27 Claims**



1. An elevated electrical connector assembly for use in a wellhead operating at an elevated temperature, the elevated electrical connector assembly comprising:

a removable tubular assembly housing;

a removable lower electrical connector;

a removable annular retainer member;

a removable crossover sealing adapter;

a removable upper electrical connector; and

a removable annular locking member,

wherein the tubular assembly housing includes

a housing lower connecting end having threaded first means for attaching to a threaded coupling port in a first wellhead member of the wellhead,

a pass-through part located near the housing lower connecting end and for traversing a bore in a second wellhead member of the wellhead,

a housing upper connecting end having a coupling first part, and

a housing passageway between the housing lower and upper connecting ends,

wherein the lower electrical connector includes

a lower cable-connecting end for electrical connection to an electrical cable,

an upper end for electrical connection to the upper electrical connector, therebelow

a cylindrical upper first section, and therebelow

a supporting second section,

wherein the annular retainer member includes

supporting second means for supporting and maintaining the cylindrical upper first section of the lower electrical connector outside the tubular assembly housing a predetermined distance from the housing upper connecting end,

wherein the crossover sealing adapter includes

an adapter lower end, an adapter upper end, and an adapter passageway therebetween,

coupling third means near the adapter lower end for connecting to the coupling first part of the tubular assembly housing,

the adapter passageway having a bored first portion which is slidable over the cylindrical upper first section of the lower electrical connector,

sealing fourth means for preventing leakage between the bored first portion and the cylindrical upper first section of the lower electrical connector,

a bored second portion in the adapter passageway between the adapter upper end and the bored first portion, and

a coupling third portion near the adapter upper end for coupling to the annular locking member, and

wherein the upper electrical connector includes

a lower end,

an upper cable-connecting end for electrical connection to an electrical cable,

a cylindrical lower sector which is slidable into the bored second portion of the crossover sealing adapter, and

contact means for making electrical contact between the upper and lower electrical connectors, and

wherein the annular locking member includes

coupling fifth means for maintaining the lower end of the upper electrical connector in abutting relationship with the upper end of the lower electrical connector, the coupling fifth means also for coupling to the coupling third portion of the crossover sealing adapter, and

wherein, when the elevated electrical connector assembly is installed in the wellhead, the tubular assembly housing has an effective length between its pass-through part and its housing upper connecting end for positioning the lower and upper electrical connectors a predetermined distance away from the wellhead that the elevated temperature of the wellhead will not cause damage to the lower and upper electrical connectors.

5,795,170

FEMALE TERMINAL FOR WATERPROOF CONNECTOR AND RESIN-FILLED WATERPROOF CONNECTOR

Toshiaki Okabe, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 10, 1996, Ser. No. 728,369

Claims priority, application Japan, Oct. 13, 1995, 7-265363

Int. Cl.[6] H01R *11/22*

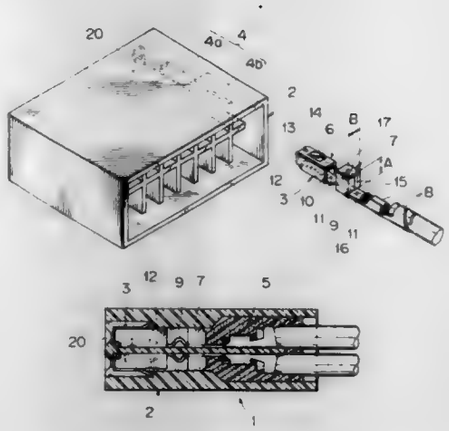
U.S. Cl. 439—252 **9 Claims**

1. A female terminal for a waterproof connector comprising, in integrally formed relation:

an electrical contacting section having a contacting spring piece;

an electrical wire-connected section formed adjacent said electrical contacting section; and

a closed section formed between said electrical contacting section and said electrical wire-connected section for blocking a terminal-receiving chamber of a connector housing containing said female terminal, wherein, when resin material for waterproofing fills that portion of said terminal-receiving chamber containing said electrical wire connected section, passage of said resin material to the electrical contacting section side of said closed section of said terminal is prevented and wherein



said closed section is in the shape of a box and is formed integrally with a terminal substrate section of the terminal.

5,795,171

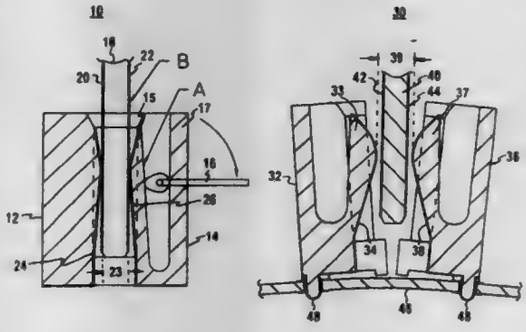
ALL PLASTIC ZERO INSERTION FORCE ELECTRICAL CONNECTOR

Allen J. Bernardini, Southbury, Conn., assignor to Litton Systems, Inc., Watertown, Conn.

Filed Jul. 16, 1996, Ser. No. 683,065

Int. Cl.[6] H01R *13/15*

U.S. Cl. 439—260 **13 Claims**



1. A zero insertion force electrical connector, comprising:

a body having a rigid section and a flexible section, said flexible section including:

a contact finger portion and a fixed portion defining a cavity therebetween, said rigid section having

a first conductive trace located on a first edge thereof, and said flexible section having a second conductive trace located on a second edge thereof, said first conductive trace and said second conductive trace defining an opening therebetween; and

a bias means rotatable connected to said fixed portion and partially positioned in said cavity;

said contact finger portion being movable by said bias means between a normal open position in which said connector can receive at least a portion of a printed circuit board and a biased closed position such that said first conductive trace and said second conductive trace are brought into electrical contact with the printed circuit board when said contact finger portion is moved into said biased closed position.

5,795,172

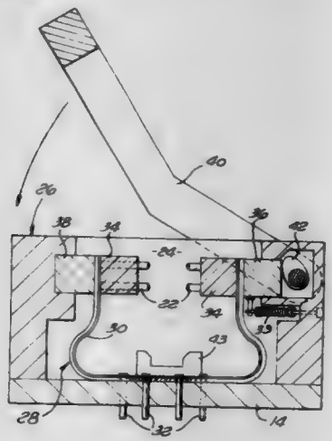
PRODUCTION PRINTED CIRCUIT BOARD (PCB) EDGE CONNECTOR TEST CONNECTOR

Navid Shahriari, Chandler, Ariz.; Mike Mayberry, Beaverton, Oreg., and Nasser Barabi, Hayward, Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 18, 1996, Ser. No. 768,961

Int. Cl.[6] H01R *13/15*

U.S. Cl. 439—260 13 Claims



1. A test connector for coupling a printed circuit board which has a plurality of surface pads, to a tester, comprising:

a housing which has a slot that receives the printed circuit board;

a plate that moves relative to said housing between an open position and a closed position;

a plurality of contacts that are located within said slot and coupled to said plate; and,

an actuator that is actuated to move said plate into the closed position to push said contacts into the contact pads of the printed circuit board, and wherein said actuator includes a spring that biases said plate into the open position.

5,795,173

PLUG CONNECTOR

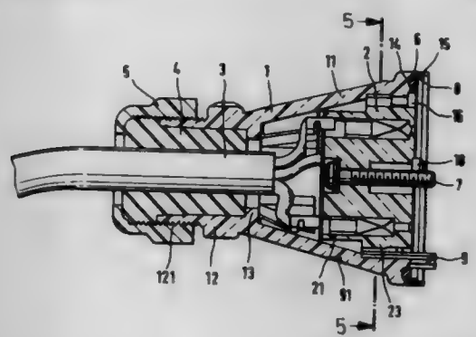
Thomas Werner, Maulburg; Markus Mornhinweg, Gundelfingen; Andreas Weber, Lörrach, and Burkhard Lutterbeck, Steinen, all of Germany, assignors to Endress + Hauser GmbH + Co., Maulburg, Germany

Filed Sep. 27, 1996, Ser. No. 721,473

Claims priority, application European Pat. Off., Sep. 29, 1995, 95115395

Int. Cl.[6] H01R *13/52*

U.S. Cl. 439—275 5 Claims



1. A plug connector which is to be connected to a plug having three flat elongated contact pins, a flat elongated protective contact pin and a threaded hole arranged in its center, which plug connector comprises:

a housing (1) partly forming a cone (11),

a hollow cylinder (12) which is molded onto the cone (11) on the side facing away from the plug and has an external thread (121),

a nut (5) screwed onto the hollow cylinder (12),

a sealing element (4) which completely fills the hollow cylinder (12) and the nut (5),

a four-way cable (3) which penetrates the nut (5) and the sealing element (4) in the axial direction,

a groove (14), arranged on the side of the housing (1) facing toward the plug, to accommodate a seal (6),

a ring (15) which is molded on the cone (11) on the side facing toward the plug and which encloses the plug coaxially at the end, and retains the seal (6) in the groove (14) and

a contact insert (2) arranged in the housing (1),

in which four flat contact clamps, to which the ways of the cable (3) are connected, are arranged in a countersunk fashion,

which has a central axial hole (27) in which a screw (7) for securing the plug connector on the plug is captively arranged, and

which is fixed nonrotatably in the housing (1) by means of a bayonet closure and a locking tab (17) arranged in the housing (1) and can be detached only by means of a tool.

5,795,174

MULTI-CONNECTOR SUPPORTING DEVICE WITH CONNECTION/DISCONNECTION MECHANISM

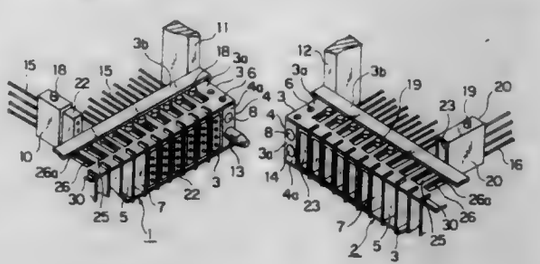
Kazuki Saito; Sunao Sekiguchi, and Hisashi Ishida, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry, Limited, Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 623,174

Claims priority, application Japan, Mar. 29, 1995, 7-071462; Mar. 29, 1995, 7-071521

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—310 15 Claims



1. A multi-connector support device with a connection/disconnection mechanism which comprises:

a support housing defining a hollow space and having a plurality of partitions fixed at spaced positions to separate said hollow space into a plurality of connector accommodating chambers therein which are arranged in order for accommodating a plurality of pairs of connectors therein, respectively;

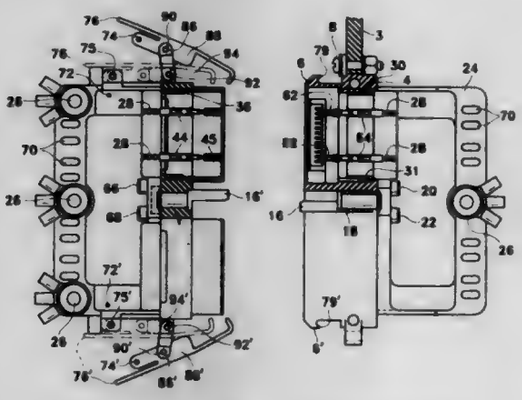
a plurality of pairs of guide engaging portions formed on said support housing at said connector accommodating chambers for engaging said pairs of connectors accommodated in said chambers and guiding said pairs of connectors to move in connecting and disconnecting directions in said chambers, respectively; and

a connector driving means removably assembled onto said support housing for driving said pairs of connectors in a selected one of the connecting and disconnecting directions.

5,795,175
RECTANGULAR HAND-MOUNT CONNECTOR

John E. Barr, Brea, Calif., assignor to Aero Electric Connector System, Inc., Cerritos, Calif.

Filed Feb. 21, 1995, Ser. No. 392,641
Int. Cl.[6] H01R *13/327*
U.S. Cl. 439—358 **14 Claims**



1. A rectangular hand-mounted connector comprising:

a. a receptacle assembly comprising:

bay areas are provided for EMI springs and further protruding with closed entry socket openings connected to socket contacts and to triple seal grommet design;

the bay areas are further provided with insert key-ways each of a d-shaped geometry;

the shell further having at its center a polarization key having latch tension through a spring; and

a plurality of hooks located at a first and second end of the receptacle shell; and

b. A plug assembly comprising:

a plug shell having a first and second side wall and a plurality of mating bay areas therein;

the mating bay areas are protruding with pins connected to pin contacts and to triple seal grommet design;

the mating bay areas are further provided with mating insert keys each of a d-shaped geometry;

the plug shell further having at its center a polarization key mating part having latch tension when mated with the polarization key from the receptacle assembly; and

a plurality of latch assemblies each located at said first and second side walls of said plug shell for providing engagement with a hook on the receptacle shell, wherein each of said latch assemblies comprises:

a latch;

a first rod having a first and second end;

a link connected to said latch and having means connected through a first hole of said first end of said first rod; and

a second rod having a third and fourth end, said third end of said second rod connected to and through a second hole of said second end of said first rod and said fourth end of said second rod connected to said plug assembly,

wherein said link further comprises a detent for connecting with a depression on said plug shell.

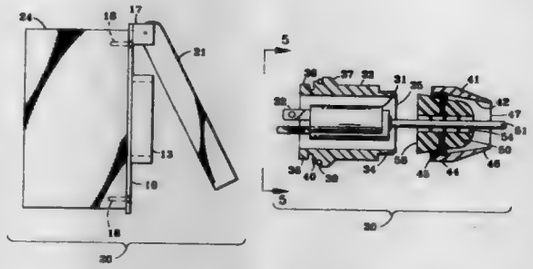
5,795,176
METHOD OF PROTECTING AN ELECTRICAL CONNECTION AND PLUG LOCK THEREFOR

Ewald Blaetz, 442 W. Ames Rd., Canajoharie, N.Y. 13317

Filed Aug. 14, 1996, Ser. No. 696,724
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—373 **14 Claims**

1. A method comprising the steps of:

a) placing a hollow tubular end cap over a power cord and sliding the hollow tubular end cap over the power cord;



b) joining a pair of bushing halves together around the power cord and pulling the hollow tubular end cap over the bushing halves;

c) attaching the hollow tubular end cap to a first end of a hollow tubular housing by a connecting device;

d) tightening the hollow tubular end cap on the hollow tubular housing to compress the bushing halves and form a tight seal around the power cord;

e) providing the hollow tubular housing with a seal in a second end thereof, the second end also including outwardly extending projections;

f) providing a faceplate for an electrical socket, the faceplate including a planar member having an opening for the electrical socket and an integral circular protruding portion having radially inward extending projections;

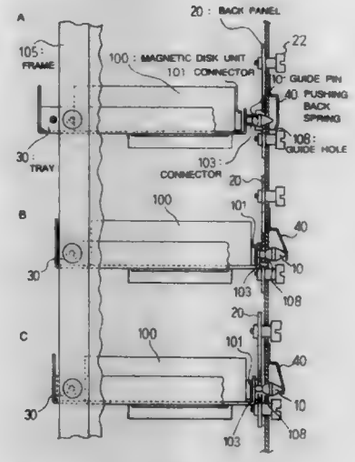
g) joining a power cord plug and the electrical socket together by inserting the power cord plug into the electrical socket; and

h) coupling the hollow tubular housing and the integral circular protruding portion together by interlocking the radially inward extending projections and the outwardly extending projections to compress the seal and form a tight seal.

5,795,177
MOUNTING MECHANISM OF COMPONENTS, MOUNTING MECHANISM OF UNIT AND METHOD OF MOUNTING COMPONENTS

Tetsuro Hirono, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1996, Ser. No. 692,036
Claims priority, application Japan, Aug. 25, 1995, 7-217437; Mar. 29, 1996, 8-077586
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—378 **6 Claims**



1. A combination of a mounting mechanism and two components respectively having a first electrical connector and a second electrical connector, comprising:

(a) a first component having a guide pin, wherein the guide pin has a thick body portion towards an outer end of the guide pin and a thin body portion towards an inner end of the guide pin;

(b) a second component having a guide part to guide the thick body portion guide pin for leading the first connector to the second connector and to disengage from the guide pin at the thin body portion when the first and second connectors are connected; and

(c) a frame for mounting the first and second components when the first and second connectors are connected.

5,795,178

PLUG FOR HEART ELECTRODE WIRE

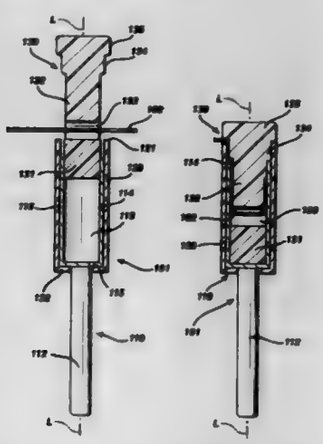
Lothar Schilder, Hamburg; Kay Müller, Kaltenkirchen; Christian Skutta, Hamburg, and Hanke Sierk, Norderstedt, all of Germany, assignors to Ethicon, Inc., Somerville, N.J.

Filed Aug. 7, 1995, Ser. No. 512,248

Claims priority, application Germany, Oct. 13, 1994, 44 37 818.1

Int. Cl.[6] H01R 4/24

U.S. Cl. 439—417 **8 Claims**



1. A plug for connection to the stripped end (**102**; **202**; **302**; **402**; **502**) of a heart electrode wire or of another implantable wire, having

a contact piece (**110**; **210**, **310**), the front region of which is constructed as a plug pin (**112**; **212**; **312**) and the rear region (**114**; **214**; **314**; **414**; **514**) of which has a recess (**118**; **218**; **318**; **418**, **518**),

an insulating housing (**120**; **220**; **320**; **420**; **520**) which surrounds the rear region (**114**; **214**; **314**; **414**; **514**) of the contact piece and leaves free access to the recess (**118**; **218**; **318**; **418**; **518**);

a clamping piece (**130**; **230**; **330**; **430**; **530**), which in the assembled state engages with the recess (**118**; **218**; **318**; **418**; **518**), whereby the stripped wire end (**102**; **202**; **302**; **402**; **502**) is bent round and clamped in the recess (**118**; **218**; **318**; **418**; **518**) wherein the recess (**118**) runs in the direction of the longitudinal axis (L—L) of the plug (**101**) and is accessible from the rear end of the contact piece (**110**) wherein the clamping piece (**130**) is provided with a transverse bore (**133**) to guide through the stripped wire end (**102**), wherein the clamping piece (**130**; **230**; **330**; **430**; **530**) consists completely of insulating material; and

wherein the recess (**118**) is cylindrical and the clamping piece (**130**) essentially fills the recess (**118**) in the assembled state, the diameter of the front end region (**131**) of the clamping piece (**130**) being matched to the inside diameter of the recess (**118**), the clamping piece (**130**) having a smaller diameter in the middle region (**132**) in which the through bore (**133**) is arranged and the rear end region (**134**; **135**) of the clamping piece (**130**), which projects from the recess (**118**) in the assembled state, being wider to cover the rear end of the contact piece (**110**), wherein the recess (**218**; **318**; **418**; **518**) is arranged laterally at the contact piece (**210**; **310**), wherein the recess (**218**; **318**) is accessible via a longitudinal groove (**224**; **324**), arranged laterally at the insulating housing (**220**; **320**),

wherein the clamping piece (**230**) is provided with stop elements (**236**) which engage with corresponding counterparts (**228**) at the insulating housing (**220**) in the assembled state,

wherein the clamping piece (**330**) has a wall section (**333**) which, in the assembled state, covers the rear end of the longitudinal groove (**324**),

wherein the clamping piece (**230**) can be pushed laterally onto the insulating housing (**220**), wherein the clamping piece (**330**) is constructed as one piece with the insulating housing (**320**) and can be hinged about a film hinge (**337**) for assembly,

wherein in the non-assembled state, the stripped wire end (**402**) can be introduced from the rear end into the plug (**401**) via a longitudinal channel (**419**) cutting or crossing the recess (**418**), in that the insulating housing (**420**) is closed laterally apart from an opening (**422**) over the recess (**418**), and in that the clamping piece (**430**) is formed as a pin (**432**; **434**) which can be pushed laterally into the opening (**422**) and the recess (**418**),

wherein the recess (**518**) is constructed as a circular groove which extends along part of the periphery of the rear region (**514**) of the contact piece, in that the stripped wire end (**502**) can be introduced into the plug (**501**) in the non-assembled state, from the rear end via a longitudinal channel (**519**) in the contact piece, which channel crosses the recess (**518**), in that the insulating housing (**520**) can be twisted on the rear region (**514**) of the contact piece and in that the clamping piece (**530**) is formed as a pin guided in the circular groove (**518**).

5,795,179

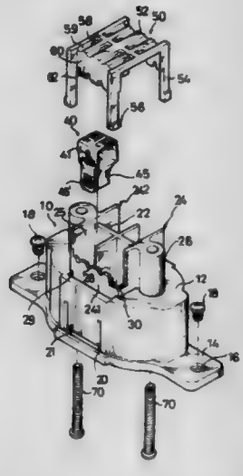
SOCKET FOR ENERGY-SAVING BULBS

Ching-fang Lin, Taipei Hsien, Taiwan, assignor to Golo Chang Company Limited, Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 536,261, Sep. 29, 1995, abandoned. This application Aug. 6, 1996, Ser. No. 692,771

Int. Cl.[6] H01R 4/24

U.S. Cl. 439—441 **6 Claims**



1. A lamp socket for an energy-saving bulb, comprising:

a hollow housing integrally formed of a substantially elliptical projection with two oppositely-facing long walls and short walls for adapting a base of the bulb, two wing portions extending from the short walls of a bottom of the projection with an aperture defined in each wing portion,a cross-shaped projection and rectangular wall plates having a pair of opposite long walls and a pair of opposite short walls formed on a top surface of the elliptical projection for defining four compartments each with a hole in communication with an inner portion of the elliptical projection, two longitudinal slots defined in opposite walls of the rectangular wall plates, two U-shaped slits respectively defined on long walls of the sub-

stantial elliptical projection, and four notches defined on a top edge of each of opposite walls of said rectangular plates;

four connector racks each to be received within a corresponding compartment, having a lead receiving portion and a bulb receiving portion, said lead receiving portion having a plurality of resilient retaining pieces defined in a top surface and a side wall facing the notches and said bulb receiving portion being formed of two oppositely-facing arcuated plates extending inward and downward from the lead receiving portion; and

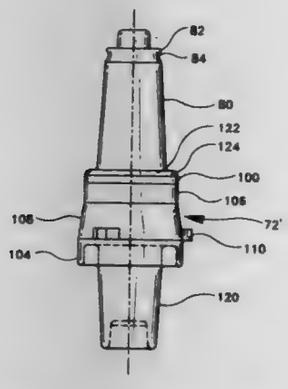
a table-shaped cap comprising a flat surface having a plurality of openings facing the retaining on the top surface of the connector racks for covering the compartments, four legs extending from said flat surface, each having a foot for extending into a corresponding slot and engaging within the slot when the cap is mounted onto the cross-shaped projection, two oppositely faced wall plates connected to said four legs, each having four grooves under a bottom edge and facing the notches for defining four orifices aligning with retaining pieces when the cap is mounted onto the projection.

5,795,180

ELBOW SEATING INDICATOR

Larry N. Siebens, Port Murry, N.J., assignor to Amerace Corporation, Hackettstown, N.J.

Filed Dec. 4, 1996, Ser. No. 753,980
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—489 **15 Claims**



10. An elbow seating indicator for a high voltage bushing comprising:

a. a hollow jacket formed of conductive material having a first end, a second end and a bore extending therethrough;

b. said jacket having a recess adjacent said first end, said recess having a free end at said first end of said conductive jacket and a step remote from said first end;

c. a band having a first face and second face, said first face adjacent said free end of said jacket and said second face adjacent said step in said conductive jacket;

d. an insulating body extending through said bore and beyond said first and second ends of said conductive jacket; and

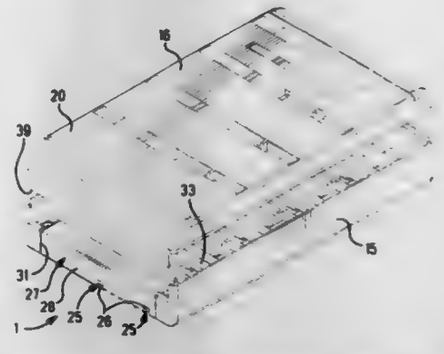
e. a rib on said insulating body adjacent said free end of said recess and said first face of said band whereby said band is fixed in position in said recess between said rib and said step in said conductive jacket.

5,795,181

CONNECTOR ON A BATTERY

Wayne S. Davis, Harrisburg, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 377,568, Jan. 24, 1995, abandoned. This application Nov. 7, 1996, Ser. No. 747,575
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—500 **9 Claims**



1. An electrical connector to removably connect a battery to electronic equipment to provide electrical energy thereto, comprising:

an insulating package and a header assembly adapted to be assembled to the package;

the header assembly having an insulating header and conductive battery terminals on the header, portions of the terminals being exposed within respective recesses in at least one of an exterior side and an exterior end of the header for connecting with the electronic equipment, battery connecting portions on the terminals to connect with battery cells, barrier receiving recesses beside the terminals, the barrier receiving recesses being in the exterior side of the header and extending to communicate with the exterior end of the header at an intersection thereof with the exterior side; and

the insulating package having a header-receiving opening at an intersection of an exterior end and an exterior side thereof, and interlocking with the header upon placement of the header assembly into the header-receiving recess such that the battery connecting portions of the terminals extend within a terminal receiving cavity of the package that is adjacent to a battery cell receiving portion of the package for connection to the battery cells upon complete assembly of the connector,

the battery connecting portions of the terminals being bendable within the terminal receiving cavity during package assembly, and the battery connecting portions of the terminals being adapted for connection to battery cells in the battery receiving portion of the package, and

the exterior end of the header completing the exterior end of the package, the exterior side of the header completing the exterior side of the package, and the exposed portions of the terminals being recessed along recesses in the exterior side of the package upon assembly of the header to the package for connection with the electronic equipment.

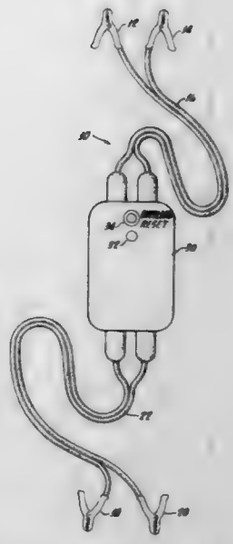
5,795,182

POLARITY INDEPENDENT BATTERY JUMPER CABLES OR CHARGER WITH AUTOMATIC POLARITY DETECTOR AND BUILT-IN AUTOMATIC SAFETY FEATURES

Elijah Jacob, Los Angeles, Calif., assignor to Modern Technology Inventions, Los Angeles, Calif.

Filed Jul. 25, 1996, Ser. No. 686,378
Int. Cl.[6] H01R *11/00*
U.S. Cl. 439—504 **15 Claims**

1. A polarity independent battery jumper cable apparatus for vehicles and the like, which may be operatively connected to a first



battery and a second battery, each battery having a positive and a negative terminal, the apparatus automatically connecting the two positive terminals and the two negative terminals without regard to the polarities of the two batteries, comprising:

a first terminal pair for connecting to the first battery;

a second terminal pair for connecting to the second battery; and

a polarity independent automatic crossbar switch comprising:

a relative polarity detector for automatically detecting whether said first and second battery terminal pairs are connected to said first and second batteries in a parallel configuration, a cross configuration, or neither, and for generating appropriate logic signals thereupon;

a crossbar connector responsive to said logic signals for operatively connecting said first battery positive terminal to said second battery positive terminal, and for connecting said first battery negative terminal to said second battery negative terminal;

an undercurrent detector for detecting when current flowing between said first and second batteries falls below a predetermined threshold and for generating an undercurrent signal in response thereto; and

a crossbar connector disabler responsive to said undercurrent signal for returning said crossbar connector to an unconnected state.

5,795,183

CONNECTOR APPARATUS

Isao Kameyama, Shizuoka-ken, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 10, 1996, Ser. No. 728,606

Claims priority, application Japan, Oct. 13, 1995, 7-265702

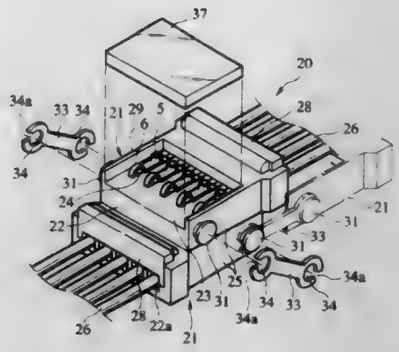
Int. Cl.[6] H01K *13/60*

U.S. Cl. 439—534 **4 Claims**

1. A connector apparatus comprising:

first and second connectors, each having a connector housing including upper and lower surfaces, wherein a terminal remains accommodated in a terminal accommodating room of the connector housing, and an electric contactor of said terminal is outwardly exposed through an upper opening in the upper surface of said connector housing; and

a coupling member having two ends, wherein each end of said coupling member is rotatably engaged with a respective side wall of a connector housing of one of said first and second connectors so as to couple said first and second connectors to one another in a manner permitting the coupled connectors to move from a first position, wherein said connectors lie in the same plane, to a second overlapping position, wherein the upper surface of the connector housing of one of said first and second connectors is covered by and in contact with the lower surface of the other of said first and second connectors.



5,795,184

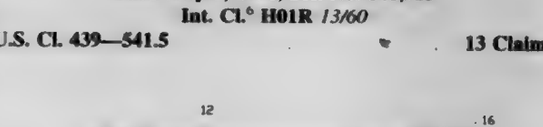
DEVICE FOR INTERCONNECTING STACKED CONNECTORS AND BOARD

Hua-Tseng Pan; Chu-Mei Chen, both of Taipei, and Ming-Yow Hon, Taipei Hsien, all of Taiwan, assignors to Hon Hai Precision Inc. Co., Ltd., Taipei Hsien, Taiwan

Filed May 8, 1996, Ser. No. 646,915

Int. Cl.[6] H01R *13/60*

U.S. Cl. 439—541.5 **13 Claims**



1. An assembly of a first and second connector and an interface device, said connectors being stacked together and each having a number of contacts, said interface device connecting the connectors to a mother board and comprising:

a first half section including a first dielectric housing having a first mating surface through which the contacts of the first connector extend into the first housing, a first mounting face adapted for connecting with the mother board, a plurality of first passageways defined from the first mating surface to the first mounting surface, a first abutting surface and a first side opposite the first abutting surface, and a number of first conductors received in the first passageways for electrically connecting with the contacts of the first connector and having first tail portions adapted to be soldered to the mother board and extending out of the first housing from the first side thereof; and

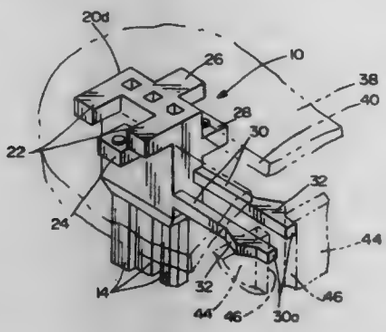
a second half section connected with the first half section and including a second dielectric housing having a second mating surface through which the contacts of the second connector extend into the second housing, a second mounting face adapted for connecting with the mother board, a second abutting surface connecting with the first abutting surface of the first housing of the first half section and a second side opposite the second abutting surface, a plurality of second passageways defined from the second mating surface to the second mounting surface, and a number of second conductors received in the second passageways for electrically connecting with the contacts of the second connector and having second tail portions adapted to be soldered to the mother board and extending out of the second housing from the second side thereof.

5,795,185

ELECTRICAL CONNECTOR FOR MOUNTING ON A SUPPORT STRUCTURE SUCH AS A PANEL OR THE LIKE

Richard R. Edgley, Elmhurst, Ill.; William R. Lenz, Grand Marais, Minn.; John S. Luthy, Naperville, and Karen Samiec, Downers Grove, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 19, 1997, Ser. No. 801,235
Int. Cl.[6] H01R 13/74
U.S. Cl. 439—545 11 Claims



1. An electrical connector for mounting in a cutout in an edge of a first generally planar panel and for mounting through an opening in a second generally planar panel perpendicular to the first generally planar panel, comprising:

a dielectric housing including

guide projections on the side of the housing for slidably mounting the housing in the cutout in an insertion direction generally parallel to the plane of the first panel;

at least one latch projection on the housing extending therefrom in said insertion direction generally parallel to the plane of the first panel for engaging an appropriate locking means projecting from the generally second planar panel, and

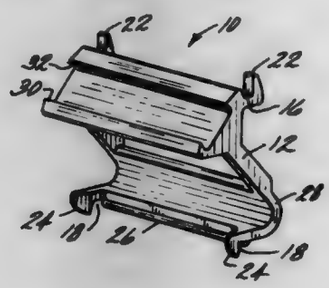
the housing and at least said latch projection on the housing adapted to pass through said opening prior to mounting.

5,795,186

MULTIMEDIA BEZELS

Brian Tulley, Ansonia, and Denny Lo, Danbury, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Filed Sep. 18, 1996, Ser. No. 715,543
Int. Cl.[6] H01R 13/74
U.S. Cl. 439—557 13 Claims



1. A bezel for mounting a connector in a panel, said bezel comprising:

a body having an opening formed therein for receiving the connector;

at least one top notch for engaging a first edge of a cut-out in the panel; and

at least one bottom notch for engaging a second edge of the cut-out;

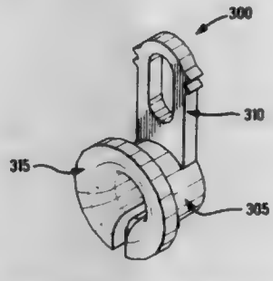
wherein said top notch and said bottom notch define a plane and said body is at an oblique angle relative to said plane.

5,795,187

BOARD MOUNT FOR VARIABLE ORIENTATION SURFACE MOUNTED CONNECTOR

Lynn Robert Sipe, Lewistown, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 615,382, Mar. 14, 1996, Pat. No. 5,588,844, which is a continuation of Ser. No. 342,934, Nov. 21, 1994, Pat. No. 5,520,545. This application Dec. 9, 1996, Ser. No. 762,548
Int. Cl.[6] H01R 13/73
U.S. Cl. 439—567 1 Claim



1. A board mount for mounting an electrical connector to a circuit board, comprising:

a circular cylindrical mount portion having a central passageway and a stop, said stop extending along the length of said cylindrical mount and adapted to selectively engage corresponding surfaces of a board mount cavity in said connector when said board mount is in a first position or a second position;

a slotted post extending outwardly from a first end of said cylindrical portion and adapted to engage an aperture in said circuit board; and

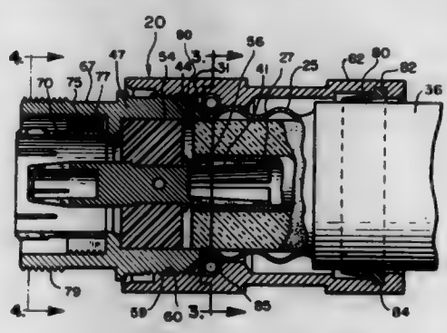
a retaining flare comprising a circular flange extending radially outward from a second end of said cylindrical mount portion and disposed in spaced-apart relation to said slotted post, said retaining flare being sized to fit within said board mount cavity and adapted to freely rotate therein as said board mount moves between said first position and said second position.

5,795,188

CONNECTOR KIT FOR A COAXIAL CABLE, METHOD OF ATTACHMENT AND THE RESULTING ASSEMBLY

Frank A. Harwath, Downers Grove, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Mar. 28, 1996, Ser. No. 623,227
Int. Cl.[6] H01R 9/07
U.S. Cl. 439—583 56 Claims



1. A connector assembly for engagement with a corresponding mating connector fitting, comprising:

a coaxial cable having a corrugated outer conductor with a plurality of corrugations, each corrugation having a valley between two crests, each crest having an apex, an inner conductor and a dielectric between the outer conductor and the inner conductor, said coaxial cable having one end defined by a cross-sectional end surface, said cross-sectional end surface being substantially perpendicular to the longitudinal axis of the coaxial cable and intersecting said outer conductor at or inward of the apex of a crest and forming an annular flared end portion, said flared end portion having an inside surface and an outside surface;

a front housing having a first end, a second end and a wedging surface, the first end of said housing fitting around the outer conductor;

a connecting insert member having a first end and a second end said first end being electrically connected to the inner conductor and said second end for engagement with the corresponding mating connector fitting;

a clamping member having a contact surface in contact with the inside surface of the flared end portion of said outer conductor and having a connector end for engagement with the corresponding mating connector fitting;

a closed expandable-retractable clamping ring for placement in the valley adjacent to the flared end portion, said ring being pressed by the wedging surface of said front housing against the outside surface of the flared end portion of the outer conductor, said ring being sufficiently rigid to cause, when wedged against the outer surface of the flared end portions, a uniform electrical contact between the inside surface of said flared end portion and said contact surface; and

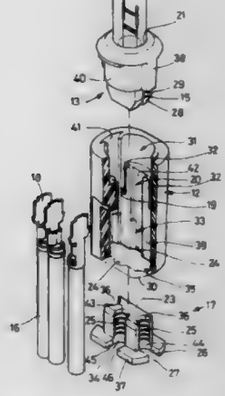
an attachment holding the wedging surface pressed against the clamping ring and the clamping ring wedged against the outside surface of the flared end portion of the outer conductor so as to provide electrical contact between the contact surface and the inside surface of the flared end portion.

5,795,189

STRUCTURE FOR A DECORATIVE LAMP

Ching-Chong Liou, No. 4, Alley 16, Kuang-Hua S. St., Hsin-Chu City, Taiwan

Filed Nov. 18, 1996, Ser. No. 751,850
Int. Cl.[6] H01R *17/00*
U.S. Cl. 439—602 **5 Claims**



1. A decorative lamp comprising an outer socket, a connecting sleeve, a bulb, an end plug, and a plurality of power wires having copper plates; an upper end of said outer socket having a cylindrical hole, a bottom of said cylindrical hole having a rectangular plug channel for receiving said connecting sleeve therein, two opposite sides of said rectangular plug channel each having two copper plate slots respectively for receiving therein said copper plates of said power wires respectively; the outer socket further comprising a rectangular guide hole under said rectangular plug channel; said power wires attached with said copper plates extending into said rectangular guide hole, with said copper plates located in said copper plate slots respectively on opposite sides of said rectangular plug channel;

a lower end of said rectangular plug channel forming at least two first semi-circular grooves on opposite sides thereof to accept said power wires therein , said power wires extending through said rectangular plug channel with said copper plates located in said copper plate slots respectively on said rectangular plug channels respectively said power wires extending out of said lower end of said rectangular plug channel;

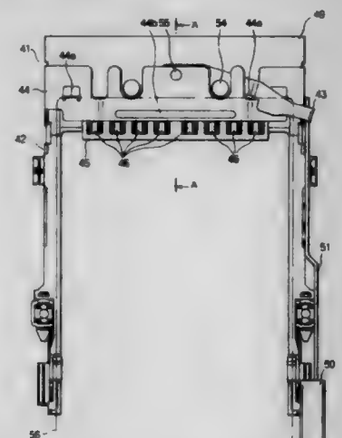
an end plug having a body portion plugged into said rectangular guide hole of said outer socket, said body portion having a flat end plate, and said body portion having at least two second semi-circular grooves aligned with said at least two first semi-circular grooves to accommodate said at least two power wires therein, each second semi-circular groove having a plurality of slip-resisting ridges whereby said power wires extend through the flat end plate of said end plug.

5,795,190

CONNECTOR HAVING GROUND PLATE FOR PC CARDS

Michitaka Ono, Tokyo, Japan, assignor to Japan Aviation Electronics Industry Limited, Tokyo, Japan

Filed Jun. 28, 1996, Ser. No. 673,305
Claims priority, application Japan, Jun. 30, 1995, 7-1662671
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—607 **7 Claims**



1. An electrical connector for electrical connections with an article having a substantially rectangular surface with a plurality of contacts and ground pads thereon and having a side surface with a plurality of contact elements thereon, said connector comprising:

a connector housing made of an insulator material having a receiving space for receiving said article and having a mounting surface;

a contact array of a plurality of mating contact elements fixed to said connector housing and disposed in said receiving spaces to be brought into contact with said contact elements of said article received in said receiving space so that the electrical connection is established between said electrical connector and said article;

an ejecting plate slidably mounted on said mounting surface of said connector housing for engaging said article received in said receiving space in order to push out said article from said receiving space so as to disconnect said article from said electrical connector; and

a ground plate of an electroconductive plate disposed between said ejecting plate and said mounting surface of said connector housing and fixedly mounted on said mounting surface

over and covering the electrical connection portion between said mating contact elements of said connector housing and said contact elements of said article, said ground plate having a plate surface opposite to said rectangular surface of said article, and having a plurality of engaging elements formed on said plate surface thereof for engaging with said a plurality of ground pads of said article received in said receiving space.

5,795,191

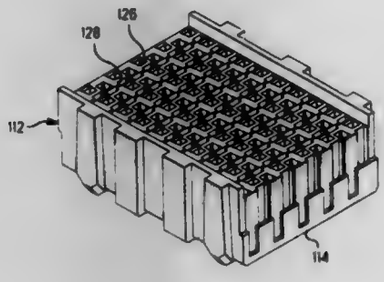
CONNECTOR ASSEMBLY WITH SHIELDED MODULES AND METHOD OF MAKING SAME

George Preputnick, 517 Blanchester Rd., Harrisburg, Pa. 17112; James Lee Fedder, 105 Appaloosa Way, Etters, Pa. 17319; Scott Keith Mickievicz, 534 Westbrooke Dr., Elizabethtown, Pa. 17022, and Richard Nicholas Whyne, 5113 Inverness Dr., Mechanicsburg, Pa. 17055

Continuation-in-part of Ser. No. 714,024, Sep. 11, 1996. This application Jun. 26, 1997, Ser. No. 882,795

Int. Cl.[6] H01R *13/648*

U.S. Cl. 439—608 14 Claims



1. An electrical connector assembly comprising an insulating housing and assembled thereto a plurality of terminal modules and electrically conductive ground shields therebetween, each terminal module having a plurality of signal contacts, each contact including a mating contact portion, a conductor connecting portion and an intermediate portion therebetween with at least some of the intermediate portions encapsulated in an insulative web, each of the modules having an electrically conductive ground shield mounted thereto, the connector assembly being characterized in that:

each terminal module includes first and second signal contacts, the intermediate portions of said first signal contacts being disposed in a first common vertical plane and the intermediate portions of said second contacts being disposed in a second common vertical plane spaced horizontally from said first vertical plane and parallel therewith, the intermediate portions of said first signal contacts being encapsulated in the insulating web proximate a first major side surface of the module and spaced from an opposed second major surface thereof and the intermediate portions of said second signal contacts being encapsulated in the web proximate said second major surface of said module and spaced from said first major surface thereof; and

said mating contact portions of said first contacts are staggered vertically with respect to those of said second contacts;

whereby upon assembling the terminal modules and the respective conductive ground shields therebetween into the insulating housing, said intermediate portions of said first signal contacts are spaced more closely to a first said conductive ground shield along said first major surface and said intermediate portions of said second signal contacts are spaced more closely to a second said conductive ground shield along said second major surface thereby assuring primary coupling between each said signal contact and a respective said conductive ground shield rather than to an adjacent said signal contact.

5,795,192

SOCKET FOR RECEIVING A RADIATION SOURCE AND A RADIATION SOURCE WITH A BASE

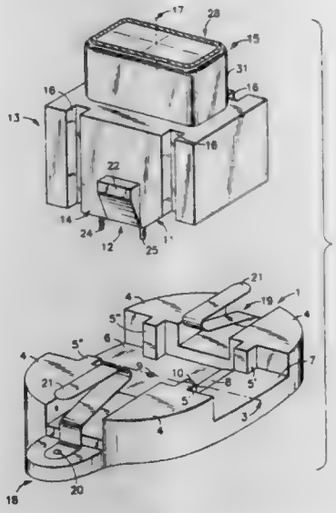
Bernd Ullrich, Erlensee, Germany, assignor to Heraeus Noblelight GmbH, Hanau, Germany

Filed Aug. 5, 1996, Ser. No. 692,328

Claims priority, application Germany, Aug. 31, 1995, 195 31 713.0

Int. Cl.[6] H01R *17/00*

U.S. Cl. 439—619 20 Claims



1. A socket for receiving a radiation source having a base, the base having at least one groove-shaped depression thereon, the socket comprising:

a bottom portion defining a receptacle for receiving said base,

a pair of walls extending upwardly from said bottom portion and being spaced apart from each other so as to receive said base therebetween,

at least one of said walls having at least one protuberance which projects inwardly of said socket toward the other of said walls,

said at least one protuberance being receivable in a corresponding groove-shaped depression in said base so as to guide and retain said base in said socket,

said socket and said base being shiftable relative to each other along an axis, wherein said at least one protuberance and said groove-shaped depression extend in a direction substantially parallel to said axis,

wherein a portion of a bottom surface of the socket forms an elevated surface area for accommodating a correspondingly shaped area of an underside of said base, the socket further comprising a recessed surface having at least two spring contacts for receiving two contact pins of the base, the recessed surface being adjacent to a ramp area, the ramp area being adjacent to the elevated area of the bottom surface of the socket.

5,795,193

POWER DISTRIBUTION BOX WITH BUSBAR HAVING BOLT RETAINING MEANS

Shenghua Yang, Westland, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 23, 1996, Ser. No. 736,071

Int. Cl.[6] H01R *13/68*

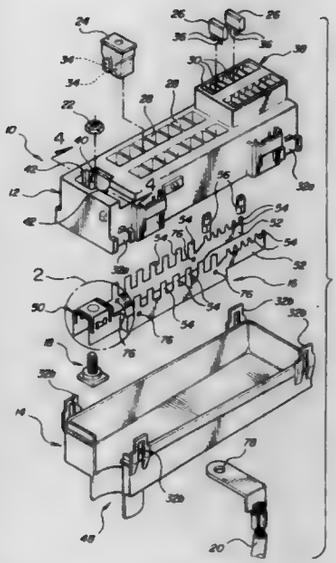
U.S. Cl. 439—621 10 Claims

1. A power distribution box comprising:

a housing;

a busbar for mounting within the housing; and

means disposed on the busbar for retaining a power connection bolt in captive engagement with the busbar;



wherein the busbar has a bracket comprising first and second substantially parallel side plates and an end plate connecting the side plates and having a bolt hole formed therein, and the bolt retaining means is disposed on the bracket and adapted to hold the bolt in a captive position wherein a head of the bolt is between the side plates and a shank of the bolt passes through the bolt hole.

5,795,194

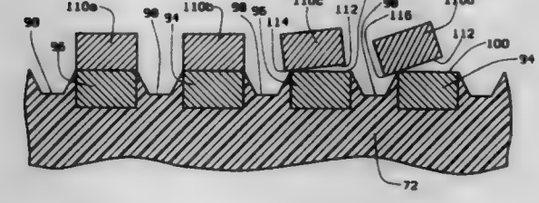
ELECTRICAL CONNECTOR WITH V-GROOVES

Marlyn E. Hahn, York, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Continuation of Ser. No. 536,646, Sep. 29, 1995, abandoned. This application Jun. 25, 1997, Ser. No. 882,365

Int. Cl.[6] H01R *17/00*

U.S. Cl. 439—660 **18 Claims**



1. An electrical connector for receiving a mating electrical connector of the having a plurality of spaced apart terminals, the electrical connector comprising:

a housing;

a substratum disposed in said housing and defining a surface;

a plurality of spaced apart terminal contacts disposed on said surface of said substratum and terminating in a plurality of solder-tails, said terminal contacts corresponding in number to the plurality of terminals of the mating electrical connector, each of said terminal contacts having a contact surface that is raised from said substratum to define an elevated area wherein said contact surface extends the entire width of said elevated area; and

a channel formed in said substratum surface adjacent each of said terminal contacts.

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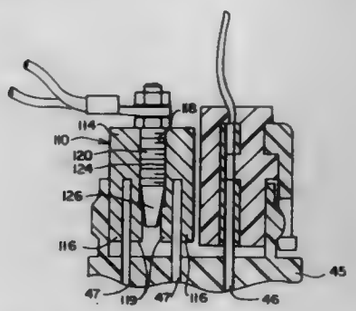
ELECTRICAL PLUG

Mark A. Karlsberger, 165 ½ E. Winter St., Delaware, Ohio 43015

Filed Sep. 23, 1996, Ser. No. 717,978

Int. Cl.[6] H01R *4/50*

U.S. Cl. 439—783 **1 Claim**



1. An electrical plug for securing a wire to an alternator receptacle having a pair of prongs therein, comprising;

a metallic housing having a base portion, an outer pair of downwardly depending legs and an inner pair of downwardly depending legs, a partially threaded bore extending through said base portion central of said inner pair of legs, said bore having a reduced diameter portion, between said inner pair of legs; and

a fastener having a tapered outer end portion adapted to engage said housing bore such that upon engagement of said fastener with said threaded portion of said bore, said bolt is drawn downwardly into said bore toward said inner pair of legs and said bolt tapered outer end portion engages said reduced diameter bore portion between said inner legs and biases them laterally outwardly toward said outer legs.

5,795,196

CONTACT HAVING AN INDEPENDENTLY SUPPORTED INNER CONTACT ARM

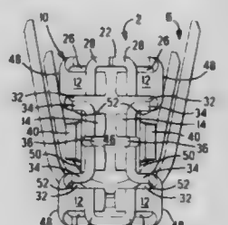
Gheorghe Hotea, Griesheim; Mile Trajkov, Frankfurt, and Horst Gehrke, Langen, all of Germany, assignors to The Whitaker Corporation, Wilmington, Del.

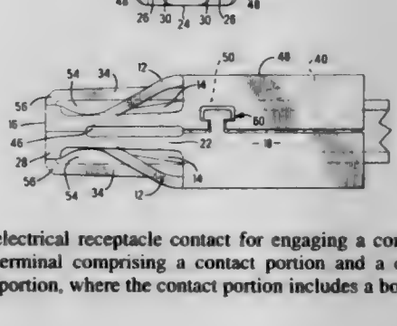
Filed Mar. 28, 1996, Ser. No. 623,581

Claims priority, application Germany, Jun. 4, 1995, 9507187.4

Int. Cl.[6] H01R *13/11*

U.S. Cl. 439—850 **15 Claims**





1. An electrical receptacle contact for engaging a complementary tab terminal comprising a contact portion and a conductor engaging portion, where the contact portion includes a body and at

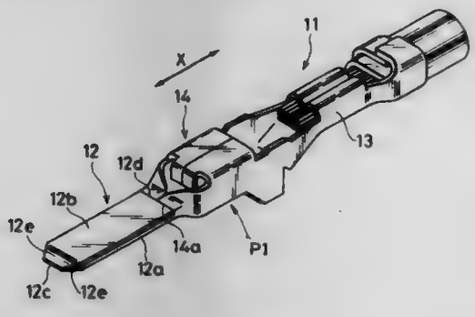
least three adjacently arranged contact arms including a pair of spaced-apart outer contact arms extending from the body with contact an inner contact arm extending therebetween and the contact arms have contact surfaces thereupon for engaging a common side of the tab terminal, where a transverse support rail is provided along the inner contact arm and between the outer contact arms such that the inner contact arm is supported independently of the adjacent outer arm to provide enhanced stiffness.

5,795,197

METALLIC MALE TERMINAL

Masanori Tsuji, and Motohisa Kashiyama, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Nov. 13, 1996, Ser. No. 747,816
Claims priority, application Japan, Nov. 17, 1995, 7-300013
Int. Cl.[6] H01R *9/24*
U.S. Cl. 439—884 **3 Claims**



1. A metallic male terminal comprising:

a plate member folded to define a connecting portion and a mating contact portion;

the connecting portion being capable of connection to an electrical wire and having a transversely folded part abutting the mating contact portion, the transversely folded part being formed by folding the plate member in a transverse direction of the metallic terminal so that transversely opposite sides of the plate member abut each other in a transversely central region of the metallic male terminal;

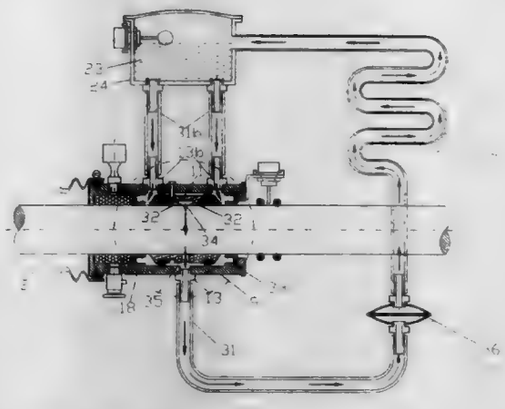
the mating contact portion being integral with the connecting portion and formed by a folded plate member folded in a longitudinal direction of the metallic male terminal to define a tongue-like configuration capable of coupling a metallic female terminal.

5,795,198

FLOATING SEAL FOR HIGH ROTATIONAL SPEED PROPELLER SHAFTS WITH INTEGRATED FORCED OIL CIRCULATION GENERATOR AND SAFETY DEVICES

Antonio Pedone, Boulevard Albert-I, Monaco MC, Monaco

PCT No. PCT/MC95/00001, § 371 Date Feb. 3, 1997, § 102(e) Date Feb. 3, 1997, PCT Pub. No. WO96/05100, PCT Pub. Date Feb. 22, 1996
PCT Filed Aug. 9, 1995, Ser. No. 776,741
Claims priority, application Monaco, Aug. 10, 1994, 2276; May 8, 1995, 219/2276
Int. Cl.[6] B63H *23/36*
U.S. Cl. 440—2 **16 Claims**



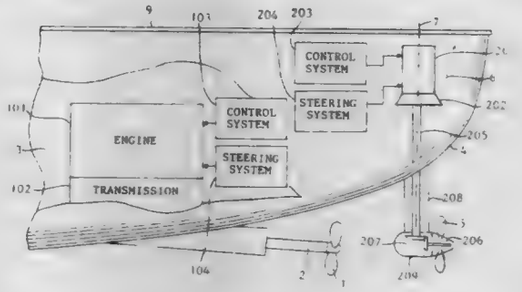
1. A seal joint for a propeller shaft passing through a boat hull, comprising a bronze support bushing (**11**) that is fitted over the propeller shaft (**2**), first elastic rings (**10, 14**) cooperating with said support bushing, an elastic bellows (**5**) surrounding said shaft downstream of said support bushing (**11**), and a lubricating oil circulation system, the lubricating oil circulation system comprising two stages that cooperate to establish water tightness, a first ring-shaped water retention chamber (**16**) filled with a viscous insoluble sealing medium, and a second chamber (**32, 34, 35**) filled with lubricating oil (**23**), the lubricating oil circulation system employing (**23**) closed-circuit forced circulation produced during rotation of said propeller shaft (**2**) within said support bushing (**11**), inside a static eccentric chamber (**34**) formed within the support bushing, said support bushing being loosely fit onto the propeller shaft with no rigid fixing whereby the propeller shaft is rotatable and axially moveable.

5,795,199

PROPELLER DRIVE FOR WATERCRAFT

Hans Langenberg, Hamburg, and Hansjorg Klante, Wedel, both of Germany, assignors to Blohm + Voss Holding AG, Hamburg, Germany

Continuation of Ser. No. 635,714, Apr. 22, 1996, abandoned. This application Jul. 14, 1997, Ser. No. 892,483
Claims priority, application Germany, Apr. 22, 1995, 195 14 878.9
Int. Cl.[6] B63H *5/07*
U.S. Cl. 440—79 **19 Claims**



1. A propeller drive for an ocean-going ferry watercraft, the watercraft having a hull with a longitudinal axis, said propeller drive comprising:

an aft propeller mechanism;

an aft propeller drive mechanism to drive said aft propeller mechanism;

a forward propeller mechanism;

a forward propeller drive mechanism to drive said forward propeller mechanism;

said aft propeller mechanism being configured to be disposed astern of said forward propeller mechanism;

an arrangement to pivot said aft propeller mechanism substantially greater than 90 degrees with respect to the longitudinal axis;

said aft propeller mechanism having a drive position to drive a watercraft forward; and

at least a portion of said aft propeller drive mechanism being disposed between said forward propeller mechanism and said

aft propeller mechanism upon said aft propeller mechanism being disposed in said drive position.

5,795,200

CONTRA-ROTATING ROTOR UNIT

Bryan James Larkin, 670 Beach Road, Surf Beach, New South Wales 2536, Australia

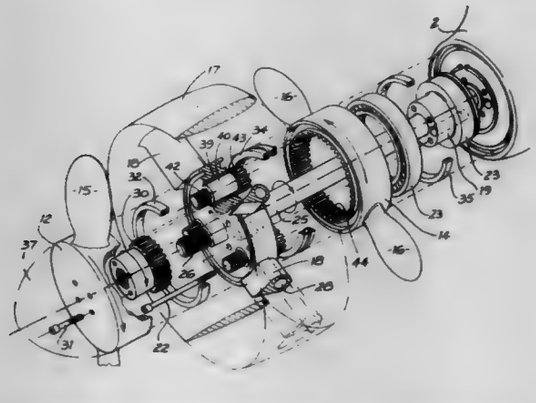
PCT No. PCT/AU95/00624, § 371 Date Mar. 25, 1997, § 102(e) Date Mar. 25, 1997, PCT Pub. No. WO96/09954, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 22, 1995, Ser. No. 809,037

Claims priority, application Australia, Sep. 26, 1994, PM 8421

Int. Cl.[6] B63H *5/10*

U.S. Cl. 440—81 **7 Claims**



1. A marine propulsion unit comprising two, axially-aligned and contra-rotating rotors one of which is rigidly attached to a drive shaft and drives the other rotor through a positionally-held planetary gear which is mounted on a static support sleeve through which the drive shaft passes and which is positioned between the two rotors while extending axially through one of them; the planetary gear being formed with a shaft extending parallel to the drive shaft and formed at its opposite end-portions with respective gear pinions one of which meshes with internal gearing on one of the rotors, and the other of which meshes with external gearing on the other rotor to transmit a reversing drive between them.

5,795,201

ONE-HANDED CANOE PADDLE

John A. Tibbetts, P.O. Box 284, Thomaston, Me. 04861

Filed Apr. 21, 1997, Ser. No. 847,150

Int. Cl.[6] B63H *16/04*

U.S. Cl. 440—101 **2 Claims**

1. A one-handed canoe paddle comprising a blade portion, an angled hand grip portion, and an arm cuff portion,

said blade and arm cuff portions being connected by means of a shaft constructed in the same plane as, and of a single unit with, the blade and hand grip, but being offset to the centerline of the blade and hand grip a distance equal to approximately one-half the thickness of an adult arm;

said arm cuff being U-shaped, positioned perpendicularly to the plane of the blade and hand grip, attached at the base of the U to the shaft opposite the blade, with the arms of the U being parallel to and above the hand grip,



said hand grip being constructed in the same plane as, and of a single unit with, the blade portion and at an angle approximating the natural angle that a closed hand makes with the centerline of the arm when the hand is in alignment with the forearm.

5,795,202

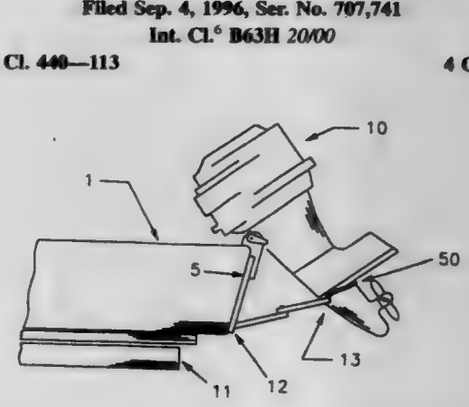
OUTBOARD MOTOR SUPPORT DEVICE

Carl F. Williams, 3815 64th Street NE., Tuscaloosa, Ala. 35406

Filed Sep. 4, 1996, Ser. No. 707,741

Int. Cl.[6] B63H *20/00*

U.S. Cl. 440—113 **4 Claims**



1. An apparatus for maintaining an outboard boat motor in a tilted position, comprising:

(a) a rigid plate being for fixed attachment to the transom of a boat and defining a cavity longitudinally disposed through the length of the rigid plate; and

(b) a first support member having an extended end and an attached end, the attached end slideably and hingedly attached within the cavity of the rigid plate in such a manner that the first support member slides from a first position fully extended without the cavity to a second position fully contained within the cavity; and

(c) a second support member having a first end rotatably attached to the extended end of the first support member, and an engaging end operative for engaging the boat motor; and

(d) means for restraining the first support member in its second position within the cavity of the rigid plate.

5,795,203

AIR-LAUNCHED BUOY

Vito Suppa, Rouquefort les Pins; Pascal Bocquillon, Vallauris; Bernard Loubieres, La Colle sur Loup, and Gilbert Oddoart, Nice, all of France, assignors to Thomson-CSF, Paris, France

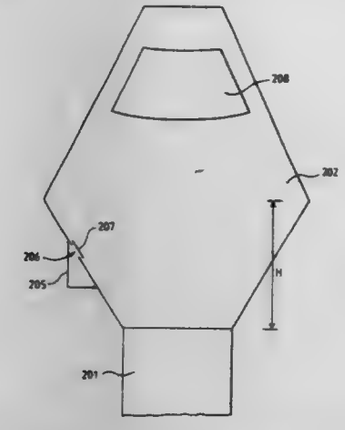
PCT No. PCT/FR95/01351, § 371 Date Apr. 18, 1997, § 102(e) Date Apr. 18, 1997, PCT Pub. No. WO96/11837, PCT Pub. Date Apr. 25, 1996

PCT Filed Oct. 13, 1995, Ser. No. 817,099

Claims priority, application France, Oct. 18, 1994, 94 12411

Int. Cl.[6] B63B *22/00*

U.S. Cl. 441—1 5 Claims



1. Air-launched buoy intended to be launched from a flying aircraft, of the type comprising a body surmounted by an inflatable balloon equipped at its upper part with pockets for aerodynamic stabilization, and at its lower part including an air intake to allow the balloon to be inflated, wherein the connection between the body and the balloon is leaktight and in that the air intake is composed of at least one beak having a triangular shape, the opening of which points towards the bottom of the balloon so as to form a scoop for the air, and in that at its upper part this scoop covers an opening made in the wall of the balloon and forming an inlet allowing air into the balloon.

5,795,204

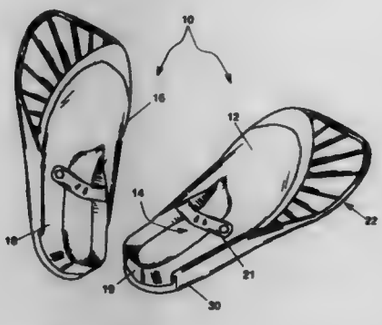
COMBINATION WATER SHOE AND SWIM FIN

Roderick S. Bruner, 452 Brandt Ct. #10, Salt Lake City, Utah 84107

Filed Apr. 30, 1997, Ser. No. 847,161

Int. Cl.[6] A63B *31/11*

U.S. Cl. 441—61 9 Claims



1. A water shoe comprising:

a lower sole having a slip resistant lower surface;

a shoe upper body affixed to said lower sole and formed of mesh material allowing for quick water drainage;

an inner foot receiving cavity formed between said sole and said upper body in an otherwise conventional manner such that it is bounded by an inner shoe sidewall, an outer shoe sidewall, and a heel fence, and a toe fence formed at the front edge of the shoe; and

a swim fin extending laterally outward from the sole outward from the outer shoe sidewall.

5,795,205

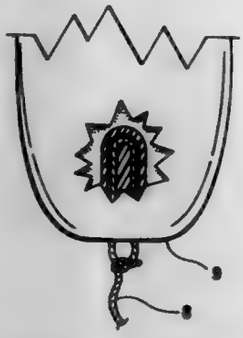
ATTACHMENT FOR SURFBOARD LEASH

Rob A. Gantenbein, 2015B Swazey St., San Luis Obispo, Calif. 93401, and Andrew A. Jennings, 332 Twinridge Dr., San Luis Obispo, Calif. 93405

Filed Mar. 17, 1997, Ser. No. 823,888

Int. Cl.[6] B63B *1/00*

U.S. Cl. 441—75 4 Claims



1. An article attachable to a surfboard having an upper surface and a trailing edge, said article serving as an attachment for securing a leash to the surfboard and comprising:

a plug received within a rearwardly-opening cavity in the trailing edge of the surfboard, said plug including an internal passage extending from a first rearwardly-opening hole to a second rearwardly-opening hole, whereby a leash may be threaded through the internal passage and thereby secured to the surfboard.

5,795,206

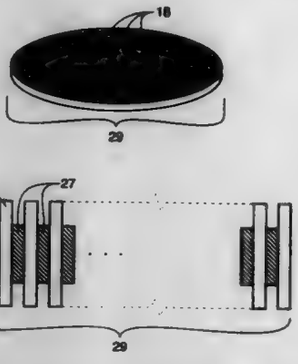
FIBER SPACERS IN LARGE AREA VACUUM DISPLAYS AND METHOD FOR MANUFACTURE OF SAME

David A. Cathey, Boise; Charles M. Watkins, Meridian; Darryl M. Stansbury, Boise; James J. Hofmann, Boise; Robert T. Rasmussen, Boise, and Surjit S. Chadha, Meridian, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 349,091, Nov. 18, 1994, Pat. No. 5,486,126. This application Sep. 15, 1995, Ser. No. 528,761

Int. Cl.[6] H01J *9/18*

U.S. Cl. 445—24 47 Claims



1. A process for forming spacers between a first component having a first surface and a second component having a second

surface, the first and second components being in a display device, the process comprising:

forming a bundle of fibers, each fiber having a core and a cladding;

removing the cladding;

providing a binder around the fibers;

placing the plurality of bound fibers on the first surface;

removing the binder from around the fibers; and

placing the second surface of the second component against the fibers.

5,795,207

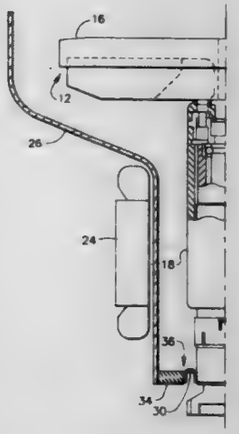
GLASS TO METAL INTERFACE X-RAY TUBE

James A. Blake, Franklin; Jamie E. Lazzaro, Wauwatosa, both of Wis., and James R. Dobbs, Niskayna, N.Y., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 31, 1995, Ser. No. 551,091

Int. Cl.[6] H01J *9/26;9/34*

U.S. Cl. 445—28 **4 Claims**



1. A method for interfacing dissimilar materials in an X-ray tube comprises the steps of:

using a rotor assembly to distribute heat generated in the X-ray tube;

sealing the X-ray tube within a glass material, the glass material having a first expansion coefficient;

providing an interface, the interface comprising a metal material and a ceramic material bridging the glass material and the metal material, the ceramic material having a second expansion coefficient that closely matches the first expansion coefficient, the interface being provided between the rotor assembly and the glass material to absorb temperature coefficient stresses.

5,795,208

MANUFACTURE OF ELECTRON EMITTER BY REPLICA TECHNIQUE

Atsuo Hattori, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka, Japan

Filed Oct. 6, 1995, Ser. No. 540,418

Claims priority, application Japan, Oct. 11, 1994, 6-271754; Oct. 11, 1994, 6-271755; Oct. 11, 1994, 6-271756

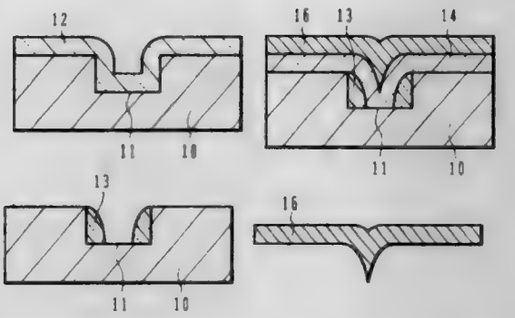
Int. Cl.[6] H01J *9/02;1/30*

U.S. Cl. 445—50 **21 Claims**

1. A method of manufacturing a microelectronic device comprising the steps of:

(a) providing a hole in a substrate;

(b) forming a first sacrificial film having a side surface on a side wall of the hole with a first material;



(c) applying a second sacrificial film on the first sacrificial film to fill the hole and form a cusp;

(d) forming an electron emitting material layer on the second sacrificial film to fill the cusp to form a tip; and

(e) removing the first sacrificial film and the second sacrificial film to expose the tip;

wherein the second sacrificial film comprises a non-conformal layer.

5,795,209

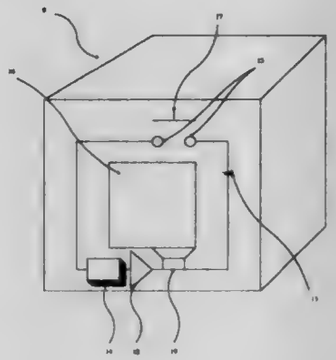
PACKAGE AMUSEMENT DEVICE AND METHOD

Steven Jerome Moore, 9 Sonoma Rd., Cortlandt Manor, N.Y. 10566

Filed Jan. 2, 1996, Ser. No. 581,890

Int. Cl.[6] A63H *3/00;5/00;33/26;* **B65D** *77/00*

U.S. Cl. 446—73 **14 Claims**



1. A package amusement device comprising:

a packaging means for packaging a gift, said packaging means selected from the group of: a box, an enclosing shell, a bag, wrapping paper, ribbon material;

a detection means integrated with said packaging means for detecting change with repect to the packaging means or to the immediate vicinity of said packaging means;

a microprocessor means integrated with said packaging means and electronically connected to said detection means for generating a pre-programmed signal upon said change with respect to the packaging means or to the immediate vicinity of said packaging means;

a sense-detectible signal generating means electronically connected to said microprocessor means for generating a sense-detectible signal in response to said pre-programmed signal from said microprocessor means.

5,795,210
TOY BUILDING SET AND BUILDING ELEMENTS THEREFOR

Philip Marshall Kushner, Greve Strand; Kenn Rasmussen, Valby, and Niels Øhrwald, Espergærde, all of Denmark, assignors to Interlego AG, Baar, Switzerland

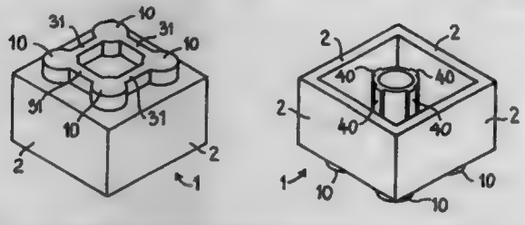
PCT No. PCT/DK94/00353, § 371 Date Mar. 19, 1996, § 102(e) Date Mar. 19, 1996, PCT Pub. No. WO95/08376, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 21, 1994, Ser. No. 617,910

Claims priority, application Denmark, Sep. 22, 1993, 1064/93

Int. Cl.[6] A63H *33/08;33/04*

U.S. Cl. 446—128 **17 Claims**



1. A toy building set with building elements (**1**, **3**, **4**) capable of being interconnected in a releasable frictional engagement, and comprising

building elements which have a first type of coupling means (**10**) arranged in a two dimensional modular pattern, and

building elements which have at least one coupling means (**2**, **20**) of a second type which is so dimensioned that when a building element having coupling means (**10**) of the first type is interconnected with a building element having a coupling means (**2**, **20**) of the second type, the coupling means (**2**, **20**) of the second type will touch the coupling means (**10**) of the first type in a releasable frictional engagement,

wherein the building set moreover comprises

building elements which have a third type of coupling means (**31**, **32**) arranged in the two-dimensional modular pattern and offset with respect to coupling means (**10**) of the first type, the third type of coupling means (**31**, **32**) being so dimensioned that when a building element having coupling means (**2**, **20**) of the second type is interconnected with a building element having coupling means (**10**) of the first type and coupling means (**31**, **32**) of the third type, the coupling means (**2**, **20**) of the second type will not touch the coupling means (**31**, **32**) of the third type, and

building elements which have at least one coupling means (**40**) of a fourth type which is so dimensioned that when a building element having coupling means (**31**, **32**) of the third type is interconnected with a building element having the coupling means (**40**) of the fourth type, the coupling means (**31**, **32**) of the third type will touch the coupling means (**40**) of the fourth type in a releasable frictional engagement.

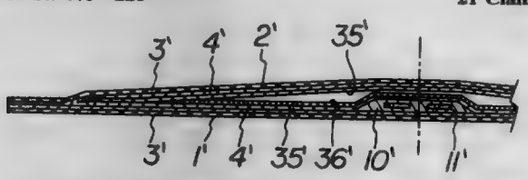
5,795,211
ILLUMINATED NON-LATEX BALLOON

Robert Carignan, Cranston, R.I., and Chen Ping, Hong Kong, Hong Kong, assignors to Satellite Balloon Manufacturer of Hong Kong Ltd., Hong Kong, Hong Kong

Continuation-in-part of Ser. No. 585,176, Jan. 11, 1996, abandoned. This application Aug. 2, 1996, Ser. No. 691,980

Int. Cl.[6] A63H *3/06;33/26*

U.S. Cl. 446—220 **21 Claims**



1. A method for producing an inflated non-latex, portable balloon with an internal lamp having an external electric power source comprising the steps of:

forming a balloon body with an open neck by providing first and second panels of balloon material having respective inner polyethylene layers and sealing the layers together along respective peripheries by one of heat/pressure and ultrasonic vibration;

enveloping a pair of flat metal conductor leads in polyethylene to provide a discrete integral elongate, strip to form a lead member with the leads in hermetically sealed relation, extending spaced apart between opposite longitudinal ends thereof;

electrically connecting an electric lamp to the leads at one end of the lead member so that the electric lamp is supported thereby;

inflating the balloon body with air;

sealing the neck closed, substantially airtight, with the lead member extending therethrough with the electric lamp inside the balloon and opposite ends of the leads outside the balloon by application of one of heat/pressure and ultrasonic vibration to the neck thereby fusing together polyethylene surfaces of the lead member and the balloon panels to provide a hermetic seal; and, electrically connecting a power source to the leads outside the balloon.

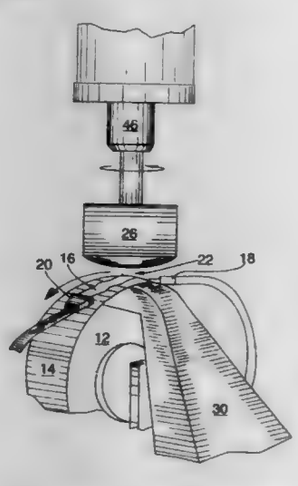
5,795,212
DETERMINISTIC MAGNETORHEOLOGICAL FINISHING

Stephen David Jacobs, Pittsford, N.Y.; William Kordonski; Igor Victorovich Prokhorov, both of Minsk, Belarus; Donald Golini, Rochester, N.Y.; Gennadii Rafailovich Gorodkin, Minsk, Belarus, and Tvasta David Strafford, Rochester, N.Y., assignors to Byelocorp Scientific, Inc., New York, and University of Rochester, Rochester, both of N.Y.

Filed Oct. 16, 1995, Ser. No. 543,426

Int. Cl.[6] B24B *1/00;31/112*

U.S. Cl. 451—36 **52 Claims**



1. A method of finishing a workpiece surface using magnetorheological fluid, comprising:

(a) positioning the workpiece near a continuous carrier surface such that a converging gap is defined between a portion of the workpiece surface and the carrier surface, wherein said carrier surface extends along a rim of a vertically oriented wheel;

(b) applying a magnetic field substantially at said gap;

(c) depositing magnetorheological fluid from a magnetorheological fluid source on the carrier surface;

(d) moving the carrier surface past said workpiece by rotating the wheel such that magnetic field-stiffened magnetorheological fluid flows through said converging gap defining a work zone forming a transient finishing tool for engaging and causing material removal at a portion of the workpiece surface;

(e) moving the workpiece or the work zone relative to the other to expose different portions of the workpiece surface to the

work zone for predetermined time periods to selectively finish said portions of said workpiece surface to predetermined degrees;

(f) collecting magnetorheological fluid that has flowed through said gap from said carrier surface; and

(g) returning the magnetorheological fluid collected in step (f) to the magnetorheological fluid source.

5,795,213

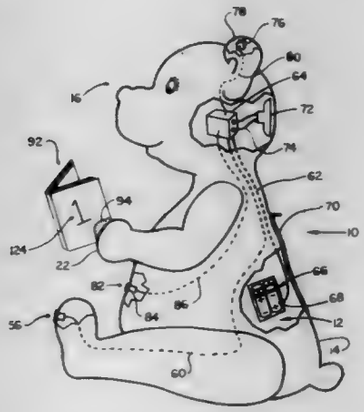
READING TOY

Richard P. Goodwin, Bristol, Tenn., assignor to General Creation International Limited, Bristol, Tenn.

Filed Apr. 22, 1997, Ser. No. 837,753

Int. Cl.[6] A63H *3/28;5/00;* **G09B** *5/00*

U.S. Cl. 446—297 **12 Claims**



1. A learning device for audibly relating written material to a listener comprising:

(a) a book comprising:

(i) a first page containing a first written material, said first written material being capable of audio interpretation;

(ii) a second page containing a second written material, said second written material being capable of audio interpretation:

(b) a supplemental book comprising:

(i) a third page containing a third written material, said third written material being capable of audio interpretation;

(ii) a fourth page containing a fourth written material, said fourth written material being capable of audio interpretation;

(c) a portable toy having an interior, said portable toy comprising the following elements, at least several of which are within said interior:

(i) an electric power source;

(ii) a first actuator;

(iii) a second actuator;

(iv) a switch means having at least a first condition and a second condition; and

(v) a memory storage means for storing electronic data corresponding to the written material on said pages of the book and the supplemental book, which storage means is electronically connected to said switch means and said first and second actuators and produces audio signals including:

(1) a first audio signal upon actuation of said first actuator when said switch means is in said first condition;

(2) a second audio signal upon actuation of said second actuator when said switch means is in said first condition;

(3) a third audio signal upon actuation of said first actuator when said switch means is in said second condition; and

(4) a fourth audio signal upon actuation of said second actuator when said switch means is in said second condition;

(d) wherein said first audio signal is an audio interpretation of said first written material;

(e) wherein said second audio signal is an audio interpretation of said second written material;

(f) wherein said third audio signal is an audio interpretation of said third written material; and

(g) wherein said fourth audio signal is an audio interpretation of said fourth written material.

5,795,214

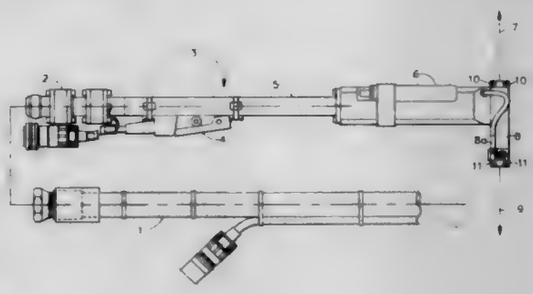
THRUST BALANCED TURN BASE FOR THE NOZZLE ASSEMBLY OF AN ABRASIVE MEDIA BLASTING SYSTEM

Rosa M. Leon, Cincinnati, Ohio, assignor to Cold Jet, Inc., Loveland, Ohio

Filed Mar. 7, 1997, Ser. No. 813,114

Int. Cl.[6] B24C *5/04*

U.S. Cl. 451—102 **8 Claims**



1. A thrust balanced turn base for changing the direction of a fluid flow containing entrained abrasive media; said turn base comprising an elongated member having an inlet for said fluid flow with entrained abrasive media, a first internal passageway extending in a downstream direction from said inlet, said first passageway comprising a first throat, a first converging portion between said inlet and said first throat, a diverging portion extending downstream from said first throat, a second gently converging portion downstream of said diverging portion, a turning portion downstream of said second converging portion converging to a second throat and leading to a first nozzle conducting said fluid flow containing entrained abrasive media in a direction angularly related to a long axis of said turn base, a second internal passageway in fluid communication with said first internal passageway at an aperture in said first internal passageway located between said inlet and said first throat, said second internal passageway having a first portion extending from said aperture and a second gently diverging portion extending from said first portion and terminating abruptly in a second nozzle oriented at about 90° to the long axis of said turn base, said first portion of said second internal passageway being configured to divert a substantially abrasive media-free part of said fluid flow from said first internal passageway into said second internal passageway, said second nozzle being oriented and sized so that the thrust of said entrained abrasive media flow from said first nozzle is substantially counterbalanced by the thrust of said abrasive media-free flow from said second nozzle.

5,795,215

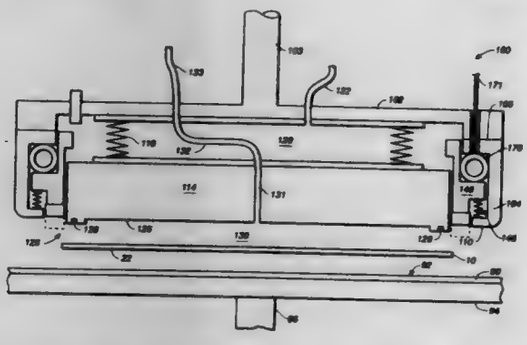
METHOD AND APPARATUS FOR USING A RETAINING RING TO CONTROL THE EDGE EFFECT

William L. Guthrie; Tsungnan Cheng, both of Saratoga; Sen-Hou Ko, Cupertino; Harry Q. Lee, Mountain View; Michael T. Sherwood, Fremont, and Norm Shendon, San Carlos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 488,921, Jun. 9, 1995, and Ser. No. 549,651, Oct. 27, 1995. This application Jun. 19, 1996, Ser. No. 667,221

Int. Cl.[6] B24B *5/00*

U.S. Cl. 451—286 **5 Claims**



1. A method of chemically mechanically polishing a substrate, comprising the steps of:

positioning a substrate adjacent to a polishing pad by means of a carrier head, said carrier head including a mounting assembly and a retaining ring;

moving said substrate relative to said polishing pad;

applying a first load to said mounting assembly to press said substrate against said polishing pad;

selecting a second load to be applied by said retaining ring to minimize an edge effect on said substrate; and

independently applying said second load to said retaining ring to press said retaining ring against said polishing pad.

5,795,216

ABRADING TOOL HAVING A SUCTION SYSTEM FOR COLLECTING ABRADED PARTICLES

Philip Graves, Peoria, Ill., assignor to DuMont Companies, Peoria, Ill.

Filed Mar. 21, 1996, Ser. No. 620,105

Int. Cl.[6] B24B *55/06*

U.S. Cl. 451—456 **12 Claims**

1. An abrading tool adaptable to clean surface portions of contaminants on structures in difficult to reach places, while permitting enclosure of such contaminants away from the environment, comprising:

a tubular housing;

said tubular housing is further defined as having an inner and outer periphery;

said inner periphery is further defined as having a front and rear portion;

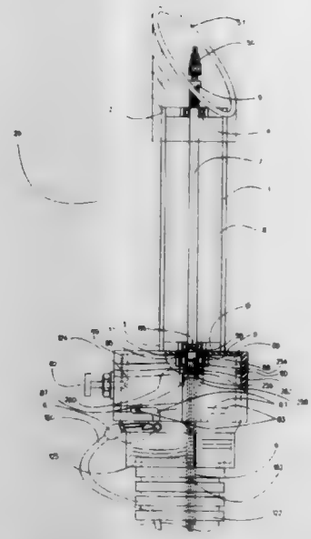
said front portion contains a first bearing plate demountably secured therein;

said rear portion contains a second bearing plate demountably secured therein;

an arbor is demountably journaled within and extends through said first bearing plate and said second bearing plate thereby terminating in close proximity of said front and rear portions; the end of the arbor terminating in close proximity with the rear portion contains a drive means;

the end of the arbor terminating in close proximity with the front portion contains a tool attachment means;

said tubular housing is fluidly connected to an integral discharge port;



said discharge port contains a button switch to actuate a remote empowerment means;

a power supply enclosed within a power transfer conduit in communication with said button and said remote empowerment means;

said remote empowerment means being engaged by the button through said power transfer conduit;

a vacuum conduit fluidly interconnecting said discharge port to a remote vacuum means;

a flexible drive shaft interconnecting said remote empowerment means with said drive means, thereby being snaked through said vacuum conduit from the interconnection thereof with the discharge port at one end of said vacuum conduit to the interconnection thereof with said remote vacuum means at the other end of said vacuum conduit whereby operational torque vibration set up in said flexible drive shaft enclosably housed within said vacuum conduit in turn imparts a vibratory shaking thereto;

said power transfer conduit interconnecting said button to said remote empowerment means being snaked through said vacuum conduit from interconnection thereof with the button at one end of said vacuum conduit to the interconnection thereof with said remote empowerment means at the other end.

5,795,217

STRESSED BURNISHER

Mark Joseph LaPlante, Walden; Thomas Edward Lombardi, Poughkeepsie; David Clifford Long, Wappingers Falls; Anton Nenadic, Red Hook, and Alan Piciacchio, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

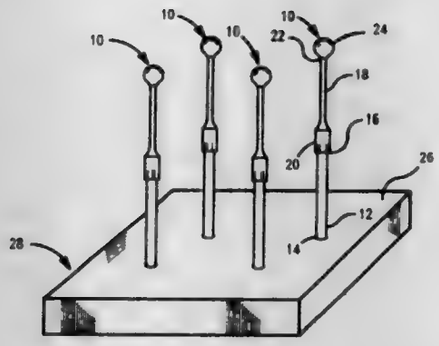
Filed Nov. 22, 1995, Ser. No. 562,291

Int. Cl.[6] B24B *41/02*; **B24D** *17/00*

U.S. Cl. 451—313 **21 Claims**

1. A flexible wire burnisher for disassociating undesirable material from a work piece, comprising:

a wire having a distal end, a proximate end, a lead section and an outer surface, wherein the wire is capable of flexing, the lead section is adjoining the distal end, the outer surface is capable of contacting the work piece in the region between the lead section and the proximate end, and the lead section is capable of preventing an abrasive action of the wire and the work piece outside the region between the distal end and the proximate end of the wire; and



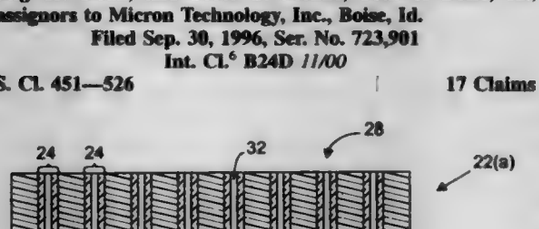
a burnishing medium in contact with the wire over at least the region capable of contacting the work piece, the burnishing medium is capable of disassociating undesirable material.

5,795,218

POLISHING PAD WITH ELONGATED MICROCOLUMNS

Trung Tri Doan, and Scott G. Meikle, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Sep. 30, 1996, Ser. No. 723,901
Int. Cl.[6] B24D *11/00*
U.S. Cl. 451—526 **17 Claims**



1. A chemical-mechanical planarizing polishing pad for planarizing semiconductor wafers, comprising:

a matrix body having a planarizing surface for planarizing the semiconductor wafers; and

a plurality of elongated solid microcolumns positioned within the matrix body and extending inwardly from the planarizing surface, the microcolumns being substantially parallel to each other, distributed substantially uniformly throughout the matrix body, and abrasive relative to the semiconductor wafers.

5,795,219

NAIL POLISHING WORKSTATION WITH VENTILATION AND CAROUSEL TRAY

Ira Gary Bloom, University Park, Tex., assignor to ASR Affiliates, Inc., Dallas, Tex.

Filed Mar. 27, 1997, Ser. No. 829,324
Int. Cl.[6] B08B *15/04*
U.S. Cl. 454—49 **8 Claims**

1. A nail sculpting station for the treatment of nails on the human hand in the form of filing the nails and applying a nail polish coating, comprising:

a plurality of workstations, each having a work surface;

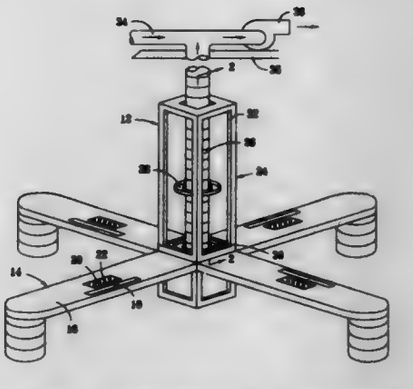
exhaust vents, one corresponding to each of said workstations for removing fumes and airborne particulate from above respective ones of said work surfaces;

a central exhaust duct;

exhaust ducting connecting said exhaust vents to said central exhaust duct;

an exhaust fan having an inlet connected to said central exhaust duct and having an exhaust connected to a space which is remote from said nail sculpting station for producing a vacuum above said work surfaces and therefore creating a continuous air flow to draw air, fumes and particulate into said exhaust vents, through said exhaust ducting and said central exhaust vent to exhaust the air, fumes and particulate remotely from said work stations; and

a supply tray rotatably mounted to an exterior of said central exhaust duct, wherein said exhaust duct provides the support structure for supporting said supply tray.

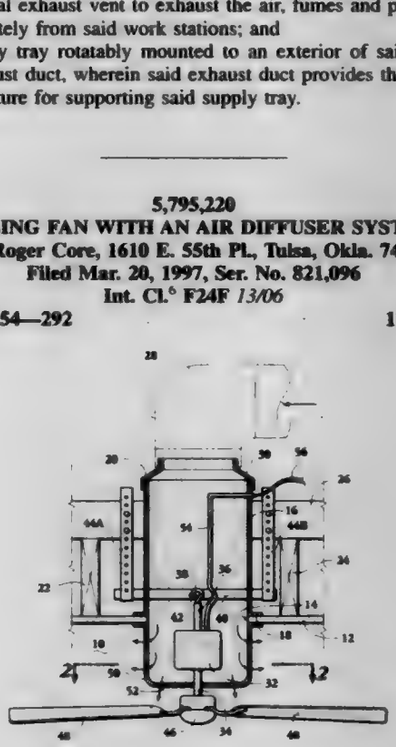


5,795,220

CEILING FAN WITH AN AIR DIFFUSER SYSTEM

William Roger Core, 1610 E. 55th Pl., Tulsa, Okla. 74105

Filed Mar. 20, 1997, Ser. No. 821,096
Int. Cl.[6] F24F *13/06*
U.S. Cl. 454—292 **11 Claims**



1. A system for distributing air through a ceiling into a room, the ceiling being supported by structural members, the air being supplied by a duct located above the ceiling, comprising:

an elongated vertically oriented plenum having a top and an open bottom and being mounted for support and for communication with an air supply duct, the open bottom having flush communication with an opening in the ceiling;

an air diffuser positioned within a room in communication with said opening in the ceiling and with said plenum open bottom providing for passage of air from said plenum into the room, the air diffuser having a bottom with an opening therethrough;

a bracket secured and supported transversely within said plenum intermediate said plenum top and bottom, the bracket having opposed ends adaptable for supporting attachment to ceiling supporting structural members;

an electric motor supported to said bracket and within said air diffuser, the motor having a rotating portion in alignment with said opening in said air diffuser bottom; and

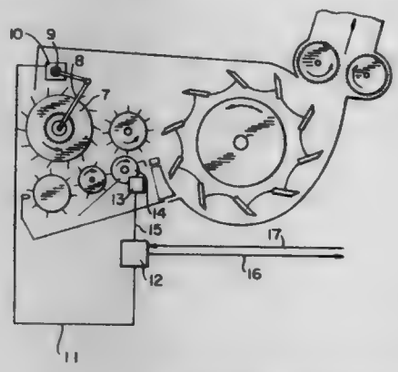
a plurality of fan blades affixed to and extending radially and at least substantially horizontally from said motor rotating portion and below said diffuser.

5,795,221

DEVICE FOR AND A METHOD OF A THROUGHPUT MEASUREMENT IN AGRICULTURAL MACHINES

Norbert Diekhans, Gütersloh, Germany, assignor to Claas KgaA, Harsewinkel, Germany

Filed Jul. 8, 1996, Ser. No. 676,426
Claims priority, application Germany, Jul. 7, 1996, 195 24 752.3
Int. Cl.[6] A01F *12/00*
U.S. Cl. 460—6 24 Claims



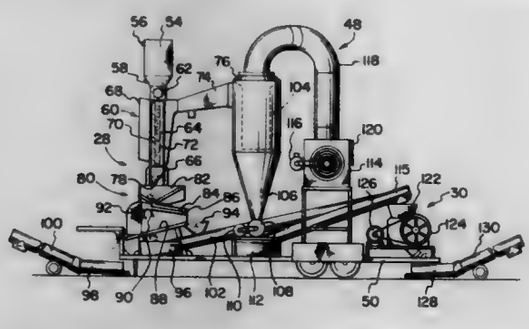
1. An agricultural machine, comprising a frame; harvested product treating means arranged on said frame and including a supply unit with a plurality of vertically movable prepressing rollers for prepressing and supplying a harvested product, at least one chopping drum for chopping the harvested product, and a throwing element for discharging the harvested product from the machine; and means for measuring a throughput of a harvested product through the machine, said throughput measuring means having a first element which converts a vertical movement of at least one prepressing roller caused by the harvested product into a first signal value, a second element which measures a throughflow speed of a product stream flowing through the machine and converts it into a second signal value; and microprocessor means receiving said first and said second signal values continuously and calculating from them an absolute quantity measuring value.

5,795,222

MCLEOD YARD PLANT

Robert H. McLeod, Winnipeg, Canada, assignor to Bob McLeod Inc., Winnipeg, Canada

Filed Nov. 1, 1996, Ser. No. 742,623
Int. Cl.[6] A01F *12/44*
U.S. Cl. 460—97 22 Claims



17. Method of cleaning a mixture of chaff, grain, grain leavings and weed seeds, comprising:

aspirating said mixture to remove liftings, leaving an aspirated mixture;

screening said aspirated mixture to remove matter larger than said grain, to produce a first screened grain mixture and a large matter discharge;

screening said first screened grain mixture to remove matter smaller than said grain, to produce a second screened grain mixture and a small matter discharge;

blowing said second screened grain mixture to remove matter lighter than said grain, to produce a cleaned grain product and a blown matter discharge; and

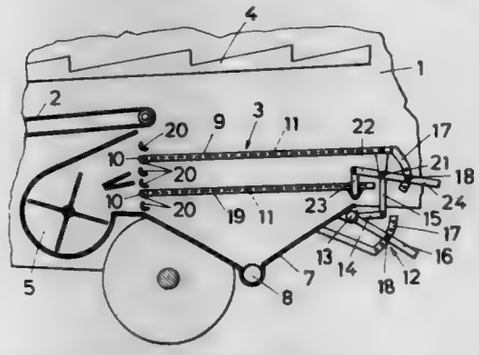
milling at least one of said liftings, said large matter discharge, said small matter discharge and said blown matter discharge, to produce a densified product useful as an animal feed.

5,795,223

SCREEN DEVICE FOR A HARVESTER-THRESHER, IN PARTICULAR A HARVESTER-THRESHER FOR A TEST FIELD

Franz Spiesberger, Lohnsburg, and Johann Aigner, Ried/Innkreis, both of Austria, assignors to Wintersteiger GmbH, Ried, Austria

PCT No. PCT/AT95/00101, § 371 Date Nov. 22, 1996, § 102(e) Date Nov. 22, 1996, PCT Pub. No. WO95/32609, PCT Pub. Date Dec. 7, 1995
PCT Filed May 24, 1995, Ser. No. 750,317
Claims priority, application Austria, May 27, 1994, 1086/94
Int. Cl.[6] A01F *12/32*
U.S. Cl. 460—102 6 Claims



1. A screen device for a harvester-thresher, comprising

(a) a chassis,

(b) two superposed frames for holding cleaning screens,

(c) respective transverse axles pivotally mounting the superposed frames in the chassis, and

(d) adjusting means for changing the pivotal position of the two superposed frames, the adjusting means comprising

(1) two actuating shafts extending parallel to the transverse axles and connected to swivel drives, a first one of the actuating shafts being mounted in the chassis and a second one of the actuating shafts being mounted on one of the superposed frames,

(2) at least one swivel arm affixed to each one of the actuating shafts, and

(3) a respective connecting rod connecting each swivel arm of the first actuating shaft to the one superposed frame and each swivel arm of the second actuating shaft to the other superposed frame.

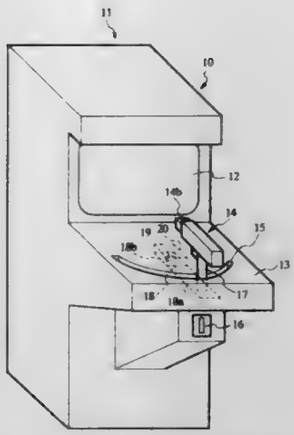
5,795,224

SHOOTING UNIT SUPPORT DEVICE AND GAME DEVICE HAVING SHOOTING UNIT

Yusuke Yoshida, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan

Filed Mar. 19, 1996, Ser. No. 617,694
Claims priority, application Japan, Mar. 20, 1995, 7-61349
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—2 7 Claims

1. A shooting game device comprising:



a game display unit which displays a background image and a target image:

a shooting unit with a muzzle positioned with respect to said display unit;

a support unit which movably supports said shooting unit so as to allow a player to pivotally move the shooting unit;

a moving unit which allows a player to move the support unit in a generally parallel direction relative to the game display unit;

a position detecting unit which detects a positional displacement of the support unit; and

display control means for scrolling the background image with the target image laterally in response to the detected displacement of said support unit.

5,795,225

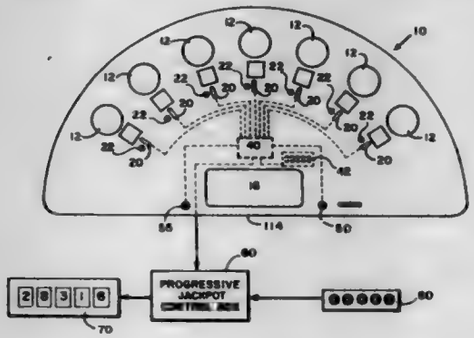
METHODS OF PROGRESSIVE JACKPOT GAMING

Daniel A. Jones, and James P. Suttle, both of Las Vegas, Nev., assignors to Progressive Games, Inc., Ft. Lauderdale, Fla.

Continuation of Ser. No. 337,661, Nov. 9, 1994, Pat. No. 5,626,341, which is a division of Ser. No. 40,925, Mar. 31, 1993, Pat. No. 5,364,104, which is a division of Ser. No. 800,631, Nov. 27, 1991, Pat. No. 5,288,077, which is a continuation-in-part of Ser. No. 361,276, Jun. 5, 1989, Pat. No. 5,078,405, which is a division of Ser. No. 214,934, Jul. 5, 1988, Pat. No. 4,861,041, which is a continuation-in-part of Ser. No. 182,374, Apr. 18, 1988, Pat. No. 4,836,553. This application Mar. 6, 1997, Ser. No. 811,364

Int. Cl.[6] A63F *1/00;9/24*

U.S. Cl. 463—13 **20 Claims**



1. A method of including a jackpot component as an additional feature in a live casino table card game comprising the steps of:

(a) a player making a first wager to participate in the live casino table card game;

(b) a player optionally making a second wager to participate in said jackpot component;

(c) a dealer dealing playing cards to the player; and

(d) if the player's hand comprises a predetermined arrangement of cards, the player wins a predetermined prize if the player has optionally made the second wager, wherein the steps (a) and (b) occur prior to step (c) and step (c) occurs prior to step (d), and wherein said predetermined arrangement and said predetermined prize are each determined before steps (a) and (b).

5,795,226

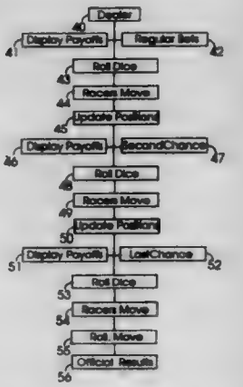
BETTING RACE GAME

Chen Yi, 3436 Holyoke Dr., Los Angeles, Calif. 90065

Filed Aug. 5, 1996, Ser. No. 691,944

Int. Cl.[6] A63F *9/22*

U.S. Cl. 463—22 **4 Claims**



1. A method of playing a betting race game comprising the steps of

providing a plurality of racer on a race course,

providing a plurality of payoff tables for the racers of a race in a plurality of finishing orders,

permitting players to place bets on the racers of the race before and after the race has begun,

determining a plurality of numbers,

advancing the racers of the race on the race course according to said plurality of numbers,

determining race results,

providing official payoff results.

5,795,227

ELECTRONIC GAME SYSTEM

Roni Raviv, 7 Maccabi Street, Ness Ziona 70400, and Omri Rothschild, 16 Barak Street, Tel Aviv 69933, both of Israel

Filed Jun. 28, 1996, Ser. No. 673,384

Int. Cl.[6] A63F *9/22*

U.S. Cl. 463—34 **9 Claims**

1. A computer game comprising:

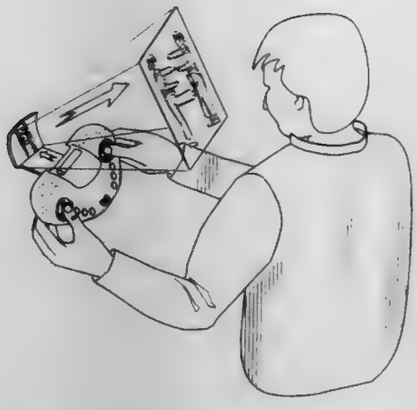
a housing;

game controls located on an outer surface of said housing;

a light source disposed within said housing and being operative to direct light along a light path;

an at least partially transparent image surface disposed along said light path; and

a non-transparent reflective viewing surface having optical power, mounted on said housing and arranged to display an enlarged image of said transparent image surface to a user, said non-transparent reflective viewing surface being formed



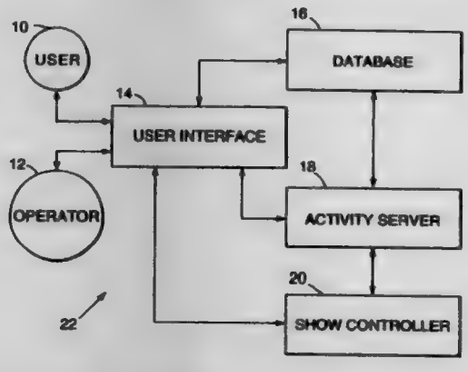
of a generally monochromatic light transmissive substrate having a reflective backing.

5,795,228

INTERACTIVE COMPUTER-BASED ENTERTAINMENT SYSTEM

Douglas Trumbull, Southfield, Mass.; Marty Behrens, Culver City, Calif., and Erich Greenebaum, Great Barrington, Mass., assignors to Ridefilm Corporation, Lee, Mass.

Filed Jul. 3, 1996, Ser. No. 675,351
Int. Cl.[6] G06F *13/00*
U.S. Cl. 463—42 **20 Claims**



1. A computer-based entertainment system which interacts with a user who has user characteristics, and which presents to the user an interactive show comprising audio, video images and computer-generated graphical images, the entertainment system comprising:

user interface means for receiving user input signals indicative of user input actions, and further for presenting user output signals to the user, which user output signals are indicative of the audio, video and computer graphical images generated by output devices;

database means for receiving said user input signals and for generating in dependence thereupon database signals which are indicative of an informational record of the user, which informational record is indicative of user characteristics;

show controller for generating a first set of show control signals indicative of the audio, the video images and the computer-generated graphical images of the show; and

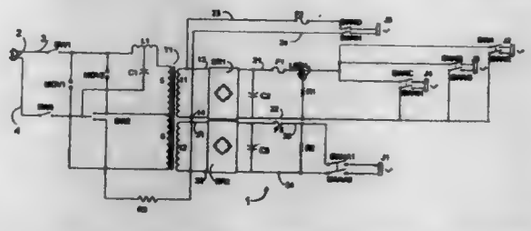
activity server means for receiving said user input signals, said database signals and said first set of show control signals, and for generating in dependence thereupon activity server signals for directing presentation of said user output signals by said user interface means, and wherein said activity server signals are presented to said show controller and, in dependence thereon, said show controller generates a second set of show control signals indicative of the audio, the video images and the computer-generated graphical images of the show which are adjusted in accordance with said user input actions.

5,795,229

VIDEO GAME POWER CONTROLLER

Edward J. Johnson, P.O. Box 642, Sunrise Beach, Mo. 65079

Filed Oct. 23, 1996, Ser. No. 735,524
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—47 **17 Claims**



1. A video game power controller for selective connection between an input power source and one or more of a plurality of video game systems, comprising:

a. an input including a wire pair connectable to a line power outlet;

b. a master switch connected in series with one wire of said wire pair;

c. a step-down transformer connected to said wire pair;

d. a first AC/DC power supply connectable to said transformer;

e. a plurality of power outputs, each of which is equipped with a power jack for connection to a respective one of said video game systems;

f. a plurality of switches, each of which is connected between said first power supply and a respective one of said power outputs;

g. a second AC/DC power supply connectable to said transformer;

h. at least one auxiliary power output which is equipped with an auxiliary power jack for connection to an auxiliary video game system; and

i. an auxiliary power switch which is connected between said second power supply and said auxiliary power outputs.

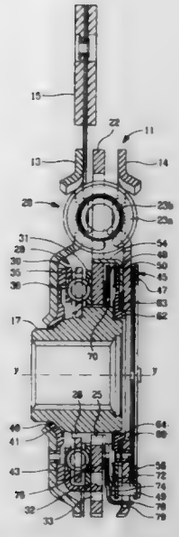
5,795,230

TORSION DAMPER HAVING SEVERAL FRICTION STAGES

Gerard Lefevre, Saleux, France, assignor to Valeo, Paris, France

PCT No. PCT/FR95/01708, § 371 Date Nov. 22, 1996, § 102(e) Date Nov. 22, 1996, PCT Pub. No. WO96/20357, PCT Pub. Date Jul. 4, 1996
PCT Filed Dec. 21, 1995, Ser. No. 702,473
Claims priority, application France, Dec. 26, 1994, 94 15634
Int. Cl.[6] F16D *3/14*
U.S. Cl. 464—63 **8 Claims**

1. Torsion damper having several circumferentially acting elastic damping stages and several axially acting friction stages, comprising a hub (**17**) designed to be connected to a shaft, and a main damping stage (**20**) having a hub disc (**22**) equipped with internal teeth mounted with predetermined angular clearance on external teeth of the said hub, two guiding washers (**13**, **14**) disposed axially on each side of said hub disc and elastic means (**23***a*, **23***b*) interposed circumferentially between the hub disc (**22**) and said guiding washers, characterized in that a main friction stage (**45**) is arranged on each side of one (**14**) of the guiding washers (**13**, **14**), axially, and has two bearing washers (**47**, **48**) disposed on each side of said guiding washer and joined by braces (**49**) of axial orientation passing through said guiding washer, a friction washer (**50**) coupled with respect to rotation to said hub disc and inserted between the guiding washer and one of the bearing washers (**47**,



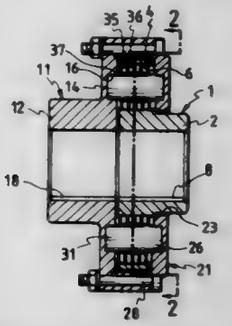
48), and an elastic clamping washer (56) inserted between the same guiding washer and the other bearing washer (47).

5,795,231

FLEXIBLE SHAFT COUPLING

Kazuichi Fukuda, Fujisawa, Japan, assignor to Shoyo Engineering Co., Ltd., Tokyo, and Kyushu Hasec Co., Ltd., Noogata, both of Japan

Continuation-in-part of Ser. No. 181,316, Jan. 13, 1994, abandoned. This application Jan. 28, 1997, Ser. No. 788,439
Claims priority, application Japan, Jan. 14, 1993, 5-005015
Int. Cl.[6] F16D 3/12
U.S. Cl. 464—65 12 Claims



1. A flexible coupling for rotatable shafts, comprising:

a first hub connected to a transmission shaft, having a cylindrical part, an outwardly extending flange at one end of said cylindrical part and a plurality of spring holes extending through said flange circumferentially spaced along the periphery thereof;

a second hub connected to a transmission shaft, having a cylindrical part, and an outwardly extending flange at one end of said cylindrical part;

a holder fixed to said flange of said second hub such that said flange of said first hub is held between said holder and said flange of said second hub, said cylindrical part of said first hub extending through said holder, and said flange of said first hub and each of said flange of said second hub and said holder having a space therebetween sufficient to accommodate shaft misalignments;

pins supported between said flange of said second hub and said holder; and

barrel-shaped coil springs each passed through a spring hole in the flange of said first hub, each barrel-shaped coil spring being compressed between the flange of said second hub and said holder by 5% to 15% of the free length thereof, the largest- and smallest-diameter portions of each barrel-shaped coil spring being shrink-fitted in the spring hole in the first hub and expansion-fitted over said pin, each barrel-shaped coil spring comprising four to seven active coils, with a ratio k_a/k_b, k_a being the spring constant at a point where an increasing load equal to ½ of the load acting when the inner surface of the barrel-shaped coil spring is in close contact with the pin acts and k_b being the spring constant obtained when the spring load increases from 0, being between 3 and 8, and the deflection at the intersection of the line passing the point where the ½ load acts and having a gradient equal to the spring constant k_a and the line passing the point where the load is 0 and having a gradient equal to the spring constant k_b being 10% to 60% of the maximum deflection that occurs when the inner surface of the barrel-shaped coil spring is in close contact with the pin;

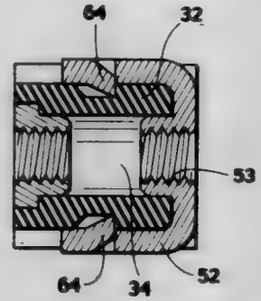
wherein a load perpendicular to the spring axis brings adjoining coils of the coil spring into contact with each other, with the resulting friction causing the coil spring to exhibit a hysteretic spring characteristic and generate sufficient energy to absorb shocks and reduce torsional vibration.

5,795,232

DRIVE ASSEMBLY COUPLER

Carl R. Sitzberger, St. Peters, Mo.; Richard L. Hudson, Tulsa, and Thomas W. Boyer, Collinsville, both of Okla., assignors to R. L. Hudson & Company, Tulsa, Okla.

Filed Mar. 13, 1997, Ser. No. 816,658
Int. Cl.[6] F16D 3/68
U.S. Cl. 464—73 13 Claims



1. A drive assembly coupler to transfer torque from a motor shaft, which coupler comprises:

a non-conducting body having a longitudinal axial opening therethrough, said body having a first pair of channels opposed to each other and parallel to said axial opening, and having a second pair of channels opposed to each other and parallel to said longitudinal opening; and

a pair of inserts, each insert having a projection with a threaded cylindrical opening, said projection receivable within said axial opening and a pair of legs extending parallel to said threaded opening, said legs receivable in said channels.

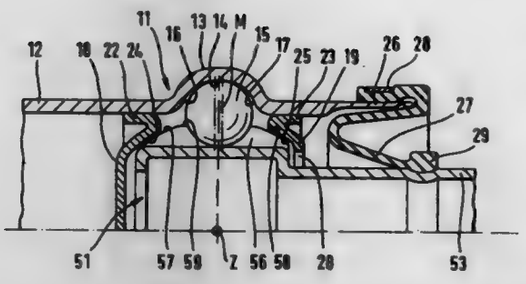
5,795,233

UNIVERSAL JOINT

Markus Eschbach, Overath; Peter Schwärzler, Glattbach, and Hans-Heinrich Welschof, Rodenbach, all of Germany, assignors to Lohr & Bromkamp GmbH, Offenbach am Main, Germany

Filed Sep. 8, 1995, Ser. No. 525,222
Claims priority, application Germany, Sep. 10, 1994, 44 32 245.3
Int. Cl.[6] F16D 3/223
U.S. Cl. 464—143 13 Claims

1. A universal joint for small articulation angles,



an outer joint part with longitudinally extending first ball tracks which, between stops, have an axial length with an unchanged cross-section;

an inner joint part with longitudinally extending second ball tracks whose axial length is greater than that of the first ball tracks;

torque transmitting balls guided in radially opposed first and second ball tracks; and

at least in the axial region of the first ball tracks, the outer joint part is made of plate metal with an approximately constant wall thickness, the first ball tracks in the outer joint part are formed by circumferentially distributed formations axially closed at both ends by stops.

5,795,234

PROCESS FOR FORMING BOLT

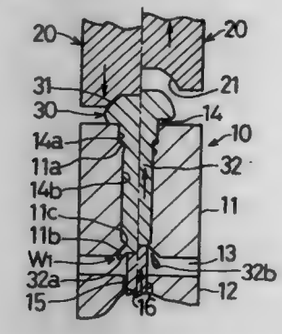
Takeshi Inada, Tokai, and Munechika Nakane, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 13, 1996, Ser. No. 694,612

Claims priority, application Japan, Aug. 17, 1995, 7-209461

Int. Cl.[6] B21H *3/02*

U.S. Cl. 470—16 **13 Claims**



1. A process for forming a bolt, the process comprising the steps of:

preparing a die, a rod-shaped knock-out member, and a punch, the die having opposite end surfaces, a through bore opened to one of the opposite end surfaces, and a space connected with the through bore and disposed substantially perpendicular to an axial line of the through bore, the knock-out member disposed in the through bore, the punch disposed so as to face one of the opposite end surfaces of the die to which the through bore is opened;

fitting a bolt precursor into the through bore of the die, the bolt precursor including a leg member having a leading end and a trailing end; and

pressing the bolt precursor by the punch so as to deform and flow a portion of the bolt precursor at around the leading end of the leg member, or a portion of the bolt precursor adjacent to the leading end of the leg member, the leading end of the leg member being pressed by the knock-out member, into the space of the die, thereby producing a thinned-out portion and flattening a leading-end surface of the leg member of the bolt precursor.

5,795,235

CAROUSEL

Jürgen Ullrich, Eisbergsteige 1, 72202 Nagold, Germany, and Karin Kohl, Ringstrasse 26/1, 75328 Schoemberg/Langenbrand/Wuertt., Germany

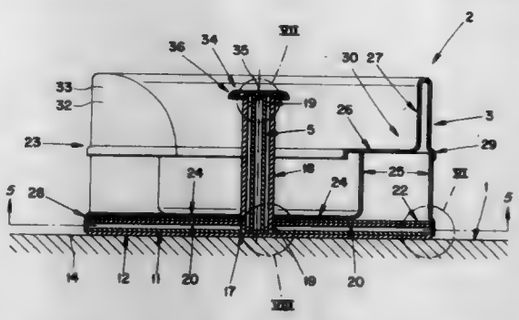
PCT No. PCT/EP95/00339, § 371 Date Sep. 4, 1996, § 102(e) Date Sep. 4, 1996, PCT Pub. No. WO95/20426, PCT Pub. Date Aug. 3, 1995

PCT Filed Jan. 31, 1995, Ser. No. 682,709

Claims priority, application Germany, Jan. 31, 1994, P4402506.7

Int. Cl.[6] A63G *1/12*

U.S. Cl. 472—14 **25 Claims**



1. A carousel for people, especially children, comprising a substructure which is stationary relative to a ground and which has a stator axle essentially perpendicular to said ground and a radial support star essentially parallel to said ground, and a rotor being rotatable about said stator axle and having a turning section for carrying people, wherein said radial support star is located on a profiled ground plate in recesses thereof that essentially conform to the shape of said radial support star.

5,795,236

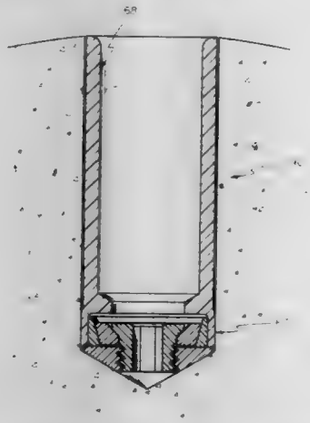
REMOVABLE THUMB INSERT ASSEMBLY FOR BOWLING BALLS

Jack B. Alberta, 3000 Woodland Park Dr. #2107, Houston, Tex. 77082, and Jeff A. Conley, 13111 Nantucket, Sugar Land, Tex. 77478

Filed Dec. 23, 1996, Ser. No. 771,950

Int. Cl.[6] A63B *37/00*

U.S. Cl. 473—129 **3 Claims**



1. A bowling ball having a removable insert frictionally retained within a hole in the ball, said insert comprising:

a sleeve having a free sliding fit with the hole when the sleeve is in its relaxed condition,

a circumferential resilient tubular wall at a distal end of the sleeve, and

an expander within the tubular wall, said expander comprising

(a) an inner ring having a cylindrical throughbore and a frustoconical circumference,

(b) an outer ring surrounding said inner ring and having a radial slot and a frustoconical bore engaging the circumference of the inner ring,

(c) said inner and outer rings being concentric and mated such that downward motion of said inner ring relative to said outer ring acts to expand the diameter of said outer ring into engagement with substantially the entire inner circumference of said tubular wall to expand said tubular wall into frictional engagement with the wall of the hole;

(d) a base disc in the bottom of the hole, said base disc having a central threaded bore, and

(e) a center screw threadedly engaged with the base disc.

5,795,237

PORTABLE TYPE ELECTRONIC GOLF SCORE DISPLAY DEVICE

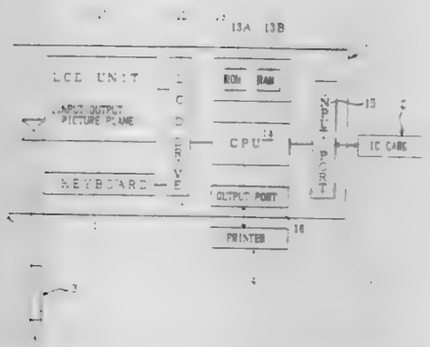
Yoshifumi Miyamoto, Tokyo, Japan, assignor to Sun Pionnier Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 245,037, May 17, 1994, abandoned. This application Sep. 4, 1996, Ser. No. 698,687

Claims priority, application Japan, Sep. 3, 1993, 5-243614

Int. Cl.[6] A63F *9/24*

U.S. Cl. 473—131 **4 Claims**



1. An electronic golf score display device comprising:

a display unit having a display plane and displaying a required picture plane, said display unit further including at least one of an input pen and a key pad for inputting data information from a user;

a memory means for storing predetermined processing procedures and for storing data information input by said user; and

a processing device interposed between said display unit and said memory means wherein said processing device processes said data information in accordance with said processing procedures stored in said memory means,

wherein said processing device includes:

a first means for displaying a score card setting picture plane on said display plane by inputting necessary score conditions from a selection of at least one of a course, a yardage, and a player's name wherein said first means inputs said input information into said memory according to said score card setting picture plane;

a second means for displaying input information of said score card setting picture plane providing for an indication for each hole on said display plane;

third means for automatically calculating a score by inputting each striking of a golf ball and inputting each score into said memory;

fourth means for displaying a golf course layout picture plan of a hole designated on said display plane and displaying a line of a locus of said strokes from a previous point to a new point input by said input pen through said golf course layout picture plane on said display plane and inputting a score of said hole into said memory by inputting said new point; and

fifth means for displaying said score through said score card picture plane on said display plane at an end of the displaying of said golf course layout picture plane on said display plane.

5,795,238

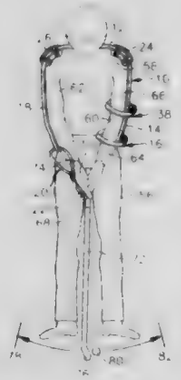
GOLF STROKE TRAINING APPARATUS

Robert Steven Nicholson, 12205 Torrey Pines Point, Knoxville, Tenn. 37922

Filed Aug. 21, 1997, Ser. No. 915,338

Int. Cl.[6] A63B *69/36*

U.S. Cl. 473—214 **32 Claims**



27. A golf stroke training system for attachment to a golf trainee, the system comprising limiting means for limiting movement of each arm of the trainee relative to the trainee's other arm and to the trainee's shoulders and means for attaching the limiting means to selected portions of the arms and hands of the trainee, wherein the limiting means limits movement of the arms and shoulders of the trainee such that the movement of a golf club having a head by the trainee's in a putting motion between two spaced apart points on each side of a golf ball causes the trainee's arms and shoulders to move in a plane parallel to the direction of movement of the golf club head in a pendulum-like motion.

5,795,239

GOLF PUTTER

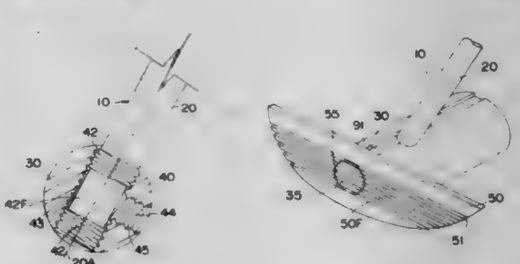
Chun Shin Lin, 6F, No. 8, Alley 33, Lane 114, Section 7, Chung-Shan N. Road, Tien-Shan Li, Shin Lin, Taipei, Taiwan

Filed Mar. 17, 1997, Ser. No. 818,916

Claims priority, application Taiwan, Aug. 28, 1996, 85213195

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—255 **9 Claims**



1. A golf putter comprising:

a shaft;

an elongate head connected to said shaft and having an impact face formed on a surface of an impact wing provided on a longitudinal end of said head;

a counterweight position adjustment means provided in another longitudinal end of said head; and

a connecting means connecting said shaft and head, said connecting means comprising:

a threaded portion formed on a bottom end of said shaft;

a first threaded hole diametrically formed in said head, which passes through a center of gravity of said head, for threaded engagement with said threaded portion

a second threaded hole formed in said head in a position perpendicular to said first threaded hole and a threaded bolt for threaded engagement with said second threaded hole, whereby said threaded portion is secured to said first threaded hole by said threaded bolt.

5,795,240

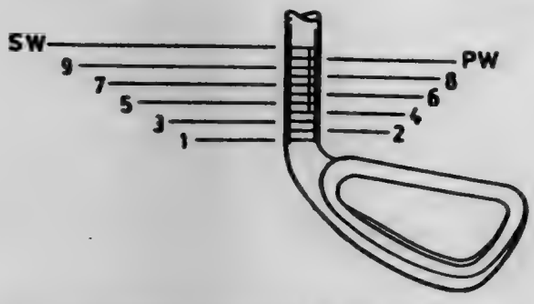
MECHANICAL LOCKING DEVICE FOR ATTACHING A SHAFT TO A GOLF CLUB HEAD

Chris Chappell, Westminster, S.C., assignor to Dunlop Maxfli Sports Corporation, Westminster, S.C.

Division of Ser. No. 480,556, Jun. 7, 1995, Pat. No. 5,616,086, which is a continuation of Ser. No. 350,507, Dec. 6, 1994, abandoned, which is a continuation of Ser. No. 101,584, Aug. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 964,916, Oct. 22, 1992, Pat. No. 5,316,297. This application Sep. 19, 1996, Ser. No. 710,581

Int. Cl.[6] A63B *53/04*

U.S. Cl. 473—291 **5 Claims**



1. A set of golf club irons, each of the golf club irons in the set having a head portion with a toe area and a heel area, and a hosel portion connecting the head portion to a shaft portion, the set comprising at least a first golf club iron and at least a second golf club iron, with the head portion of the first golf club iron having a loft less than a loft of the head portion of the second golf club iron, wherein the length of the hosel of the first golf club iron is less than the length of the of the hosel of the second golf club iron, and a location of a center of percussion is not uniform for the first and second golf club irons situated toward the toe area on the first golf club iron, and situated less toward the toe area and more toward the heel area on the second golf club iron, and the comparative size of the head portions of the clubs increases as the loft of the head portion increases.

5,795,241

GOLF PUTTER HAND GRIP

Andrew W. Peshek, 2825 N. Austin, Chicago, Ill. 60634, assignor to Andrew W. Peshek, and Maria S. Peshek, both of Chicago, Ill.

Continuation of Ser. No. 440,677, May 15, 1995, abandoned. This application Jan. 21, 1997, Ser. No. 787,409

Int. Cl.[6] A63B *53/14*

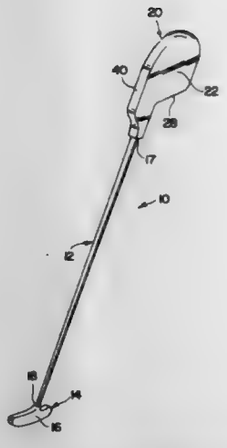
U.S. Cl. 473—300 **6 Claims**

1. A golf putter hand grip, for a golf putter of the type including a shaft having a first end, a second end, a diameter, a longitudinal axis therethrough, and a club head including a base and a club face for hitting a golf ball, said golf putter hand grip being positionable at the first end of the shaft said golf putter hand grip comprising:

a first palm surface, said first palm surface being positionable substantially planar and substantially parallel to the club face and positionable on an immediate first side of the shaft;

a second palm surface, said second palm surface being opposite and parallel to said first palm surface, and separated from said first palm surface by a uniform thickness so as to be positionable on a second, opposite immediate side of the shaft;

a grip fold region operably positioned between said first and said second palm surfaces, said grip fold region being positionable substantially parallel to the base, said grip fold region having a substantially linear uniform, continuous, peripheral configuration for accommodating, through substantially linear receipt, the respective ring finger, middle finger and pinky finger of each hand of a golfer, in at least one of an interlocking and overlying finger engagement orientation.



5,795,242

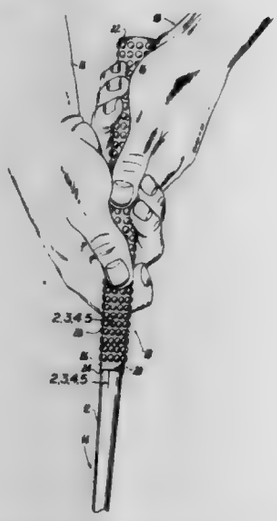
HEALTHY GOLF CLUB GRIP

Sook H. Ree, 2 Edgewood La., Roslyn, N.Y. 11576

Filed Feb. 18, 1997, Ser. No. 800,954

Int. Cl.[6] A63B *49/08*

U.S. Cl. 473—303 **3 Claims**



1. A healthy golf club grip adaptable to a shaft of a golf club, comprising:

a) an elongated, slender, and slightly downwardly tapering cylindrically-shaped core having a wide and circular-shaped

proximal end, a narrow and circular-shaped socket distal end adapted to receive the shaft of the golf club, and an outer longitudinal surface extending from said wide and circular-shaped proximal end of said elongated, slender, and slightly downwardly tapering cylindrically-shaped core to said narrow and circular-shaped socket distal end of said elongated, slender, and slightly downwardly tapering cylindrically-shaped core;

b) a cover layer of resilient material covering said outer longitudinal surface of said elongated, slender, and slightly downwardly tapering cylindrically-shaped core in its entirety; said cover layer of resilient material having a plurality of hemispherically-shaped projections extending outwardly therefrom, in close proximity to each other, and covering said cover layer of resilient material in its entirety; and

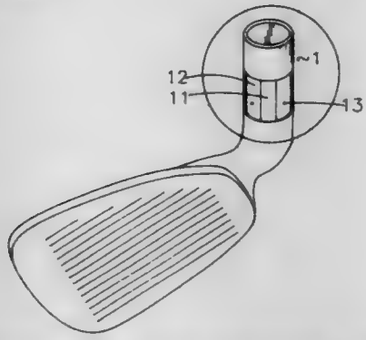
c) a plurality of square-parallelepiped-shaped permanent magnets, each of which being disposed in, and not filling, a void in each projection of said plurality of hemispherically-shaped projections on said cover layer of resilient material; each magnet of said plurality of square-parallelepiped-shaped permanent magnets contacting each projection of said plurality of hemispherically-shaped projections on said cover layer of resilient material but not contacting said outer longitudinal surface of said elongated, slender, and slightly downwardly tapering cylindrically-shaped core so as to form a space therebetween.

5,795,243

CLUB HEAD WITH A SHOCK ABSORBING HOSEL

Poh-Heng Chang, Melaka, Malaysia, and Chung-Jong Sung, Hsinying, Taiwan, assignors to Sung Ling Golf & Casting Co., Ltd., Tainan, Taiwan

Filed Mar. 10, 1997, Ser. No. 814,587
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—310 **1 Claim**



1. A club head having a tubular hosel adapted for fastening to a shaft, wherein said tubular hosel comprises an internally and externally recessed middle section formed of a plurality of thick wall portions and thin wall portions alternatively arranged together around the periphery, a plurality of through holes on said thin wall portions, and a shock absorbing rubber molded on said middle section and filled up said through holes and covered on said thick wall portions and said thin wall portions in a flush manner.

5,795,244

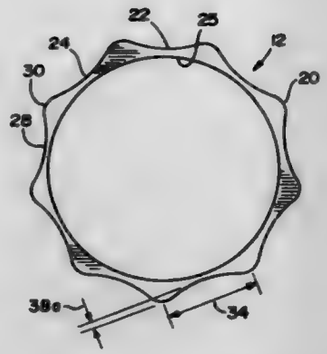
GOLF CLUB SHAFT WITH AN AIRFOIL CHANNEL

Clife S. Lu, 282 Newbridge Rd., Hicksville, N.Y. 11801

Filed Feb. 21, 1997, Ser. No. 802,984
Int. Cl.[6] A63B *53/10;53/12*
U.S. Cl. 473—317 **21 Claims**

1. A golf club shaft, comprising:

an elongated tubular member having an outer surface and a longitudinal axis, the elongated tubular member having a plurality of channels formed about the outer surface of the



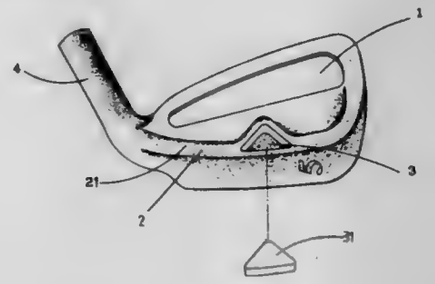
elongated tubular member, wherein each of the plurality of channels includes a plurality of dimples formed therein and the plurality of channels are shaped and dimensioned to create air flow about the elongated tubular member reducing air resistance as the golf club shaft is swung by an individual.

5,795,245

NECK WEIGHTING STRUCTURE FOR GOLF CLUBS

Poh-Heng Chang, Melaka, Malaysia, and Chung-Jong Sung, Tainan, Taiwan, assignors to Sung Ling Golf & Casting Co., Ltd., Taiwan

Filed Dec. 18, 1996, Ser. No. 768,816
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—335 **2 Claims**



1. A golf club having an improved neck weighting structure comprising a club head with a front side, a sole, a neck, a weight chamber, and a shaft mount,

said front side of said club head including a face of uniform thickness,

said shaft mount is cylindrical and adapted for receiving and positioning a shaft,

said neck of said club head extending from said shaft mount towards a lower rim of said sole of said club head and straddling said sole of said club head and adapted to lower the gravitational center of said club head,

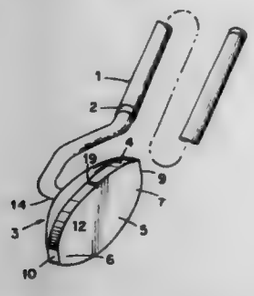
a neck weighting projecting from said neck near said shaft mount, said neck weighting for moving the gravitational center to an extended line of the golf club, and

said weight chamber is disposed at a central position of said neck for accommodating weights of different mass for correcting the gravitational center of said club head when the gravitational center deviates from a predetermined area.

5,795,246
GOLF PUTTER

Robert L. Hale, 3424 Wayne Rankin Rd., Louisville, Tenn. 37777

Filed Apr. 11, 1997, Ser. No. 840,143
Int. Cl.[6] A63B 53/04
U.S. Cl. 473—340 11 Claims

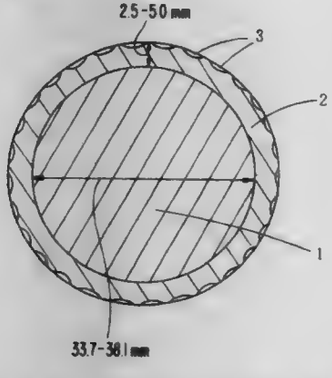


1. A golf putter comprising:
an elongated shaft having a grip end and an opposite end;
a putter head including a face portion having a flat, generally elliptical shaped front striking surface with a major axis thereof extending between a toe and heel ends of said putter head and a rearwardly extending body portion having a convex, generally ellipsoidal form to provide a concentrated center of gravity of said putter head aligned with the center of said putter head striking surface; and
a neck member having a lower arcuate portion having a linear end leg connected to said body portion of said putter head at the rearward most extension thereof in alignment with an axis passing through the center of said front striking surface and the center of gravity of said putter head and an upper portion connected to said opposite end of said shaft so that the longitudinal axis of said shaft is aligned parallel to the plane of said striking surface of said putter head and offset therefrom sufficient to form a line of sight plane along a front edge of said shaft coextensive with the plane of said striking surface of said putter head.

5,795,247
SOLID GOLF BALL

Masatoshi Yokota; Keiji Moriyama, both of Shirakawa, and Satoshi Iwami, Himeji, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Apr. 5, 1996, Ser. No. 628,341
Claims priority, application Japan, Apr. 5, 1995, 7-106910
Int. Cl.[6] A63B 37/06;37/12
U.S. Cl. 473—374 2 Claims

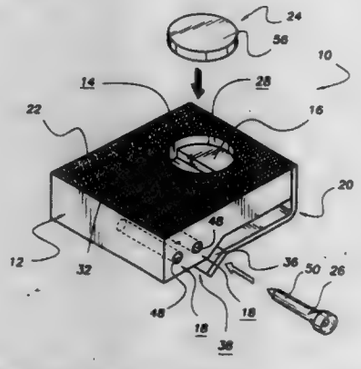


1. A solid golf ball comprising a core having a diameter of 33.7 to 38.1 mm and a cover covering said core having a thickness of 2.5 to 5.0 mm, wherein, when a compression deformation formed by applying a load of from 10 kg (initial load) to 130 kg (final load) to the core taken as the compression deformation A and a compression deformation formed by applying a load from 10 kg (initial load) to 130 Kg (final load) to the golf ball is taken as compression deformation B, the difference (A−B) between compression deformation A and compression deformation B falls within the range of 1.0 to 3.5 mm.

5,795,248
GOLF ACCESSORY CADDY

James A. Giglio, 16828 Ellis Ct., South Holland, Ill. 60473

Filed Nov. 6, 1996, Ser. No. 744,619
Int. Cl.[6] A63B 57/00
U.S. Cl. 473—406 1 Claim



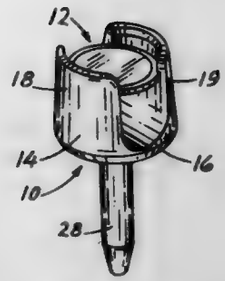
1. A golf accessory caddy comprising:
a molded plastic body member having a ball marker storage cavity formed therein having an access opening defined by a planar first surface, said ball marker storage cavity having a substantially uniform cavity cross-sectional area along a length thereof, said ball marker storage cavity being substantially cylindrical shaped, said body member further including at least one tee holding cavity formed therein having a diameter and depth sufficient to receive the tip end of a golf tee therein in frictional gripping contact;
a ball marker retaining magnet positioned within said ball marker storage cavity, said ball marker retaining magnet having a magnet cross-sectional area smaller than said cavity cross-sectional area, said ball marker retaining magnet being flat, and having a semi-circular shaped cross-section;
a ball marker that is sized to fit within said ball marker storage cavity, said ball marker including a sufficient quantity of magnetically attractable material to allow said ball marker to be held within said ball marker storage cavity by contact with said ball marker retaining magnet;
a metal clip member adhesively secured to and extending from said body member, said clip member defining an insertion slot between said clip member and said body member; and
a glove attachment surface covering at least a portion of said first surface having a plurality of securing members attachable to one of a hook and pile fastener surfaces of an existing golf glove;
said ball marker being sized such that at least a portion of said ball marker extends past said ball marker retaining magnet when said ball marker completely covers said ball marker retaining magnet, said golf marker including a surface suitable for marking with desired identifying indicia.

5,795,249
HOLDER FOR GOLF BALL MARKER

James A. Johnson, Kenosha, Wis., assignor to 4U2C, Inc., Kenosha, Wis.

Filed Apr. 23, 1997, Ser. No. 838,961
Int. Cl.[6] A63B 57/00
U.S. Cl. 473—406 8 Claims

1. A holding device for a golf ball marker having a disk portion and a spike extending outwardly from the disk portion comprising:



a body member having a base portion;

at least two oppositely positioned arm members extending outwardly from the base portion;

a ledge surface spaced inwardly from outer edges of each of the arm members, the ledge surfaces being coplanar and constructed and arranged to accommodate the disk portion of the golf marker, the ledge surfaces being spaced from the base portion to accommodate the spike portion of a golf ball marker in a manner so that the spike portion is free of contact from the body member; and

a fastening member extending from the body member opposite the arm members for engagement with a golf club.

5,795,250

TETHERED BALL PRACTICE DEVICE

Larry Duane Cripe, 14946 18th Ave. SW., Seattle, Wash. 98166

Filed Nov. 1, 1996, Ser. No. 742,380

Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—426 **16 Claims**



1. A game practice device comprising:

a backstop having vertically extending opposite margins and front and rear sides;

a ball:

a home plate which has side margins and is on the front side of said backstop; and

means for suspending said ball above said home plate in a strike zone defined by the side margins of said home plate, said ball suspending means comprising means for damping motions of the ball as said ball returns to a rest position after having been struck;

said damping means comprising a damping means assembly of vertically spaced, elastically extensible segments and a ball supporting element connected between said segments, said ball supporting element extending through said ball and having upper and lower portions;

said ball suspending means further comprising a tether means for tensioning said damping means and a cantilevered arm which has first and second ends and is fixed at said first end to said backstop;

a portion of said damping means assembly being suspended from the second end of said cantilevered arm; and

said tether means comprising two inelastic lines both connected at one end thereof to the ball supporting element lower portion below the ball, said lines extending to opposite side margins of the backstop and then to anchor means located on the rear side of said backstop and midway between the side margins of the backstop.

5,795,251

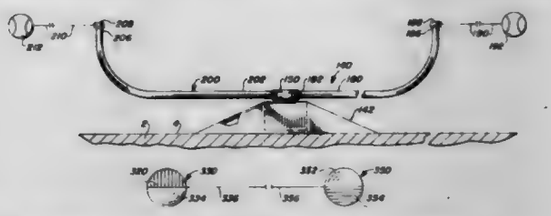
ROTARY BATTING PRACTICE APPARATUS

Gerald P. Andersen, 1318 E. Lavieve, Tempe, Ariz. 85284

Filed Feb. 3, 1997, Ser. No. 794,621

Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—427 **8 Claims**



1. Batting practice apparatus comprising in combination:

a base having a relatively low profile to be disposed on a surface;

a hub rotatably disposed on and secured to the base;

a pair of oppositely extending arms secured to the hub, and each arm extends outwardly and upwardly from the hub and terminates in an outer end;

a cord secured to each outer end;

a ball secured to each cord remote from the outer end of each arm; and

a motor for rotating the hub and the arms to rotate the balls for hitting.

5,795,252

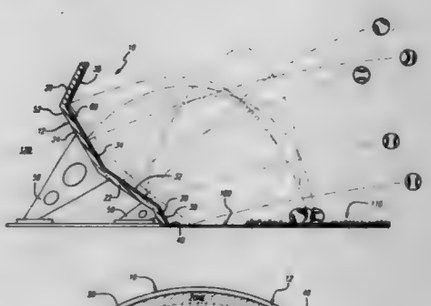
OUTFIELD WALL STRUCTURE FOR A BASEBALL PLAYING FIELD

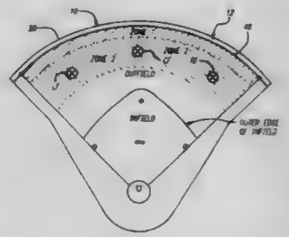
Robert A. Crucet, 2451 Brickell Ave., Apt. 7F, Miami, Fla. 33129

Filed Mar. 7, 1997, Ser. No. 812,536

Int. Cl.[6] A63B *67/04*

U.S. Cl. 473—434 **16 Claims**





1. A baseball park comprising:

a spectator seating area and a playing field on a ground surface including an outfield having an outermost perimeter and an infield adjacent the outfield and including a plurality of bases, a pitcher's mound, a home plate, and left and right field foul lines extending from home plate, at a right angle relative to one another, to said outermost perimeter of the outfield to thereby define a fair territory of the playing field between the left and right field foul lines; and

an outfield wall assembly separating said spectator seating area from said outfield and extending along at least a portion of the outermost perimeter of the outfield and including:

said wall assembly having at least two panels including a first panel having a main front face and a second panel having a main front face, said main front faces of said first and second panels being positioned and disposed in angled relation to one another so that said main front faces are not coplanar to one another; and

means for supporting said wall assembly in an upstanding position relative to the playing field so that said main front faces of said first and second panels are positioned and maintained at an upwardly and outwardly angled orientation relative to the playing field.

5,795,253

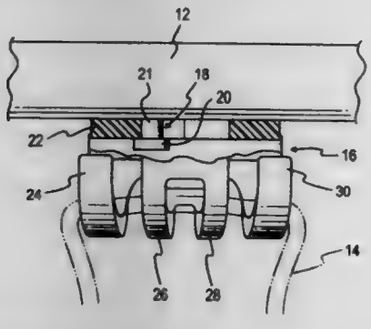
BASKETBALL GOAL RIM FOR BREAKAWAY NET ATTACHMENT SYSTEM AND METHOD OF MAKING SAME

David A. Allen, Oconomowoc, Wis., assignor to Huffy Corporation, Miamisburg, Ohio

Continuation-in-part of Ser. No. 275,954, Jul. 15, 1994, Pat. No. 5,524,883. This application Jan. 31, 1996, Ser. No. 594,519

Int. Cl.[6] A63B *63/08*

U.S. Cl. 473—489 **19 Claims**



1. A basketball goal rim comprising:

a ring-shaped hoop formed from a rod of a first material having a curved outer surface; and

a mounting projection formed from a second material, said mounting projection including a shaft portion and an enlarged head portion, said shaft portion being integrally connected to the curved outer surface of said hoop such that the enlarged head portion is confined within the profile of the hoop.

5,795,254

RACKET HANDLE

Andrew J. Brown, Cincinnati, Ohio, assignor to R. H. Associates, Ltd., Cincinnati, Ohio

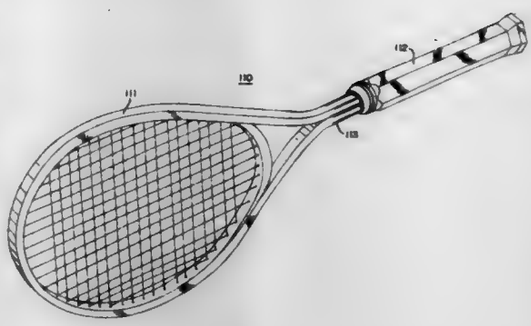
Continuation of Ser. No. 400,801, Mar. 8, 1995, abandoned, which is a continuation of Ser. No. 24,482, Mar. 1, 1993, Pat. No. 5,409,216, which is a continuation-in-part of Ser. No. 937,366, Aug. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 853,981, Mar. 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 675,406, Mar. 21, 1991, abandoned, which is a continuation-in-part of Ser. No. 562,406, Aug. 2, 1990, abandoned, which is a continuation of Ser. No. 414,596, Sep. 27, 1989, abandoned, which is a continuation of Ser. No. 148,210, Apr. 6, 1988, abandoned, which is a continuation of Ser. No. 833,633, Feb. 25, 1986, abandoned, which is a continuation of Ser. No. 601,488, Apr. 18, 1984, abandoned. This application Jun. 17, 1996, Ser. No. 664,846

Int. Cl.[6] A63B *49/08*

U.S. Cl. 473—552 **29 Claims**

1. A tennis racket, comprising:

a substantially planar striking surface comprising a plurality of strings;



a neck having one end connected to said substantially planar striking surface; and

a handle connected to another end of said neck, wherein said handle comprises an outer sheath and an inner core inserted into said outer sheath so that said outer sheath is freely rotatable about said inner core when said inner core is inserted into said outer sheath and wherein said handle has a shape such that when two parallel planes, which are perpendicular to the planar striking surface, intersect the handle, the two parallel planes and the handle define a prism which comprises a polygonal base and a plurality of surfaces, wherein said polygonal base comprises two parallel sides which intersect and are perpendicular to a first plane; and

said handle is rotatable relative to said planar striking surface about an axis to a plurality of predetermined positions where said first plane and said planar striking surface intersect each other at an acute angle ranging from greater than 0° to approximately 40°, wherein said plurality of predetermined positions define acute angles ranging from greater than 0° to approximately 40° to provide proper alignment for approximately 100% of the general population.

5,795,255

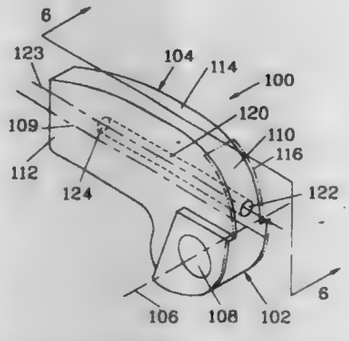
EXTERNALLY ADJUSTABLE CAM ARM

John P. Hooper, 402 Washington Rd., Goshen, N.H. 03752

Filed Nov. 14, 1996, Ser. No. 749,320

Int. Cl.[6] F16H *59/36*

U.S. Cl. 474—14 **19 Claims**



1. An improved cam arm for use in a rotational speed regulation device, the cam arm having,

a base region having a pivot axis through which a pivot pin passes to allow for pivotable mounting of the cam arm to the rotational speed regulation device,

an elongated centrifugal mass region terminating in a proximal end which is attached to the base region of the cam arm, and a distal end which forms a free end of the elongated centrifugal mass region, the elongated centrifugal mass region also having a longitudinal axis which is offset with respect to the pivot axis of the cam arm and extending normal thereto,

the improvement comprising:

an internal cavity located in the centrifugal mass region of the cam arm and having a cavity opening located in the proximal end of the centrifugal mass region: and

means for adding mass to said internal cavity.

5,795,256

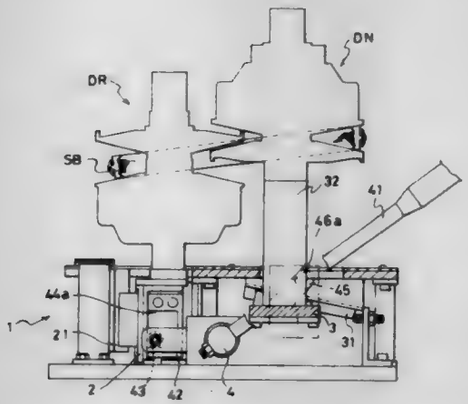
JIG APPARATUS FOR ASSEMBLING BELT ONTO VARIATOR

Kazutoshi Takada, Saitama-ken, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1996, Ser. No. 589,690

Int. Cl.[6] F16H *7/24*

U.S. Cl. 474—37 **3 Claims**



1. A jig apparatus for use in extending a belt across a pair of pulleys of a variator, said jig apparatus comprising:

a pair of holding members for holding the pulleys such that an axial line of rotation of each of the pulleys becomes parallel to each other;

widening means for widening a groove width of at least one of the pulleys; and

moving means for relatively moving said both holding members such that a sheave half of each of the pulleys gets into a pulley groove of the other of the pulleys.

5,795,257

TENSIONING DEVICE FOR TRACTION MEANS WITH CONE-TYPE SLIDING BEARING

Peter Giese, Herzogenaurach; Werner Petri, Erlangen, and Mattis Räcke, Karlsruhe, all of Germany, assignors to Ina Wälzlager Schaeffler KG, Herzogenaurach, Germany

Filed Oct. 29, 1996, Ser. No. 741,213

Claims priority, application Germany, Nov. 2, 1995, 195 40 706.7

Int. Cl.[6] F16H *7/08;7/22;7/12*

U.S. Cl. 474—109 **14 Claims**

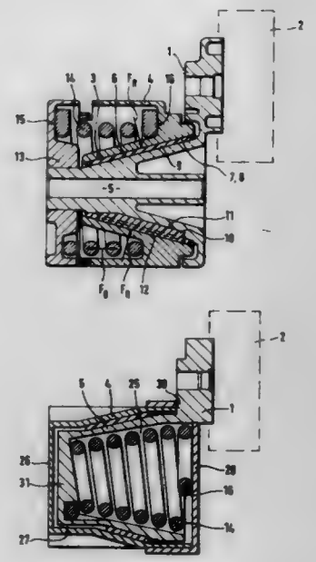
1. A tensioning device for a traction element such as a belt or a chain, comprising:

a fixed structure;

a tensioner arm carrying a tensioning member and being spring-loaded against the traction element, said tensioner arm including a tensioner arm shaft;

a sliding bearing rotatably supporting the tensioner arm on the fixed structure and exhibiting sliding bearing surfaces configured in the form of conical surfaces in parallel relationship to one another and positioned concentrically to the tensioner arm shaft; and

a spring wound about the tensioner arm shaft and extending between a support secured on the tensioner arm and a fixed support at exertion of an axial force which is introduced into



the sliding bearing in form of a reaction force that acts perpendicular to the sliding bearing surfaces.

5,795,258

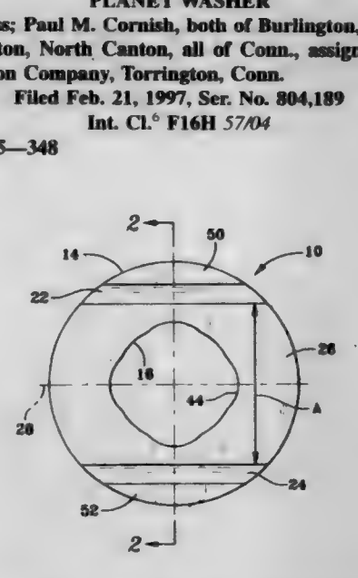
PLANET WASHER

Jan J. Faass; Paul M. Cornish, both of Burlington, and David R. Moulton, North Canton, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Feb. 21, 1997, Ser. No. 804,189

Int. Cl.[6] F16H *57/04*

U.S. Cl. 475—348 **7 Claims**



1. A planet washer for use adjacent to a planet gear supported by rollers on a planet shaft, the rollers having a pitch diameter and an outer raceway, the planet washer comprising:

a substantially flat, steel ring having an axis, a round perimeter, a central aperture and two axial end faces;

at least one of the two axial end faces having two parallel chordal grooves disposed symmetrically about the central aperture, the chordal grooves being spaced apart such that a flat end surface having a width greater than the pitch diameter of the rollers and a length extending to the round perimeter of the steel ring is provided between the chordal grooves for engaging the planet gear and ends of the rollers, the chordal grooves being spaced close enough together such that a portion of the chordal grooves is radially inward of the outer raceway of the rollers, providing a lubricant path.

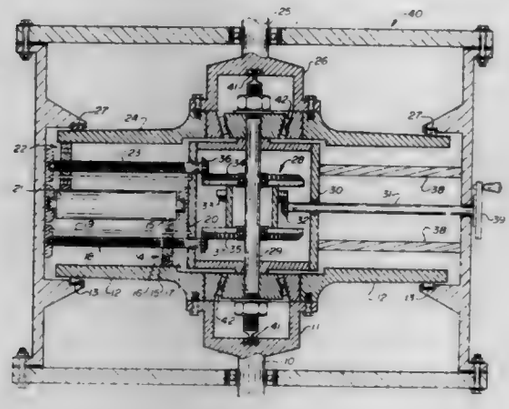
5,795,259
CONTINUOUSLY VARIABLE TRANSMISSION

David S. Stoliker, 2560 TJ Dr., Conway, Ark. 72032

Continuation-in-part of Ser. No. 711,990, Sep. 10, 1996, abandoned. This application Nov. 15, 1996, Ser. No. 746,714

Int. Cl.[6] F16H *15/12*

U.S. Cl. 476—33 11 Claims



1. A continuously variable transmission, comprising:

an input friction disc mounted to an input shaft for rotation about an axis of said input shaft and having a friction surface perpendicular to said axis of said input shaft;

a first ratio transfer bearing mounted for rotation about a first axis parallel to said friction surface of said input friction disc and frictionally engaging said friction surface and further being mounted for translational movement along said first axis;

an idler bearing mounted for rotation about a second axis parallel to said friction surface of said input friction disc and frictionally engaging said first ratio transfer bearing;

a second ratio transfer bearing mounted for rotation about a third axis parallel to said friction surface of said input friction disc and frictionally engaging said idler bearing and further being mounted for translational movement along said third axis;

an output friction disc mounted to an output shaft for rotation about an axis of said output shaft and having a friction surface perpendicular to said axis of said output shaft and further frictionally engaging said second ratio transfer bearing; and

means connected to said first ratio transfer bearing and to said second ratio transfer bearing for translational movement of said first ratio transfer bearing and said second ratio transfer bearing whereby translational movement of said first ratio transfer bearing relative to said axis of said input shaft is in inverse relationship to translational movement of said second ratio transfer bearing relative to said axis of said input shaft.

5,795,260
TRANSMISSION CONTROL SYSTEM FOR AN ELECTRIC VEHICLE

Chun-ho Kim, Kwangmyung, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea

Filed Dec. 16, 1996, Ser. No. 767,497

Claims priority, application Rep. of Korea, Sep. 17, 1996, 1996-40374

Int. Cl.[6] B60K *41/08*

U.S. Cl. 477—20 2 Claims

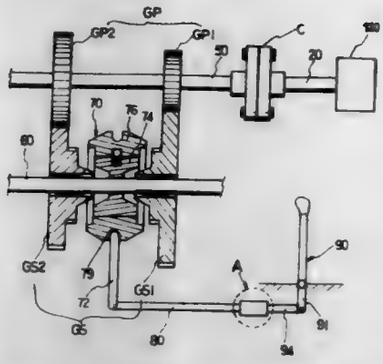
1. A transmission control system for an electric vehicle, comprising:

a motor;

a transmission, connected to said motor without clutch, having a shift fork;

a shift lever for selecting wheel speed range;

a linkage hingedly connected to said shift lever;



a shift rod connected to the shift fork of said transmission, a hydraulic pressure device for connecting the linkage and said shift rod, and for absorbing movement of said linkage and moving said shift rod in a determined time;

a shift lever sensor for detecting movement of said shift lever;

a motor speed sensor for detecting speed of said motor;

a wheel speed sensor for detecting wheel speed;

a shift fork sensor for detecting movement of the shift fork;

an inverter for controlling said motor; and

a control unit for controlling said inverter and said hydraulic pressure device in accordance with signals of said shift lever sensor, said motor speed sensor, said wheel speed sensor, and said shift fork sensor.

5,795,261
METHOD OF CONTROLLING A CONTINUOUSLY VARIABLE TRANSMISSION

Patrick Speicher, Oberteuringen, and Ralf Vorndran, Bodolz, both of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

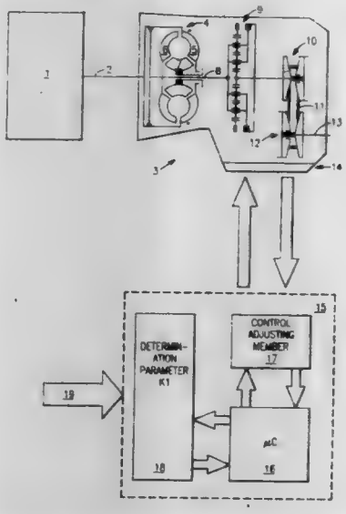
PCT No. PCT/EP95/03528, § 371 Date Mar. 12, 1997, § 102(e) Date Mar. 12, 1997, PCT Pub. No. WO96/08664, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 8, 1995, Ser. No. 793,309

Claims priority, application Germany, Sep. 14, 1994, 44 32 678.5

Int. Cl.[6] B60K *41/14*

U.S. Cl. 477—48 5 Claims



1. A method of controlling an electronically controlled, continuously variable transmission (3) having a tapered-disc pair (10, 12) on both an input shaft and on an output shaft and a belt-drive member (11) being coupled between said tapered disc pairs, an electronic control device (15) which, on a basis of input variables

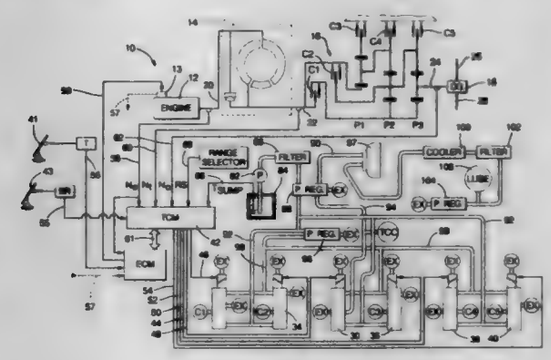
(19), establishing an operating point of said continuously variable transmission by at least one characteristic line, said method comprising the steps of establishing said operating point by a performance graph (25, 26) which represents a dependence of the speed of said first tapered-disc pair (22) on a throttle valve position (20), a vehicle speed (21) and a parameter K1 (24) with said parameter K1 (24) being capable of assuming any discrete values between zero and two, and at a value of said parameter K1 (24) of zero a optimum consumption is adjusted, at a value of one a maximum performance optimum presettable by a driver is adjusted and at a value of two, a maximum engine braking effect or maximum performance of an internal combustion engine (1) is adjusted.

5,795,262

AUTOMATIC NEUTRAL TO DRIVE SHIFT CONTROL

Timothy Alan Robinson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 15, 1996, Ser. No. 632,196
Int. Cl.[6] B60K *41/28*
U.S. Cl. 477—92 **7 Claims**



1. The method of powertrain control during an automatic neutral to drive shift in a motor vehicle having an internal combustion engine for producing output torque at an output member in accordance with an operator torque request, an automatic multi-ratio transmission having an output member and an input member coupled to the engine output member through a torque transmitting fluid coupling, the engine being limit controlled in accordance with an upper torque, an upper engine speed, and a neutral idle engine speed, the transmission including a fluid controlled torque transmitting device for establishing a forward speed ratio across the input and output members of the transmission when engaged, the method comprising the steps:

monitoring a set of predetermined powertrain operating parameters during a period of neutral idle operation wherein said torque transmitting device is disengaged and engine torque is substantially decoupled from the transmission output;

when said set of predetermined powertrain operating parameters indicates incipient neutral to drive shift, limiting the engine torque to a predetermined nominal value; and,

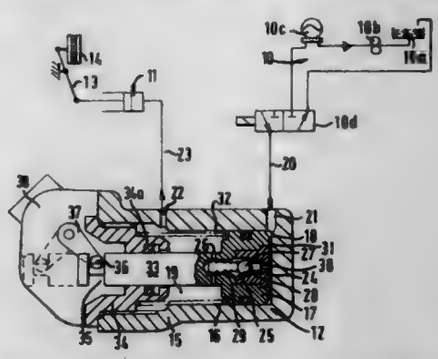
limiting the upper engine torque to said nominal value for the duration of the neutral to drive shift.

5,795,263

ACTUATION SYSTEMS AND MECHANISMS

David Anthony Harries, Welford on Avon, Great Britain, assignor to Kongsberg Techmatic UK Limited, Leamington Spa, England

Filed Nov. 22, 1995, Ser. No. 572,150
Claims priority, application United Kingdom, Mar. 29, 1994, 9406271; Jul. 12, 1994, 9414035; Oct. 18, 1994, 9420981; WIPO, Mar. 29, 1995, PCT/GB95/00709
Int. Cl.[6] F16D *25/12*
U.S. Cl. 477—113 **29 Claims**



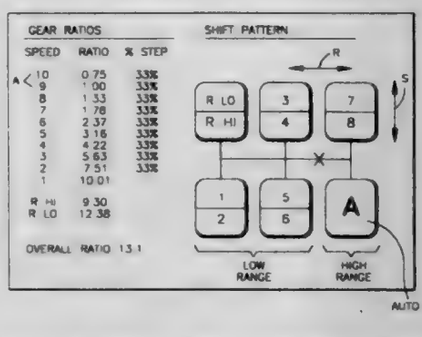
1. A displacement valve for use in an hydraulic actuation system, said displacement valve comprising a housing with a piston slideable in a bore of the housing to define two fluid tight chambers one on each side of the piston, one chamber being in fluid connection with a slave cylinder and the other chamber being connected with a source of pressurised fluid, a sensing means operatively connected with the piston, a passage interconnecting said chambers, and a valve means disposed in said passage to cut off or control the passage of fluid between said chambers and hence between said source and slave cylinder, said valve means being arranged to be open when said piston is in a retracted condition in which said other chamber is at a minimum volume and said slave cylinder is not operated and said valve means being arranged to close as said piston is displaced along said bore against a bias force in response to a rise in said pressurised fluid thus raising the pressure level in said one chamber to cause actuating movement of the slave cylinder proportional to the movement of said piston and which is measured by said sensing means.

5,795,264

SENSING MANUAL SHIFT INTO AUTOMATED UPPER RATIOS

Jon A. Steeby, Schoolcraft, and Daniel P. Janecke, Kalamazoo, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Feb. 5, 1997, Ser. No. 796,001
Int. Cl.[6] F16H *59/18*
U.S. Cl. 477—124 **14 Claims**



1. A vehicular, partially automated mechanical transmission system including a mechanical transmission having a lower group of

ratios requiring manual shifting and an upper group of automated ratios, shifting between the ratios within said automated group of ratios being automated, shifting from a ratio in said lower group of ratios to a ratio in said upper group of automated ratios requiring a manually initiated shifting operation, said system including a controller for receiving input signals, including signals indicative of one or more of engine speed, transmission input shaft speed, transmission output shaft speed and/or operator-set throttle position, and for processing same in accordance with predetermined logic rules to issue command output signals to system controllers including an engine fueling controller and a transmission shift controller, said system characterized by said logic rules including rules effective upon sensing (a) a manual shift into transmission neutral from the highest ratio in said lower group of ratios, (b) output shaft speed exceeding a first reference value, and (c) throttle position being less than a second reference value to declare an operator intent to manually engage one of the ratios in the upper group of automated ratios and to initiate automatic engine synchronizing for engagement of said one of the ratios in said upper group of ratios.

5,795,265
PROCESS FOR CONTROLLING AN AUTOMATIC TRANSMISSION

Hans-Jörg Domian, Immenstaad; Ralf Dreibholz, Meckenbeuren; Gerd Frotscher, and Thomas Schober, both of Friedrichshafen, all of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

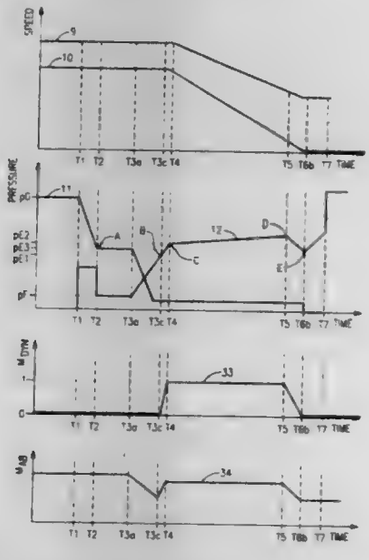
PCT No. PCT/EP95/02658, § 371 Date Jan. 10, 1997, § 102(e) Date Jan. 10, 1997, PCT Pub. No. WO96/01961, PCT Pub. Date Jan. 25, 1996

PCT Filed Jul. 8, 1995, Ser. No. 776,001

Claims priority, application Germany, Apr. 12, 1994, 44 24 456.8

Int. Cl.[6] F16H *61/06*

U.S. Cl. 477—143 **15 Claims**



1. A process for controlling an automatic transmission driven by an internal combustion engine wherein a change from a first to a second gear speed is brought about as result of a first clutch (**11**) disengaging and a second clutch (**12**) engaging, an electronic control device controls, via more than one electromagnetic valve, a pressure curve of said first (**11**) and second (**12**) clutches during a gearshifting operation, the electronic control device selects, on the basis of input variables, one of a first or a second gearshifting method, the first gearshifting method being one of an upshift for pulling load or a downshift for pushing load and the second gearshifting method being one of a downshift for pulling load or an upshift for pushing load, the gearshifting operations comprising the steps of:

providing a rapid filling phase;

following the rapid filling phase by a filling equalizing phase;

following the filling equalizing phase by a load take-over phase;

following the load take-over phase by a gradient setting phase;

following the gradient setting phase by a sliding phase;

following the sliding phase by a gradient breakdown phase; and

following the gradient breakdown phase by a closure phase;

wherein during the first gearshifting method the load take-over phase (**3**) is followed by the gradient setting phase (**4**) with the sliding phase (**5**), and the gradient breakdown phase (**6**) precedes the closure phase (**8**); and during the second gearshifting method the filling equalizing phase (**2**) is followed by the gradient setting phase (**4**) with the sliding phase (**5**) and the gradient breakdown phase (**6**) proceeds the load take-over phase (**7**).

5,795,266
CONTROL DEVICE FOR LOCKUP CLUTCH

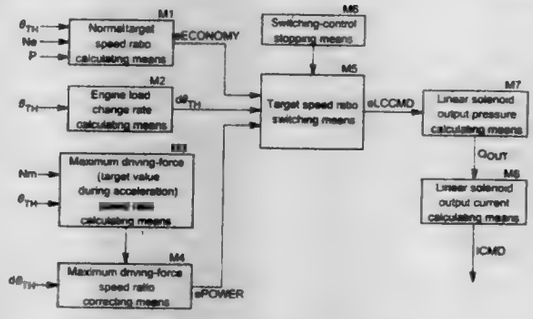
Koichi Hasegawa; Yoshinori Yamamoto, and Toru Iwahashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1996, Ser. No. 683,375

Claims priority, application Japan, Jul. 20, 1995, 7-184250

Int. Cl.[6] F16H *6/14*

U.S. Cl. 477—169 **8 Claims**



1. A control device for a lockup clutch comprising:

control means for controlling an engage force of a lock-up clutch such that the actual speed ratio of a torque converter of an automatic transmission becomes equal to a predetermined target speed ratio corresponding to an operational state of a vehicle:

an engine load change rate detecting means for detecting a change rate of an engine load;

a maximum driving-force speed ratio calculating means for calculating a maximum driving-force speed ratio of the torque converter which provides a maximum driving force corresponding to the operational state of the vehicle; and

a target speed ratio switching means for switching said predetermined target speed ratio to said maximum driving-force speed ratio when the change rate of the engine load becomes equal to or larger than a predetermined value.

5,795,267
PRE-TENSIONED FLOOR SYSTEM

Darrell A. Weaver, Sedalia, Mo., assignor to PlaySmart, Inc., Sedalia, Mo.

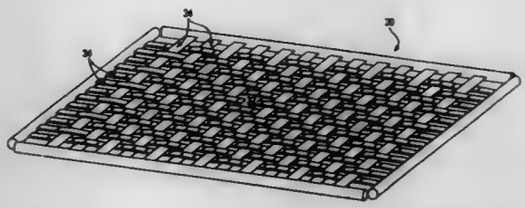
Filed Jul. 21, 1995, Ser. No. 505,011

Int. Cl.[6] A63B *9/00*

U.S. Cl. 482—35 **16 Claims**

1. A play system floor which comprises:

a rigid frame defining the periphery of an area to be floored, the area to be floored having dimensions;



a webbed flooring comprising a webbing material having a predetermined stretch coefficient, the webbing material having ends along an outer periphery of the webbed flooring, the webbed flooring sized using the stretch coefficient; and

at least one rigid rod secured in fixed relation to the ends of the webbing material and secured to the frame also in fixed relation thereto;

whereby the dimensions of the webbed flooring when stretched substantially correspond to the dimensions of the area to be floored, the webbed flooring being stretched to the dimensions of the area to be floored.

5,795,268

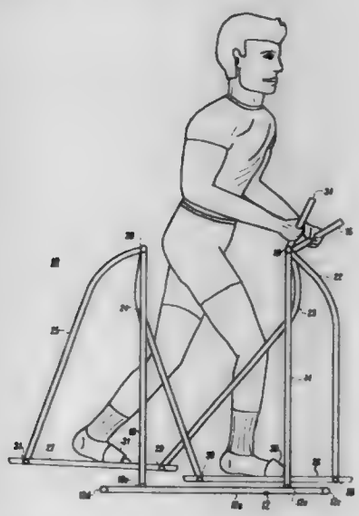
LOW IMPACT SIMULATED STRIDING DEVICE

Royce H. Husted, R.R. 4, Box 550, Forest, Va. 24551

Continuation-in-part of Ser. No. 572,638, Dec. 14, 1995, abandoned. This application Dec. 6, 1996, Ser. No. 760,941

Int. Cl.[6] A63B *22/00;23/04*

U.S. Cl. 482—51 **3 Claims**



1. An exercise device comprising:

a base;

means for establishing spaced apart front and rear supports on said base at a height that approximates the swing radius of a person's leg, said front support including bearing means and a pair of front support hinge tubes rotatably coupled on said bearing means;

front and rear linkage means for suspending a pair of independently swingable side-by-side foot platforms from said spaced apart front and rear supports, respectively, said foot platforms enabling a person standing thereon and between said supports to perform low impact striding motions;

said front linkage means comprising rigid front suspension members secured to said front support hinge tubes;

said rear linkage means suspending the rear of said foot platforms at a slightly higher elevation than the front of said foot platforms are suspended;

said rear linkage means comprising flexible suspension members;

pivot means near the ends of each of said foot platforms coupled to respective ones of said linkage means;

the distance between said pivot means being greater than the distance between said spaced apart front and rear supports; and

outwardly extending handles connected to said front support hinge tubes, said handles being spaced farther apart than the distance between said side-by-side foot platforms.

5,795,269

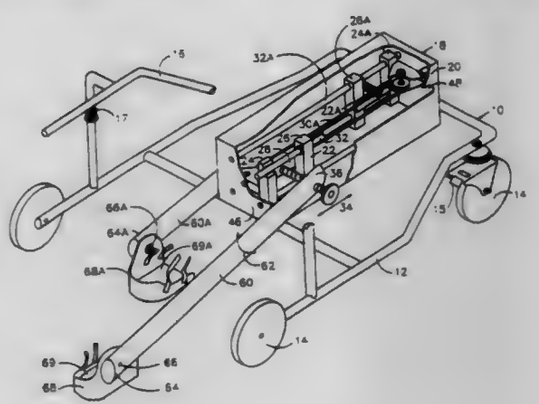
GAIT THERAPY AID

Bruce Allan Bawtree; Kevin James Trawin, both of Victoria, and Jason Edward Pope, Mission, all of Canada, assignors to Innovative Therapy Aids Inc., Victoria, Canada

Filed May 25, 1996, Ser. No. 654,101

Int. Cl.[6] A63B *22/00*

U.S. Cl. 482—66 **20 Claims**

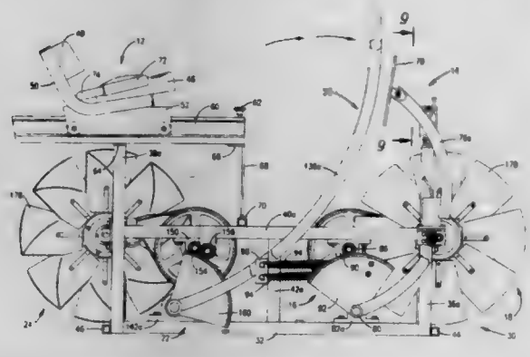


1. A gait trainer comprising a pair of foot pieces, each adapted to be connected with a foot of a user for movement by movement of the foot of a user, said foot pieces are configured to be free to move into contact with a supporting surface along which said trainer is moved by walking movements of a user, a frame, means for allowing movement of said frame by a user, a pair of mounting blocks operatively connected to said frame, means for guiding said mounting blocks for reciprocal movement along selected substantially parallel paths in one or an opposite direction, a motion control means mounted on said frame, a first arm means connecting one of said pair of foot pieces to said one of said blocks and a second arm means connecting another of said pair of foot pieces to said other of said blocks, each of said arm means interconnecting its said block with its said foot piece to limit movement of its said foot piece to be substantially in said one or said opposite directions, said motion control means interconnecting said pair of mounting blocks for reciprocal movements in a pair of substantially parallel paths and ensuring that movement of one of said pair of mounting blocks relative to said frame in said one direction results in equal movement of the other of said pair of mounting blocks relative to said frame but in said opposite direction and movement of said frame relative to the supporting surface by distance equal to one half a distance of movement of said one block in said one direction when said other of said pair of blocks is prevented from movement relative to the supporting surface when said foot piece to which it is interconnected is pressed against the supporting surface during walking of said user.

5,795,270
SEMI-RECUMBENT ARM AND LEG PRESS EXERCISING APPARATUS

Jim Woods, Paola, and Dan Todd, Olathe, both of Kans., assignors to Jim Woods, Paola, Kans.

Filed Mar. 21, 1996, Ser. No. 620,037
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—72 **22 Claims**



1. An exercise apparatus which may be operated by a user for muscle development and/or cardiovascular development, said apparatus comprising: / a longitudinal frame having a forward end and a rear end for supporting the apparatus on the floor;

a seat assembly mounted toward the rear end of said frame for supporting a user in a semi-recumbent position;

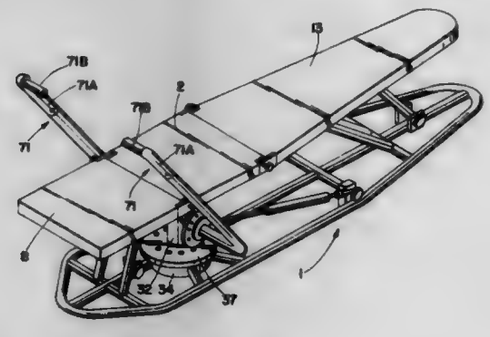
a leg press assembly comprising a pair of leg press beams interconnected for concurrent movement, said leg press assembly being pivotally mounted toward the forward end of said frame to enable the user to perform a leg press exercise;

an arm pull/arm press assembly comprising a pair of arm levers interconnected for concurrent movement said arm press assembly being pivotally mounted to the frame intermediate the seat assembly and the leg press assembly to enable the user to perform an arm pull/arm press exercise, wherein said arm pull/arm press and leg press assemblies each operate independently of one another.

5,795,271
EXERCISE MACHINE

Bob Larry Pearson, 4868 Cottonwood Rd., Memphis, Tenn. 38118

Filed Jul. 11, 1996, Ser. No. 678,227
Int. Cl.[6] A63B *69/06;21/008;21/00*
U.S. Cl. 482—72 **17 Claims**



1. An exercise machine comprising:

(a) a frame;

(b) a vertical shaft rotatably connected to said frame for rotational movement about a vertical axis; and,

c) a means for resisting movement of said vertical shaft about said vertical axis: and,

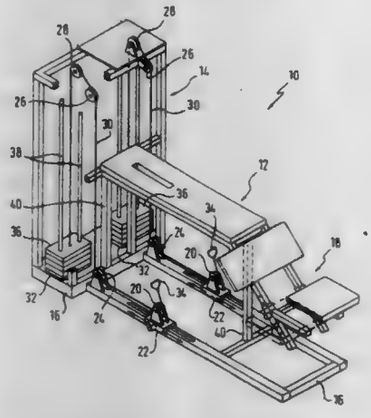
(d) a pair of lever arms each rotatably connected to said vertical shaft on opposite sides thereof for pivotal movement about a common horizontal axis extending through said vertical axis in perpendicular relation thereto such that a user supported by said frame may rotate said lever arms about said horizontal axis or exert the force on said lever arms to urge said vertical shaft in rotational movement about said vertical axis, and

(e) rotation means connected to said vertical shaft and engaging said lever arms to selectively facilitate concurrent or independent pivotal movement of said lever arms about said horizontal axis.

5,795,272
TRAINING APPARATUS

Horst Brenke, Kreischa, Germany, assignor to Rudolf Presl, Kreischa, Germany

PCT No. PCT/EP94/03549, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO95/12435, PCT Pub. Date May 11, 1995
PCT Filed Oct. 28, 1994, Ser. No. 632,431
Claims priority, application Germany, Nov. 4, 1993, 93 16 910 U
Int. Cl.[6] A63B *21/06*
U.S. Cl. 482—103 **4 Claims**



1. A training device for use by a trainee, comprising:

a) a berth (**12**), having three segments essentially forming a step, namely, a first one to hold the upper body, at a head end of the berth, a second one to hold the upper legs of a foot end of the berth, and a third one to hold the lower legs,

b) a weight-guiding pulling device (**14**) having a first and a second tension cable (**30**),

c) the berth (**12**) and the pulling device (**14**) being combined in a common support frame (**16**) to form a unified device,

d) the distance between the first and the third segments of the step being adapted for adjustment to the particular size of a trainee's body,

e) two first diverting rollers (**20**), to guide the first and the second tension cables (**30**), respectively, the first diverting rollers being arranged horizontally adjustably underneath the berth (**12**) on the support frame (**16**) so that a trainee lying with his stomach on the berth (**12**) with his knees bent and his arms hanging down can grasp a free end of a tension cable in each hand and perform various pulling exercise alternatives according to the horizontal position of the first diverting rollers (**20**), and

f) two second diverting rollers (**24**), to guide the first and second tension cables (**30**), respectively, the second diverting rollers being arranged at the head end of the berth approximately level with the first diverting rollers to guide the cable to the first diverting rollers, the cable being removable from the first diverting rollers whereby the cable may be alternatively pulled from the second diverting rollers.

5,795,273

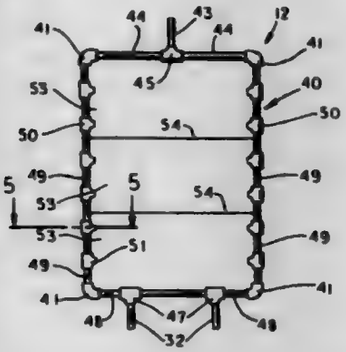
ADJUSTABLE RESISTANCE AQUATIC EXERCISE DEVICE

Kenneth Lochbaum, 3002 E. 38th St., Erie, Pa. 16510

Division of Ser. No. 451,674, May 26, 1995, Pat. No. 5,611,763, which is a continuation-in-part of Ser. No. 365,498, Dec. 28, 1994, Pat. No. 5,533,950. This application Dec. 23, 1996, Ser. No. 772,419

Int. Cl.[6] A63B *21/008*

U.S. Cl. 482—111 **12 Claims**



1. An aquatic exercise device comprising a frame in the form of a window sash having an opening;

said frame having a top, a bottom and sides;

a slot in said sides

said top having hand engaging means;

whereby said frame can be swung relative to said water; and,

relatively flat window pane having an edge received in said slot whereby said window pane can be slid from an open to a closed position to change the size of said opening and thereby change the force of water on said device during exercise;

said frame comprises a hinge means for supporting said frame on one end thereof whereby said frame can be swung relative to water in which it is immersed.

5,795,274

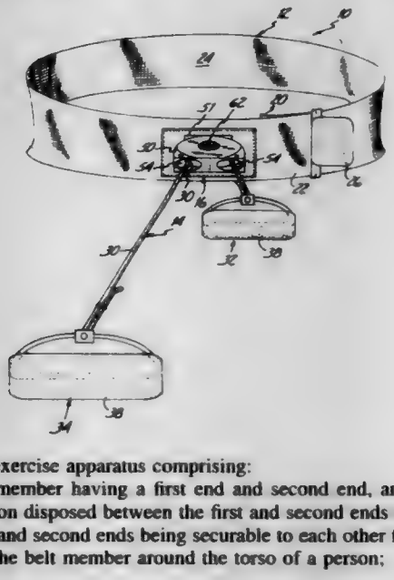
PORTABLE EXERCISE PULLEY BELT APPARATUS

Michael J. Kasbohm, Minnetonka, Minn., assignor to Lawrence C. Chasin, Morris Plains, N.J.

Filed May 9, 1996, Ser. No. 647,034

Int. Cl.[6] A63B *21/02;21/015*

U.S. Cl. 482—115 **10 Claims**



1. An exercise apparatus comprising:

a belt member having a first end and second end, and a body section disposed between the first and second ends being, the first and second ends being securable to each other for fastening the belt member around the torso of a person;

a pulley housing mounted to the body section of the belt so that when the belt member is positioned on the person's torso the pulley housing is centered on the person's torso between the person's arms;

a center pulley wheel rotatably mounted within the pulley housing;

a pivot hinge attached to the body section of the belt and the pulley housing for pivotally mounting the pulley housing to the belt member such that the pulley housing pivots with respect to the belt member as the first and second handles are alternatively moved away from the center pulley wheel;

an adjustable tension mechanism attached to the pulley housing and the center pulley wheel for selectively adjusting an amount of force needed to rotate the center pulley wheel within the pulley housing; and

a pulley cable having a first handle attached to a first end thereof and a second handle attached to a second end thereof, the pulley cable being wound around the center pulley wheel such that movement of the first handle in a direction away from the center pulley wheel and away from the person's torso moves the second handle toward the center pulley wheel, and such that movement of the second handle in a direction away from the center pulley wheel and away from the person's torso moves the first handle toward the center pulley wheel.

5,795,275

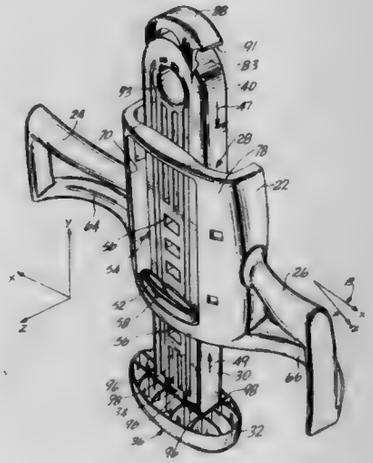
EXERCISE APPARATUS

Martin A. Van Der Hoeven, 3636 Carlsbad Blvd., Carlsbad, Calif. 92008; Jaeson Cayne, 2917 Managua Pl., Carlsbad, Calif. 92056, and Thomas J. Ryan, 13605 Pine Needles Dr., Del Mar, Calif. 92014

Filed Oct. 10, 1996, Ser. No. 729,078

Int. Cl.[6] A63B *21/02*

U.S. Cl. 482—122 **16 Claims**



1. An exercise apparatus comprising:

a body having a channel extending therethrough;

a slide member positioned in the channel and being slidable therein in a reciprocating manner and having a user engagement and extending from the channel having means for engaging a targeted muscle area of a user;

a resilient member engaging the body and the slide to bias the slide in one direction; and

first and second handles attached to the body at opposing locations and extending away from the body at first and second acute angles each extending in a different direction perpendicular to a longitudinal axis of the body respectively, wherein the first angle is about 25 degrees.

5,795,276

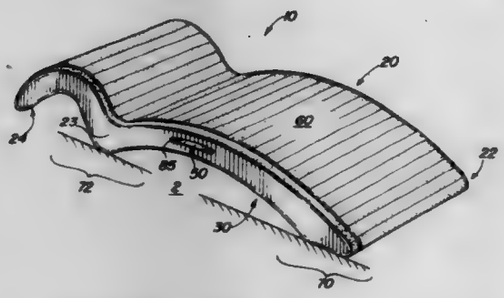
STRETCHING AND EXERCISE DEVICE

T. Michael Almeda, 14 Aster Ter., Key West, Fla. 33040

Continuation-in-part of Ser. No. 334,954, Nov. 7, 1994, Pat. No. 5,584,786, which is a continuation-in-part of Ser. No. 10,503, Jul. 7, 1993, Pat. No. Des. 353,173. This application Aug. 12, 1996, Ser. No. 695,783

Int. Cl.[6] A63B *26/00*

U.S. Cl. 482—142 **15 Claims**



1. An exercise device comprising:

a) a platform formed of a rigid material, said platform structured and disposed for supporting an exerciser's body weight thereon; said platform including a top region, a bottom region, a first end zone and a second end zone,

b) said top region of said platform defining an upper support surface for contacting and supporting the exerciser thereon; said upper support surface having a generally sinusoidal configuration between said first and second end zones, said upper support surface further including:

i) a convex support portion for supporting a substantial portion of the exerciser's back, said convex support portion causing the exerciser's back to at least partially arch when the exerciser reclines against said convex support portion;

ii) a concave cradle portion for supporting and cradling the exerciser's buttocks during the performance of exercises on said device;

c) said bottom region defining a bottom surface having a generally sinusoidal configuration between said first and second end zones corresponding said generally sinusoidal configuration of said upper support surface; and

d) said bottom region of said platform structured and disposed to contact and support said device on a common planar surface when said device is in an operative position.

5,795,277

TILT WALKER SPORT BOARD SPORT TILT WALKER BOARD

Joseph A. Bruntmyer, Rte. 11, Box 1486, Hickory, N.C. 28601, assignor to Joseph A. Bruntmyer, Hickory, N.C.

Continuation-in-part of Ser. No. 85,977, Jun. 30, 1993, abandoned. This application Jun. 19, 1995, Ser. No. 492,220

Int. Cl.[6] A63B *22/14*

U.S. Cl. 482—146 **6 Claims**

1. A recreational device comprising:

an elongated generally flat base having an upper and lower surface, a right end, a left end, a width and a center;

said elongated base being provided with a pair of apertures spaced from the ends and spaced apart;

a pair of downwardly projecting members, mounted under said apertures on said lower surface of said elongated base;

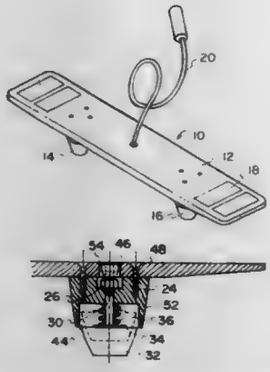
each of said downwardly projecting members housing a vertical axle and axle retainer;

said axle configured with a head member;

a foot rotatably fixed to said axle;

a spring engaged about said axle in contact with said foot and said upper portion of said downwardly projecting member;

the elongated base being pivotal about either foot; and



said pair of downwardly projecting members further having means for accommodating said feet therein and that upon compression of said spring, said foot moves upward into said downwardly projecting member thereby moving said head member of said axle into said apertures so that it is flush with said upper surface of said elongated base.

5,795,278

NUMERICAL CONTROL EQUIPMENT FOR A PLURALITY OF SYSTEMS

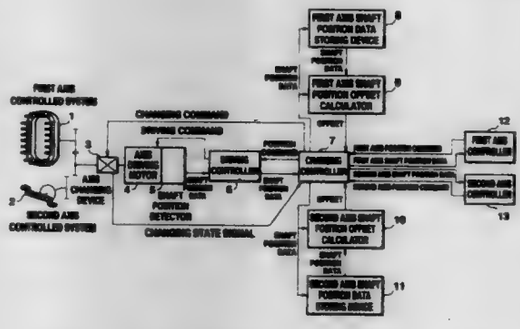
Koji Saruwatari, and Koji Shiraishi, both of Niwa-gun, Japan, assignors to Okuma Corporation, Nagoya, Japan

Filed May 19, 1997, Ser. No. 858,451

Claims priority, application Japan, May 24, 1996, 8-129493

Int. Cl.[6] B23Q *3/157;* **G05B** *19/00*

U.S. Cl. 483—4 **6 Claims**



1. Numerical control equipment for controlling a plurality of controlled systems, comprising:

an axis driving motor for driving a plurality of controlled systems

a shaft position detector for detecting an angular position of a shaft of the axis driving motor;

a driving controller for controlling the drive of the axis driving motor;

an axis changing device for selectively connecting the axis driving motor to the respective controlled systems;

a changing controller for selectively connecting the driving controller to the respective axis controllers;

a shaft position data storing device for storing the shaft position at the time when one controlled system was separated from the axis driving motor; and

a shaft position offset calculator for calculating a shaft position offset on the basis of a present shaft position detected by the shaft position detector when the connection of the controlled systems is changed by the axis changing device and the shaft position stored in the shaft position data storing device at the time when the controlled system to be connected next was separated from the axis driving motor;

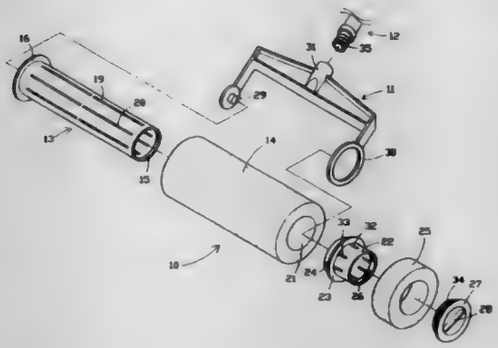
wherein the driving controller controls the drive of the axis driving motor on the basis of the shaft position corrected by the offset calculated by the shaft position offset calculator.

5,795,279

PAINT ROLLER

Jin-Fu Shieh, No. 9, Lane 95, Chung-Shin Rd., Sec. 1, Wu Ku Hsiang, Taipei Hsien, Taiwan

Filed Mar. 19, 1996, Ser. No. 618,141
Int. Cl.[6] B65C *17/02*
U.S. Cl. 492—13 **4 Claims**



1. A paint roller comprising a roller, a handle, and a bridge and socket assembly connected to said handle to hold said roller, wherein said roller comprises:

a paint storage barrel for storing paint, said paint storage barrel having a fixed end cap at one end, an opening at an opposite end, and a plurality of longitudinal slots equally spaced around the periphery;

a first cylindrical sponge fixedly mounted around said paint storage barrel to absorb paint from said paint storage barrel through the longitudinal slots of said paint storage barrel;

a hollow cylindrical connector connected to the opening of said paint storage barrel, having a coupling portion at one end fastened to said paint storage barrel, an inner thread at an opposite end, and a plurality of longitudinal slots equally spaced around the periphery;

a second cylindrical sponge fixedly mounted around said connector; and

a detachable end cap having an outer thread at an inner side threaded into the inner thread of said connector and a handle at an outer side for turning by hand.

5,795,280

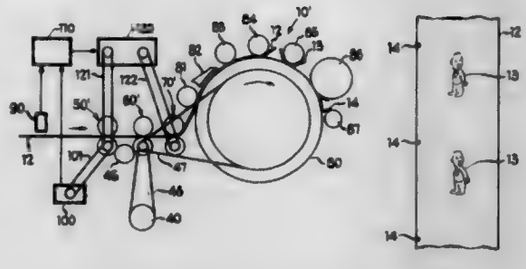
APPARATUS FOR THE REGISTRATION OF PRINTED MATTER DURING THE MANUFACTURE OF BAGS

Maxie Joe Fowler, and William Belmont Osteen, both of Hodge, La., assignors to Stone Container Corporation, Chicago, Ill.

Filed Mar. 20, 1996, Ser. No. 618,927
Int. Cl.[6] B65H *43/00*; **B31B** *1/02*
U.S. Cl. 493—22 **10 Claims**

1. An apparatus for facilitating the registration of printed matter during the manufacture of bags on fixed-size bag formation equipment, said bags being formed from a substantially non-stretchable material, said apparatus comprising:

a supply of a continuous web of said substantially non-stretchable material, said continuous web having a leading edge, a top surface, a bottom surface, and a plurality of periodically spaced printed matter disposed upon at least one of said top and bottom surfaces of said continuous web, said periodically spaced printed matter including associated reference markers,



first web propelling means for substantially, continuously propelling said continuous web in a direction of flow emanating from said supply and at a substantially constant, uninterrupted speed, said first web propelling means being operably positioned proximate a first position downstream from said supply;

second web propelling means for propelling said continuous web at a variable speed relative to said substantially constant speed of said web at said first position, said second web propelling means being operably positioned proximate a second position between said supply and said first position, upstream of said first web propelling means;

first web severing means for partially severing a substantially fixed length of web material from said leading edge of said web at a substantially fixed position relative to an associated reference marker, said web severing means being operably positioned downstream from said second position;

bag forming means for initiating the formation of said bag from said continuous web, said bag forming means being operably positioned downstream from said second web propelling means;

bag completion means for completing the formation of said bag from said severed length of web material, said bag formation means being operably positioned downstream from said first web severing means, said bag completion means including second web severing means for completing said partial severing of said substantially fixed length of web material from said leading edge of said web at said substantially fixed position relative to said associated reference marker;

first sensing means for sensing the passage of each of said reference markers past a third position operably positioned downstream from said supply, said first sensing means outputting a first signal indicative of said passage of each of said reference markers;

second sensing means for sensing the rotational positions of said first and second web severing means, said second sensing means outputting a second signal indicative of said rotational positions of said first and second web severing means;

said position of said first sensing means and said rotational positions of said first and second web severing means being operably correlated so that, upon passage of at least one of said reference markers past said first sensing means during a predetermined interval of time, said first and second severing means sever said web at desired predetermined positions relative to said periodically spaced printed matter;

web speed altering means, operably associated with the second sensing means and the second web propelling means, for selectively increasing or decreasing the speed of the second web propelling means to, in turn, increase or decrease the speed of a localized portion of the web upstream of the first severing means, relative to other portions of the web; and

web control means, operably associated with the first sensing means for receiving said first signal therefrom, and said second sensing means for receiving said second signal therefrom, for determining from the first and second signals whether a localized portion of the web, located between the first sensing means and a selected fixed location downstream thereof, is moving at a speed varying from a preselected speed;

the web control means further being operably associated with said speed altering means, for increasing said speed of said

second web propelling means relative to said first web propelling means when said localized portion of said web is moving below a preselected speed and for decreasing said speed of said second web propelling means relative to said first web propelling means when said localized portion of said web is moving above a preselected speed, to, in turn, vary the speed of said localized portion of said web, to vary the position along the continuous web where said first and second web severing means sever said continuous web in relation to said associated reference marker;

first information transmitting means for communicating said first signal from said first sensing means to said web control means;

second information transmitting means for communicating said second signal from said second sensing means to said web control means; and

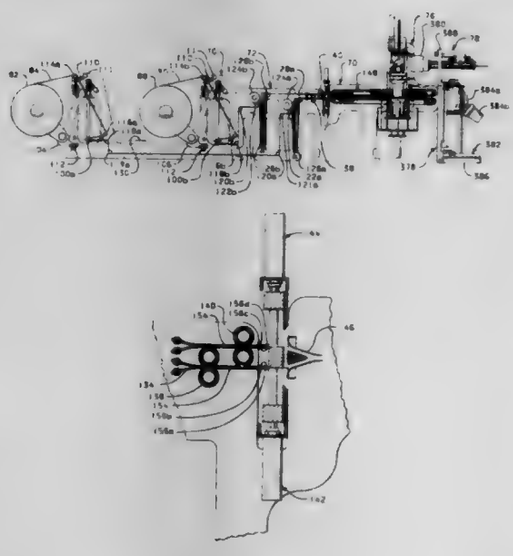
means for communicating control signals between said web control means and said web speed altering means.

5,795,281

APPARATUS AND METHOD FOR AUTOMATICALLY FORMING AN ARTICLE

Donald E. Weder; Joseph G. Straeter, both of Highland; William F. Straeter, Breese, all of Ill.; Frank Craig, Valley Park, Mo.; Michael J. King, Staunton, Ill., and William C. Funk, San Francisco, Calif., assignors to Southpac Trust International, Inc.

Filed Jul. 17, 1996, Ser. No. 680,348
Int. Cl.[6] B31B *1/44*
U.S. Cl. 493—154 **26 Claims**



14. A method for forming an article, the method comprising the steps of:

(a) providing a first web of sheet material and a second web of sheet material;

(b) passing the first web of sheet material a predetermined distance beyond a first cutting assembly;

(c) passing the second web of sheet material a predetermined distance beyond a second cutting assembly;

(d) cutting the first web of sheet material with the first cutting assembly to provide a first sheet of material having a predetermined length;

(e) cutting the second web of sheet material with the second cutting assembly to provide a second sheet of material having a predetermined length;

(f) positioning the first sheet of material on the second sheet of material;

(g) passing the first sheet of material and the second sheet of material between a female die and a male die, the female die having an upper end, a lower end and an opening intersecting the upper end and extending a distance toward the lower end forming an inner peripheral female die surface, the male die having an upper end, a lower end, and an outer peripheral male die surface extending a distance generally between the lower end and the upper end of the male die, the male die shaped such that at least a portion of the male die is receivable in the opening of the female die; and

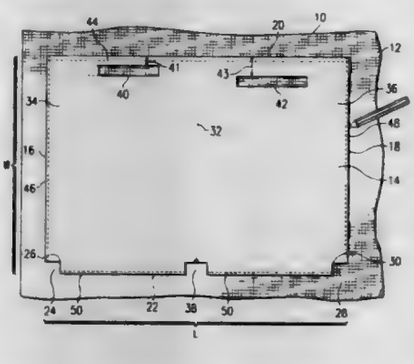
(h) positioning the male die and the female die between a forming position wherein at least a portion of the male die is inserted into the opening of the female die so as to form the article from the first and second sheets of material and an article discharge position wherein the male die is removed from the opening of the female die.

5,795,282

CLOTH BOX SLEEVE AND ITS METHOD OF CONSTRUCTION

Mary deMunnik, 1610 Wagon Wheel, Pantego, Tex. 76013

Continuation-in-part of Ser. No. 525,957, Sep. 8, 1995, abandoned. This application Jul. 30, 1996, Ser. No. 692,809
Int. Cl.[6] B31B *1/90*
U.S. Cl. 493—210 **12 Claims**



1. A method for constructing a cloth box sleeve comprising:

patterning a single piece of fabric to have a top edge, two side edges and a bottom edge;

forming a fold line in the center of the fabric piece to form first and second halves where the first half includes the top edge and the second half includes the bottom edge;

removing a portion of the fabric along both side edges adjacent the fold line;

folding the fabric along the fold line;

fastening the first and second halves together at the side edges;

providing a closure for closing the cloth box sleeve;

attaching the closure to the fabric; and

forming the fabric into a cloth box sleeve.

5,795,283

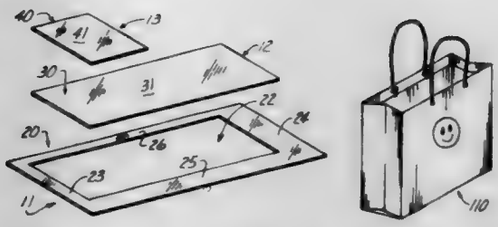
DECORATIVE BAG MAKING APPARATUS AND METHOD OF USE

Nicholas K. Romer, P.O. Box 614, Bel Air, Md. 21014

Filed May 9, 1997, Ser. No. 853,278
Int. Cl.[6] B31B *47/00;* **B65H** *45/12*
U.S. Cl. 493—243 **26 Claims**

1. A decorative bag making apparatus for creating a finished bag from a sheet of decorative material having an image bearing side wherein the apparatus comprises:

a sizing unit for defining and creating a periphery of an actual surface area of the sheet of decorative material that will be employed to create the finished bag; wherein, the sizing unit is provided with an enlarged opening;



a centerpiece unit dimensioned to be received within the enlarged opening in the sizing unit; wherein a periphery of the centerpiece unit provides a folding surface to crease the decorative material into a plurality of flaps; and

a face unit dimensioned to be received within said enlarged opening in the sizing unit and having an external periphery that corresponds to a periphery of at least one of respective face panels of the finished bag.

5,795,284

METHOD OF AND DEVICE FOR FOLDING A GAS BAG OF A VEHICLE OCCUPANT RESTRAINT SYSTEM

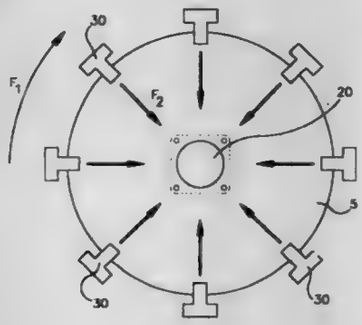
Dietmar Berti, Schechingen, Germany, assignor to TRW Occupant Restraint Systems GmbH, Aldorf, Germany

Continuation of Ser. No. 559,192, Nov. 13, 1995, abandoned. This application Jul. 28, 1997, Ser. No. 901,340

Claims priority, application Germany, Nov. 15, 1994, 44 40 [illegible]

Int. Cl.[6] B31B *1/26*

U.S. Cl. 493—405 **3 Claims**



1. A method for folding a gas bag for a vehicle occupant restraint system, said method comprising the steps of:

providing a gas bag having a rear wall section, a front wall section lying opposite said rear wall section, and a junction wall section interconnecting peripheral zones of said front and rear wall sections, said rear wall section including a central wall zone in which an inflation opening is defined, said gas bag having an inflated state in which said gas bag has a three-dimensional shape and a deflated state in which said gas bag has a flattened state and lies substantially in a single plane;

positioning said front and rear wall sections of said gas bag in said deflated state opposite each other and in an overlying relationship;

holding stationary only said central wall zone of said rear wall section while an overlying portion of said front wall section overlying said central wall zone of said rear wall section remains free to move relative to said stationary central wall zone of said rear wall section; and

rotating said peripheral zones of said front and rear wall sections about an axis which is substantially normal to said plane thereby causing said overlying portion of said front wall section of said gas bag to be rotated relative to said central wall zone of said rear wall section.

5,795,285

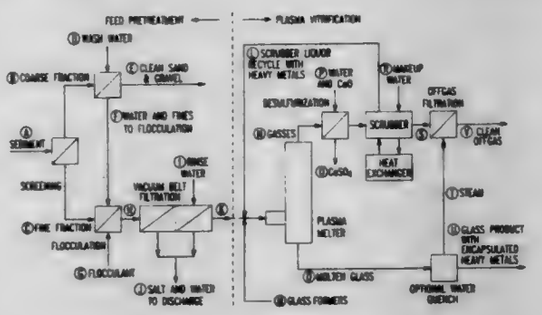
CONVERSION OF CONTAMINATED SEDIMENTS INTO USEFUL PRODUCTS BY PLASMA MELTING

David Francis McLaughlin, 1537 Oak St., Oakmont, Pa. 15139, and Nancy Hamp Ulerich, 57 Mallard Dr., Pittsburgh, Pa. 15238

Continuation-in-part of Ser. No. 566,238, Dec. 1, 1995, Pat. No. 5,637,127. This application Oct. 21, 1996, Ser. No. 734,660

Int. Cl.[6] B09B *3/00;* **B09C** *1/06;* **C03B** *5/16*

U.S. Cl. 588—256 **32 Claims**



1. A method of treating contaminated sediment comprising:

providing a source of contaminated sediment;

melting the contaminated sediment in a tuyere of a plasma melter to form a molten mass and to vitrify the molten mass while the mass is in the tuyere; and

cooling the molten mass to form a vitrified product.

31. Apparatus for treating contaminated sediment comprising:

supply means for providing contaminated sediment comprising sand, silt and clay;

plasma melter means for melting the contaminated sediment to form a molten mass containing at least a portion of the contaminants of the sediment; and

cooling means for cooling the molten mass to form a glass product.

5,795,286

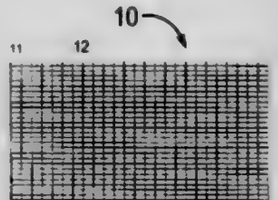
RADIOISOTOPE IMPREGNATED SHEET OF BIOCOMPATIBLE MATERIAL FOR PREVENTING SCAR TISSUE FORMATION

Robert E. Fischell, Dayton, Md., and David R. Fischell, Fair Haven, N.J., assignors to Cathco, Inc., Dayton, Md.

Filed Aug. 15, 1996, Ser. No. 698,577

Int. Cl.[6] A61N *5/00*

U.S. Cl. 600—3 **13 Claims**

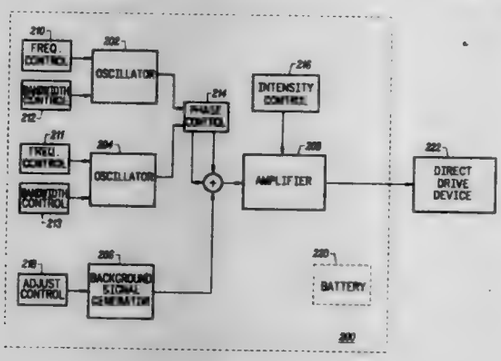


1. A biodegradable sheet of material adapted for implantation between tissues of a human body, at least part of said sheet of material including a radioisotope, said radioisotope being placed within a soluble structure which is said biodegradable sheet of material so that the radioisotope becomes dispersed into the human body.

5,795,287
TINNITUS MASKER FOR DIRECT DRIVE HEARING DEVICES

Geoffrey R. Ball, Sunnyvale, and Bob H. Katz, Los Gatos, both of Calif., assignors to Symphonix Devices, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 582,301, Jan. 3, 1996. This application Sep. 30, 1996, Ser. No. 723,855
Int. Cl.[6] H04R *25/00*
U.S. Cl. 600—25 **28 Claims**

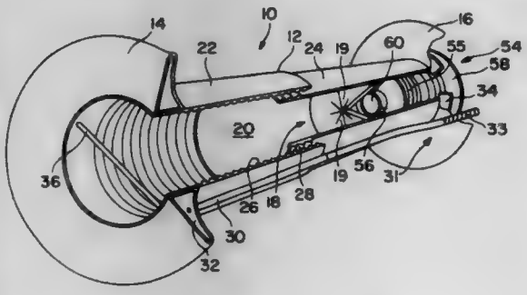


1. An apparatus for masking tinnitus, comprising:
a battery;
a circuit, coupled to the battery, that generates signals; and
a direct drive hearing device that receives the signals from the circuit which correspond to sound a user will perceive in order to mask tinnitus.

5,795,288
APPARATUS WITH VALVE FOR TREATING INCONTINENCE

Kenneth L. Cohen, 9 Bishop Dr., Woodbridge, Conn. 06525, and Dennis J. Hanlon, 15 Morris Rd., East Haven, Conn. 06513

Filed Aug. 8, 1996, Ser. No. 694,331
Int. Cl.[6] A61F *2/00*
U.S. Cl. 600—29 **39 Claims**

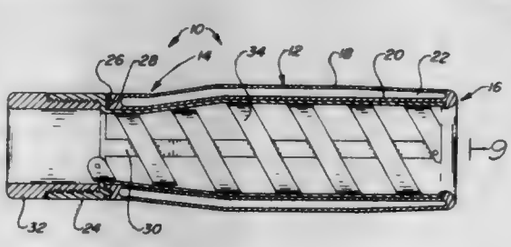


33. An apparatus for treating incontinence, comprising:
a substantially tubular body member having a first end and a second end and defining a urine flow passage;
an internal seal member positioned at the first end of the body member;
an external retaining member positioned at the second end, at least one member of the internal seal member and the external retaining member being moveable longitudinally with respect to the other member of the internal seal member and the retaining member;
means for longitudinally securing the at least one member relative to the other member, whereby the tubular body member can be positioned in a urethra with the seal member substantially sealingly positioned in an interior opening of the urethra and with the retaining member positioned at an exterior opening of the urethra; and
valve means positioned in the flow passage for controlling flow through the flow passage wherein the tubular body member comprises a first body portion defining the first end and a second body portion defining the second end, wherein the first body portion is longitudinally movable relative to the second body portion whereby spacing between the seal member and the retaining member is adjustable, and further comprising means for locking the first body portion relative to the second body portion at a desired spacing, said means for locking comprising a first set of ratchet teeth positioned on said first portion and skewed toward the first end, and a second set of ratchet teeth positioned on the second portion and skewed toward the second end, whereby relative movement of the first portion toward the second portion is permitted, and relative movement of the first portion away from the second portion is prevented.

5,795,289
SPECULUM

William H. Wyttenbach, 6905 Sunset Ave., Panama City Beach, Fla. 32327

Filed Jul. 28, 1997, Ser. No. 901,619
Int. Cl.[6] A61M *29/02*
U.S. Cl. 600—207 **6 Claims**



1. A speculum comprising:
a generally elongate shaft, having a proximal end, a distal end, an outer surface, and an inner surface delimiting a central cavity, the shaft member capable of articulating between a retracted position wherein the cavity has a first diameter to an expanded position wherein the cavity has a second diameter that is greater than the first diameter;
an end cap, having a first hollow central portion, attached to the shaft proximate the proximal end, such that the first hollow central portion is generally aligned with the cavity;
at least one elongate guide member having a first end attached to the end cap and a second end terminating proximate the distal end, disposed within the cavity;
an expansion cap, having a second hollow central portion, rotatably disposed within the end cap such that the second hollow central portion is generally aligned with the first hollow central portion and such that rotation of the expansion cap causes the expansion cap to rotate into the end cap and counter-rotation of the expansion cap causes the expansion cap to rotate out of the end cap; and
a spring having a third end attached to the expansion cap and a fourth end attached to the second end of one of the at least one guide member.

5,795,290

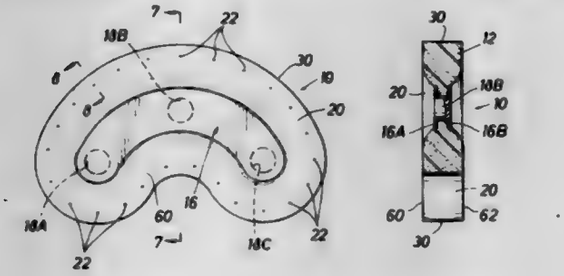
APPARATUS FOR HOLDING INTESTINES OUT OF AN OPERATIVE FIELD

Doye R. Bridges, Victoria, Tex., assignor to Bioplexus Corporation, Las Vegas, Nev.

Division of Ser. No. 405,529, Mar. 16, 1995, Pat. No. 5,651,762, which is a continuation-in-part of Ser. No. 089,713, Jul. 9, 1993, abandoned. This application Dec. 11, 1996, Ser. No. 763,287

Int. Cl.[6] A61B 17/02

U.S. Cl. 600—210 20 Claims



1. Apparatus adapted for use within an abdominal cavity of a patient, said cavity defined by an anterior wall, a posterior wall and lateral walls, said apparatus comprising:

a U-shaped holding member adapted to be received in the patient's abdominal cavity and having an edge formed of a resiliently deformable polymer and a core formed from a polymer that is more rigid than said resiliently deformable polymer, a resilient deformation of at least a portion of said edge of said holding member resulting in a residual reactive force against the abdominal cavity, said residual reactive force thereby assisting in positioning said holding member in the abdominal cavity;

at least one bore in said holding member wherein said at least one bore has a predetermined length; and

said core including a first plate and a second plate, said plates having an assembled length less than said predetermined length.

5,795,291

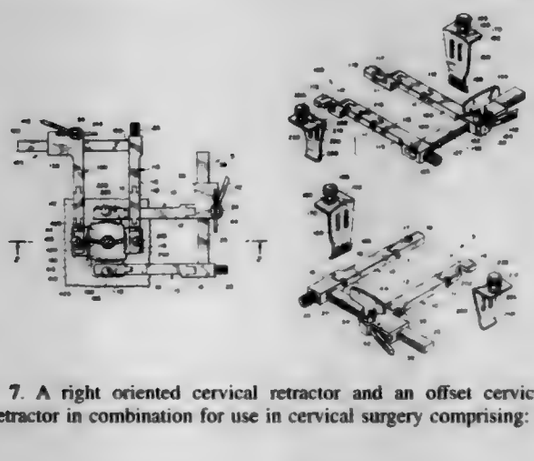
CERVICAL RETRACTOR SYSTEM

Tibor Koros, and Gabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021

Continuation of Ser. No. 351,804, Dec. 8, 1994, abandoned, and a continuation-in-part of Ser. No. 30,862, Nov. 10, 1994, Pat. No. Des. 369,860, and a continuation-in-part of Ser. No. 31,744, Dec. 5, 1994. This application Feb. 7, 1997, Ser. No. 796,878

Int. Cl.[6] A61B 17/02

U.S. Cl. 600—232 7 Claims



7. A right oriented cervical retractor and an offset cervical retractor in combination for use in cervical surgery comprising:

a right oriented cervical retractor comprising:

a stationary double hinged arm having a stationary segment, a middle hinged segment, and a hinged blade securement end having an outer edge;

a toothed cross brace having one end secured to said stationary segment of said stationary arm;

a movable double hinged arm having a housing for slidably engaging a portion of said toothed cross brace, a middle hinged segment, and a hinged blade securement end having an outer edge;

said housing on said movable hinged arm having a crank means for moving said movable arm away from said stationary arm;

a vertical semicircular flared opening in the outer edge of said blade securement end of said stationary arm for demountable attachment of a surgical blade;

a vertical semicircular flared opening in the outer edge of said blade securement end of said movable arm for demountable attachment of a surgical blade;

an offset cervical retractor overlying said right oriented cervical retractor and comprising:

a stationary double hinged arm having a stationary segment, a middle hinged segment, and an offset hinged blade securement end having an outer edge;

a toothed cross brace having one end secured to said stationary segment of said stationary arm;

a movable double hinged arm having a housing for slidably engaging a portion of said toothed cross brace, a middle hinged segment, and a hinged offset blade securement end having an outer edge;

said housing on said movable hinged arm having a crank means for moving said movable arm away from said stationary arm;

a vertical semicircular flared opening in the outer edge of said offset blade securement end of said stationary arm for demountable attachment of a surgical blade; and

a vertical semicircular flared opening in the outer edge of said offset blade securement end of said movable arm for demountable attachment of a surgical blade.

5,795,292

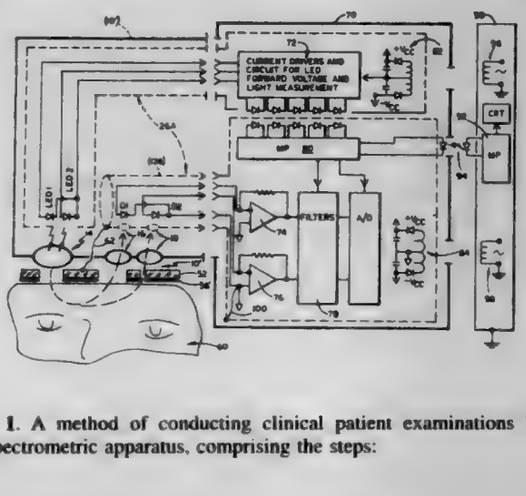
METHOD FOR IMPROVING SIGNAL-TO-NOISE IN CLINICAL SPECTROMETRIC PROCEDURES

Gary D. Lewis, Grosse Pointe Farms; Wayne P. Messing, Troy; Oleg Gonopolskiy, Southfield, and Richard S. Scheuing, Ann Arbor, all of Mich., assignors to Somanetics Corporation, Troy, Mich.

Division of Ser. No. 324,120, Oct. 14, 1994, Pat. No. 5,697,367. This application May 2, 1996, Ser. No. 641,875

Int. Cl.[6] A61B 5/00

U.S. Cl. 600—323 14 Claims



1. A method of conducting clinical patient examinations by spectrometric apparatus, comprising the steps:

placing an electrically actuated sensor in contact with the patient for receiving and transmitting selected energy wavelength signals between the sensor and the patient;

coupling the sensor to an electrically powered controller and processor having electrical power circuits which are electrically isolated from at least portions of signal-processing circuits thereof to transmit patient examination signals to said signal-processing circuits; and

electrically coupling at least a selected surface portion of said patient to said portions of said signal-processing circuits of said controller and processor which are electrically isolated from said power circuits thereof, to thereby establish and maintain substantially the same electrical potential between said selected surface portion of said patient and said portions of said processing circuits to which said selected surface portion is coupled and thereby substantially reduce the electrical noise content of said examination signals transmitted from said sensor to said processor.

5,795,293

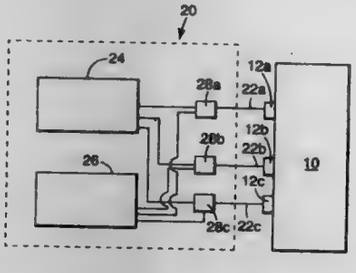
REDUCING ARTIFACT IN BIOELECTRIC SIGNAL MONITORING

Hatim M. Carim, West St. Paul, Minn., and Scott A. Burton, Essex Junction, Vt., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 29, 1995, Ser. No. 586,011

Int. Cl.[6] A61B *5/04*

U.S. Cl. 600—372 **10 Claims**



1. A method of conditioning skin to reduce artifact in bioelectric signal monitoring through an electrode on skin comprising the steps of:

a) placing the electrode on the skin; and

b) conditioning the skin beneath the electrode by passing electrical energy at a rate of about 5 $\mu A/cm^2$ to about 5 mA/cm^2 through the electrode and into the skin using a ramped conditioning current to reduce skin impedance.

5,795,294

PROCEDURE FOR THE CORRELATION OF DIFFERENT COORDINATE SYSTEMS IN COMPUTER-SUPPORTED, STEREOTACTIC SURGERY

Joachim Luber, Essingen, and Arvids Mackevics, Aalen, both of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Germany

Filed May 30, 1995, Ser. No. 452,752

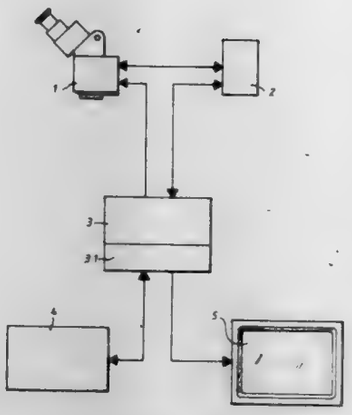
Claims priority, application Germany, May 21, 1994, 44 17 944.8

Int. Cl.[6] A61B *5/05; 19/00*

U.S. Cl. 600—407 **6 Claims**

1. A method for correlation of different coordinate systems in computer-supported stereotactic surgery without use of referencing markers, comprising:

moving a surgical microscope (1) mounted on a carrier system (2) over a specific surface area of an object under observation,



continually measuring distances between surface points on said surface area and said surgical microscope point-by-point to generate a three-dimensional surface profile of said surface area, and

spatially correlating said three-dimensional surface profile with diagnostic data generated prior to surgery via a correlation algorithm.

5,795,295

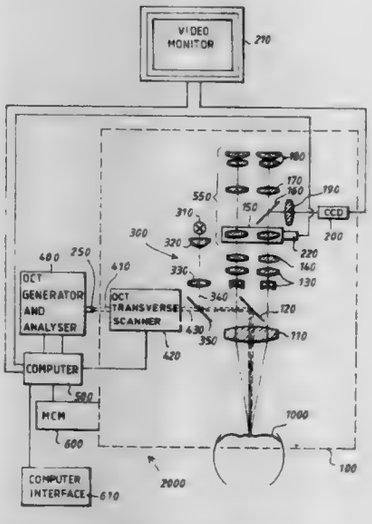
OCT-ASSISTED SURGICAL MICROSCOPE WITH MULTI-COORDINATE MANIPULATOR

Thomas Hellmuth, Aalen; Michael Kaschke, Oberkochen, both of Germany; John C. Moore, Half Moon Bay, Calif., and Gerhard Unold, Essingen, Germany, assignors to Carl Zeiss, Inc., Thornwood, N.Y.

Filed Jun. 25, 1996, Ser. No. 669,948

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—407 **36 Claims**



1. A surgical apparatus for use in performing a surgical procedure on an object which comprises:

a surgical microscope;

a multi-coordinate manipulator ("MCM") system which: (a) translates the surgical microscope and orients an optic axis of the surgical microscope, (b) stores diagnostic image data, and (c) autofocuses the surgical microscope; and

an optical coherence tomography ("OCT") apparatus which includes: (a) a scanner which scans the object with optical output from the OCT apparatus in response to input from the MCM system, (b) a receiver which produces OCT scan data in response to reflections of the optical output from the object,

and (c) a transmitter which transmits the OCT scan data to the MCM system for analysis.

5,795,296

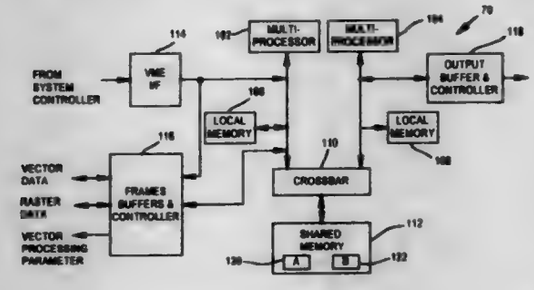
PIPELINE PROCESS FOR AUTOMATICALLY MEASURING OBJECT BOUNDARY FROM ULTRASOUND IMAGE SAMPLES

Sayan Pathak, Seattle; Vikram Chalana, Mountlake Terrace, and Yongmin Kim, Seattle, all of Wash., assignors to University of Washington, Seattle, Wash.

Continuation-in-part of Ser. No. 624,949, Mar. 29, 1996, Pat. No. 5,605,155. This application Feb. 20, 1997, Ser. No. 802,979

Int. Cl.[6] A60B *8/00*

U.S. Cl. 600—443 **14 Claims**



1. A method for automatically measuring fetal head size based upon ultrasound image data of the fetal head, the method comprising the steps of:

detecting an ultrasound image of the fetal head;

identifying a radial maxima point on each of a plurality of radii extending from a substantially common vertex point within the fetal head image, each radial maxima point corresponding to an ultrasound sample along its corresponding radius and having a maximum ultrasound echo strength;

defining a first curve from the radial maxima points;

modifying the first curve to define an enclosed initial fetal head boundary;

deriving an inner fetal head boundary and outer fetal head boundary from the initial fetal head boundary and a predetermined fetal skull thickness; and

computing fetal head size from the inner fetal head boundary and outer fetal head boundary.

5,795,297

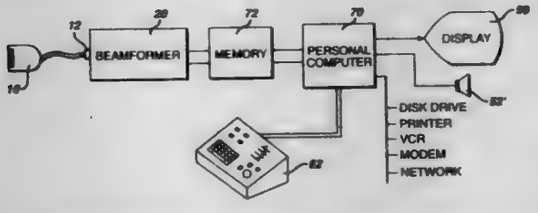
ULTRASONIC DIAGNOSTIC IMAGING SYSTEM WITH PERSONAL COMPUTER ARCHITECTURE

Ronald E. Daigle, Redmond, Wash., assignor to Atlantis Diagnostics International, L.L.C., Bothell, Wash.

Filed Sep. 12, 1996, Ser. No. 712,828

Int. Cl.[6] A61B *8/00*

U.S. Cl. 600—447 **69 Claims**



1. An ultrasonic diagnostic imaging system comprising:

a beamformer to which ultrasonic probes may be removably connected for acquiring ultrasonic echo signals and producing digital rayline signals;

a central processing unit (CPU) coupled to said beamformer for both signal processing and display processing of said digital rayline signals; and

a display coupled to receive processed rayline signals for display of an ultrasonic image.

5,795,298

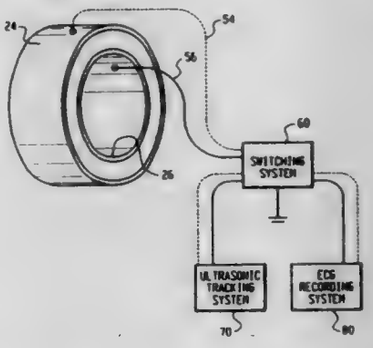
SYSTEM FOR SHARING ELECTROCARDIOGRAM ELECTRODES AND TRANSDUCERS

Ivan Vesely, Cleveland Heights, Ohio, and Marshall Edge, London, Canada, assignors to Sonometrics Corporation, London, Canada

Filed Mar. 7, 1997, Ser. No. 813,924

Int. Cl.[6] A61B *8/00*

U.S. Cl. 600—450 **18 Claims**



1. A catheter arrangement capable of providing data signals for ECG recording and ultrasonic tracking, comprising:

a catheter having a catheter shaft;

a plurality of detection means arranged along the catheter shaft comprising:

inner conductor means formed on the catheter shaft;

outer conductor means surrounding the inner conductor means;

a piezoelectric material arranged between the inner conductor means and the outer conductor means;

ground conductor means extending from one of the inner conductor means and the outer conductor means; and

power conductor means extending from one of the inner conductor means and the outer conductor means,

wherein the inner and outer conductor means and piezoelectric material serve as transducer means and the outer conductor means serves as an electrode.

5,795,299

ULTRASONIC TRANSDUCER ASSEMBLY WITH EXTENDED FLEXIBLE CIRCUITS

John W. Eaton, Palo Alto; Randall L. Schlesinger, San Mateo; Michael H. Ikeda, San Jose; Charles W. Brummer, Simi Valley; Xavier L. Pacheco, Chatsworth; Robert Kevakian, Agoura Hills, and Ricardo G. Espinosa, Milpitas, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Filed Jan. 31, 1997, Ser. No. 791,601

Int. Cl.[6] A61B *8/00*

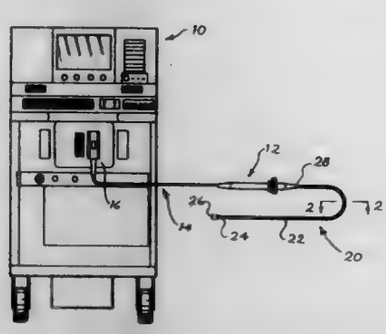
U.S. Cl. 600—459 **35 Claims**

1. In an ultrasonic transducer assembly of the type comprising:

an elongated conduit comprising a distal end portion, a proximal end portion, and a lumen, said lumen defining an axis;

a plurality of ultrasonic transducer elements carried by the conduit adjacent the distal end portion; and

a plurality of flexible circuits carried in the lumen, said plurality of flexible circuits comprising a set of flexible circuits, each flexible circuit in the set comprising a plurality of elongated



conductors, at least some of said conductors electrically coupled to respective ones of the transducer elements;

the improvement comprising:

each flexible circuit in the set comprising first, second and third portions, said first and second portions meeting at a first fold, and said second and third portions meeting at a second fold, said first and third portions extending through respective, axially-spaced portions of the lumen, at least one of the folds oriented obliquely to the axis.

5,795,300

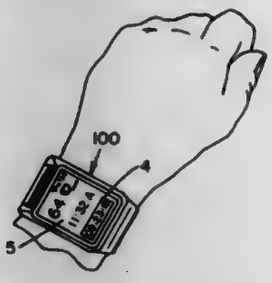
HEART PULSE MONITOR

John D. Bryars, Encinitas, Calif., assignor to Advanced Body Metrics Corporation, Rancho Sante Fe, Calif.

Continuation of Ser. No. 252,605, Jun. 1, 1994. This application Jun. 5, 1995, Ser. No. 462,156

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—500 **29 Claims**



1. A pulse rate monitor comprising:

sensor means adapted to be disposed adjacent to a pulse location of a user, said sensor means operative to produce a first signal in response to the occurrence of a heart pulse at said pulse location and a second signal in response to artifact signals at said pulse location; and

circuit means operative to produce an output signal which is representative of the difference between said first and second signals and which varies as a function of the heart pulse rate;

wherein said circuit means includes:

amplifier means connected for amplifying the signals from the sensor means and supplying the amplified signals as an output signal;

filter means connected to receive the output signal of the amplifier means and provide a filtered signal as a filter output signal;

an analog-to-digital converter connected to receive the filter output signal and convert said filter output signal to a digital signal;

microprocessor means connected to receive said digital signal;

said microprocessor means evaluates said digital signal to detect either a frequency node peak comprised of a multiplicity of heart pulse signals captured over time within a predetermined signal spectrum and generates a pulse rate output signal indicative of the heart pulse rate of the user in response thereto or a divergent value;

said microprocessor means updates said pulse rate output signal only when a frequency node peak in said spectrum is detected;

said microprocessor means does not update said pulse rate output signal when a divergent value is detected; and

display means connected to said microprocessor means for displaying said pulse rate output signal.

5,795,301

DISPLAY METHOD USED IN PORTABLE PULSE MEASURING DEVICE

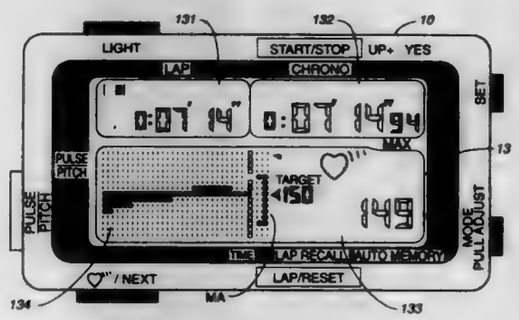
Naoaki Yasukawa, Suwa, and Chiaki Nakamura, Chiba, both of Japan, assignors to Seiko Epson Corporation, Tokyo, and Seiko Instruments, Inc., Chiba, both of Japan

Filed Aug. 6, 1996, Ser. No. 692,938

Claims priority, application Japan, Aug. 31, 1995, 7-224319; Sep. 12, 1995, 7-234470; Sep. 12, 1995, 7-234472

Int. Cl.[6] A61B *5/02*

U.S. Cl. 600—500 **18 Claims**



6. Display method in a portable pulse measuring device comprising the steps of:

(a) measuring a pulse rate;

(b) switching a graphic display mode between a first measurement period until the pulse rate measured in step (a) reaches a reference pulse rate after measurement of the pulse rate has started and a second measurement period after the pulse rate has reached the reference pulse rate;

(c) graphically displaying time varying changes in the measured pulse rate in a first mode during the first measurement period and a second mode during the second measurement period on a display device;

(d) measuring time contemporaneously with step (a);

(e) performing an external operation that stops measurement of time of step (d);

(f) measuring of the pulse rate contemporaneously with step (e); and

(g) graphically displaying time varying changes in the measured pulse rate in a mode other than the second mode while continuing to measure the pulse rate for a prescribed period.

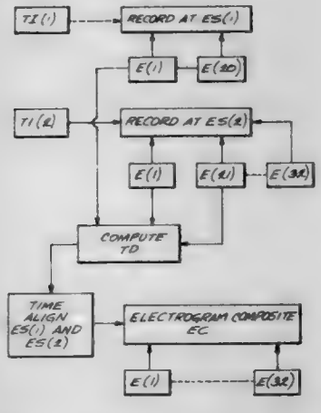
5,795,302

Patent Not Issued For This Number

5,795,303
SYSTEMS AND METHODS FOR MAKING TIME-SEQUENTIAL MEASUREMENTS OF BIOPOTENTIALS SENSED IN MYOCARDIAL TISSUE

David K. Swanson, Mountain View, and Dorin Panescu, Sunnyvale, both of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 390,540, Feb. 17, 1995, abandoned.
This application Sep. 2, 1997, Ser. No. 921,878
Int. Cl.[6] A61B 5/0402
U.S. Cl. 600—509 42 Claims



1. An element for generating a composite signal derived from biopotentials sensed in myocardial tissue comprising

a plurality of sensors,

first means for inputting a first set of signals comprising a plurality of biopotentials sensed in myocardial tissue using a first group of the sensors during a first time interval,

second means for inputting a second set of signals comprising a plurality of bipotentials sensed in myocardial tissue during a second time interval sequentially after the first time interval using a second group of the sensors having at least one common sensor that is part of the first group and other sensors that are not part of the first group, at least one of the biopotentials in the first set of signals being sensed in the first time interval and not in the second time interval, and at least one of the biopotenial in the second set of signals being sensed in the second time interval and not in the first time interval, and

third means for time aligning the first and second sets of signals using biopotentials sensed in myocardial tissue by the at least one common sensor, thereby generating the composite signal arranged for analysis as if all biopotentials were sensed during a common time interval, whereby-the composite signal provides a diagnostic indicator.

5,795,304
SYSTEM AND METHOD FOR ANALYZING ELECTROGASTROPHIC SIGNAL

Hun H. Sun, Blue Bell; Wen Wei Qiao, Drexel Hill, both of Pa.; William Y. Chey, Pittsford, and Kae Yol Lee, Rochester, both of N.Y., assignors to Drexel University, Philadelphia, Pa.

Filed Mar. 26, 1997, Ser. No. 827,086
Int. Cl.[6] A61B 5/0488
U.S. Cl. 600—546 14 Claims

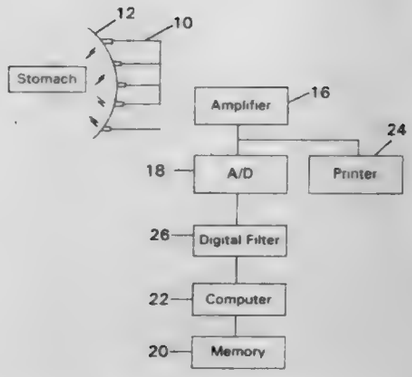
1. A method of analyzing an electrogastrophic (EGG) signal, comprising the steps of:

placing electrodes on abdominal skin of a subject adjacent a stomach thereof, the stomach producing the EGG signal;

obtaining the produced EGG signal by way of the electrodes;

amplifying the obtained EGG signal by way of an amplifier; and

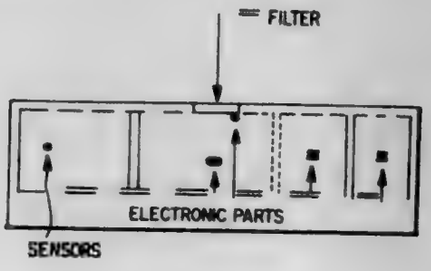
transforming the amplified EGG signal from a time domain representation to a frequency domain representation by way of a predetermined transform function incorporating a variable frequency and a window function having a time resolution and a frequency resolution, the frequency resolution of the window function being proportional to the frequency, the time resolution of the window function varying with the frequency such that the time resolution is relatively narrow when the frequency is relatively high and relatively broad when the frequency is relatively low.



5,795,305
PROCESS AND DEVICE FOR NON-INVASIVE DETERMINATION OF GLUCOSE CONCENTRATION IN PARTS OF THE HUMAN BODY

Ok-Kyung Cho, Feldblumenweg 3, D-44267 Dortmund, and Birgit Holzgreve, Dortmund, both of Germany, assignors to Ok-Kyung Cho, Germany

Filed Jun. 12, 1996, Ser. No. 662,340
Claims priority, application Germany, Dec. 12, 1993, 43 42 105.9
Int. Cl.[6] A61B 5/04
U.S. Cl. 600—549 36 Claims



1. A process for non-invasive determination of glucose concentrations in parts of the human body, the method comprising the steps of:

measuring predefined spatially and temporally resolved temperatures on a surface of the body, and a thermal output from the body using highly accurate, at least one of contacting and contactless temperature measurement processes;

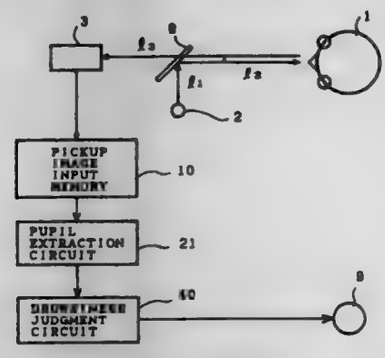
allocating the spatially and temporally resolved temperatures and the thermal output using their functional relationship via a mathematical algorithm; and

providing the allocated spatially and temporally resolved temperatures and the thermal outputs to an output unit which displays information depicting glucose concentrations in parts of the human body.

5,795,306
BODILY STATE DETECTION APPARATUS

Mitsuo Shimotani; Minoru Nishida; Akira Okada; Toshihide Satake; Shoichi Washino; Futoshi Okawa, and Hiromi Terashita, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 330,322, Oct. 27, 1994, Pat. No. 5,573,006. This application Aug. 7, 1996, Ser. No. 692,236
Claims priority, application Japan, Mar. 10, 1994, 6-039887
Int. Cl.[6] A61B 13/00
U.S. Cl. 600—558 7 Claims



1. A bodily state detection apparatus comprising:

optical input means for receiving images of a predetermined area including the face of a subject person;

illumination means for illuminating said subject person, said illumination means being positioned so that at least near said subject person, the direction of the illumination coincides substantially with the optical axis connecting said subject person with said optical input means;

pupil extraction means for extracting either the pupil position or the pupil shape of said subject person from the images thereof output from said optical input means;

search range definition means for defining the range of search for feature points in said subject person's face on the basis of the result of the pupil extraction performed by said pupil extraction means;

feature quantity extraction means for extracting either the position or the shape of said feature points in the range defined by said search range definition means; and

bodily state judgment means for judging the bodily state of said subject person in accordance with the result of the feature quantity extraction performed by said feature quantity extraction means.

5,795,307
SHUNT TAP APPARATUS AND METHOD

John A. Krueger, 17900 Anthony La., Brookfield, Wis. 53045

Filed Apr. 29, 1997, Ser. No. 841,264
Int. Cl.[6] A61B 5/00
U.S. Cl. 600—561 19 Claims



1. Shunt-tap apparatus for use in sensing CSF pressure data in a shunt implanted in a subject, wherein the shunt includes a reservoir lying along a CSF path of flow, said apparatus comprising:

means for temporarily forming an aperture to communicate with CSF contained in said reservoir;

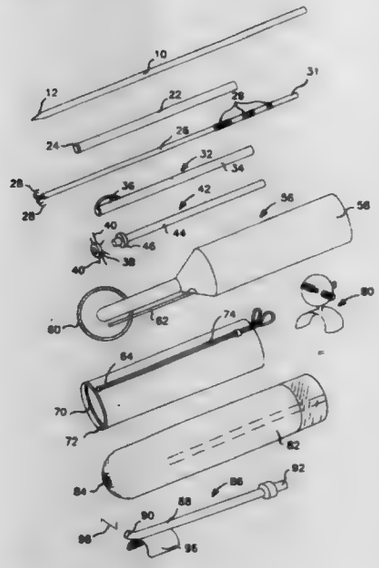
coupling means for selectively engaging a pressure transducer comprising a component of a specified pressure-monitoring device; and

pressure transmissive means positioned between said aperture forming means and said coupling means for transmitting CSF pressure data from said reservoir to said pressure transducer, while at the same time restricting CSF in said reservoir from passing through said aperture.

5,795,308
APPARATUS FOR COAXIAL BREAST BIOPSY

Lincoln D. Russin, 440 Westhampton Rd., Northampton, Mass. 01060

Continuation-in-part of Ser. No. 386,111, Mar. 9, 1995, abandoned. This application Jul. 26, 1996, Ser. No. 690,185
Int. Cl.[6] A61B 5/00
U.S. Cl. 600—567 12 Claims



1. A biopsy kit comprising:

a) a stiff, point-sharpened rod;

b) a bevel-ended tube adapted to pass coaxially over the stiff, point-sharpened rod;

c) a stiff anchor rod having a plurality of flexible, resilient anchor hooks located at a distal end thereof, said stiff anchor rod and plurality of flexible anchor hooks being adapted to pass through the bevel-ended tube until the anchor hooks extend beyond the bevel-ended tube;

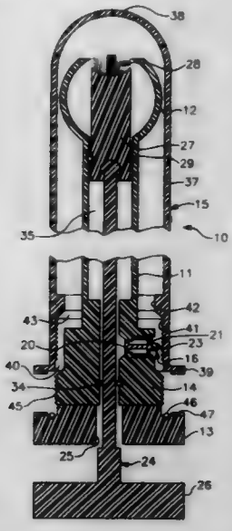
d) an insertion tube having a collar seat at an insertion and thereof, said insertion tube being adapted to pass coaxially over the stiff anchor rod; and,

e) a spiked collar having a plurality of flexible, resilient radially extending spikes adapted to be positioned removably against the collar seat of said insertion tube whereby the stiff, point-sharpened rod can penetrate and impale a suspected cancer with the bevel-ended tube thereafter positioned coaxially over the stiff, point-sharpened rod which can then be withdrawn leaving the bevel-ended tube located with respect to the suspected cancer to provide a guide for the stiff anchor rod that passes through the bevel-ended tube with the anchor hooks extending beyond the bevel-ended tube which can then be withdrawn so that the insertion tube can pass coaxially over the anchor rod with the spiked collar positioned removably against the collar seat of the insertion tube.

5,795,309
CERVICAL TISSUE SAMPLING AND CONTAINMENT DEVICE

Richard A. Leet, 3118 Williamsburg, NW., Warren, Ohio 44485, and Deborah L. Rowlands, 2697 Oak Forest Dr., Niles, Ohio 44446

Filed Jul. 10, 1997, Ser. No. 891,257
Int. Cl.[6] A61B *10/00*
U.S. Cl. 600—569 **17 Claims**

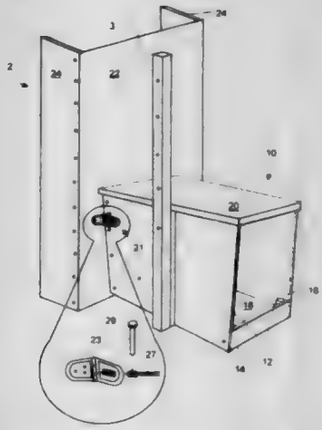


1. A cervical tissue sampling and transportation device comprising; a collection cylinder, a plunger disposed for reciprocally sliding movement within said cylinder, a first fluid chamber within said collection cylinder, a collection brush secured to a distal end of said plunger, a containment closure removably positioned in sealing relation over a portion of said collection cylinder, a second fluid chamber within said containment closure and a portion of said collection cylinder, means for transferring contents of said first fluid chamber to said second fluid chamber and means for sealing and locking said containment closure onto said collection cylinder.

5,795,310
MODULAR WORK EVALUATION APPARATUS

Stanley Berlin, 4 Stream Ct., Owings Mills, Md. 21117

Filed Oct. 15, 1996, Ser. No. 729,882
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—595 **22 Claims**



15. A work evaluation apparatus for assessing job related functions of a patient after injury at work, comprising:

a main bench unit forming a walled semi-enclosure with removable top;

a simulated shoveling pit enclosed within said main bench unit and accessible by removing said removable top;

a simulated engine block enclosed within said main bench unit and accessible by removing said removable top;

a shelving unit attached exteriorly of said main bench unit, said shelving unit including an adjustable-height shelf and adjustable-weight container positional on said shelf for determining how much weight said patient can lift at various heights;

a mechanical fastener module attached exteriorly of said main bench unit, said mechanical fastener module including a vertical pole having a plurality of pre-drilled holes there through and fasteners for attachment through said holes which can be assembled and disassembled with conventional tools;

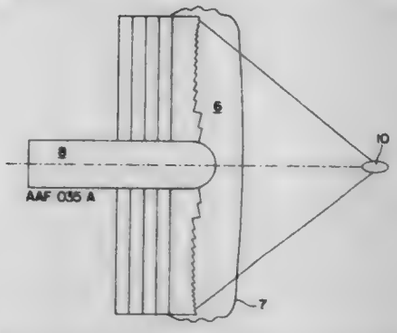
a simulated plumbing module attached exteriorly of said main bench unit, plumbing module including a plurality of plumbing components that can be worked with conventional plumber's tools; and

a simulated electrical module attached exteriorly of said main bench unit, said electrical module including a plurality of electrical components that can be worked with conventional electrician's tools; whereby said work evaluation stations simulate respective specific job related tasks performed by said patient at work.

5,795,311
APPARATUS FOR THE TREATMENT OF BIOLOGICAL TISSUE AND CORPORAL CONCRETIONS

Othmar Wess, Lendwil-Oberhofan, Switzerland, assignor to Storz Medical AG, Switzerland

PCT No. PCT/EP94/01784, § 371 Date Jun. 17, 1996, § 102(e) Date Jun. 17, 1996, PCT Pub. No. WO94/28540, PCT Pub. Date Dec. 8, 1994
PCT Filed Jun. 1, 1994, Ser. No. 553,696
Claims priority, application Germany, Jun. 1, 1993, 43 18 237.2
Int. Cl.[6] A61B *17/22*
U.S. Cl. 601—2 **29 Claims**



1. An apparatus for the treatment of the human body by means of focussed acoustical waves, comprising:

a sound generating unit shaped so that its generated wave is an essentially plane wave, and having an acoustical impedance, said sound generating unit being triggered by a control unit to generate acoustic waves having a selected specific frequencies and energies;

a rigid focussing unit comprising a Fresnel lens-like structure disposed in a fixed spatial relationship to said sound generating unit whereby said focussing unit focusses the waves generated by said sound generating unit in a desired selected focal range, the material of said focussing unit having an acoustical impedance;

manipulation means attached to said focussing unit for positioning said apparatus relative to a human body;

a coupling medium for coupling said focussing unit to a human body said coupling medium having an acoustical impedance;

the acoustical impedance of said focussing material lying between the acoustical impedance of said sound generating unit and the acoustical impedance of the coupling medium, said coupling medium being situated in the sound path between said focussing unit and said human body, said focussing unit serving as a carrier for the entire structure; and

at least one adaption layer positioned between said radiation area of said sound generating unit and of said sound entry area of the focussing unit, the acoustical impedance of said adaption laying between that of said focussing unit and that of the acoustical impedance of said sound generating unit.

5,795,312

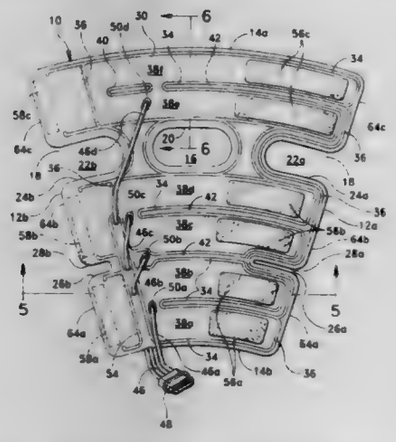
COMPRESSION SLEEVE

John F. Dye, Bridgewater, Mass., assignor to The Kendall Company, Mansfield, Mass.

Continuation of Ser. No. 127,019, Sep. 27, 1993, abandoned. This application Mar. 15, 1996, Ser. No. 617,978

Int. Cl.[6] A61H *9/00*

U.S. Cl. 601—151 **13 Claims**



6. A device for applying compressive pressure against a patient's leg from a source of pressurized fluid comprising:

an elongated sleeve for enclosing a length of the patient's leg, the sleeve having a pair of opposed side edges and a pair of opposed end edges connecting the side edges, the side and end edges together defining the shape and outer dimensions of the sleeve, and at least one pressure chamber within the sleeve;

conduits for introducing the pressurized fluid within the chamber(s) of the sleeve; and

a plurality of pairs of opposed flaps extending longitudinally between the end edges of the sleeve, one flap of each pair of flaps being on one of the side edges and the other flap of each pair being on the other side edge of the sleeve, the flaps of adjacent pairs of flaps being separated by opposed cut out regions in the side edges of the sleeve, each of the pairs of flaps having a closure member mateable with an associated closure member on the opposed flap of the pair, the pairs of flaps and their associated closure members being located to be individually adjustable and securable together to provide differing circumferential dimensions when the sleeve is secured surrounding the leg to accommodate the thickness of the particular leg region enclosed by the pair of flaps, thereby permitting proper fitting of the sleeve around the leg for applying the proper preselected pressure profile;

a first opening symmetrically located between the side edges of the sleeve for placement substantially centrally behind the knee, and at least one set of the opposed cut out regions being symmetrically located to define a second opening for placement substantially centrally over the knee cap when the sleeve is wrapped around the leg; and

a tubing channel through which the conduits extend, the tubing channel spaced inwardly from at least two of the flaps on one of the side edges and extending longitudinally from one end edge past another of the cut out regions separating the at least two flaps.

5,795,313

Patent Not Issued For This Number

5,795,314

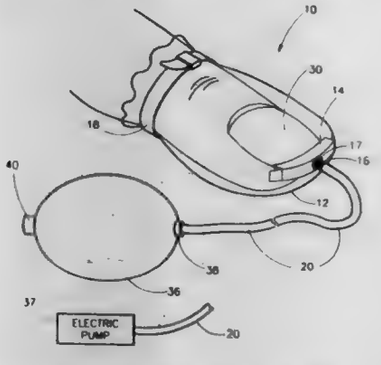
THERAPEUTIC FINGERNAIL TREATMENT DEVICE

Moshe Berenstein, 1/7 Janus Korczak St., Netanya, Israel

Filed Jun. 19, 1996, Ser. No. 665,864

Int. Cl.[6] A61M *35/00*; **A45D** *29/18*

U.S. Cl. 601—166 **15 Claims**



1. A device for therapeutic treatment of a fingernail, said device comprising:

means for enclosing the fingernail in sealed fashion; and

nozzle means attached at an end of said enclosing means and facing the fingernail, said nozzle means being connected to a fluid source having means for reversibly pumping said fluid therethrough, and back to said fluid source, in cyclical fashion,

such that said fluid periodically flows under the fingernail, and is withdrawn therefrom, providing therapeutic fingernail treatment.

5,795,315

MULTIPLE-SIZE CERVICAL COLLAR

James R. Traut; Sean L. Phillips, both of Poughkeepsie, N.Y., and Gordon D. Row, Lexington, Mass., assignors to Laerdal Medical Corporation, Wappinger Falls, N.Y.

Filed Dec. 23, 1996, Ser. No. 780,024

Int. Cl.[6] A61F *5/00*

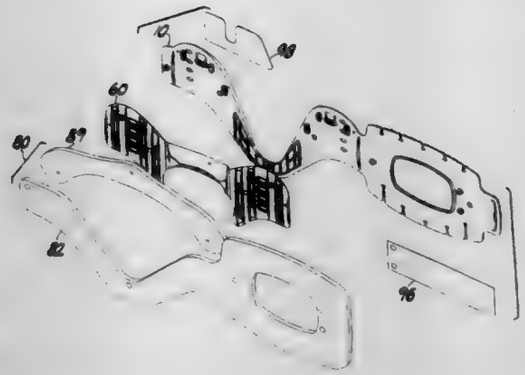
U.S. Cl. 602—18 **40 Claims**

1. A multiple position cervical collar comprising:

a band formed of a stiff material including a front portion and a back portion:

a mandible support formed of a stiff material, said mandible support having a central chin cup and a pair of wing portions, each wing portion located on one of the sides of the chin cup; and

a connection between the mandible support and the band providing a series of selectable predefined positions between the two wing portions of said mandible support and the band, each predefined position defining a different distance between the center of the chin cup and a fixed point on the band, said connection comprising a projection located on one of said band and said mandible support that is movable from a first



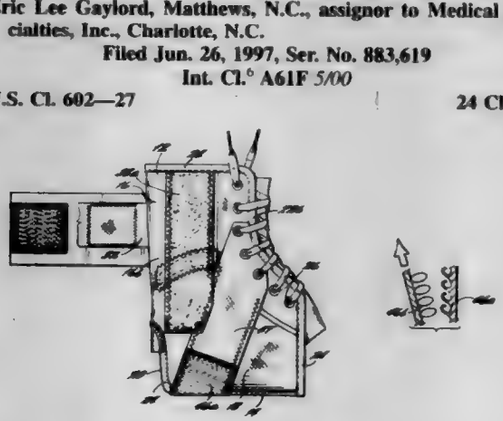
unengaged position to a second engaged position in cooperation with one of a plurality of openings on the other one of said band and said mandible support.

5,795,316

ANKLE STABILIZING APPLIANCE FOR RESTRICTING INVERSION AND EVERSION OF THE FOOT

Eric Lee Gaylord, Matthews, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C.

Filed Jun. 26, 1997, Ser. No. 883,619
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 **24 Claims**



1. An ankle stabilizing appliance comprising:

a substantially non-elastic boot-like body member configured to receive ankle and rear foot portions of a wearer therein, said body member including an ankle portion adapted to overlie sides and a rear of the ankle of the wearer with said ankle portion having a length sufficient to extend above the malleoli of the wearer, a foot portion configured to extend under at least a portion of the foot of the wearer, and opposing laterally spaced apart front edges extending along at least a portion of said ankle portion, and with said ankle portion defining an inside panel corresponding to the inside of the ankle, an outside panel corresponding to the outside of the ankle, and a rear portion which extends vertically between the inside and outside panels and thus along the Achilles tendon region of the wearer, when in use

a connector for drawing said front edges of said body member toward each other so as to permit said body member to be secured about the ankle and rear portion of the foot of the wearer,

a pair of elongate substantially non-elastic stabilizing straps, with said straps each having a first end operatively associated with a rear portion of said ankle portion to define an inside strap extending toward said inside panel and an outside strap extending toward said outside panel,

a first pair of mating fasteners attached respectively to said inside panel of said ankle portion and to a free end of said inside strap, and a second pair of mating fasteners attached respectively to said outside panel of said ankle portion and to a free end of said outside strap,

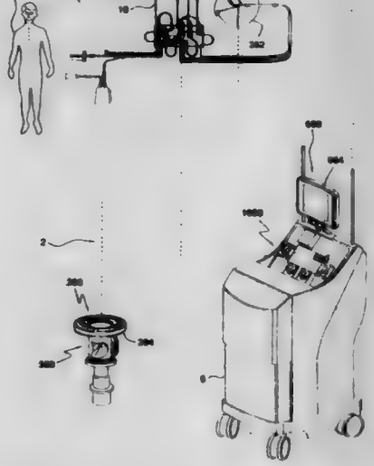
a first fastener of a mating unidirectional fastener pair secured on a bottom portion of said body member and adapted to correspond to the calcaneus of a wearer's foot, when in use and a second fastener of a unidirectional fastener pair positioned on a central region of one of said stabilizing straps, such that when that stabilizing strap is brought across the top of a wearer's foot, downwardly and underneath the foot, and then upwardly again such that said free end thereof is releasably attached to said ankle portion, said mating unidirectional fastener pair is secured together such that it restricts lateral relative movement between the stabilizing strap and the bottom portion of the body member in substantially all but one direction.

5,795,317

EXTRACORPOREAL BLOOD PROCESSING METHODS AND APPARATUS

Mark J. Brierton, Littleton; Victor D. Dolecek, Englewood; Leon E. Bilodeau, Littleton, and Russell Hempstead, Boulder, all of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Jun. 7, 1995, Ser. No. 486,217
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—5 **18 Claims**



1. A disposable assembly for use in an extracorporeal blood processing system, comprising:

blood removal conduit for transferring whole blood from a donor;

blood return conduit for transferring uncollected blood components to a donor, a first portion of said blood removal conduit and a first portion of said blood return conduit being in direct fluid communication;

a single pressure sensor responsive to positive and negative pressure changes, said pressure sensor interconnected in direct fluid communication to one of said first portion of said blood removal conduit and said first portion of said blood return conduit, wherein said pressure sensor is responsive to pressure changes in said first portions of said blood removal conduit and blood return conduit.

5,795,318

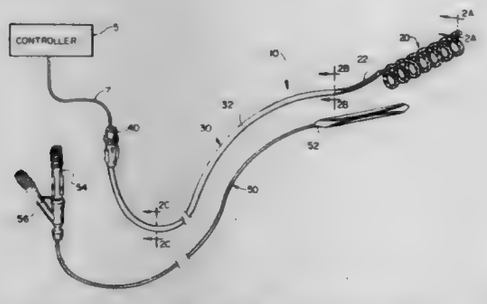
METHOD FOR DELIVERING DRUGS TO A VASCULAR SITE

Lixiao Wang; Roger Hastings, both of Maple Grove; Paul Buscemi, Long Lake, and Sew-Wah Tay, Plymouth, all of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Continuation of Ser. No. 471,635, Jun. 6, 1995, abandoned, which is a division of Ser. No. 129,860, Sep. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 55,635, Apr. 30, 1993, abandoned. This application Feb. 20, 1997, Ser. No. 802,521

Int. Cl.[6] **A61F** *2/06;* **A61M** *5/00*

U.S. Cl. 604—8 **5 Claims**



1. A method for intravascular delivery of a medication or a drug to a vascular site in the vascular system of a patient said vascular site being a coronary artery, said method comprising the steps of:

providing a medication or drug:

providing a catheter, said catheter comprising: an elongate shaft with a proximal end and a distal end, the proximal end being substantially linear, the distal end comprising a circumferentially continuous elongate member having two configurations, an elongated configuration, and an expanded configuration wherein said distal end is coiled about an axis that is substantially parallel to the proximal end, the coiled distal end having a length L greater than its outer diameter D, the shaft also having a drug delivery lumen extending from the proximal end to the distal end, the distal end of the shaft having a plurality of holes in fluid communication with the drug delivery lumen;

introducing the catheter into the vascular system of a patient,

the catheter to the vascular site, the catheter having an outer diameter D of about 0.04–0.16 inches and an inner diameter d of about 0.03–0.13 inches while in said vascular site, and wherein when the distal end is in its expanded configuration, said holes at the distal end of the drug delivery lumen face an internal wall of the vascular site; and

delivering the drug or medication through the drug delivery lumen and the holes at the distal end of the drug delivery lumen to the coronary artery.

5,795,319

EASILY REMOVABLE URETERAL STENT

Mohammed Ali, Shorewood, Wis., assignor to Circon Corporation, Racine, Wash.

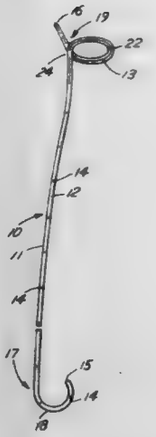
Filed Mar. 7, 1997, Ser. No. 813,598

Int. Cl.[6] **A61M** *25/00*

U.S. Cl. 604—8 **13 Claims**

1. A ureteral stent for maintaining drainage between the kidney and bladder comprising;

an elongated flexible tubular member having proximal and distal ends connected by a body portion having an axis including a central lumen and a plurality of holes to provide fluid communication between the proximal and distal ends, the proximal end for placement in the bladder, the distal end including retention means for retaining the distal end in the kidney, the distal end retention means comprising the distal end being set in the shape of helical curl, the helical curl having a flex portion which is viewed as the second turn of a loop of the helical curl in the same plane of the body portion when the angle measured between the body portion and the flex portion of the helical curl is 0°–10°, said flex portion of the helical curl being positioned at an angle to the body portion being measured between 15° to 175° to allow for safe and facile removal of the distal end from the kidney.



5,795,320

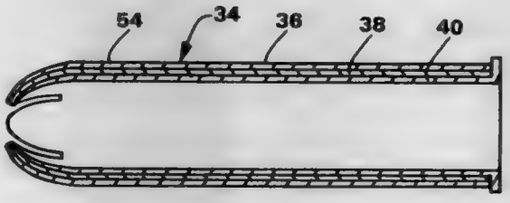
PAPER APPLICATOR CONTAINING A COMPOSTABLE COATING

Steven James Nielsen, Greenville; Yihua Chang, Appleton; Allan James Krueger, Winneconne; Tammy Jo Balzar, Menasha, and Richard Roy Tews, Larsen, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation-in-part of Ser. No. 476,481, Jun. 7, 1995, abandoned. This application Aug. 12, 1996, Ser. No. 696,642

Int. Cl.[6] **A61F** *13/20*

U.S. Cl. 604—12 **24 Claims**



1. An applicator comprising:

a) a tubular member formed from a single layer of paper and having an exterior surface, said tubular member capable of holding a substance which is to be inserted into a body cavity; and

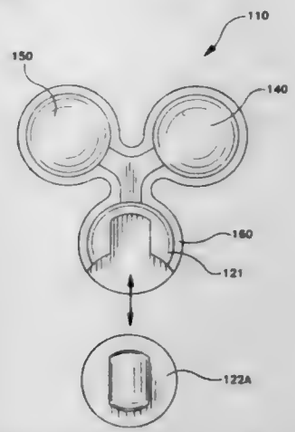
b) a coating applied to said exterior surface, said coating being a single layer of a compostable material and comprising at least 85 percent by weight of a polylactide polymeric material, at least 10 percent by weight of additives, and up to about 5 percent by weight of a residual monomer, wherein said coating provides said tubular member with a dry coefficient of kinetic friction value ranging from between 0.62 to 0.86.

5,795,321

IONTOPHORETIC DRUG DELIVERY SYSTEM, INCLUDING REMOVABLE CONTROLLER

William Allan McArthur, Highland Lakes, N.J.; Scott Edward Stropkay, Carlisle, Mass., and Marc Walter Tanner, London, United Kingdom, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 30, 1994, Ser. No. 316,655
Int. Cl.[6] A61N 1/30
U.S. Cl. 604—20 2 Claims



1. An iontophoretic drug delivery system for delivering at least one active agent to an applied area of a patient, such as the skin, mucus membrane and the like, comprising:

housing having an upper portion, a lower portion and an intennediate portion forming a first pod, a second pod and a third pod, with said pods being generally circular in shape and electrically interconnected by a flexible web, whereby said housing conforms to the contours of the applied area;

electrode assembly means for driving the at least one active agent into the applied area of the patient along electrical field lines generated by an electrical current, said electrode assembly means including at least a first electrode and a second electrode;

said first pod including said first electrode and a first reservoir situated in electrical communication with said first electrode, with said first reservoir containing said at least one active agent to be delivered to the applied area of the patient;

said second pod including said second electrode and a second reservoir situated in electrical communication with said second electrode;

said first pod and said second pod each including power means for supplying electrical current and sufficient energy to drive said at least one active agent into the patient;

said third pod including controller means for controlling and monitoring the electrical energy delivered by said power means during operation so that said at least one active agent is delivered to the applied area of the patient approximate said first reservoir; and

interconnection means for releasably engaging said controller means.

5,795,322

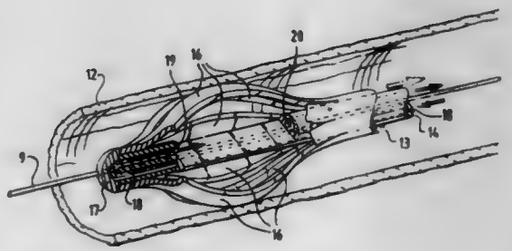
CATHETER WITH FILTER AND THROMBUS-DISCHARGE DEVICE

Alexander C. Boudewijn, Leek, Netherlands, assignor to Cordis Corporation, Miami, Fla.

Filed Apr. 9, 1996, Ser. No. 629,798
Int. Cl.[6] A61B 17/20
U.S. Cl. 604—22 5 Claims

1. Catheter comprising:

a tube-like catheter body with a distal and a proximal end connected by a longitudinal section, wherein the catheter comprises at the distal end an expandable filter element; and



further contained at the distal end, a device for reducing thrombi in size and removing them; and

wherein the filter element is formed by a number of strip-shaped wall sections of of the tube-like catheter body defined in between longitudinal cuts evenly distributed around the circumference; and furthermore comprising a means for moving sections of the tube-like catheter body, said means for moving situated on the distal end and causing certain of the wall-sections to move towards each other in order to make other parts of the wall sections bend outwards; and

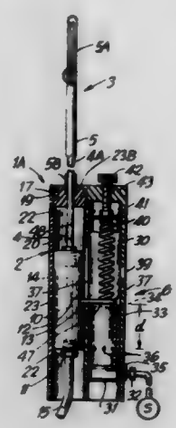
wherein the device for reducing thrombi comprises a jet nozzle connected to a pressure lumen and a discharge opening connected to a discharge lumen, said device situated inside the tube-like catheter body such that said jet nozzle is pointing in the proximal direction and said discharge opening is proximal of said jet nozzle.

5,795,323

POWER-ASSISTED LIPOSUCTION INSTRUMENT AND CANNULA ASSEMBLY THEREFOR

Robert L. Cucin, 8 E. 62nd St., New York, N.Y. 10021

Continuation of Ser. No. 307,000, Sep. 16, 1994, Pat. No. 5,643,198, which is a continuation of Ser. No. 627,240, Dec. 14, 1990, Pat. No. 5,348,535. This application Jun. 26, 1997, Ser. No. 882,927
Int. Cl.[6] A61B 17/20
U.S. Cl. 604—22 4 Claims



1. A powered liposuction device comprising:

(a) A hand-holdable housing having a longitudinal extent, a cylindrically-shaped cannula cavity extending along a substantial portion of said longitudinal extent, and a reciprocation means reciprocatable within said hand-holdable housing and an actuation means; and;

(b) a cannula assembly operably connectable to said hand-holdable housing, and including;

(1) a hollow inner cannula having a distal end, and a proximal end, and at least one inner suction aperture about said inner cannula distal end, said inner cannula proximal end further including an outlet port and a continuous passageway communicating said inner suction aperture with said outlet port,

said inner cannula having an inner cannula base portion extending from said inner cannula proximal end and being releasably connectable to said hand-holdable housing, when said inner cannula base portion is slidably disposed within said cannula cavity,

(2) a hollow outer cannula having a distal end, a proximal end, and at least one outer elongated suction aperture disposed about said outer cannula distal end, said outer cannula having an outer cannula base extending from said outer cannula proximal end, and said hollow inner cannula being disposed within at least a portion of said hollow outer cannula so as to enable relative sliding movement between said hollow outer and inner cannulas while permitting aspiration through said outer and inner suction apertures, along said continuous passageway and out of said outlet port, said inner suction aperture being elongated in the longitudinal direction of said hollow inner cannula, said inner suction aperture being substantially shorter than said outer suction aperture alone said longitudinal direction,

(3) alignment means, operably associated with said hollow inner cannula, for aligning said hollow inner and out cannulas so that said inner suction aperture is in registration with at least a portion of said outer elongated suction aperture as said hollow inner and outer cannulas are caused to undergo said relative sliding movement, and

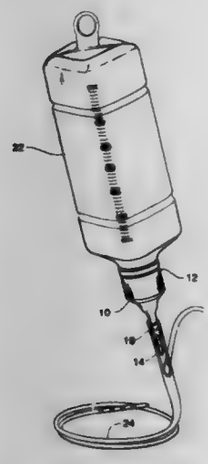
(4) said hollow inner cannula being operably associated with said actuation means, and said hollow outer cannula being supportable in an essentially stationary position with respect to said hand-holdable housing so that said actuation means can effectuate relative sliding movement between said hollow inner and outer cannulas when said reciprocation means reciprocates, and that the location of said aspiration is periodically displaceable a distance equal to a substantial portion of the longitudinal extent of said hand-holding housing.

5,795,324

WOUND AND LAVAGE IRRIGATION CAP APPARATUS AND METHOD FOR USING

Jeffrey W. Morse, Vacaville, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 27, 1994, Ser. No. 368,261
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—27 **9 Claims**



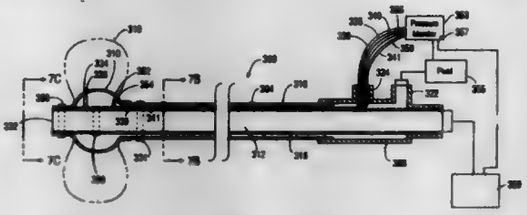
1. A cap for use in wound and lavage irrigation, comprising, on one end of the cap, a threaded end for screwing onto a bottle of sterile irrigation fluid and, on the other end of the cap, a nozzle end having the size and shape of a syringe tip.

5,795,325

METHODS AND APPARATUS FOR ANCHORING AN OCCLUDING MEMBER

Kirsten L. Valley, Mountain View; David W. Snow, Woodside; Sylvia W. Fan, San Francisco, and Richard L. Mueller, Jr., Byron, all of Calif., assignors to Heartport, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 486,216, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 282,192, Jul. 28, 1994, Pat. No. 5,584,803, which is a continuation-in-part of Ser. No. 162,742, Dec. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 123,411, Sep. 17, 1993, abandoned, which is a continuation-in-part of Ser. No. 991,188, Dec. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 730,559, Jul. 16, 1991, Pat. No. 5,370,685. This application Dec. 11, 1995, Ser. No. 570,286
Claims priority, application Australia, Dec. 3, 1992, PL 6170
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—53 **17 Claims**



1. A method for positioning a balloon in a passageway and occluding the passageway, comprising the steps of:

providing a catheter having a shaft and a balloon mounted thereto, the balloon having a collapsed shape and an expanded shape;

inserting the catheter into a body passageway of a patient with the balloon in the collapsed shape;

positioning the catheter in a portion of the body passageway for occluding the portion of the body passageway;

inflating the balloon with a fluid;

monitoring a rate of pressure increase in the balloon with respect to a fluid volume in the balloon; and

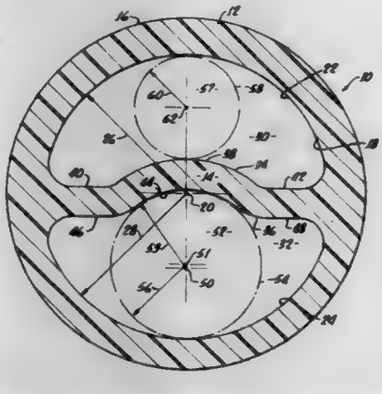
adding an amount of fluid after the rate of pressure increase in the balloon exceeds a predetermined threshold.

5,795,326

DOUBLE LUMEN TUBING DESIGN FOR CATHETER

Jaime E. Simán, Santa Ana, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Filed Jan. 29, 1997, Ser. No. 791,079
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—43 **16 Claims**



1. A double lumen tubing adapted for use as a catheter, said double lumen tubing comprising:

a tubular wall comprising an exterior surface and an interior surface, said interior surface having a circular cross-section located about a longitudinal central axis which defines a tubular conduit, said interior surface comprising a first lumen portion located along a first lumen radius measured from said longitudinal central axis and a second lumen portion located along a second lumen radius measured from said longitudinal central axis;

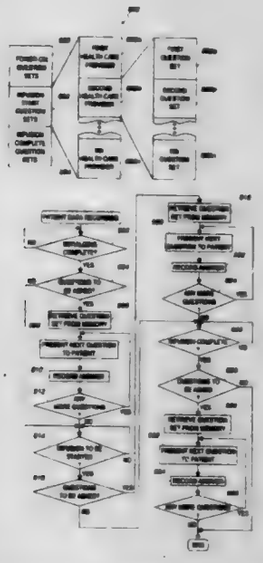
a lumen wall extending parallel to said longitudinal central axis and extending transversely across said tubular conduit between spaced locations on said interior surface, said lumen wall comprising a first surface which, when combined with said first lumen portion of said interior surface, defines a first lumen, said first lumen having a cross-sectional area, said lumen wall further comprising a second surface which, when combined with said second lumen portion of said interior surface, defines a second lumen, said second lumen having a cross-sectional area, wherein the cross-sectional areas of said first and second lumens are substantially equal, said first surface of said lumen wall having a first lumen central arcuate portion and two first lumen wing portions located on opposite sides of said first lumen central arcuate portion, said second surface of said lumen wall having a second lumen central arcuate portion and two second lumen wing portions located on opposite sides of said second lumen arcuate portion, wherein said second lumen arcuate portion is in the shape of a circular arc which is concentric with said first lumen arcuate portion and which has a radius that is from 50 to 60 percent of the radius of said second lumen portion of said interior surface to thereby form a circular guide wire zone in said second lumen which has a radius of from 50 to 60 percent of the radius of said second lumen portion and which is bordered on one side by said second lumen arcuate portion and bordered on the other side by said second lumen portion of said interior surface.

5,795,327

INFUSION PUMP WITH HISTORICAL DATA RECORDING

Larry Wilson, Poway, and Alan E. Jordan, San Diego, both of Calif., assignors to Sabratek Corporation, Niles, Ill.

Filed Mar. 6, 1995, Ser. No. 398,887
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—65 **20 Claims**



1. An infusion apparatus for infusing liquid into a patient, said infusion apparatus comprising:

a housing;

a pump disposed in said housing and adapted to pump liquid through a conduit;

non-volatile memory means;

means for presenting the patient with a plurality of questions to be answered by the patient;

input means for allowing the patient to input a plurality of answers to said plurality of questions; and

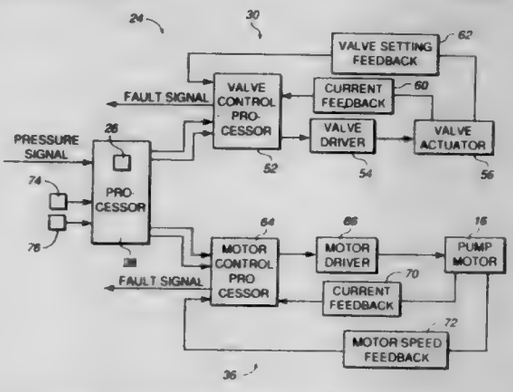
means for storing said answers in said non-volatile memory means.

5,795,328

VACUUM SYSTEM AND A METHOD OF OPERATING A VACUUM SYSTEM

James C. Barnitz, Schwenksville; Joseph M. Curley, Lansdale, and David C. Downey, Holland, all of Pa., assignors to Iolab Corporation, Claremont, Calif.

Division of Ser. No. 330,920, Oct. 28, 1994, Pat. No. 5,624,394.
This application Jun. 12, 1996, Ser. No. 662,115
Int. Cl.[6] A61M *31/00*
U.S. Cl. 604—67 **11 Claims**



1. A method of operating a vacuum system, comprising:

selecting a target operating vacuum pressure for a vacuum line;

determining the current vacuum pressure in the vacuum line;

when the vacuum pressure in the vacuum line is within a first range of values, operating a pump at a generally constant speed, and changing the pressure in the vacuum line by conducting additional fluid into the vacuum line and adjusting the amount of additional fluid conducted into the vacuum line to adjust the pressure toward the target operating pressure; and

when the vacuum pressure in the vacuum line is within a second range of values, changing the pressure in the vacuum line by varying the operation of the pump to adjust the pressure toward the target operating pressure.

5,795,329

Patent Not Issued For This Number

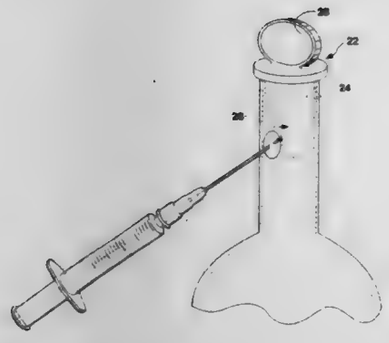
5,795,330

MIXING DEVICE

Aliassghar Tofighi, Belmont, Mass.; Alfred V. Vasconcellos, Cranston, R.I.; Katherine Jacobs, Sagamore Beach, and Pramod Chakravarthy, Cambridge, both of Mass., assignors to Etex Corporation, Cambridge, Mass.

Filed Oct. 10, 1996, Ser. No. 728,440
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—82 **23 Claims**

1. A mixer for the mixing of a first and a second component, comprising:



a) a flexible mixing pouch which in use contains the first component and which has a continuous inner surface that is non-retaining to the components, wherein a portion of the inner surface opposably contacts another portion during mixing; and

b) means for supplying the second component to said pouch for mixing with the first component, said supplying means comprising a needle port, needle penetrable material, or a valve through which a second component can be introduced into said mixing pouch.

5,795,331

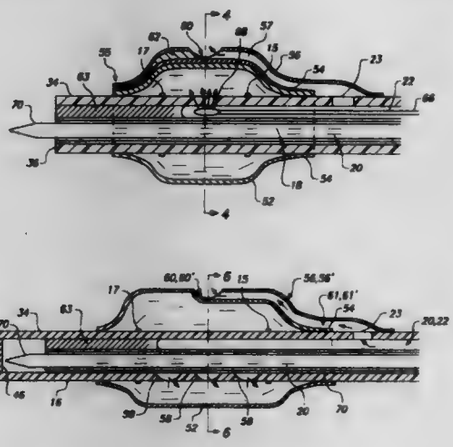
BALLOON CATHETER FOR OCCLUDING ANEURYSMS OF BRANCH VESSELS

Andrew H. Cragg, Edina, and Jonathan Kagan, Minneapolis, both of Minn., assignors to Micro Therapeutics, Inc.

Filed Jan. 24, 1994, Ser. No. 148,374

Int. Cl.[6] A61M *29/00;31/00*

U.S. Cl. 604—96 **49 Claims**



1. A method of forming an occluding cast through a vessel opening in the side wall of a main blood vessel for occluding a peripheral vessel or aneurysm outside of the opening without occluding the main vessel, comprising the steps of:

sealing the main vessel lumen and side walls from the vessel opening into the aneurysm or peripheral vessel to thereby shield the main vessel wall adjacent to the vessel openings;

delivering an occluding agent through the vessel opening into the aneurysm chamber or peripheral vessel; and

maintaining the seal until occlusion is effected or the occluding agent is stabilized, whereby an occluding cast is formed by or about the occluding agent within the aneurysm or peripheral vessel and seals the vessel opening without occluding the main vessel.

5,795,332

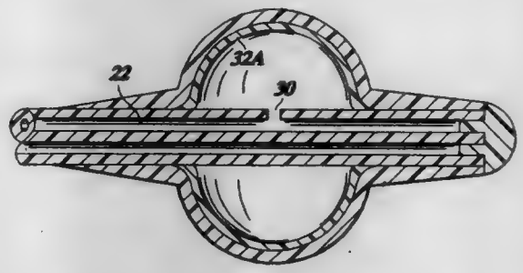
SILICONE CATHETER

Daniel R. Lucas, and Celia L. Lucas, both of 1751 Douglas Rd., Anaheim, Calif. 92806

Division of Ser. No. 631,946, Apr. 15, 1996. This application Oct. 23, 1997, Ser. No. 956,505

Int. Cl.[6] A61M *25/00;29/00*

U.S. Cl. 604—96 **16 Claims**



1. A silicone catheter having an inflatable silicone balloon on the distal end thereof, comprising:

a cured silicone catheter having an inflation lumen therein, an outer surface, and a lateral inflation port on the distal end thereof;

an inner balloon sleeve formed of a substantially cured silicone compound having an inner diameter corresponding to the outer diameter of the catheter and having a length corresponding to the length of the balloon, and positioned onto the distal end of the catheter and over said inflation port;

a silicone compound layer, initially in an uncured condition, formed on the distal end of the catheter, and over the outer surface and ends of said sleeve and having a length extending beyond the ends of said sleeve, whereby said silicone compound does not contact the inner surface of said sleeve; and

whereas the silicone compound layer, in the cured condition, is securely bonded to the outer surface of the catheter and is securely bonded to the ends and the outer surface of said sleeve, and the inner surface of said sleeve is adapted to be released from any adhesion with the catheter by a lateral force on the periphery of the layer over the sleeve, and thereby forms the inflatable silicone balloon thereon.

5,795,333

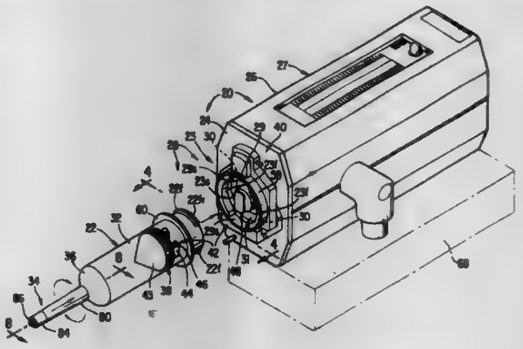
FRONT-LOADING MEDICAL INJECTOR AND SYRINGE FOR USE THEREWITH

David M. Reilly, Glenshaw; Joseph B. Havrilla; Eugene A. Gelblum, both of Pittsburgh, and Daniel Kazousky, Trafford, all of Pa., assignors to Medrad, Inc., Indianola, Pa.

Division of Ser. No. 929,926, Aug. 17, 1992, Pat. No. 5,383,858. This application Jan. 19, 1995, Ser. No. 375,431

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—154 **4 Claims**



1. Apparatus for injecting liquid media, comprising:

a front-loading syringe for holding a liquid medium and including a plunger;

an infector housing having a front wall;

drive means movable through said front wall for controlling the movement of said plunger in said syringe;

a tubular pressure jacket having a rearward end mounted on said front wall of said housing and a forward open end for receiving said syringe therethrough for connection of the syringe plunger to said drive means;

first retaining means mounted on an inside surface of said pressure jacket adjacent the forward open end thereof; and

second retaining means engageable with said first retaining means said first and second retaining means coacting to retain said syringe inside said tubular pressure jacket;

wherein said first retaining means includes a plurality of arcuate flanges formed on said tubular pressure jacket and defining slots therebetween, said second retaining means including a plurality of flanges adaptable to be inserted through said slots, said flanges of said second retaining means forming an interference fit with said flanges of said first retaining means when said second retaining means is rotated with respect to said tubular jacket.

5,795,334

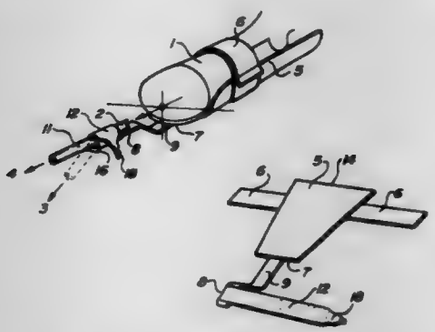
CATHETER SUPPORT CRADLE

John D. Cochrane, III, 1530 Edinborough, Ann Arbor, Mich. 48104

Filed Oct. 7, 1996, Ser. No. 723,454

Int. Cl.[6] A61M *25/02*

U.S. Cl. 604—174 **1 Claim**



1. A catheter support for immobilizing a catheter tube exiting a penis comprising:

an open-faced, flexible pad cradle forming a lengthwise support which is open at its forward and rear ends, said cradle forming a support for a penis extending lengthwise on said cradle to said forward end;

an extension member integral with said cradle and extending forwardly from the cradle;

strap means on said cradle engageable with both the cradle and the penis to secure the penis to the cradle so as to avoid relative movement between said penis and said cradle; and

strap means on the extension member securing a portion of the catheter tube proximate the exit from the penis to said extension member, so as to preclude relative movement between said catheter portion and said penis, thereby precluding relative flexing between catheter and penis to thereby avoid discomfort.

5,795,335

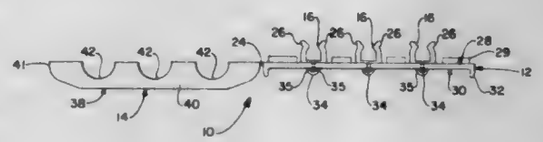
INTRAVENOUS TUBE RESTRAINT AND COVER DEVICE

Eva S. Zinreich, 10 Stream Ct., Owing Mills, Md. 21117

Filed Feb. 26, 1997, Ser. No. 806,833

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—174 **19 Claims**



1. A device for securing and protecting tubing used with a medical patient comprising an anchor plate having an inner surface and an outer surface;

at least one retaining means attached to said inner surface of said anchor plate for retaining medical tubing in a fixed position;

a cover covering at least a portion of said inner surface of said anchor plate; and

a non-adhesive fastening means for positioning said device relative to said patient.

5,795,336

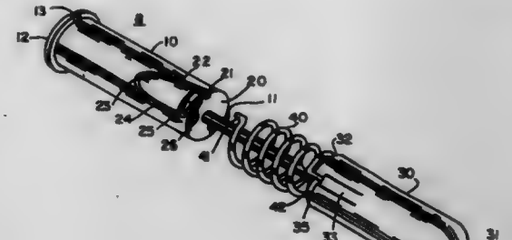
AUTOMATIC NEEDLE PROTECTOR HAVING FEATURES FOR FACILITATING ASSEMBLY

John F. Romano, Washington Crossing; William Patrick McVay, Doylestown, both of Pa., and Larry M. D'Alessio, Manasquan, N.J., assignors to Beech Medical Products, Inc., Middlesex, N.J.

Continuation of Ser. No. 387,676, Feb. 13, 1995, abandoned, which is a continuation-in-part of Ser. No. 159,053, Nov. 29, 1993, Pat. No. 5,389,085, which is a continuation-in-part of Ser. No. 16,285, Feb. 11, 1993, Pat. No. 5,292,314. This application May 2, 1997, Ser. No. 850,338

Int. Cl.[6] A61B *5/14*

U.S. Cl. 604—192 **20 Claims**



1. A needle protector device comprising:

a needle subassembly having a hub and a needle extending from said hub to terminate at a tip, said hub having at least one rib on an exterior surface;

a mount having an upper end, an open lower end, and a tapered interior channel extending from said upper end of said mount, wherein said at least one rib of said hub is press fit into said channel in assembly to retain said needle subassembly in attachment to said mount; and

a protective cover having an upper end coupled to said lower end of said mount and an open lower end, wherein said protective cover is adapted for being in a needle protection position in which said cover is disposed over said needle tip or in a retracted position in which said needle tip extends through said open lower is end of said cover.

5,795,337

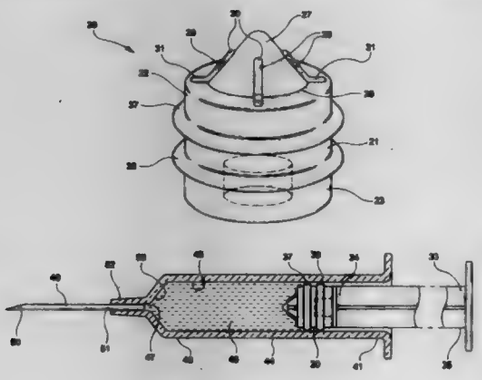
SYRINGE ASSEMBLY AND SYRINGE STOPPER

Jean Pierre Grimard, Vif, France, assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 196,349, Feb. 14, 1994, abandoned. This application Apr. 10, 1996, Ser. No. 630,338

Int. Cl.[6] A61M *5/315*

U.S. Cl. 604—222 **21 Claims**



1. A syringe stopper made of a resilient material for use in a syringe barrel having a substantially cylindrical body comprising:

a piston-like stopper body for slidable fluid-tight engagement inside the barrel of the syringe, said stopper body having an outside diameter, a distal end, a proximal end and a longitudinal axis therethrough; .

a conically-shaped projection on said distal end of said stopper body and projecting outwardly therefrom, said conically-shaped projection defining a base as it intersects said distal end of stopper body, said base having a base diameter less than said outside diameter of said stopper body to provide an exposed portion of said stopper body between the base of the conically-shaped projection and the distal end the stopper body; and

a plurality of elongated discontinuities running along said conically-shaped projection in the form of raised ribs and continuing past the base of the conically-shaped projection into the exposed portion along the distal end of the stopper body, said raised ribs each having a first end on said conically-shaped projection and extending radially outwardly from the longitudinal axis of the stopper body to a second end disposed past the intersection of said base diameter and said distal end of the stopper body on said exposed portion of the distal end of said stopper body.

5,795,338

Patent Not Issued For This Number

5,795,339

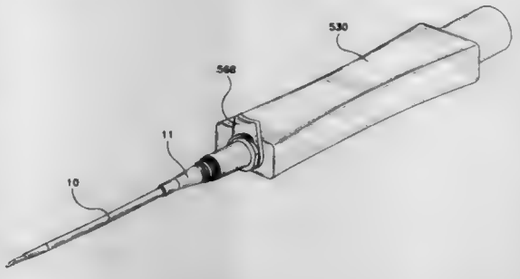
CATHETER-ADVANCEMENT ACTUATED NEEDLE RETRACTION SYSTEM

Timothy J. Erskine, Sandy, Utah, assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 599,670, Feb. 12, 1996, abandoned, which is a continuation of Ser. No. 400,140, Mar. 7, 1995, abandoned. This application Oct. 24, 1996, Ser. No. 736,618

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—264 **11 Claims**



1. A catheter and needle introducer assembly, comprising:

a barrel defining a barrel lumen and having a proximal end and a distal end, the distal end defining a distal wall with an opening extending therethrough;

a catheter having a proximal end and a distal end;

a catheter hub, having an inner wall, affixed to the proximal end of the catheter;

a needle having a sharp distal tip and a proximal end;

a needle hub having a proximal end and a distal end affixed to the proximal end of the needle, the needle hub being disposed in the barrel lumen such that the sharp distal tip of the needle initially extends distally of the distal wall of the barrel through the opening coaxially within the catheter and the catheter hub with the catheter hub adjacent to the distal wall of the barrel;

a spring disposed in the barrel lumen and operatively engaged with the needle hub to urge the needle hub toward the proximal end of the barrel;

a means for retaining the needle hub adjacent to the distal end of the barrel;

a means removably engaged with the catheter hub for contacting the means for retaining the needle hub adjacent to the distal end of the barrel to allow the spring to force the needle hub toward the proximal end of the barrel when the catheter hub is moved distally from the distal wall of the barrel; and

a means for cushioning the proximal end of the needle hub when the needle hub is retracted against the proximal end of the barrel wherein the means for cushioning includes a plurality of tines longitudinally extending from the proximal end of the needle hub.

5,795,340

MICROCATHETER SET

Volker Lang, Zugspitzstrasse 52, 82131 Gauting, Germany

PCT No. PCT/EP95/04290, § 371 Date Nov. 6, 1996, § 102(e) Date Nov. 6, 1996, PCT Pub. No. WO95/20987, PCT Pub. Date Aug. 10, 1995

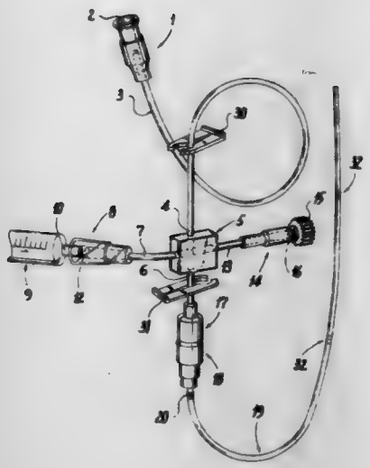
PCT Filed Dec. 23, 1994, Ser. No. 687,357

Claims priority, application Germany, Feb. 5, 1994, 44 03 630.2

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—283 **21 Claims**

1. In a microcatheter set, in particular an epicutaneo cava microcatheter set, comprising a microcatheter (19), a catheter connection device (17,18) for connecting the microcatheter (19) with one end of a first hose (6,3) and a first standard Luer lock connector (1) coupled to an opposite end of the first hose (6,3), wherein



an integrated flushing and medicine application device (9) is arranged in communication with the first hose (3,6) through a second micro-lumen hose (7) and second Luer lock connector (8) and close to and in front of the catheter connection device (17,18), and

the second Luer lock connector (8), first hose (6,3) which is a micro-lumen hose, second micro lumen hose (7) and catheter connection device (17,18) are each formed and arranged with respect to one another to provide minimized dead space, resulting in reduction of overall dead space in the microcatheter set.

5,795,341

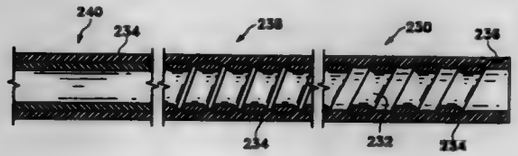
HIGH PERFORMANCE SPIRAL-WOUND CATHETER

Gene Samson, Milpitas, Calif., assignor to Target Therapeutics, Inc., Fremont, Calif.

Division of Ser. No. 338,018, Nov. 10, 1994. This application Jun. 7, 1995, Ser. No. 475,761

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **39 Claims**



1. A single lumen over-the-wire catheter section comprising:

an elongate tubular member having a proximal end and a distal end and a single passageway defining an inner lumen extending between those ends, comprising

a.) a first ribbon stiffener having a width and thickness, and said first ribbon stiffener is spirally wound to form axially-spaced-apart helical turns with a handedness to form said passageway and an outer stiffener surface and wherein said outer stiffener surface is at least partially coated with an adhesive material, and

b.) at least one tubing member exterior to and contiguous with and adherent to said first ribbon stiffener via said adhesive material wherein said exterior tubing member adherent to said first ribbon stiffener substantially prevents kinking at the at least one tubing member.

5,795,342

OCULAR IRRIGATION DEVICE

Michael B. Shapiro, Madison, and Michael L. Kvalo, Portage, both of Wis., assignors to Eye-Deal Ocular Safety Products, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 589,295, Jan. 22, 1996, abandoned. This application Aug. 2, 1996, Ser. No. 691,271

Int. Cl.[6] A61M *35/00*

U.S. Cl. 604—300 **11 Claims**



1. An ocular irrigation device for use in holding opposing eyelids of an eye separated and providing irrigating fluid under at least one of the eyelids, said irrigation device comprising:

an engaging member engageable with at least one of the eyelids; and

a fluid dispenser having at least one fluid-dispensing orifice, said fluid dispenser is arranged relative to said engaging member such that said orifice is positionable under at least one of the eyelids when the engaging member is engaging the opposing eyelid.

5,795,343

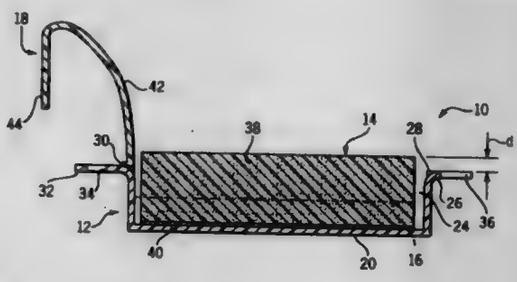
ANTISEPTIC APPLICATOR DEVICE

Edward Q. Yavitz, 3828 Spring Creek Rd., Rockford, Ill. 61114, and Randall S. Yavitz, 27 W. Morten Ave., Phoenix, Ariz. 85021

Filed May 6, 1997, Ser. No. 851,744

Int. Cl.[6] A61M *35/00*

U.S. Cl. 604—310 **20 Claims**



10. A device for applying antiseptic to an area of injury, comprising:

a housing having a cavity and a rim extending along the periphery of the cavity;

an applicator element attached to the housing and disposed within the cavity, the applicator element comprising an absorbent pad;

a cover attached to the rim to seal the applicator element within the cavity; and

an antiseptic disposed within the cavity in contact with the applicator element, wherein the cover may be pulled back to expose the applicator element for use in applying the antiseptic to a desired area, wherein the absorbent pad is compressed

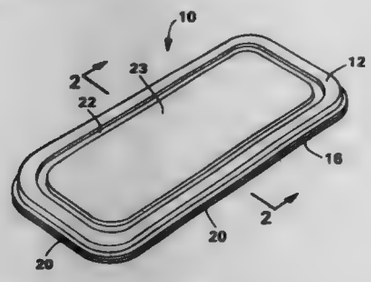
when sealed within the cavity, and further wherein the absorbent pad expands and extends beyond the rim when the cover is pulled back.

5,795,344

ABSORBENT ARTICLE WITH PROTECTION CHANNEL

Charles John Chappell, Appleton, Wis., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Apr. 2, 1997, Ser. No. 832,595
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—379 24 Claims



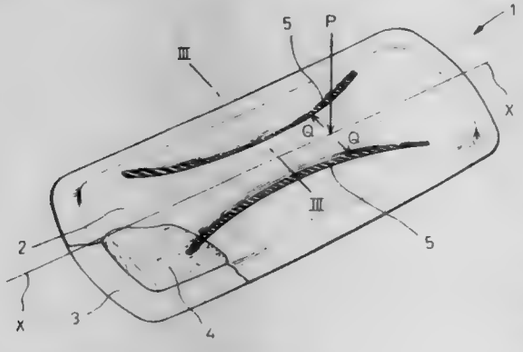
1. An absorbent article comprising:
a. an absorbent; and
b. a channel positioned inward from and along at least a portion of an edge of said absorbent, said channel substantially defining in said absorbent an inner portion and an outer portion, wherein the density of said absorbent in said inner portion is greater than the density of said absorbent in said outer portion.

5,795,345

SANITARY NAPKIN

Satoshi Mizutani, and Kenichi Hisada, both of Ehime-ken, Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Oct. 21, 1996, Ser. No. 731,808
Claims priority, application Japan, Oct. 19, 1995, 7-271253
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—380 5 Claims



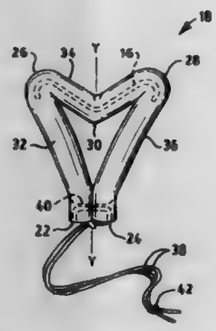
1. An absorbent article comprising;
a liquid-permeable topsheet;
a liquid impermeable backsheet;
a liquid-absorbent core disposed therebetween, said core defining an absorbing region; and
said absorbent article having a pair of compression-molded grooves formed in said topsheet and said core, said grooves extending longitudinally along transversely opposite sides of said absorbing region, and said grooves are spaced apart from each other by a distance gradually increasing from the minimum at a longitudinally middle point thereof to the maximum at longitudinally opposite ends thereof, said grooves having higher and lower density compressed zones alternately arranged in a longitudinal direction thereof.

5,795,346

TAMPON HAVING A RESILIENT MEMBER

Amy Michele Achter, Neenah; Tammy Jo Balzar, Menasha, and Donald George Fox, Neenah, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Aug. 12, 1996, Ser. No. 695,488
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 20 Claims



1. A tampon comprising:
a) an absorbent;
b) a resilient member positioned on said absorbent, said absorbent and said resilient member being formed into an elongated softwind having a first end and a second end, said softwind being folded upon itself such that said first and second ends are aligned adjacent to one another and said softwind contains at least two folds therebetween, said resilient member extending beyond said two folds, said softwind being compressed into an elongated pledget having an insertion end and a trailing end with said resilient member located at said insertion end and said resilient member capable of expanding at least a portion of said pledget to intercept fluid flow when inserted into a woman's vagina; and
c) withdrawal means for removing said tampon from a woman's vagina, said withdrawal means being attached to said first and second ends of said softwind.

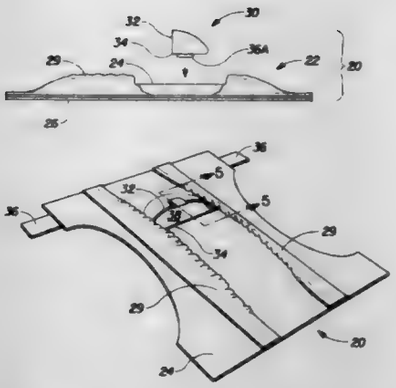
5,795,347

DIAPER HAVING EXPLOSIVE SPACER

Donald Carroll Roe, West Chester, and Kimberly Ann Dreier, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 441,269, May 15, 1995, Pat. No. 5,667,503, which is a division of Ser. No. 353,578, Dec. 9, 1994, Pat. No. 5,514,121. This application Nov. 25, 1996, Ser. No. 758,121
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 3 Claims

1. A diaper having a longitudinal centerline and a lateral centerline orthogonal thereto, said lateral centerline dividing said diaper into front and rear portions, said diaper comprising:
a chassis comprising:
a liquid impervious backsheet,
a liquid pervious topsheet having an inwardly oriented surface and an outwardly oriented surface;
an absorbent core intermediate said topsheet and said backsheet, said core facing said inwardly oriented surface of said topsheet; and
an expulsive spacer releasably affixed to said topsheet, whereby said spacer may be removed from said topsheet without tearing or gross deformation of either said spacer or said topsheet, said spacer being disposed on said outwardly oriented surface of said topsheet and having a



concave side and a convex side, said expulsive spacer being oriented such that said concave side faces towards said front portion of said diaper, and receivably collecting fecal material deposited on said outwardly oriented surface of said topsheet, whereby said spacer can expel at least a portion of the fecal material contained therein.

5,795,348

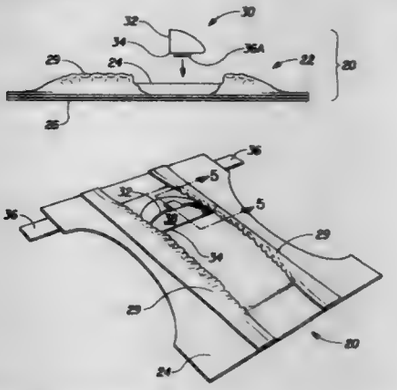
DIAPER HAVING EXPULSIVE SPACER

Donald Carroll Roe, West Chester, and Kimberly Ann Dreier, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 758,121, Nov. 25, 1996, which is a continuation of Ser. No. 441,269, May 15, 1995, Pat. No. 5,667,503, which is a division of Ser. No. 353,578, Dec. 9, 1994, Pat. No. 5,514,121. This application Jun. 23, 1997, Ser. No. 880,958

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.1 **7 Claims**



1. A package comprising:

a first plurality of diapers, each said diaper having a longitudinal centerline and a lateral centerline orthogonal thereto, said lateral centerline dividing said diaper into front and rear portions, said diaper comprising:

a chassis comprising:

a liquid impervious backsheet;

a liquid previous topsheet having an inwardly oriented surface and an outwardly oriented surface; and

an absorbent core intermediate said topsheet and said backsheet, said core facing said inwardly oriented surface of said topsheet;

said package further comprising a second plurality of expulsive spacers, each said spacer being disposable on said outwardly oriented surface of said topsheet and movable relative to said chassis, said spacer receiving fecal material in use, whereby said spacer may be moved to expel fecal material from said disposable absorbent article.

5,795,349

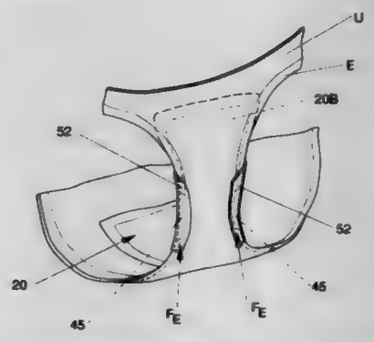
ABSORBENT ARTICLES HAVING PANTY COVERING COMPONENTS THAT NATURALLY WRAP THE SIDES OF PANTIES

Bruce William Lavash, West Chester; Thomas Ward Osborn, III; Robb Eric Olsen, both of Cincinnati, all of Ohio; Katherine Louise Mayer, Newport, Ky.; Letha Margie Hines, Cincinnati, Ohio, and Noriko Kawai, Hyogo, Japan, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 474,949, Jun. 7, 1995, which is a division of Ser. No. 96,121, Jul. 22, 1993, Pat. No. 5,584,829, which is a continuation-in-part of Ser. No. 707,233, May 21, 1991, Pat. No. 5,346,486, Ser. No. 832,246, Feb. 7, 1992, Pat. No. 5,344,416, Ser. No. 915,133, Jul. 23, 1992, Ser. No. 42,840, Apr. 5, 1993, Pat. No. 5,354,400, and Ser. No. 73,256, Jun. 4, 1993, Pat. No. 5,389,094. This application Sep. 3, 1996, Ser. No. 706,931

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—387 **17 Claims**



1. An absorbent article having a longitudinal dimension extending in a longitudinal direction and a transverse dimension extending in a transverse direction, a longitudinal centerline, and a transverse centerline, said absorbent article comprising:

a main body portion comprising an absorbent core, said main body portion having a body-facing side, a garment-facing side, and a pair of longitudinal side edges;

an undergarment covering component, said undergarment covering component being joined to the garment-facing side of said main body portion by a decoupling component, said decoupling component being joined to said main body portion at a pair of junctures being unattached between said junctures to define an unattached region of said main body portion that can move apart from said undergarment covering component, said undergarment covering component comprising a pair of side wrapping elements that extend laterally outward beyond the longitudinal side edges of said main body portion a distance of less than one-half the width of said main body portion to distal edges, wherein at least a portion of said undergarment covering component is extensible generally in the longitudinal direction between said affixation points and said distal edges of said side wrapping elements.

5,795,350

DISPOSABLE ABSORBENT ARTICLE HAVING A MECHANICAL FASTENER

Christoph Johann Schmitz, Euskirchen-Stotzheim, Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/16669, § 371 Date Jun. 30, 1997, § 102(e) Date Jun. 30, 1997, PCT Pub. No. WO96/20676, PCT Pub. Date Jul. 11, 1996

PCT Filed Dec. 13, 1995, Ser. No. 860,123

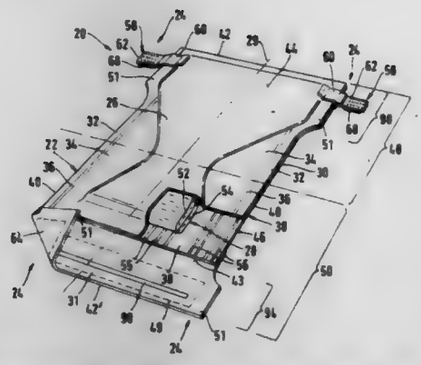
Claims priority, application European Pat. Off., Dec. 29, 1994, 94120878

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—391 **8 Claims**

1. An absorbent article (**20**) comprising:

a garment facing backsheet having two longitudinal sides (**40**),



a front transverse edge (**42'**), a front waist region (**94**) located along the front transverse edge (**42'**), a back transverse edge (**42**), and a back waist region (**98**) located along the back transverse edge (**42'**), an absorbent core (**28**) joined to said backsheet; and

a mechanical closing system (**24**) comprising:

at least two hook-type fastening members (**58**) located in the back waist region (**98**) and extending transversely beyond each longitudinal side (**40**), and

a landing zone (**49**,**49'**) located in the front waist region (**94**) comprising a landing member (**64**) for mechanically engaging with the hook-type fastening members (**58**),

wherein the backsheet comprises a first section (**30**), having a front peripheral edge (**43**) located outside the landing zone (**49**), and a second section (**31**) joined to the first section (**30**), the second section (**31**) extending longitudinally outwardly from the first section (**30**) toward the front transverse edge (**42'**), the second section being at least partly located in the front waist region (**94**) and forming the landing member (**64**), and

wherein the second section (**31**) of the backsheet comprises an elastically extendible material, the elastically extendible material exerting a contractive force of between 20 and 250 g when the material is stretched by 2.54 cm.

5,795,351

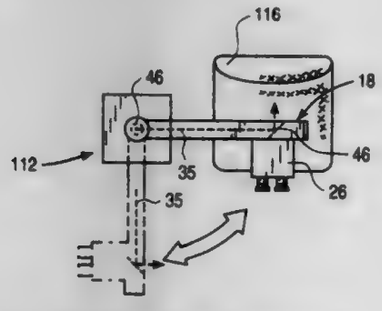
LASER REFRACTIVE SURGERY STATION

Terrance N. Clapham, Saratoga, Calif., assignor to VISX, Incorporated, Santa Clara, Calif.

Filed Nov. 19, 1996, Ser. No. 752,662

Int. Cl.[6] A61F *9/007*

U.S. Cl. 606—4 **17 Claims**



1. A laser refractive surgery station, comprising:

a base frame;

a head support unit mounted on said base frame and including means for supporting and retaining the head of a patient seated in an upright position adjacent to said base frame;

an optical examination instrument mounted on said base frame in a position for use by a physician in preparation for and performance of laser refractive surgery;

a laser unit mounted in a predetermined fixed position relative to said base frame, said laser unit including means for generating a controlled power laser beam for corneal photoablation; and

optic means for coupling said laser beam to said optical examination instrument for redirection thereby to an eye of the patient;

wherein said base frame comprises a support pole mounted adjacent to an examination chair, and movable frame means on said support pole for movement between a first position generally in front of the examination chair and a second position displaced away from in front of the examination chair, said head support unit and said optical examination instrument being mounted on said movable frame means.

5,795,352

Patent Not Issued For This Number

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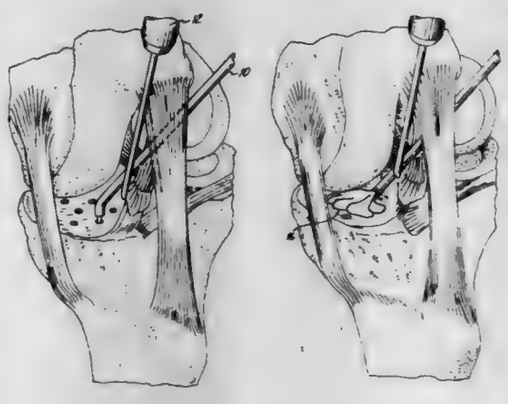
JOINT RESURFACING SYSTEM

Jeffrey C. Felt, Greenwood, Minn., assignor to Advanced Bio Surfaces, Inc., Minnetonka, Minn.

Continuation of Ser. No. 474,113, Jun. 7, 1995, abandoned, which is a division of Ser. No. 239,248, May 6, 1994, Pat. No. 5,556,429. This application Nov. 2, 1996, Ser. No. 742,444

Int. Cl.[6] A61F *2/30;2/46*

U.S. Cl. 623—18 **5 Claims**



1. A system comprising:

(a) a plurality of components adapted to be mixed to form a flowable polyurethane biomaterial for delivery to the surface of a knee joint where the biomaterial would cure to provide a permanent replacement material for natural bone or cartilage of the joint, and

(b) a delivery instrument for delivery of the biomaterial to the knee joint, the instrument being adapted to mix the plurality of components at the time of use and to inject the mixed components through a cannula adapted to be inserted through a tissue access site and operated under arthroscopic control and visualization, and

(c) an arthroscopic drill bit for use in drilling one or more anchor points into subchondral bone of the knee wherein the anchor points formed by the drill bit prevent rotational or translational movement of the cured biomaterial within the knee joint.

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5,795,354

PROCESS FOR DYEING WOOL AND OTHER KERATIN FIBRES

John Anthony Rippon, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australian Capital Territory, Australia

PCT No. PCT/AU88/00086, § 371 Date Sep. 25, 1989, § 102(e) Date Sep. 25, 1989, PCT Pub. No. WO88/07602, PCT Pub. Date Oct. 6, 1988

PCT Filed Mar. 25, 1988, Ser. No. 423,472

Claims priority, application Australia, Mar. 25, 1987, PI1067/87

Int. Cl.[6] D06P *5/00;* D06M *13/00*

U.S. Cl. 8—128.1 35 Claims

1. A method of applying an anionic dye to keratin fibres which comprises pretreating the fibres by contacting them with an alkaline solution of an amphoteric surfactant, said solution having a pH of not greater than 11, and thereafter applying dye to the pretreated fibres as an acidic dye medium.

5,795,355

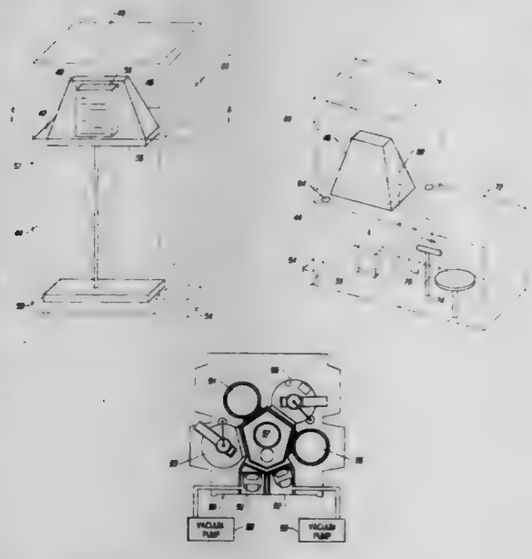
INTEGRATED MICRO-ENVIRONMENT CONTAINER LOADER APPARATUS HAVING A SEMIPERMEABLE BARRIER

J. Christopher Moran, Saratoga, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Dec. 24, 1996, Ser. No. 773,011

Int. Cl.[6] H01L *21/68;* B65G *49/07*

U.S. Cl. 29—25.01 28 Claims



1. A wafer loading apparatus comprising:

a load lock chamber for use with a process environment, said load lock chamber having an upper chamber for receiving a micro-environment container therein, and a lower chamber;

a separator between said upper and lower chambers, said separator having least one aperture formed therethrough;

movable carrier plate selectably operable to open and close said micro-environment container and to selectably remove a cassette of wafers from said micro-environment container and into said lower chamber, wherein said micro-environment container is supported by said separator to form an impermeable barrier between said lower chamber and said upper chamber; and

a semipermeable barrier in said at least one aperture to prevent any particulate material in said upper chamber from entering said lower chamber;

wherein said upper and lower chambers may be simultaneously evacuated.

5,795,356

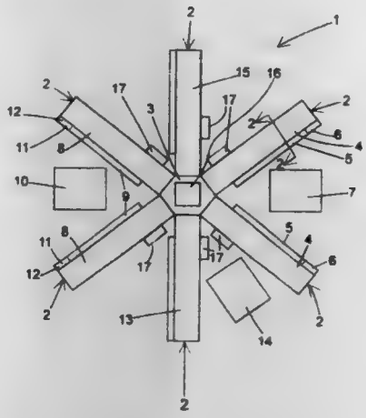
MICROELECTRONIC COMPONENT FABRICATION FACILITY, AND PROCESS FOR MAKING AND USING THE FACILITY

Lindsay Leveen, Tiburon, Calif., assignor to SLSP Partners, Inc., Rancho Santa Fe, Calif.

Filed May 31, 1996, Ser. No. 655,958

Int. Cl.[6] H01L *21/50;* B01L *1/04*

U.S. Cl. 29—25.01 23 Claims



11. A method of fabricating a microelectronic device comprising the steps of:

first processing a work piece with a first process in a first processing area, which processing area radiates outwardly from a central hub, wherein the processing area is covered by a first housing connected to a hub housing which covers the central hub, and wherein the first processing area has multiple microelectronic device processing tools;

first transporting the work piece along the first processing area to said central hub;

second transporting the work piece from the central hub and along a second processing area for processing the work piece in a second process, which second processing area radiates outwardly from the central hub, wherein the second processing area is covered by a second housing connected to said hub housing which said second housing is spaced from said first housing, wherein said buildings are capable of human habitation, and wherein said second processing area has multiple microelectronic device processing tools; and

second processing the work piece in the second processing area.

5,795,357

ELECTRODE MANUFACTURING METHOD FOR RECHARGEABLE BATTERIES

Jin-soo Kim, Kyungki-do, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Continuation-in-part of Ser. No. 783,121, Jan. 14, 1997, abandoned. This application Aug. 21, 1997, Ser. No. 918,679

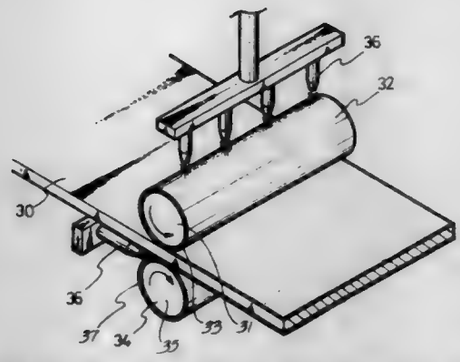
Claims priority, application Rep. of Korea, May 15, 1996, 1996-16154

Int. Cl.[6] H01M *4/04;* B05D *5/12*

U.S. Cl. 29—623.5 3 Claims

1. A method for coating a rechargeable battery electrode with an aqueous binding material, comprising the steps of:

spraying opposing roller members with the aqueous binding material; and



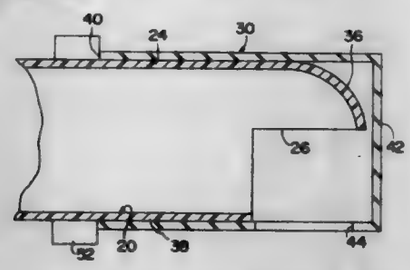
passing the electrode through the roller members to coat the electrode with the aqueous binding material sprayed onto the roller members.

5,795,358

REMOVEABLE DEFLECTOR BOOT FOR A WET/DRY VACUUM CLEANER

John J. Scanlon, Wilmington, Del.; Jay J. Herring, Landenberg, Pa., and Richard W. Giannetta, Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Continuation of Ser. No. 699,429, Aug. 19, 1996, abandoned. This application Jul. 2, 1997, Ser. No. 887,363
Int. Cl.[6] B01D *45/08*
U.S. Cl. 55—320 **3 Claims**



1. In a wet/dry vacuum cleaner including a canister having an interior region defining a chamber, a motor mounted on the canister, a filter mounted on the canister and disposed within the chamber, and an inlet fitting attached to the canister, said inlet fitting being positioned adjacent the filter wherein particles of debris flow through the inlet fitting and into the chamber of the canister generally towards the filter, the improvement comprising: a resilient, removable deflector boot secured to the inlet fitting for deflecting said particles of debris away from the filter, said deflector boot having a cylindrical wall having an open end at one end thereof and an end wall that encloses an opposing end of the cylindrical wall, said cylindrical wall having an opening formed therein, said open end of the cylindrical wall being sized for stretching over the inlet fitting to releasably secure the deflector boot to the inlet fitting.

5,795,359

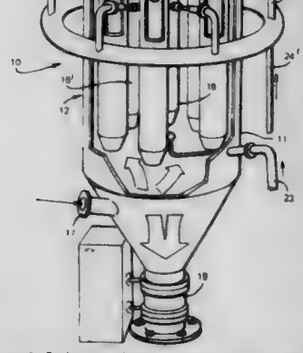
APPARATUS FOR SEPARATING PARTICULATE AND/OR POWDERY MATERIAL FROM AN ENTRAINING GAS

Andrew McLeish; Roy Cartilage; Michael Coffey, and Michael Prior, all of Cheshire, United Kingdom, assignors to Hosokawa Micron Limited, Cheshire, United Kingdom

Continuation of Ser. No. 341,874, Nov. 15, 1994, abandoned. This application Sep. 23, 1996, Ser. No. 710,884
Int. Cl.[6] B01D *46/04*
U.S. Cl. 55—242 **21 Claims**

1. An apparatus for separating particulate or powdery material from an entraining gas including means for in-situ washing, comprising a housing defining a closed chamber having an inlet for the material and gas, an outlet in a lower region of the housing for separated material, an outlet for filtered gas and tubular filter means disposed between the inlet and gas outlet and mounted such that the gas must pass through said filter means to reach the gas outlet,

wherein first washing means for introducing a washing liquid are provided in said chamber and disposed to wash an interior portion of the housing and said filter means, and second washing means are disposed in an upper region of said tubular filter means, said second washing means comprising nozzles connected to the end of a liquid supply pipe which extends coaxially or concentrically within a back flow gas supply pipe.

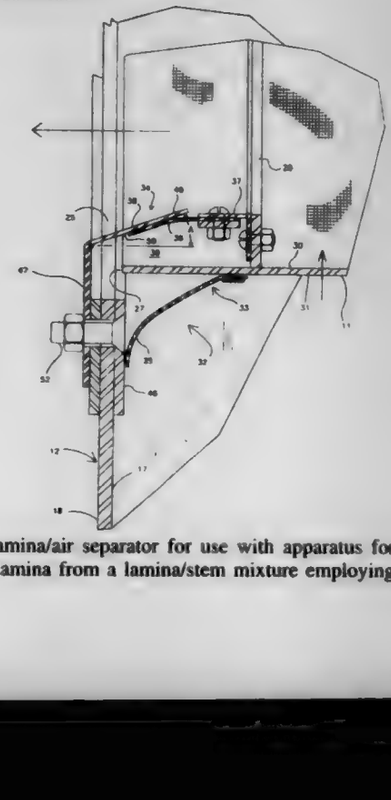


5,795,360

APPARATUS FOR THE SEPARATION OF TOBACCO LAMINA FROM AN AIR STREAM

Sam Levy, and James H. Lowe, Jr., both of Richmond, Va., assignors to Mactavish Machine Manufacturing Co., Richmond, Va.

Filed Feb. 26, 1996, Ser. No. 607,014
Int. Cl.[6] B01D *45/00*
U.S. Cl. 55—408 **9 Claims**



1. A lamina/air separator for use with apparatus for removing tobacco lamina from a lamina/stem mixture employing a recircu-

lating air current and producing a lamina-entraining air stream, said separator comprising:

1) a stationary housing defined by opposed sidewalls, front and rear walls, top portion and lower extremity, said housing being elongated horizontally between said sidewalls, each sidewall being bounded by an interiorly directed face and opposed exteriorly directed face,

2) an elongated entrance port disposed within said front wall adjacent said top portion,

3) an elongated lamina discharge port disposed at said lower extremity,

4) an air exit port disposed in each sidewall,

5) an air-permeable drum of circular cylindrical configuration bounded by interior and exterior surfaces and extending upon a center axis of rotation between opposed open extremities which communicate with said air discharge ports, and

6) a sealing assembly interactive between each extremity of said drum and the corresponding sidewall to define a stagnant zone that surrounds said extremity, each sealing assembly comprised of:

a) a first resilient sealing strip encircling the exterior surface of said drum and attached thereto, said strip extending outwardly from the drum and resiliently urged toward said axis and into sliding contact with the interiorly directed face of said sidewall,

b) a second circular resilient sealing strip disposed within said drum and resiliently urged toward said axis, and

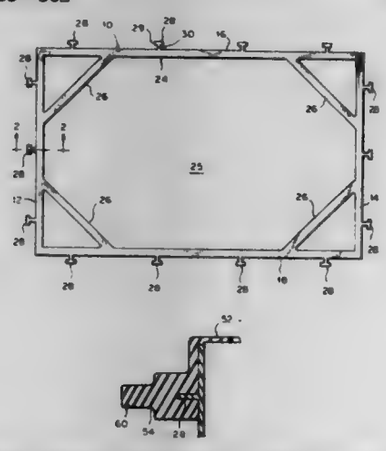
c) a stationary annular flange supported by the exteriorly directed face of said sidewall at an angle of between 10 and 30 degrees with respect to said drum and defined by inside and outside surfaces, said outside surface being positioned to be slideably contacted by said second strip.

5,795,361

FILTER CONFIGURATION

Roland Vann Lanier, Jr., Belmont, and Gregory Keith Rhyne, Denver, both of N.C., assignors to Dana Corporation, Toledo, Ohio

Filed Mar. 12, 1996, Ser. No. 615,164
Int. Cl.[6] B01D *46/052*
U.S. Cl. 55—502 **18 Claims**



1. A filter element for mounting in a filter housing, the filter element comprising:

a frame having an extent defining a space of a selected area and shape, the frame having a first side and a second side, the second side being open and having inwardly extending support surfaces extending from an outer wall surface of the frame and the first side defining an opening corresponding to the selected area and shape, the first and second sides having parallel extents;

laterally extending flanges projecting outwardly from the frame in a direction parallel to the extent of the first and second sides of the frame;

pleated filter media configured as a continuous block having an area and shape complementing that defined by the frame and being received in the frame, the pleated filter media abutting the inwardly extending support surfaces; and

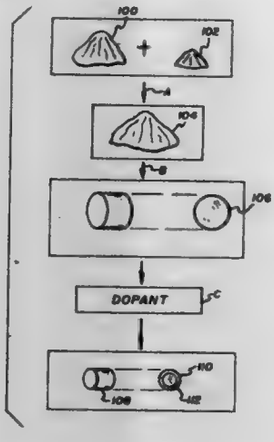
a sealing gasket of sealing material molded around the outer wall surface of the frame and over the laterally extending flanges, the sealing gasket having an overlapping lip portion extending past the inner periphery of the first side of the frame and overlying a peripheral portion of the pleated filter media to adhere the pleated filter media in the frame and to provide a gasket and peripheral mounting surface for retaining the filter element within a housing, the sealing gasket having portions beneath the lip and extending between the pleats to seal the edges of the filter media to ensure that fluid being filtered passes through the filter media.

5,795,362

ALUMINA CERAMIC ARTICLES HAVING CUBIC SPINEL ON SURFACES AND METHODS FOR PREPARING ALUMINA CERAMIC ARTICLES AND FOR SINTERING

Dilip K. Chatterjee; Syamal K. Ghosh, and Thomas N. Blanton, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 398,331, Mar. 3, 1995, abandoned. This application Jun. 25, 1996, Ser. No. 670,058
Int. Cl.[6] C03B *19/01*
U.S. Cl. 65—17.3 **18 Claims**



1. A method for preparing an alumina ceramic article comprising:

compacting a mixture of a first concentration of particulate aluminum oxide and a second concentration of particulate zirconium oxide alloy, said zirconium oxide alloy consisting essentially of zirconium oxide and a secondary oxide selected from the group consisting of MgO, CaO, Y_2O_3, CeO_2, Sc_2O_3 rare earth oxides, and combinations of these secondary oxides; wherein zirconium oxide alloy has a concentration of said secondary oxide of, in the case of Y_2O_3, about 0.5 to about 5 mole percent; in the case of MgO, about 0.1 to about 1.0 mole percent, in the case of CeO_2, about 0.5 to about 15 mole percent, in the case of Sc_2O_3, about 0.5 to about 7.0 mole percent and in the case of CaO from about 0.5 to about 5 mole percent, relative to the total of said zirconium oxide alloy, said compacting further comprising forming a blank;

providing contact between said blank and a material consisting essentially of a dopant oxide selected from the group consisting of MgO, ZnO, FeO, CoO, NiO, and MnO, said contact being subsequent to said forming of said blank; and

sintering said blank in contact with said dopant oxide, said sintering further comprising diffusing said dopant oxide into the surface of said blank, converting said aluminum oxide particles in said surface into cubic spinel, and converting said

zirconium oxide alloy particles in said surface from a tetragonal crystal structure to cubic and monoclinic crystal structures;

wherein said first concentration is less than 5 weight percent of the total of the first and second concentrations or is greater than 75 weight percent of the total of said first and second concentrations, and wherein said first concentration is sufficient to prevent retention of said zirconium oxide alloy particles in said surface in a predominantly tetragonal crystal structure;

whereby said prepared ceramic article has a core consisting essentially of sintered particles of (1) said zirconium oxide alloy in a tetragonal crystal structure and (2) aluminum oxide, and a continuous surface comprising sintered particles of (a) zirconium oxide alloy in non-tetragonal crystal structures and (b) cubic spinel;

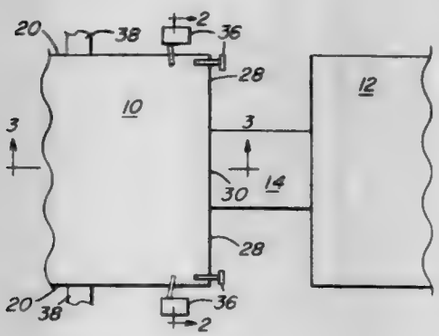
wherein said sintering and compacting are maintained for from about 1 to about 3 hours, at a pressure from about 69 MPa to about 207 MPa and at a temperature from about 1400° C. to about 1600° C.; and wherein said reducing is to a density of from about 99.5 to about 99.9 percent of theoretical density; and further comprising the steps of gradually heating and gradually cooling said article.

5,795,363

REDUCTION OF SOLID DEFECTS IN GLASS DUE TO REFRACTORY CORROSION IN A FLOAT GLASS OPERATION

George A. Pecoraro, Lower Burrell, and Yih-Wan Tsai, Pittsburg, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 25, 1996, Ser. No. 758,139
Int. Cl.[6] C03B 5/16
U.S. Cl. 65—134.4 **27 Claims**



15. In a method for making flat glass by the float process, wherein batch materials are fed into a melting and refining furnace and heated to melt said batch materials to form molten glass, said molten glass passes along said melting section into a refining section for gradually cooling and conditioning of said molten glass to prepare it for forming, said molten glass is then delivered to a forming chamber where said molten glass is floated upon molten metal and formed into a continuous sheet of glass, and wherein portions of said melting section of said furnace are constructed from silica refractory and alkali vapors from said molten glass accumulate within a downstream portion of said melting section and corrodes said silica refractory, the improvement comprising:

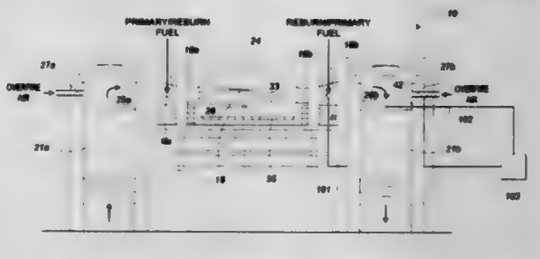
directing a nonreactive gas into a downstream portion of said melting section at a temperature no greater than that of said molten glass within said melting section and at a volume sufficient to reduce the amount of alkali vapors in said downstream portion of said melting section and reduce corrosion of said silica refractory.

5,795,364

REBURNING GLASS FURNACE FOR INSURING ADEQUATE MIXING OF GASES TO REDUCE NO_x EMISSIONS

Roy Payne, and David K. Moyeda, both of Mission Viejo, Calif., assignors to Gas Research Institute

Filed Nov. 1, 1995, Ser. No. 551,402
Int. Cl.[6] C03B 5/16
U.S. Cl. 65—158 **10 Claims**



1. A glass furnace for implementing a reburn process for efficiently minimizing nitrogen oxide emissions while minimizing cost of the reburn process, comprising:

(a) a combustion housing defining:

(1) a primary zone for receiving combustible fuel;

(2) a reburn zone connected to said primary zone for receiving exhaust from said primary zone and reburn fuel to generate a first gas mixture; and

(3) a burnout zone connected to said reburn zone for receiving said first gas mixture and overfire air to generate a second gas mixture;

(b) said reburn zone including:

(1) a first gas mixture measurement plane residing substantially at an exit to said reburn zone; and

(2) a first movable probe disposed in said first gas mixture measurement plane, said first probe for measuring a concentration of said first gas mixture; and

(3) means responsive to said first probe for providing said reburn fuel to said reburn zone so that said first gas mixture at said first gas mixture measurement plane is characterized by a first coefficient of variation that is about 0.4; and

(c) said burnout zone further including;

(1) a second gas mixture measurement plane residing substantially at an exit to said burnout zone;

(2) a second movable probe disposed in said second gas mixture measurement plane, said second probe for measuring a concentration of said second gas mixture; and

(3) means responsive to said second probe for providing said overfire air to said burnout zone so that said second gas mixture at said second gas mixture measurement plane is characterized by a second coefficient of variation that is about 0.4.

5,795,365

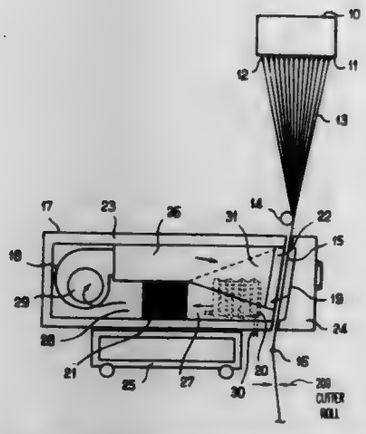
METHOD OF PRODUCING AND TREATING GLASS THREADS BY BLOWING DRIED AIR ACROSS COATED FIBERS

Yvan Salvador, Chambery; Dominique Gerard, La Motte Servolex, and Eric Huet, Barberaz, all of France, assignors to Vetrotex France, Chambery, France

Continuation of Ser. No. 405,947, Mar. 17, 1995, abandoned, which is a continuation of Ser. No. 165,510, Dec. 13, 1993, Pat. No. 5,443,611. This application Jun. 6, 1997, Ser. No. 870,359
Claims priority, application France, Dec. 11, 1992, 92 14910
Int. Cl.[6] C03B 37/022
U.S. Cl. 65—443 **8 Claims**

1. Method of producing and treating at least one glass thread, comprising the steps of:

drawing a number of thin streams of molten glass from a number of apertures disposed at a base of a die plate;



forming the streams into at least one fan of continuous filaments moving from the die plate;

depositing a size composition on the at least one fan of filaments;

reducing the moisture content of at least one current of air;

controlling an amount of moisture on the at least one fan of filaments by subjecting the at least one fan of filaments having a size deposited thereon to the at least one current of air directed onto the at least one fan of filaments and substantially transversely to directions in which said filaments move; and

combining the filaments of the at least one fan of filaments, having size deposited thereon, into at least one thread,

wherein said step of subjecting said at least one fan of filaments to the at least one current of air is performed before the filaments of said at least one fan of filaments are combined to form the at least one thread.

5,795,366

METHOD OF MANUFACTURING A NON-SAG TUNGSTEN WIRE FOR ELECTRIC LAMPS

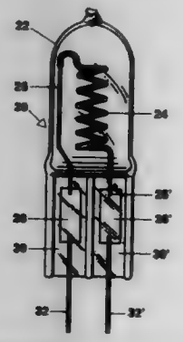
Michael Salmen, Munich, Germany; Hans-Joachim Lunk, Towanda, Pa.; Alfred-Georg Gahn, Koenigsbrunn, Germany; Bernhard Altmann, Langerringen, Germany, and Martin Fait, Berlin, Germany, assignors to Patent-Treuhand-Gesellschaft fuer elektrische Gluehlampen mbH, Munich, Germany

Filed Feb. 28, 1996, Ser. No. 608,552

Claims priority, application Germany, Mar. 3, 1995, 195 07 554.4

Int. Cl.[6] **B22F** *9/24*

U.S. Cl. 75—368 **12 Claims**



1. A method of manufacturing a non-sag tungsten wire comprising the steps of

(a) providing tungsten blue oxide, wherein the tungsten blue oxide comprises, as a major substance, a hexagonal ammonium tungsten bronze of the formula

$$(NH_4)_x(NH_3)_yWO_3$$

wherein x is less than 0.33 and y is less than 0.05;

(b) doping said tungsten blue oxide by adding a doping solution which includes a doping agent to the tungsten blue oxide to obtain doped tungsten blue oxide, wherein said doping agent consists essentially of potassium;

(c) reducing the doped tungsten blue oxide to doped tungsten powder; and

(d) compacting the tungsten powder, and drawing the compacted powder to a tungsten wire from the compacted powder.

5,795,367

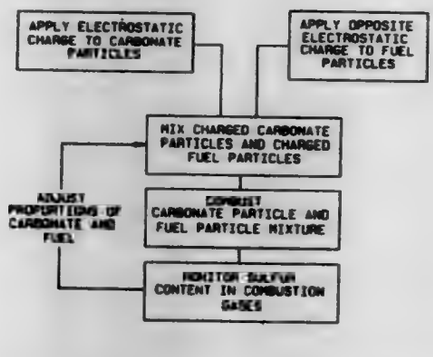
METHOD OF AND APPARATUS FOR REDUCING SULFUR IN COMBUSTION GASES

William R. Kennedy, and John M. Kennedy, both of Taylorville, Ill., assignors to Jack Kennedy Metal Products & Buildings, Inc., Langleville, Ill.

Filed Jun. 25, 1996, Ser. No. 672,341

Int. Cl.[6] **B03C** *3/013*

U.S. Cl. 95—3 **12 Claims**



1. A method for reducing the sulfur content in combustion gases from burning sulfur-bearing fuel, the method comprising the steps of:

applying opposite electrostatic charges to fuel particles and to reaction particles of a substance capable of reacting with the sulfur in the coal to form sulfur compounds, and mixing the oppositely charged particles prior to combustion to facilitate the formation of sulfur compounds from sulfur in the fuel upon combustion of the fuel, to thereby reduce the sulfur content in the combustion gases.

10. An apparatus for mixing powdered carbonate and sulfurbearing fuel particles prior to combustion to reduce sulfur content in the resulting combustion gases, the apparatus comprising:

a first pneumatic line for conveying fuel particles, and a first electrostatic charging device for applying an electrostatic charge to the fuel particles conveyed in the line; and

a second pneumatic line for conveying carbonate powder, and a second electrostatic charging device for applying an electrostatic charge to the carbonate powder conveyed in the line that is opposite in polarity to the charge applied to the fuel particles;

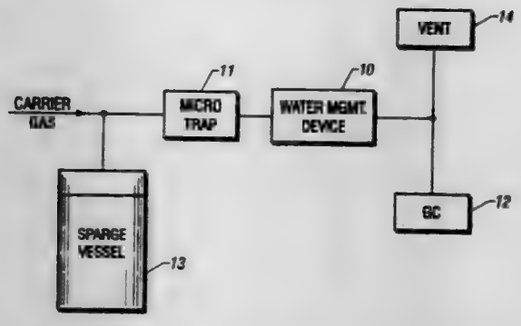
the first pneumatic line and the second pneumatic line being electrically insulated from each other, but outletting to a chamber in sufficiently close proximity to allow the fuel particles and carbonate powder to mix prior to combustion.

5,795,368

MICROTRAP SAMPLE CONCENTRATOR AND METHODS OF USE

Lowell Wright, College Station; Scott M. Abeel, Bryan; Nathan C. Rawls, and Ronald D. Snelling, both of College Station, all of Tex., assignors to O.I. Corporation, College Station, Tex.

Filed Mar. 1, 1996, Ser. No. 609,447
Int. Cl.[6] B01D *15/08;53/04*
U.S. Cl. 95—82 65 Claims



1. A method of delivering greater than 30% of concentrated analytes to an analytical instrument comprising:

a) purging or drawing an analyte stream from a sparge vessel containing a sample;

b) passing the purged analytes through a first passage connecting the sparge vessel to a microtrap where the analytes associate with one or more sorbent material contained within the microtrap; and

c) desorbing the analyte stream from the microtrap at a desorption flow rate of one to three cc/min and directly passing greater than 30% of the desorbed analyte stream through a second passage from the microtrap to an analytical instrument, without first splitting or cryogenically focusing the analyte stream,

wherein the temperature of the second passage is not lower than ambient room temperature;

and wherein the second passage is heated by a heating means to a temperature sufficient to vaporize water in the passage and to expel the vaporized water out of a vent.

5,795,369

FLUTED FILTER MEDIA FOR A FIBER BED MIST ELIMINATOR

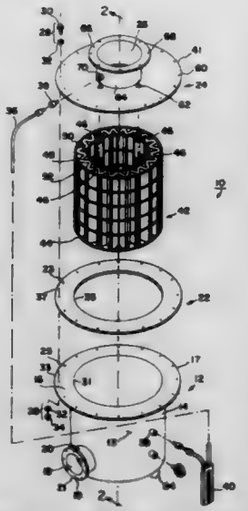
Steven L. Taub, Narberth, Pa., assignor to Ceco Filters, Inc., Conshohocken, Pa.

Filed Mar. 6, 1996, Ser. No. 611,698
Int. Cl.[6] B01D *46/24;39/20*
U.S. Cl. 95—273 47 Claims

1. A fiber bed mist elimination process for the substantial removal of aerosols entrained in a moving gas stream, the process comprising the steps of:

a) introducing an aerosol-laden gas stream into a fiber bed mist eliminator filter; and

b) passing the aerosol-laden gas stream through a fluted fiber bed filter media in the fiber bed mist eliminator filter to produce a treated gas, the fiber bed filter media having a thickness greater than about one inch for removing substantially all of the entrained aerosol by diffusion as the gas stream passes through the fiber bed thickness.

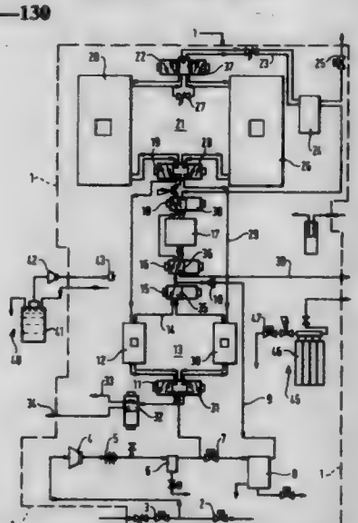


5,795,370

CONTROLLING ATMOSPHERES IN CONTAINERS

Michael E. Garrett, Woking, England, and Norberto Lemcoff, Livingston, N.J., assignors to The BOC Group plc, Windlesham, England

Filed Jun. 20, 1996, Ser. No. 667,151
Claims priority, application United Kingdom, Jun. 28, 1995, 9513111
Int. Cl.[6] B01D *53/047*
U.S. Cl. 96—130 6 Claims



1. A system for controlling the atmosphere within a container comprising

(a) a container;

(b) a first pair of adsorption vessels arranged in parallel, each vessel having an inlet and an outlet and containing a desiccant;

(c) a single adsorption vessel having an inlet and an outlet and containing an adsorbent which selectively adsorbs ethylene from an oxygen-nitrogen-carbon dioxide gas mixture;

(d) a second pair of adsorption vessels arranged in parallel, each vessel having an inlet and an outlet and containing an adsorbent which selective adsorbs nitrogen and carbon dioxide from an oxygen-containing gas mixture;

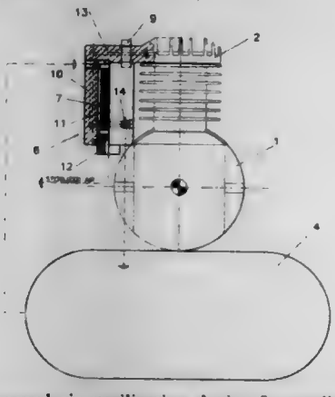
(e) conduit means for transporting gas between said container and the inlets of said first adsorption vessels;
(f) conduit means connecting the outlets of said first adsorption vessels with the inlet of said single adsorption vessel;
(g) conduit means connecting the outlet of said single adsorption vessel with the inlets of said second pair of adsorption vessels;
(h) purge conduit means connecting the outlets of said first pair of adsorption vessels with the inlets of said second pair of adsorption vessels;
(i) bypass conduit means, distinct from said purge conduit means, connecting the outlets of said first pair of adsorption vessels with the inlets of said second pair of adsorption vessels;
(j) means for desorbing ethylene-rich gas from said single adsorption vessel to the atmosphere; and
(k) means for venting carbon dioxide-enriched gas desorbed from said second adsorption vessels to the atmosphere.

5,795,371

DEVICE AND METHOD FOR THE STERILIZATION OF COMPRESSED AIR FOR MEDICAL USE

Bartocci Ezio, Via L. Da Vinci 32, Piacenza, Italy

Filed Jul. 23, 1997, Ser. No. 899,379
Claims priority, application Italy, Jul. 29, 1996, PC96A0018
Int. Cl.[6] B01D *50/00*
U.S. Cl. 96—175 **8 Claims**



1. A compressed air sterilization device for medical use, comprising: means for compressing air which produces heat sufficient to sterilize a filtering cartridge; a filtering cartridge for passing air from the means for compressing air; and means provided which use the heat produced during the air compression to heat the filtering cartridge to a temperature high enough to insure a thermal treatment of the air passing through the filtering cartridge.

5,795,372

NITROGEN-FREE CORROSION INHIBITORS HAVING A GOOD BUFFERING EFFECT

Karlheinz Hill, Erkrath; Sigrid Igelmund, Duesseldorf; Bernd Stedry, Kempen; Juergen Geke, Duesseldorf; Andreas Wilde, Duesseldorf, and Harald Kuester, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP95/04844, § 371 Date Jun. 16, 1997, § 102(e) Date Jun. 16, 1997, PCT Pub. No. WO96/18757, PCT Pub. Date Jun. 20, 1996
PCT Filed Dec. 8, 1995, Ser. No. 860,109
Claims priority, application Germany, Dec. 16, 1994, 44 44 878.3
Int. Cl.[6] C23F *11/12;11/10*
U.S. Cl. 106—14.41 **11 Claims**

1. An aqueous corrosion control formulation comprising:
a. a carboxylic acid having 6 to 44 carbon atoms; and
b. an aromatic hydroxy compound having a pK_a of 7.0 to 11,
wherein a. and b. are present in a weight ratio of 1:2 to 20:1, wherein said formulation is free of nitrogen, and wherein said formulation has a buffering capacity of 1 to 8.

5,795,373

FINISHING COMPOSITION FOR, AND METHOD OF MASS FINISHING

Kyle Elmblad, Kalamazoo, Mich., assignor to Roto-Finish Co., Inc., Kalamazoo, Mich.

Filed Jun. 9, 1997, Ser. No. 871,474
Int. Cl.[6] C23F *11/00*
U.S. Cl. 106—14.42 **10 Claims**

1. A composition used in a mass finishing process comprising 1–15 wt. % monoethanolamine borate, 1–10 wt. % monoethanolamine octanoate, 5–30 wt. % triethanolamine and water.

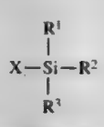
5,795,374

COATING COMPOSITION

Masayasu Itoh; Shigeo Fukuda; Yoshihisa Kawakami; Yoshiro Matsubara; Yasushi Kawamura; Shigeru Masuoka, and Yoshihiro Honda, all of Kanagawa, Japan, assignors to NOF Corporation, Tokyo, Japan

Filed Apr. 15, 1997, Ser. No. 839,702
Claims priority, application Japan, Apr. 17, 1996, 8-095028
Int. Cl.[6] C09D *5/16;* **A01N** *55/10*
U.S. Cl. 106—16 **16 Claims**

1. A coating composition comprising solid ingredients and solvent, said coating composition comprising, as essential components,
(A) at least one rosin compound selected from the group consisting of rosins, rosin derivatives and rosin metal salts;
(B) at least one polymer containing an organosilyl ester group, wherein said at least one polymer is composed of:
i) a polymer obtained from at least one of monomers M represented by formula (1);
ii) a polymer obtained from at least one of said monomers M and at least one of polymerizable monomers other than said monomers M; or
iii) a mixture of the polymers i) and ii),



(1)

wherein R^1, R^2 and R^3 are the same or different and each represents an alkyl group or an aryl group; and X represents an acryloyloxy group, a methacryloyloxy group, a maleinoyloxy group, a fumaroyloxy group, an itaconoyloxy group or a citraconoyloxy group; and
(C) antifoulant,
wherein the proportion of said at least one rosin compound to said at least one polymer containing an organosilyl ester group is from 1/99 to 99/1, by weight on a solid basis, and
wherein said antifoulant is present in an amount of from 0.1 to 80% by weight based on the total amount of all solid ingredients in the coating composition.

5,795,375

WATER COLOR INK FOR RECORDING AND INK-JET RECORDING PROCESS

Hideto Yamazaki; Masaya Fujioka; Takeo Kitahara; Masahito Kato, all of Nagoya, and Shunichi Higashiyama, Yokkaichi, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Nov. 4, 1996, Ser. No. 743,154
Claims priority, application Japan, Nov. 13, 1995, 7-319564
Int. Cl.[6] C09D 11/02
U.S. Cl. 106—31.57 21 Claims

1. A plurality of water color inks for recording, comprising:

a yellow ink comprising a yellow ink solvent and 0.7 to 3 wt % color index number Acid Yellow 23;

a magenta ink comprising a magenta ink solvent and 0.7 to 3 wt % of a dye mixture of color index number Acid Red 52 and color index number Acid Red 289; and

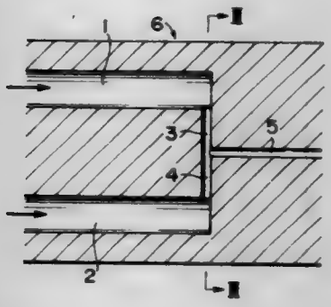
a cyan ink comprising a cyan ink solvent and 0.7 to 3 wt % color index number Acid Blue 9.

5,795,376

COATED PIGMENT AND COLORANT COMPOSITION

Yusaku Ide, Tokyo, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 421,319, Apr. 13, 1995, abandoned. This application Sep. 5, 1997, Ser. No. 924,650
Claims priority, application Japan, Apr. 15, 1994, 6-076922
Int. Cl.[6] C09D 11/00
U.S. Cl. 106—31.73 8 Claims



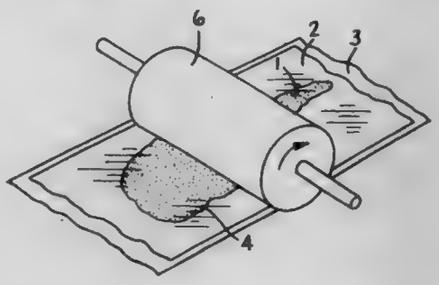
1. An offset ink composition which comprises a coated pigment produced by preparing a mixture of water and a substantially water-insoluble organic surface modifier, pressurizing the mixture, introducing the mixture into a flow path having a diameter-decreased portion and a turning portion to cause a shear force in the mixture of which the flow is accelerated while the mixture is passing the diameter-decreased portion, mutual collision of the mixture of which the flow has been accelerated or collision of the mixture of which the flow has been accelerated against a wall constituting the flow path, thereby obtaining an aqueous dispersion in which the substantially water-insoluble organic surface modifier is homogeneously dispersed in the water, mixing the aqueous dispersion with a pigment to coat the pigment with the substantially water-insoluble organic surface modifier, and isolating the pigment coated with the substantially water-insoluble organic surface modifier, and a vehicle for an offset ink.

5,795,377

METHOD FOR MODIFYING PAPERMAKING SLUDGE AND PRODUCTS MADE FROM MODIFIED PAPERMAKING SLUDGE

James Jay Tanner, Winneconne, and David Henry Hollenberg, Kaukauna, both of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation-in-part of Ser. No. 841,960, Apr. 8, 1997, abandoned. This application Aug. 5, 1997, Ser. No. 906,249
Int. Cl.[6] C08L 1/02; D21H 11/14;21/08
U.S. Cl. 106—164.4 21 Claims



1. A method of modifying papermaking sludge comprising adding from about 0.5 to about 20 weight percent of a dispersant to the papermaking sludge and mixing the dispersant and the papermaking sludge until the rheology of the mixture is substantially the same as that of modeling clay.

7. A method of making a paper sheet comprising: (a) combining papermaking sludge with a dispersant; (b) mixing the papermaking sludge and the dispersant; (c) forming the mixture of papermaking sludge and dispersant into a sheet; and (d) drying the sheet.

5,795,378

COATING SOLUTION FOR SILICA-BASED COATING FILM AND METHOD FOR THE PREPARATION THEREOF

Yoshinori Sakamoto, Kawasaki; Yoshio Hagiwara, Tokyo-to, and Toshimasa Nakayama, Chigasaki, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Japan

Division of Ser. No. 749,845, Nov. 15, 1996. This application Sep. 23, 1997, Ser. No. 935,510
Claims priority, application Japan, Nov. 16, 1995, 7-298736
Int. Cl.[6] C09D 183/06
U.S. Cl. 106—287.16 12 Claims

1. A method for the preparation of a coating solution for the formation of a silica-based coating film on a substrate surface which comprises the steps of:

(a) dissolving a trialkoxy silane compound, of which the alkoxy group has 1 to 4 carbon atoms, in an alkyleneglycol dialkyl ether represented by the general formula

$$RO+CH_2+_nOR,$$

in which each R is, independently from the other, an alkyl group having 1 to 4 carbon atoms and the subscript n is 3 or 4, as a solvent in a concentration in the range from 1 to 5% by weight calculated as SiO_2 to give a silane solution;

(b) adding, to the silane solution, water in an amount in the range from 2.5 to 3.0 moles per mole of the trialkoxy silane compound;

(c) adding, to the silane solution, an acid in a catalytic amount as a catalyst for the hydrolysis reaction of the trialkoxy silane compound; and

(d) effecting hydrolysis of the trialkoxy silane compound to form a hydrolysis product thereof dissolved in a solvent system comprising the alkyleneglycol dialkyl ether and the alcohol as a by-product of the hydrolysis reaction of the trialkoxy silane compound.

5,795,379

PIGMENTS AND A METHOD FOR PRODUCING THEM

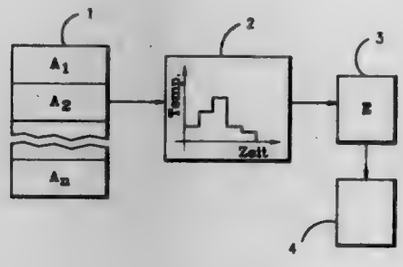
Gerhard Schwenk, Punchheim; Ulrich Scholz, Munich; Ulrich Magg, Feldgeding, and Johannes Leist, Munich, all of Germany, assignors to Giesecke & Devrient GmbH, Munich, Germany

Filed Nov. 1, 1996, Ser. No. 742,161

Claims priority, application Germany, Nov. 3, 1995, 195 41 054.8

Int. Cl.[6] C08K 5/00

U.S. Cl. 106—499 21 Claims



1. A pigment composition comprising a dye and a solid resin, the dye being bound in the solid resin, wherein the resin is a reaction product from an oligomerized polyisocyanate and a mixture of polyfunctional compounds with active hydrogen.

5,795,380

LIGHTWEIGHT ROOF TILES AND METHOD OF PRODUCTION

Patricia Billings, Leawood, Kans., and Susan Michalski, Lee's Summit, Mo., assignors to Earth Products Limited, Leawood, Kans.

Filed May 2, 1997, Ser. No. 850,054

Int. Cl.[6] C04B 7/04; 14/18

U.S. Cl. 106—675 12 Claims

1. A lightweight roof tile constructed of a composition comprising cement present in the amount of approximately 154–214 parts by weight, gypsum present in the amount of approximately 147–203 parts by weight, perlite aggregate present in the amount of approximately 35–50 parts by weight, lava stone present in the amount of approximately 59–82 parts by weight, water present in the amount of approximately 92–138 parts by weight, a catalyst comprising styrene acrylic present in the amount approximately 49–68 parts by weight, and a powder selected from the group consisting of perlite powder and volcanic ash present in the amount of approximately 10–14 parts by weight.

5,795,381

SIO PROBE FOR REAL-TIME MONITORING AND CONTROL OF OXYGEN DURING CZOCHRALSKI GROWTH OF SINGLE CRYSTAL SILICON

John D. Holder, St. Louis, Mo., assignor to MEMC Electrical Materials, Inc., St. Peters, Mo.

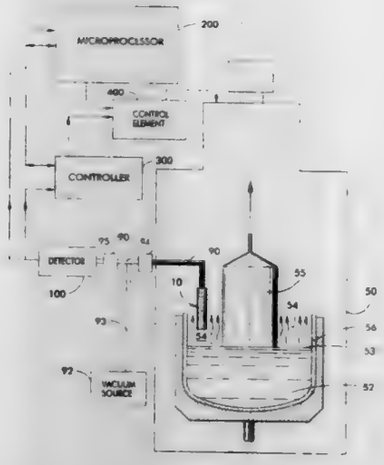
Filed Sep. 9, 1996, Ser. No. 711,085

Int. Cl.[6] C30B 15/00

U.S. Cl. 117—14 30 Claims

1. A method for determining the amount of SiO present in an atmosphere over a pool of molten silicon, the method comprising

withdrawing a sample containing SiO from the atmosphere over the pool of molten silicon, reacting SiO present in the sample with a reactant to form a detectable reaction product,



determining the amount of reaction product formed, and

correlating the determined amount of reaction product to the amount of SiO present in the atmosphere.

5,795,382

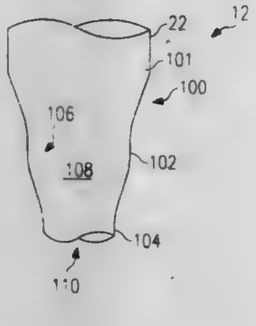
OXYGEN PRECIPITATION CONTROL IN CZOCHRALSKI-GROWN SILICON CRYSTALS

Weldon J. Bell, Frisco, and H. Michael Grimes, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 238,999, May 6, 1994, Pat. No. 5,474,020. This application Jun. 7, 1995, Ser. No. 474,641

Int. Cl.[6] C30B 15/20

U.S. Cl. 117—20 7 Claims



1. An improved silicon crystal having controlled oxygen precipitation, said silicon crystal grown according to a Czochralski silicon growing process, the silicon crystal comprising:

a cylindrical portion formed from a reservoir of molten silicon according to the Czochralski silicon crystal growing process;

a first tapered portion formed from said cylindrical portion in terminating the Czochralski silicon crystal growing process by withdrawing the silicon crystal from the molten silicon at an increasing temperature and at least a constant rate;

a second tapered portion of said silicon crystal,

said second tapered portion formed to comprise a cascaded middle portion connecting to said first tapered portion, said cascaded middle portion concentrating therein oxygen precipitation such that oxygen precipitation forms away from said cylindrical portion of said silicon crystal; and

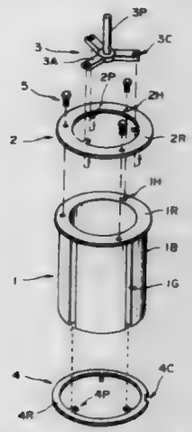
at least a third tapered portion formed from said second tapered portion by yet further increasing a pull rate and a temperature of the molten silicon.

5,795,383

METHOD AND MECHANISM FOR LIFTING GAS FLOW-GUIDE CYLINDER OF A CRYSTAL PULLING APPARATUS

Hideo Okamoto; Toshiharu Uesugi, both of Sabae, Japan; Atsushi Iwasaki, Vancouver, Wash., and Tetsuhiro Oda, Nishishirakawa, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1996, Ser. No. 760,964
Claims priority, application Japan, Dec. 28, 1995, 7-352212
Int. Cl.[6] C30B 15/20
U.S. Cl. 117—30 8 Claims



1. A method of lifting a gas flow-guide cylinder of a crystal pulling apparatus which includes a heating container for accommodating a crystalline material and for melting the crystalline material through heating, and a gas flow-guide cylinder capable of being moved upward/downward above said heating container, and which is adapted to grow a single crystal from the crystalline material by a pulling method,

said method of lifting said gas flow-guide cylinder comprising the steps of:

moving upward said gas flow-guide cylinder when the crystalline material in a solid form is to be placed in said heating container, so that the bottom end of said gas flow-guide cylinder is separated away from the top portion of said heating container in order to prevent contact between the solid crystalline material and the gas flow-guide cylinder; and

moving downward said gas flow-guide cylinder when the single crystal is grown, so that the bottom end of said gas flow-guide cylinder is placed directly above said heating container.

5,795,384

MANUFACTURE OF TRANSITION METAL CARBIDE NITRIDE OR CARBONITRIDE WHISKERS

Roy Tom Coyle, Yorba Linda, Calif., and Jan Magnus Ekelund, Jarna, Sweden, assignors to Sandvik AB, Sandviken, Sweden, and Advanced Industrial Materials, Yorba Linda, Calif.

Filed Jul. 20, 1995, Ser. No. 504,779
Int. Cl.[6] C30B 29/62
U.S. Cl. 117—87 10 Claims

1. A method of producing in large volumes of transition metal carbide, nitride or carbonitride whiskers comprising:

mixing a carbon powder containing a volatile part which volatiles at temperatures up to 1000° C., a transition metal compound in an amount to satisfy the stoichiometric requirements of the whisker to be formed, at least one of the alkali chlorides NaCl, KCl or CaCl, a transition metal/alkali chloride molar ratio 0.1–2, and a catalyst of Ni, Co and mixtures thereof in a transition metal (Ni+Co) molar ratio 0.01–0.5; and



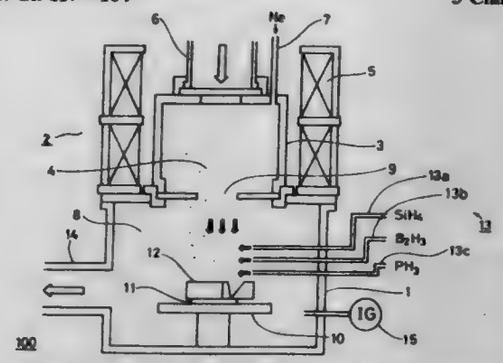
heating the mixture to 1000°–1800° C., for 1–15 hours at 10 mbar–50 mbar pressure in an atmosphere of at least one of Ar, N_2 of H_2.

5,795,385

METHOD OF FORMING SINGLE-CRYSTALLINE THIN FILM BY BEAM IRRADIATOR

Toshifumi Asakawa, Yamato; Masahiro Shindo, Suita; Toshikazu Yoshimizu, Suita, and Sumiyoshi Ueyama, Suita, all of Japan, assignors to Neuralsystems Corporation, Tokyo-to, and Mega Chips Corporation, Suita, both of Japan

Continuation of Ser. No. 597,097, Feb. 7, 1996, abandoned, which is a division of Ser. No. 239,969, May 9, 1994, abandoned. This application Mar. 18, 1997, Ser. No. 820,381
Claims priority, application Japan, Oct. 14, 1993, 5-281748; Oct. 20, 1993, 5-285674; Dec. 10, 1993, 5-341281; Mar. 29, 1994, 6-058887
Int. Cl.[6] C30B 25/06
U.S. Cl. 117—104 5 Claims



1. A beam irradiating method of irradiating a target surface of a sample with a gas beam, said method comprising the steps of:

setting said sample in a container; and

irradiating said target surface of said sample being set in said container with said gas beam at an energy lower than a threshold energy of sputtering in a surface of a portion being irradiated with said gas beam along an inner wall of said container.

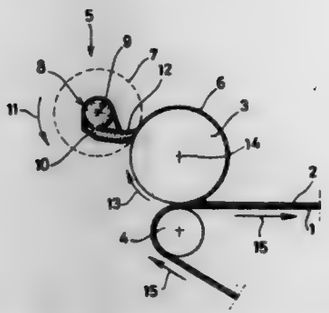
5,795,386

APPARATUS FOR APPLYING A COATING LAYER TO A SUBSTRATE WEB

Gilbert Foster, Boxmeer, and Carolus J. A. M. Schrauwers, Bergen, both of Netherlands, assignors to Stork X-Cel B.V., Boxmeer, Netherlands

Continuation-in-part of Ser. No. 426,089, Apr. 21, 1995, abandoned. This application Dec. 26, 1996, Ser. No. 772,557
Claims priority, application Netherlands, Apr. 22, 1994, 9400646
Int. Cl.[6] B05C 1/00
U.S. Cl. 118—203 10 Claims

1. A device for applying a coating layer to a substrate web, comprising, in combination:



an application roll for applying the coating layer to the substrate web;

a counterpressure roll interacting with the application roll in order to support a substrate web passing between the application roll and the counterpressure roll;

a metering device for applying the coating material in a layer to the application roll;

said metering device being in fluid communication with the application roll and having a cylindrical screen rotating about its axis with supply means for supplying the coating material to the cylindrical screen;

said application and counterpressure rolls being spaced apart to provide at their peripheries a gap therebetween having a width such that a substrate web passing between the application roll and the counterpressure roll is continuously drawn along the surface of the application roll; and

said application roll rotating about its axis in the same direction as the counterpressure roll so that at said gap the periphery of the application roll moves in a direction opposite to that of the periphery of the counterpressure roll.

5,795,387

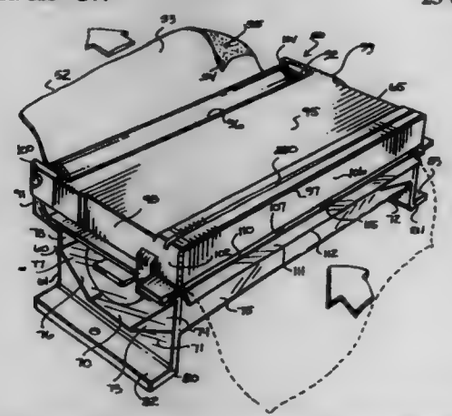
WALLPAPER PASTE APPLYING APPARATUS

Joe A. Huerta, 12634 S. 35th Pl., Phoenix, Ariz. 85044

Filed Mar. 14, 1997, Ser. No. 818,122

Int. Cl.[6] B05C *1/00*

U.S. Cl. 118—244 **23 Claims**



1. A wallpaper paste applying apparatus for applying paste to a surface of wallpaper, said wallpaper paste applying apparatus comprising:

a trough having an upstream end, a downstream end and opposing sidewalls;

an applicator roller carried by said trough;

a scraper bar adjustably carried by said trough upstream of and adjacent to said applicator roller, said scraper bar including an elongate member extending intermediate said opposing sidewalls of said trough and having a scraper portion located at a height proximate the back surface of the wallpaper to remove a predetermined amount of paste from the surface of the wallpaper, the scraper portion including an apex extending longitudinally along said elongate member, a beveled scraper surface contiguous with said apex and directed toward the surface of the wallpaper, said beveled scraper surface including a plurality of wales disposed therealong in spaced-apart relation and each separated by one of a plurality of valleys each having a predetermined depth, said apex and said plurality of wales to contact the surface of the wallpaper to remove paste therefrom to form a layer of paste upon the back surface of the wallpaper, and the layer defined by a plurality of ribs of paste corresponding to said plurality of valleys each separated by one of a plurality of grooves each formed by one of said plurality of wales;

an adjustment assembly carried by said scraper bar for adjusting the height of said scraper portion for allowing a user to adjust the amount of paste removed from the surface of the wallpaper;

a lid removably and hingedly coupled to said trough for movement between an open position and a closed position; and

an outfeed roller carried proximate said trough upstream of said scraper bar.

5,795,388

DEVICE FOR DISTRIBUTING PULVERULENT SOLIDS ONTO THE SURFACE OF A SUBSTRATE FOR THE PURPOSE OF DEPOSITING A COATING THEREON

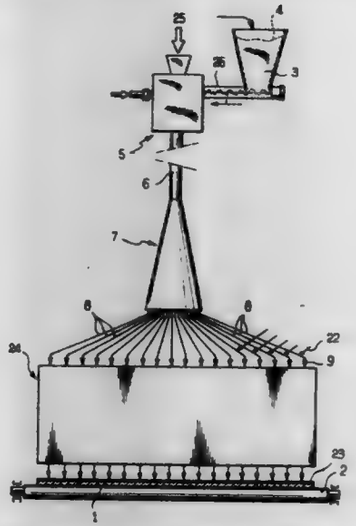
Jean-Francois Oudard, Thiescourt, France, assignor to Saint-Gobain Vitrage, Courbevoie, France

Filed Sep. 27, 1995, Ser. No. 534,800

Claims priority, application France, Sep. 27, 1994, 94 11504

Int. Cl.[6] B05B *7/00;7/04;* B65G *53/34*

U.S. Cl. 118—308 **8 Claims**



1. A device for distributing a pulverulent solid suspended in a gas onto a moving substrate, comprising:

a distribution nozzle defining a cavity terminating in an elongate distribution slit facing the substrate;

a powder feed system in flow communication with said distribution nozzle for feeding powder thereto, said powder feed system comprising a principal powder feed duct and a plurality of secondary powder supply ducts, each in flow communication with said principal feed duct at one end, and with said cavity of said distribution nozzle at positions spaced along the length of said slit at the other end; and

a pneumatic device connected to at least one of said secondary powder supply ducts for pneumatically modulating a flow rate of powder in said at least one of said secondary powder supply ducts, wherein said pneumatic device comprises means for generating a controlled loss of head in said at least one of said secondary powder supply ducts, wherein said pneumatic device includes an auxiliary duct feeding a jet of gas into said

at least one of said secondary powder supply ducts to form a powder-gas suspension, and wherein said means for generating a controlled loss of head comprises means for measuring a characteristic of the coating applied to the substrate; a control unit in communication with said measuring means for receiving signals from said measuring means; and a flow regulating valve in said auxiliary duct and in communication with controlled by said controller.

5,795,389

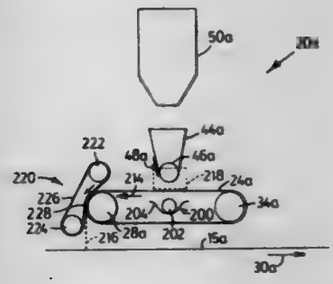
METHOD AND APPARATUS FOR APPLYING SURFACING MATERIAL TO SHINGLES

Henry Koschitzky, Downsview, Canada, assignor to Iko Industries Ltd., Toronto, Canada

Continuation-in-part of Ser. No. 392,319, Feb. 22, 1995, abandoned. This application Feb. 16, 1996, Ser. No. 602,188

Int. Cl.[6] B05C *7/06; 19/06*

U.S. Cl. 118—308 **13 Claims**



1. Apparatus for depositing a surfacing material on an asphalt coated sheet, for producing roofing, said apparatus comprising:

(a) means for causing said sheet to travel in a first direction,

(b) first belt means having upper and lower flights and having an opening therein,

(c) means for causing said upper flight of said first belt means to travel above said sheet with a component of movement of said upper flight being in said first direction,

(d) surfacing material supply means located above said upper flight for dropping said surfacing material onto said upper flight so that some of said surfacing material falls through said opening and some of said surfacing material remains on said upper flight, the surfacing material falling through said opening being a first sub-set of said surfacing material and said surfacing material remaining on said upper flight being a second sub-set of said surfacing material,

(e) means for applying said second sub-set of surfacing material onto said sheet to form patches thereon,

(f) collection means located between said upper flight and said lower flight for collecting and removing said first sub-set of surfacing material and thereby for preventing surfacing material falling from said surfacing material supply means through said opening from falling onto said lower flight;

(g) said means for applying including surfacing material guide means cooperating with said first belt means for directing material from said first belt means onto said sheet, said first belt means including an end turn for connecting said upper flight to said lower flight, said surfacing material guide means comprising second belt means located adjacent said end turn and pressing against said end turn to hold said surfacing material on said first belt means until said surfacing material is moving in a substantially downward direction.

5,795,390

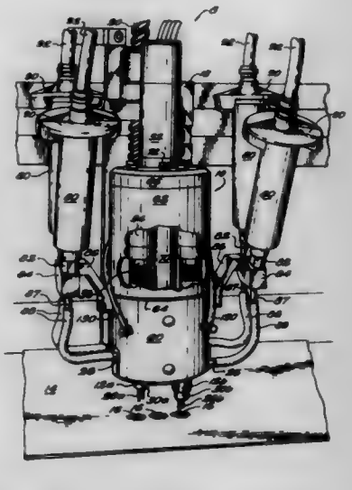
LIQUID DISPENSING SYSTEM WITH MULTIPLE CARTRIDGES

William A. Cavallaro, Bradford, Mass., assignor to Camelot Systems, Inc., Haverhill, Mass.

Filed Aug. 24, 1995, Ser. No. 519,146

Int. Cl.[6] B05B *7/06;* **B67D** *5/08*

U.S. Cl. 118—314 **24 Claims**



1. A liquid dispensing system for dispensing at a high rate quantities of liquid under control of a controller, the liquid dispensing system comprising:

a plurality of cartridges, each for receiving liquid and for dispensing the liquid on a medium;

a motor; and

a coupling coupled to said motor and to each of said plurality of cartridges at the same time, said motor activating a selected one of said plurality of cartridges in response to an activation signal from the controller so that said motor causes the selected cartridge to dispense the liquid.

5,795,391

METHOD AND APPARATUS FOR APPLICATION OF FLUENT MATERIAL TO A MOVING SUBSTRATE

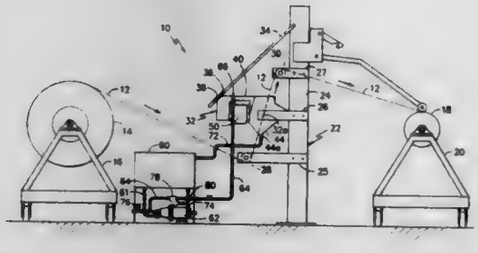
Frederic J. Niemann, and Wolfgang K. F. Otto, both of Spartanburg, S.C., assignors to Consultex Corporation, Spartanburg, S.C.

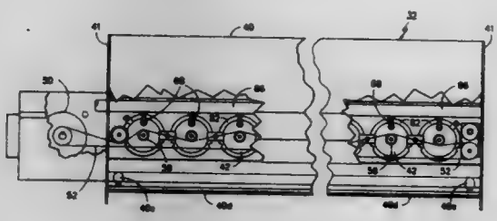
Filed Mar. 21, 1996, Ser. No. 619,991

Int. Cl.[6] B05C *5/00;* **D06B** *1/02*

U.S. Cl. 118—315 **12 Claims**

1. Apparatus for applying fluent material to a moving surface the improvement comprising a housing having an elongated continuous opening therein positioned adjacent to and extending generally transversely across the path of a moving surface, a row of rotatable spray heads mounted in said housing for rotation about parallel axes and positioned along said elongated opening, means operatively communicating with said spray heads to supply fluent material to each of the rotatable heads, means operatively connected to said rotatable heads for rotating immediately adjacent rotatable heads in the row in opposite directions to centrifugally discharge fluent material therefrom in unrestricted flow through said elongated opening and onto said moving surface, and with the rotatable heads being located such that the fluent material from each rotatable head passing through the elongated opening of the housing





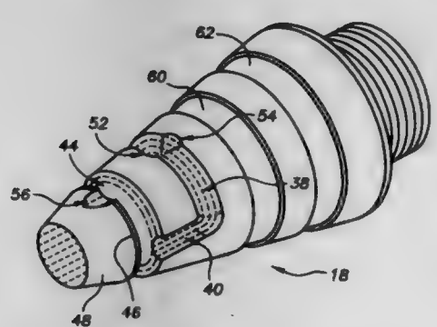
strikes the moving head passing through the elongated opening of the housing strikes the moving surface in multiple overlapping patterns of fluent material from multiple adjacent rotatable heads to blend the fluent material in a substantially uniform concentration across the width of the moving surface.

5,795,392

CORE TUBE FOR A CROSS-HEAD DIE APPARATUS

James A. Milliman, 8644 Emerald Cir. South, Rome, N.Y. 13440

Filed Mar. 14, 1997, Ser. No. 819,576
Int. Cl.[6] B05C *3/02;3/12*
U.S. Cl. 118—405 **25 Claims**



1. A core tube for use in cross-head die apparatus having a body with an axial bore through which a filamentary member is longitudinally moved for application thereto of a coating material, said body having a radial bore through which said coating material is injected into said axial bore, said core tube comprising:

a) a hollow member having a longitudinal axis, front and rear ends and an external surface with portions configured for mating engagement with opposing portions of said axial bore;

b) a first annular groove extending between opposite ends partially around said external surface;

c) a second annular groove extending 360° around said external surface at a position between said first annular groove and said front end; and

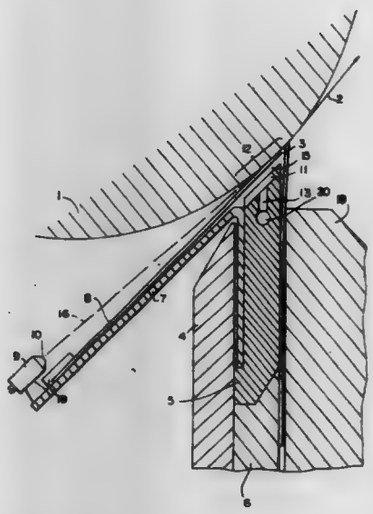
d) at least one passageway through which said first annular groove communicates with said second annular groove.

5,795,393

APPARATUS FOR LIMITING THE COATING EDGE IN A SHORT DWELL COATER

Wolfgang Isfort, Hemer, Germany, assignor to Stora Feldmühle AG, Düsseldorf, Germany

PCT No. PCT/EP95/02673, § 371 Date Jan. 13, 1997, § 102(e) Date Jan. 13, 1997, PCT Pub. No. WO96/02703, PCT Pub. Date Feb. 1, 1996
PCT Filed Jul. 8, 1995, Ser. No. 765,571
Claims priority, application Germany, Jul. 15, 1994, 44 25 137.8
Int. Cl.[6] B05C *3/02*
U.S. Cl. 118—413 **5 Claims**



1. An apparatus for limiting a coating edge in a short dwell coater comprising:

a backing roll having a circumferential surface for guiding a web;

a doctor blade element abutting said backing roll and extending laterally across a width of the web;

a barrier wall oriented parallel to said doctor blade element, said barrier wall and said doctor blade element defining an application zone therebetween for applying coating to the web;

two means for limiting the coating edge, each of said edge limiting means comprising:

a sealing block interposed between said barrier wall and said doctor blade;

a sliding element operatively connected to said sealing block and interposed between said barrier wall and said doctor blade element;

each of said coating edge limiting means being arranged in an edge region of the web and movable in a direction perpendicular to a direction of movement of the web;

a formatting plate holder having a free end and an opposite end connected to said sealing block, said formatting plate holder extending outwardly over said barrier wall; and

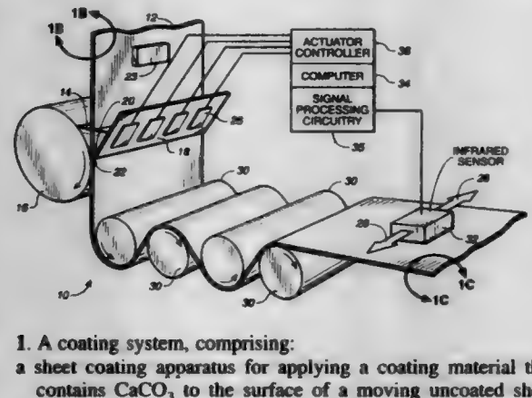
a thin formatting plate arranged on said formatting plate holder so as to extend over said barrier wall into a space between said barrier wall and said doctor blade element and to cover the application zone in the edge region of the web;

an upper surface of said sealing block facing said formatting plate having at least one depression extending parallel to the direction of movement of the web and connected to a water supply by a channel; said formatting plate and said sealing block defining therebetween a sealing gap having a width of between 1 mm and 3 mm, the water introduced into the sealing gap through the depression producing a pressure cushion and pressing said formatting plate flatly against the web.

5,795,394
COATING WEIGHT MEASURING AND CONTROL APPARATUS

Edward Belotserkovsky, San Francisco, and John A. Dahlquist, Palo Alto, both of Calif., assignors to Honeywell-Measurex, Cupertino, Calif.

Filed Jun. 2, 1997, Ser. No. 867,524
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—665 **13 Claims**



1. A coating system, comprising:

a sheet coating apparatus for applying a coating material that contains $CaCO_3$ to the surface of a moving uncoated sheet that comprises a base sheet, the coating apparatus including a metering element for regulating the amount of the coating material which remains on a coated sheet after a moving uncoated sheet passes by the metering element;

a first coating sensor disposed adjacent to the coated sheet and including a first radiation source disposed to direct a first beam of radiation into the coated sheet, and a first radiation receiver positioned to detect at least a portion of the first beam emerging from the coated sheet, the first receiver being configured to detect the amount of radiation in first and second separate wavelength regions of the infrared electromagnetic spectrum and to produce first and second signals therefrom, respectively indicative of the amount of detected radiation in the first and second regions, and wherein the first region is selected for radiation which is sensitive to the basis weight of the base sheet and the second region is selected for radiation which is approximately equally as sensitive as the radiation in the first region to the basis weight of the base sheet, but which is also sensitive to the $CaCO_3$ of the coating material, the sensitivity of the radiation in the first region to the $CaCO_3$ being different than the sensitivity of the radiation in the second region to the $CaCO_3$ and wherein the first region ranges from about 3.6 to 3.9 μm and the second region ranges from about 3.9 to 4.1 μm;

a computer operatively coupled to the first receiver for computing the amount of coating material on the sheet from the first and second signals, the computer producing a third signal indicative of the computed amount of $CaCO_3$ in the coating material; and

at least one actuator, operatively coupled to the computer and to the metering element, for adjusting the metering element in response to the third signal to regulate the amount of the coating material on the base sheet.

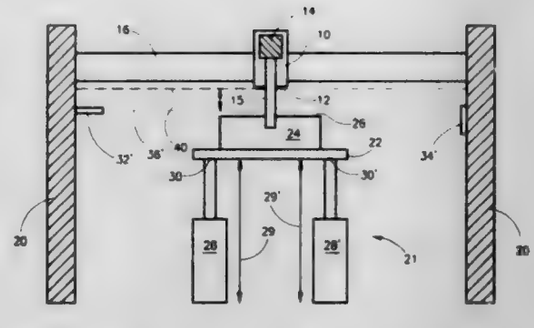
5,795,395
CAKE DECORATING SYSTEM AND METHOD

Ruth Ben-Matityahu, David Meretz 13, Ramat Sharett, 96905 Jerusalem, Israel; Boris Sverdlov, Shmuel Rodensky 29, and Ilena Brailovski, Masada 190, both of Beersheva, Israel

Filed Mar. 7, 1997, Ser. No. 813,215
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—712 **14 Claims**

1. An apparatus for decorating a cake having a top surface, comprising:

(a) a movable print head;



(b) a positioning mechanism supporting said movable print head, wherein said positioning mechanism is operative to selectable position said print head at a plurality of positions which define a domain wherewithin said print head moves;

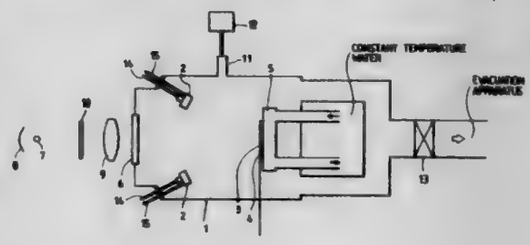
(c) a support mechanism for supporting the cake below said movable print head, said support mechanism including a leveling mechanism for adjusting said support mechanism so that at least a portion of the top surface of the cake is substantially parallel to said domain and displaced from said domain by a certain displacement; and

(d) a sensing mechanism connected to said leveling mechanism, for sensing whether said position of the top surface of the case is substantially parallel to said domain and displaced from said domain by said displacement, said leveling mechanism being responsive to said sensing mechanism.

5,795,396
APPARATUS FOR FORMING CRYSTALLINE FILM

Shunichi Ishihara, Hikone, and Jun-ichi Hanna, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 286,793, Aug. 5, 1994, abandoned, which is a division of Ser. No. 25,753, Mar. 3, 1993, abandoned, which is a continuation of Ser. No. 501,484, Mar. 30, 1990, Pat. No. 5,213,997. This application Jun. 25, 1996, Ser. No. 671,806
Claims priority, application Japan, Mar. 31, 1989, 1-081106
Int. Cl.[6] C23C *16/00*
U.S. Cl. 118—724 **16 Claims**



7. A deposited film forming apparatus comprising:

a film forming chamber;

an exhaust port for exhausting the inside of the film forming chamber;

a substrate holder for holding a substrate provided in the film forming chamber;

means for supplying a starting material gas for film formation into the film forming chamber;

a light generating means for heating a surface of the substrate;

a convex lens for collecting light generated from the light energy generating means; and

an energy controlling means for controlling the strength of the energy from the light energy generating means to form a non-uniform temperature distribution pattern on the substrate, where the non-uniform temperature distribution pattern varies within the range of 50° C. to 70° C.

5,795,397

CHEMICALLY DERIVATIZED MALTODEXTRINS

Yong-Cheng Shi, Somerville; James L. Eden, Millstone, and James J. Kasica, Whitehouse St., all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed May 6, 1996, Ser. No. 643,644

Int. Cl.[6] C08B *31/00;31/02;31/08;30/18*

U.S. Cl. 127—29 **15 Claims**

1. A maltodextrin syrup containing a chemically derivatized maltodextrin, which syrup after enzyme conversion of a chemically derivatized starch and prior to concentration, has a solids content of at least 55% by weight and which maltodextrin has (i) substituents in an amount sufficient to provide a degree of substitution of about 0.01 to less than about 0.50; (ii) a reducing sugar content of between about 5 and about 19 dextrose equivalent; and (iii) a polymodal molecular weight distribution having one peak between about 630 to about 1600 daltons and at least one other peak between about 1600 and about 2,500,000 daltons.

8. A maltodextrin syrup containing a chemically derivatized maltodextrin, which syrup is prepared by the steps of:

(a) adding, to a chemically derivatized starch having substituents in an amount sufficient to provide a degree of substitution of about 0.01 to about 0.50, an alpha amylase enzyme or an enzyme mixture containing an alpha amylase enzyme, and water in an amount sufficient to produce a single phase powdered mixture without a visible free water phase;

(b) activating the alpha amylase enzyme by heating the powdered mixture to an optimum temperature for the alpha amylase enzyme; and

(c) allowing the chemically derivatized starch to hydrolyze to a degree sufficient to give the chemically derivatized maltodextrin having a reducing sugar content of between about 5 and about 19 and the syrup having a solids content of at least 55% by weight.

5,795,398

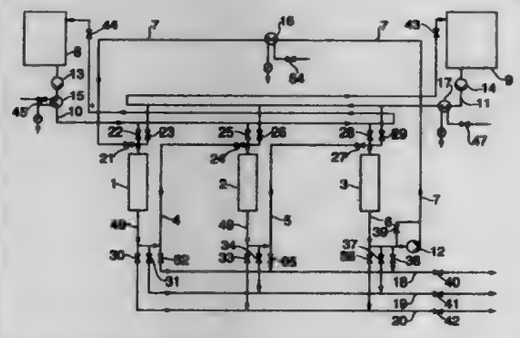
FRACTIONATION METHOD OF SUCROSE-CONTAINING SOLUTIONS

Göran Hyöky; Hannu Paananen, both of Kantvik; Kaj-Erik Montén, Lapinkylä; Heikki Heikkilä, Espoo, and Jarmo Kuisma, Kantvik, all of Finland, assignors to Cultor Ltd., Helsinki, Finland

Filed Jun. 7, 1995, Ser. No. 486,921

Int. Cl.[6] C13J *1/06;* **C13D** *3/00;* **B01D** *15/08;15/00*

U.S. Cl. 127—46.1 **15 Claims**



1. A method for separating sucrose and a dissolved component from a beet-derived sucrose-containing material comprising the steps of:

fractionating a beet-derived sucrose-containing- material in a first loop by a chromatographic simulated moving bed process to produce at least a first fraction and a second fraction said second fraction comprising sucrose and a dissolved component selected from the group consisting of betaine, inositol, raffinose, galactinol, serine and amino acid; and

fractionating a stream comprising said second fraction in a second loop by chromatographic fractionation to produce at least a third fraction and a fourth fraction, said third fraction comprising sucrose, said fourth fraction comprising sucrose and said dissolved component, said third fraction comprising a higher percentage concentration by weight sucrose on a dry substance basis than said second and fourth fractions, said fourth fraction comprising a higher percentage concentration by weight on a dry substance basis of said dissolved component than said second fraction, and said second loop being different than said first loop.

5,795,399

SEMICONDUCTOR DEVICE MANUFACTURING APPARATUS, METHOD FOR REMOVING REACTION PRODUCT, AND METHOD OF SUPPRESSING DEPOSITION OF REACTION PRODUCT

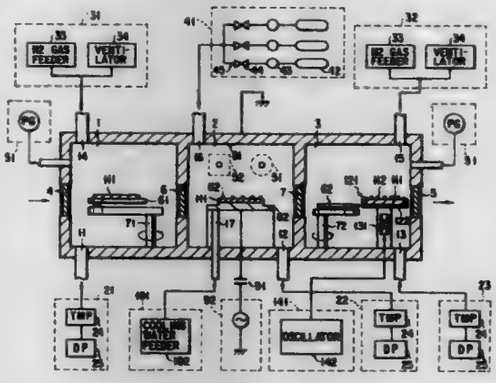
Makoto Hasegawa, Kawasaki; Atsuo Sanda, Oita, and Haruhiko Nomura, Yokkaichi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 29, 1995, Ser. No. 496,754

Claims priority, application Japan, Jun. 30, 1994, 6-150244

Int. Cl.[6] B08B *6/00;* **C23F** *1/02;* **B44C** *1/22*

U.S. Cl. 134—1.3 **18 Claims**



1. A semiconductor device manufacturing apparatus comprising:

a first chamber having a loading port for loading a work therethrough;

a second chamber connected to said first chamber through a first gate;

a third chamber connected to said second chamber through a second gate and having an unloading part for unloading the work therethrough;

a processing section, provided to said second chamber, for processing the work in said second chamber;

a sonic wave applying section, provided to said third chamber, for applying a sonic wave to the work in said third chamber;

a first conveyor, provided to said first chamber, for conveying the work to said processing section through said loading port and said first gate; and

a second conveyor, provided to said third chamber, for conveying the work from said processing section to said sonic wave applying section through said second gate and thereafter conveying the work from said sonic wave applying section through said unloading port.

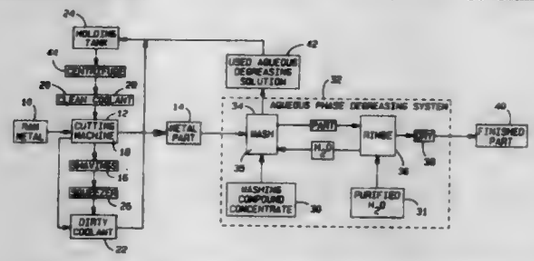
5,795,400
METHOD FOR RECYCLING COOLANT FOR A CUTTING MACHINE

Mitchell H. Berger, 4349 Candlewood La., Sylvania, Ohio 43560; Dennis L. Foster, 13054 Andover Dr., Carmel, Ind. 46033; David K. Shaffer, 20690 McCutchenville Pike, Bowling Green, Ohio 43402; Phillip B. Simon, 2517 Pamela, Ann Arbor, Mich. 48103, and John D. Wheatley, 2590 E. County Rd., 820 South, Greensburg, Ind. 47240

Continuation of Ser. No. 243,574, May 16, 1994, abandoned. This application Oct. 30, 1996, Ser. No. 739,613

Int. Cl.[6] B08B *3/00;3/04;* **C23G** *5/00;5/02*

U.S. Cl. 134—10 **10 Claims**



1. A method for recycling a coolant solution for use in cooling raw metal being cut in a metal cutting machine, said method including the steps of:

cutting raw metal in a metal cutting machine while directing a stream of a coolant solution thereonto, said coolant solution comprising a supply of a water miscible, cutting fluid concentrate dispersed in water, whereby a part is produced from said metal and a volume of used coolant solution is generated;

conveying said part to a degreasing station which operates to wash said part in a degreasing solution which comprises a supply of a water miscible washing compound concentrate dispersed in water, whereby a cleaned part is produced and a volume of used degreasing solution is generated;

cleaning said volume of used coolant solution so as to remove insoluble oils and contaminants therefrom;

cleaning said volume of used degreasing solution so as to remove insoluble oils and contaminants therefrom; and

mixing said used coolant solution, said used degreasing solution and sufficient cutting fluid concentrate so as to regenerate the coolant solution having said supply of said cutting fluid concentrate therein.

5,795,401
METHOD FOR SCRUBBING SUBSTRATE

Takashi Itoh; Hiroyuki Saitoh; Haruyuki Kinami; Toshinori Konaka, and Tsuyoshi Murai, all of Tokyo, Japan, assignors to M. Setek Co., Ltd., Japan

Continuation of Ser. No. 441,924, May 16, 1995, abandoned, which is a division of Ser. No. 301,562, Sep. 7, 1994, Pat. No. 5,465,447. This application Oct. 10, 1996, Ser. No. 729,077

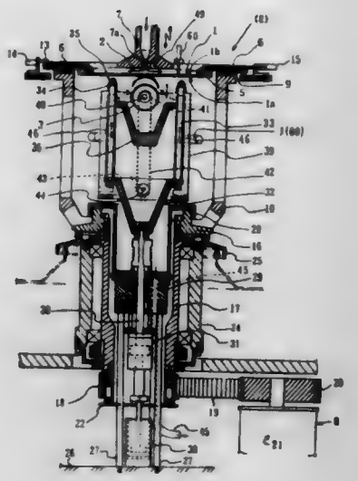
Claims priority, application Japan, Nov. 30, 1993, 5-329820; Apr. 28, 1994, 6-114779

Int. Cl.[6] B08B *1/04;3/02*

U.S. Cl. 134—6 **4 Claims**

1. A method for scrubbing a circular semiconductor substrate having a tapered outer periphery extending around said substrate comprising clamping said substrate to be scrubbed in a chuck extending circumferentially around said tapered outer periphery of said substrate so that said substrate is held firmly by said chuck with the tapered outer periphery of the substrate received in a clamp groove formed in the inner circumference of said chuck so that one face of the substrate faces upwardly and an opposite face of the substrate faces downwardly and said downwardly facing face protrudes relative to said chuck; and

scrubbing said protruded face of said substrate facing upward with a cylindrical rotary brush having a length extending across the diameter of said substrate facing upward while applying back pressure to said upwardly facing face by jetting a back pressure fluid against said downwardly facing face so that the contact pressure of the brush against said downwardly facing face is balanced with said back pressure.



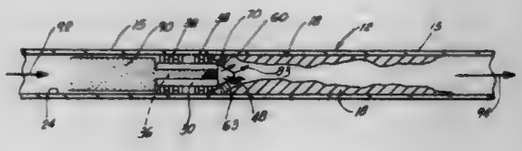
5,795,402
APPARATUS AND METHOD FOR REMOVAL OF PARAFFIN DEPOSITS IN PIPELINE SYSTEMS

Daniel Hargett, Sr., 116 Shannon Rd., Lafayette, La. 70503; Ernest D. Casey, 627 Sancroft Ct., Katy, Tex. 77450, and Ian D. Casey, 2127 Foundary Dr., Katy, Tex. 77493

Filed Jul. 24, 1996, Ser. No. 685,693

Int. Cl.[6] B08B *9/04*

U.S. Cl. 134—8 **13 Claims**



1. A process for cleaning paraffin compounds from an inner surface of a pipeline wall for transporting liquid therethrough, comprising the following steps:

a) providing a first chemical component within the pipeline;

b) providing a pig to the rear of the first chemical component, the pig further comprising a forward end, a rear end, and a bore extending from the forward end to the rear end;

c) providing a second chemical component to the rear of the pig;

d) providing a greater pressure to the rear of the second chemical component than on the first chemical component in order to move the chemical components and the pig through the pipeline;

e) the pig encountering an obstruction of paraffin buildup along a wall of the pipeline;

f) increasing the pressure to the rear of the pig in order to activate a valving member, for forcing the chemical to the rear of the pig through fluid nozzles on the front end of the pig, so that at least a portion of the second chemical component mixes with the first chemical component at the front of the pig, and undergoes an exothermic reaction for loosening the paraffin obstruction at the front of the pig; and

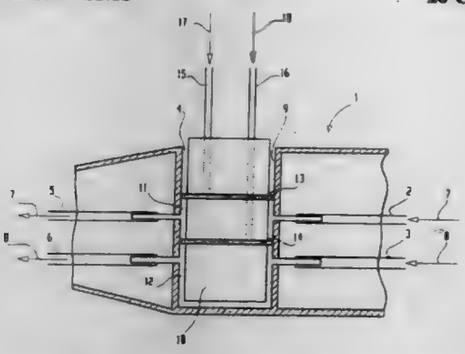
g) resuming the movement of the pig under pressure through the loose paraffin in order to clear the paraffin from the wall of the pipeline.

5,795,403

METHOD AND DEVICE FOR CLEANING ENDOSCOPES

Hans Biermaier, Ulrichstrasse 47, D-86316 Derching, Germany

Filed Jul. 6, 1995, Ser. No. 498,988
Claims priority, application Germany, Jul. 6, 1994, 44 23 730.8
Int. Cl.[6] B08B 9/02
U.S. Cl. 134—22.12 20 Claims



1. A method for cleaning an endoscope, the endoscope including a head, a chamber in the head, and at least two inlets and two outlets in the head opening through a wall of the chamber into the chamber, the method comprising the steps of:

connecting each of said inlets to a source of cleaning fluid;

forming seals on the chamber wall to define separate flow paths through the chamber, a first of the flow paths extending from a first of the inlets to a first of the outlets and a second of the flow paths extending from a second of the inlets to a second of the outlets;

flushing each flow path with cleaning fluid; and

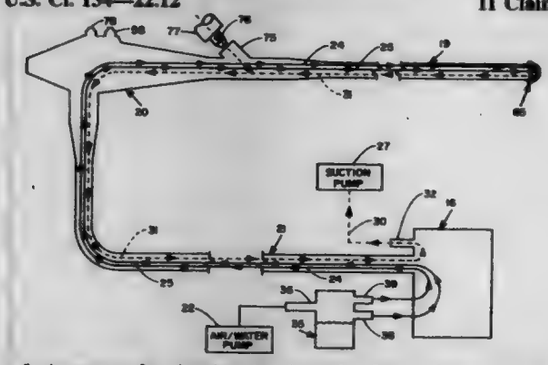
selectively breaking the formed seals to expose portions of the chamber wall for rinsing by the cleaning fluid.

5,795,404

METHOD AND APPARATUS FOR CLEANING CHANNELS OF AN ENDOSCOPE

Kelley Murphy; Michael Lynch, both of Skaneateles, and Scott Spanfelner, Camillus, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Aug. 23, 1996, Ser. No. 699,510
Int. Cl.[6] B08B 3/04; 9/00
U.S. Cl. 134—22.12 11 Claims



1. Apparatus for cleaning the channels of an endoscope having an air channel, a water channel and a suction channel, all of which are open to the distal end of the endoscope insertion tube, a support unit having engagement means for receiving a removable water bottle, said removable water bottle having a water chamber connected to the water channel of the endoscope and an air chamber connected to the air channel of the endoscope, a first pump for delivering air into the air chamber of said removable water bottles a second suction pump connected to the suction channel and control means for selectively passing air and water through said air and water channels, said apparatus comprising:

an end cap removably fitted over the distal end of the endoscope insertion tube to provide a fluid tight seal therebetween, said end cap further including a reservoir for collecting fluids passed through the air and water channels,

a replacement bottle for replacing said removable water bottle, said replacement bottle being receivable in said engagement means of said support unit, said replacement bottle further having a fluid chamber for containing a quantity of cleaning solution and an air chamber over said fluid chamber, said replacement bottle further including means to connect the fluid chamber to both the air channel and the water channel of the endoscope,

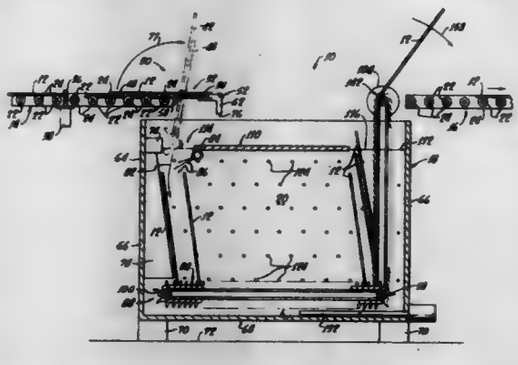
whereby cleaning solution is passed through the air and water channels in the end cap reservoir and exhausted from the reservoir through the suction channel upon activation of at least said second suction pump.

5,795,405

MACHINE AND METHOD FOR PROCESSING OF PRINTED CIRCUIT BOARDS BY IMMERSION IN TRANSVERSELY FLOWING LIQUID CHEMICAL

Eric F. Harnden, 1030 Berne Dr., Crestine, Calif. 92325, and Daryl K. Ito, Bristol, Wis., assignors to Eric F. Harnden, Redlands, Calif.

Filed Mar. 13, 1996, Ser. No. 614,661
Int. Cl.[6] B08B 3/04
U.S. Cl. 134—25.4 41 Claims



39. A method of chemically treating surfaces of a panel-like planar printed circuit board work piece (PCBWP), said method comprising the steps of:

repositioning a PCBWP from a horizontal orientation to a substantially vertical orientation in a chemical treatment liquid bath and onto a conveyor belt submerged in the bath;

conveying via the conveyor belt the PCBWP in the substantially vertical orientation face-on through the bath along a line substantially perpendicular to the plane of the PCBWP;

after said conveying, lifting the PCBWP out of the bath; and

wherein said repositioning includes allowing the PCBWP to fall and sink by itself edge-wise in the bath of its own weight onto the conveyor belt.

5,795,406

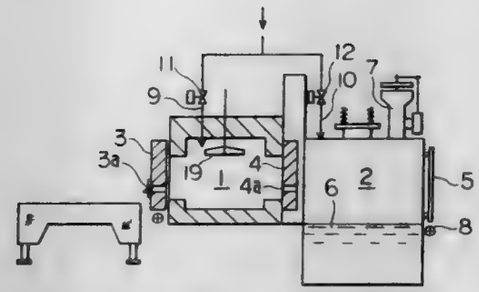
CEMENTATION METHOD OF METALS

Toshiyuki Kawamura; Hitoshi Goi, and Fumitaka Abukawa, all of Tokyo, Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1996, Ser. No. 770,176
Claims priority, application Japan, Dec. 28, 1995, 7-352428
Int. Cl.[6] C21D 1/06; C23C 8/20
U.S. Cl. 148—216 16 Claims

1. A cementation method of metals, comprising:

introducing an oxidization gas into a heat treatment furnace for cementation of a metal in said furnace; and



introducing a small quantity of a hydrocarbon gas at a low pressure of between 0.025 Kg/cm^2 and 0.1 Kg/cm^2 into the heat treatment furnace in order to form an initial atmosphere.

5,795,407

METHOD FOR PRE-TREATING ALUMINUM MATERIALS PRIOR TO PAINTING

Hiroshi Ishii, Hiratsuka, and Hiroshi Kamio, Kurashiki, both of Japan, assignors to Henkel Corporation, Plymouth Meeting, Pa.

PCT No. PCT/US95/05543, § 371 Date Nov. 8, 1996, § 102(e) Date Nov. 8, 1996, PCT Pub. No. WO95/31587, PCT Pub. Date Nov. 23, 1995

PCT Filed May 10, 1995, Ser. No. 737,503

Claims priority, application Japan, May 11, 1994, 6-097512

Int. Cl.^{6} C23C *22/07*

U.S. Cl. 148—253 **14 Claims**

1. A method of treating surfaces of aluminum materials, said method comprising steps of:

(A) subjecting the surface to a dipping treatment in a first zinc phosphate based conversion coating composition which contains from 500 to 1500 ppm, calculated as fluorine, of a fluorine containing component, so as to form a zinc phosphate based conversion coating on said surface;

(B) spraying the surface after step (A) with a second treatment liquid which is either a zinc phosphate based conversion coating liquid composition itself, or is made by diluting such a zinc phosphate based conversion coating liquid composition, the concentration of the active ingredients in the second treatment liquid being from 1 –⅓s of the concentration of the active ingredients of the first zinc phosphate based conversion coating composition.

5,795,408

PROCESS FOR THE PHOSPHATISING TREATMENT OF STEEL STRIP OR SHEET GALVANIZED ON ONE SIDE OR ALLOY GALVANIZED ON ONE SIDE

Klaus Bittner, Frankfurt am Main; Walter K.M. Jansen, Muelheim an der Ruhr; Klaus-Peter Mohr, Voerde; Thomas Wendel, Schwalbach, and Hardy Wietzoreck, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Germany

PCT No. PCT/EP94/02510, § 371 Date Jul. 8, 1996, § 102(e) Date Jul. 8, 1996, PCT Pub. No. WO95/04842, PCT Pub. Date Feb. 16, 1995

PCT Filed Jul. 29, 1994, Ser. No. 596,220

Claims priority, application Germany, Aug. 6, 1993, 43 26 388.7

Int. Cl.^{6} C23C *22/07*

U.S. Cl. 148—262 **17 Claims**

1. A process for formation of a phosphate coating on a steel strip or sheet having a galvanized or alloy galvanized side and a steel side so that the phosphate coating is formed only on the galvanized or alloy galvanized side, said process comprising contacting the steel strip or sheet with a phosphatizing solution for 4 to 20 seconds at a temperature of from 45° C. to 80° C.,

wherein said phosphatizing solution contains

0.5 to 5 g/l	zinc,
3 to 20 g/l	P_2O_5,
0.020 to 0.2 g/l	nitrite,
3 to 30 g/l	nitrate,
0.2 to 2.5 g/l	complexing agent for iron.

and has an S value of 0.08 to 030, so that the phosphate coating is formed only on the galvanized or alloy galvanized side and not on the steel side of the steel strip or sheet.

5,795,409

SURFACE TREATING AGENT FOR COPPER OR COPPER ALLOY

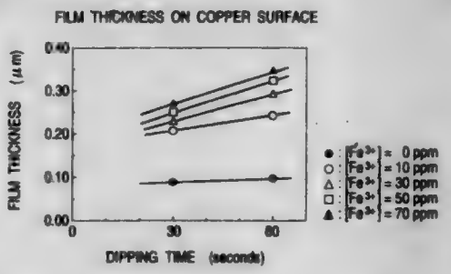
Hirohiko Hirao, and Yoshimasa Kikukawa, both of Kagawa, Japan, assignors to Shikoku Chemicals Corporation, Kagawa, Japan

Filed Feb. 24, 1997, Ser. No. 805,055

Claims priority, application Japan, Feb. 26, 1996, 8-065490; Sep. 19, 1996, 8-271722

Int. Cl.^{6} C23C *22/05*

U.S. Cl. 148—269 **4 Claims**



1. A surface treating agent for copper and a copper alloy, comprising an aqueous solution containing

(1) 0.01 to 10% by weight of an imidazole compound selected from the group consisting of a 2-alkylimidazole compound, a 2-arylimidazole compound and a 2-aralkylimidazole compound or a benzimidazole compound selected from the group consisting of a 2-alkylbenzimidazole compound, a 2-(cycloalkyltbenzimidazole) compound, a 2-arylbenzimidazole compound, a 2-aralkylbenzimidzole compound,

(2) 1 to 10 moles of a chelating agent per mole of iron compound, and

(3) 0.0001 to 5% by weight of iron compound.

5,795,410

CONTROL OF SURFACE CARBIDES IN STEEL STRIP

Yinshi Liu, Monroeville, Pa., assignor to USX Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1997, Ser. No. 788,092

Int. Cl.^{6} C22C *38/18*

U.S. Cl. 148—320 **5 Claims**

1. A steel strip for automotive applications with critical surface requirements, said steel strip having been produced by a method comprising:

casting a steel consisting essentially of in weight percent,

0.08% carbon max.

1.0% manganese max.

0.06% aluminum max.

up to 0.1% chromium max.

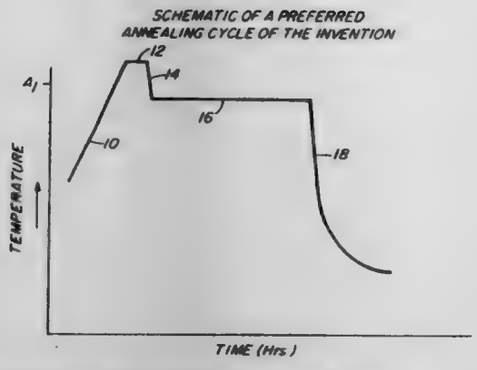
up to 0.1% titanium max.

up to 0.1% niobium max., and

up to 0.1% vanadium max.

hot rolling the casting to strip

cold rolling the strip, and



box annealing the cold rolled strip in coil form,

including heating the strip to a temperature above the A_1 temperature, holding the steel strip at a temperature above the A_1 temperature for a time not in excess of about 30 minutes, and cooling the strip at a rate of at least about 30° C./hour through the temperature range of from about 727° C. to about 700° C., the size of surface carbides formed on the surface of the strip during box annealing being less than 50 microns.

5,795,411

FERRITIC STAINLESS STEEL WIRE AND STEEL WOOL

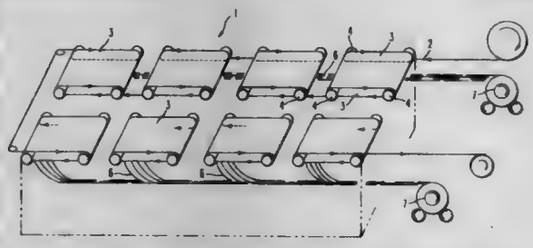
Pascal Terrien, Elancourt; Pierre Pedarre, Annecy le Vieux; Bernadette Sicoli, Ugine, and Claude Bioteau, Mercury, all of France, assignors to Ugine Savoie, Ugine, France

Filed Nov. 4, 1996, Ser. No. 743,152

Claims priority, application France, Nov. 3, 1995, 95 12976

Int. Cl.[6] C22C *38/18*

U.S. Cl. 148—325 **11 Claims**



1. Steel wire obtained by wire drawing ferritic stainless steel comprising, by weight,

carbon≦0.2%,

silicon≦2%,

manganese≦2%,

11%≦chromium≦30%,

nickel≦1%,

sulfur≦0.030%,

calcium≧15×10^{-4}%

oxygen≧40×10^{-4}%, the calcium and oxygen contents satisfying the following relationship:

$0.2 \leqq Ca/O \leqq 0.7$.

5,795,412

METHOD OF MANUFACTURING AND REPAIRING A BLADE MADE OF α-β TITANIUM

Raymond Delmaire, Othis, France, assignor to GEC Alsthom Electromecanique S.A., Paris, France

Filed Dec. 20, 1996, Ser. No. 777,732

Claims priority, application France, Dec. 22, 1995, 95 15398

Int. Cl.[6] B23K *20/22*; C22F *1/18*

U.S. Cl. 148—524 **11 Claims**

11. A method of repairing a steam-turbine blade made of αβ titanium and having a worn anti-erosion insert, comprising:



machining said blade to eliminate the remains of the worn anti-erosion insert, and

providing a new anti-erosion insert by:

placing an insert of β titanium into solution; then

carrying out a hardening treatment to harden said insert of β titanium; then

welding said insert of β titanium to the location on the blade where the worn anti-erosion inset had been, using a welding technique having localized and controlled energy density.

5,795,413

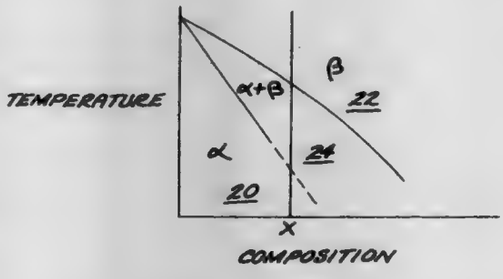
DUAL-PROPERTY ALPHA-BETA TITANIUM ALLOY FORGINGS

Mark D. Gorman, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 24, 1996, Ser. No. 773,455

Int. Cl.[6] C22F *1/18*

U.S. Cl. 148—671 **17 Claims**



1. A method for preparing a titanium-alloy article, comprising the steps of

providing a preform of an alpha-beta titanium alloy whose phase diagram exhibits a beta phase field and an alpha-beta phase field;

processing the preform in the beta phase field; and thereafter

forging a preselected portion of the processed preform in the alpha-beta phase field to form the titanium-alloy article, so that a nonselected portion of the preform is not forged,

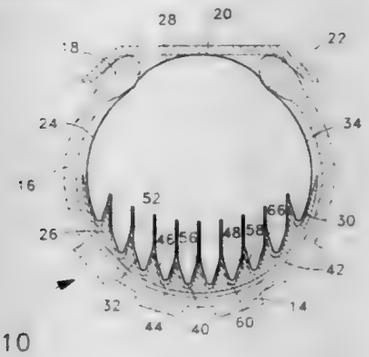
whereupon, at the completion of the step of forging, the nonselected portion has a beta-processed microstructure, and the preselected portion has a beta-processed plus alpha-beta forged microstructure.

5,795,414

PUNCTURE RESISTANT TIRE ASSEMBLY

Choon J. Shih, 2083 Blueridge Dr., Milpitas, Calif. 95035

Filed Apr. 10, 1996, Ser. No. 630,591
Int. Cl.[6] B60C *19/12*
U.S. Cl. 152—195 19 Claims



1. A puncture resistant tire assembly for a load-carrying pneumatic tire having an interior surface, comprising:

an inflatable inner tube having an inner tube body, the inner tube body having a plurality of substantially radially outwardly extending deflectable structures thereon, the deflectable structures being integrally continuous with the inner tube body and pressurizable therewith, each deflectable structure further having a characteristic shape which includes a tapered tip to present a deflectable structure surface that is inclined and a load-bearing surface of minimal size; and

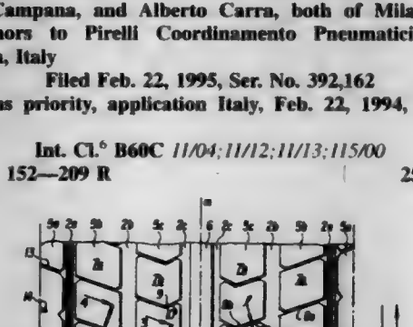
a tire liner disposed between said inner tube and the interior surface of said tire, said tire liner having a plurality of separator structures thereon, the separator structures shaped for substantially mateable reception of the deflectable structures, the separator structures assisting the deflectable structures in the approximate maintenance of the characteristic shape when said tire is under load and cooperating with the deflectable structures for deflection of the same upon puncture of said tire liner by a sharp object.

5,795,415

MEDIUM/HEAVY DUTY MOTOR-VEHICLE TIRES PROVIDED WITH A TREAD OF THE UNIVERSAL TYPE

Luigi Campana, and Alberto Carra, both of Milan, Italy, assignors to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy

Filed Feb. 22, 1995, Ser. No. 392,162
Claims priority, application Italy, Feb. 22, 1994, MI94 A 000309
Int. Cl.[6] B60C *11/04;11/12;11/13;115/00*
U.S. Cl. 152—209 R 25 Claims



1. A tire for medium/heavy duty motor vehicles for rotation in either a first driven rotation direction or in a second traction rotation direction, comprising:

a tread having side edges;

at least one pair of circumferential shoulder ribs positioned between respective side edges of said tread and respective circumferential shoulder grooves axially spaced apart from the side edges;

at least one pair of intermediate circumferential ribs respectively positioned between said shoulder grooves and corresponding intermediate circumferential grooves axially spaced apart from said shoulder grooves;

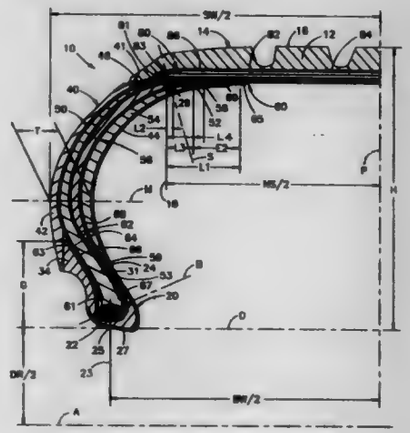
two circumferentially extending center ribs positioned between said intermediate grooves, said center ribs being disposed symmetrically to an equatorial plane of the tread and mutually separated by at least one auxiliary circumferential groove, each of said intermediate and center ribs being divided into a plurality of respective intermediate and center blocks, circumferentially respectively defined by intermediate and central transverse cuts in which the central transverse cuts define, in the axial width of the tread, at least one directional circumferential area positioned between the intermediate grooves, in which each center block has a cusp-shaped end portion facing in said first rotation direction, and a hollow-shaped end portion, at a circumferentially opposite position, the shape of which matches the cusp-shaped end portion of an adjacent center block, wherein said center blocks are linked up one after the other by effect of elastic deformations induced therein by the reactions transmitted from the ground when the tread rotates in said first direction, said intermediate cuts defining, at laterally opposite positions relative to said directional circumferential area, at least two tractive circumferential areas in which each of the intermediate blocks has a substantially rhomboidal configuration imparted by said cuts, obliquely directed to the circumferential direction of the tire, wherein when the tire rotates in said second traction rotation direction at least the intermediate blocks mutually diverge by effect of the elastic deformations induced by the reactions transmitted from the ground.

5,795,416

RUN-FLAT TIRE HAVING PARTIAL CARCASS LAYERS

Walter Lee Willard, Jr., Greenville; Virginia White Snipes, Greer, and Allen Eugene Wilson, Lexington, all of S.C., assignors to Michelin Recherche et Technique, Switzerland

Filed Aug. 2, 1996, Ser. No. 691,831
Int. Cl.[6] B60C *9/02;17/06*
U.S. Cl. 152—517 27 Claims



1. A vehicle tire including an innerliner to the inside of said tire, a reinforced inner carcass layer that is anchored in each bead region by being looped around each inextensible bead core, a tread disposed in a crown portion of said tire, a pair of first crescent-shaped reinforcing members each disposed in a respective sidewall adjacent said innerliner and a tread reinforcing package disposed between said carcass layer and said tread, said tire further comprising:

respective inner sidewall supporting complexes each disposed in a sidewall extending from a respective bead core to a lapping arrangement with a respective lateral end of said tread reinforcing package and including at least two reinforced partial carcass layers partially separated by a filler rubber portion and at least one crescent-shaped reinforcing member partially separating said at least two partial carcass layers from said inner carcass layer; and

respective outer sidewall and bead protecting complexes each disposed laterally to the outer sides of said inner sidewall supporting complexes and essentially wrapping around said respective bead core in a respective bead region and extending radially outward to a respective lateral edge of said tread for contacting said tread, wherein each complex is a preassembled structural component made as a single component from sub-components and positioned within the tire to help provide self-supporting sidewalls of the tire during deflated running of the tire.

5,795,417

PNEUMATIC VEHICLE TIRE HAVING A BREAKER ARRANGEMENT SURROUNDED AT LEAST IN ITS EDGE REGIONS BY AT LEAST ONE COVER PLY AND METHOD OF MAKING THE SAME

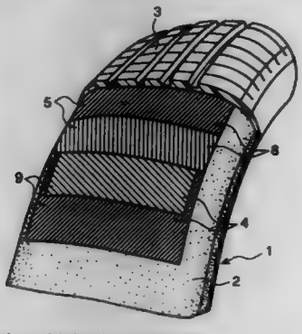
Roland Damke, Freigericht-Somborn; Manfred Gerresheim, Obertshausen-Hausen; Robert Nau, Hammersbach; Hans-Joachim Winter, Geinhausen, and Bernd Lowenhaupt, Bensheim, all of Germany, assignors to SP Reifenwerke GmbH, Hanau, Germany

Filed Aug. 22, 1995, Ser. No. 517,630

Claims priority, application Germany, Aug. 23, 1994, 44 29 899.4; Feb. 23, 1995, 195 06 381.3; Mar. 17, 1995, 195 09 824.2

Int. Cl.[6] B60C *9/18;9/20;9/22;9/26*

U.S. Cl. 152—527 **38 Claims**



1. A pneumatic vehicle tire comprising:

a single ply, or multi-ply radial carcass anchored to beads,

a tread,

a breaker arrangement provided between the carcass and the tread, the breaker arrangement being built up of at least two cut breaker plies with the threads or cords of the cut breaker plies, which serve as strength carriers and extend parallel to one another in the respective ply, crossing at a predetermined angle to the central mid-circumferential plane of the tire, and

at least one cover ply of threads or cords extending substantially in the circumferential direction of the tire, the at least one cover ply surrounding the breaker arrangement in the two shoulder regions (**18**) of the tire including the breaker arrangement's edge regions and in the central region (**21**) of the tire axially between the shoulder regions, wherein

the threads or cords (**9**) in the breaker arrangement (**4**) are of non-metallic material; a material with a low thermal shrinkage or no thermal shrinkage is used as the material for the threads or cords (**8**) of the at least one cover ply (**5**); and extension of the tire into its tire mold during the tire's manufacture is ensured through the choice of the material of the threads or cords (**8**) of the at least one cover ply (**5**) alone, or in conjunction with at least one of the group consisting of the nature of the construction of the at least one cover ply (**5**), the application of the at least one cover ply (**5**), and the nature of the construction of the threads or cords (**8**) of the at least one cover ply (**5**), but additional extension of the tire is prevented, and

wherein the at least one cover ply (**5**) has, in the two shoulder regions (**18**) of the tire, an extensibility of at most about 0.1 to 0.5% and, in the central region (**21**) of the tire, an extensibility in the range of from 2 to 3%.

5,795,418

PNEUMATIC MOTORCYCLE TIRE FOR IMPROVED CORNERING AND STRAIGHT RUNNING STABILITY

Shigehiko Suzuki, Amagasaki, Japan, assignor to Sumitomo Rubber Industries Ltd., Hyogo-ken, Japan

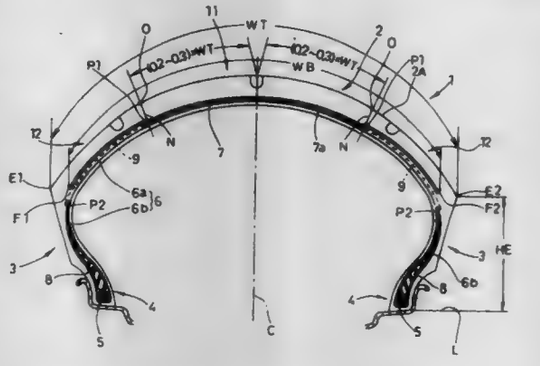
Division of Ser. No. 251,970, Jun. 1, 1994, Pat. No. 5,482,102.

This application Sep. 25, 1995, Ser. No. 533,211

Claims priority, application Japan, Jun. 7, 1993, 5-164002; Apr. 4, 1994, 6-90594

Int. Cl.[6] B60C *9/22;9/28*

U.S. Cl. 152—530 **7 Claims**



1. A pneumatic motorcycle tire comprising

a tread portion with axial edges, said tread portion curved so that the maximum cross-sectional width of the tire lies between the tread edges,

a pair of axially spaced bead portions,

a pair of sidewall portions extending between the tread edges and the bead portions,

a pair of bead cores, one disposed in each bead portion,

a carcass comprising at least one ply of cords having a main portion extending between the bead portions and a pair of turned up portions each turned up around one of said bead cores,

a belt disposed radially outside the carcass and inside the tread portion, said belt consisting of a single ply formed by spirally winding a ribbon-shaped strip of rubber in which at least one cord is embedded along the longitudinal direction thereof, at an angle to the tire equator, said belt having a width in a range of 0.85 to 0.95 times a tread surface width,

a pair of axially spaced reinforcing cord layers disposed radially inside of the belt and outside of the carcass,

each said reinforcing cord layer extending from a point (**P1**) in the tread portion on each side of the tire equator towards the sidewall portion beyond the belt edge,

said point (**P1**) being spaced apart from the tire equator such that, when a straight line is drawn normal to the tread surface through the point, the distance measured along the tread surface from the tire equator to the normal line is in a range of from 0.2 to 0.3 times the tread surface width measured along a tread surface from one tread edge to the other tread edge,

with respect to the tire equator, the cords of one of said reinforcing cord layers are inclined reversely to the cords of the other of said reinforcing cord layers,

each reinforcing cord layer consisting of a single ply of parallel organic fiber cords inclined at an angle of 20 to 70 degrees to the tire equator to cross the carcass cords,

said ply of each said reinforcing cord layer being rubberized with a topping rubber having a 100% modulus of 25 to 55 kgf/sq.cm,

each reinforcing cord layer having a radially inner edge not turned up around the bead core and terminated at a height in the range of from 0.3 to 1.0 times the height of a tread edge, each measured from a base of the bead portion.

5,795,419

METHOD FOR ADJUSTING THE OPERATING FREQUENCY OF AN ORBITAL MOTION PRODUCING VIBRATORY WELDING SYSTEM

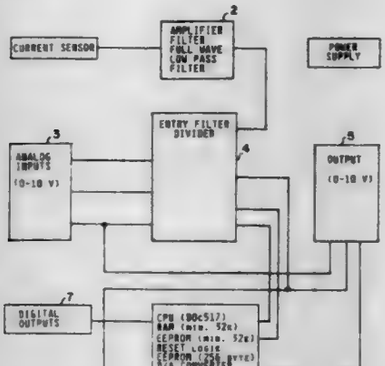
Wilfried Lotz, Neuberg; Heiko Priem, Brachtal-Heilstein, and Gerd Reitmayer, Aschaffenburg, all of Germany, assignors to Branson Ultraschall Niederlassung der Emerson Technology GmbH & Co., Dietzenbach, Germany

Filed Apr. 5, 1996, Ser. No. 628,851

Claims priority, application Germany, Apr. 5, 1995, 195 12 820.6

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—64 **7 Claims**



1. In a method for adjusting the operating frequency of an orbital vibratory welding system including a welding head receiving a workpiece, resilient means to which the head is mounted and electromagnetic means for driving the head which is subjected to orbital vibrations having a geometrical configuration constricted to a vibratory plane, the improvement comprising the steps of: varying the operating frequency in a predetermined range of frequencies, sensing the geometrical configuration of the orbital vibrations, and selecting an optimum frequency resulting in an optimum geometrical configuration of the orbital vibrations and adjusting the operating frequency of the welding system to the optimum frequency.

5,795,420

METHOD OF APPLYING A FINISHING SHEET TO A SUBSTRATE

Everett W. English, Clarksburg, Calif., assignor to Wintune Graphics, Inc., Sacramento, Calif.

Filed May 31, 1996, Ser. No. 660,688

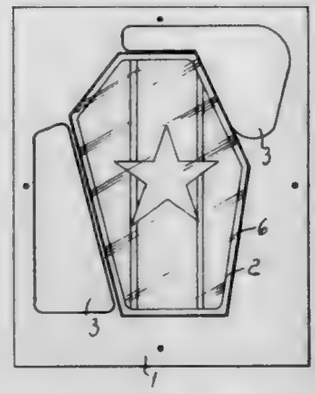
Claims priority, application Italy, Jul. 25, 1995, MI95A1616

Int. Cl.[6] B32B *31/18;31/20;31/26;31/28*

U.S. Cl. 156—64 **25 Claims**

1. A method of applying a finishing sheet having a graphic design to a substrate comprising the steps of:

printing a graphic design with ink on a side of a transparent finishing sheet which has to face towards a substrate whereon the finishing sheet with the graphic design will be applied;



laminating a thermal activated film adhesive to the finishing sheet on the side of the sheet whereon the graphic design is printed;

applying the finishing sheet thus printed and with the adhesive film thereon to the substrate by thermo-vacuum forming including heating the finishing sheet to soften the finishing sheet and to rewet the ink of the graphic design and to melt the adhesive film, and bringing the heated finishing sheet into contact with the substrate for stretching the finishing sheet and connecting the finishing sheet to the substrate.

5,795,421

METHOD FOR PREPARING A PANEL WITH A RESINOUS FRAME

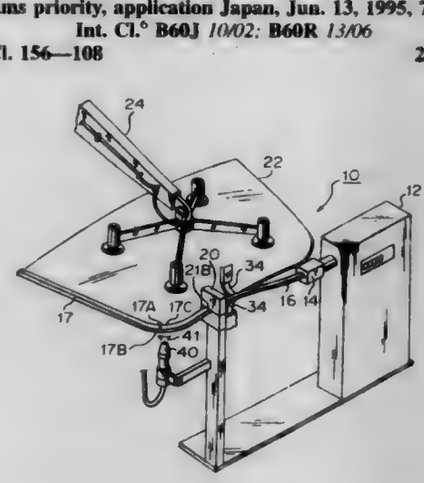
Kazuhiro Takahashi; Hideyuki Hashimoto, and Hisashi Takeda, all of Aichi, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jun. 13, 1996, Ser. No. 663,451

Claims priority, application Japan, Jun. 13, 1995, 7-146467

Int. Cl.[6] B60J *10/02;* **B60R** *13/06*

U.S. Cl. 156—108 **20 Claims**



1. A method for preparing a panel with a resinous frame member wherein the resinous frame member is unified to at least one surface of the panel at a peripheral portion thereof, comprising:

extruding a resinous material for the frame member in a predetermined shape from a resin shaping die to form a shaped product;

providing a pressing member at a position spaced apart from the shaping die by a predetermined distance, the pressing member having a stationary interior profile which substantially conforms to an outer shape of the frame member and substantially encloses said frame member, wherein said frame member slides past said interior profile;

advancing the shaped product extruded from the die through the interior profile;

inserting a peripheral portion of the panel into a panel inserting portion of the pressing member to arrange the pressing member at the peripheral portion of the panel; and

unifying the shaped product to at least one surface of the peripheral portion of the panel by pressing the shaped product against the panel while relatively moving the pressing member with respect to the panel and along the peripheral portion thereof.

5,795,422

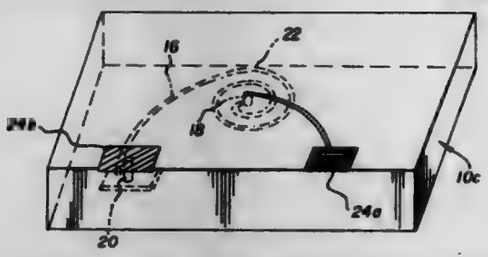
METHOD FOR FORMING MOLDED CERAMIC DEVICES HAVING EMBEDDED SPIRAL COILS

Dilip K. Chatterjee, Rochester; Edward P. Furlani, Lancaster, and Syamal K. Ghosh, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 2, 1997, Ser. No. 775,524

Int. Cl.[6] B32B *31/26*

U.S. Cl. 156—89.12 **16 Claims**



1. A method of fabricating a molded ceramic device having an embedded spiral coil, comprising the steps of:

a) forming grooves that provide portions of a spiral coil in surfaces of first and second ceramic plates;

b) aligning the grooves in the first and second ceramic plates and filling the aligned grooves with sacrificial material

c) sintering the first and second ceramic plates with the sacrificial material to form a unitary structure:

d) removing the sacrificial material from the unitary structure; and

e) filling the grooves with a conductive material to complete a conductive spiral coil.

5,795,423

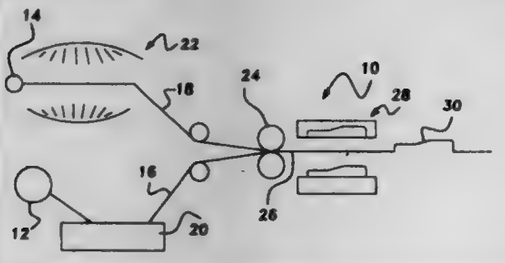
METHOD FOR MANUFACTURING A FIBER REINFORCED ARTICLE

Carl Frederick Johnson, Belleville, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Dec. 5, 1996, Ser. No. 760,843

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—166 **16 Claims**



1. A method of manufacturing a fiber reinforced article comprising the steps of:

impregnating a first fiber reinforcing layer with an initiator;

impregnating a second fiber reinforcing layer with a molten cyclic resin;

contacting said first and second reinforcing layers; heating said first and second reinforcing layers while said initiator reacts with said cyclic resin and to open the ring-like structure on said cyclic resin and to cause said open rings to polymerize and cross-link, said polymerization and cross-linking forms a pliable thermoplastic, and

subsequent to said heating step, molding said article into a desired shape while said thermoplastic is still warm and pliable, whereby said thermoplastic impregnates and completely wets the first and second fiber reinforcing layers to form said article.

5,795,424

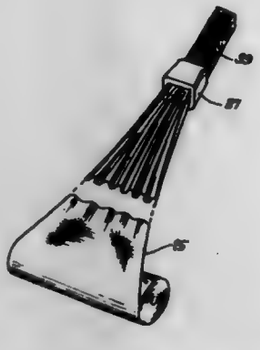
HIGH SHEAR STRENGTH PULTRUSION

David W. Johnson, San Diego; W. Brandt Goldsworthy, and George Korzeniowski, both of Los Angeles, all of Calif., assignors to Ebert Composites Corporation, San Diego, Calif.

Division of Ser. No. 325,981, Jan. 26, 1995, Pat. No. 5,597,629, which is a continuation-in-part of Ser. No. 128,800, Sep. 28, 1993, abandoned, Ser. No. 196,650, Feb. 14, 1994, Pat. No. 5,697,612, and Ser. No. 259,431, Jun. 14, 1994, Pat. No. 5,644,888, said Ser. No. 128,800 Ser. No. 196,650, and Ser. No. 259,431, each is a continuation-in-part of Ser. No. 715,912, Jun. 14, 1991, Pat. No. 5,247,774, Ser. No. 541,547, Jun. 21, 1990, Pat. No. 5,024,036, and Ser. No. 231,379, Aug. 12, 1988, Pat. No. 4,991,726, which is a continuation-in-part of Ser. No. 137,101, Dec. 23, 1987, Pat. No. 4,809,146, and Ser. No. 137,100, Dec. 23, 1987, Pat. No. 4,825,620, said Ser. No. 137,101 and Ser. No. 137,100, each is a continuation-in-part of Ser. No. 848,573, Apr. 7, 1986, Pat. No. 4,715,503. This application Jan. 26, 1997, Ser. No. 806,031

Int. Cl.[6] B31F *1/00*

U.S. Cl. 156—166 **5 Claims**



1. A method of pultruding composites to define a monlithic pultruded stack of switchback bidirectional woven fiber cloth layers using a pultrusion machine having a resin bath, a die, and means for pulling bidirectional woven fiber cloth through said bath and said die, comprising the following steps:

(a) with a jig that folds bidirectional woven fiber cloth fed therethrough from a roll of flat bidirectional woven fiber cloth stock into a configuration having consecutive switchback pleats with longitudinally extended fold lines, the step of drawing bidirectional woven fiber cloth from a roll of flat bidirectional woven fiber cloth stock and feeding same through said jig to form same into a pleated ribbon; and,

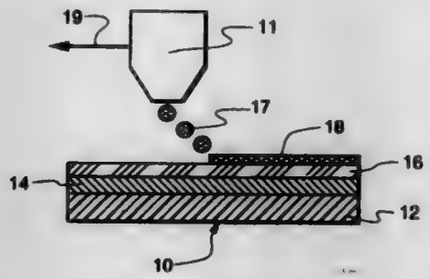
(b) passing said pleated ribbon through said bath and die to compress same into a monolithic stack comprised of the consecutive switchback pleats of said ribbon bonded together by solidified resin from said resin bath.

5,795,425

INK JET IMAGING PROCESS AND RECORDING ELEMENT FOR USE THEREIN

Donald Armand Brault, Granby; Douglas Allan Cahill, Belchertown; Richard Scott Himmelwright, Wilbraham, and Dene Harvey Taylor, Holyoke, all of Mass., assignors to Rexam Graphics Incorporated, South Hadley, Mass.

Filed Sep. 3, 1993, Ser. No. 115,561
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—235 **40 Claims**



1. A process for preparing a protected ink image comprising

A) imagewise depositing from an ink of an ink jet, one or more ink images on an ink receptor, the ink comprising a carrier liquid which is water or a polyhydric alcohol or a combination thereof, and the ink receptor comprising

1) a temporary carrier layer;

2) an image transparent, protective layer; and

3) an image transparent, adhesive, ink receptive layer permanently adhered to the image transparent, protective layer;

wherein, the one or more ink images are deposited on the image transparent, adhesive, ink receptive layer to form an ink imaged layer of an imaged receptor;

B) applying to the ink imaged layer of the imaged receptor, a substrate; wherein, the adhesive of the image transparent, adhesive, ink receptive layer is activated whereby the substrate is adhered to the ink imaged layer of the imaged receptor to form an imaged laminate; and

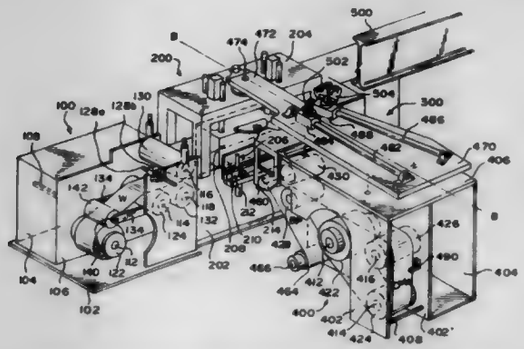
C) removing the temporary carrier layer from the image transparent, protective layer of the imaged laminate.

5,795,426

METHOD AND APPARATUS FOR EFFECTING CONTINUOUS MULTI-DIRECTIONAL LAMINATING

Dana B. Jackson; Donald I. Asher, both of Broken Arrow; Ronald G. Halcomb, and John E. Vogt, both of Tulsa, all of Okla., assignors to Boeing North American, Inc., Seal Beach, Calif.

Filed Aug. 5, 1996, Ser. No. 695,817
Int. Cl.[6] B32B *31/10;35/00*
U.S. Cl. 156—249 **17 Claims**



1. A method for applying segments of a second cross-ply tape on the top of a first carrier tape, said method comprising:

supporting said first tape for travel between first and second stations along a linear path,

positioning press means and severing means at a location on said path between said first and second stations,

moving said first tape a predetermined distance toward said location along said path, said distance being proportional to the width of said second tape,

moving said second tape toward said press means a distance proportional to the width of said first tape,

sequentially moving said first and second tapes, as well as said press and severing means such that, for each predetermined distance that said first tape is moved toward said location along said path, a layer of said second tape is deposited on said first tape, and before the first tape is moved again along said path said predetermined distance, the press means is actuated and then the second tape is severed, and

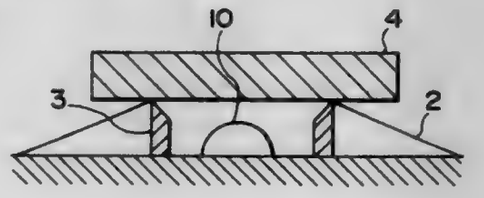
reversing the direction of movement of said first tape along said path so that at least one other layer of said second tape can be applied to said first tape.

5,795,427

METHOD OF APPLYING A PAINT PROTECTING FILM TO A VEHICLE BODY

Takashi Arakawa, Hiratsuka, and Kimio Shiraishi, Zama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 6, 1995, Ser. No. 568,136
Claims priority, application Japan, Dec. 13, 1994, 6-309004
Int. Cl.[6] B32B *31/18*
U.S. Cl. 156—256 **7 Claims**



1. A method of attaching a paint protecting film to a painted body of a vehicle and leaving a specific site uncovered, comprising the steps of:

disposing a cutter on said body such that a blade of said cutter surrounds said site and projects from said body,

covering said body, having said cutter disposed thereon, with said film,

pressing a press member against said cutter covered by said film so that said film is cut by said blade,

attaching said film to said body in an area surrounding said cutter after said film is cut by said blade.

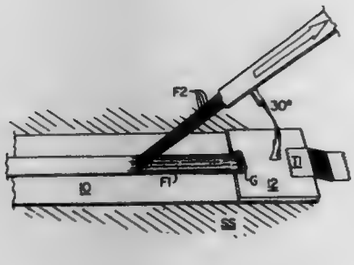
5,795,428

METHOD FOR MIDSPAN ENTRY OF OPTICAL RIBBON FIBER

William E. Beasley, Jr., Durham, N.C.; John P. Sarbell, Grand Island, Fla., and James W. Moran, Marlton, N.J., assignors to Sumitomo Electric Lightwave Corp., Durham, N.C.

Continuation of Ser. No. 333,420, Nov. 2, 1994, Pat. No. 5,600,750, which is a continuation-in-part of Ser. No. 292,859, Aug. 19, 1994, Pat. No. 5,460,683. This application Feb. 4, 1997, Ser. No. 795,467
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—344 **3 Claims**

1. A method of removing the encapsulant matrix from a selected span of optical ribbon fiber to provide access to one or more selected optical fibers within said optical ribbon fiber, said method comprising the steps of:



(a) securing a strip of adhesive tape to a support surface;
(b) adhesively securing the span length of the optical ribbon fiber to said strip of tape so as to overlay said strip of tape;
(c) lifting the span length of the optical ribbon fiber at a selected location adjacent an end of said strip of tape so as to initiate delamination of the encapsulant matrix from the optical fibers; and
(d) propagating the delamination of the encapsulant matrix from the optical fibers along at least a portion of the remaining span length of the optical ribbon fiber by further lifting the span length of the optical ribbon fiber which overlays said strip of tape.

5,795,429

PLASMA PROCESSING APPARATUS

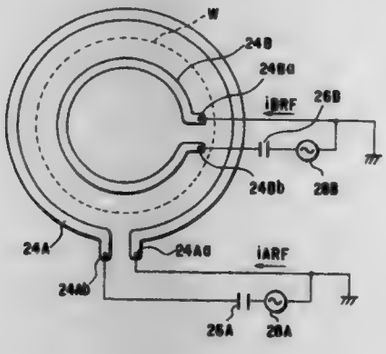
Nobuo Ishii, and Jiro Hata, both of Yamanashi-ken, Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Division of Ser. No. 180,281, Jan. 12, 1994. This application Dec. 26, 1996, Ser. No. 774,685

Claims priority, application Japan, Jan. 12, 1993, 5-19193; Jan. 12, 1993, 5-19217; Mar. 27, 1993, 5-92511

Int. Cl.[6] **H05H** *1/00*

U.S. Cl. 156—345 **5 Claims**



1. A plasma processing apparatus, comprising:
a processing chamber in which an object to be processed is arranged;
a processing gas introducing means for introducing a processing gas into said processing chamber; and
at least two induction members each arranged on the outer surface of said processing chamber positioned in correspondence with said object to be processed, an insulator being interposed between said induction members and said processing chamber, a high frequency power being supplied to said induction members so as to form an induction electric field near the object to be processed, each of said two induction members forming a single loop, and said two induction members being arranged in a concentric configuration, wherein said at least two induction members each being in the form of a single loop are independently controlled in respect of the high frequency power supplied thereto.

5,795,430

FACEPLATE BONDING PROCESS FOR A VISUAL DISPLAY UNIT

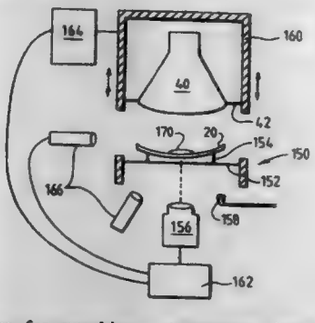
John Beeteson, Skelmorlie, and Anthony C. Lowe, Braishfield, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 441,711, May 15, 1995, Pat. No. 5,605,595, which is a continuation-in-part of Ser. No. 262,728, Jun. 20, 1994, Pat. No. 5,417,791. This application Dec. 2, 1996, Ser. No. 753,898

Claims priority, application United Kingdom, Dec. 18, 1993, 9325932; Dec. 16, 1994, 9425415

Int. Cl.[6] **B32B** *17/06*

U.S. Cl. 156—350 **3 Claims**



1. Apparatus for attaching a transparent faceplate (**20**) to a screen of a visual display unit (**40**), by adhesion of opposed surfaces thereof, comprising:
means for locating reference points on the faceplate (**20**) and on the visual display unit for precise relative positioning of said surfaces by a positioning tool without the need for the positioning of physical spacers between said surfaces;
means for dispensing (**80**) an adhesive material onto at least one of said surfaces;
a positioning tool for bringing said surfaces together (**90**) in a controlled manner using said reference points, such that the opposed surfaces displace the adhesive material outwards towards the edges of said surfaces to form an adhesive layer which fills the gap therebetween;
means for curing (**100**, **120**) the adhesive material to secure the faceplate to the screen; and
control apparatus for the positioning tool and a detection means for determining when the adhesive material has reached predefined points proximate the outer edges of the opposed surfaces, said control apparatus being connected to respond to signals from the detection means to fix the relative positions of the opposed surfaces.

5,795,431

WELDING EQUIPMENT

Reinhard Weissfloch, Aachen, Germany, assignor to Wegener GmbH, Germany

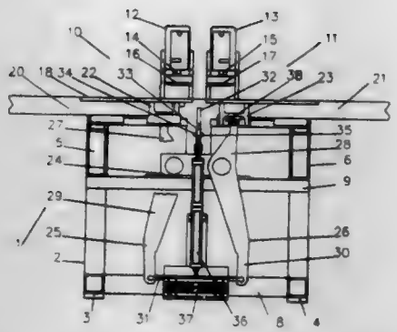
Filed Oct. 28, 1993, Ser. No. 141,956

Claims priority, application Germany, Oct. 28, 1992, 9214574 U

Int. Cl.[6] **B29C** *65/20*

U.S. Cl. 156—358 **17 Claims**

1. A device for welding plastic workpieces, comprising:
a) first and second opposed clamp devices movable relative to each other, each said device for clamping a workpiece thereto;
b) a heating unit operably associated with said clamp devices for plastifying workpieces clamped by said clamp devices;
c) means operably associated with each of said clamp devices for reciprocatingly driving said clamp devices so that said clamp devices approach and move away from each other;
d) a force measuring assembly operably associated with at least one of said clamp devices and the associated driving means for measuring the force applied to said clamp device for causing driving movement thereof; and



e) a control unit operably associated with said driving means and with said force measuring assembly for controlling operation of said driving means in response to the measured force.

5,795,432

COILING MACHINE WITH ADHESIVE STRIP APPLICATOR

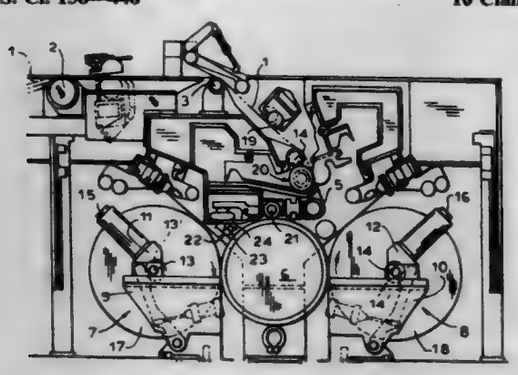
Ernst-Günther Urban, Neuss, Germany, assignor to Jagenberg Aktiengesellschaft, Dusseldorf, Germany

Continuation of Ser. No. 882,147, May 11, 1992, abandoned. This application Oct. 18, 1993, Ser. No. 139,616

Claims priority, application Germany, May 10, 1991, 41 15 406.1

Int. Cl.[6] **B65C** *3/12;3/16;9/04*

U.S. Cl. 156—446 **10 Claims**



1. A winding machine for winding a web having a pair of opposite sides on at least one winding sleeve, the winding machine comprising:

a support roller;

guide means for feeding a web to be wound to the support roller, the web passing around an arc of the support roller, the support roller facing one of the sides of the web;

at least one winding station for forming a roll by winding the web around a winding sleeve adjacent the support roller, the roll resting against the support roller and receiving the web therefrom;

means at the winding station for rotatably supporting the sleeve for rotation about an axis;

a carriage facing the other side of the web and shiftable axially across the web and directly juxtaposed with the support roller at the arc;

means including a pressing roller on the carriage for pressing a two-sided adhesive strip carried by a tape spanned over the pressing roller against the other side of the web at the arc of the support roller and thereby transferring the strip to the other side of the web against the support roller;

means for displacing the carriage axially across the web; and

a cutter on the carriage behind the pressing roller and juxtaposed with the other side of the web on the carriage in an axial direction of displacement of the pressing roller across the web for cutting through the web and through the strip by engagement of the cutter through the web and strip as the carriage travels and against the support roller to form a trailing end of a wound roll and a leading end of a web to be applied to another sleeve strip, whereby each end is left carrying a portion of the strip.

5,795,433

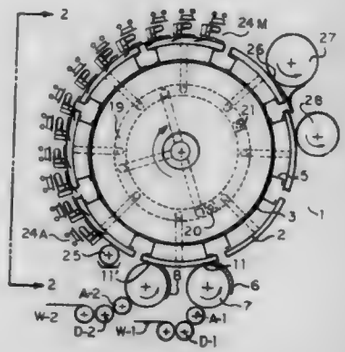
METHOD AND APPARATUS FOR MAKING APPAREL WITH FOLDED SEAMS

William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54311

Filed Feb. 8, 1996, Ser. No. 598,368

Int. Cl.[6] **A41D** *1/00;* **A41H** *33/00;* **D05B** *35/00*

U.S. Cl. 156—479 **18 Claims**



1. Apparatus for mechanically assembling two webs of material to form garments, said apparatus including:

a first and a second web advancing means to move and cut said webs,

a carrier moving in a path having a beginning and an end,

said first web advancing means comprised of a die roll in operative cutting contact with an anvil roll for cutting from a first web a series of first segments having a first size and shape, said anvil roll being selectively vacuumized to advance said first segments to said carrier near the beginning of said path,

said second web advancing means comprised of a die roll in operative cutting contact with an anvil roll for cutting from a second web a series of second segments having a second size and shape substantially corresponding to, but smaller than, said first size and shape of said first segment, said anvil roll being selectively vacuumized to advance said second segment to said carrier on top of said first segment,

assembly means arranged for folding portions of said first segment over said second segment,

said carrier having a plurality of platens and vacuum means with holes in said platens connected to said vacuum means,

each of said platens arranged to hold one of said first segments in said series of first segments against the surface of said platen, and one of said second segments in said series of second segments in superposed relationship to said first segment while said carrier moves along said path in coacting relationship with said assembly means,

said assembly means arranged for operation during a portion of movement along said path to fold portions of said first segment which extend beyond the edges of said second segment around and over the edges of the second segment while both segments are held against said platens by vacuum,

joining means to secure said portions of said first segment to said second segment while both of said superposed segments are held in place on said platens by the vacuum means, and

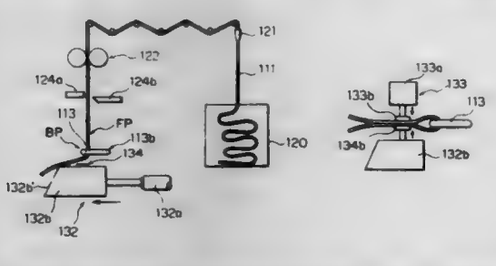
means to serially remove the assembled first and second segments from said plurality of platens as the platens approach the end of said path.

5,795,434

MACHINE FOR CONTINUOUSLY MANUFACTURING TAPE STRIP FOLDED ABOUT RING, AND DEVICE FOR CORRECTING TAPE TWIST

Kiichiro Ishikawa, Marietta, Ga., assignor to YKK Corporation of America, Marietta, Ga.

Filed Feb. 23, 1996, Ser. No. 605,859
Int. Cl.[6] B65C 9/36;3/02
U.S. Cl. 156—486 20 Claims



1. A machine for continuously manufacturing a tape strip folded through a ring, comprising:

(a) a tape supply section accommodating a continuous tape;

(b) tape drawer rollers adapted to be driven for controlled rotation to intermittently draw a predetermined length of the continuous tape at a time from said tape supply section along a tape traveling path;

(c) a ring supply path along which rings are to be successively supplied, said supply path meeting said tape traveling path;

(d) ring positioning means for positioning the ring, which is supplied via said ring supply path, in a fixed position in such a posture that a leading end portion of the continuous tape can be inserted through the ring;

(e) tape severing means situated between said tape drawer rollers and said ring supply path and operable, while the feeding of the continuous tape is stopped, for severing a predetermined length tape strip off the continuous tape with a leading end portion of the continuous tape being inserted through the ring;

(f) tape bending means situated adjacent to said ring positioning means for folding the tape strip of the predetermined length through the ring;

(g) tape fusing means for fusing at least part of a laminate portion of the folded tape strip; and

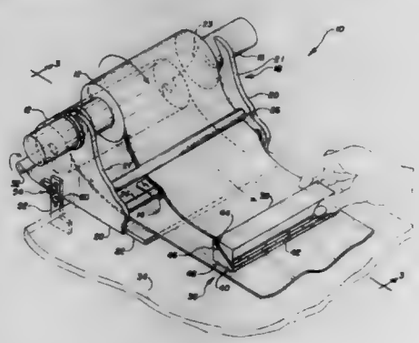
(h) discharging means for discharging the fused tape strip out of said machine.

5,795,435

TRANSFER TAPE APPLICATOR SYSTEM

Jesse Walter Waters, Jr., P.O. Box 384, Springfield, Ga. 31329

Filed Nov. 8, 1995, Ser. No. 555,045
Int. Cl.[6] B65H 23/26
U.S. Cl. 156—577 4 Claims



1. A transfer tape applicator for supporting and dispensing a roll of sheet material over a work surface comprising:

a frame including a rectangular platform and two vertically extending side members affixed to opposite edges of said platform;

each of said side members including a front edge and a rear edge having an upper slot and a lower recess;

a removable support axle rotatably disposed in each said upper slot for supporting a first roll of sheet material;

a removable support rod rotatably disposed in each said lower recess for supporting a second roll of sheet material;

an upper tension rod and a lower tension rod slopingly affixed between said side members for tensioning the first roll sheet material above a work surface; and

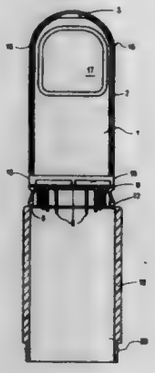
clamping means for removably securing said frame to the work surface.

5,795,436

ADHESIVE STICK WITH PLUNGER-SHAPED RETAINING DEVICE FOR THE STICK COMPOSITION

Hans Haim, Herne; Wilhelm Werhahn, Baden-Baden; Klaus Eichler, Buhl, and Hans-Martin Kapsa, Ottersweiler, all of Germany, assignors to Uhu GmbH, Baden, Germany

Filed Jul. 17, 1996, Ser. No. 682,113
Claims priority, application Germany, Feb. 8, 1996, 196 04 626.2
Int. Cl.[6] B32B 31/00
U.S. Cl. 156—579 9 Claims



1. An adhesive stick having:

1. a member in plunger form for retaining a stick adhesive composition,

2. a sleeve enclosing the stick composition, and

3. a propelling device for an upward and downward moving of the stick composition,

wherein:

a. the plunger sleeve,

b. the plunger with plunger plate and

c. a propelling element, configured as a plate, which element at the same time constitutes an actuating element;

form a unit in a form of an injection moulding, and wherein a plate-shaped propelling element is bonded on two sides to the plunger plate via reinforcing webs and having, at a vertex, a pressure plate, in that a surrounding surface is further provided on the propelling element above the plunger plate, and wherein the plunger plate has on its side anchorage elements, in the form of bristles protruding into the sleeve and adapted to engage and anchor the adhesive stick composition during upward and downward moving of the adhesive stick composition.

5,795,437

FRICTION WELDING DEVICE

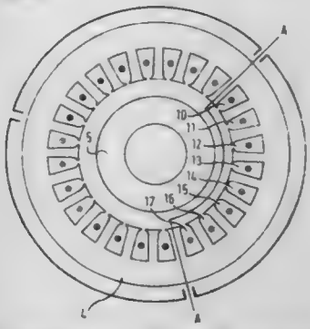
Emil Muhr, Glattbach, Germany, assignor to Branson Ultraschall Niederlassung der Emerson Technology GmbH & Co., Dietzenbach, Germany

Filed Dec. 2, 1996, Ser. No. 758,960

Claims priority, application Germany, Dec. 1, 1995, 195 45 132.5

Int. Cl.[6] B29C 65/06

U.S. Cl. 156—580 6 Claims



1. A friction welding device for joining workpieces, comprising a stationary support, an oscillating platform and a plurality of flexural rod-like members connecting said support and said platform and an electromagnetic drive motor for driving said platform in an orbital motion with respect to said stationary support, wherein said workpieces are mounted to said support and said platform, respectively, including means for clamping said workpieces towards each other, said electromagnetic drive motor including an electric motor having a cylindrical rotor and a stator, with an airgap between the cylindrical rotor and the stator greater than the vibrational amplitude of said orbital motion, and a winding disposed in slots of the stator, said winding generating a rotating magnetic field exerting a unidirectional attraction of said rotor.

5,795,438

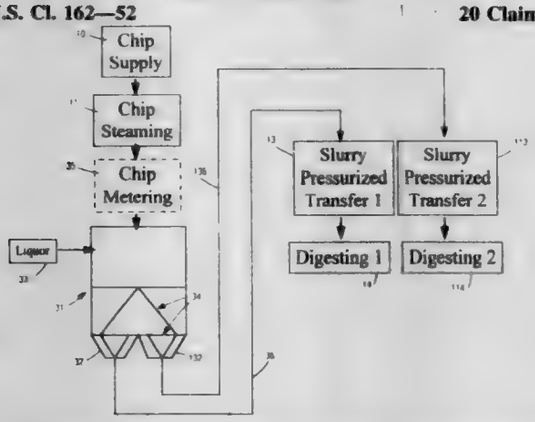
METHOD AND APPARATUS FOR FEEDING MULTIPLE DIGESTERS

C. Bertil Stromberg, Glens Falls; Bruno S. Marcoccia, and J. Wayne Chamblee, both of Queensbury, all of N.Y., assignors to Ahlstrom Machinery Inc., Glens Falls, N.Y.

Filed Nov. 4, 1996, Ser. No. 744,857

Int. Cl.[6] D21C 7/06

U.S. Cl. 162—52 20 Claims



1. A method of treating comminuted cellulosic fibrous material, using a steaming vessel and a plurality of distinct parallel digesters, comprising the steps of continuously:

(a) feeding comminuted cellulosic fibrous material to the steaming vessel in a first stream of material;

(b) steaming, slurrying with liquid, and pressurizing the material from the first stream, to provide a liquid slurry;

(c) substantially simultaneously transferring the liquid slurry to a plurality of the distinct parallel digesters; and

(d) between steps (a) and (c) splitting the first stream of material into a plurality of distinct, individually controlled material streams, one for each of the distinct parallel digesters.

5,795,439

PROCESS FOR MAKING A NON-WOVEN, WET-LAID, SUPERABSORBENT POLYMER-IMPREGNATED STRUCTURE

Joanne M. Euripides, Charlotte; Lessie C. Phillips, Huntersville, and Steven F. Nielsen, Charlotte, all of N.C., assignors to Celanese Acetate LLC, Charlotte, N.C.

Filed Jan. 31, 1997, Ser. No. 792,289

Int. Cl.[6] D21H 23/04

U.S. Cl. 162—100 15 Claims

1. A process for making a non-woven, wet laid, superabsorbant polymer-impregnated structure comprising the steps of:

a) mixing fibers and a superabsorbent polymer in an aqueous medium to form a furnish at suitable temperature conditions for a sufficient period of time such that said temperature conditions inhibits the swelling of said superabsorbent polymer;

b) dewatering said furnish to form a preform structure; and

c) drying said preform structure to form the non-woven, wet laid, superabsorbent polymer-impregnated structure.

5,795,440

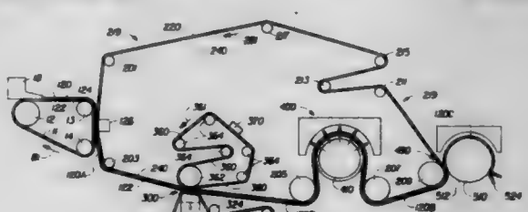
METHOD OF MAKING WET PRESSED TISSUE PAPER

Robert Stanley Ampulski, Fairfield; Ward William Ostendorf, West Chester, and Osman Polat, Montgomery, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 460,949, Jun. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 358,661, Dec. 19, 1994, Pat. No. 5,637,194, which is a continuation-in-part of Ser. No. 170,140, Dec. 20, 1993, abandoned. This application Jun. 28, 1996, Ser. No. 671,993

Int. Cl.[6] D21H 11/00

U.S. Cl. 162—117 23 Claims



1. A method of forming a paper web comprising the steps of:

providing an aqueous dispersion of papermaking fibers;

providing a foraminous forming member;

providing a first dewatering felt layer;

providing a second watering felt layer;

providing a compression nip having a machine direction length of at least about 3.0 inches, wherein the compression nip comprises convex and concave opposed compression surfaces;

providing an imprinting member having a web contacting face comprising a web imprinting surface and a deflection conduit portion;

forming an embryonic web of the papermaking fibers on the foraminous forming member, the embryonic web having a first face and a second face;

transferring the embryonic web from the foraminous forming member to the imprinting member to position the second face

of the embryonic web adjacent the web contacting face of the foraminous imprinting member;

deflecting a portion of the papermaking fibers in the embryonic web into the deflection conduit portion and removing water from the embryonic web through the deflection conduit portion to form an uncompacted, non-monoplanar intermediate web of the papermaking fibers;

positioning the web intermediate the first and second felt layers in the compression nip, wherein the first felt layer is positioned adjacent the first face of the intermediate web, wherein the web imprinting surface is positioned adjacent the second face of the intermediate web, and wherein the deflection conduit portion is in flow communication with the second felt layer; and

pressing the intermediate web in the compression nip to form a molded web.

5,795,441

BREAST BOX FOR A PAPERMAKING MACHINE

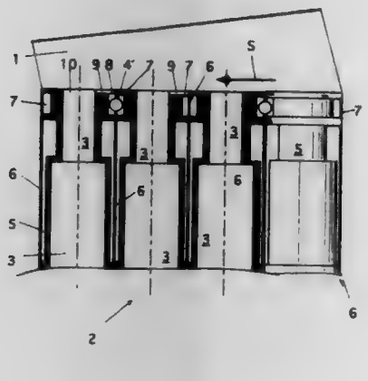
Klaus Lehleiter, Mengen, and Robert Trondle, Ravensburg, both of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Oct. 17, 1995, Ser. No. 544,187

Claims priority, application Germany, Oct. 18, 1994, 44 37 181.0

Int. Cl.[6] D21F *1/08*

U.S. Cl. 162—343 **9 Claims**



1. A breast box for a papermaking machine having a supply and distribution apparatus for material suspension flow and a guiding device coupled in a downstream direction from the supply and distribution apparatus, said guiding device comprising:

a plurality of channels, each channel receiving at least a portion of the material suspension;

a plurality of laterally spaced supply conduits supplying a material dilution liquid;

a plurality of elongated parallel extending inserts

each of the plurality of channels located within a respective elongated parallel extending insert;

a nozzle chamber coupled in a direction downstream of the guiding device, that forms an exit aperture for the material suspensions

a plurality of guide tubes, each of the plurality of guide tubes receiving a respective elongated parallel extending insert, and forming a hollow chamber along a periphery of the guide tube between an outer surface of the respective elongated parallel extending insert and an inner surface of the guide tube;

each of the plurality of laterally spaced supply conduits coupled to at least one of the hollow chambers; and

a recess, associated with at least one of the plurality of channels and open to the supply and distribution apparatus, coupled to one of the hollow chambers.

5,795,442

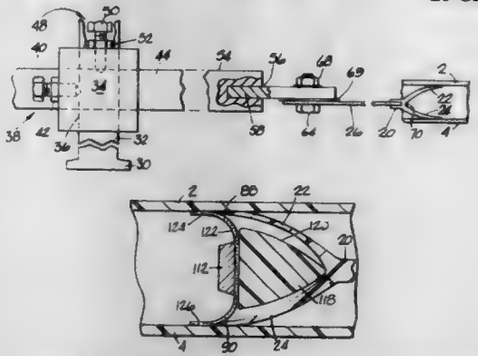
SEALING DEVICE FOR A TWIN WIRE DEWATERING APPARATUS

Donald L. Boyd, 8269 Jellison St., Arvada, Colo. 80005, and William M. Fields, 4670 Independence Trail, Evergreen, Colo. 80439

Filed Mar. 1, 1996, Ser. No. 610,084

Int. Cl.[6] D21F *1/58*

U.S. Cl. 162—353 **20 Claims**



1. A sealing device in an apparatus for removing liquid from a liquid slurry containing fibrous material which liquid slurry is fed from a headbox into the space between converging upper and lower liquid pervious moving belts having opposite longitudinal side edges which belts are guided for movement in substantially fixed planes comprising:

an elongated flexible member mounted adjacent to each of said opposite longitudinal side edges and having a longitudinal axis, a first end portion and a second end portion;

said elongated flexible member having a base portion and two Integral lip portions diverging outwardly from said base portion in opposite angular directions;

each of said two integral lip portions having a terminal end or forming an effective seal with one of said converging upper and lower liquid pervious moving belts;

said terminal ends of said two integral lip portions at said first end portion being spaced apart a distance greater than the distance said terminal

ends of said two integral lip portions are spaced apart at said second end portion;

each of said two integral lip portions having an inner surface extending outwardly from a substantially common center line of said base portion;

at least portions of each of said inner surfaces having a first substantially planar surface extending from a center line at a predetermined angle and a second substantially planar surface extending at a predetermined angle to said first substantially planar surface;

said first substantially planar surface being tapered from at least a first location adjacent to said first end portion to at least a second location adjacent to said second end portion; and

said second substantially planar surface being tapered from at least a third location. adjacent to said second end portion to at least a fourth location adjacent to said first end portion.

5,795,443

APPARATUS FOR CONTROLLING FIBER DEPOSITIONS IN SLURRY PREFORMS

Bruce Norman Greve, Clarkston, Mich., assignor to The Budd Company, Troy, Mich.

Filed Mar. 13, 1997, Ser. No. 816,698

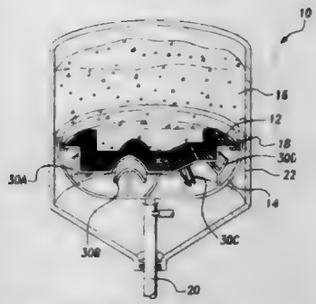
Int. Cl.[6] D21J *7/00*

U.S. Cl. 162—388 **20 Claims**

13. An apparatus for forming fiber preforms comprising:

a tank having a top portion and a bottom portion, the tank containing a slurry of a liquid and a mass of fibers;

a screen having a predetermined contour disposed within the tank, the screen having a surface containing openings;



a frame for supporting the screen;

a mechanism for raising the screen through the slurry with the liquid passing through the openings in the screen and the fibers being deposited on the screen thereby forming a preform having substantially the same configuration as the screen; and

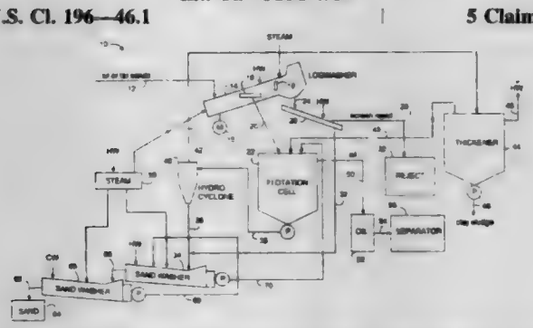
at least one flow diverter spaced from the screen for directing the flow of liquid through portions of the screen to regulate the fiber deposition on the screen.

5,795,444

METHOD AND APPARATUS FOR REMOVING BITUMINOUS OIL FROM OIL SANDS WITHOUT SOLVENT

John S. Rendall, and Stephen J. Lane, both of Albuquerque, N. Mex., assignors to Solv-Ex Corporation, Albuquerque, N. Mex.

Filed Dec. 15, 1994, Ser. No. 356,148
Int. Cl.[6] C10C *1/20*
U.S. Cl. 196—46.1 **5 Claims**



1. A system for separating sand and clay from bitumen in oil sands, comprising:

a log washer including rotating paddles for mixing hot water, steam and oil sands into a slurry, and that is inclined along its longitudinal length with respect to the surface of said slurry within, wherein an oversize discharge is controlled to maintain a particular slurry-surface level;

a skimmer connected to the logwasher for drawing-off bitumen oils with sand, clay and water from the surface of said slurry with a horizontal slit and a baffle that divide a segregated flow out and a logwasher slurry;

a flotation vessel connected to receive said segregated flow from the skimmer and for separation by skimming off said bitumen oils from said sand, clay and water providing for an overflow of bitumen oils and an under-flow of sand, clay and water;

hydrocyclone separation means connected to receive said under-flow from the flotation vessel and for separating out sand from bitumen oils, clay and water and providing for an under-flow of sand connected the first sand washing means and an over-flow of sand, clay and water;

a thickener vessel connected to receive said overflow from the hydrocyclone separation means and providing for a floating off a bitumen oils flow from a clay flow and a recycled water flow; and

first sand washing means connected to receive a slurry of sand, clay and water with some still-unseparated bitumen oils from both the flotation vessel and a screening means and providing for a separating out of any remaining bitumen oils and returning a flow to the flotation vessel.

5,795,445

METHOD OF CONTROLLING THE QUENCH OF COKE IN A COKE DRUM

Richard S. Boswell, Magnolia, Tex., and Thomas D. Farraro, Lake Charles, La., assignors to Citgo Petroleum Corporation, Tulsa, Okla.

Filed Jul. 10, 1996, Ser. No. 677,802
Int. Cl.[6] C10B *39/08;57/02*
U.S. Cl. 201—39 **9 Claims**

1. A method of controlling the quench of coke in a coke drum to reduce the rate of

deterioration of the coke drum sidewall comprising:

admitting water into a hot coke drum to cool coke therein;

determining the stress imposed on the coke drum sidewall by means of at least one strain gauge affixed to the sidewall; and

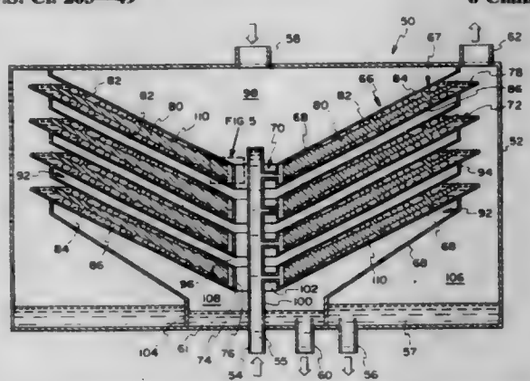
controlling the admission of water into the coke drum in response to the determined stress to a rate that results in the determined stress remaining below a preselected maximum level.

5,795,446

METHOD AND EQUIPMENT FOR HEAT-OF-VAPORIZATION TRANSFER

Eduard Kirschmann, Grünlinde 4, D-30459 Hannover, Germany

Filed Aug. 7, 1995, Ser. No. 512,057
Claims priority, application Germany, Aug. 17, 1994, 44 30 619.9
Int. Cl.[6] B01D *1/22;3/34*
U.S. Cl. 203—49 **6 Claims**



1. A method for heat-of-vaporization transfer in heat exchanger, employing steam bubbles, comprising the following method steps:

introducing steam bubbles into at least one evaporation chamber, consisting essentially of a liquid to be evaporated, the at least one evaporation chamber being formed between heat-transferring, heated heat exchanger walls and being mounted at a slant relative to the horizontal,

allowing the introduced steam bubbles to rise in the at least one evaporation chamber,

deforming the rising steam bubbles between the heat transferring, heat exchanger walls to form a constrained convection thin liquid film between the steam bubbles and the heat-transferring, heat exchanger walls by adjusting the diameter of the steam bubbles to a size at least larger than the distance between the heat exchanger walls at the side of bubble introduction whereby the steam bubbles enter the at least one evaporation chamber, and

removing the steam bubbles for purposes of further use.

5,795,447

SEPARATION OF 2-BUTANOL FROM ISOBUTANOL BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. 3rd. Ave., Bozeman, Mont. 59715

Filed Aug. 22, 1997, Ser. No. 917,448
Int. Cl.[6] B01D *3/40*; C07C *29/84*
U.S. Cl. 203—57 1 Claim

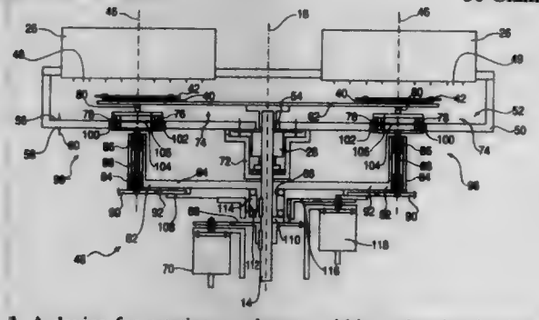
1. A method for recovering 2-butanol from a mixture consisting of 2-butanol and isobutanol which consists essentially of distilling said mixture consisting of 2-butanol and isobutanol in the presence of an extractive distillation agent, recovering the 2-butanol as overhead product and obtaining the isobutanol and the extractive distillation agent as bottoms product, wherein said extractive distillation agent consists essentially of one material selected from the group consisting of benzyl acetate, ethylene carbonate, isobutyl isobutyrate, 2-octanone, cyclopentanone 2-undecanone, isophorone, 2-butoxyethanol,2-methoxyethanol, 2-ethoxyethanol, 1-methoxy-2-propanol, propylene glycol propyl ether, 1,2-propanediol, 2-methyl-2,4-pentanediol, ethyl acetate diethyl malonate, p-xylene, beta-pinene, dipentene, 1,2,3,4-tetrahydronaphthalene, dipropyl amine, N-Methylpyrrolidone, 3-dimethylaminopropylamine, N,N-diethylaniline, morpholine, pyridine, N,N-dimethylethanolamine, benzonitrile, butyronitrile, cyclohexylamine, 4-methylimorpholine, butyrolactone, 1-nitropropane, 4-ethylmorpholine, 2-nitropropane, dimethylsulfoxide, 1,2,4-trimethylbenzene, formamide, 2,4-dimethylphenol, N,N-dimethylacetamide, 1-methyl-2-pyrrolidone, N,N-dimethylformamide, salicylaldehyde and diethylene glycol ethyl ether.

5,795,448

MAGNETIC DEVICE FOR ROTATING A SUBSTRATE

Steven Hurwitt, Park Ridge, N.J.; Ira Reiss, New City, N.Y.; Marian Zielinski, Washington Township, N.J., and Swie-In Tan, San Jose, Calif., assignors to Sony Corporation, Tokyo, Japan; Materials Research Corp., Orangeburg, N.Y., and Read Rite Corp., Milpitas, Calif.

Filed Dec. 8, 1995, Ser. No. 570,220
Int. Cl.[6] C23C *14/34*; *14/50*
U.S. Cl. 204—192.1 30 Claims



1. A device for rotating a substrate within a chamber having a wall for defining a cavity, comprising:

first rotating means for enabling rotation of said substrate about a first axis, wherein said first rotating means is located within said cavity;

second rotating means for enabling rotation of a planet gear about said first axis, wherein said second rotating means is located outside of said chamber;

magnet means for magnetically bonding said first and second rotating means through said wall to enable said first and second rotating means to rotate in unison about said first axis;

a sun gear adapted for engagement with said planet gear outside of said chamber;

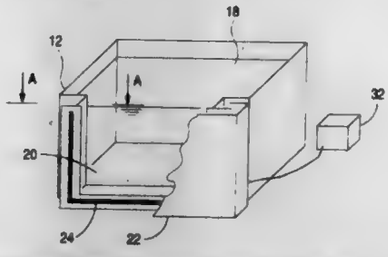
first drive means for causing a first rotation of said first and second rotating means and thus said substrate about a center axis and for simultaneously causing a second rotation of said first and second rotating means and thus said substrate about said first axis due to said engagement between said planet gear and said sun gear.

5,795,449

PROCESSING-LIQUID RESERVATION UNIT FOR DISCHARGE PROCESSING APPARATUS

Tsutomu Sasaki, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1996, Ser. No. 758,459
Claims priority, application Japan, Apr. 18, 1996, 8-097169
Int. Cl.[6] B23H *1/00*; *3/00*; *11/00*
U.S. Cl. 204—244 M 21 Claims



1. A processing-liquid reservation unit for a discharge processing apparatus which reserves processing liquid supplied from a processing-liquid supply unit and generates, in said processing liquid, a discharge in a small gap between an electrode and a work piece to be processed so as to process said work piece, said processing-liquid reservation unit for a discharge processing apparatus comprising:

a processing tank having an opening portion;

a door for opening/closing said opening portion of said processing tank;

a tubular elastic member for sealing a space between said door and said opening portion of said processing tank in a state where said door is closed; and

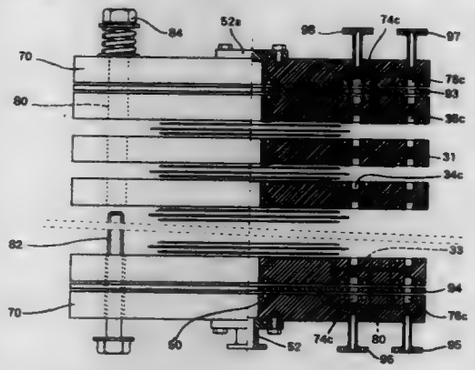
a fluid control unit for filling said tubular elastic member with fluid and discharging the same from said tubular elastic member.

5,795,450

APPARATUS FOR PRODUCING HYDROGEN AND OXYGEN

Kiyoshi Hirai, Kakogawa; Shinichi Yasui, Kako-gun; Hiroko Kobayashi, Kobe; Mamoru Nagao, Osaka; Takashi Sasaki, Miki, and Hiroyuki Harada, Tokyo, all of Japan, assignors to Shinko Pantec Co., Ltd., Hyogo, Japan

Filed Mar. 4, 1997, Ser. No. 811,263
Int. Cl.[6] C25B *9/00*; *15/08*
U.S. Cl. 204—256 3 Claims



1. A bipolar apparatus for producing hydrogen and oxygen comprising a plurality of joined solid electrolyte membrane units, each solid electrolyte membrane unit comprising a solid electrolyte membrane having two opposing surfaces, a porous conductor in contact with each opposing surface of the solid electrolyte membrane, and an electrode plate in contact with each porous conductor, wherein each electrode plate performs as an anode and a cathode.

a main water feeding path formed through the solid electrolyte membrane units in the axial direction thereof,

a cathode chamber and an anode chamber separated from one another by each of the electrode plates, wherein each chamber stores the porous conductor,

a secondary water feeding path for the anode chamber formed in each electrode plate from the main water feeding path to the anode chamber,

a hydrogen gas collecting chamber and a hydrogen gas path, said hydrogen gas path extending from the cathode chamber to the hydrogen gas collecting chamber and formed in each electrode plate in a radially outer portion thereof,

a hydrogen gas discharging path extending axially to hydrogen gas collecting chambers formed in the electrode plates,

an oxygen gas collecting chamber and an oxygen gas path, said oxygen gas path extending from the anode chamber to the oxygen gas collecting chamber and formed in each electrode plate in a radially outer portion thereof, and

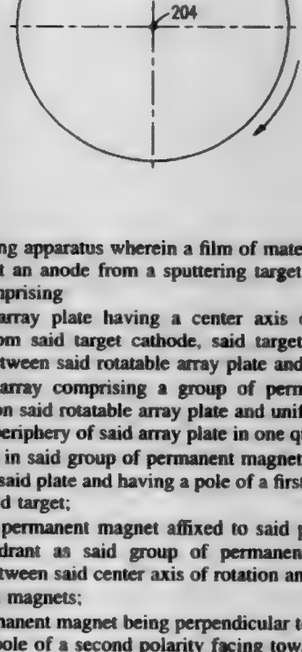
an oxygen gas discharging path extending axially to the oxygen gas collecting chambers formed in the electrode plates.

5,795,451

SPUTTERING APPARATUS WITH A ROTATING MAGNET ARRAY

Swie-In Tan, San Jose, Calif., and David Ian Charles Pearson, Hampshire, United Kingdom, assignors to Read-Rite Corporation, Milpitas, Calif., and Nordiko, Ltd., United Kingdom, one half interest

Filed Jun. 12, 1997, Ser. No. 874,075
Int. Cl.[6] C23C *14/35*
U.S. Cl. 204—298.2 **6 Claims**



1. A sputtering apparatus wherein a film of material is sputtered onto a wafer at an anode from a sputtering target cathode facing said anode comprising

a rotatable array plate having a center axis of rotation and spaced from said target cathode, said target cathode being located between said rotatable array plate and said anode;

a magnetic array comprising a group of permanent magnets disposed on said rotatable array plate and uniformly arranged around a periphery of said array plate in one quadrant thereof;

each magnet in said group of permanent magnets being perpendicular to said plate and having a pole of a first polarity facing toward said target;

a single bar permanent magnet affixed to said plate within the same quadrant as said group of permanent magnets and located between said center axis of rotation and said group of permanent magnets;

said bar permanent magnet being perpendicular to said plate and having a pole of a second polarity facing toward said target;

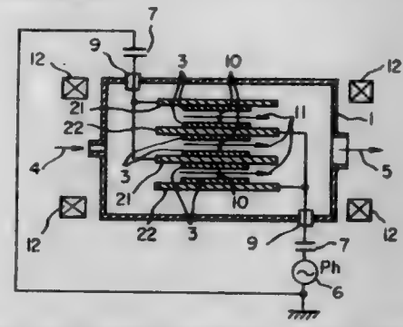
said group of permanent magnets and said bar permanent magnet creating a closed-loop static magnetic field that is substantially triangular in shape, concentrated in said one quadrant, and offset from said center axis of rotation.

5,795,452

DRY PROCESS SYSTEM

Haruhisa Kinoshita, Hirosawa Hamamatsu; Osamu Matsumoto, Akishima, and Harunobu Sakuma, Hamura-machi, all of Japan, assignors to Kokusai Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 923,149, Jul. 31, 1992, abandoned, which is a continuation of Ser. No. 603,537, Oct. 25, 1990, abandoned. This application Jan. 11, 1996, Ser. No. 587,822
Claims priority, application Japan, Nov. 15, 1989, 1-298694
Int. Cl.[6] C23C *14/34;16/00;* C23F *1/02*
U.S. Cl. 204—298.37 **17 Claims**



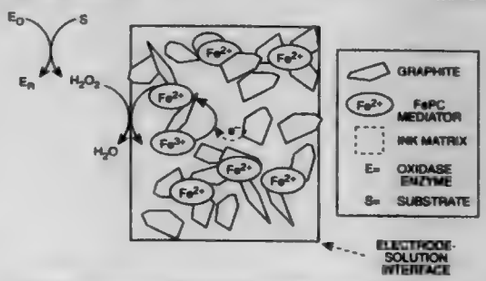
1. A dry process system comprising; a chamber having a reaction gas inlet and an exhaust gas outlet; at least one pair of substantially parallel electrodes; at least one of the electrodes being adapted to receive a substrate for processing; alternating current power source means; a blocking capacitor connecting each electrode of said at least one pair of substantially parallel electrodes to said alternating current power source means; magnetic field applying means for applying a magnetic field substantially parallel to said at least one pair of substantially parallel electrodes; the spacing between electrodes of said at least one pair of parallel electrodes being set to be substantially equal to a mean free path of electrons emitted from the electrodes; reaction gas supplying means for supplying a reaction gas at a predetermined pressure; wherein all of said at least one pair of parallel electrodes are cathodes; whereby a uniform high density plasma is generated between said at least one pair of substantially parallel electrodes.

5,795,453

ELECTRODES AND METALLO ISOINDOLE RINGED COMPOUNDS

Markas A. T. Gilmartin, 18 Westbrook Court, Cumberland Close, Baltic Wharf, Bristol BS16XB, England

Filed Jan. 23, 1996, Ser. No. 589,912
Int. Cl.[6] G01N *27/26;33/50;* C12Q *1/00*
U.S. Cl. 204—403 **21 Claims**



1. An hydrogen peroxide electrode assembly comprising:

a) a ferro isoindole ringed compound,

b) an electrode, and

c) an oxidase,

wherein said oxidase is attached to an analyte or an analyte analog and said oxidase can prevent said analyte from binding to an analyte binding moiety; and

wherein said oxidase has sufficient activity to catalyse hydrogen peroxide production in detectable amounts.

5,795,454

SEAL FOR A SENSOR ELEMENT OF A GAS SENSOR

Karl-Hermann Friese, Leonberg; Helmut Weyl, Schwieberdingen; Romuald Fries, Weissach; Hans-Martin Wiedenmann, Stuttgart, and Anton Hans, Ludwigsburg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

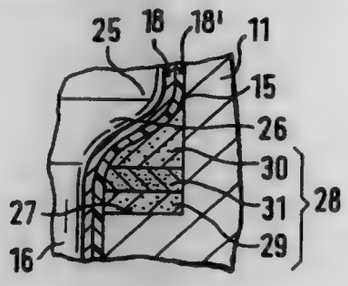
PCT No. PCT/DE94/00537, § 371 Date Dec. 4, 1995, § 102(e) Date Dec. 4, 1995, PCT Pub. No. WO94/29710, PCT Pub. Date Dec. 22, 1994

PCT Filed May 11, 1994, Ser. No. 569,074

Claims priority, application Germany, Jun. 5, 1993, 43 18 789.7

Int. Cl.[6] G01N *27/407*; F16J *15/14*

U.S. Cl. 204—424 **14 Claims**



1. A seal for a sensor element of a gas sensor for determining the oxygen content in gases including exhaust gases of an internal combustion engine, which seal seals the sensor element in a longitudinal bore of a housing, the seal comprising:

a sealing stack which is positioned within the longitudinal bore of the housing and around the sensor element in use and which is comprised of two sealing bodies and an additional seal positioned between and directly adjoining the two sealing bodies,

wherein the two sealing bodies are comprised of a pre-sintered ceramic material,

wherein the additional seal is comprised of a pre-pressed powder material,

wherein the two sealing bodies and the additional seal are compressed together within the longitudinal bore in use and are deformed into respective powders so that the sensor element is sealed in a gap-free manner within the longitudinal bore, and

wherein following compressing and deformation, the additional seal has a porosity which is lower than that of the two sealing bodies.

5,795,455

METHOD FOR DETERMINING THE NUCLEOTIDE SIZE OF DNA FRAGMENTS

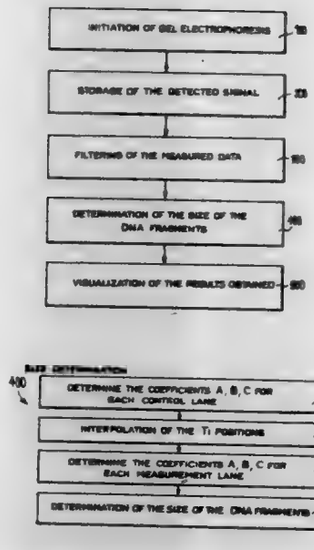
Christophe Pannetier, Paris, France, assignor to Institut National de la Sante et de la Recherche Medicale (INSERM), and Institut Pasteur, both of Paris, France

Continuation of Ser. No. 367,174, Dec. 29, 1994, abandoned. This application Feb. 14, 1997, Ser. No. 801,096

Claims priority, application France, Jul. 3, 1992, 92 08253

Int. Cl.[6] G01N *27/26*; *27/447*

U.S. Cl. 204—466 **20 Claims**



1. A method for determining the nucleotide size of DNA fragments separated by gel electrophoresis, the method comprising the stages of:

i) depositing DNA fragments to analyze on gel measurement lanes and co-depositing standards of known size on distinct control lanes of the same gel,

ii) measuring the migration time of said standards of known size over a predetermined constant length on said control lanes,

iii) interpolating on each of said measurement lanes the migration time of the standards of known size measured on said control lanes

calculating migration parameters A, B, and C for each of said measurement lanes from the migration time values resulting from the interpolation, on the basis of a relation

$$L_i = A \exp[-B(t_i + t_o)] + C$$

wherein

L_i is the length of a standard of known size

t_i is the value of the migration time interpolated for said standard of known size on a measurement lane,

t_o is a time constant, and

A, B, and C represent migration parameters,

iv) measuring the migration time, over said predetermined constant length, for each detected DNA fragment on a measurement lane, and

v) correlating the size of each detected DNA fragment with its migration time, on the basis of said migration parameters A, B, and C interpolated for each of said measurement lanes, on the basis of a relation

$$L = A \exp[-B(t + t_o)] + C$$

wherein

L represents the size of a DNA fragment, and

t represents the migration time measured for said DNA fragment on a measurement lane.

5,795,456

MULTI-LAYER NON-IDENTICAL CATALYST ON METAL SUBSTRATE BY ELECTROPHORETIC DEPOSITION

Semyon D. Friedman, Baltimore, Md.; Martin B. Sherwin, Boca Raton, Fla.; Rasto Brezny, Catonsville, and Poovathoill F. Francis, Columbia, both of Md., assignors to Engelhard Corporation, Iselin, N.J.

Filed Feb. 13, 1996, Ser. No. 600,788

Int. Cl.[6] C25D *13/02*

U.S. Cl. 204—471 **14 Claims**

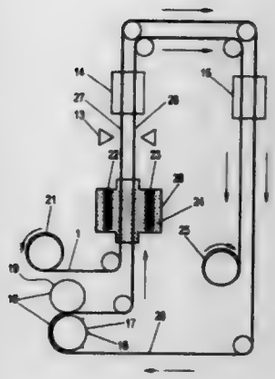
1. A method of forming a catalytically-active metal substrate member comprising:

(a) preparing a first slurry of particles of a first catalyst and first catalyst support material,

(b) contacting a metal foil having a first and second primary surface and an edge surface with said first slurry such that at least a portion of said first primary surface is in contact with said slurry,

(c) placing an electrode in contact with said first slurry in an electrophoretic deposition cell,

(d) contacting said foil with an electrical contact, said contact being coupled to a power source,



(e) applying an electric field between said foil and said electrode to create an electrical charge on the foil and on the particles in the slurry, which electrical charge on the foil is opposite to the charge on the particles in the slurry,

(f) maintaining said electric field for a time sufficient to cause electrophoretic deposition of at least some of said particles of said first catalyst and catalyst support material on said primary surface to form a foil coated with a first layer of said first catalyst support material impregnated with said first catalyst,

(g) removing said foil having said first layer deposited thereon from said electrophoretic deposition cell,

(h) drying said foil having said first layer electrophoretically deposited thereon,

(i) optionally calcining said foil having said first layer electrophoretically deposited thereon,

(j) preparing a second slurry of particles of a second catalyst and second catalyst support material,

(k) replacing the first slurry in the electrophoretic deposition with the second slurry,

(l) maintaining electrical interaction between said foil coated with said first layer, the power source attached to the foil, and the electrode disposed in said electrophoretic deposition cell,

(m) applying an electric field between said foil coated with said first layer and said electrode in said electrophoretic deposition cell to create an electrical charge on the foil and on the particles in the slurry which charge on the foil is opposite to the electrical charge on the particles in the slurry,

(n) maintaining said electric field for a time sufficient to cause electrophoretic deposition of at least some of said particles of said second catalyst and catalyst support material on the first layer to form a foil coated with a second layer of said second catalyst support material impregnated with said second catalyst,

(o) removing said foil having said first and second layer electroporetically deposited thereon from said electrophoretic deposition cell,

(p) drying said coated foil from step (o), and

(q) optionally, calcining said dried coated foil from step (p).

5,795,457

MANIPULATION OF SOLID, SEMI-SOLID OR LIQUID MATERIALS

Ronald Pethig, Anglesey, and Julian Paul Hillhouse Burt, Bangor, both of Wales, assignors to British Technology Group Ltd., London, England

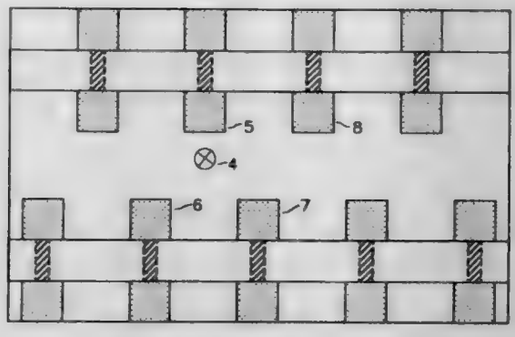
Continuation of Ser. No. 952,456, Jul. 29, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 461,070

Claims priority, application United Kingdom, Jan. 30, 1990, 9002092

Int. Cl.[6] C25B *7/00*

U.S. Cl. 204—547 **22 Claims**

1. A method of promoting a desired reaction between particles suspended in a liquid, said method comprising steps of:



applying, at a first frequency, a first non-uniform electrical field to a region of said liquid from an electrode array; and

applying, at a second frequency, a second non-uniform electrical field to said region of said liquid from said electrode array substantially simultaneously with said application of said first non-uniform electrical field, said second non-uniform field being independent of said first non-uniform electrical field;

said first non-uniform electrical field and said second non-uniform electrical field promoting said desired reaction using dielectrophoretic forces on said particles; and

at least one of said first frequency and said second frequency being chosen to effect a negative dielectrophoretic force on only some of said particles suspended in said liquid.

5,795,458

MANUFACTURING METHOD OF THIN FILM DIODE FOR LIQUID CRYSTAL DISPLAY DEVICE

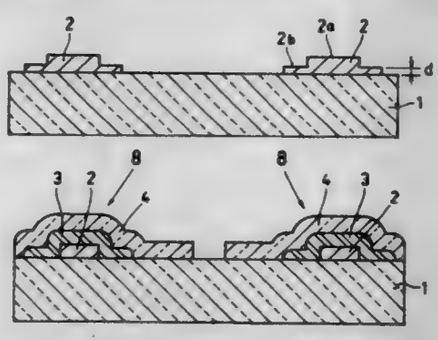
Kozo Miyoshi, Kitamoto, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1995, Ser. No. 528,215

Claims priority, application Japan, Sep. 14, 1994, 6-219831; Feb. 17, 1995, 7-028533; Apr. 14, 1995, 7-088944

Int. Cl.[6] C25D *11/02*; **G02F** *1/1333*

U.S. Cl. 205—124 **13 Claims**



1. In a manufacturing method for a thin film diode of a liquid crystal display device which comprises, two glass substrates (**1**, **11**) with liquid crystal material sealed therebetween, a lower layer film (**2**) connected to a data line (**12**), formed on an inner surface of glass substrate (**1**); an insulating film (**3**) on the lower layer film (**2**), made of an insulating oxide-film formed by an anodic oxidation technique; and an upper layer film (**4**) constituting a portion of a drive electrode (**13**), formed on the insulating film (**3**),

the manufacturing method comprising the steps of:

forming a film of a lower layer material (**20**) on said glass substrate (**1**);

forming a pattern of a resist (**6**) on the lower layer material (**20**) by a photo-lithography technique;

etching said lower layer film material (**20**) using the pattern of the resist (**6**) as an etching mask by an etching technique to form a patterned lower layer film (**2**);

reducing a pattern dimension of said resist (**6**);

etching the exposed portion of said lower layer film (2) using said resist (6) as an etching mask until the thickness of said patterned lower layer film (2) is reduced to a preselected value to form a patterned lower layer film (2) having a difference in level in a direction of said upper layer film (4); and

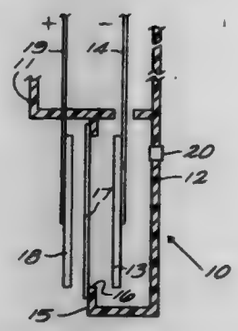
forming said insulating film (3) on the surface of said patterned lower layer film (2) by an anodic oxidation technique, and forming said upper layer film (4) on said insulating film (3).

5,795,459

APPARATUS AND METHOD FOR WATER PURIFICATION

Charles T. Sweeney, 708 Mockingbird La., Kerrville, Tex. 78028

Filed Jul. 29, 1996, Ser. No. 688,268
Int. Cl.[6] C02F 1/461
U.S. Cl. 205—701 **26 Claims**



1. A small portable electrolytic cell having an enclosed electrode and an exposed electrode,

an electrolyte in contact with said enclosed electrode, and no electrolyte in contact with said exposed electrode, and

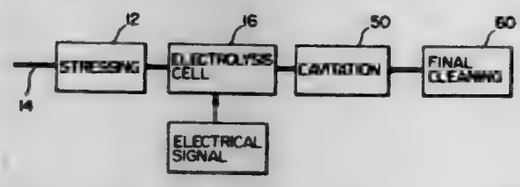
said cell being operable when immersed in aqueous liquid electrolyte to generate chlorine or other oxidant when said exposed electrode is an anode, or to increase the pH of said liquid when said exposed electrode is a cathode.

5,795,460

METHOD FOR REMOVAL OF FILMS FROM METAL SURFACES USING ELECTROLYSIS AND CAVITATION ACTION

Muhammed Al-Jiboory; Norman Chow; Cliff Low Dor Mui, all of Vancouver; Klaus H. Oehr, Surrey, and Remy Stachowiak, Vancouver, all of Canada, assignors to Dynamotive Corporation, Vancouver, Canada

Filed Apr. 10, 1996, Ser. No. 630,608
Int. Cl.[6] C25F 1/04;3/02; C25D 5/20; B08D 3/12
U.S. Cl. 205—705 **29 Claims**



1. A system for removing films from metal surfaces, comprising:

means for applying stress to a film on a surface of a metal substrate, so as to rupture the film; means for moving the substrate through an electrolysis cell having two electrode means and an electrolyte, wherein the substrate comprises one of said two electrode means;

means for applying a bipolar electrical signal to the said electrode means in the electrolysis cell such that the electrical signal flows to the substrate, without any direct contact with the moving substrate, resulting in a conditioning effect on at least one of (1) the film and (2) a surface of the metal substrate;

means for immersing said metal substrate in a cavitation fluid and moving said substrate therethrough; and

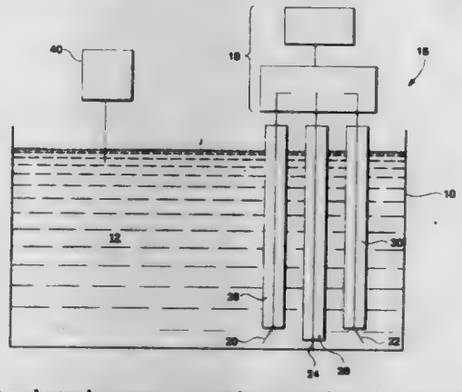
means for generating energy in the cavitation fluid, toward the metal substrate, so that cavitation bubbles are created in locations relative to the film such that when said bubbles expand and collapse in cavitation action, effects are produced which tend to remove the film from the metal substrate.

5,795,461

ELECTRODE SYSTEM FOR MONITORING CORROSION

Brandt A. Rising, 98 S. Bay Ave., Brightwaters, N.Y. 11718

Filed Mar. 26, 1996, Ser. No. 623,318
Int. Cl.[6] G01N 27/26
U.S. Cl. 205—775.5 **20 Claims**



1. An electrode system to monitor corrosion of a surface of a structure formed from a first metallic material, the electrode system comprising:

a first electrode formed of the first metallic material, the first electrode being electrically connected to the surface of the structure;

a second electrode formed of the first metallic material, the second electrode being physically isolated from the first electrode so that a first potential exists between the second electrode and the first electrode;

an electrolyte in direct physical contact with the surface of the structure and the second electrode; and

a monitor constructed and arranged to monitor corrosion of the surface of the structure by measuring the first potential.

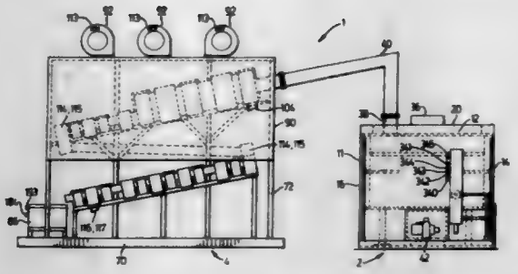
5,795,462

APPARATUS AND METHOD FOR RECLAIMING USEFUL OIL PRODUCTS FROM WASTE OIL

Edward Calton Shurtleff, Pennfield, Canada, assignor to Patent Holdings Ltd., Grand Turks, Turks/Caicos Islands

Continuation of Ser. No. 199,201, Jan. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 712,775, Jun. 10, 1991, Pat. No. 5,286,349, which is a continuation-in-part of Ser. No. 246,834, Sep. 20, 1988, abandoned. This application Mar. 28, 1997, Ser. No. 829,526
Int. Cl.[6] C10M 175/00
U.S. Cl. 208—182 **33 Claims**

1. An apparatus for reclaiming a useful oil product from a waste oil, the apparatus comprising: an evaporation chamber, including an inlet for the waste oil, and an outlet for vaporized oil, as a useful oil product; heating means for heating the evaporation chamber to vaporize oil from the waste oil; level monitoring means for monitoring the level of the waste oil in the evaporation chamber and including a first switch means; pump means connected to the inlet of the evaporation chamber for pumping waste oil into the evapo-



ration chamber, and connected to and controlled by the level monitoring means, to maintain the waste oil level in the evaporation chamber at a desired level; and a control circuit connected to and controlling the heating means and the pump means, wherein the first switch means is connected in the control circuit for controlling the pump means and for disabling the heating means if a desired oil level is not present in the evaporation chamber, and the control circuit includes a bake override switch means for overriding operation of the first switch means and enabling continued operation of the heating means in a bake mode with the waste oil below the desired level, thereby to enable vaporisation of substantially all residual waste oil in the evaporation chamber.

5,795,463

OIL DEMETALIZING PROCESS

Richard A. Prokopowicz, 2018 45 Carlton St., Toronto, Ont., Canada, M5B2H9

Filed Aug. 5, 1996, Ser. No. 691,825
Int. Cl.[6] C10G *17/00*
U.S. Cl. 208—251 R **14 Claims**

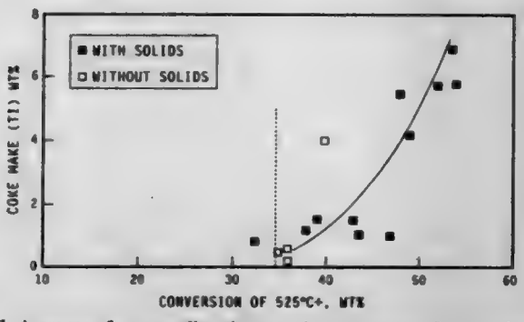
1. The method of treating a metals-contaminated oil mixture to diminish the metallic content thereof to meet a stipulated polution standard defining maximum allowable concentrations of specified toxic metals including lead and copper, comprising the steps of: hydrating a quantity of said mixture to a first level of hydration; heating the hydrated oil to a first low temperature below the flashpoint of the oil, and effective for a desired first demetalizing reaction; mixing a primary demetalizing agent in a quantity of at least about stoichiometric, based upon the concentration of contaminating metals, in said oil to effect said first demetalizing reaction; said first level of hydration being sufficient to enable said first demetalizing reaction to proceed without premature crystalization of said primary agent from said mixture; cooling the mixture to settle out sludge incorporating at least a portion of said metallic content of said metals-contaminated oil mixture, to diminish the metallic contamination of the mixture; separating substantially all said sludge from the mixture; re-heating the remaining mixture to a second low temperature below the flashpoint of the oil; adding a water-soluble complexing agent thereto to solvate metallic residues, including residues of lead and copper, suspended in the mixture as metal chelates; reducing the hydration level of the reheated mixture to crystalize substantially all said metal chelates, including chelates of said lead and copper as precipitated components; and removing substantially all the sludge and precipitated components present in the oil, to thereby substantially deplete said oil of metal contaminants including said chelates of lead and copper, to meet said stipulated polution standard.

5,795,464

CONVERSION OF THE ORGANIC COMPONENT FROM TAR SANDS TO LOWER BOILING PRODUCTS

Bruce M. Sankey, Calgary, Canada; Peter S. Maa, and Roby Bearden, Jr., both of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 326,402, Oct. 19, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 753,459
Int. Cl.[6] C01G *1/00;1/04;9/34*
U.S. Cl. 208—391 **5 Claims**



1. A process for upgrading the organic component of tar sands to lower boiling products, which process comprises:

a) separating the organic component from the inorganic component of tar sands so that the organic component contains from about 2 to 10 wt. % of inorganic tar sands native solids;

b) subjecting said organic component containing the native solids to temperatures from about 425° to 565° C. and pressures from about atmospheric pressure to about 2,000 psig;

c) collecting a normally liquid hydrocarbonaceous product stream, including inorganic native solids; and

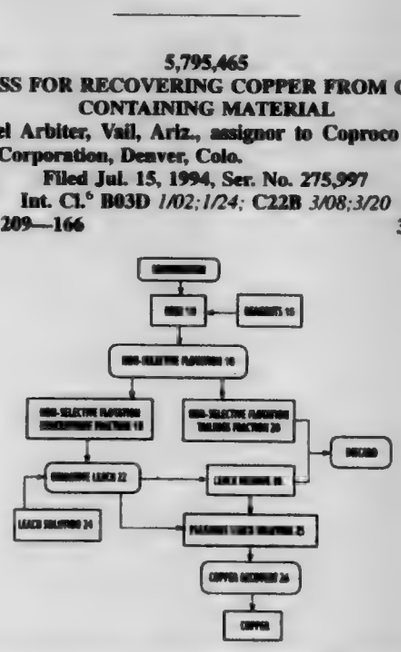
d) separating the inorganic native solids from the normally liquid product stream.

5,795,465

PROCESS FOR RECOVERING COPPER FROM COPPER-CONTAINING MATERIAL

Nathaniel Arbiter, Vail, Ariz., assignor to Coproco Development Corporation, Denver, Colo.

Filed Jul. 15, 1994, Ser. No. 275,997
Int. Cl.[6] B03D *1/02;1/24;* **C22B** *3/08;3/20*
U.S. Cl. 209—166 **36 Claims**



1. A process for the recovery of copper from a copper-containing material including metal sulfides, comprising the steps of:

(a) non-selectively floating the copper-containing material in the presence of a non-selective collector under conditions that are conducive to the flotation of copper sulfide and iron sulfide and at a pH ranging from about pH 7.5 to about pH 10.5 to form a non-selective flotation tailings fraction and a non-selective flotation concentrate fraction containing a substantial portion of the metal sulfides;

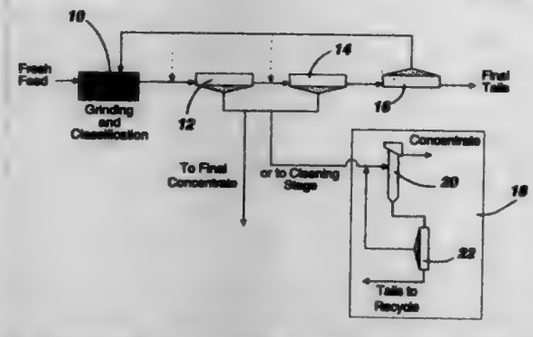
(b) contacting substantially all of the non-selective flotation concentrate fraction with a leach solution to solubilize the copper contained in the fraction; and
(c) recovering the copper from the leach solution.

5,795,466

PROCESS FOR IMPROVED SEPARATION OF SULPHIDE MINERALS OR MIDDLINGS ASSOCIATED WITH PYRRHOTITE

Sadan Kelebek, Kingston; Peter F. Wells, Sudbury; Simon O. Fekete, Oakville; Michael J. Burrows, Lively, all of Canada, and Daniel F. Suarez, Bonao, Dominican Rep., assignors to Falconbridge Limited, Toronto, Canada

Filed May 27, 1997, Ser. No. 863,367
Int. Cl.[6] B03D 1/06
U.S. Cl. 209—166 25 Claims



1. A process for concentrating sulphide minerals or middlings containing non-ferrous metal values in association with pyrrhotite, which comprises:
(a) grinding the sulphide minerals or middlings at a pH above 9.5 into a fine pulp by means of grinding media such as to produce a low REDOX potential in the resulting pulp, said REDOX potential being less than a predetermined value selected within a range of −150 to −250 mV (SCE);
(b) subjecting said pulp having the REDOX potential of less than the predetermined value to a plurality of stages of froth flotation in the presence of a collector and a frother, but essentially in the absence of a specific pyrrhotite depressive reagent, whereby a concentrate is produced in each of the stages of the froth flotation during which the REDOX potential rises above the predetermined value in some stage or stages of said flotation;
(c) recycling the concentrate from the stage or stages where the REDOX potential has risen above the predetermined value back to the grinding step (a) and/or to a stage or stages where the REDOX potential is less than the predetermined value; and
(d) collecting the concentrate from the stage or stages in which the REDOX potential is less than the predetermined value.

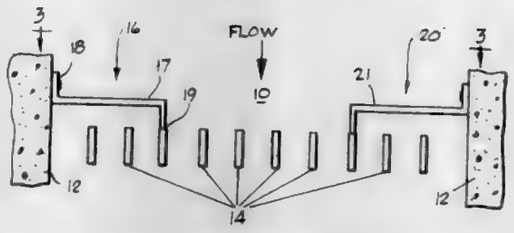
5,795,467

ADJUSTABLE INLET FOR WASTE WATER TREATMENT APPARATUS

Charles M. Schloss, Englewood, and Charles E. Snyder, Aurora, both of Colo., assignors to Schloss Engineered Equipment, Inc., Aurora, Colo.

Filed Oct. 23, 1996, Ser. No. 735,525
Int. Cl.[6] E02B 5/08; B01D 35/02
U.S. Cl. 210—162 19 Claims

1. A device for controlling the velocity of fluid comprising: an intake channel of a fluid treatment plant, the channel having a bar rack or filtering screen allowing flow therethrough;
a weir for controlling the flow through the bar rack or filtering screen, the weir having a plate substantially transverse to the channel;



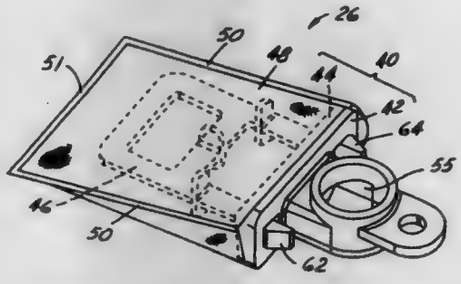
means for attaching and detaching the weir within the channel directly to the bar rack or filtering screen and also directly to the channel;
the plate being attachable to the channel and the bar rack or filtering screen.

5,795,468

IN-TANK AUTOMOTIVE FUEL FILTER

Kevin Christopher Reising, Bloomington, and Timothy James Carter, Crothersville, both of Ind., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 31, 1997, Ser. No. 828,634
Int. Cl.[6] B01D 35/027
U.S. Cl. 210—172 11 Claims



1. A fuel filter for an automotive vehicle, with said filter being disposed within a fuel tank for filtering fuel entering a fuel intake, with said fuel filter comprising:
a filter element;
a filter manifold integrally attached to a filter frame, thereby defining an attachment point, with said attachment point defining a weakened zone, with said filter frame being disposed within said filter element to retain said filter element in a predetermined shape, with said filter frame being adapted for subsequent detachment from said filter manifold at said weakened zone, thereby creating a free-floating filter frame disposed within said filter element such that said filter frame is permitted to move relative to said manifold so as to allow insertion of said filter into the fuel tank with limited destructive deformation of said filter, with said weakened zone facilitating detaching of said manifold from said frame.

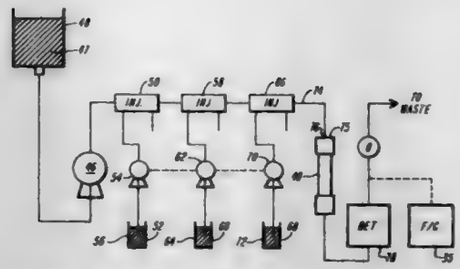
5,795,469

HIGH PERFORMANCE LIQUID CHROMATOGRAPHY METHOD AND APPARATUS

Hubert M. Quinn, Brighton; Rebecca A. Menapace, Framingham, and Charles J. Oberhauser, Belmont, all of Mass., assignors to Cohesive Technologies, Inc., Acton, Mass.

Continuation-in-part of Ser. No. 588,874, Jan. 19, 1996, abandoned. This application Jan. 21, 1997, Ser. No. 785,324
Int. Cl.[6] B01D 15/08
U.S. Cl. 210—198.2 13 Claims

1. In chromatography apparatus including a substantially uniform, elongated chromatography column containing chromatographically reactive surfaces, means for injecting into said column a discrete volume of liquid mixture containing at least one solute



that is reactive with said surfaces so as to load said column, and means for flowing eluant fluid through the loaded column, the improvement wherein:

said means for flowing said eluant fluid comprises means for injecting at least one discrete plug of said eluant fluid into said column adjacent the input of said column so as to maintain minimized spatial step separation between said plug and said discrete volume of liquid mixture as said plug and volume traverse said column wherein said column and said means for flowing are configured such that the flow of said volume of eluent traverses said column at a reduced velocity greater than 5000.

5,795,470

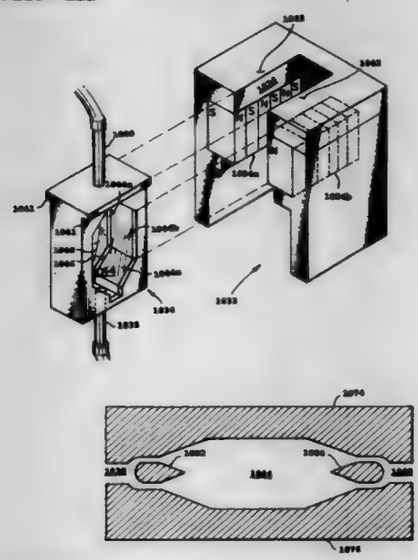
MAGNETIC SEPARATION APPARATUS

Yuzhou Wang, Wayne; Weixin Tang, Lansdale, and Paul A. Liberti, Huntingdon Valley, all of Pa., assignors to Immunivest Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 228,818, Apr. 18, 1994, Pat. No. 5,541,072, and Ser. No. 6,071, Jan. 15, 1993, Pat. No. 5,466,574, which is a continuation-in-part of Ser. No. 674,678, Mar. 25, 1991, Pat. No. 5,186,827. This application Jun. 7, 1995, Ser. No. 482,636

Int. Cl.[6] B01D *35/06*

U.S. Cl. 210—222 **1 Claim**



1. A magnetic separation apparatus, comprising:

a flowthrough vessel;

mounting means for supporting said vessel and having a slot therein for receiving said vessel;

a first array of magnets mounted upon the mounting means along one side of the slot and arranged adjacent one another to face the slot with alternating polarity;

a second array of magnets mounted upon the mounting means along the opposite side of the slot from said first array, said second magnets arranged adjacent one another to face the slot with alternating polarity, each of said magnets in said second array confronting and magnetically opposing one of said magnets in said first array; and

wherein said vessel comprises a plenum, an inlet port for introducing fluid into said plenum, and a hydrodynamic damping structure located between said inlet port and said plenum for reducing turbulence in said fluid.

5,795,471

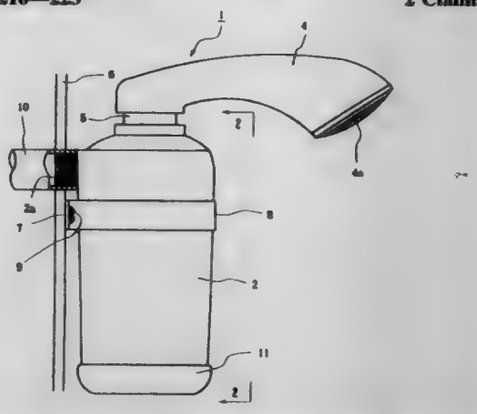
SHOWER HEAD HAVING A WATER PURIFYING FUNCTION

Harusuke Naito, 17-5, Haraojima 2-chome, Okayama-shi, Okayama-ken, Japan

Continuation-in-part of Ser. No. 655,620, May 30, 1996, abandoned. This application Jan. 15, 1997, Ser. No. 784,004

Int. Cl.[6] C02F *9/00*

U.S. Cl. 210—223 **2 Claims**



1. A shower device having a water purifying function comprising a cartridge type filter formed with a water inlet at one end and a water outlet at the other end and means for showering connected to the water outlet of said cartridge type filter, said cartridge type filter containing a tannin layer consisting of a material comprising tannin, a bakuhanseki layer consisting of granular bakuhanseki formed in a layer, a ceramic layer consisting of granular ceramic formed in a layer, a magnetite layer consisting of broken pieces of magnetite formed in a layer and provided at least on the water inlet side or on the water outlet side of the ceramic layer, and magnetizing means for magnetizing said magnetite layer.

5,795,472

MULTISTAGE FILTER DEVICE INCLUDING A HOUSING WITH REMOVABLE SIDEWALLS HAVING A FILTERING CAPACITY

Harry L. Nurse, Jr., 10409 Watterson Trail, Louisville, Ky. 40299

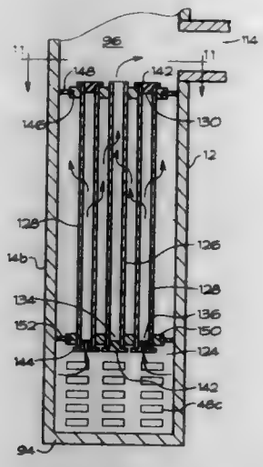
Continuation-in-part of Ser. No. 436,105, May 8, 1995, Pat. No. 5,591,331. This application Nov. 20, 1996, Ser. No. 753,112

Int. Cl.[6] B01D *29/35*

U.S. Cl. 210—232 **16 Claims**

1. A multi-stage filter system for separating solid material from a liquid comprising:

a first filter device comprising a housing having a top with an opening therein, a closed bottom, and a plurality of vertically extending sidewall sections, at least one of the said sidewall sections including means to receive a pair of spaced, parallel removable vertically extending sidewall members, at least one of said removable vertical extending sidewalls including filter means to retain solids of preselected size from a liquid, and, an inwardly extending circumferential bottom seal extending around an inner surface of said housing at a preselected distance above said filter means, said seal and said closed bottom defining a prefiltered liquid inlet chamber;



a second filter device having a horizontally extending bottom cylindrical disc with a plurality of openings therethrough in sealing relation with said bottom seal, a horizontally extending top cylindrical disc with a second filter tube receiving opening therethrough, said top disc being in sealing relation with said housing, a plurality of first vertically extending filter tubes having an opening in a bottom end of each of said first filter tubes and a closed top, each bottom end being in flow communication with an opening in said bottom cylindrical disc, a second vertically extending filter tube spaced from said first filter tubes, said second filter tube having an open top in its upper end and a closed bottom, the upper end being received by said second filter tube receiving opening; and,

means to remove filtered liquid from said housing in a flow communication with said second filter tube open top.

5,795,473

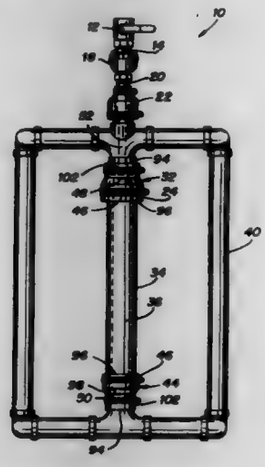
ELONGATED FLUID FILTERING ASSEMBLY TO PREVENT CONTAMINATION FROM UNWANTED FOREIGN MATTER AND ZEBRA MUSSELS

Donald C. Marks, 815 W. Swamp Rd., Middlesex, N.Y. 14507

Continuation-in-part of Ser. No. 532,171, Sep. 22, 1995, abandoned. This application May 23, 1997, Ser. No. 862,718

Int. Cl.[6] B01D *35/00*

U.S. Cl. 210—232 **28 Claims**



1. A fluid intake filter, comprising:

(a) a fixed frame having at least two resilient bushings facing each other, and having at least two sealing surfaces for sealingly engaging at least two resilient bushings respectively, the sealing surfaces set a fixed distance apart;

(b) an elongated hollow tube having at least one transverse slit, a first end and a second end, the tube positioned between the two bushings facing each other;

(c) a filter housed within the tube supported and centered in the tube by the bushings, the filter having an open first end and a sealed second end; and

(d) the bushings, the frame and sealing surfaces are selected to permit removal of the bushings, the tube, and the filter without displacing the sealing surfaces.

5,795,474

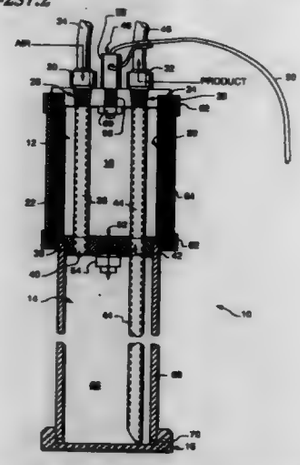
METHOD AND APPARATUS FOR THE SEPARATION OF HAZARDOUS WASTE FROM GROUNDWATER

Peter J. Tolan, 30 Greenfield La., Scituate, Mass. 02066

Filed Mar. 6, 1995, Ser. No. 399,188

Int. Cl.[6] B01D *63/00*

U.S. Cl. 210—257.2 **10 Claims**



1. An apparatus for the remediation of a site contaminated with a hazardous substance, said apparatus comprising:

a first axially extending chamber defining a first axially extending interior cavity, axially extending side wall means forming said first axially extending chamber, said axially extending side wall means of said first chamber formed of an axially extending membrane, said membrane having an inner surface and an outer surface, said outer surface of said membrane configured to be in communication with the site contaminated with said hazardous substance, said inner surface of said membrane defining said first axially extending interior cavity, said membrane being selectively permeable to the hazardous substance, said membrane permitting the hazardous substance to migrate into said first interior axially extending cavity; and,

a second axially extending chamber defining a second axially extending interior cavity, said first axially extending chamber being connected to said second axially extending chamber, a connecting means joining said second axially extending interior cavity to said first axially extending interior cavity, said connecting means being configured to permit the hazardous substance to flow into said second axially extending interior cavity after migration through said membrane.

5,795,475

COUPLER/DIVERTER FOR COUNTER-TOP RO FILTER

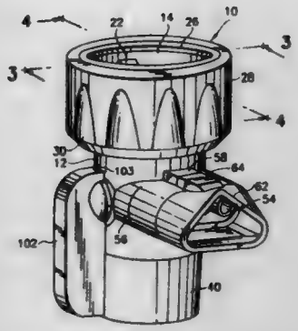
Frederick L. Luedke, Waterbury, Conn.; Ryan K. Hur, Irvine, Calif., and Dirk Yoshida, Los Angeles, Calif., assignors to Neoperl, Inc., Waterbury, Conn.

Filed Jul. 12, 1996, Ser. No. 679,187

Int. Cl.[6] B01D *27/08;35/157*

U.S. Cl. 210—257.2 **11 Claims**

1. A coupler/diverter for connection to a faucet spout to serve a reverse osmosis filter comprising:



a. a housing having an inlet end and an outlet end,

b. quick-connect coupling means at the inlet end of the housing adapted to engage the spout,

c. respective supply, overflow and brine return hose nipples extending laterally off adjacent the outlet end of the housing,

d. a single rotary multi-port valve in the housing comprising a wall disposed transversely of the housing, a barrel disposed lengthwise of the wall and a stem rotatably disposed snugly in the barrel, the stem having respective supply, overflow and brine return partial circumferential channels spaced longitudinally therealong,

e. supply passage means in the housing connecting the upper inlet end to a supply inlet opening in the barrel radially aligned with the supply channel and a supply outlet opening in the barrel aligned with the supply channel and connecting the supply outlet opening to the supply nipple,

f. overflow passage means in the housing connecting the overflow nipple to an overflow inlet opening in the barrel aligned with the overflow channel and an overflow outlet opening in the barrel aligned with the overflow channel and connecting the overflow outlet opening and the lower outlet end, and

g. brine return passage means in the housing connecting the brine return nipple to a brine return inlet opening the barrel aligned with the brine return channel and a brine return outlet opening in the barrel aligned with the brine return channel and connecting the brine return outlet opening to a discharge outlet from the housing separate from the outlet end,

the positions of the openings in the barrel and the positions of the partial channels being such that the channels will respectively connect the openings aligned with the respective channels at various rotary settings of the stem.

6. In combination with the coupler/diverter of claim 1, a reverse osmosis filter comprising:

a. a container having a filter membrane extending thereacross and partitioning the container into an inlet side and an outlet side,

b. a supply hose connecting the supply nipple and the inlet side,

c. an overflow hose connecting the outlet side spaced above the bottom of the container and the overflow nipple, and

d. a brine return hose connecting the inlet side adjacent the membrane and the brine return nipple.

5,795,476

WATER TREATMENT APPARATUS

Harold E. Haney, 66 Lannoo Drive, Winnipeg, Manitoba, Canada, R3R 3T4

Filed May 31, 1996, Ser. No. 655,774

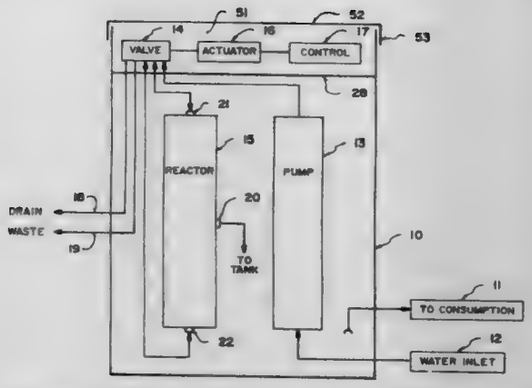
Int. Cl.[6] B01D *63/00; C02F 9/00*

U.S. Cl. 210—257.1 **20 Claims**

1. Apparatus for treating water from a water supply for consumption comprising:

a water supply inlet;

a treatment reactor including a first port, a second port, and a third port, said treatment reactor being arranged for receiving inlet water at one of the first and third ports, and for separating the inlet water into a consumption output at the second port and a waste output at the other of the first and third ports;



a storage tank for receiving and storing water from the consumption output;

a pump for pumping water through the reactor;

and a valve arrangement for controlling flow of the water through the reactor;

the storage tank comprising a substantially cylindrical wall having an exterior surface, a vertical axis, and a first and a second substantially part cylindrical recess in the storage tank wall extending into the exterior surface of the storage tank wall, the recesses being angularly spaced, mutually parallel and parallel to the vertical axis;

the first recess receiving a body of a pump;

and the second recess receiving a body of the treatment reactor; wherein the pump and treatment reactor are separated from water stored within the storage tank by the storage tank wall;

and wherein the pump, treatment reactor and storage tank wall are wholly contained within an imaginary cylindrical surface containing said storage tank wall.

5,795,477

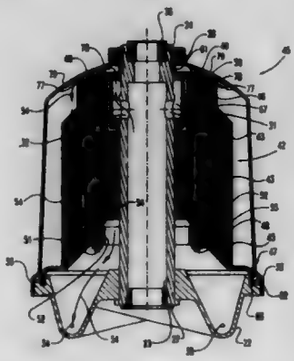
SELF-DRIVEN, CONE-STACK TYPE CENTRIFUGE

Peter K. Herman, and Byron A. Pardue, both of Cookeville, Tenn., assignors to Fleetguard, Inc., Nashville, Tenn.

Continuation of Ser. No. 583,634, Jan. 5, 1996, Pat. No. 5,637,217, which is a continuation of Ser. No. 378,197, Jan. 25, 1995, Pat. No. 5,575,912. This application Apr. 28, 1997, Ser. No. 847,861

Int. Cl.[6] B04B *1/08*

U.S. Cl. 210—360.1 **15 Claims**



1. A replaceable, self-contained, cone-stack subassembly for use in a self-driven, cone-stack centrifuge wherein said centrifuge is designed for separating particulate matter out of a flowing liquid, said cone-stack subassembly comprising:

an annular liner shell having a flow control first end and opposite thereto an open second end;

an annular bottom plate attached to the second open end of said liner shell and defining with said liner shell an interior cone space; and

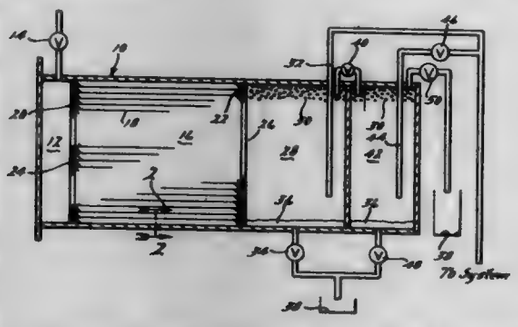
a plurality of separation cones arranged into a stacked array and positioned within said interior cone space.

5,795,478

OIL EXTRACTION SYSTEM

Gene Hirs, 3822 W. Thirteen Mile Rd., Apt. D, Royal Oak, Mich. 48073

Filed Jan. 15, 1997, Ser. No. 784,084
Int. Cl.[6] C02F 1/40
U.S. Cl. 210—521 5 Claims



1. A pressurized system for removing free oil and fine solids from industrial machining and washing fluids comprising;

a cylindrical tank having an inlet chamber at one end thereof for the acceptance of contaminated fluid under pressure;

a plurality of horizontally oriented polymeric elements extending longitudinally of said tank and filling the entire lateral cross section thereof, said elements having laterally spaced surfaces for channeling fluid flow longitudinally of said tank and for attracting and coalescing free oil from said fluid by oleophilic attraction;

a gravity separation chamber at an opposite end of said tank from said inlet chamber wherein free oil is further coalesced at the top thereof and solids settle to the bottom thereof;

means for releasing fluid from a zone in said separation chamber between the coalesced oil and the solids for return to the fluid system;

means for releasing coalesced oil from the top of said separation chamber for discharge to waste; and

means for releasing the solids from the bottom of said chamber for discharge to waste.

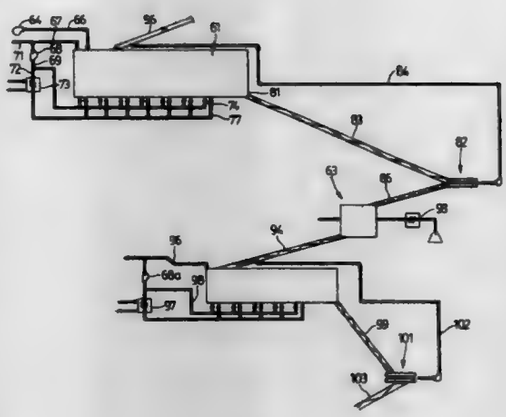
5,795,479

APPARATUS AND METHOD FOR WASTE RECYCLING AND CONVERSION

Gregory M. Vogt; Hubert S. Vogt, and Herman K. Walter, all of Toronto, Canada, assignors to Eastern Power Limited, Toronto, Canada

Filed Nov. 29, 1996, Ser. No. 758,720
Int. Cl.[6] C02F 3/28
U.S. Cl. 210—603 9 Claims

1. A method of digestion and decontamination of municipal solid waste (MSW) comprising digestible organic material, lignin coated cellulose fiber, and mercury contaminant, comprising: slurrying said MSW in an aqueous phase; subjecting the slurry to a primary stage of anaerobic digestion to digest at least a substantial portion of the organic material; separating aqueous phase to yield a primary solid digested residue; steam heating the primary solid residue to yield a water and mercury vapor containing vapor phase and a substantially mercury free solid phase; collecting the vapor phase separately from the solid phase and condensing the vapor phase to yield water and mercury in liquid form; elevating the ambient pressure of and then explosively decompressing the heated solid phase to yield a treated solid phase comprising the fibers in ruptured condition exposing the cellulosic internal surfaces thereof; slurrying the treated solid phase in an aqueous phase and



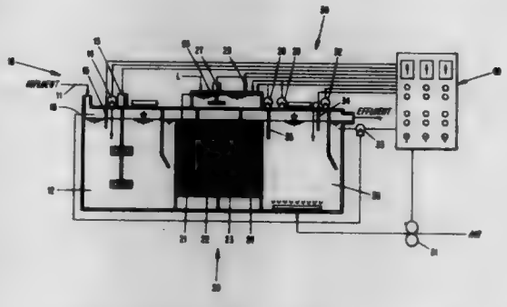
subjecting the slurry to a secondary stage of anaerobic digestion; and recovering a secondary solid digested residue.

5,795,480

METHOD AND SYSTEM FOR THE TREATMENT OF LIVESTOCK WASTEWATER

Oh Kwang Keun, Seoul; Lee Cheol Woo, Kyungkee province; Jeon Yeong Joong, and Lee Jae Heung, both of Seoul, all of Rep. of Korea, assignors to Cheil Jedang Corporation, Seoul, Rep. of Korea

Filed Dec. 30, 1996, Ser. No. 777,239
Claims priority, application Rep. of Korea, Dec. 29, 1995, 1995-72239
Int. Cl.[6] C02F 3/34
U.S. Cl. 210—611 7 Claims



1. A process for the treatment of livestock wastewater which comprises

(a) biodegrading the said wastewater by mixing it with hydrolytic, acidogenic and acetogenic bacteria culture;

(b) biodegrading the supernatant from the primary treatment by contacting it with a biofilm with immobilized photosynthetic bacteria; and

(c) biodegrading the liquid from the secondary treatment by mixing it with an activated sludge mixed with photosynthetic and symbiotic bacteria culture.

3. A system for the treatment of livestock wastewater, the system comprising:

(a) an acid-forming tank including hydrolytic, acidogenic and acetogenic bacteria culture for the primary treatment of the wastewater;

(b) a biofilm reactor with immobilized photosynthetic bacteria for the secondary treatment of the supernatant transferred from the acid-forming tank; and

(c) a symbiotic tank including photosynthetic and symbiotic bacteria culture for the advanced treatment of the liquid transferred from the biofilm reactor.

5,795,481

PROCESS FOR THE TREATMENT OF AQUEOUS EFFLUENTS ON BIOFILTERS OR OTHER DEVICES MAKING USE OF FIXED CULTURES

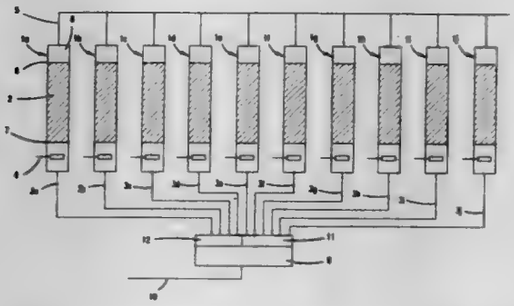
Andre Lesouef, Le Plessis Robinson, France, assignor to OTV Omnium De Traitements Et De Valorisation S.A., Saint Maurice Cedex, France

Filed Jan. 29, 1996, Ser. No. 593,715

Claims priority, application France, Feb. 2, 1995, 95 01412

Int. Cl.[6] C02F *3/04*

U.S. Cl. 210—615 **14 Claims**



1. A process for the treatment and purification of an aqueous effluent, the process comprising the steps of:

passing the aqueous effluent at a total rate into the interior of at least one battery comprising several biological filters, the biological filters having fixed cultures and operating in parallel;

supplying aqueous effluent at a chosen rate to each of one or more biological filters;

supplying one biological filter with a flow of aqueous effluent at a rate that corresponds to the difference between the total rate and the product of the chosen rate times the number of biological filters supplied with the aqueous effluent at the chosen rate; and

varying the number of biological filters supplied with the chosen rate of aqueous effluent as the total rate varies.

5,795,482

USE OF HYDROCARBON-SOLUBLE AMINOMETHYLENE PHOSPHONIC ACID DERIVATIVES IN THE SOLVENT EXTRACTION OF IRON IONS FROM AQUEOUS SOLUTIONS

Michael Ehle, and Knut Oppenländer, both of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/02327, § 371 Date Jan. 8, 1996, § 102(e) Date Jan. 8, 1996, PCT Pub. No. WO96/00309, PCT Pub. Date Jan. 4, 1996

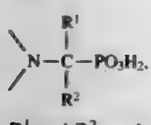
PCT Filed Jun. 16, 1995, Ser. No. 750,984

Claims priority, application Germany, Jun. 23, 1994, 44 21 932.6

Int. Cl.[6] C22B *3/38;3/40;3/42;3/26*

U.S. Cl. 210—634 **8 Claims**

1. A process for the solvent extraction of iron ions from aqueous solutions, which comprises extracting an aqueous solution containing iron ions with a solvent containing a hydrocarbon-soluble aminomethylenephosphonic acid having a structural element of formula (I)



(I)

where R^1 and R^2 are hydrogen, C_1–C_{30}-alkyl which can additionally bear up to 15 hydroxyl groups and/or be interrupted by up to 14 non-adjacent oxygen atoms, C_2–C_{30}-alkenyl, C_7–C_{18}-aralkyl or C_6–C_{14}-aryl which can be substituted by up to three C_1–C_{12}-alkyl groups, C_1–C_{12}-alkoxy groups, halogen atoms, cyano groups, hydroxyl groups or C_1–C_4-alkoxycarbonyl groups.

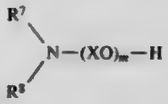
7. A mixture suitable for the solvent extraction of iron ions from aqueous solutions, comprising

A) from 0.5 to 99.5% by weight of one or more hydrocarbon-soluble aminomethylenephosphonic acids as claimed in claim 1 and

B) from 99.5 to 0.5% by weight of one or more of an alkoxylated long-chain alcohol III,

$$R^7—O—(XO)_m—H \quad \text{(III)}$$

or an alkoxylated long-chain amine of the formula (IV) , or a mixture thereof where



(IV)

where

R^7 is C_6–C_{30}-alkyl, C_6–C_{30}-alkenyl, C_7–C_{18}-aralkyl or C_6–C_{14}-aryl which may be unsubstituted or substituted by up to three C_1–C_{12}-alkyl groups, C_1–C_{12}-alkoxy groups, halogen atoms, cyano groups, hydroxyl groups or C_1–C_4-alkoxycarbonyl groups,

R^8 is hydrogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or a group $—(XO)_m—H$ or is as defined for R^7,

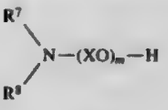
X is a 1,2-alkylene group having from 2 to 30 carbon atoms or a group of the formula $—CH_2—CHR^{10}—$, where R^{10} is C_7–C_{18} -aralkyl or C_6–C_{14}-aryl which may be substituted by up to three C_1–C_{12}-alkoxy groups, halogen atoms, cyano groups, hydroxyl groups or C_1–C_4-alkoxycarbonyl groups, and

m is a number from 1 to 20.

8. A process for the solvent extraction of metal ions from aqueous solutions, which comprises extracting with a solvent containing an alkoxylated long-chain alcohol of formula (III)

$$R^7—O—(XO)_m—H$$

or an alkoxylated long-chain amine of formula (IV)



(IV)

where

R^7 is C_6–C_{30}-alkyl, C_6–C_{30}-alkenyl, C_7–C_{18}-aralkyl or C_6–C_{14}-aryl which may be unsubstituted or substituted by up to three C_1–C_{12}-alkyl groups, C_1–C_{12}-alkoxy groups, halogen atoms, cyano groups, hydroxyl groups or C_1–C_4-alkoxycarbonyl groups,

R^8 is hydrogen, C_1–C_5-alkyl, C_2–C_5-alkenyl or a group $—(XO)_m—H$ or is as defined for R^7,

X is a 1,2-alkylene group having from 2 to 30 carbon atoms or a group of the formula $—CH_2—CHR^{10}—$, where R^{10} is C_7–C_{18}-aralkyl or C_6–C_{14}-aryl which may be substituted by up to three C_1–C_{12}-alkyl groups, C_1–C_{12}-alkoxy groups, halogen atoms, cyano groups, hydroxyl groups or C_1–C_4-alkoxycarbonyl groups, and

m is a number from 1 to 20.

5,795,483

METHOD OF SEPARATING LEUKOCYTES FROM BLOOD CELLS USING A LEUKODEPLETION FILTER

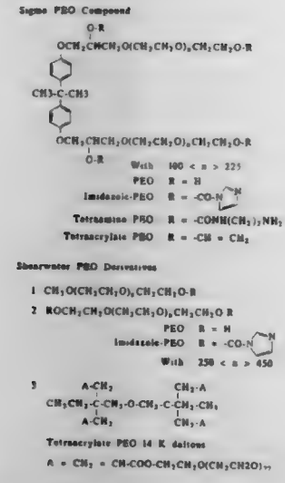
Neng S. Ung-Chhun, Lincolnshire, and Richard J. Johnson, Mundelein, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 323,559, Oct. 17, 1994, Pat. No. 5,647,985. This application Mar. 4, 1997, Ser. No. 810,751

Int. Cl.[6] B01D *37/00;39/02*

U.S. Cl. 210—645 **1 Claim**

1. A method of separating blood cells comprising



contacting blood cells with cell separation means consisting essentially of a fibrous structure, and a coating thereon, said coating being a copolymer of an electrophilically active, high molecular weight polyalkylene oxide compound and a high molecular weight polyalkylene oxide derivative selected from the group consisting of tetraaminopolyalkylene oxide and a bifunctional dihydroxy- or diamino- polyalkylene oxide,

removing said cell separation means, thereby separating leukocytes which adhere to said cell separation means from the red blood cells and platelets which do not adhere to said cell separation means.

5,795,484

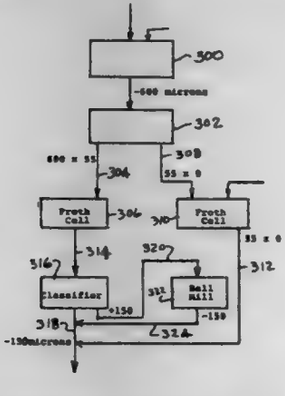
METHOD AND APPARATUS FOR DEWATERING

Edward H. Greenwald, Sr., 52 Nancy La., McMurray, Pa. 15137

Continuation-in-part of Ser. No. 95,862, Jul. 22, 1993, Pat. No. 5,413,703, which is a division of Ser. No. 735,386, Jul. 24, 1991, Pat. No. 5,236,596, which is a continuation-in-part of Ser. No. 112,669, Oct. 22, 1987, abandoned. This application May 8, 1995, Ser. No. 436,761

Int. Cl.[6] **B03D** *3/00;* **B01D** *21/00;21/28;* **C10L** *9/10*

U.S. Cl. 210—696 **18 Claims**



1. The coal product produced according to a method of treating clay contaminated ultra fine coal particles, said method including the steps of;

forming an aqueous slurry of clay contaminated ultra fine coal particles;

mechanically stripping clay contaminants from the surfaces of the coal particles while subdividing the size of the clay contaminant to clay platelets;

peptizing the clay platelets to impart a state of discreetness in the aqueous slurry;

collecting a mass of dilatant coal particles in a superimposed relation upon a dilatant coal layer, said dilatant coal layer being defined by forming an aqueously permeable barrier comprised of a dilatant coal layer of collected coal particles from said slurry upon a barrier;

using the dilatancy of said dilatant coal mass in combination with an applied force for dewatering the coal mass by draining aqueous medium along with peptized clay platelets from the coal mass; and

recovering the coal mass.

5,795,485

PROCESS FOR TREATING PHOTOGRAPHIC PROCESSING WASTE SOLUTION

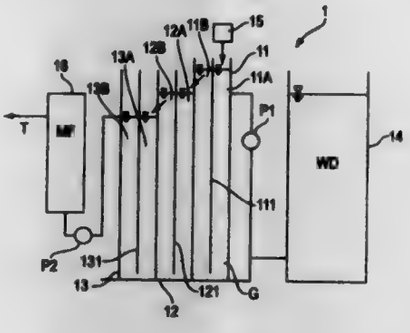
Takashi Nakamura; Haruhiko Iwano, and Koji Matsuo, all of Kanagawa, Japan, assignors to Fuji Photo Film Co.,Ltd., Kanagawa, Japan

Filed Mar. 7, 1995, Ser. No. 399,658

Claims priority, application Japan, Mar. 9, 1994, 6-065744

Int. Cl.[6] **C02F** *1/52*

U.S. Cl. 210—714 **5 Claims**



1. A process for treating a photographic processing waste solution which comprises:

placing a polymer precipitate having a S atom which can coordinate with a metal in a lower portion of a tank having a U-shaped treating space which comprises (i) a first partition, (ii) a second partition and (iii) an interconnecting partition for interconnecting said first partition and said second partition in said lower portion of a tank;

introducing into said first partition a photographic processing waste solution containing a processing solution having fixing ability which has processed a silver halide photographic material;

treating said photographic processing waste solution by passing said photographic processing waste solution through said interconnecting partition containing as a seed crystal said polymer precipitate having a S atom which can coordinate with a metal in said U-shaped treating space; and

removing said metal in said photographic processing waste solution;

wherein a plurality of tanks each having said U-shaped treating space are provided and said photographic waste solution is allowed to flow in from a preceding stage tank to a subsequent stage tank in turn.

5,795,486

USE OF BARIUM AND/OR STRONTIUM SULPHIDE TO REMOVE HEAVY METALS IN ACIDIC SOLUTIONS

Jean-Yves Chane-Ching, Eaubonne, and Fabrice Fourcot, Velizy, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Dec. 27, 1995, Ser. No. 579,190
Int. Cl.[6] C02F 1/62
U.S. Cl. 210—723 7 Claims

1. A process for the removal of heavy metal from an industrial acidic solution comprising the steps of:

i) introducing a composition selected from the group consisting of barium sulphide and barium sulphate; strontium sulphide and strontium sulphate; and mixture of any of the aforementioned into said solution in stroichiometric excess relative to the metal; and

ii) separating the precipitate thus formed.

5,795,487

PROCESS TO MANUFACTURE STABILIZED ALKALI OR ALKALINE EARTH METAL HYPOBROMITE AND USES THEREOF IN WATER TREATMENT TO CONTROL MICROBIAL FOULING

Anthony W. Dallmier, and William F. McCoy, both of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jan. 3, 1997, Ser. No. 778,598
Int. Cl.[6] C02F 1/50; C23F 11/08
U.S. Cl. 210—754 21 Claims

1. A method for preparing a stabilized aqueous alkali or alkaline earth metal hypobromite solution comprising:

a. Mixing an aqueous solution of alkali or alkaline earth metal hypochlorite having from about 5 percent to about 70 percent available halogen as chlorine with a water soluble bromide ion source;

b. Allowing the bromide ion source and the alkali or alkaline earth metal hypochlorite to react to form a 0.5 to 70 percent by weight aqueous solution of unstabilized alkali or alkaline earth metal hypobromite;

c. Adding to the unstabilized solution of alkali or alkaline earth metal hypobromite an aqueous solution of an alkali metal sulfamate in a quantity to provide a molar ratio of alkali metal sulfamate to alkali or alkaline earth metal hypobromite is from about 0.5 to about 7; and,

d. Recovering a stabilized aqueous alkali or alkaline earth metal hypobromite solution.

5,795,488

PROCESS FOR TRANSPORTING A SOLUTION OF CELLULOSE IN AN AQUEOUS TERTIARY AMINE-OXIDE

Wolfram Kalt, Lenzing; Johann Männer, Weyregg; Heinrich Firgo, Vöcklabruck, and Franz Schwenninger, Königsdorf, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

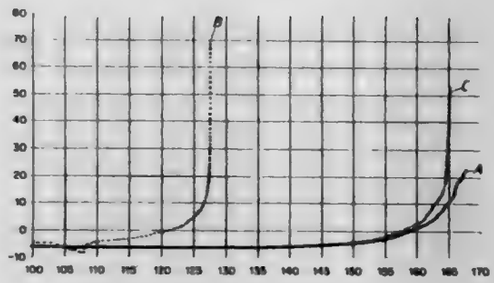
Filed Sep. 19, 1996, Ser. No. 715,763
Claims priority, application Austria, Sep. 26, 1995, 1596/95
Int. Cl.[6] B01D 37/00; D01F 2/00
U.S. Cl. 210—767 4 Claims

1. A process for transporting a solution of cellulose in an aqueous tertiary amine oxide through a component along a flow path comprising the steps of;

providing the cellulose solution to said component;

conveying the cellulose solution through said component whereby different portions of said cellulose solution have different flow rates along said flow path in said component;

providing for said component a discharge outlet for a portion of the cellulose solution flowing through said component at a location at which said portion of the cellulose solution is



flowing through the component at a lower rate than another portion of said flow; and

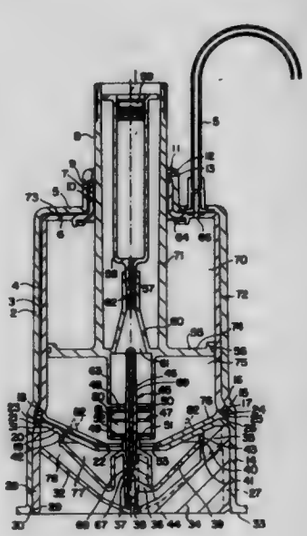
separately discharging said lower flow rate portion of said solution through said outlet while allowing said another portion of said cellulose solution to continue to flow along said flow path.

5,795,489

CENTRIFUGAL FILTRATION METHOD

Niels Erik Holm, Birkerød, Denmark, assignor to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 348,672, Dec. 2, 1994, Pat. No. 5,733,446.
This application Nov. 8, 1996, Ser. No. 745,763
Int. Cl.[6] B01D 21/26
U.S. Cl. 210—782 15 Claims



1. A method for the centrifugal separation of a particulate from a liquid comprising the steps of

introducing a particulate-containing liquid into a filter chamber of a device, which device is insertable into and removable from a centrifuge apparatus which rotates the device about its longitudinal axis, said filter chamber radially extending from said axis to an outer wall which is at least partially defined by an annular filter, which annular filter is supported only at top and bottom edge thereof;

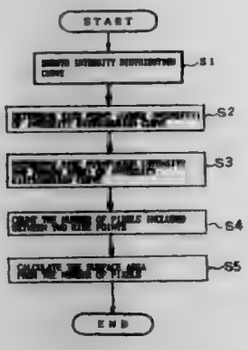
rotating said device and filter chamber about said longitudinal axis so that said liquid is forced through said filter into a collecting means at least part of which is disposed radially beyond said filter, whereby said particulate is retained on or in said filter.

5,795,490

MAGNETIC HEAD DAMAGE EVALUATION METHOD AND APPARATUS THEREFOR

Satoru Momose, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 28, 1997, Ser. No. 828,913
Claims priority, application Japan, Mar. 31, 1996, 8-104374
Int. Cl.[6] B44C 1/22
U.S. Cl. 216—22 8 Claims



1. A slider surface damage evaluation method for evaluation of damage to a slider, an air-bearing-surface of which opposes a recording surface of a recording medium, and is formed an air-bearing-surface overcoat on it, by recognition of the wear condition of said air-bearing-surface overcoat, said method comprising:

a first step in which said air-bearing-surface of said slider including said slider, said air-bearing-surface overcoat formed thereon, being worn is etched so as to reduce its optical reflectance of exposed air-bearing-surface substance;

a second step in which said air-bearing-surface of said slider is optically imaged so as to obtain an image which includes a region having a high optical reflectance and a region having a low optical reflectance; and

a third step in which, at least from said region having a low optical reflectance image, a condition of a worn out region formed on said air-bearing-surface overcoat of said slider is recognized.

5,795,491

METHOD OF PRODUCING DECORATIVE LOUVER WINDOW COVERING MATERIAL

Piergiorgio Ciriaci, 6811 Falconsgate Ave., Davie, Fla. 33331

Filed Mar. 13, 1996, Ser. No. 614,491
Int. Cl.[6] B44C 1/22
U.S. Cl. 216—28 10 Claims

1. A method for producing a decorative window covering product, the method comprising the steps of:

extruding a thermoplastic material from an extrusion apparatus to form a profile having opposite faces;

pulling said profile along a straight path of travel;

partially cooling said profile;

applying at least one pigmented liquid ink composition directly to at least one of said opposite faces of said profile;

etching said at least one of said opposite surfaces of said extrusion profile to which said ink composition is applied;

drying said ink composition on said profile; and

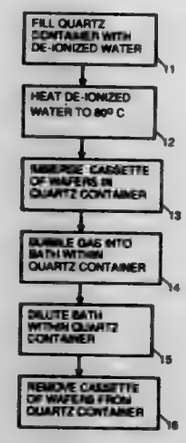
cutting said profile into segments.

5,795,492

ETCHING METALS USING CHLORINE GAS AND HYDROCHLORIC GAS IN DE-IONIZED WATER

Kenneth Reis, San Antonio, and Allen Page, Helotes, both of Tex., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Apr. 30, 1997, Ser. No. 846,833
Int. Cl.[6] H01L 21/306
U.S. Cl. 216—57 12 Claims



1. A method for stripping metal from a wafer comprising the following steps:

(a) submerging the wafer in de-ionized water; and,

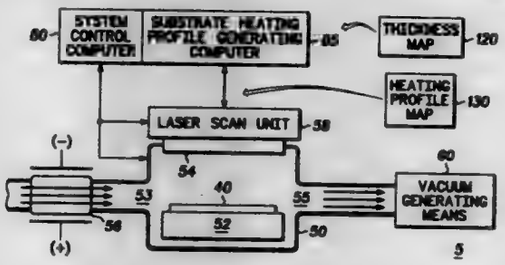
(b) bubbling chlorine gas and hydrochloric acid gas into the de-ionized water.

5,795,493

LASER ASSISTED PLASMA CHEMICAL ETCHING METHOD

Yefim Bukhman, Scottsdale, and Edward M. Keller, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1995, Ser. No. 432,556
Int. Cl.[6] H01L 21/00
U.S. Cl. 216—59 16 Claims



1. A method for removing material from a semiconductor substrate to thin and smooth said semiconductor substrate, comprising the steps of:

measuring uniformity of thickness of said semiconductor substrate;

generating a heating profile map from the uniformity of thickness measurement;

placing the semiconductor substrate in an etching chamber;

differentially heating localized portions of said semiconductor substrate in accordance with said heating profile map so that thicker localized portions are at a higher temperature and thinner localized portions of said semiconductor substrate are at a lower temperature; and

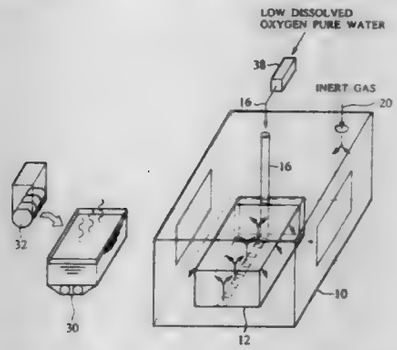
etching an entire surface of said semiconductor substrate, wherein the localized portions of said semiconductor substrate that are at a higher temperature are etched at a faster rate than the localized portions of said semiconductor substrate that are at a lower temperature.

5,795,494

SEMICONDUCTOR SUBSTRATE CLEANING METHOD AND SEMICONDUCTOR DEVICE FABRICATION METHOD

Yuka Hayami; Miki T. Suzuki; Hiroki Ogawa; Shuzo Fujimura; Haruhisa Mori, and Yoshiko Okui, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 10, 1995, Ser. No. 513,748
Claims priority, application Japan, Dec. 19, 1994, 6-314392
Int. Cl.[6] H01L 21/02
U.S. Cl. 216—83 11 Claims



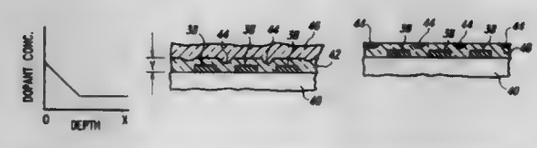
1. A semiconductor substrate cleaning method comprising an immersing step of immersing a semiconductor substrate having an oxide film formed thereon in pure water having a dissolved oxygen concentration of below 200 ppb at room temperature and a temperature above 60° C., in an atmosphere which controls oxygen concentration to keep the dissolved oxygen concentration in the pure water, whereby the semiconductor substrate is cleaned to etch the oxide film.

5,795,495

METHOD OF CHEMICAL MECHANICAL POLISHING FOR DIELECTRIC LAYERS

Scott G. Meikle, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 232,610, Apr. 25, 1994, Pat. No. 5,449,314. This application Sep. 8, 1995, Ser. No. 526,001
Int. Cl.[6] H01L 21/311
U.S. Cl. 216—88 12 Claims



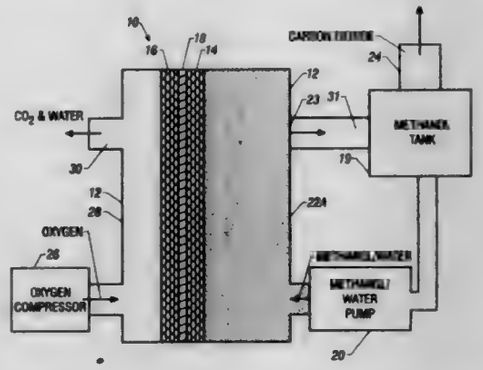
1. A chemical mechanical polishing method for forming a planarized dielectric layer on a substrate, comprising the steps of:
- depositing an undoped dielectric layer of silicon nitride on the substrate;
- depositing a doped dielectric layer on the undoped silicon nitride layer;
- controlling a dopant concentration of the doped dielectric layer to produce a dopant concentration profile with the dopant concentration decreasing with increasing depth into the doped dielectric layer and then leveling to a substantially uniform concentration;
- polishing the doped dielectric layer using a chemical mechanical polishing process;
- controlling a polish rate of the chemical mechanical polishing process using the dopant concentration such that the polish rate decreases with increasing depth into the doped dielectric layer; and
- end pointing the polishing process at a planar endpoint located within the undoped layer of silicon nitride.

5,795,496

POLYMER MATERIAL FOR ELECTROLYTIC MEMBRANES IN FUEL CELLS

Shaio-Ping S. Yen, Altadena; Sekharipuram R. Narayanan, St. Altadena; Gerald Halpert, Pasadena; Eva Graham, St. Pasadena, and Andre Yavrouian, Glendale, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Nov. 22, 1995, Ser. No. 561,899
Int. Cl.[6] H01M 8/10;8/22; C08J 5/18
U.S. Cl. 252—62.2* 19 Claims



1. A method of processing a polymer to enhance its proton conducting characteristics, comprising:
- obtaining a polymer material which can be treated to form a material with proton conducting characteristics,
- treating said polymer material to enhance its proton conducting characteristics by adding sulfonate groups in a way to increase proton conductivity; and
- crosslinking the sulfonate groups on one surface of said polymer material only, and not on the other surface of said polymer material to form a material which has asymmetric surface-dense characteristics.

5,795,497

THIOURACIL DERIVATIVES AND METAL SURFACE-TREATING AGENT COMPRISING THEREOF

Mikio Kimura, and Masayuki Aizawa, both of Tsukuba, Japan, assignors to Tokuyama Corporation, Yamaguchi-ken, Japan

Filed Apr. 18, 1997, Ser. No. 837,479
Int. Cl.[6] C09K 3/00;15/06; C07D 239/10
U.S. Cl. 252—182.18 18 Claims

1. An unsaturated thiouracil derivative which
- has at least at one terminal thereof an organic group (I) having a radical polymerizable unsaturated bond, and
- has at the other terminal the following thiouracil residue (II)

$$CH_2=C(R^5)-Z- \quad \text{(I-1)}$$

wherein
- R^1 and R^2 each is a hydrogen atom or an alkyl group, and at least one of R^1 and
- R^2 is a hydrogen atom, and
- R^3 is a hydrogen atom, an alkyl group or a phenyl group,

and
wherein
- the organic group (I) and the thiouracil residue (II) are separated by a bivalent spacer residue containing at least 2 carbon atoms.

5,795,498

Patent Not Issued For This Number

5,795,499

STABILIZATION OF HIGH SOLIDS COATINGS WITH LIQUID COMPOSITIONS OF TRIAZINE UV ABSORBERS

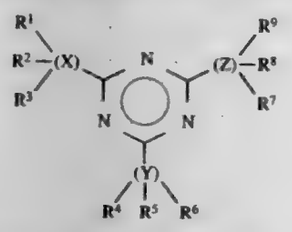
Paul Sheldon Waterman, Shelton, Conn., assignor to Cytec Technology Corp., Wilmington, Del.

Division of Ser. No. 224,204, Mar. 17, 1994, abandoned, which is a continuation of Ser. No. 486,625, Feb. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 456,917, Dec. 26, 1989, abandoned. This application May 31, 1995, Ser. No. 454,971

Int. Cl.[6] C09K *15/08*

U.S. Cl. 252—404 **20 Claims**

1. A triaryl triazine ultraviolet light stabilizer composition comprising a mixture of compounds represented by the formula below:



wherein independently for each of said compounds

X, Y, and Z are each the same or different aromatic carbocyclic radicals, and

at least one of X, Y, and Z is substituted by a hydroxy group ortho to the point of attachment to the triazine ring, and

at least one of R^1 to R^9 is an alkoxy radical of the formula —O-(C_6 to C_{12} alkyl) substituted at a point para to the point of attachment to the triazine ring, and

the remainder of R^1 to R^9 are selected from the group consisting of hydrogen, hydroxy, alkyl, alkoxy, sulfonic, carboxy, halo, haloalkyl, and acylamino;

with the proviso that in said mixture are present at least 10% each of at least three different isomers of said —O-(C_6 to C_{12} alkyl) radical, wherein % is based on the total —O-(C_6 to C_{12} alkyl) radicals.

5,795,500

ELECTRICALLY CONDUCTIVE COATINGS COMPRISING FLUORINATED CARBON FILLED FLUOROELASTOMER

Kock-Yee Law, Penfield; Ihor W. Tarnawskyj, Webster; Joseph Mammino, Penfield; Martin A. Abkowitz, Webster, and Frederick E. Knier, Jr., Wolcott, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 3, 1997, Ser. No. 808,775

Int. Cl.[6] H01B *1/24;* **C08J** *3/20*

U.S. Cl. 252—511 **24 Claims**

1. A coating comprising a fluorinated carbon filled fluoroelastomer, wherein said fluoroelastomer is selected from the group consisting of (i) tetrapolymers of vinylidenefluoride, hexafluoropropylene, tetrafluoroethylene and a cure site monomer, and (ii) volume grafted fluoroelastomers.

5,795,501

ELECTRICALLY-CONDUCTIVE COMPOSITION

Haruhiko Kano, Muko, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

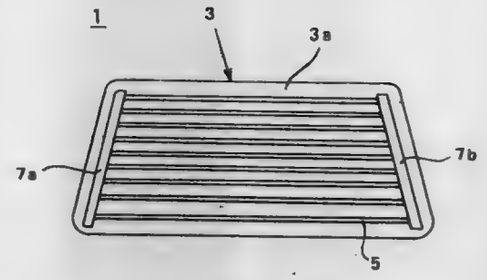
Filed Sep. 10, 1996, Ser. No. 711,806

Claims priority, application Japan, Sep. 22, 1995, 7-244728

Int. Cl.[6] H01B *1/02;1/16;1/22*

U.S. Cl. 252—514 **13 Claims**

1. An electrically-conductive composition which comprises (A) silver powder, (B) glass frit, (C) rhodium or a compound thereof, (D) inorganic pigment which is at least two members of the group



consisting of copper oxide, manganese oxide, iron oxide and chromium oxide, and (E) organic vehicle, wherein the amount of rhodium compound is about 0.00001–0.0001 parts by weight (in terms of metallic rhodium) for 100 parts by weight of the silver powder.

5,795,502

ELECTRICALLY CONDUCTING CERAMICS, PROCESS FOR PRODUCING THE SAME AND FUEL CELL USING THE CERAMICS

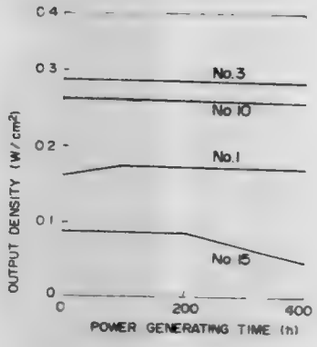
Yoshitake Terashi; Takashi Shigehisa; Masahide Akiyama, and Shoji Yamashita, all of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed May 21, 1996, Ser. No. 650,976

Claims priority, application Japan, Dec. 13, 1995, 7-324687

Int. Cl.[6] H01B *1/08;* **H01M** *8/10*

U.S. Cl. 252—521.1 **13 Claims**



1. Electrically conducting ceramics having, as a chief crystalline phase, a perovskite crystalline phase containing at least one kind of rare earth element, Cr and Mg and further having, in addition to the chief crystalline phase, an oxide phase containing at least one kind of rare earth element, wherein said chief crystalline phase and said oxide phase contain at least La as a rare earth element and when the atomic ratios among the rare earth element, Mg and Cr in said chief crystalline phase are represented by the following formula (I),

$$R:Mg:Cr=x:y:z \quad (I)$$

wherein R denotes a rare earth element, the atomic ratios among the rare earth element, Mg and Cr contained in the whole ceramics are represented by the following formula (II),

$$R:Mg:Cr=(x+u):(y+v):z \quad (II)$$

wherein R is as defined above, x, y and z are the numbers as defined in the formula (I) above, and u and v are the numbers satisfying the following formulas,

$$0.0001 \leqq u/(x+y+z) \leqq 0.20 \quad \text{(a)}$$

$$0.01 \leqq (y+v)/(x+y+z) \leqq 0.60 \quad \text{(b)}$$

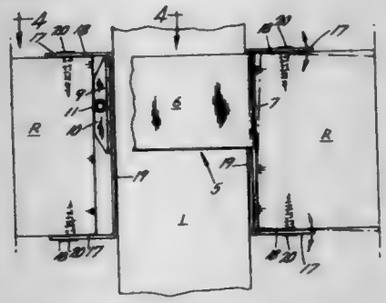
$$0 \leqq v \quad \text{(c)}$$

5,795,503

FENCE POST AND RAIL CONNECTOR

Christopher P. Krake, 22500 N. E. 128th Cir., Brush Prairie, Wash. 98606

Filed Oct. 21, 1996, Ser. No. 731,858
Int. Cl.[6] E04H *17/14*
U.S. Cl. 256—65 **4 Claims**



1. A connector assembly for attaching rails to a fence post and comprising,

a clamp having contiguous walls and including fastener means for clamp placement about the post, one of said walls being segmented and having ears on said segments apertured for reception of said fastener means, said segmented wall and ears thereon positionable intermediate a rail end and the fence post to partially conceal the ears and fastener means,

a bracket attachable to an end of the rail and having right angular flanges, one of said flanges insertable between said clamp and the post for surfacial abutment with the post, and

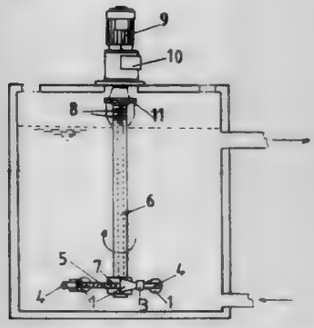
said clamp upon fastener means actuation urging one of said contiguous walls toward said one of said flanges and the flange into frictional contact with the post to retain the rail end in place on the post.

5,795,504

APPARATUS FOR FEEDING AND DIFFUSING AIR OR ANOTHER GAS INTO A LIQUID

Raymond Berchotteau, 9, rue Linne, 78500 Sartrouville, France

Filed Aug. 23, 1995, Ser. No. 518,548
Claims priority, application France, Mar. 5, 1993, 93 02602
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—30 **17 Claims**



11. An apparatus for diffusing a gas into a liquid at a certain depth, comprising

a rotary drive member;

a shaft having an axis, an upper end and a base, wherein the upper end of said shaft is mechanically connected to the rotary drive member;

a support means attached to the base of the shaft;

a first plurality of water jet vacuum pumps furnished to the base of the shaft, wherein each water jet vacuum pump of the first plurality of water jet vacuum pumps is arranged peripherally at a distance from the axis of the shaft and fixed to the shaft by the support means, said each water jet vacuum pump having a pump axis and including, coaxially, a cone aligned with the pump axis and exhibiting a tip at a narrowed end forming a jet, wherein a base of the cone forms an inlet of said each water jet vacuum pump, a chamber surrounding the tip and forming a cavity, and an outlet nozzle connected to the chamber on a side of the chamber disposed opposite to a side where the cone enters the chamber, wherein the narrowed end of the cone enters into the outlet nozzle;

a source of gas;

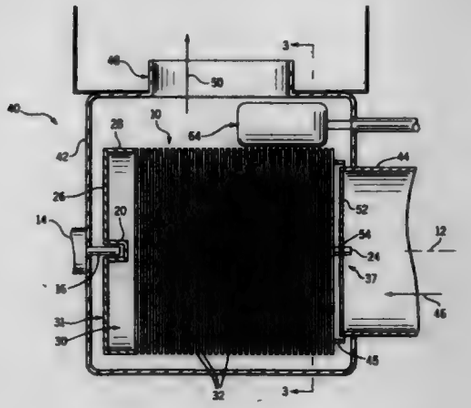
a conduit connecting the cavity to the source of gas by ducts furnished integrated with the support means of the water jet vacuum pumps, wherein a vacuum is created in the cavity by a liquid flowing through the cone when the shaft is rotated to allow a gas from the source of gas to flow through the conduit to the cavity and then into the liquid.

5,795,505

AIR HUMIDIFIER WITH REDUCED MINERAL BUILDUP

Rodney B. Burns, Calgary, Alberta, Canada, assignor to Harry Penno, Alberta, Canada

Continuation of Ser. No. 642,094, May 2, 1996, abandoned.
This application Aug. 7, 1997, Ser. No. 908,224
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—92 **7 Claims**



1. An air humidifier comprising:

a plurality of annular disks spaced along a substantially horizontal common axis, the disks having radially inner and outer edges, the inner edges defining an inner volume;

a portion of a lower housing positioned beneath the disks to hold water at a water level;

a motor assembly connected to the disks to rotate the disks about their common axis so as to change the portion of the disks that is beneath the water level as the disks rotate;

an air conduit communicating with the inner volume;

whereby air conducted through the conduit into the inner volume may pass outward between the disks to be humidified;

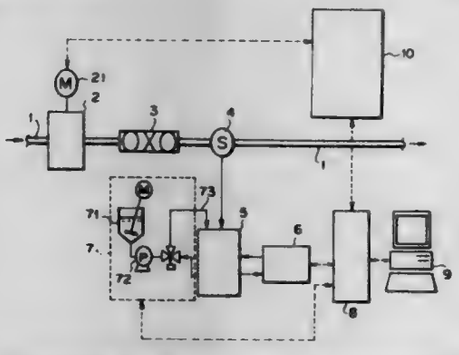
further including a tubular chamber having an open end abutting the inner volume and substantially preventing axial air flow from an opening of the inner volume of the disks opposite the air conduit, the tubular chamber further having an opposite closed end removed from the disks, the chamber sized to even the flow of air from the air conduit through the spaces between the disks.

5,795,506

METHOD AND SYSTEM FOR CONTROLLING MICROCAPSULE PARTICLE DIAMETERS

Yoshihito Hodosawa; Hideo Nagano, and Hirokazu Saito, all of Shizuoka-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1996, Ser. No. 625,131
Claims priority, application Japan, Mar. 31, 1995, 7-075801
Int. Cl.[6] B01J 13/00;13/02;13/06; G01N 15/02
U.S. Cl. 264—4.1 6 Claims



1. A method for automatically measuring and controlling microcapsule particle diameters during production of microcapsules in a production line provided with an emulsifying machine, comprising the steps of:

i) automatically sampling the microcapsules on an on-line basis from a portion of a process pipeline, which portion is located downstream from the emulsifying machine,

ii) feeding the obtained sample into a particle diameter measuring device,

iii) measuring the particle diameters of the microcapsules in the sample using said particle diameter measuring device,

iv) calculating a difference between the measured values of the particle diameters and a desired particle diameter, the calculation being carried out using a process computer,

v) calculating a value of a rotation speed of the emulsifying machine, which value yields said desired particle diameter, in accordance with a relationship between the rotation speed of the emulsifying machine and a mean particle diameter, said relationship having been previously input, and

vi) adjusting the rotation speed of the emulsifying machine in accordance with the calculated value of the rotation speed, whereby the particle diameters of the microcapsules are controlled.

5. A system for automatically measuring and controlling microcapsule particle diameters during production of microcapsules in a production line provided with an emulsifying machine for stirring and emulsifying a mixture liquid having been fed into a process pipeline, the system comprising:

i) a sampling device for automatically sampling the emulsion, which contains the microcapsules, on an on-line basis from a portion of the process pipeline, which portion is located downstream from the emulsifying machine, the microcapsules being sampled from a middle region in a pipe of the process pipeline,

ii) an in-line mixer located in a portion of the process pipeline, which portion is located at a position immediately upstream of said sampling device, said in-line mixer stirring and mixing a portion of the microcapsules, which is located in a middle region within the pipe of the process pipeline, and a portion of the microcapsules, which is located in a peripheral region within the pipe of the process pipeline, together,

iii) a particle diameter measuring device for measuring the particle diameters of the microcapsules, which are contained in the emulsion having been sampled by said sampling device, and

iv) a process computer for calculating a desired value of a rotation speed of the emulsifying machine in accordance with a difference between the measured values of the particle diameters, which measured values have been obtained from said particle diameter measuring device, and a desired particle diameter, said process computer generating a control signal in accordance with the calculated desired value of the rotation speed of the emulsifying machine and feeding out the control signal to the emulsifying machine.

5,795,507

PREPARATION OF PIGMENTED MELAMINE-FORMALDEHYDE POLYMER BEADS

George M. Crews, Gonzales, and Ji Shen, Donaldsonville, both of La., assignors to Melamine Chemicals, Inc., Donaldsonville, La.

Filed Jun. 24, 1996, Ser. No. 669,623
Int. Cl.[6] C08G 12/32
U.S. Cl. 264—5 10 Claims

1. Method of producing pigment beads of melamine formaldehyde resin comprising the steps of

(i) forming a mixture of formaldehyde, melamine and water,

(ii) heating said mixture of (i) and adding a dye to form a colored methylolmelamine solution,

(iii) adding an organic solvent and emulsifying agent to said methylolmelamine solution (ii), said emulsifying agent having an HLB of 8.5–9.3, and

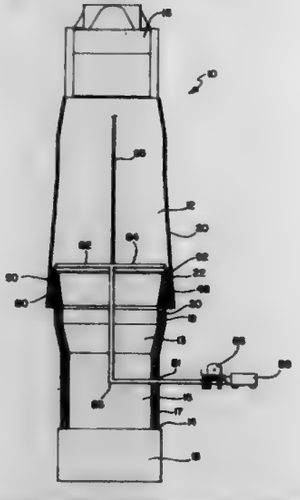
(iv) heating (iii) with stirring to provide pigmented spherical shaped particles of crosslinked melamine resin.

5,795,508

METHOD OF LINING A BLAST FURNACE

Madjid Soofi, St. Charles, Ill., and James S. Irwin, Hinckley, Ohio, assignors to Magneco/Metrel, Inc., Addison, Ill.

Continuation of Ser. No. 280,488, Jul. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 173,655, Dec. 27, 1993, abandoned, which is a continuation of Ser. No. 116,027, Sep. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 893,377, Jun. 4, 1992, abandoned, which is a continuation of Ser. No. 673,954, Mar. 22, 1991, abandoned. This application May 20, 1996, Ser. No. 650,221
Int. Cl.[6] F27D 1/16
U.S. Cl. 264—30 17 Claims



1. A method of installing a refractory lining in a metallurgical vessel including a steel shell, comprising the steps of:

installing a first form member including a first rigid frame and, mounted to the first rigid frame, a first porous consumable form which facilitates the transmission and evaporation of liquid, in the metallurgical vessel at a distance from the shell;

pumping a casting composition which includes a granular refractory and a liquid carrier, between the steel shell and the first form member;

hardening the casting composition by transmitting at least some of the liquid carrier through the first porous consumable form;

installing a second form member including a second rigid frame and a second porous consumable form mounted to the second frame, above the first form member at a distance from the shell;

injecting a casting composition which includes a granular refractory and a liquid carrier, between the steel shell and the second form member; and

hardening the casting composition by transmitting at least some of the liquid carrier through the second consumable forms;

wherein each porous consumable form has a height of at least about six feet and comprises an open-mesh screen.

5,795,509

INJECTION METHOD OF PREPLASTICIZATION INJECTION MOLDING MACHINE

Misao Fujikawa, and Hirotsugu Otowa, both of Ishikawa, Japan, assignors to Sodick Co., Ltd., Japan

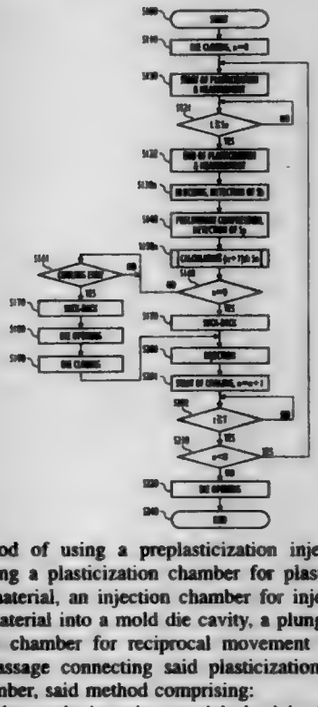
PCT No. PCT/JP96/03151, § 371 Date Jun. 26, 1997, § 102(e) Date Jun. 26, 1997, PCT Pub. No. WO97/15422, PCT Pub. Date May 1, 1997

PCT Filed Oct. 28, 1996, Ser. No. 860,542

Claims priority, application Japan, Oct. 27, 1995, 7-281019

Int. Cl.[6] B29C *45/54;45/76*

U.S. Cl. 264—40.1 **4 Claims**



1. A method of using a preplasticization injection molding machine having a plasticization chamber for plasticizing a synthetic resin material, an injection chamber for injecting the synthetic resin material into a mold die cavity, a plunger mounted in said injection chamber for reciprocal movement therein, and a connection passage connecting said plasticization chamber and injection chamber, said method comprising:

measuring the synthetic resin material plasticized in said plasticization chamber as it is fed to said injection chamber through said connection passage, said measuring step terminating at a measurement detection position;

blocking said connection passage;

preliminarily compressing the synthetic resin material in said injection chamber to a predetermined pressure;

detecting a preliminary compression position of said plunger after the step of preliminary compressing;

controlling the filling of the mold die cavity with the synthetic resin material based on said preliminary compression position; and

correcting the measurement detection position for the measuring step of the next injection based on any movement from said measurement detection position to said preliminary compression position.

5,795,510

METHOD OF PRESS-MOLDING THERMOPLASTIC RESINS

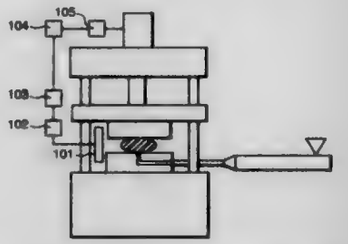
Masahito Matsumoto, Osaka; Masaaki Tsutsubuchi, Chiba; Takeo Kitayama, Osaka; Yukito Nakamura, Chiba, and Yoshiaki Togawa, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 9, 1996, Ser. No. 728,315

Claims priority, application Japan, Oct. 11, 1995, 7-262675

Int. Cl.[6] B29C *45/56*

U.S. Cl. 264—40.5 **3 Claims**



1. A press-molding method for a thermoplastic resin wherein the thermoplastic resin in a molten state is compressed to flow between a pair of female and male molds so as to be formed into a predetermined shape, which comprises the steps of:

(a) providing a molding apparatus comprising a female mold and a male mold;

(b) supplying a molten thermoplastic resin between the female mold and the male mold;

(c) detecting a starting point of compression of the molten thermoplastic resin;

(d) measuring acceleration and deceleration of the moving mold;

(e) compressing and forming the molten thermoplastic resin between the female mold and the male mold, wherein the step of compressing is conducted under a condition where compression rate is controlled so that the following expression (1) is satisfied;

$$0.5 \leq B/A \leq 2 \quad (1)$$

wherein A (mm/s^2) is an acceleration which is realized at a time when the compression rate is 75% of a maximum rate in a compression-acceleration region which is a period of time from a moment when the compression of the molten thermoplastic resin is started to a moment when the compression rate reaches the maximum rate; and B (mm/s^2) is a deceleration which is realized at a time when the compression rate is 75% of the maximum rate in a compression-deceleration region which is a period of time from a moment when the compression rate reaches the maximum rate to a moment when the closing of the molds is completed;

(f) cooling the compressed and formed resin to solidify the resin; and

(g) extracting a molded article from the molds;

whereby a molded article having an even surface appearance is obtained.

5,795,511

METHOD AND APPARATUS FOR CONTROLLING INJECTION-MOLDING SYSTEMS

Peter G. Kalantzis, Woodridge, Ill., and J. Howard Smith, Greenfield, Wis., assignors to Fast Heat, Inc., Elmhurst, Ill.

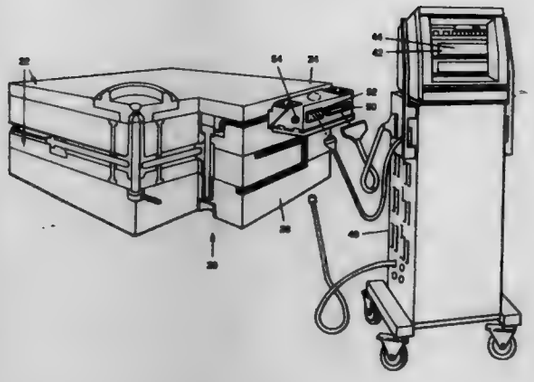
Filed Jun. 6, 1995, Ser. No. 468,711

Int. Cl.[6] B29C *45/72;45/78*

U.S. Cl. 264—40.6 **18 Claims**

1. A method of controlling the temperature of the material at least one location in a hot-half of a mold, comprising the steps of:

coupling a system controller to the hot-half of the mold to provide a communication path therebetween and to provide power from the system controller to at least one heating element in the hot-half;



communicating to the system controller temperature data along the communication path from a memory housed at and mounted to the hot-half;

providing a controlled amount of power from the system controller to the heating element in accordance with the temperature data communicated to the system controller; and

updating the temperature data via a user input at the system controller and communicating the updated temperature data to the memory via the communication path.

5,795,512

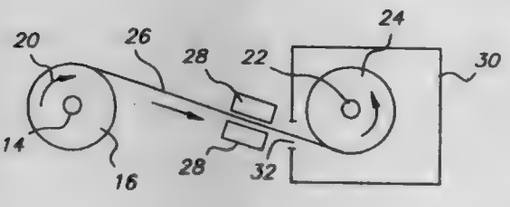
METHOD AND APPARATUS FOR REDUCING CURL IN WOUND ROLLS OF PHOTOGRAPHIC FILM

Jehuda Greener, and Kam C. Ng, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 29, 1996, Ser. No. 697,746

Int. Cl.[6] B29C *53/18*

U.S. Cl. 264—40.6 **17 Claims**



1. A method for reducing curl in a stored photographic film wound on a first core having a first diameter, the stored photographic film having been stored at a first temperature, the stored photographic film having a glass transition temperature, said method comprising the steps of:

(a) unwinding the stored photographic film from the first core;

(b) winding the stored photographic film about a second core having a second diameter in a first direction;

(c) unwinding the stored photographic film from the second core to yield a traveling web portion;

(d) preheating the traveling web portion to a predetermined temperature above the first temperature and below the glass transition temperature;

(e) then winding the traveling web portion onto a third core in a direction opposite to the first direction, the third core having a third diameter which is not greater than the first diameter; and

(f) maintaining the web wound on the third core at about the predetermined temperature for not more than two hours after completion of the second winding step.

5,795,513

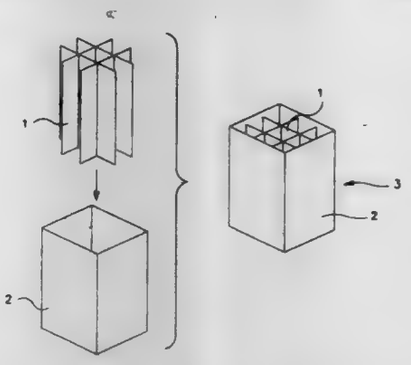
METHOD FOR CREATING PATTERNS IN CAST MATERIALS

Mark Austin, 31 Pierce St., New Rochelle, N.Y. 10801, assignor to Mark Austin, New Rochelle, N.Y.

Filed Dec. 28, 1995, Ser. No. 579,697

Int. Cl.[6] B28B *1/08; 1/32*

U.S. Cl. 264—71 **30 Claims**



1. A method for creating multicolor designs and patterns in cast articles comprising the steps of:

a) preparing a mold to receive casting mixtures;

b) preparing at least two wet casting mixtures of different colors at a viscosity to facilitate even pouring thereof;

c) providing a formula setting forth a horizontal and vertical geometric arrangement for loading said casting mixtures into a container and providing a container therefor and loading said casting mixtures into said container according to said formula;

d) transferring said loaded mixtures from said container to said mold, and;

e) consolidating said mixtures in said mold into a physically uniform mass and allowing said mass to set;

whereby a cast article is formed having a color pattern therein which pattern is determined by said formula by which said casting mixtures are loaded into said container.

5,795,514

PROCESS FOR PRODUCING MACHINE COMPONENTS FROM CAST MINERAL

Wolfgang Düchting, Witten, and Horst Gunter Noack, Reeken, both of Germany, assignors to Düchting Pumpen Maschinenfabrik GmbH & Co. KG, Witten, Germany

PCT No. PCT/EP94/04243, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO95/17297, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 20, 1994, Ser. No. 676,126

Claims priority, application Germany, Dec. 20, 1993, 43 43 547.5

Int. Cl.[6] B29C *39/42*

U.S. Cl. 264—71 **9 Claims**

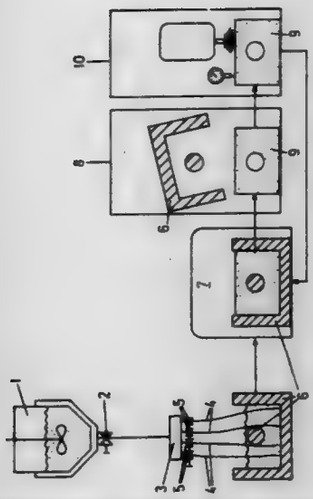
1. Process for producing machine components from highly corrosion- and wear-resistant cast mineral, in which the vehicle is first mixed with the filler in a positive mixer and the finished mixture is poured into a casting mold and then cured, comprising

a hot-curing synthetic resin-hardener system is used as the vehicle;

mixing of the vehicle and the filler is carried out in a heatable, evacuated positive mixer (1) at a temperature of over 20° C. and at a pressure of under 80 mbar;

casting is carried out in a preheated casting mold (6) as a rising casting;

the cast mineral present in the casting mold (6) is first slightly cured at a temperature of over 60° C., and the slightly cured casting (9) is removed from the mold;



the slightly cured casting (**9**) is cleaned, measured and reworked, if necessary; and

the casting (**9**) is finally completely cured in an annealing furnace (**7**) at over 120° C.

5,795,515

METHOD OF PRODUCING FORMED ARTICLES OF A FIBER REINFORCED, HYDRAULICALLY SETTING MATERIAL

Hans Fischer, Uznach, Switzerland, assignor to Nueva AG, Weesen, Switzerland

Filed Jul. 8, 1996, Ser. No. 676,482

Claims priority, application Switzerland, Aug. 16, 1995, 2348/95

Int. Cl.[6] **C04B** *40/02*

U.S. Cl. 264—82 **13 Claims**

1. A method of producing formed articles of a fiber reinforced hydraulically setting material in a Hatschek process whereby hydraulic binding agents and organic reinforcing fibers as constituents are mixed with water in an amount of 250–500% based on the dry weight of the constituents, comprising the steps of admixing aluminum sulfate and silica for mineralizing the organic reinforcing fibers,

thereafter processing said constituents with admixed aluminum sulfate and silica in the Hatschek process to obtain multilayered parts with damp laminates,

presetting the damp laminates in molds in an environment of a high relative humidity and temperature,

removing the laminates from the mold and letting them set for a plurality of days, and

thereafter subjecting the laminates to temperatures between 45° and 125° C. in a humid environment to a treatment by CO_2 thereby precarbonizing the laminates.

5,795,516

METHOD FOR FABRICATING OLEFIN TARPAULINS

Suh H. Cho, Sungnam; Il Y. Kim; Chung S. Kang, both of Seoul; Chang B. Jung, Anyang; Hae J. Lee, Seoul; Il Y. Jung, and Chang G. Kim, both of Kyunggi-do, all of Rep. of Korea, assignors to Kolon Industries, Inc., Seoul, Rep. of Korea

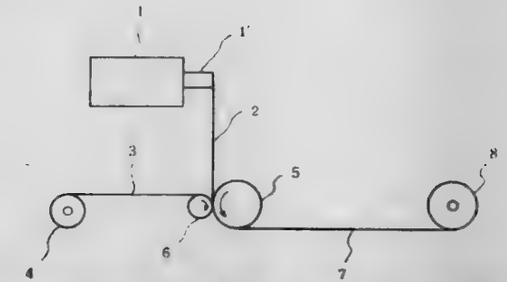
Filed Apr. 24, 1997, Ser. No. 842,424

Claims priority, application Rep. of Korea, Jul. 26, 1996, 30521/96; Oct. 30, 1996, 49869/96; Dec. 23, 1996, 70174/96

Int. Cl.[6] **B29C** *47/06;* **B32B** *5/12*

U.S. Cl. 264—103 **11 Claims**

1. A method for fabricating olefin tarpaulin, comprising the steps of:



forming polyester fabrics having a density of warp and weft of 5~20 threads per inch from high strength polyester filaments;

preparing a coating composition by blending LLDPE (linear low density polyethylene) or LDPE (low density polyethylene) of 15~94.5% by weight, elastomer of ethylene-α-olefin co-polymer of 5~60% by weight which is (i) ethylene propylene rubbers or (ii) co-polymers of ethylene and octene or butene; coloring master batch chip of 0.5~15% by weight formed by mixing LLDPE or LDPE with pigments or titanium dioxide (TiO_2), and adhesion-preventing master batch chip of 0~10% by weight formed by mixing LLDPE or LDPE with silica or calcium carbonate ($CaCO_3$);

treating the polyester fabrics with the coating composition; and

compressing the polyester fabrics so obtained between a calendering roller and a silicone rubber roller to thereby obtain an olefin tarpaulin.

5,795,517

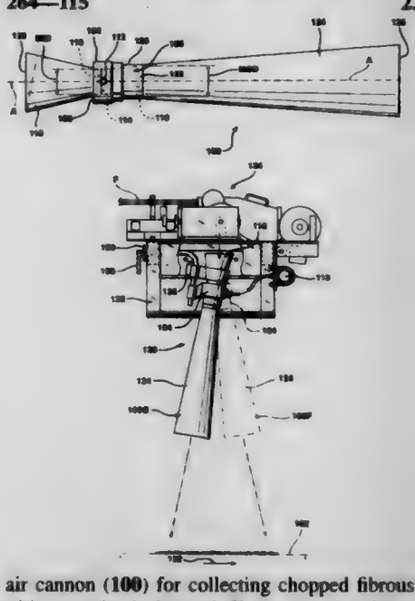
COLLECTION AND DEPOSITION OF CHOPPED FIBROUS STRANDS FOR FORMATION INTO NON-WOVEN WEBS OF BONDED CHOPPED FIBERS

Daniel F. Heisler, Brampton; Christopher J. Clements, and Kenneth M. Berry, both of Guelph, all of Canada, assignors to Owens-Corning Canada, North York, Canada

Filed May 3, 1996, Ser. No. 646,698

Int. Cl.[6] **C03B** *37/16;* **D01G** *1/04*

U.S. Cl. 264—115 **23 Claims**



1. An air cannon (**100**) for collecting chopped fibrous material and depositing received chopped fibers on a moving collection surface (**102**), said air cannon (**100**) comprising:

an air amplifier (**104**) defining a passage (**106**) therethrough and having an inlet (**108**) and an outlet (**110**), said air amplifier (**104**) being driven by compressed air which enters said passage of said air amplifier (**104**) through an air orifice (**114**);

an inlet cone (**116**) having an outlet end (**118**) positioned adjacent said inlet (**108**) of said air amplifier (**104**) and an inlet

end (120) for receiving chopped fibers and directing them to the air amplifier (104); and

an outlet cone (124) and having an inlet end (122) positioned adjacent said outlet (110) of said air amplifier (104) and an outlet end (126) for directing chopped fibers onto said moving collection surface (102).

19. A process for forming a chopped strand mat (182) comprising the steps of:

chopping strands of fibrous material (F);

passing chopped strands through at least one air cannon (100) to disperse said chopped strands and force said chopped strands against a moving collection surface (102);

applying a binder (174) to said chopped strands;

applying energy (178, 180) to activate said binder;

compacting (184) the combination of activated binder and chopped strands; and

cooling (184, 186) the combination of activated binder and chopped fibers to form a continuous chopped strand mat.

5,795,518

PROCESS FOR PRODUCING SEALING RINGS FROM EXPANDABLE GRAPHITE

Helmut Parr, Neudorf, Austria, assignor to Klinger AG, Zug, Switzerland

Filed Dec. 19, 1996, Ser. No. 769,864

Claims priority, application Germany, Dec. 20, 1995, 195 47 711.1

Int. Cl.[6] B32B *3/26*

U.S. Cl. 264—134 **16 Claims**

1. A process for the production of an expanded graphite sealing ring comprising the steps of:

Producing a porous sealing ring of pre-determined initial density;

impregnating the porous sealing ring with a dispersion of polytetrafluoroethylene particles, the impregnation occurring in the presence of an electric field;

drying the impregnated ring; and

compressing the dried impregnated ring to a desired final density whereby particles of the low coefficient of friction material are captured in pores in the ring and thereby in part define a sealing surface of the ring.

5,795,519

PROCESS OF MAKING A MICROSTRUCTURED PLASTIC MOLD

Walter Bacher, Stutensee; Peter Bley, Eggenstein-L., and Michael Harmening, Hirschberg, all of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Filed Dec. 19, 1994, Ser. No. 358,397

Claims priority, application Germany, Jun. 16, 1992, 42 19 667.1

Int. Cl.[6] B29C *59/02*

U.S. Cl. 264—139 **1 Claim**

1. A process of making a microstructured plastic mold from which structures can be galvanically formed, comprising the steps of;

a) providing a compound layer comprising an electrically conductive layer and an electrically insulating layer,

b) heating said compound layer,

c) impressing into the electrically insulating layer of the heated compound layer a tool with a plurality of raised microstructured bodies disposed on a base plate wherein said microstructured bodies have front face areas which extend parallel to said base plate,

d) the height of said microstructured bodies corresponding at least to the thickness of said insulating layer,

e) and the front face areas of said microstructured bodies having a roughness with a roughness depth R, of between 0.1 μm and 10 μm and with a medium roughness value R_a of 0.01 μm to 1 μm and the insulating layer having a thickness of 0.1 μm to 20 μm wherein, by the given roughness, the front faces have points and ridges which penetrate the electrically insulating layer upon impression of said tool into said electrically insulating layer, thereby providing fully exposed areas of the electrically conductive layer at the bottom of the cavities formed by the raised microstructured bodies, and

f) removing said tool from said compound layer to provide said microstructured plastic mold with areas at the bottom of the cavities formed therein where said electrically conductive layer is fully exposed.

5,795,520

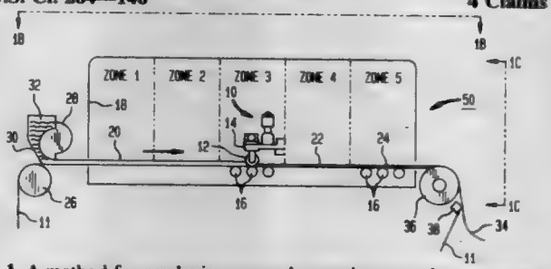
METHOD FOR IN-SITU GREEN SHEET SLITTING

Lorenzo Scalia, Hopewell Junction, and Barry Donald Sewing, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 298,480, Aug. 29, 1994, abandoned. This application Apr. 17, 1996, Ser. No. 633,611

Int. Cl.[6] B28B *11/16;7/14*

U.S. Cl. 264—146 **4 Claims**



1. A method for producing a cured ceramic green sheet comprising,

(a) forming a ceramic slurry in a hopper,

(b) dispensing said ceramic slurry onto a flat surface,

(c) processing said ceramic slurry on said flat surface through at least one first heating zone to form an uncured ceramic green sheet,

(d) placing said uncured ceramic green sheet under a slitting mechanism and forming at least one slit in said uncured ceramic green sheet,

(e) processing said uncured ceramic green sheet through at least one second heating zone to fully cure said uncured green sheet to form a cured green sheet, wherein said at least one slit widens and causes a separation in said cured green sheet.

5,795,521

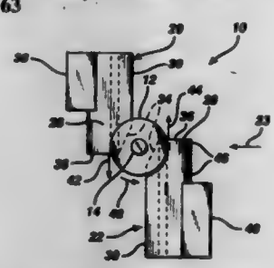
MOLDLESS BEVELING OF CATHETERS

Julien C. Mathieu, Avon, Conn., assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.

Filed Sep. 6, 1996, Ser. No. 709,172

Int. Cl.[6] B29C *57/00*

U.S. Cl. 264—163 **15 Claims**



1. A method of beveling a catheter having a distal end to be inserted into a patient comprising:

a. positioning an unbeveled catheter mounted on a central cylindrical support between first and second bevel profile blades,

mounted for translation in opposite directions, wherein each bevel profile blade has a blade surface having a beveled shape which is to be imparted to a surface of the unbeveled catheter, including a relatively steep bevel angle blade surface at a distal end of the unbeveled catheter, and an adjacent relatively shallow bevel angle blade surface, wherein the blade surfaces of the first and second bevel profile blades are positioned on opposite sides of the unbeveled catheter in a first linear direction, and the first and second bevel blades are translated in opposite directions;

b. heating the first and second bevel profile blades; and

c. then translating the first and second bevel profile blades in opposite directions parallel to an axis which is substantially perpendicular to the first linear direction towards the unbeveled catheter said translating causing the first and second bevel profile blades to pass tangentially along said catheter, wherein the first and second bevel profile blades squeeze and frictionally rotate the unbeveled catheter therebetween to pinch off and shape the beveled catheter with the beveled surfaces defined by the bevel profile blades, thereby forming a beveled catheter; and

d. retracting the first and second bevel profile blades from the beveled catheter, and removing the beveled catheter from the central cylindrical support.

5,795,522

CELLULOSE FIBRE

Heinrich Firgo, Vöcklabruck; Sigrid Seidl, Seewalchen; Peter Bartsch, Schörfling; Berndt Köll, Lenzing, and Eduard Mülleder, Linz, all of Austria, assignors to Lenzing Atkiengesellschaft, Lenzing, Austria

PCT No. PCT/AT96/00137, § 371 Date Mar. 26, 1997, § 102(e) Date Mar. 26, 1997, PCT Pub. No. WO97/07266, PCT Pub. Date Feb. 27, 1997

PCT Filed Jul. 30, 1996, Ser. No. 817,012

Claims priority, application Austria, Aug. 11, 1995, 1367/95

Int. Cl.[6] D01F *2/02*

U.S. Cl. 264—187 **28 Claims**

1. A process for the production of a cellulose molded body according to an amine-oxide process comprising the steps of

(a) providing a suspension of cellulose in an aqueous tertiary amine-oxide, the suspension including a substance which reacts with the cellulose and incorporates functional groups therein which are more nucleophilic than hydroxyl groups in the cellulose;

(b) transforming the suspension of cellulose into a spinnable solution;

(c) extruding said solution through a spinneret thereby forming a molded body; and

(d) conveying the molded body to a precipitation bath.

5,795,523

METHOD FOR TREATMENT OF CS_2 AND H_2S EMISSIONS DURING VISCOSE REGENERATION

Alexander Rozenberg, Mogilev, Ethiopia, assignor to Alfacel s.a., Madrid, Spain

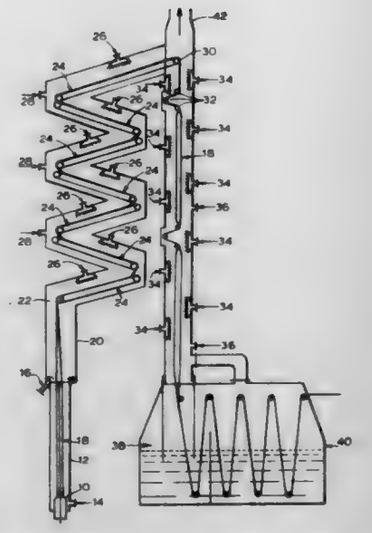
Filed Oct. 30, 1996, Ser. No. 739,825

Int. Cl.[6] B29C *47/88*

U.S. Cl. 264—196 **6 Claims**

1. In a method for producing tubular sausage casings of regenerated cellulose wherein viscose is extruded through an annular extrusion die submerged in an aquarium to form a tubular product and coagulation and regeneration of the tubular product is initiated in said aquarium, continued by spray application of an intermediate regenerating solution in an intermediate regeneration zone after the tubular product has exited the aquarium, and completed in one or more coagulation/regeneration baths, the improvement comprising:

heating the tubular product to a temperature above the boiling point of carbon bisulphide in the intermediate regeneration zone to maximize concentration of the carbon bisulphide in a gas/air mixture exhausted from the intermediate regeneration zone for more efficient recycling or disposal.



5,795,524

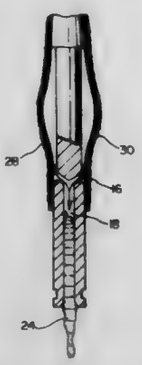
PROCESS FOR PRODUCING COMPOSITE TUBULAR PARTS

Robert J. Basso, Jr., 4810 La Cruz Dr., La Mesa, Calif. 91941, and Wayne E. Hogarth, 7091 Stonewood Dr., Huntington Beach, Calif. 92647

Filed Mar. 28, 1997, Ser. No. 825,361

Int. Cl.[6] B29C *70/28*

U.S. Cl. 264—221 **24 Claims**



1. A method of producing a tubular member having an internal diameter of at least a first magnitude and a region of said member having an internal diameter of a second magnitude comprising,

providing an elongated mandrel, having an end and an external surface,

surrounding at least a portion of said external surface with a mold having an interior surface diameter greater than the diameter of at least a portion of said external surface of said mandrel,

pouring a liquid moldable material capable of setting to a rigid condition into said mold to surround said portion of said external surface of said mandrel,

setting said moldable material to form a molded material in the shape of a rigid solid bulge on said at least a portion of said external surface of said mandrel,

removing said mold from said mandrel,

wrapping said mandrel including said bulge to form at least one lamina of a composite material consisting of a thermosetting resin and reinforcing fibers,

covering said composite material with a shrink wrap.

curing said thermosetting resin in said composite material by applying heat to said mandrel and said composite material to form said tubular member,

removing said molded material from said mandrel,

removing said mandrel from said tubular member, and

removing said shrink wrap after said curing step whereby said tubular member is produced.

5,795,525

METHOD FOR ASSEMBLING A CONTROL PANEL OF AN ELECTRONIC APPARATUS

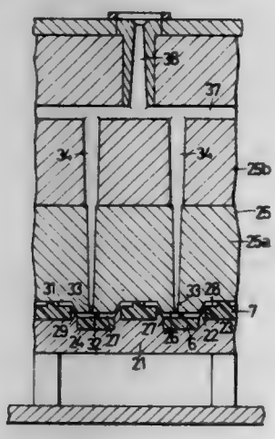
Masanori Naritomi, Chiba, Japan, assignor to Taisei Plas Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 623,826

Claims priority, application Japan, Jun. 9, 1995, 7-167990

Int. Cl.[6] B29C *45/22;45/32;45/14*

U.S. Cl. 264—251 **14 Claims**



1. A method for assembling a control panel, the panel including a control panel body and a set of buttons of an electronic apparatus, the method comprising:

mounting said set of buttons on said control panel body, each button of said set of buttons including a movable portion independently moving in the direction perpendicular to an exterior surface of said control panel body, and a surface forming thin portion connected to said control panel body, resiliently supporting said movable portion on said control panel body at a peripheral portion of said movable portion,

said mounting step including the sub-steps of

forming a plurality of cavities, defined by an upper mold, a lower mold, the control panel body located on the lower mold and the plurality of movable portions located on the lower mold, each of the plurality of cavities corresponding to a surface-forming thin portion of a button of said set of buttons;

injecting a resilient material independently into each of said plurality of cavities through a plurality of gates in said upper mold, each of said cavities having at least one gate opening of a gate in the portion of the upper mold defining the cavity at a location corresponding to one of said plurality of movable portions;

isotropically flowing said resilient material throughout each of said plurality of cavities, from each of said movable portions to the control panel body, thereby creating said surface-forming thin portion; and

fusion-bonding said surface forming thin portion to said control panel by melting a part of said control panel in contact with said surface-forming thin portion;

wherein said flowing step includes flowing bubbles formed in said resilient material from said movable portions, through said surface-forming thin portion, to the control panel body.

5,795,526

PROCESS FOR PRODUCING MULTILAYER MOLDED ARTICLE

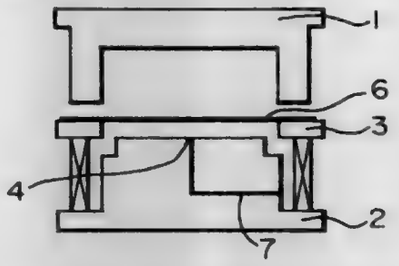
Masahito Matsumoto, Ibaraki; Nobuhiro Usui, and Seiji Terashima, both of Takatsuki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 318,803, Oct. 17, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 724,584

Claims priority, application Japan, Feb. 19, 1993, 5-030498

Int. Cl.[6] B29C *45/64;45/73*

U.S. Cl. 264—266 **7 Claims**



1. A process for producing a multilayered molded article in which a skin material is laminated to the surface of a thermoplastic resin, said process comprising the steps of:

feeding the skin material to the cavity defined by female and male molds which are not closed, and subsequently feeding a molten thermoplastic resin to the cavity of the molds through a resin passageway provided in at least one of the molds;

clamping both molds to shape the molten resin in the cavity at a first clamping pressure, and then cooling the resin under pressure; and

reducing the first clamping pressure to a second clamping pressure after the molten resin has been shaped and during said step of cooling the resin,

wherein said step of cooling the resin under pressure is conducted so that a temperature for said step of feeding the molten thermoplastic resin to the cavity of the molds is in a range of from 175° to 195° C.,

wherein the clamping pressure at completion of the shaping is in a range of from 30 to 95 kg/cm^2, and

wherein a product of the clamping pressure and the pressure time after completion of the shaping is in a range of from 100 to 1,500 kg/cm^2.sec.

5,795,527

METHOD OF MANUFACTURING DECORATED ARTICLE USING A TRANSFER MATERIAL

Yuzuo Nakamura; Masayuki Kyomen, both of Kyoto; Soichiro Asada, Ogaki; Toshiyuki Matsunami, Ogaki; Hiroyuki Suzuki, Ogaki, and Satoru Kawai, Ogaki, all of Japan, assignors to Nissha Printing Co., Ltd., Kyoto, and Pacific Industrial Co., Ltd., Ogaki, both of Japan

Filed Apr. 29, 1994, Ser. No. 235,858

Int. Cl.[6] B29C *31/06*

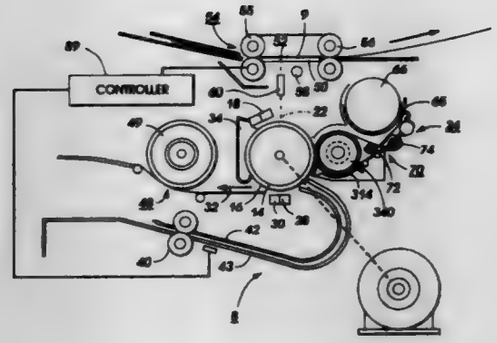
U.S. Cl. 264—267 **10 Claims**

1. A method of manufacturing a decorated resin wheel cover, comprising the steps of:

providing a decorative transfer material having a base film, a decorative metal vapor deposition layer with a front face facing the base film and a rear face, a metallic reinforcing layer covering all of the rear face of the metal vapor deposition layer to reinforce the metal vapor deposition layer, a retainer layer for holding the metal vapor deposition layer on the base film, and an adhesive layer for bonding the metallic reinforcing layer to an object;

inserting the decorative transfer material into open in-mold dies;

closing the in-mold dies;



molding the resin and, simultaneously, bonding the resin to the metallic reinforcing layer via the adhesive layer;

opening the in-mold dies;

removing the base film of the decorative transfer material to leave the decorative metal vapor deposition layer and the metallic reinforcing layer adhered to the molded resin by the adhesive layer, to thereby form the decorated resin wheel cover; and

wherein said step of molding the resin and, simultaneously, bonding the resin to the metallic reinforcing layer via the adhesive layer comprises molding the resin into a wheel cover shape having a face comprising a spin-processed part formed with an uneven surface and, simultaneously, bonding the reinforcing layer to the uneven surface of the spin-processed part via the adhesive layer.

5,795,528

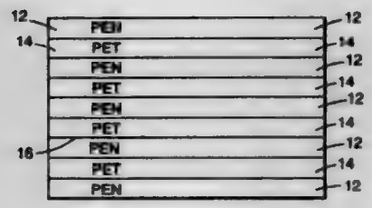
METHOD FOR MAKING A MULTILAYER POLYESTER FILM HAVING A LOW COEFFICIENT OF FRICTION

James A. Klein, Minneapolis; Brandt K. Carter, Woodbury; Sheldon J. Israel, Minneapolis, and Raymond L. Lucking, Hastings, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 8, 1996, Ser. No. 612,708

Int. Cl.[6] B29C *55/12*

U.S. Cl. 264—290.2 **13 Claims**



1. A method for producing a polyester film comprising the steps of:

providing a film comprising (i) a first layer which is devoid of particulate slip agents and which defines a first surface of the film, said first layer comprising a naphthalene dicarboxylic acid polyester, and (ii) a second layer, adjacent to the first layer, which comprises a crystalline terephthalic acid polyester; and

stretching the film in at least one direction such that the Rodenstock value of the first surface is at least 34 nm.

5,795,529

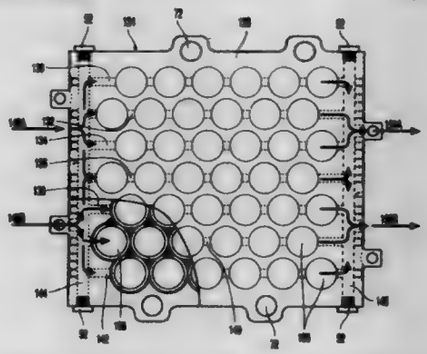
FAST THERMAL RESPONSE MOLD

Walter L. Reid, Jr., Mattapoisett, Mass., assignor to Acushnet Company, Fairhaven, Mass.

Division of Ser. No. 455,442, May 31, 1995, abandoned. This application Mar. 22, 1996, Ser. No. 620,448

Int. Cl.[6] B29C *35/04*

U.S. Cl. 264—293 **14 Claims**



1. A method of operating a mold frame for molding golf balls, said mold frame comprised of a frame plate member having a plurality of cavities therein receiving a plurality of half-molds in a plurality of half-molds rows, a plurality of bores for fluid communication between said half-molds, and a cross bore extending across a first end of each of said half-mold rows, comprising the steps of:

loading ball assemblies into said half-molds;

molding golf balls from said ball assemblies by flowing a hot thermal medium into said cross bore in at least two distinct locations to define at least two flow paths and dividing each flow path into at least two parallel paths through said half-mold rows such that any portion of said hot thermal medium flows through only one of said half-mold rows; and

unloading molded golf balls from said half-molds.

5,795,530

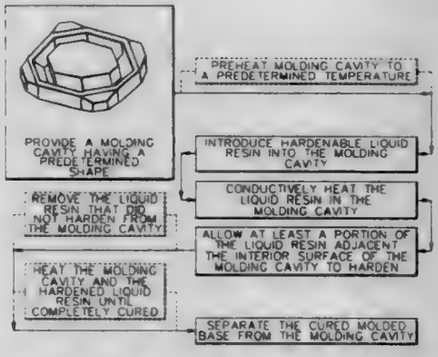
METHOD AND BASE FOR TRAFFIC CHANNELIZER

Albert F. Monda, and Milton Darrell Hinnant, both of Kannapolis, N.C., assignors to Radiator Specialty Company, Charlotte, N.C.

Division of Ser. No. 538,867, Oct. 4, 1995, Pat. No. 5,713,694. This application Dec. 24, 1996, Ser. No. 777,977

Int. Cl.[6] B29C *41/18;33/40*

U.S. Cl. 264—306 **10 Claims**



1. A method of forming a molded base for a traffic channelizer, the method comprising the steps of:

providing a molding cavity comprising an interior surface, at least a portion of said interior surface defining a predetermined shape;

introducing a hardenable liquid polyvinyl chloride (PVC) resin into said molding cavity in an amount sufficient to cover said portion of said interior surface;

adding a specific gravity increasing agent to the resin to increase the specific gravity of the base to at least about 1.25;

conductively heating at least a portion of said liquid resin adjacent said portion of said interior surface by contact with said portion of said interior surface under conditions sufficient to harden said portion of said liquid resin; and

separating said hardened portion of said liquid resin from said molding cavity.

5,795,531

METHOD AND APPARATUS FOR THE CROSS-SECTIONAL MEASUREMENT OF ELECTRIC INSULATED CONDUCTORS

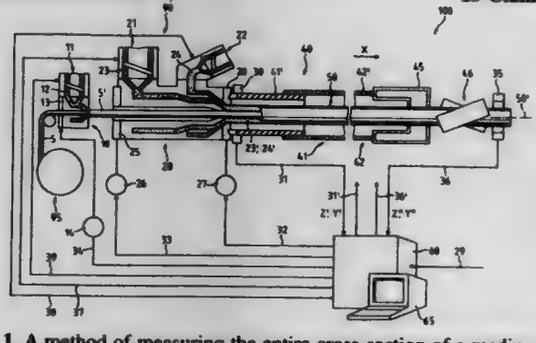
Hannes Salzmann, Greppen; Ulrich Jung, Fehraltorf, and Wilfried Kötter, Attinghausen, all of Switzerland, assignors to Zumbach Electronic AG, Switzerland

Continuation-in-part of Ser. No. 260,166, Jun. 15, 1994, Pat. No. 5,578,681, which is a continuation of Ser. No. 865,398, Apr. 8, 1992, abandoned. This application Sep. 26, 1995, Ser. No. 534,021

Claims priority, application Switzerland, Apr. 9, 1991, 1053/91

Int. Cl.[6] **B29C** *47/06;47/92*

U.S. Cl. 264—408 **13 Claims**



1. A method of measuring the entire cross-section of a medium-voltage and/or high-voltage insulated conductor which includes at least an inner semi-conductor layer, an insulation layer, and an outer semi-conductor layer applied to a conductor emerging from an extrusion device, said extrusion device being equipped with adjustment tools, said insulated conductor being cross-linked within a cross-linking device following emergence from said extrusion device;

the method comprising the steps of:

penetrating the semi-conductor and insulation layers of the insulated conductor emerging from the extrusion device by passing at least two differently directed, individual X-ray beams entirely across said insulated conductor within a plane orthogonal to the insulated conductor axis, such that each X-ray source is simultaneously moved with its respective detector;

determining the X-ray intensity line-scan values of each beam; and

computing the intensity values to determine the actual thicknesses of the individual semi-conductor and insulation layers.

5,795,532

METHOD FOR MAKING A MAGNETIC ROLL

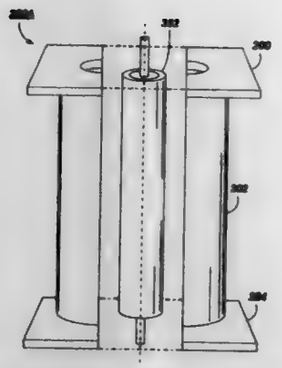
Jennifer R. Wagner; Moritz P. Wagner, both of Walworth; Jorge A. Alvarez, Webster, and David C. Irving, Avon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1997, Ser. No. 835,574

Int. Cl.[6] **H01F** *1/02*

U.S. Cl. 264—429 **6 Claims**

1. A method for manufacturing a magnetic roll, comprising the steps of:



molding a roll core with molten magnetic powder filled resin material to a first diameter in a first mold;

magnetizing said core during said molding step;

allowing the molten magnetic powder filled resin material to cool until it solidifies;

overmolding said roll core with molten magnetic powder filled resin material to a second diameter in a second mold;

magnetizing said core during said overmolding step; and

allowing the molten magnetic powder filled resin material to cool until it solidifies.

5,795,533

METHOD AND DEVICE FOR THE MANUFACTURING OF HOLLOW ARTICLES MADE FROM THERMOPLASTIC MATERIAL BY BLOW MOULDING

Gottfried Mehnert, Messelstrasse 25, D-14195 Berlin, Germany

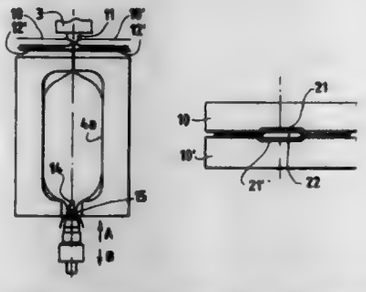
PCT No. PCT/DE95/00232, § 371 Date Dec. 4, 1996, § 102(e) Date Dec. 4, 1996, PCT Pub. No. WO95/23060, PCT Pub. Date Aug. 31, 1995

PCT Filed Feb. 22, 1995, Ser. No. 696,957

Claims priority, application Germany, Feb. 23, 1994, 44 05 743.1

Int. Cl.[6] **B29C** *49/18;49/32;49/50*

U.S. Cl. 264—529 **10 Claims**



1. A method for producing a hollow article from thermoplastics by inflating a thermally plasticated preform, the method comprising the steps of: extruding the preform vertically downwards from an extruder between parts of a split blow mould located at a first station; closing the split blow mould around the preform so that the preform is positioned in a mould cavity, wherein the mould cavity substantially corresponds to the finished shape and size of said hollow article; transferring the blow mould to a second station disposed laterally to the first station; inflating the preform within the mould cavity by introduction of a blowing medium through a blowing needle into the preform; cooling the inflated preform thereby forming said hollow article, and removing the hollow article from the blow mould; wherein an upper portion of the preform located above the blow mould is severed from a following preform being extruded from the extruder and the following preform is pinched together to form a lower portion of the following preform such that the lower portion of the following preform is partially sealed but remains open over a predetermined region.

5,795,534

PRIMARY MOLD OF BOTTLE BODY WITH HANDLE AND METHOD OF MANUFACTURING BOTTLE BODY WITH HANDLE

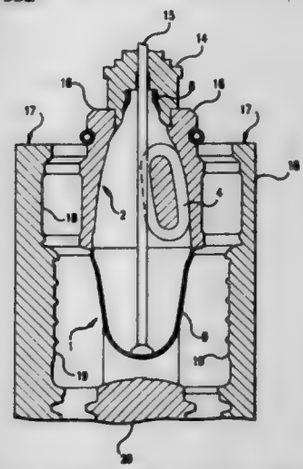
Masao Akutsu, and Akiho Ohta, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/00957, § 371 Date Apr. 4, 1995, § 102(e) Date Apr. 4, 1995, PCT Pub. No. WO95/01859, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 9, 1993, Ser. No. 392,871

Int. Cl.[6] B29C *49/08;49/18;* B29B *11/06;* B29D *22/00*

U.S. Cl. 264—532 5 Claims



3. A method of manufacturing a molded bottle body with a blown integral handle, comprising:

holding a primary molded bottle body in a first mold, said primary molded bottle body comprising an upper body that is a final product with an integral blown handle piece formed at a backside thereof during hollow molding, and a lower intermediate body blank portion integrally formed at a bottom of said upper body, said lower intermediate body blank portion having a thicker wall thickness than said upper body and being shaped like a cylinder with a bottom wall; and

forming a final lower body by biaxial stretch blow molding said lower intermediate body blank portion while holding said upper body to prevent deformation thereof, said final lower body being shaped like a cylinder with a bottom wall and having a bottom portion with an annular leg portion at a bottom thereof.

5,795,535

METHOD OF THERMOFORMING PLASTIC ARTICLES

Anthony Giovannone, Osterville, and David Mitchell, West Barnstable, both of Mass., assignors to Sencorp Systems, Inc., Hyannis, Mass.

Filed Mar. 15, 1996, Ser. No. 619,810

Int. Cl.[6] B29C *51/10*

U.S. Cl. 264—551 19 Claims

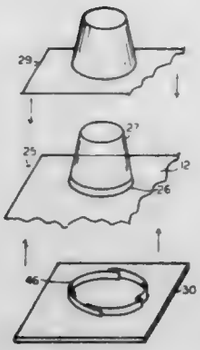
1. A method for the production of a plastic article from a thermoplastic sheet material in a thermoforming operation, which method comprises:

a) providing a thermoplastic sheet material;

b) heating the thermoplastic sheet material to a selected temperature to form a preheated thermoplastic sheet material;

c) thermoforming the preheated thermoplastic sheet material in a thermoform press, forming a plurality of thermoformed articles having an outer periphery in the sheet material, the articles formed in a spaced-apart arrangement from each other in the sheet material, and to define a surround area of the sheet material about each article;

d) trimming in a diecutting trim press the thermoformed articles from the sheet material, and



e) recovering accurately cut plastic articles from the trim press at a recovery station, the improvement which comprises:

precutting in a striking operation about the outer periphery of each of the thermoformed articles employing a die platen with a plurality of spaced apart overlapping cutting blades and a striking platen to form, in the surround area of each of the articles, a plurality of overlapping diecut lines and elongated, spaced apart joining strips of selected length and defined width between ends of the overlapping diecut lines, the diecut lines extending about the outer periphery of each of said articles, the joining strips to provide for retaining the thermoformed articles in the sheet material and to permit a slight movement and accurate alignment of the thermoformed articles in the trimming step.

5,795,536

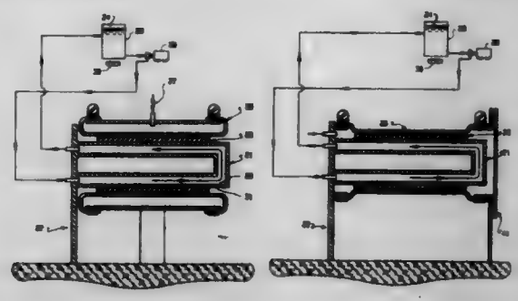
METHOD AND APPARATUS FOR CURING CYLINDRICAL POLYMERIC OBJECTS

Andrew J. Gaworowski; Darren E. Hercyk, both of Spartanburg; Roger D. Meadows, Moore, and Herman D. Sheron, Jr., Seneca, all of S.C., assignors to Reeves Brothers, Inc., Spartanburg, S.C.

Filed Feb. 9, 1996, Ser. No. 598,875

Int. Cl.[6] B29C *35/04*

U.S. Cl. 264—571 19 Claims



1. A method of curing an uncured cylindrical object at a controlled curing temperature, the method comprising:

placing an uncured cylindrical object, having an inner surface and an outer surface, between an outer support, having a movable support surface, and an inner stationary support, having a stationary support surface so that the object is in coaxial orientation about the stationary support;

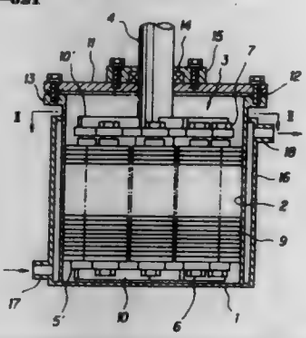
expanding the outer support to move the movable support surface against the object and thereby press the object against the inner stationary support; and

heating at least the stationary support with a heated liquid heat transfer medium by circulating the heated liquid through the inner stationary support to directly transfer heat to substantially all of the object to cure the object, said heated liquid being circulated at a controlled temperature and at a controlled flow rate to control the curing temperature and rate of heating.

5,795,537
METHOD OF PRODUCING COMPOSITE OXIDE CERAMICS

Mamoru Senna, Chofu; Sang-Hee Cho, Taegu, and Kenji Hamada, Tokyo, all of Japan, assignors to Nara Machinery Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1996, Ser. No. 693,608
Claims priority, application Japan, Aug. 9, 1995, 7-203322
Int. Cl.[6] C04B *35/622*
U.S. Cl. 264—621 **7 Claims**



1. A method of producing composite oxide ceramics comprising the steps of:

mixing a metallic hydroxide or metallic hydrous gel with a plurality of metallic oxide powders to prepare a raw material mixture powder;

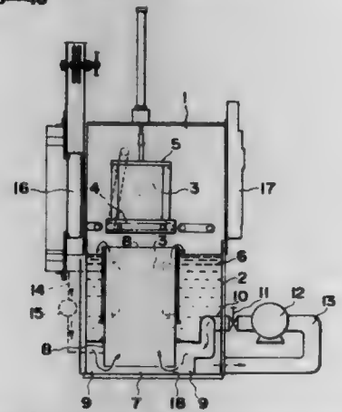
activating the resulting raw material mixture powder by mechanochemical treatment by grinding the raw material mixture powder under conditions of repeatedly providing a mechanical impact force which provides a centrifugal acceleration of at least 15 times gravitational acceleration (g), to form a precursor; and

synthesizing composite oxide ceramics by heat treatment of said precursor obtained by activation.

5,795,538
APPARATUS FOR STEEL HARDENING AND PROCESS THEREFOR

Fumitaka Abukawa; Hitoshi Goi; Masahiko Watanabe; Shin Kurasawa, and Hirofumi Kamisugi, all of Yokohama, Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 185,694, Jan. 24, 1994, abandoned. This application Aug. 28, 1996, Ser. No. 704,812
Claims priority, application Japan, Jan. 27, 1993, 3-14561; Feb. 17, 1993, 5-14461
Int. Cl.[6] C21D *1/10*
U.S. Cl. 266—46 **13 Claims**



1. Apparatus for quenching steel workpieces comprising:

a reservoir tank having an upper open top for containing quenching oil;

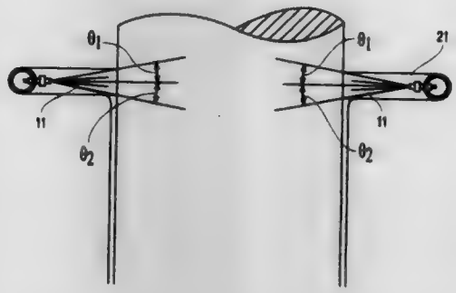
a quenching chamber having an open top disposed within said reservoir tank and an elevator, upon which said steel workpieces are loaded and movable vertically into and out of said quenching chamber, the level of said quenching oil in said reservoir tank being lower than the top of said quenching chamber to permit overflow of quenching oil from said quenching chamber to said reservoir tank, said quenching chamber being otherwise sealed from communication with said reservoir tank by a closed lower end, the size of the quenching chamber relative to the periphery of the elevator being as small as possible so as to immediately surround said steel workpieces while permitting free movement of the elevator in its vertical path;

means for supplying quenching oil into the quenching chamber adjacent the bottom thereof, comprising a conduit, a pump, and a valve arranged to create within said quenching chamber an upwardly moving laminar flow without agitation for movement of quenching oil through said steel workpieces to cool the same and means for operating said pump and valve to deliver said quenching oil through said conduit so that said quenching oil is calmed through a pooling effect and displaces said quenching oil at the bottom of the quenching chamber through volume displacement so that the quenching oil flows smoothly upwardly, layer by layer, as it is displaced; and the excess oil overflowing from the top of said quenching chamber into said reservoir tank.

5,795,539
METHOD FOR COOLING GRAPHITE ELECTRODES USED FOR METAL MELTING AND REFINING IN AN ELECTRIC ARC FURNANCE AND A LADLE

Fumiyoshi Sakurai, Toyama-ken, and Norio Nagai, Tokyo-to, both of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 721,221
Claims priority, application Japan, Sep. 26, 1995, 7-271907; Sep. 26, 1995, 7-271908; Sep. 26, 1995, 7-271909; Sep. 26, 1995, 7-271910; Sep. 26, 1995, 7-271911
Int. Cl.[6] C21B *7/10*
U.S. Cl. 266—46 **4 Claims**



1. A method for cooling a vertical train comprised of graphite electrodes with diameter of 18 to 30 inches connected to each other and which penetrates through a cover for enclosing an open portion of an electric arc furnace or a ladle for melting and refining metal, said method comprising spraying a cooling liquid at an optimum flow rate on an outer surface of said vertical train by directing said cooling liquid in an upwardly or a downwardly inclined direction with angle of 0 to 60 degrees, wherein said optimum flow rate (liters/minutes) is 8 to 13, 10 to 18, 12 to 20, 14 to 24, 17 to 28, 20 to 33 and 23 to 40 for the diameter of said graphite electrode of 18 inches, 20 inches, 22 inches, 24 inches, 26 inches, 28 inches and 30 inches, respectively.

5,795,540

CORROSION AND WEAR-RESISTANT CHILL CASTING

Anja Dwars, Nurnberg; Wolfgang Prechtl, Sulzbach-Rosenberg; Jorg Schropfer, Erlangen, and Hermann Tschner, Pegnitz, all of Germany, assignors to KSB Aktiengesellschaft, Frankenthal, Germany

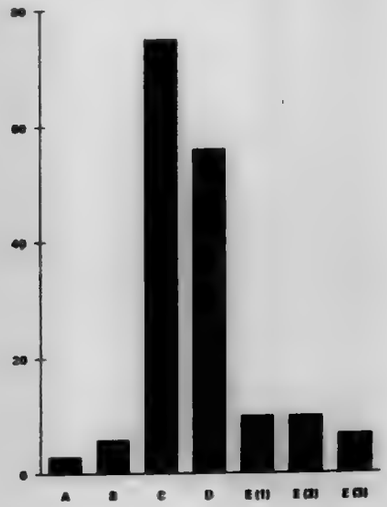
PCT No. PCT/EP95/00759, § 371 Date Sep. 17, 1996, § 102(e) Date Sep. 17, 1996, PCT Pub. No. WO95/25826, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 2, 1995, Ser. No. 716,391

Claims priority, application Germany, Mar. 18, 1994, 44 09 278.4

Int. Cl.[6] C22C *37/06;38/20;38/42;30/00*

U.S. Cl. 420—12 **8 Claims**



1. A corrosion and wear-resistant chill cast part wherein said part is formed from an iron composition comprising from 26 to 36 percent Cr; 0 to 10 percent Ni; 2 to 6 percent Mo; Cu being present in an amount less than or equal to 3 percent; N being present in an amount less than or equal to 0.2 percent; 0 to 1.5 percent Si; 0 to 1.5 percent Mn; 4 to 9 percent V; and 1.4 to 1.9 percent C; all percents by weight of the total composition; wherein the remainder of the composition is Fe and impurities.

5,795,541

ALUMINUM ALLOY SHEET FOR LITHOGRAPHIC PRINTING PLATES AND METHOD FOR MANUFACTURING THE SAME

Masaki Tanigawa, Moka; Shinichiro Hosono, Moko; Kozo Hoshino, Moko, and Yoshihiko Asakawa, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 26, 1996, Ser. No. 772,572

Claims priority, application Japan, Jan. 5, 1996, 8-000346; Apr. 8, 1996, 8-085572; Apr. 8, 1996, 8-085576; Apr. 11, 1996, 8-089697; Apr. 16, 1996, 8-094146; Apr. 17, 1996, 8-095702; Apr. 17, 1996, 8-095723; Jul. 17, 1996, 8-187102; Jul. 18, 1996, 8-189619

Int. Cl.[6] C22C *21/00*

U.S. Cl. 420—520 **27 Claims**

2. An aluminum alloy sheet for printing plate consisting essentially of:

Fe: 0.2 to 0.6 Wt %;

Si: 0.03 to 0.15 Wt %;

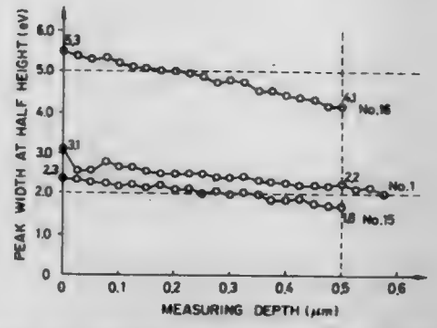
Ti: 0.005 to 0.05 Wt %;

Ni: 0.005 to 0.20 Wt %; and

balance: Al,

wherein a ratio of Ni content and Si content satisfies $0.1 \leqq Ni/Si \leqq 3.7$,

wherein said aluminum alloy sheet has good or excellent surface grain uniformity, and



wherein said aluminum alloy sheet has a peak width at half height between 530 to 536 eV in a range of 2 to 5 eV in a binding energy distribution from a surface to 0.5 μm of depth measured by X-ray photoelectron spectroscopy method.

5,795,542

Patent Not Issued For This Number

5,795,543

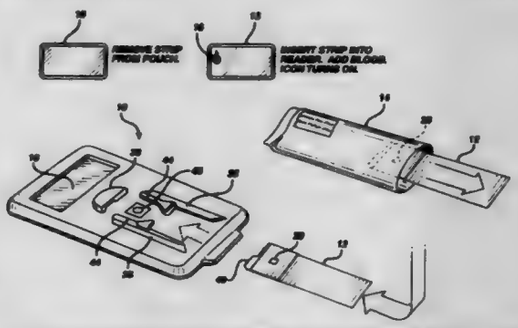
DISPOSABLE ELECTRONIC DIAGNOSTIC INSTRUMENT

Edward M. Poto, Somerville; Kenneth R. Strahs, Basking Ridge, both of N.J.; Timothy J. Conner; Francis T. Delahanty, both of Newton, Pa.; Michael Moorman, Princeton, and Henry Wieck, Plainsboro, both of N.J., assignors to Advanced Care Products, Raritan, N.J.

Continuation of Ser. No. 339,058, Nov. 14, 1994, abandoned. This application Jul. 21, 1997, Ser. No. 897,490

Int. Cl.[6] G01N *21/00*

U.S. Cl. 422—82.05 **31 Claims**



1. A disposable diagnostic instrument calibrated for use with a test strip to which a blood sample is applied, comprising:

a. an instrument housing having keying guides defining a location as which said strip is placed, and defining a test reading aperture on said strip on which one or more drops of blood to be tested are inoculated, said test reading aperture defining a test area;

b. a sensor switch located adjacent said keying guide and contacted by the strip in response to the strip being inserted into the guide, and a control circuit, the switch connected to the control circuit for activation of the instrument by providing power to the instrument in order to operate the instrument

c. a light source positioned to emit radiation of desired wavelengths towards said test area and a photodetector positioned to detect radiation reflected by said test areas said light source and photodetector capable of analyzing said blood sample at said desired wavelengths to determine the amount of cholesterol in said blood sample;

d. a display mounted on said instrument housing for displaying instrumental prompt icons and cholesterol level readings;

e. a first control circuit, said first control circuit capable of performing self-diagnostic testing of said instrument to determine the capability of said photodetector to read said light source within a desired range;

f. a second control circuit, said second control circuit controlling the operation of said light source, analyzing the output signal of said photodetector, and controlling the operation of said display;

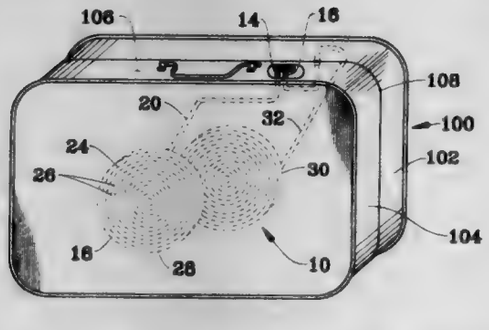
wherein said instrument measures the change in reflectance of said strip in response to a test solution being applied to said strip, and wherein said keying guides include at least one lateral edge guide for engaging a lateral edge of strip and an angled fore guide for engaging an angled fore edge of said strip.

5,795,544

CLOSED CONTAINER INSPECTION AND TREATMENT APPARATUS

Warren W. Matz, 13882 U.S. Highway 1, Juno Beach, Fla. 33408

Filed Mar. 14, 1997, Ser. No. 818,607
Int. Cl.[6] G01N *7/00*
U.S. Cl. 422—83 **15 Claims**



9. An inspection apparatus for use with closed containers for detection of explosives or drug paraphernalia in combination with a gas detector, said apparatus comprising: a first coupling bracket secured to an outer surface of a closed container, said first coupling bracket having an inlet and an outlet opening with identification indicia placed adjacent thereto wherein said inlet opening introduces a gas into said closed container and said outlet opening is coupled to the gas detector; a first hollow housing disposed within the container, said first housing having an inner cavity sealingly coupled to said inlet opening, said first housing having at least one opening for release of the gas introduced through said inlet opening into said first housing; a second housing spaced apart from said first housing within the container, said second housing having an inner cavity sealingly coupled to said outlet opening by an outlet tube, said outlet tube includes a sealing means to bridge an openable portion of said container, said second housing having at least one opening spaced apart from said first housing opening for receipt of the gas from said housing, thereby allowing transfer of said gas to said outlet opening; and

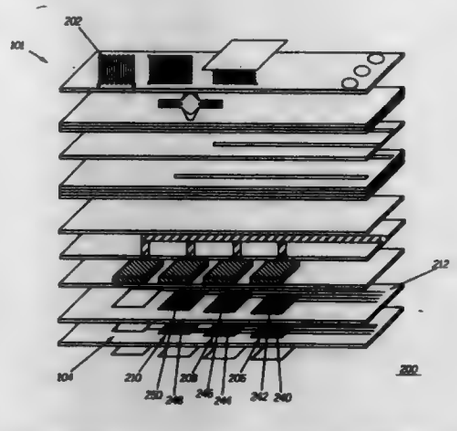
a second coupling bracket having a pressurized outlet wherein said pressurized outlet comprises a first and second opening, wherein the first opening couples to said inlet opening of said first coupling bracket, and the second opening fluidly couples to a gas source, such that gas from the gas source is introduced into the closed container through said first inlet opening of said first coupling bracket.

5,795,545

INTEGRATED CERAMIC EXHAUST GAS SENSORS

Chowdary R. Koripella, Albuquerque; Adam D. Moya, Peralta, and David Wilcox, Sr., Albuquerque, all of N. Mex., assignors to Motorola Inc., Schaumburg, Ill.

Filed May 20, 1996, Ser. No. 650,705
Int. Cl.[6] G01N *25/22*
U.S. Cl. 422—94 **15 Claims**



6. An integrated, multi-layered ceramic exhaust gas sensor, including at least a combustion calorimetric sensor for measuring heat produced as a result of oxidation of hydrocarbons, carbon monoxide, and hydrogen in exhaust gases and an oxygen sensor for measuring oxygen partial pressures in said exhaust gases, said exhaust gas sensor comprising;

a first ceramic layer having a first metallized pattern disposed thereon;

a second ceramic layer having first and second major surfaces, and first and second metallized coils formed on said first major surfaces, said metallized coils operatively disposed above said metallized pattern;

a layer of a catalyst material disposed on at least one of said metallized coils wherein hydrocarbons, carbon monoxide, and hydrogen present in said exhaust gases are oxidized by said catalytic material layer to form carbon dioxide and water;

a third ceramic layer having a channel formed through a third major surface, said channel providing a means for introducing an oxygen containing reference gas of known partial pressure to said oxygen sensor in order to measure the oxygen partial pressure of said exhaust gases; and

a fourth ceramic layer having a cavity formed therein, said cavity being operatively disposed adjacent an opening in the channel formed through said third ceramic layer wherein said cavity receives the oxygen containing reference gas from said channel;

wherein said first metallized pattern, said first and second metallized coils, and said layer of catalyst material, disposed upon said first and second ceramic layers, define said combustion calorimetric sensor, and said third and fourth ceramic layers define said oxygen sensor.

5,795,546

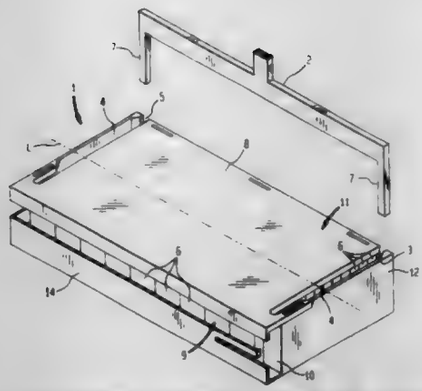
STORAGE CONTAINER FOR VESSELS

Rolf Amelung, Lemgo, Germany, assignor to Heinrich Amelung GmbH, Lemgo, Germany

Filed Dec. 11, 1996, Ser. No. 763,410
Claims priority, application Germany, Dec. 15, 1995, 195 46 594.5
Int. Cl.[6] B01L *3/00;* **B65D** *43/04*
U.S. Cl. 422—102 **3 Claims**

1. A storage container for measuring vessels containing fluids to be tested, such as blood, blood plasma; comprising:

a housing having an interior space for accommodating a plurality of measuring vessels arranged in rows, said housing hav-



ing a top surface covering the vessels and provided with openings formed laterally in the top surface outside an area of the vessels covered by the top surface, said housing further including a rear wall and a front wall which exhibits an ejection slot for discharge of single vessels; and ejector means for displacing the rows of vessels toward the ejection slot, said ejector means including a guide rail extending across and behind a rearmost row of vessels between the rearmost row of vessels and the rear wall, and an ejector insertable through the openings and acting on the guide rail for moving the guide rail in direction toward the discharge slot, thereby shifting the rows of vessels in direction toward the ejection slot.

5,795,547

THERMAL CYCLER

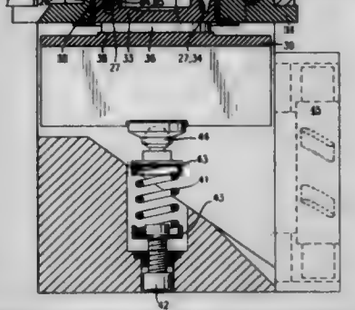
Rolf Moser, Vitznau, and Lukas Birrer, Lucerne, both of Switzerland, assignors to Roche Diagnostic Systems, Inc., Branchburg, N.J.

Continuation of Ser. No. 301,932, Sep. 7, 1994, Pat. No. 5,616,301. This application Oct. 23, 1996, Ser. No. 735,943

Claims priority, application Switzerland, Sep. 10, 1993, 2717/93

Int. Cl.[6] B01L *9/00; 11/02*

U.S. Cl. 422—104 **13 Claims**



1. An automatic analytical device, which comprises:

(a) a plurality of test tubes, each for containing a predetermined volume of a liquid reaction mixture, each of the plurality of test tubes being equipped with a pierceable closure;

(b) a pipetting needle configured and dimensioned for piercing the pierceable closures and removing liquid reaction mixture from the test tubes;

(c) means for moving the pipetting needle from a position outside of each test tube, through the piercable closure on the test tube, and into the test tube;

(d) means for applying suction to the pipetting needle so as to enable the pipetting needle to withdraw liquid reaction mixture out of a given test tube when the pipetting needle is inside the given test tube and reaction mixture is present within the given test tube; and

(e) a device for automatic performance of temperature cycles on the test tubes, which comprises:

(1) a holder formed of a thermally conductive material and having an upper surface, a lower surface and a cylindrical outer wall, the holder having an array of chambers for holding the test tubes equipped with piercable closures, the chambers being disposed along an arc with each chamber having an opening located in the upper surface of the holder, each chamber being configured and dimensioned to receive one test tube equipped with a piercable closure, the holder being configured and dimensioned so that when test tubes having piercable closures are held in the array of chambers, the piercable closures of the test tubes can be accessed by a pipetting needle;

(2) a computer-regulated automatic control system; and

(3) means actuated by the automatic control system for cyclic alteration of the temperature of the holder.

5,795,548

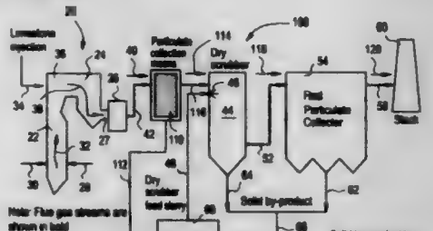
FLUE GAS DESULFURIZATION METHOD AND APPARATUS

Deborah A. Madden, Canfield, and George A. Farthing, Washington Township, Stark County, both of Ohio, assignors to McDermott Technology, Inc., New Orleans, La.

Filed Mar. 8, 1996, Ser. No. 611,605

Int. Cl.[6] B01D *50/00*

U.S. Cl. 422—171 **9 Claims**



1. A system for desulfurizing and removing particles from flue gas produced during a combustion processing a furnace of a steam generator to produce treated flue gas, comprising:

means for injecting limestone into an upper portion of a furnace in a temperature range of approximately 2000–2400° F. to calcine a portion of the limestone into lime, some of the lime absorbing sulfur oxide species from a flue gas therein and producing calcium sulfate, the flue gas leaving the steam generator contained particulates which are primarily fly ash, calcium sulfate, and lime;

first particulate collection means for collecting particulates and thus a portion of the lime from the flue gas, located downstream of the furnace and upstream of a dry scrubber means to reduce an amount of particulate entering the dry scrubber means which could otherwise be available to absorb, absorb, or react with available water in the dry scrubber means, thereby maintaining a higher free moisture content in particulates collected by a second particulate collection means located downstream of the dry scrubber means than would otherwise occur if the first particulate collection means was not present, to enhance removal of sulfur oxide species in the second particulate collection means;

means for slurrying the collected particulates and lime from the first particulate collection means with water to produce a dry scrubber feed slurry containing hydrated lime;

means for conveying the flue gas, from which the particulates and portion of the lime has been removed, to the dry scrubber mean;

means for spraying the dry scrubber feed slurry into the flue gas within the dry scrubber means to further absorb sulfur oxide

species from the flue gas therein by reaction with a portion of the lime and hydrated lime; and

means for conveying the flue gas, lime and hydrated lime to the second particulate collection means, where additional absorption of sulfur oxide species from the flue gas by reaction with the lime and hydrated lime and collection of particulates occurs to produce treated flue gas.

5,795,549

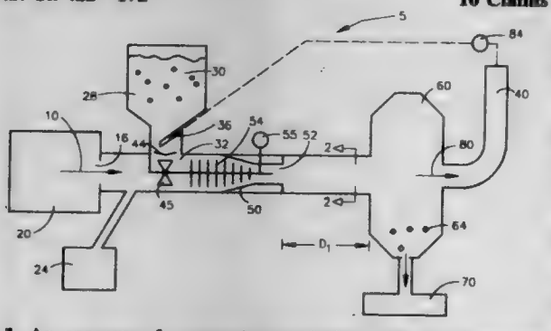
APPRARATUS FOR REMEDIATION OF TOXIC FLUE GASES

Richard A. Steinke, Munroe Falls, and Dennis S. Chrobak, Silver Lake, both of Ohio, assignors to American Mobility Ltd., Las Vegas, Nev.

Division of Ser. No. 650,015, May 17, 1996, Pat. No. 5,723,099. This application Nov. 26, 1996, Ser. No. 758,211

Int. Cl.[6] B01D *47/10;46/10*

U.S. Cl. 422—172 **10 Claims**



1. An apparatus for removing particulate matter and gaseous pollutants from a gas stream having a pre-determined flow rate, said apparatus comprising:

a gas inlet for reception of said gas stream;

a duct, said duct defining a passageway communicating with said inlet at a first end and having a length and a first cross-sectional area;

delivery means for delivering a sorbent material to said duct at a sorbent introduction site, said delivery means being able to introduce said sorbent material at a pre-determined feed rate;

a powered turbo-venturi being located in said duct downstream from said sorbent introduction site;

removal means for removing reaction products being formed from interaction of said sorbent material and said gas stream;

an outlet for venting said gas stream from said apparatus after said reaction products are removed;

monitoring means for monitoring the level of said pollutants in said vented gas stream; and,

means for automatically adjusting said sorbent feed rate in response to said monitored pollutant level.

5,795,550

APPARATUS FOR PACKING CATALYST

Yoshitaka Minami, Himeji, Japan, assignor to Idemitsu Engineering Co., Ltd., Tokyo, Japan

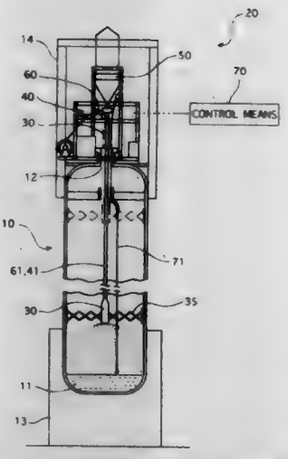
Division of Ser. No. 297,115, Aug. 26, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 598,911

Claims priority, application Japan, Aug. 27, 1993, 5-212794; Aug. 27, 1993, 5-212795; Aug. 27, 1993, 5-212797

Int. Cl.[6] B01J *8/08*

U.S. Cl. 422—219 **11 Claims**

1. A catalyst packing apparatus, comprising: a catalyst ejector suspended in a reaction tower for scattering catalyst in said reaction tower to form a catalyst bed, said catalyst ejector being adjustable in its suspended height, and control means for controlling the height of said catalyst ejector, wherein said control means comprises sensing means for measuring a scattering height between said catalyst ejector and a surface of the catalyst bed in



said reaction tower, a memory part for storing therein a relationship between the scattering height measured from said surface of the catalyst bed in said reaction tower to said catalyst ejector and a packed density of the catalyst bed scattered from said scattering height, a selecting part for selecting a scattering height corresponding to a designated packed density from said memory part, and an adjusting part for adjusting the height of said catalyst ejector so as to obtain said scattering height selected by said selecting part, said sensing means including at least one radially extendable holding arm and a distance sensor, said holding arm being supported from said catalyst ejector, being retractable into a first position having a free end of said holding arm adjacent said catalyst ejector and being extendable into a second position having said free end of said holding arm remote from said catalyst ejector, said distance sensor being attached to said free end of said holding arm for measuring a height from the distance sensor to said surface of said catalyst bed, and said distance sensor communicating said measured height to said control means.

5,795,551

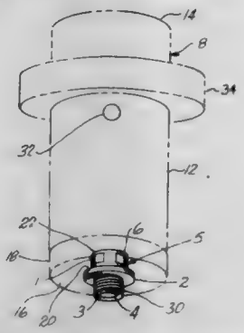
FLOATING CHEMICAL DISPENSER WITH DELAY FOR SWIMMING POOLS

Jonathan S. Powell, 5094 Tip Top Rd., Mariposa, Calif. 95338

Filed Aug. 18, 1996, Ser. No. 682,998

Int. Cl.[6] B01D *11/02;* **C02F** *1/76*

U.S. Cl. 422—264 **20 Claims**



6. The floating chemical dispenser for delayed dispensing of a dissolvable chlorinating chemical into a pool, the chemical dispenser comprising:

a container extending between a top end and a bottom end and having an inlet port disposed therebetween, the container configured for holding the chlorinating chemical;

a lid sealably coupled to the bottom end of the container, the lid having a central opening in communication with the container;

a float member attached to the container for maintaining the container in a floating and upright position in the pool such that the lid is maintained submerged;

a tubular adapter extending between a closed end and an open end and including a plurality of openings adjacent the closed end and in fluid connection with the open end, the closed end and plurality of openings being disposed within the container and the open end extending through the central opening in the lid and out of the container; and

a connecter for coupling with the open end and sealably connecting the tubular adapter to the lid;

an outlet port adapted for connection with the open end of the tubular adapter;

wherein a cylindrical plug of a soluble chemical is sealably insertble into the outlet port, the chemical plug dissolvable by the pool water over a preset period of time to delay passage of water through the outlet port and the dispensing of the chlorinating chemical from the container into the pool.

5,795,552

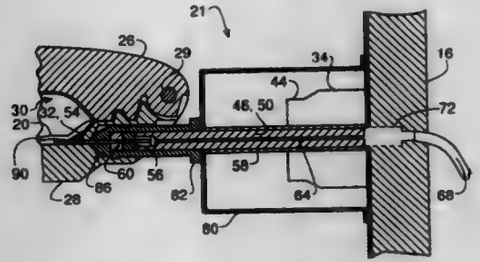
APPARATUS FOR HEATING AND VENTING A CONTAINER

Kenneth Dean Corby, Rochester; David Edward Foeller, Batavia; Dana Andrew Carlile, Webster; Jacob Michael Shmois, Rochester; Fugui He, Penfield, and Stephen Albert Mruczek, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 4, 1996, Ser. No. 610,018

Int. Cl.[6] A61L *2/00*

U.S. Cl. 422—294 **12 Claims**



1. Apparatus for heating and venting a container, said apparatus comprising:

a heating station for said container;

a heater disposed to supply heat to said heating station;

a drive having a body and a reciprocable member, said body being mounted in predetermined relation to said receiving station, said reciprocable member being movable relative to said receiving station between a first position and a second position;

a cannula joined to said reciprocable member, said cannula having a hollow bore, said cannula being movable between a retracted position and an extended position by movement of said reciprocable member between said first position and said second position; and

a vent line communicating with said bore and the ambient environment.

5,795,553

NITROGEN OXIDE ADSORBING MATERIAL

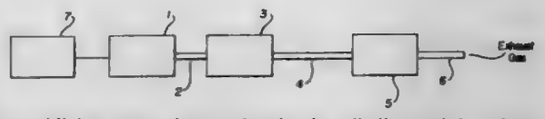
Stephen E. Lott, Edgewood; Timothy J. Gardner, Albuquerque; Linda I. McLaughlin, Albuquerque; John B. Oelfke, Albuquerque, and Charlene A. Matlock, Albuquerque, all of N. Mex., assignors to Low Emmissions Technologies Research and Development Partnership, Dearborn, Mich.

Filed Jul. 3, 1996, Ser. No. 675,063

Int. Cl.[6] B01J *8/00*

U.S. Cl. 423—213.2 **25 Claims**

1. A NO_x adsorber material, comprising an activated alkali metal-doped and copper-doped hydrous zirconium oxide material that adsorbs NO_x in an oxidizing atmosphere and desorbs NO_x in a



non-oxidizing atmosphere, wherein the alkali metal is selected from the group consisting of sodium and potassium.

5,795,554

METHOD FOR PREPARING THE OXYSULFIDES OF RARE EARTH ELEMENTS

Ming Fang; Jian Xin Ma, both of Clearwater Bay, and Ngai Ting Lau, Tai Po, all of Hong Kong, assignors to The Hong Kong University of Science & Technology, Hong Kong

Division of Ser. No. 674,715, Jul. 2, 1996, which is a continuation-in-part of Ser. No. 357,028, Dec. 16, 1994, abandoned. This application Jan. 29, 1997, Ser. No. 790,600

Int. Cl.[6] C01F *17/00*

U.S. Cl. 423—263 **7 Claims**

1. A method for preparing the oxysulfide of the rare earth elements selected from the group consisting of lanthanum, yttrium, gadolinium, neodymium, europium and dysprosium from the corresponding rare earth oxide, comprising the steps of (1) hydrating the rare earth oxide to form the hydroxide, and then (2) sulfidizing the resulting hydroxide by reacting with carbon monoxide and sulfur dioxide.

5,795,555

MICRO-MESO POROUS AMORPHOUS TITANIUM SILICATES AND A PROCESS FOR PREPARING THE SAME

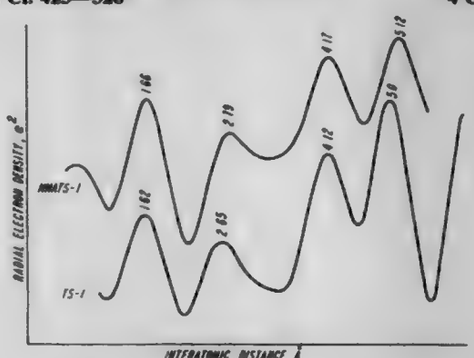
Keshavaraja Alive; Ramaswamy Vedanayaki; Ramaswamy Arumugamangalam Venkataraman, and Ratnasamy Paul, all of National Chemical Laboratory, Pune-411008, Maharashtra, India

Filed Aug. 2, 1995, Ser. No. 510,574

Claims priority, application India, Nov. 24, 1994, 1508/94

Int. Cl.[6] C01B *33/20*

U.S. Cl. 423—326 **4 Claims**



1. A process for the preparation of micro-meso porous amorphous titanium silicates having a molar composition in terms of the anhydrous oxides of TiO_2:(5-400) SiO_2, the said titanium silicates being further characterized by (a) the absence of any line in its x-ray diffraction pattern, (b) the presence of interatomic vectors around 1.6–1.7, 2.7–2.8, 4.1–4.2 and 5.0–5.2 Å in the radial electron density distribution, (c) an absorption band around 220 nm in the ultraviolet region, (d) an absorption band around 960 cm^{-1} in the infrared region and (e) a bimodal pore size distribution with the first peak width maximum at a value less than 10 Å and the second peak width maximum between 10 and 100 Å, respectively, comprising the steps of:

(i) preparing a solution A of an alkoxide of titanium selected from the group consisting of titanium ethoxide, titanium isopropoxide, and titanium butoxide, in an alkanol, selected from

the group consisting of ethanol, propanol, isopropanol, butanol and tertiary butanol by adding the former to the latter;

(ii) preparing a solution B of an alkoxide of silicon selected from the group consisting of tetraethyl orthosilicates in an alkanol selected from the group consisting of ethanol, propanol, isopropanol, butanol and tertiary butanol;

(iii) reacting solution A with solution B at a temperature below about 90° C. in the absence of a nitrogenated organic base selected from the group consisting of tetramethyl ammonium hydroxide, tetra ethyl ammonium hydroxide, and tetra butyl ammonium hydroxide, and water to form a mixture C at a pH around 7;

(iv) adding water to the above mentioned mixture C to form a transparent sol D; and

(v) removing water from the sol D by allowing it to age at a temperature below 90° C. to obtain a solid gel E and drying this gel at a temperature ranging from 90° to 120° C. and calcining the dried gel at a temperature above 300° C. to form the micro-meso porous amorphous titanium silicate.

5,795,556

XEROGELS AND PROCESS FOR THEIR PREPARATION

Rolf-Michael Jansen, Kelkheim; Andreas Zimmermann, Griesheim, both of Germany; Eric Jacquinot, Trolsy Breuil, France, and Douglas Smith, Albuquerque, N. Mex., assignors to Hoechst AG, Germany

Continuation-in-part of Ser. No. 355,601, Dec. 14, 1994, abandoned. This application Jun. 20, 1996, Ser. No. 668,458

Claims priority, application Germany, Dec. 14, 1993, 43 42 548.8

Int. Cl.[6] C01B *33/12*

U.S. Cl. 423—338 **15 Claims**

1. A process for the preparation of a xerogel which

a) bringing an aqueous waterglass solution to a pH of ≦3.0 by contacting with an acidic ion exchange resin or a mineral acid to form a resulting silica,

b) polycondensing the resulting silica by adding a base to the resulting slica to form a SiO_2 gel and, if in step a) the mineral acid was contacted with said acqueous waterglass solution then the gel is washed electrolyte-free with water,

c) washing the gel obtained in step b) with an organic solvent until the water content of the gel is ≦5% by weight,

d) reacting the gel obtained in step c) with a silylation agent to form a silylated gel and

e) drying the silylated gel obtained in step d) under subcritical conditions.

5,795,557

PROCESS FOR THE PREPARATION OF MONOLITHIC SILICA AEROGELS

Gérard Pajonk, Lyons; Elimame Elaloui, Vaulx en Velin; Redouane Begag, Bron; Marcel Durant, Mennecy; Bruno Chevalier, Grenoble; Jean-Luc Chevalier, St Etienne de Crossey, and Patrick Achard, Le Plan de Grasse, all of France, assignors to Universite Claude Bernard, Villeurbanne; Produits Chimiques Auxiliares, Longjumeau; Armienes, and Centre Scientifique et Technque Du Batiment, both of Paris, all of France

Filed Jul. 3, 1996, Ser. No. 675,681

Claims priority, application France, Jul. 7, 1995, 95 08573

Int. Cl.[6] C01B *33/14*

U.S. Cl. 423—338 **10 Claims**

1. A process for the preparation of a monolithic silica aerogel that includes the steps of:

subjecting a mixture including an organosilicon compound and an organic solvent to hydrolysis and polycondensation in an acidic medium to obtain a transparent gel,

substituting the organic solvent in the transparent gel with liquid carbon dioxide, and

evacuating the carbon dioxide under supercritical conditions of the carbon dioxide to obtain the aerogel,

wherein the organic solvent consists essentially of ethyl acetoacetate.

5,795,558

POSITIVE ELECTRODE ACTIVE MATERIAL FOR LITHIUM SECONDARY BATTERY METHOD OF PRODUCING

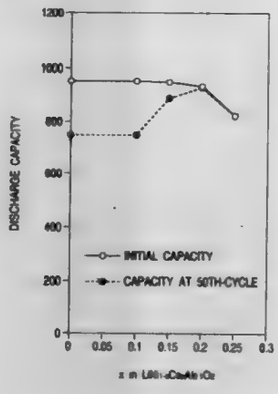
Takashi Aoki; Mikito Nagata, and Hisashi Tsukamoto, all of Kyoto, Japan, assignors to Japan Storage Battery Co., Ltd., Kyoto, Japan

Division of Ser. No. 774,226, Dec. 27, 1996, Pat. No. 5,718,989. This application Oct. 9, 1997, Ser. No. 947,494

Claims priority, application Japan, Dec. 29, 1995, 7-353033; Dec. 5, 1996, 8-342516

Int. Cl.[6] C01G *51/00;53/00*

U.S. Cl. 423—594 **8 Claims**



1. A method of producing a positive electrode active material for a lithium secondary battery comprising the steps of:

mixing at least one of β-$Ni_{1-x}Co_x(OH)_2$ and β-$Ni_{1-x}Co_xOOH$ in which x and y satisfy relations of $0 \leqq y \leqq 0.3$ and $0 \leqq x \leqq 0.25$, a Li supply source material which is a Li chemical compound used at a time of forming Li—Ni—Co—Al composite oxide, and an Al supply source material which is an Al chemical compound used at a time of forming Li—Ni—Co—Al composite oxide; and

burning the resulting mixture.

5,795,559

POROUS INORGANIC OXIDE MATERIALS PREPARED BY NON-IONIC SURFACTANT TEMPLATING ROUTE

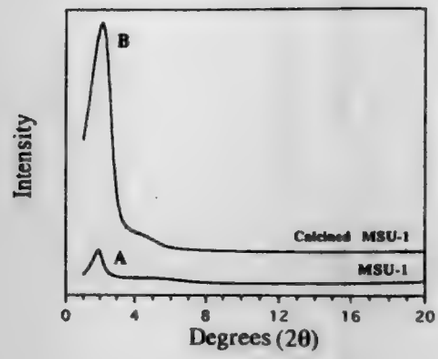
Thomas J. Pinnavaia, East Lansing, Mich., and Stephen A. Bagshaw, Montpellier, France, assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation-in-part of Ser. No. 465,770, Jun. 6, 1995, Pat. No. 5,622,684. This application May 2, 1996, Ser. No. 641,917

Int. Cl.[6] C01B *39/04*

U.S. Cl. 423—702 **50 Claims**

1. A synthetic, semi-crystalline inorganic oxide composition having at least one resolved x-ray reflection corresponding to a



lattice spacing of 3 to 10 nm, framework confined channels between about 2 and 10 nm diameter, and a specific surface area of 300 to 1400 square meters per gram and having a disordered assembly of worm channels.

5,795,560

TARGETING PROTEIN-DIAGNOSTIC/THERAPEUTIC AGENT CONJUGATES HAVING SCHIFF BASE LINKAGES

Michael W. Reed, Seattle, Wash., assignor to NeoRx Corporation, Seattle, Wash.

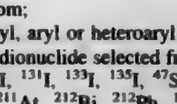
Division of Ser. No. 322,045, Nov. 1, 1994, Pat. No. 5,633,351. This application May 16, 1996, Ser. No. 648,833

Int. Cl.[6] A61K *51/00;51/10;* **C07K** *16/00*

U.S. Cl. 424—1.49 **7 Claims**

1. An improved method of diagnosis or therapy which comprises administration of an antibody or antigen binding antibody fragment targeting protein radionuclide conjugate wherein the improvement comprises administering an antibody or antigen binding antibody fragment conjugated to a radionuclide by a Schiff base linker and having the formula:

antibody or antigen binding antibody fragment



wherein

"Ar" is a substituted or unsubstituted aryl group;

"N" is a nitrogen atom;

"C" is a carbon atom;

"R" is H or an alkyl, aryl or heteroaryl substituent; and

"Z" comprises a radionuclide selected from the group consisting of ^{123}I, ^{125}I, ^{130}I, ^{131}I, ^{133}I, ^{135}I, ^{47}Sc, ^{72}Se, ^{90}Y, ^{88}Y, ^{97}Ru, ^{119}Sb, ^{197}Hg, ^{211}At, ^{212}Bi, ^{212}Pb, ^{111}In, ^{67}Ga, ^{68}Ga, ^{67}Cu, ^{75}Br, ^{76}Br, ^{99m}Tc, ^{18}F, ^{188}Re, ^{186}Re, ^{203}Pb, ^{64}Cu, ^{105}Rh, ^{198}Au and ^{199}Au;

and wherein the substituent of Ar, if present, is an electron withdrawing group or an electron-donating group capable of modifying unreduced imine bond stability of the Schiff base linker, and wherein the Schiff base is formed by a process which comprises:

reacting a non-oxidized and native amine-bearing or amine-derivatized targeting protein with an aromatic aldehyde or ketone, wherein the aromatic aldehyde or ketone is directly conjugated to Z or indirectly conjugated to Z via a chelating ligand, to form a stabilized Schiff base linker, absent a subsequent stabilizing step with respect to the C=N bond;

wherein antibody or antigen binding antibody fragment carbohydrate content is not determinative of maximum possible aromatic aldehyde or ketone conjugation to the antibody or antigen binding antibody fragment.

5,795,561

RADIOIODINATED PHOSPHOLIPID ETHER ANALOGUES

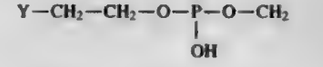
Raymond E. Counsell, Ann Arbor, Mich.; Karen L. Meyer, Norman, Okla.; Susan W. Schwendner, Ann Arbor, Mich., and Terushi Haradahira, Fukuoka, Japan, assignors to The Board of Regents of the University of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 833,303, Feb. 10, 1992, Pat. No. 5,347,030, which is a division of Ser. No. 602,157, Oct. 22, 1990, Pat. No. 5,087,721, which is a continuation-in-part of Ser. No. 573,586, Aug. 27, 1990, abandoned, which is a continuation of Ser. No. 112,865, Oct. 23, 1987, Pat. No. 4,965,391. This application Sep. 12, 1994, Ser. No. 304,259

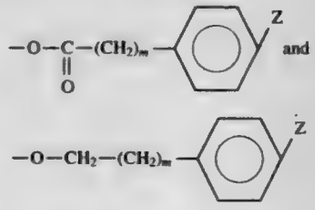
Int. Cl.[6] A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.77 **2 Claims**

1. A compound having the general formula:



where n=1–15, except n=1–14 where m=0 and Y=—N((CH$_3$)$_3$; X is selected from the group consisting of



where m=0–15 and Z is a radioactive isotope of iodine; Y is selected from the group consisting of NH_2, NR_2, NR_3; and R is selected from the group consisting of alkyl and aralkyl substituents.

5,795,562

CONTRAST AGENTS COMPRISING GAS-CONTAINING OR GAS-GENERATING MICROPARTICLES OR MICROBALLOONS

Jo Klaveness, Oslo; Keith Redford, Hagan; Pål Rongved, Hellvik; Jan Solberg, Eiksmarka; Per Strande, Oslo, and Unni Nordby Wiggen, Rasta, all of Norway, assignors to Nycomed Imaging AS, Oslo, Norway

PCT No. PCT/GB93/00470, § 371 Date Jan. 17, 1995, § 102(e) Date Jan. 17, 1995, PCT Pub. No. WO93/17718, PCT Pub. Date Sep. 16, 1993

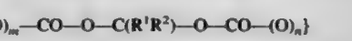
PCT Filed Mar. 5, 1993, Ser. No. 284,464

Claims priority, application United Kingdom, Mar. 6, 1992, 9204918; Mar. 6, 1992, 9204920

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.52 **20 Claims**

1. A contrast agent comprising microparticles or microballoons which comprise gas-containing or gas-generating polymer moieties, in which said polymer is a biodegradable non-polypeptide polymer containing units of formula (II)



(II)

wherein R^1 and R^2 are each selected from the group consisting of hydrogen atoms and carbon-attached monovalent organic groups or R^1 and R^2 together form a carbon-attached divalent organic group; and m and n, which may be the same or different, are each zero or 1.

5,795,563

IDENTIFICATION OF AN EXOGENOUS INTRA-ERYTHROCYTIC BACTERIUM IN PATIENTS HAVING SYSTEMIC LUPUS ERYTHEMATOSUS, AND TREATMENT

Charles A. Kallick, Lemont, Ill., assignor to Sphingomonas Research Partners, L.P., Lemont, Ill.

Continuation-in-part of Ser. No. 707,472, Sep. 4, 1996, abandoned. This application Dec. 13, 1996, Ser. No. 763,709

Int. Cl.[6] A61K *49/00;31/43*

U.S. Cl. 424—9.361 5 Claims

1. A process for treating a patient whose erythrocytes contain exogenous bacterial structures stainable with acridine orange or giemsa and are visible in phase contrast microscopy that comprises administering to said patient an antibacterial amount of a rifamycin plus an antibacterial amount of a macrolide or a third generation cephalosporin until said exogenous bacterial structures are absent from the erythrocytes.

5,795,564

METHODS AND COMPOSITIONS FOR TREATING PULMONARY DISORDERS USING OPTICALLY PURE (R,R)-FORMOTEROL

Gunnar Aberg, Westborough, Mass., and John Morley, Richmond-upon-Thames, United Kingdom, assignors to Sepracor, Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 382,744, Feb. 2, 1995, abandoned, and Ser. No. 373,515, Jan. 12, 1995, abandoned, which is a continuation-in-part of Ser. No. 222,319, Apr. 4, 1994, abandoned, which is a continuation of Ser. No. 927,458, Aug. 10, 1992, abandoned, said Ser. No. 382,744 is a continuation of Ser. No. 223,798, Apr. 6, 1994, abandoned, which is a continuation of Ser. No. 862,907, Apr. 3, 1992, abandoned. This application Mar. 7, 1996, Ser. No. 613,382

Int. Cl.[6] A61L *9/04*

U.S. Cl. 424—45 15 Claims

1. A method for eliciting a bronchodilator effect while avoiding the concomitant liability of hypersensitivity which comprises administering to a human in need of bronchodilation an amount of (R,R)-formoterol, or a pharmaceutically acceptable salt thereof, sufficient to alleviate bronchospasms but insufficient to cause hypersensitivity, said (R,R)-formoterol containing at least 99% by weight of (R,R)-formoterol and less than 1% by weight of (S,S)-formoterol.

5,795,565

SCREENING COSMETIC COMPOSITION CONTAINING A MIXTURE OF 1,4-BENZENEDI (3-METHYLIDENE-10-CAMPHOSULFONIC) ACID, PARTIALLY OR COMPLETELY NEUTRALIZED, AND METAL OXIDE NANOPIGMENTS

Martine Eteve, and Isabelle Hansenne, both of Paris, France, assignors to L'Oreal, Paris, France

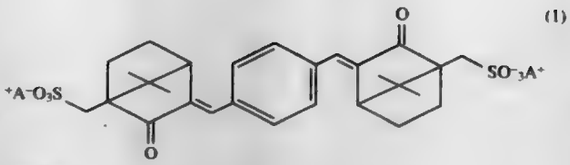
Division of Ser. No. 119,651, Sep. 13, 1993, Pat. No. 5,643,557, which is a continuation of Ser. No. 897,498, Jun. 12, 1992, abandoned. This application Mar. 24, 1997, Ser. No. 822,734

Claims priority, application France, Jun. 13, 1991, 91 07255

Int. Cl.[6] A61K *7/44;7/42;7/00*

U.S. Cl. 424—60 14 Claims

1. A screening cosmetic composition comprising, in a cosmetically acceptable carrier, a zinc oxide nanopigment having a mean diameter of less than 100 nm but greater than 5 nm, admixed with partially or completely neutralized 1,4-benzenedi(3-methylidene-10-camphosulfonic) acid of formula



(1)

wherein

A represents hydrogen, alkali metal or $NH(R)_3^+$,

wherein

said R's each independently represent hydrogen, C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl or M^{n+}/n wherein M^{n+} is a polyvalent metal cation wherein n represents 2, 3 or 4.

5,795,566

DEODORANT COMPOSITIONS CONTAINING AT LEAST TWO ALDEHYDES AND THE DEODORANT PRODUCTS CONTAINING THEM

Daniel Joulain, and Philippe Racine, both of Grasse, France, assignors to Robertet S.A., Grasse, France

Continuation of Ser. No. 908,810, Jul. 7, 1992, abandoned, which is a continuation of Ser. No. 640,388, Jan. 25, 1991, abandoned. This application Dec. 16, 1994, Ser. No. 357,995

Claims priority, application France, May 29, 1989, 89 07279

Int. Cl.[6] A61L *9/01*

U.S. Cl. 424—76.1 31 Claims

1. Deodorant compositions consisting essentially of as active ingredients at least one first aldehyde and at least one second aldehyde, the ratio of said first aldehyde to said second aldehyde being from about 20:80 to about 80:20;

wherein said first aldehyde is selected from the group consisting of decanal; undecanal; dodecanal; 2,6,10-trimethyl-9-undecene-al; undecene-10-al; 2-methyl-undecanal; 2,3,5,5-tetramethyl-hexanal; 1-formyl-2,4-dimethyl-2-cyclohexene; 2-formyl-3,5-dimethyl-4-cyclohexene; 1-formyl-2,3,5-trimethyl-4-cyclohexene; 1-formyl-2,4,6-trimethyl-3-cyclohexene; [(5.2.1.0.6)-tricyclo-8-decylidene]-4-butanal; 2,6,10-trimethyl-9-undecene-al; (4-methyl-3-pentene-yl)-4-cyclohexene-3-yl carboxaldehyde; 7-formyl-5-isopropyl-2-methyl-2,2,2-bicyclo-2-octene; 2-formyl-8-dimethyl-1,2,3,4,5,6,7,8-octahydronaphthalene; citronellal; campholenic aldehyde; α-methyl-3,4-methylene-dioxyhydrocinnamic aldehyde; cyclamen aldehyde; lilial; canthoxal; phenylacetic aldehyde; 3-phenyl-propionic aldehyde; hydroxycitronellal; and hydratropic aldehyde;

wherein said second aldehyde is selected from the group consisting of citral; jasmonal; myrtenal; perilla aldehyde; cinnamic aldehyde; alpha-amylcinnamic aldehyde; alpha-hexylcinnamic aldehyde; benzaldehyde; anisic aldehyde; heliotropine; veratric aldehyde; vanillin; isovanillin; and ethylvanillin.

5,795,567

POLYAMINES AND METHOD FOR PREPARATION THEREOF

Samuel J. Tremont, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.

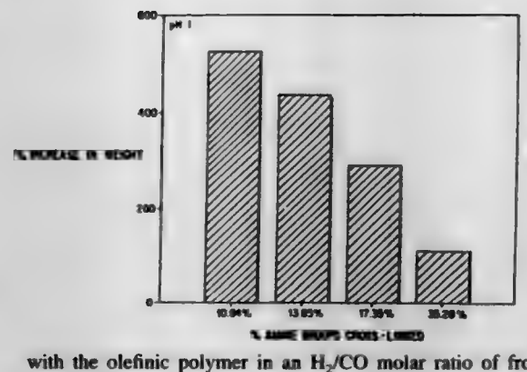
Division of Ser. No. 976,998, Jan. 15, 1993, Pat. No. 5,474,767, which is a continuation-in-part of Ser. No. 558,041, Jul. 26, 1990, abandoned. This application Mar. 6, 1995, Ser. No. 399,301

Int. Cl.[6] A61K *47/32;47/48;* C08F *8/04*

U.S. Cl. 424—78.26 15 Claims

1. A method for preparing functionalized polyamines whereby the amine functional density is in the range from about 10% to about 80% for use in site specific drug delivery systems comprising the steps of:

a) hydroformylating an olefinic-containing material under conditions whereby hydrogen and carbon monoxide are mixed



with the olefinic polymer in an H_2/CO molar ratio of from about 1:3 to about 3:1 which produces a polyaldehyde;

b) reductively aminating the polyaldehyde of Step a) to produce a polyamine; and

c) attaching a functional moiety to the polymer backbone, said moiety being a pH-sensitive drug linker comprising a chloro-organosilyl compound.

5,795,568

METHOD OF TREATING INFECTIOUS DISEASE WITH GM-CSF

Elizabeth A. Wang, Carlisle, Mass., assignor to Novartis Corporation, Basel, Switzerland

Division of Ser. No. 344,809, Nov. 23, 1994, which is a continuation of Ser. No. 183,099, Jan. 14, 1994, abandoned, which is a continuation of Ser. No. 23,146, Feb. 24, 1993, abandoned, which is a continuation of Ser. No. 752,250, Aug. 28, 1991, abandoned, which is a continuation of Ser. No. 657,350, Feb. 15, 1991, abandoned, which is a continuation of Ser. No. 652,742, Sep. 19, 1984, abandoned. This application Jun. 6, 1995, Ser. No. 469,530

Int. Cl.[6] A61K *38/19;* **C07K** *14/535*

U.S. Cl. 424—85.1 **6 Claims**

1. A method of treating a patient having an infectious disease, comprising the steps of:

selecting a pharmaceutical composition comprising substantially purified human GM-CSF and a pharmaceutically acceptable carrier; and

administering said pharmaceutical composition to a human in need thereof.

5,795,569

MONO-PEGYLATED PROTEINS THAT STIMULATE MEGAKARYOCYTE GROWTH AND DIFFERENTIATION

Timothy D. Bartley, Thousand Oaks; Jakob M. Bogenberger, Camarillo; Robert A. Bosselman; Pamela Hunt, both of Thousand Oaks; Olaf B. Kinstler, Oxnard, and Babru B. Samal, Moorpark, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Continuation-in-part of Ser. No. 252,628, May 31, 1994, which is a continuation-in-part of Ser. No. 221,768, Mar. 31, 1994, abandoned. This application Oct. 12, 1994, Ser. No. 321,488

Int. Cl.[6] C07K *1/113;14/52;* **A61K** *38/19*

U.S. Cl. 424—85.1 **11 Claims**

1. A polypeptide consisting of amino acids 1-163 of SEQ ID NO: 25, wherein a single polyethylene glycol is attached to the α-amino group at the N-terminus of said polypeptide.

9. A pharmaceutical composition comprising:

(a) a substantially homogeneous preparation of a polypeptide consisting of amino acids 1-163 of SEQ ID NO:25 monopegylated on the α-amino group at the N-terminus of said polypeptide via an alkyl linkage, wherein the polyethylene glycol has a molecular weight of 5 kDa to 50 kDa; and

(b) a pharmaceutically acceptable diluent, adjuvant or carrier.

5,795,570

METHOD OF CONTAINING CORE MATERIAL IN MICROCAPSULES

Collin J. Weber, Atlanta, Ga., and Jennifer Ayres-Price, Mooresville, N.C., assignors to Emory University, Atlanta, Ga.

Filed Apr. 7, 1995, Ser. No. 418,953

Int. Cl.[6] A61K *35/12;* **C12N** *11/10;* **B01J** *13/20*

U.S. Cl. 424—93.7 **25 Claims**

1. A method of containing a core material within microcapsules having a semipermeable wall to prevent the core material from incorporation into the wall of the microcapsules which comprises:

(a) suspending the core material in a solution containing between about 0.2% and about 0.5% of a polysaccharide gum containing acid groups capable of forming a gel to permit the polysaccharide gum to attach to the core material, wherein the solution of polysaccharide gum is physiologically compatible with the core material;

(b) removing the core material from the solution of polysaccharide gum in step (a) and washing the core material in a solution not containing the polysaccharide gum to remove from the core material all but a thin layer of polysaccharide gum attached to the core material;

(c) treating the washed core material having the attached thin layer of polysaccharide gum from step (b) under conditions to cause the polysaccharide gum attached to the core material to gel to form a pretreated core material;

(d) suspending the pretreated core material from step (c) in a solution containing a polysaccharide gum containing acid groups capable of forming a gel, wherein the solution of polysaccharide gum is physiologically compatible with the core material;

(e) forming the suspension from step (d) into droplets of a size sufficient to encapsulate the core material;

(f) treating the droplets from step (e) under conditions to cause the polysaccharide gum to gel to form temporary shape-retaining capsules; and

(g) treating the temporary shape-retaining capsules from step (f) under conditions with a polymeric material containing groups that react with and crosslink acid groups of the temporary shape-retaining capsules to cause the formation of a permanent semipermeable membrane around the capsules to form said microcapsules.

5,795,571

COMPOSITION CONTAINING AUTOLOGOUS THROMBIN BLOOD FRACTION FOR USE IN A MEDICAL PROCEDURE

Stewart A. Cederholm-Williams, Oxford, United Kingdom, and Ulla Weis-Fogh, Hoersholm, Denmark, assignors to Bristol-Myers Squibb Company, Skillman, N.J.

Division of Ser. No. 465,154, Jun. 5, 1995, which is a continuation of Ser. No. 81,532, Jun. 23, 1993, abandoned. This application Nov. 15, 1996, Ser. No. 749,717

Claims priority, application Denmark, Jun. 24, 1992, 0830/92

Int. Cl.[6] A61K *38/48*

U.S. Cl. 424—94.64 **2 Claims**

1. In a method for preparing a composition comprising materials released from platelets wherein said platelets are activated by thrombin, the improvement comprising thrombin that is derived from the same individual animal as said platelets.

5,795,572

MONOCLONAL ANTIBODIES AND FV SPECIFIC FOR CD2 ANTIGEN

Michael L. Diegel, Kent; Peter S. Linsley, Seattle; Lisa K. Gilliland, Seattle; Patricia A. Moran, Seattle; Joyce M. Zarling, Seattle, and Jeffrey A. Ledbetter, Seattle, all of Wash., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed May 25, 1993, Ser. No. 68,946

Int. Cl.[6] C07K *16/28;* **A61K** *39/395;39/44;* **G01N** *33/53*

U.S. Cl. 424—135.1 **24 Claims**

1. A single-chain recombinant antibody having specific binding affinity for CD2 antigen, including therein a human constant region sequence including: a hinge region having an amino acid sequence therein of E-P-K-S-S-D-K-T-H-T-S-P-P-S-P (SEQ ID NO:4), the hinge region being located between the variable region sequences and the constant region sequences.

5,795,573

HOMEOPATHIC PHARMACEUTICAL COMPOSITIONS

Lou Paradise, 7 Hook Rd., Rhinebeck, N.Y. 12572

Filed Jan. 8, 1998, Ser. No. 4,573

Int. Cl.[6] A61K *33/44;35/00;* **A01N** *65/00*

U.S. Cl. 424—195.1 **19 Claims**

1. A homeopathic topically applied composition for treating a patient for inflammation and pain which comprises:

A. an effective amount of a combination of herbs or extracts of Arnica Montana, *Rhus toxicodendron* and *Aesculus hippocastanum*, and

B. an effective amount of belladona, in pharmaceutically acceptable carrier to form a lotion, cream or gel.

5,795,574

USE OF AN EXTRACT FROM A NON-PHOTOSYNTHETIC FILAMENTOUS BACTERIUM AND COMPOSITION CONTAINING IT

Lionel Breton, Versailles; Lucien Aubert, Cap d'Ail; Jacques Leclaire, Massy; Richard Martin, Rochecorbon, and Olivier De Lacharriere, Paris, all of France, assignors to Société l'Oréal S.A., Paris, France

Filed Sep. 9, 1996, Ser. No. 711,109

Claims priority, application France, Sep. 7, 1995, 95 10485; Mar. 27, 1996, 96 03816; Mar. 27, 1996, 96 03818

Int. Cl.[6] A61K *7/06;7/48;33/24;35/78*

U.S. Cl. 424—195.1 **77 Claims**

1. A method of cosmetic or pharmaceutical treatment or prevention which comprises administering to a subject in need of admistration of a substance P antagonist a pharmaceutical or cosmetic composition comprising an effective amount of at least one extract from at least one non-photosynthetic filamentous bacterium which is a substance P antagonist contained in a cosmetically or pharmaceutically acceptable carrier.

5,795,575

TOPICAL MEDICAMENT WHICH INCREASES THE NUMBER OF CAPILLARIES IN DAMAGED SKIN

Ezio Bombardelli; Sergio Curri; Giancarlo Guglielmini; Paolo Morazzoni, and Walter Polinelli, all of Milan, Italy, assignors to Indena S.p.A., Milan, Italy

Continuation of Ser. No. 434,091, May 3, 1995, abandoned. This application Dec. 12, 1996, Ser. No. 763,925

Claims priority, application Italy, May 6, 1994, MI94 A 000864

Int. Cl.[6] A61K *39/385*

U.S. Cl. 424—195.1 **23 Claims**

1. A method for increasing the number of capillaries in damaged skin during healing thereof which comprises applying to damaged skin a composition comprising an active compound having peripheral vasokinetic activity and a pharmaceutically acceptable carrier, wherein said active compound is selected from the group consisting of *Amni visnaga* coumarins, Vinca alkaloids, Ergot alkaloids, polyunsaturated fatty acid derivatives, a buflomedil bioflavinoid, Ginkgo bioflavonoids, and Cratageus bioflavonoids, and is applied in an amount effective to increase the number of capillaries in new tissue which forms during healing of the damaged skin.

5,795,576

CHEMICAL COMPOSITION FOR AIDING THE ABSORPTION, BINDING AND ELIMINATION OF UNDIGESTED FAT

Jose A. Diaz, 2950 Jackson Ave., Coconut Grove, Fla. 33133, and Eduardo M. Naranjo, 14021 Cypress Ct., Miami Lakes, Fla. 33014

Filed Jul. 7, 1997, Ser. No. 888,848

Int. Cl.[6] A61K *35/78;31/715;31/70*

U.S. Cl. 424—195.1 **11 Claims**

1. A chemical composition for ingestion by a human at mealtimes, which aids in absorbing and binding undigested fat for rapid elimination from the human's body, said composition comprising:

a) an amount of a fibrous agent generally about 83% by weight of said composition;

b) an amount of glucosamine HCL generally about 8% by weight of said composition;

c) an amount of glucomannan generally about 6% by weight of said composition;

d) an amount of apple pectin generally about 2% by weight of said composition; and

e) an amount of stearic acid generally about 1% by weight of said composition.

5,795,577

VIRAL VECTOR CODING FOR A GLYCOPROTEIN OF THE VIRUS RESPONSIBLE FOR A.I.D.S.

Marie-Paule Kieny; Guy Rautmann, both of Strasbourg; Jean-Pierre Lecocq, Reichstett; Simon Wain Hobson, Montigny-le-Bretonneux; Marc Girard, Paris, and Luc Montagnier, Le Plessis-Robinson, all of France, assignors to Transgene S.A., Courbevoie, and Institut Pasteur, Paris, both of France

Continuation of Ser. No. 442,995, May 17, 1995, Pat. No. 5,672,689, which is a continuation of Ser. No. 856,572, Mar. 24, 1992, abandoned, which is a division of Ser. No. 765,413, Sep. 24, 1991, Pat. No. 5,169,763, which is a continuation of Ser. No. 143,079, Dec. 4, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 481,622

Claims priority, application France, Apr. 8, 1986, 86 05043; Oct. 29, 1986, 86 15106; WIPO, Apr. 8, 1987, PCT/FR87/00116

Int. Cl.[6] A61K *39/21;* **C12P** *21/06;* **C12N** *15/00;* **C07K** *1/00*

U.S. Cl. 424—208.1 **55 Claims**

1. An immunogenic composition comprising a viral vector, the genome of which comprises:

a functional origin of replication of a poxvirus;

a first DNA fragment encoding a non-cleavable gp160, consisting of gp120-gp40 of an HIV-1 virus, wherein said non-cleavable gp160 does not contain the amino acid sequence REKR found in natural gp160;

a second DNA fragment encoding a signal peptide, said second DNA fragment being linked to the 5'end of said first DNA fragment; and

a promoter for expressing said DNA fragments in mammalian cells.

5,795,578

VACCINE AGAINST EQUINE HERPESVIRUS TYPE 1

Dennis J. O'Callaghan, Shreveport, La., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.

Division of Ser. No. 341,781, Nov. 18, 1994, Pat. No. 5,707,629, which is a division of Ser. No. 954,417, Sep. 30, 1992, Pat. No. 5,470,718, which is a continuation of Ser. No. 561,553, Aug. 1, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 468,941

Int. Cl.[6] A61K *39/395*

U.S. Cl. 424—229.1 3 Claims

1. A purified antibody directed aaainst Equine Herpesvirus Type-1 gD polypeptide wherein said polypeptide consists of amino acids 80–98 (Cys-Glu-Lys-Ala-Lys-Arg-Ala-Val-Arg-Gly-Arg-Gln-Asp-Arg-Pro-Lys-Glu-Phe-Pro) of FIG. 2.

5,795,579

HERPES SIMPLEX VIRUS VP16 VACCINES

Rae Lyn Burke, San Francisco, and Rose E. Sekulovich, Berkeley, both of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 322,729, Oct. 13, 1994, Pat. No. 5,714,152, which is a continuation of Ser. No. 133,974, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 561,528, Aug. 2, 1990, abandoned. This application May 17, 1995, Ser. No. 442,980

Int. Cl.[6] A61K *39/245*; C07K *1/00;14/00;17/00*

U.S. Cl. 424—231.1 16 Claims

1. A composition for treatment or prevention of herpes simplex virus (HSV) infection in an individual, said composition comprised of an adjuvant, an isolated immunogenic polypeptide of herpes simplex virus type 2 (HSV-2) VP16 capable of eliciting a cellular immune response, said polypeptide comprising at least about the first 400 amino acids of HSV-2 VP16, and wherein the polypeptide is present in an effective amount in a pharmaceutically acceptable excipient.

5,795,580

GROUP B STREPTOCOCCUS TYPE V POLYSACCHARIDE-PROTEIN CONJUGATE VACCINES

Harold J. Jennings, Gloucester, Canada, and Dennis L. Kasper, Newton Centre, Mass., assignors to National Research Council of Canada, Ottawa, Canada, and Brigham and Women's Hospital, Inc., Boston, Mass.

Continuation of Ser. No. 125,556, Sep. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 949,970, Sep. 24, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 483,647

Int. Cl.[6] A01J *21/00;17/00*; C07K *1/00*

U.S. Cl. 424—244.1 32 Claims

1. An antigenic conjugate molecule comprising a type V capsular polysaccharide derived from a Group B streptococcus bacteria and a protein component wherein two or more side chains terminating in sialic acid residues of the polysaccharide component are each linked through a secondary amine bond to protein and wherein the molecular weight of the polysaccharide used for conjugation is at least 5000 daltons.

5,795,581

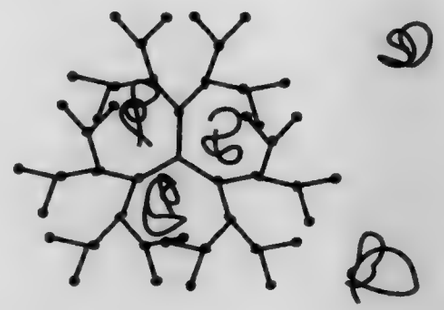
CONTROLLED RELEASE OF MOLECULAR COMPONENTS OF DENDRIMER/BIOACTIVE COMPLEXES

Daniel J. Segalman, and J. Shield Wallace, both of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Mar. 31, 1995, Ser. No. 415,352

Int. Cl.[6] A61K *9/00*; A01N *25/00*

U.S. Cl. 424—400 12 Claims



1. A process for release of guest molecules initially confined by physical entrapment in dendrimer host molecules, comprising fragmenting the host molecules by exposing them to electromagnetic radiation and producing a product comprising freed guest molecules and host molecule fragments.

5,795,582

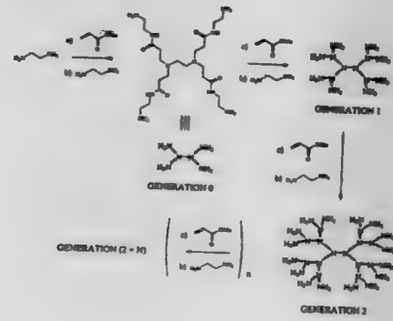
ADJUVANT PROPERTIES OF POLY (AMIDOAMINE) DENDRIMERS

D. Craig Wright, Gaithersburg, Md., assignor to Novavax, Inc., Columbia, Md.

Filed Feb. 7, 1996, Ser. No. 597,938

Int. Cl.[6] A61K *9/00;47/48*

U.S. Cl. 424—400 16 Claims



1. A vaccine for Influenza comprising an effective amount of a composition formed of an Influenza antigen and a starburst dendrimer in a physiologically compatible carrier; the amount of said Influenza antigen in said composition being substantially reduced from the amount necessary to yield a comparable antigenic response if given without said dendrimer.

5,795,583

HOMOGENIZATION OF DISPERSIONS

Burkhard Grune; Ludwig Hager, both of Burghausen; Helmut Huber, Emmerting; Gerhard Lwowski, Burghausen, all of Germany; Wilhelm Zadny, Ach, Austria; Horst Müller, Emmerting, and Otto Schneider, Burghausen, both of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jun. 2, 1997, Ser. No. 867,108

Claims priority, application Germany, Jun. 14, 1996, 196 23 850.1

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—400 14 Claims

1. A method for preparing homogeneous dispersions of fluidizable bulk materials, comprising:

in a first step, blending fluidizable bulk materials in a mixer with a liquid to produce a raw dispersion and,

in a second step, conveying the raw dispersion through a continuous enclosed, dispersing apparatus different from said mixer, said conveying being accomplished by means of a forced-conveyance apparatus.

5,795,584

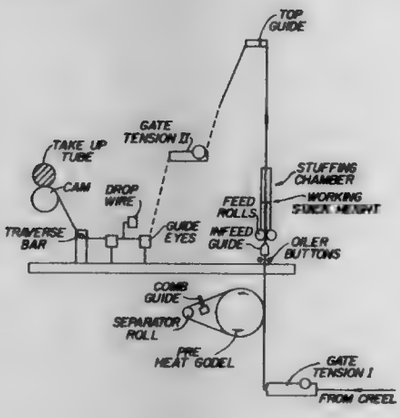
POST-SURGICAL ANTI-ADHESION DEVICE

Nagabhushanam Totakura, Norwalk; Ross R. Muth, Brookfield; Roy D. Gravener, Fairfield; Matthew Hain, New Haven, and Ilya S. Koyfman, Orange, all of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 153,336, Nov. 16, 1993, abandoned, which is a continuation-in-part of Ser. No. 9,726, Jan. 27, 1993, abandoned. This application Feb. 7, 1995, Ser. No. 385,007

Int. Cl.[6] A61K *9/70*

U.S. Cl. 424—426 5 Claims



1. A method for reducing occurrence of post-surgical adhesions comprising placing, at a site of surgical trauma, a biocompatable adhesion barrier which includes:

a. about 10 to about 90% by weight of a block copolymer having at least one block of a bioabsorbable copolymer having greater than 50 mole percent of trimethylene carbonate; and

b. about 10 to about 90% by weight of the block copolymer having at least another block of a bioabsorbable copolymer having greater than 50 mole percent of lactide; and

reducing occurrence of post-surgical adhesions.

5,795,585

RUMINANT FEED ADDITIVE COMPOSITION CONTAINING NOVEL PHOSPHORIC ACID-AMINO ACID COMPOSITE SALT AND WATER-SOLUBLE HIGH-MOLECULAR SUBSTANCE

Toru Ikeda, and Toshihide Yukawa, both of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 30, 1996, Ser. No. 777,052

Claims priority, application Japan, Dec. 28, 1995, 7-343163

Int. Cl.[6] A61K *9/16*

U.S. Cl. 424—438 13 Claims

1. A ruminant feed additive in powder or granular form, comprising:

(i) a water-insoluble salt of a water-soluble polymeric substance that gels or is insoluble in water when reacted with a polyvalent metal, wherein the water-insoluble salt is at least one member selected from the group consisting of a calcium salt, an aluminum salt, a zinc salt and an iron salt of alginic acid, carrageenan, gellan gum, pectin, carboxymethyl cellulose, carboxymethyl starch, polyacrylic acid, a polyacrylic acid copolymer, polymethacrylic acid, a polymethacrylic acid copolymer, soybean protein or casein, and

(ii) a phosphoric acid-amino acid composite salt represented by formula (1):

$$R_aMg_bM_cH_dPO_4 \cdot nH_2O \quad (1)$$

wherein

R represents a basic amino-acid hydrogen cation,

M represents a polyvalent metal of m-valence other than magnesium,

m is 2 or 3,

a is 0.1 to 1.0,

b is 0.85 to 1.43,

c is 0.02 to 0.6,

d is0to 0.3,

a+(b×2)+(c×m)+d=3, and

n is 0 to 20, wherein said ruminant feed additive is stable in the rumen of a ruminant and is capable of releasing basic amino acids in an abomasum and lower digestive organs of a ruminant.

5,795,586

TOXIN DECONTAMINANT FOOD PRODUCT AND METHOD OF FORMING SAME

Michael A. Stang, Pikesville, Md.; Jeffrey Alan Zeak, and Brian Lee Strouts, both of Manhattan, Kans., assignors to De Novo, Inc., Baltimore, Md.

Filed Aug. 7, 1996, Ser. No. 692,239

Int. Cl.[6] A61K *9/28*

U.S. Cl. 424—441 38 Claims

1. A toxin decontaminant food product for ingestion into the gastro-intestinal tract of a user comprising:

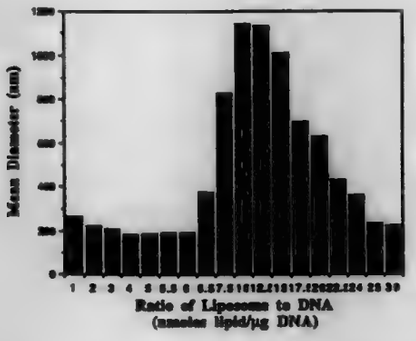
a substantially dry friable wafer adapted to be chewed by a user for ingestion into said gastro-intestinal tract of the user, said dry friable wafer including a wafer mixture composition formed by blending a first predetermined weight of a sorbent particulate composition having an initial adsorption value with respect to a toxin with a second predetermined weight of a substantially non-interfering flavored binding composition to form said wafer with a consistency emulating that of a baked cookie, said initial adsorption value of said sorbent particulate composition being substantially maintained in said wafer mixture composition.

5,795,587

STABLE LIPID-COMPRISING DRUG DELIVERY COMPLEXES AND METHODS FOR THEIR PRODUCTION

Xiang Gao, Pittsburgh, and Leaf Huang, Wexford, both of Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Filed Jan. 23, 1995, Ser. No. 376,701
Int. Cl.[6] A61K *9/127*
U.S. Cl. 424—450 21 Claims



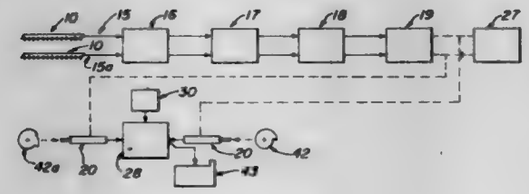
1. A method for producing noncovalent nucleic acid/lipid/polycation complexes having a net positive charge at about pH 6.0–8.0, said method comprising mixing said nucleic acid with cationic liposomes and polycation in a ratio of nucleic acid to lipid to polycation which results in the production of said complexes, said polycation being selected from the group consisting of polyarginine, polyornithine, protamines, polylysine, polybrene (hexadimethrine bromide), histone, cationic dendrimer, spermine, spermidine and synthetic polypeptides derived from SV40 large T antigen, and which synthetic polypeptides have excess positive charges and represent a nuclear localization signal.

5,795,588

ENCAPSULATED PRODUCT

Erich W. Sauter, Washington Crossing, Pa., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 180,550, Jan. 12, 1994, Pat. No. 5,511,361, which is a division of Ser. No. 927,066, Aug. 7, 1992, Pat. No. 5,317,849. This application Oct. 14, 1994, Ser. No. 323,160
Int. Cl.[6] A61K *9/48*; A61J *3/07*
U.S. Cl. 424—451 13 Claims



1. An encapsulated product comprising:
a solid caplet;
a first gelatin capsule part having an open end and a hollow interior of cross-section substantially equal to the cross-section of said caplet;
a second gelatin capsule part having an open end and a hollow interior of cross-section equal to the first;
said hollow interior of said first and second capsule parts having a combined length substantially equal to the length of said caplet; and
said capsule parts being fitted over said caplet and having said open ends in abutting relationship with each other.

5,795,589

LIPOSOMAL ANTINEOPLASTIC AGENT COMPOSITIONS

Lawrence D. Mayer; Marcel B. Bally; Pieter R. Cullis, all of Vancouver, Canada; Richard S. Ginsberg, Jamesburg, and George N. Mitilenes, Washington, both of N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 112,875, Aug. 26, 1993, Pat. No. 5,616,341, which is a continuation of Ser. No. 636,015, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 164,557, Mar. 7, 1988, abandoned, which is a continuation-in-part of Ser. No. 22,154, Mar. 5, 1987, abandoned. This application Feb. 5, 1997, Ser. No. 794,988
Int. Cl.[6] A61K *9/127;9/133*
U.S. Cl. 424—450 31 Claims

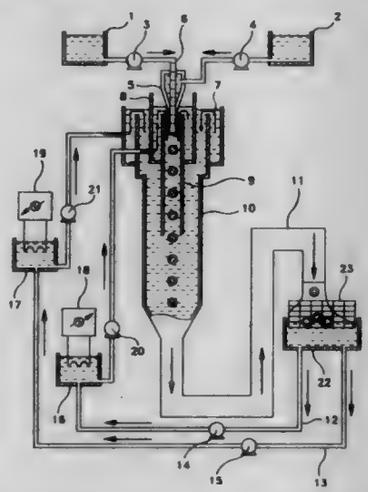
1. A composition comprising:
(i) liposomes which comprise an ionizable basic antineoplastic agent, a release inhibiting aqueous buffer comprising citric acid and a bilayer comprising a lipid; and
(ii) an aqueous solution external to the liposomes which is basic with respect to the release-inhibiting buffer.

5,795,590

SEAMLESS CAPSULES

Jesse J. Kiefer, Belvidere, and Blake H. Glenn, Randolph, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 412,672, Mar. 29, 1995, Pat. No. 5,595,757. This application Jul. 24, 1996, Ser. No. 686,649
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—451 13 Claims



1. An apparatus for making a seamless capsule comprising a shell material encapsulating a center-filled core material comprising:
a concentrically aligned multiple nozzle system having at least an outer nozzle and an inner nozzle for simultaneously extruding a shell material through the outer nozzle and a core material through an inner nozzle, thereby forming a coaxial jet of the shell material surrounding the core material;
means for supplying the shell material to the outer nozzle and the core material to the inner nozzle;
a first duct located beneath the multiple nozzle system for receiving the coaxial jet;
means for delivering a heated carrier liquid to the first duct to form a flow of the heated carrier liquid surrounding the coaxial jet, thereby allowing the shell material to encapsulate the core material to form capsules in the heated carrier liquid;
a second duct, at least a part of which is located beneath the first duct, for receiving the flow of the heated carrier liquid carrying the capsules from the first duct;

means for delivering a cooled carrier liquid into the second duct to form a flow of the cooled carrier liquid surrounding the capsules, thereby allowing the capsules to solidify.

5,795,591

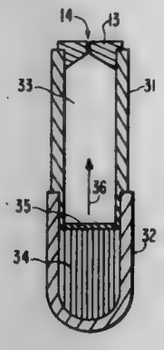
OSMOTIC DRUG DELIVERY DEVICES WITH HYDROPHOBIC WALL MATERIALS

Eun Soo Lee, Redwood City; Scott A. Bura, Palo Alto; Su Il Yum, Los Altos; Patrick S.-L. Wong, Palo Alto, and Felix Theeuwes, Los Altos, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 775,635, Oct. 10, 1991, abandoned. This application Sep. 1, 1994, Ser. No. 299,867

Int. Cl.[6] A61K *9/26*

U.S. Cl. 424—473 **12 Claims**



1. An osmotically driven device for lodgment in an aqueous environment in the interior of an animal for the controlled delivery of a beneficial agent to said animal, said device comprising:

(a) a beneficial agent;

(b) an osmotically active substance which expands on exposure to water in the aqueous environment; and

(c) a wall, surrounding said agent and said substance, and defining an exit orifice for releasing said agent therethrough in response to expansion of said substance; said wall being formed of a non-wetting hydrophobic material which material is a biodegradable polymer selected from the group consisting of poly (lactic acid), poly (glycolic acid), and copolymers of lactic acid and glycolic acid, and at least a section of said wall having air-filled interconnected pores therethrough, through which pores water vapor from the aqueous environment passes into the substance, said wall section being impermeable to liquid water and permeable to water vapor.

5,795,592

PHARMACEUTICAL COMPOSITION TO ENHANCE TISSUE HEALING AND REGENERATION AND APPLICATION KIT COMPRISING IT

Maurizio Tonetti, The Procter & Gamble Company, 11450 Grooms Rd., Cincinnati, Ohio 45242-1434

Division of Ser. No. 130,958, Oct. 4, 1993, abandoned. This application Jan. 2, 1996, Ser. No. 587,600

Int. Cl.[6] A61K *9/14*

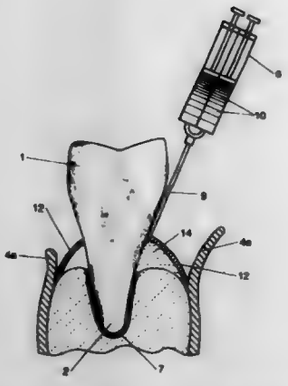
U.S. Cl. 424—484 **4 Claims**

1. A process for the treatment of a body site to enhance the tissue healing and regeneration comprising the following steps:

a) gaining access to the body site;

b) limiting the area of tissue loss, with creation of a space, with or without use of a barrier membrane, at the area of the tissue loss; and

c) placing a pharmaceutical composition comprising a calcium channel blocker as an active agent and a biocompatible carrier for fixing the agent temporarily at the site of application into the space and filling it,



said biocompatible carrier is selected from the group consisting of fibrin, a polyamino acid, gelatin, polylactide, glucuronic and polymer, polylactide glycolide copolymer and polyvinylpyrrolidone.

5,795,593

Patent Not Issued For This Number

5,795,594

SALMETEROL XINAFOATE WITH CONTROLLED PARTICLE SIZE

Peter York, Ilkley, Great Britain, and Mazen Hanna, Leeds, United Kingdom, assignors to Glaxo Group Limited, Greenford Middlesex, Great Britain

PCT No. PCT/GB94/01425, § 371 Date Mar. 28, 1996, § 102(e) Date Mar. 28, 1996, PCT Pub. No. WO95/01324, PCT Pub. Date Jan. 12, 1995

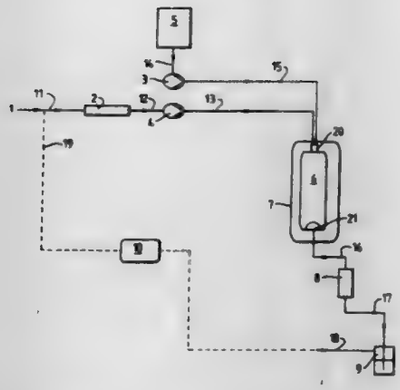
PCT Filed Jun. 30, 1994, Ser. No. 564,278

Claims priority, application United Kingdom, Jul. 1, 1993, 9313650

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—489 **15 Claims**

1. 4-Hydroxy-α^1-[[[6-(4-phenylbutoxy)hexyl]amino]methyl]-1,3-benzenedimethanol (salmeterol), 1-hydroxy-2-



naphthalenecarboxylate (xinafoate) in an easily fluidized crystalline form, with a dynamic bulk density of less than 0.1 $g.cm^{-3}$.

5,795,595

SPINNING PACK WITH SAND FILTER

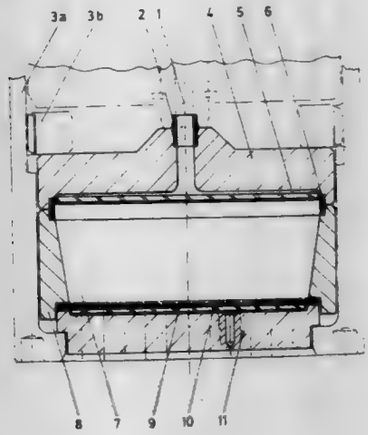
Heinz-Dieter Beeck, Frankfurt am Main; Bernd Kretschmann, Alzenau, and Wilhelm Sprick, Bockenem, all of Germany, assignors to Zimmer Aktiengesellschaft, Germany

Filed Sep. 9, 1996, Ser. No. 698,684

Claims priority, application Germany, Feb. 24, 1996, 196 07 103.8

Int. Cl.[6] D01D *4/06*

U.S. Cl. 425—198 9 Claims



1. In a spinning pack for use with melt spinning thermoplastics comprising a casing with a cover plate and a melt channel having a longitudinal axis defining a direction of flow of the thermoplastics through the spinning pack, a sand filter with a metal protective filter, and a die plate, the sand filter having a front side into which the thermoplastic flows and a back side out from which the thermoplastic flows, the improvement comprising a perforated plate with a plurality of evenly distributed, punched, D-shaped, slanting holes having a flat side and a bowed side, with the slanting holes tapering conically in the direction of flow, wherein the exit side of the perforated plate is uneven as a result of punching, and wherein the perforated plate is present on the front side, or back side, or both sides of the filter.

5,795,596

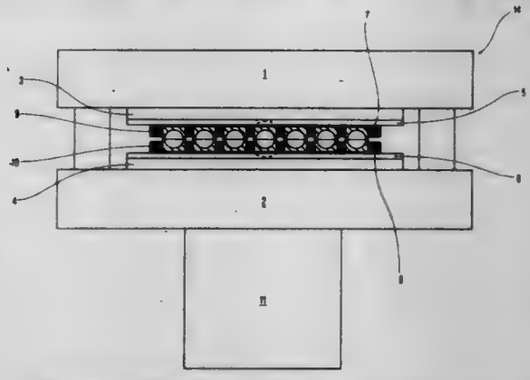
COMPRESSION MOLD WITH RUBBER SHIMS

Lawrence E. Stanton, Stoughton, and Phillip Landry, New Bedford, both of Mass., assignors to Acushnet Company, Fairhaven, Mass.

Filed Feb. 7, 1996, Ser. No. 598,173

Int. Cl.[6] B29C *43/000*

U.S. Cl. 425—116 20 Claims



1. A compression mold comprising:

an upper plate and a lower plate having opposing inner rigid surfaces;

upper and lower frame members attached to said upper and lower plates respectively, having a plurality of cavities for receiving half-molds;

a plurality of pairs of corresponding upper half-molds and lower half-molds positioned in the cavities of the upper and lower frame members, each half-mold having a top edge for contacting the top edge of the corresponding half-mold; and

a shim comprised of a cured material positioned between the inner surface of at least one of the upper and lower plates and at least one of the upper and lower half-molds, the shim being placed in the mold in a first configuration and deformed to and cured in the mold in a second configuration such that the top edges of the corresponding upper and lower half-molds are positioned to align and fully contact each other substantially upon first contact therebetween when the mold is closed.

5,795,597

WINDSHIELD MOLDING FOR VEHICLES

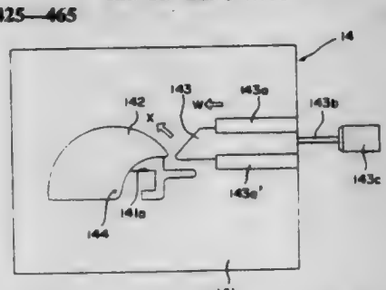
Yukihiko Yada, Nagoya, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Division of Ser. No. 333,648, Nov. 3, 1994, Pat. No. 5,523,041, which is a division of Ser. No. 890,158, May 29, 1992, Pat. No. 5,389,423. This application Mar. 8, 1996, Ser. No. 613,177

Claims priority, application Japan, May 31, 1991, 3-157580

Int. Cl.[6] B29C *47/18*

U.S. Cl. 425—465 14 Claims



1. An apparatus for producing an automobile windshield for decorating along a periphery of a windshield located in an opening of a vehicle body panel, said apparatus comprising:

an extruding device including a plurality of dies, said automobile windshield molding having a decorative section extending along said periphery of the windshield of which cross-sectional profile continuously varies in a longitudinal

direction from a first molding section to a second molding section, and a rainwater retaining groove in and along the first molding section, wherein said dies are arranged to be disposed to correspond with each of surfaces which are formed as an outer surface of the decorative section and an inner surface of the rainwater retaining groove by extruding; and

moving means for moving at least a first one of said plurality of dies during extrusion to form the rainwater retaining groove, and gradually changing a position of said at least first die in a perpendicular direction to an extruding direction from said first molding section to the second molding section so as to vary a size of the rainwater retaining groove;

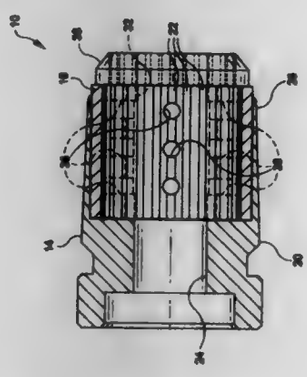
wherein a movement of said moving means to move said at least first die for forming the rainwater retaining groove with distance from the other dies reduces the size of the rainwater retaining groove from said first molding section to the second molding section.

5,795,598

ASSEMBLY FOR INFLATING A PARISON AND FORMING THE NECK OF A PLASTIC BOTTLE

Emanuel E. Wohlgemuth, North Bellmore, N.Y., and Richard J. Cobiski, Jr., St. Charlton, Mass., assignors to Ultraseal Technologies Corporation, Worcester, Mass.

Filed Apr. 28, 1997, Ser. No. 842,091
Int. Cl.[6] B29C *49/58*
U.S. Cl. 425—525 **20 Claims**



1. An assembly for inflating a parison and forming the neck portion of a plastic container in a blow molding apparatus, comprising:

a blow rod including an axial passage, a first opening, and a second opening axially spaced from said first opening, each of said openings communicating said axial passage with the exterior of said blow rod;

a blow pin assembly mounted to said blow rod, said blow pin assembly including:

a blow pin body including a shearing member, said blow pin body being comprised of a first durable material, and

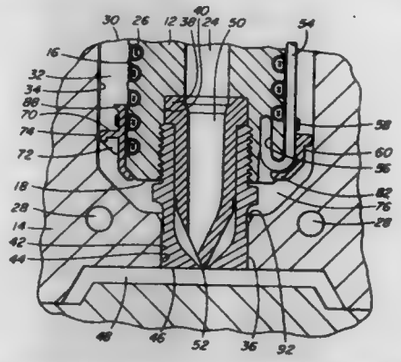
a heat sink positioned for receiving heat via conduction from said blow pin body, including said shearing member, said heat sink engaging said blow pin body and being comprised of a second material having high heat transfer properties, said heat sink including at least one surface exposable to gas emanating from said second opening of said blow rod.

5,795,599

INJECTION MOLDING NOZZLE GUIDE AND SEALING RING

Jobst Ulrich Gellert, 7A Prince Street, Georgetown, Ontario, Canada, L7G 2X1

Filed Nov. 12, 1996, Ser. No. 747,438
Claims priority, application Canada, Oct. 9, 1996, 2187497
Int. Cl.[6] B29C *45/20*
U.S. Cl. 425—549 **6 Claims**



1. In an injection molding apparatus having at least one heated nozzle extending forwardly into a well with a generally cylindrical wall in a cooled mold with an insulative air space extending between the at least one heated nozzle and the surrounding cooled mold, the at least one nozzle having a rear end, a front end, at least a portion adjacent the front end with a generally cylindrical outer surface, and a melt bore extending therethrough from the rear end to the front end in alignment with a gate leading to a cavity in the mold, the improvement further comprising;

a guide and sealing ring mounted around the outer cylindrical surface adjacent the front end of the at least one nozzle prior to insertion of the at least one nozzle into the well in the mold, the guide and sealing ring having an inner surface and an outer surface, the inner surface forming a cylindrical opening which fits around the outer cylindrical surface of the at least one nozzle, the outer surface of the guide and sealing ring fitting in the well to guide the front end of the at least one nozzle during insertion of the at least one nozzle into the well in the mold and to provide a seal between the outer surface of the guide and sealing ring and the generally cylindrical wall of the well, guide and sealing ring having a plurality of forwardly extending fingers spaced therearound, whereby after the guide and sealing ring is mounted around the outer cylindrical surface of the nozzle, the forwardly extending fingers are bent radially inwardly over the front end of the nozzle to retain the guide and sealing ring securely in place.

5,795,600

MELT DUCTING ARRANGEMENT FOR INJECTION MOLDING NOZZLE

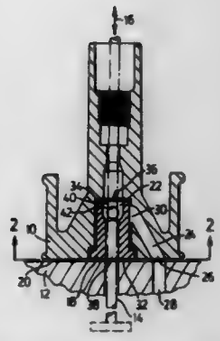
Henry J. Rozema, Brampton, Canada, assignor to Tradesco Mold Limited, Rexdale, Canada

Filed Apr. 15, 1997, Ser. No. 839,569
Int. Cl.[6] B29C *45/23*
U.S. Cl. 425—562 **4 Claims**

1. A melt ducting arrangement for a multi-cavity injection molding system, said melt ducting arrangement having a heated nozzle, a valve pin axially slidable in said heated nozzle and a guide bushing for said valve pin mounted in a manifold end of said heated nozzle; said melt ducting arrangement comprising:

a groove in said heated nozzle extending at least part way around said guide bushing;

a melt passage extending between said groove and said manifold end of said heated nozzle, said melt passage having an inlet for registering with a melt passage in a manifold and an outlet into said groove to provide a melt conduit between said manifold and said groove;



said guide bushing having an outer end adjacent said manifold and an inner end extending into said nozzle, said bushing further having a hole extending generally axially therethrough, said hole having a narrower diameter portion at said outer end for slideably receiving and guiding said valve pin and a wider diameter portion at said inner end to provide space for receiving melt between said valve pin and said bushing; and

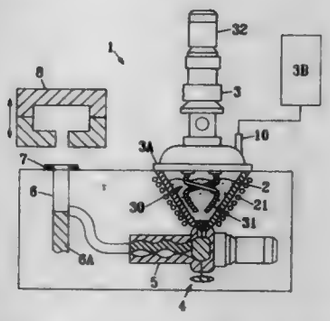
said guide bushing further having a plurality of openings extending therethrough into said wider diameter portion and registering with said groove to provide a melt conduit between said groove and said wider diameter portion of said hole.

5,795,601

APPARATUS FOR SUPPLYING INORGANIC SLURRY TO AN INJECTION MOLD

Kazuyuki Yamada, and Yuji Saito, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1996, Ser. No. 673,870
Claims priority, application Japan, Jul. 10, 1995, 7-196968
Int. Cl.[6] B29C *45/63*
U.S. Cl. 425—580 **18 Claims**



1. An apparatus for supplying an inorganic slurry to a mold for injection molding, comprising:

a slurry tank for storing said inorganic slurry, said slurry tank including a funnel-shaped lower tank portion having a conical valve seat and a discharge port defined in a lower end thereof;

a valve mechanism including a valve positioned in said slurry tank above said discharge port, said valve having a complementary shaped conical outer rim for engaging said conical valve seat in said funnel-shaped lower tank portion of said slurry tank, and an actuator connected to said valve from below said discharge port for vertically moving said valve selectively (a) upwardly out of said discharge port and into said funnel-shaped lower tank portion above said discharge port to allow the inorganic slurry to be discharged from said discharge port and (b) downwardly into said discharge port whereby said conical outer rim of said valve engages said conical valve seat to stop discharging the inorganic slurry from said discharge port; and

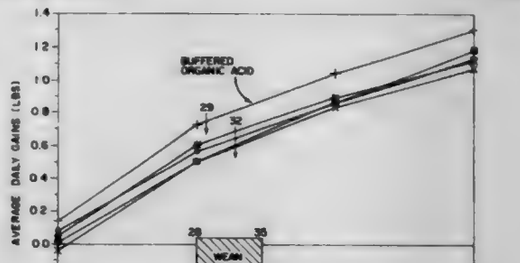
a proportional pump connected between said discharge port and the mold for supplying the inorganic slurry at a constant rate to the mold for injection molding when said valve is moved out of said discharge port by said actuator.

5,795,602

MILK ENHANCER AND MILK FEED COMPOSITION

William Michael Craig, Monticello; David P. Casper, Elk River, and Hank Esveld, Randolph, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Filed Apr. 12, 1996, Ser. No. 629,947
Int. Cl.[6] A23C *11/10*
U.S. Cl. 426—2 **19 Claims**



1. A milk enhancer composition for mixing with milk to provide a milk feed composition having a fat content not more than about the fat content of the milk with which the enhancer is mixed, and enhanced levels of protein and amino acids relative to the milk with which the enhancer is mixed, the milk enhancer comprising:

from about 10 to about 45 weight percent protein;

from about 0 to about 10 weight percent fat;

from about 1.5 to about 5.5 weight percent lysine;

from about 0.39 to about 1.40 weight percent methionine; and

from about 1.25 to about 3.15 weight percent threonine, based on the weight of the milk enhancer composition, the milk enhancer composition when mixed with milk effective for providing a milk feed composition having enhanced levels of protein and amino acids relative to the milk with which the enhancer is mixed.

5,795,603

PROCESS FOR FORMING A FILLED TORROIDAL BAGEL PRODUCT

Alvin Burger, 7876 SW. 89th La., Miami, Fla. 33156

Continuation-in-part of Ser. No. 577,965, Dec. 26, 1995, Pat. No. 5,654,021, and Ser. No. 577,963, Dec. 26, 1995, Pat. No. 5,641,527, each which is a continuation-in-part of Ser. No. 106,763, Aug. 16, 1993, Pat. No. 5,514,395, which is a continuation-in-part of Ser. No. 816,010, Dec. 31, 1991, Pat. No. 5,236,724. This application Feb. 20, 1996, Ser. No. 602,486
Int. Cl.[6] A21D *13/00*
U.S. Cl. 426—94 **16 Claims**

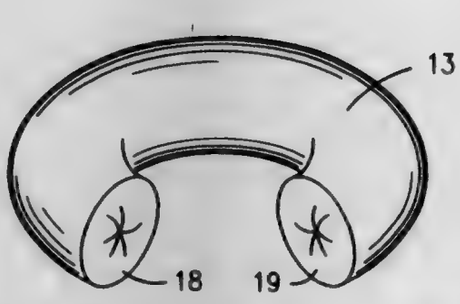
1. A process for making a filled bagel dough product, said process comprising the steps of:

(A) mixing and kneading a yeast bagel dough;

(B) proofing the product of step (A) to activate said yeast to raise said dough through fermentation;

(C) forming a substantially rectangular sheet of bagel dough having a width W, a length L, a lengthwise longitudinal axis, a widthwise transverse axis, a first transverse edge, longitudinal side edges, and a second transverse edge;

(D) depositing a strand of a cream cheese filler material on top of said substantially rectangular sheet of bagel dough along the longitudinal axis of the substantially rectangular sheet of bagel dough;



(E) causing the substantially rectangular sheet of bagel dough to roll around said strand of cream cheese such that said longitudinal edges of said substantially rectangular sheet of bagel dough contact and fuse and to form a cream cheese filled bagel dough cylinder having first and second ends and a cream cheese core;

(F) causing the first and second ends of said cream cheese filled bagel dough cylinder to contact and fuse and form a torroidal bagel shape;

(G) baking said torroidal bagel shape by a process involving:

(1) boiling in water for approximately 2 minutes, cooling, the boiled bagel shape for a period of time sufficient to obtain a core temperature of the cream cheese filler material at about 40–50 degree F., and baking for about 4 minutes, or

(2) steaming for approximately 6 minutes, cooling the steamed bagel shape for approximately 10 minutes or cooling the steamed bagel shape to obtain a core temperature of the cream cheese filler material at about 40–50 degree F., and baking for approximately 2 minutes.

5,795,604

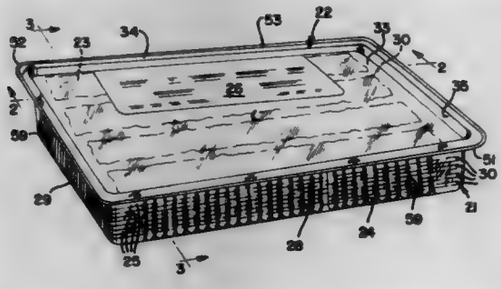
RIGID RECLOSABLE BACON PACKAGE

Cindie M. Wells, Cambridge, and Mark E. Selz, Sun Prairie, both of Wis., assignors to Kraft Food, Inc., Northfield, Ill.

Continuation-in-part of Ser. No. 220,849, Mar. 31, 1994, Pat. No. 5,520,939. This application May 23, 1996, Ser. No. 652,178

Int. Cl.[6] B65D *85/62*

U.S. Cl. 426—129 **30 Claims**



1. A shaped, generally rigid synthetic plastic sealed package of bacon, including a set of bacon pieces, the package being reclosable and comprising:

a shaped, generally rigid bubble tray member having a bottom panel, side panels defining a generally upstanding sidewall and an open mouth generally opposite to said bottom panel, said open mouth being defined between said generally upstanding sidewall and a tray member peripheral flange, said bubble tray member having transparency properties to permit inspection therethrough of an order set of bacon pieces within the tray member;

a shaped, generally rigid pedestal cover member secured onto said tray member, said pedestal cover member having a cover pedestal panel, a cover member peripheral flange, and a peripheral inset portion joining said cover pedestal panel and said cover member peripheral flange, said peripheral inset portion being substantially parallel to the generally upstanding sidewall of the tray member, and said pedestal cover panel being spaced from said cover member peripheral flange;

said bottom panel of the bubble tray member, said sidewall of the bubble tray member, and said cover pedestal panel of said pedestal cover member are sized and shaped for enclosing therewithin said ordered set of bacon pieces;

said ordered set of bacon pieces engages inside walls of both of said bubble tray member and of said pedestal cover member, and each one of said bacon pieces is supported by said inside surfaces directly or indirectly through others of said bacon pieces to thereby substantially maintain said ordered set of bacon pieces in a configuration which had been determined at the time the package was filled and sealed;

means for releasably hermetically sealing together said tray member peripheral flange to said cover member peripheral flange to provide a sealed package containing said ordered set of bacon pieces; and

said sealed package having said ordered set of bacon pieces is gas flushed.

5,795,605

PROCESS FOR PRODUCING A LINKED, CO-EXTRUDED EDIBLE PRODUCT

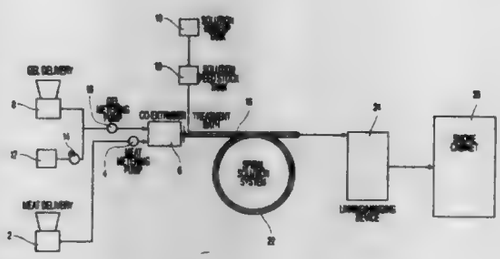
Trevor Francis Morgan, Airdrie, United Kingdom; Gordon Frame, Neshanic, N.J., and Petrus Johannes Kobussen, La Veghel, Netherlands, assignors to Devro PLC, Glasgow, Great Britain

Continuation of Ser. No. 256,390, Oct. 11, 1994, abandoned. This application Jun. 28, 1996, Ser. No. 673,411

Claims priority, application United Kingdom, Dec. 28, 1991, 9127463

Int. Cl.[6] A22C *11/00*; **A23L** *1/317*

U.S. Cl. 426—277 **12 Claims**



1. A process of producing a linked co-extruded edible product comprising the steps of:

forming a collagen gel, the collagen gel comprising collagen and a strong inorganic acid;

co-extruding a substantially uniform coating of said collagen gel around a length of an extruded edible fluid product;

feeding the co-extruded collagen gel and edible product along a path while contacting the coating of collagen gel with a chemical coagulation bath comprising an aqueous solution of sodium carbonate, said bath having a chemical coagulating agent;

applying a cross-linking agent to said gel;

coagulating said coating of collagen gel for a predetermined coagulation time, while maintaining said edible fluid product in a fluid state, to form a collagen casing which is sufficiently strong to allow mechanical twist-linking of said casing and edible fluid product at spaced points along said length; then

mechanically linking said casing and edible fluid product at said spaced points while said co-extruded edible fluid product is still in said fluid state; and

displacing said edible fluid product away from said spaced points during said linking.

5,795,606

METHOD FOR PREPARING A COATED FOOD

John Arthur Lapré, Ede, Netherlands; William Thomas McNabola, Wilmington, Del.; Jan Veenstra, Barneveld, and Hielke Tjeerd De Vries, Ede, both of Netherlands, assignors to Hercules Incorporated, Wilmington, Del.

Filed Oct. 2, 1995, Ser. No. 537,399
Int. Cl.[6] A23L *1/00*
U.S. Cl. 426—302 8 Claims

1. A method of preparing a food, the method comprising boiling in an aqueous medium containing crosslinking cations, a coated core comprising:

(a) a core comprising a carbohydrate; and

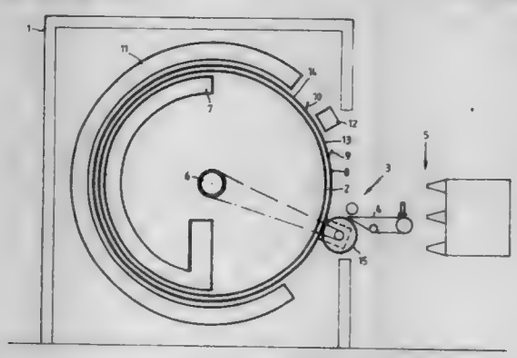
(b) a coating comprising a crosslinkable polysaccharide; wherein the boiling crosslinks the crosslinkable polysaccharide, renders the coating insoluble in boiling water, and cooks and hydrates the core.

5,795,607

PROCESS AND DEVICE FOR PRODUCING ROLLED WAFER CONES

Franz Haas, Vienna, and Johann Haas, Klosterneuburg, both of Austria, assignors to Franz Haas Waffelmaschinen Industriegesellschaft mbH, Vienna, Austria

PCT No. PCT/AT95/00108, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/32630, PCT Pub. Date Dec. 7, 1995
PCT Filed May 29, 1995, Ser. No. 750,381
Claims priority, application Austria, May 27, 1994, 1088/94
Int. Cl.[6] A21D *13/08*
U.S. Cl. 426—391 29 Claims



1. A process for producing rolled wafer cones for industrial-scale filling with ice cream and storage in the frozen state, the process which comprises:

a) pouring dough with a high sugar content onto an endless, continuously moving, heated baking surface, and forming a strip of dough;

b) baking the strip of dough into a thick wafer strip;

c) compacting the baked wafer strip, in a plastically deformable state thereof, and dividing the baked wafer strip into individual wafer pieces; and

d) rolling the individual wafer pieces into wafer cones.

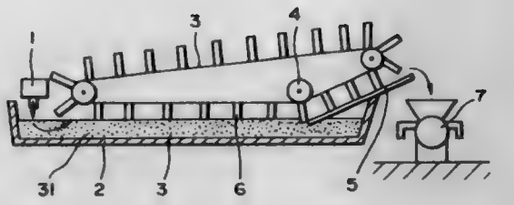
5,795,608

PROCESS FOR PREPARING COATING PARTICLES USED FOR A FRIED FOOD

Kouhachi Mukaida, Aomori-ken, Japan, assignor to Hachitei Corporation, Aomori-ken, Japan

Filed Aug. 5, 1996, Ser. No. 692,460
Int. Cl.[6] A21D *10/00*
U.S. Cl. 426—439 3 Claims

1. A process of making coating particles by mixing raw materials comprising one of flour, starch, cereal powder, and seasoning, together with water to form a slurry, and then frying said slurry



with the use of an edible oil contained in a frying apparatus, in which said process comprises the steps of:

prefrying said slurry at a primary stage, by pouring said mixture on a surface of said edible oil which is retained in a pouring portion away from a flowing portion of said frying apparatus, such that said slurry penetrates into said edible oil and elevating upwardly said slurry onto the surface of said edible oil, thereby forming prefried coating particles; and

frying said prefried coating particles at a secondary stage in said flowing portion of said frying apparatus by an application thereto of a movement with a simultaneous agitation on said surface of said edible oil of said frying apparatus, thereby forming fried coating particles.

5,795,609

ALKYLENE GLYCOL EXTRACTION OF ANTIOXIDANTS FROM VEGETABLE MATTER

Robert Aeschbach, Vevey, and Patricia Rossi, La Tour-De-Peilz, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Feb. 20, 1996, Ser. No. 603,641
Claims priority, application European Pat. Off., Feb. 21, 1995, 95102439; Nov. 28, 1995, 95203264
Int. Cl.[6] A23D *9/06*
U.S. Cl. 426—542 18 Claims

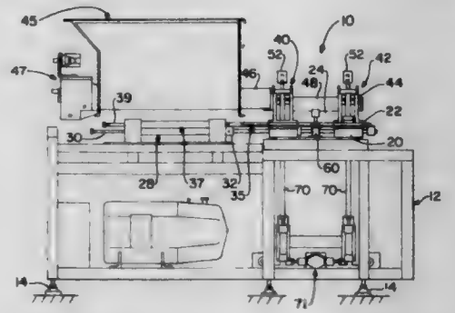
1. A process for obtaining antioxidants from vegetable matter comprising mixing a C_2–C_6 alkylene glycol with vegetable matter which contains antioxidant substances and which has a water content, by weight, of from 5% to 30% to obtain a mixture and pressing the mixture to subject the mixture to a pressure of at least 40 bar to obtain from the vegetable matter a liquid extract containing antioxidant substances.

5,795,610

FOOD MOLDING APPARATUS AND METHOD OF FORMING FOOD PRODUCTS

Eugene J. London, Sandusky, Ohio, assignor to Stein, Inc., Sandusky, Ohio

Continuation-in-part of Ser. No. 500,305, Jul. 10, 1995, Pat. No. 5,618,571. This application May 3, 1996, Ser. No. 642,507
Int. Cl.[6] A22C *7/00;* A23P *1/00*
U.S. Cl. 426—512 20 Claims



16. A method of molding formable materials comprising the steps of:

supplying a formable material into at least one supply manifold of a molding apparatus,

providing a mold plate having at least one mold cavity, said mold plate being selectively positioned so the at least one mold cavity is exposed to the formable material within said at least one supply manifold,

providing a mold plate knife assembly including at least one mold plate knife positioned adjacent said mold plate and a drive mechanism to selectively move said at least one mold plate knife from an open position to a closed position,

positioning said at least one mold plate knife in said open position, such that said mold plate is in a fill position and said at least one mold cavity is exposed to said formable material within said at least one supply manifold to be filled,

applying pressure on said formable material in said manifold to fill said at least one mold cavity exposed thereto,

moving said at least one mold plate knife to said closed position to cut said formable material at a position adjacent a first surface of said mold plate.

5,795,611

HUMAN INFANT FORMULAS CONTAINING RECOMBINANT HUMAN ALPHA-LACTALBUMIN AND BETA-CASEIN

Charles W. Slattery, 11403 Golden Gate Dr., Yucaipa, Calif. 92399

Filed Dec. 20, 1989, Ser. No. 453,779
Int. Cl.[6] A23C *9/00*
U.S. Cl. 426—580 **6 Claims**

1. A human infant formula of the type comprising proteins, lipids from vegetable sources, vitamins and minerals, wherein said proteins are recombinant proteins produced by non-human organisms, said proteins having the amino acid sequences of human alpha-lactalbumin and human beta-casein.

5,795,612

ASPARTYLDIPEPTIDEAMINE DERIVATIVES AND SWEETNER

Tadashi Takemoto; Yusuke Amino, and Ryoichiro Nakamura, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 579,976
Claims priority, application Japan, Jun. 12, 1995, 7-144844
Int. Cl.[6] A23L *1/236*; C07C *229/00*
U.S. Cl. 426—548 **11 Claims**

1. Aspartyldipeptideamide compounds of formula (I):

$$L\text{—}Asp\text{—}X\text{—}NH\text{—}C^{*}HR_1R_2 \quad (I)$$

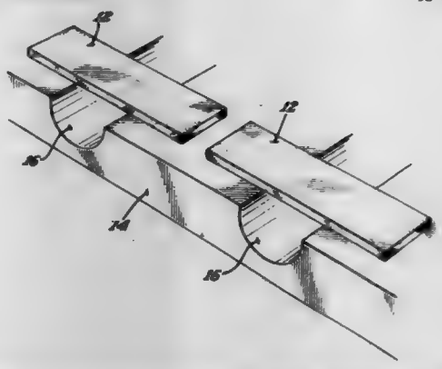
and salts thereof, wherein X is a D-α-amino acid residue or a DL-α-amino acid residue selected from the group consisting of D-alanine, D-α-aminobutyric acid, D-norvaline, D-valine, D-norleucine, D-leucine, D-isoleucine, D-alloisoleucine, D-t-leucine, D-serine, D-O-methylserine, D-threonine, D-O-methylthreonine, D-allothreonine, D-O-methylallothreonine, D-phenyl glycine and D- or DL furyl glycine, or X is a cyclic or non-cyclic α, α-dialkyl amino acid residue having 3 to 6 carbon atoms; R_1 is a linear or branched alkyl group having 1 to 6 carbon atoms or an alkoxymethyl group having 2 to 7 carbon atoms in the alkoxy portion; R_2 is a phenyl group having a substituent in its 2, 3- or 4-position selected from the group consisting of F, Cl, Br, I, a hydroxy group, a linear or branched alkoxy group having 1 to 6 carbon atoms, a cyano group, a nitro group, an acetyl group, an amino group and an acetylamino group, or R_2 is a phenyl group having a methylenedioxy group, a trimethylene group or a tetramethylene group in its 2, 3- or 3, 4- position or R_2 is a 2, 3- or 4-pyridyl group, a 2- or 3-furyl group or a 2- or 3-thienyl group; the configuration of C* in formula (I) is (S) or (RS) when R_1 is a linear or branched alkyl group; (R), (S) , or (RS) when R_1 is an alkoxymethyl group; and in formula (I), L-Asp and X are α-bonded.

5,795,613

DRIED CHEESE PIECES OF NONMELTING CHEESE AND PROCESS OF MAKING THE SAME

Paul Scharfmann, Madison, and Ludwig Zoller, Watertown, both of Wis., assignors to Specialty Cheese Company, Inc., Lowell, Wis.

Continuation-in-part of Ser. No. 373,952, Jan. 17, 1995, abandoned. This application May 1, 1996, Ser. No. 641,482
Int. Cl.[6] A23C *19/086*
U.S. Cl. 426—582 **40 Claims**



1. A dried cheese product useful as a shelf stable snack product, comprising:

a crisp unpuffed dried cheese piece without a dry crust fabricated from a slice of a nonmelting cheese having been dried to a final moisture content of about 2% to 8%.

5,795,614

METHOD OF MAKING A REDUCED FAT EMULSIFIED DRESSING

Ramanathapur G. Krishnamurthy, Glenview, and Vernon C. Witte, Naperville, both of Ill., assignors to Kraft Foods, Inc., Northfield, Ill.

Filed Mar. 1, 1996, Ser. No. 609,453
Int. Cl.[6] A23L *1/24*
U.S. Cl. 426—613 **6 Claims**

1. A method for making emulsified oil-in-water food dressing formulations comprising providing a premix comprising a fat, from about 5% to about 30% inulin, egg yolk, an edible acid and water wherein the pH in said premix is from about 2.8 to about 4.5 and subjecting said premix to high shear emulsification by transporting said premix through a high shear emulsifier which has a knife edge homogenization element located within a closely surrounding impact ring and which is operated at a pressure of from about 5,000 psig to about 15,000 psig to provide a stable oil-in-water emulsion.

5,795,615

PROCESS FOR PRODUCING METAL CARBOXYLATES FOR USE AS ANIMAL FEED SUPPLEMENTS

Christopher E. Nelson, and Douglas Howard Catron, both of Des Moines, Iowa, assignors to Kemin Industries, Inc.

Continuation-in-part of Ser. No. 315,557, Sep. 30, 1994, abandoned. This application Sep. 6, 1995, Ser. No. 524,351
Int. Cl.[6] A23K *1//16*; A23L *1/30*
U.S. Cl. 426—648 **15 Claims**

1. A process for preparing a dry, particulate metal carboxylate animal feed supplement having the formula $M(CH_3(CH_2)_xCOO^-)_2$,

wherein M is a divalent metal cation that is zinc (Zn^{+2}) or copper(II) (Cu^{+2}) and x is zero or 1, that comprises the steps of:

(a) agitatingly admixing an anhydrous C_2–C_3 carboxylic acid with an approximately stoichiometric amount of a dry, particulate basic metal compound that is an oxide, hydroxide or carbonate of Zn^{+2} or Cu^{+2}, said admixing being carried out in the absence of added solvent or other diluent to form an agitated exothermic reaction mixture that produces water as a product; and

(b) maintaining said exothermic reaction mixture under agitation while continually removing said water for a time period sufficient to form zinc or copper(II) C_2–C_3 carboxylate in dry, particulate form.

5,795,616

ENHANCED FLAVORS USING 2'-HYDROXYPROPIOPHENONE

Michael J. Greenberg, Northbrook, Ill., assignor to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Dec. 21, 1995, Ser. No. 577,449

Int. Cl.[6] A23G *3/30*

U.S. Cl. 426—650 **30 Claims**

1. A wintergreen-flavored product comprising as a flavorant, methyl salicylate and about 1 to about 99 weight percent 2'-hydroxypropiophenone.

5,795,617

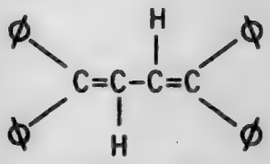
CHARGED COUPLED DEVICE WITH IMPROVED COATING

Roy Howard, 45 Berrel Ave., Trenton, N.J. 08619, and Yair Talmi, 14 Russell Crt., New Town, Pa. 18940

Filed Jun. 2, 1997, Ser. No. 866,668

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—58 **2 Claims**



1. A method of treating a charged coupled device (CCD) having a bandwidth of response, said bandwidth having cutoff and rolloff wavelengths said method comprising the steps of:

selecting a compound capable of shifting energy from wavelengths below said cutoff wavelength to wavelengths above said cutoff wavelengths but below said rolloff wavelength; and coating said CCD with said compound, said compound being tetraphenylbutadiene.

5,795,618

POLYMERIZABLE ADHESIVE (COMPRISING CURED AMINO RESIN POWDER) FOR PRINT ED CIRCUIT BOARD

Motoo Asai, and Chie Onishi, both of Gifu, Japan, assignors to Ibiden Co., Ltd, Ogaki, Japan

Division of Ser. No. 248,209, May 24, 1994, Pat. No. 5,447,996, which is a division of Ser. No. 913,935, Jul. 17. 1992, Pat. No. 5,344,893. This application Jun. 6, 1995, Ser. No. 470,801

Claims priority, application Japan, Jul. 23, 1991, 3-205618

Int. Cl.[6] C23C *26/00*; B05D *5/12*; *3/04*

U.S. Cl. 427—98 **11 Claims**

1. A method of producing printed circuit boards by forming electroless plated conductor circuits through an adhesive layer formed on a substrate, which comprises:

(1) forming onto a substrate an adhesive layer of an adhesive, wherein the adhesive is produced by dispersing a cured fine powder of amino resin which is soluble in an acid or an oxidizing agent into an uncured resin matrix, said uncured resin matrix being curable into a heat-resistant resin matrix which is insoluble in the acid or the oxidizing agent;

(2) roughening a surface of said adhesive layer with the acid or the oxidizing agent; and

(3) subjecting the roughened adhesive layer to electroless plating to form a conductor circuit.

5,795,619

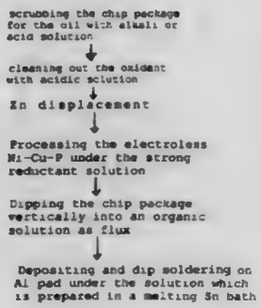
SOLDER BUMP FABRICATED METHOD INCORPORATE WITH ELECTROLESS DEPOSIT AND DIP SOLDER

Kwang-Lung Lin, and Chwan-Ying Lee, both of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Dec. 13, 1995, Ser. No. 571,401

Int. Cl.[6] B05D *5/12*

U.S. Cl. 427—123 **12 Claims**



1. A process for fabricating a solder bump comprising

cleaning a substrate comprising an aluminum pad on a silicon chip with an alkali or an acid solution;

immersing said cleaned substrate in a zinc displacement solution and forming a zinc layer on said substrate, said zinc displacement solution comprising NaOH, zinc oxide, potassium sodium tartrate, and sodium nitrate;

exposing said substrate having a zinc layer thereon to an electroless deposition solution comprising NaH_2PO_2, nickel ions, and copper ions and forming a Ni—Cu—P layer on said zinc layer of said substrate to form a layered substrate;

dipping said layered substrate into a flux comprising stearic acid and glutamic acid; and then dipping said layered substrate into a molten solder bath comprising a solder alloy.

5,795,620

RETARDING THE LEACHING OF METAL VALUES FROM WASTE ROCK

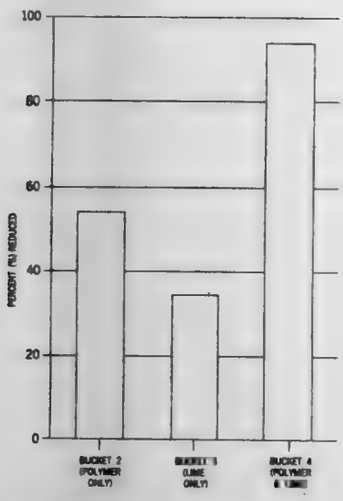
Steven R. Iwinski, Juneau, Ak., assignor to Kennecott Greens Creek Mining Company, Salt Lake City, Utah

Filed Oct. 11, 1996, Ser. No. 729,441

Int. Cl.[6] B05D *3/10*; *1/36*; E01C *11/24*

U.S. Cl. 427—136 **4 Claims**

1. A process for retarding the leaching of metal values other than strontium from waste rock, the waste rock having a leachate with a pH in excess of 5.0 formed when water contacts the rock, the



process comprising coating the waste rock with a polymer having active sites for the metal values contained therein such that the active sites of the polymer chemically adhere to the metal values present in the waste rock.

5,795,621

METHODS FOR PRODUCTION OF PATTERNED SHAPED ARTICLES

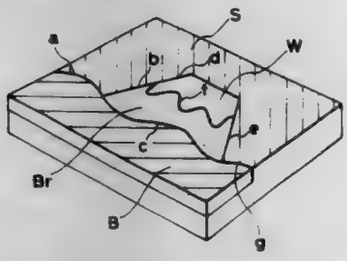
Hiroshi Uchida, Ashikaga; Mitsuhiro Onuki, Kiryu, and Hideo Watanabe, Ashikaga, all of Japan, assignors to CCA Inc., Tokyo, Japan

Continuation of Ser. No. 419,239, Apr. 10, 1995, Pat. No. 5,672,380, which is a division of Ser. No. 115,546, Sep. 3, 1993, Pat. No. 5,429,676. This application Feb. 21, 1997, Ser. No. 804,070

Claims priority, application Japan, Sep. 4, 1992, 4-260492

Int. Cl.[6] B05D *1/26;1/36*

U.S. Cl. 427—180 **2 Claims**



1. A method for producing a patterned shaped article, comprising the steps of:

positioning on a given surface, when no layer of particles exists on the given surface, a head having at least one supply port and at least one suction port;

moving the head to trace a pattern to be formed while simultaneously supplying a sufficient amount of particles onto the given surface from the at least one supply port when no layer of particles exists at positions to which the particles are to be supplied on the given surface, to form an existing layer of particles on the given surface;

removing a portion of the particles of the existing layer by suction using the at least one suction port to thereby form a cavity of a clear-cut pattern;

supplying into the cavity of the clear-cut pattern particles different from the removed particles such that the supplied particles can cooperate with the particles of the existing layer to maintain the clear-cut pattern, the supplied particles being supplied from the at least one supply port, thereby forming the existing layer into a resultant layer of particles having the clear-cut pattern on the given surface, at least some of the particles of the resultant layer being settable particles; and

allowing the resultant layer of particles to set on the given surface.

5,795,622

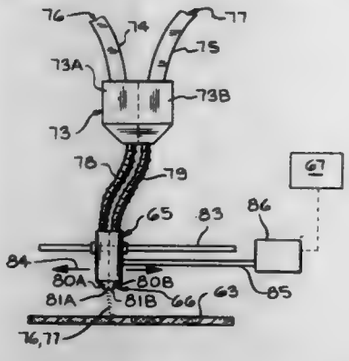
METHOD OF ROTATING OR OSCILLATING A FLOW OF GRANULES TO FORM A PATTERN ON AN ASPHALT COATED SHEET

James S. Belt, Utica; Frank R. Wilgus, Powell, and Frank A. Wilgus, Westerville, all of Ohio, assignors to Owens-Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Dec. 30, 1996, Ser. No. 774,432

Int. Cl.[6] B05D *1/12*

U.S. Cl. 427—186 **22 Claims**



1. A method of forming a pattern of granules on an asphalt coated sheet moving in a machine direction comprising:

discharging a flow of separate first granules and second granules onto the sheet, and

rotating the flow of granules to form a pattern comprising separate regions of first granules and second granules on the sheet, the rotation causing the regions of first granules and second granules to change position relative to one another along the machine direction.

5,795,623

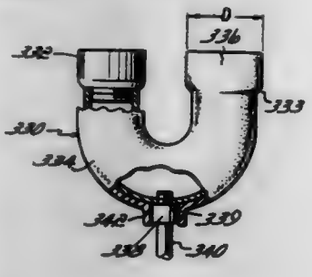
COVER ASSEMBLY AND METHOD FOR COVERING UNDERSINK PIPING

John A. Helmsderfer, Cincinnati, Ohio, assignor to McGuire Manufacturing Co., Inc., Cheshire, Conn.

Continuation of Ser. No. 846,892, May 1, 1997, which is a division of Ser. No. 675,782, Jul. 5, 1996, Pat. No. 5,678,598, which is a division of Ser. No. 271,439, Jul. 7, 1994, Pat. No. 5,586,568, which is a continuation-in-part of Ser. No. 146,999, Oct. 29, 1993, Pat. No. 5,341,830. This application Nov. 3, 1997, Ser. No. 962,617

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—388.1 **7 Claims**



1. A method for insulating an undersink drain piping assembly pipe section with opposite ends comprising:

protecting the ends of said pipe section;
applying a layer of liquified insulation material to the heated pipe section to cover generally the entire pipe section;
curing the material layer until the layer hardens to form an insulative cover layer on the pipe section; and
removing the protection from the ends of the pipe section to provide an insulated pipe section ready for installation into a drain piping assembly beneath a sink which has an insulative cover layer generally free from slits and openings to prevent dirt and contaminants from accumulating on the pipe section and cover layer.

5,795,624

PROCESS FOR COATING ELASTOMERIC MATERIAL

Augusto Fabbri, Riccione, Italy, assignor to Enichem S.p.A., Milan, Italy

Filed Oct. 3, 1997, Ser. No. 943,159
Claims priority, application Italy, Oct. 28, 1996, MI96A2232
Int. Cl.[6] B05D *1/36*
U.S. Cl. 427—412.1 **6 Claims**

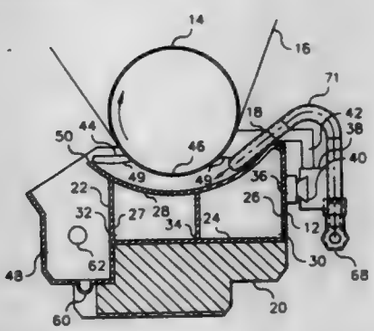
1. A process for coating and protecting an elastomer comprising applying a coating to said elastomer, said coating comprising at least one layer of protective material (material A), optionally reinforced with one or more layers of reinforcing material (material B), wherein:
material A consists essentially of an expanded material selected from the group consisting of (i) branched or linear polyethylenes, (ii) ethylene-vinylacetate copolymer with a content of vinyl acetate from 2 to 18%, (iii) ionomeric resins, (iv) branched propylenes, and mixtures thereof,
material B consists essentially of a non-expanded material again selected from the group consisting of the material A materials.

5,795,625

COATING SOLUTION DISTRIBUTION APPARATUS

James Michael Spiegel, Spencerport; Trevor Dean Huls, Honeoye, and James Michael Peck, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 16, 1996, Ser. No. 683,006
Int. Cl.[6] B05D *1/18*
U.S. Cl. 427—434.5 **9 Claims**



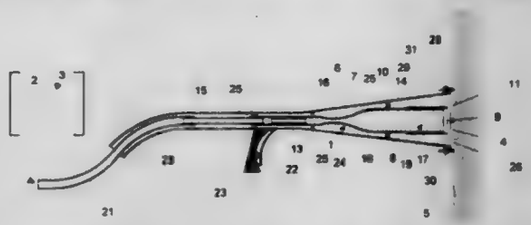
1. A method for applying a liquid coating composition to a moving web comprising the steps of:
(a) continuously passing the moving web through a reservoir pan to thereby coat the moving web with the liquid coating composition contained within the reservoir pan, the reservoir pan including a discharge weir at a downstream end thereof;
(b) and simultaneously continuously delivering the liquid coating composition to the reservoir pan proximate to an upstream end thereof, the liquid coating composition being delivered in a pair of parallel end streams and a plurality of parallel intermediate streams all flowing toward the discharge weir, the parallel end streams velocity through the reservoir pan being greater than parallel intermediate streams.

5,795,626

COATING OR ABLATION WITH A DEBRIS RECOVERY ATTACHMENT

Howard Gabel, Cupertino, Calif., and Ralph M. Tapphorn, Las Cruces, N. Mex., assignors to Innovative Technology Inc., Menlo Park, Calif.

Continuation of Ser. No. 430,419, Apr. 28, 1995. This application Sep. 25, 1996, Ser. No. 719,740
Int. Cl.[6] B05D *1/06*; B05B *5/00*; *5/12*; B05C *5/02*
U.S. Cl. 427—458 **34 Claims**



1. An applicator for a substrate comprising:
an inner nozzle for conveying, accelerating, and triboelectrically charging projectile particles entrained in a supersonic carrier gas to speeds sufficiently high to apply a treatment from the group consisting of coating and ablation to a surface of the substrate when impacted by a triboelectrically charged jet comprising a central core;
an outer evacuator nozzle surrounding said inner nozzle, said outer evacuator nozzle forming a fluid dynamic coupling with said inner nozzle and the substrate to entrain and retrieve excess projectile particles and ablated substrate materials out through said evacuator nozzle; and
a Mach turning angle between an exit of said inner nozzle and said substrate for aspiration of said central core when said carrier gas turns through said Mach turning angle; and
wherein said fluid dynamic coupling aspirates said central core of said triboelectrically charged jet to gas pressures below a back-pressure of ambient gas pressure; and
wherein said fluid dynamic coupling suspends said applicator on a gas bearing channel formed between said outer evacuator nozzle and said substrate by influx of carrier gas through said gas bearing channel.

5,795,627

METHOD FOR ANNEALING DAMAGED SEMICONDUCTOR REGIONS ALLOWING FOR ENHANCED OXIDE GROWTH

Sunil Mehta, San Jose; Emi Ishida, Sunnyvale, and Xiao-Yu Li, San Jose, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 14, 1997, Ser. No. 799,236
Int. Cl.[6] C23C *14/04*
U.S. Cl. 427—526 **24 Claims**



1. A method of forming a region of impurity in a semiconductor substrate, comprising:
(a) forming a mask layer on the surface of the semiconductor substrate;
(b) patterning the mask layer to expose a portion of the semiconductor substrate;
(c) forming an oxide growth enhancing impurity region in the semiconductor substrate;

(d) applying laser energy to the semiconductor substrate at a sufficient magnitude to liquify the oxide growth enhancing impurity region; and

(e) growing an oxide layer having a first thickness above the oxide growth enhancing region.

5,795,628

DEVICE FOR COATING A SUBSTRATE SURFACE

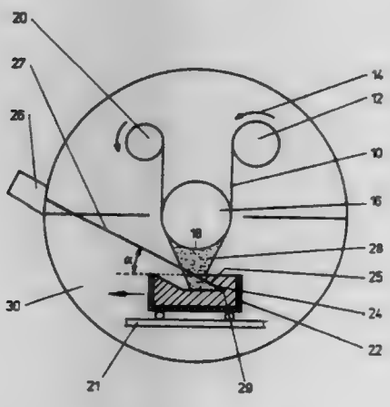
André Wisard, Adlikon, Switzerland, and Wolfgang Lohwasser, Gailingen, Germany, assignors to Alusuisse Technology & Management Ltd., Switzerland

Filed Feb. 28, 1997, Ser. No. 808,121

Claims priority, application European Pat. Off., Mar. 6, 1996, 96810130

Int. Cl.[6] C23C *14/00*

U.S. Cl. 427—566 **15 Claims**



1. Device, which comprises: a vacuum chamber; a substrate having a substrate surface and said substrate surface being situated in said vacuum chamber; a vaporization crucible filled with inorganic materials having a surface thereof and situated in said vacuum chamber; and, in the region of the vacuum chamber, an electron beam or laser gun whose beam is directed at the crucible, said device being for coating said substrate surface with a coating of inorganic materials by vaporizing the inorganic materials; wherein the electron or laser beam of the electron beam or laser gun is directed at the surface of the inorganic materials in the vaporizing crucible, and the electron or laser beam forms an angle α of 10° to 80° to the surface of the inorganic materials, wherein an overhang is present in the inorganic materials, and, geometrically, there is no line of sight between the vaporizing inorganic materials and the substrate surface.

5,795,629

LIQUID CRYSTAL ALIGNMENT LAYER AND LIQUID CRYSTAL DISPLAY DEVICE

Takamasa Harada, Inzai-machi; Hidemasa Yamaguchi, Sayama; Fumie Nozawa, Asaka; Masami Ubukata, Tokorozawa, and Haruhiko Itoh, Kakegawa, all of Japan, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Mar. 13, 1996, Ser. No. 615,612

Claims priority, application Japan, Mar. 15, 1995, 7-055983

Int. Cl.[6] C09K *19/00*

U.S. Cl. 428—1 **20 Claims**

1. A liquid crystal alignment layer for nematic liquid crystals comprising two or more kinds of polymers wherein the difference between the maximum SP value and the minimum SP value of said polymers is at least 1.

5,795,630

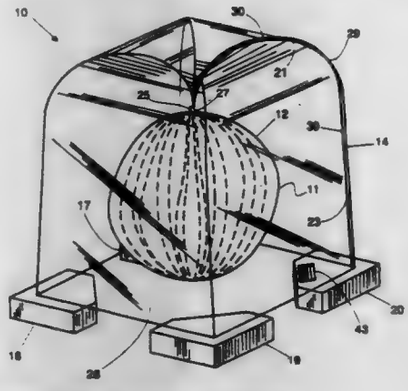
MOTORIZED SPINNING MYLAR ILLUSION DEVICE

Ted S. Shapiro, 55 W. Eleventh Street, Apt. 6C, New York, N.Y. 10011

Continuation-in-part of Ser. No. 144,043, Nov. 1, 1993, Pat. No. 5,547,718. This application Aug. 19, 1996, Ser. No. 699,463

Int. Cl.[6] B44C *3/00*; **G09F** *19/12*

U.S. Cl. 428—13 **11 Claims**



1. A novelty illusion device comprising:

a base;

a first transparent case operably secured to said base;

a second transparent case positioned within said first transparent case and configured to move with respect to said first transparent case;

an illusion object operably secured to and within said second transparent case; and

a motor operably engaged to said second transparent case for providing movement thereto with respect to said first transparent case.

5,795,631

METHOD OF PRODUCING TRANSPARENT AND OTHER ELECTRICALLY CONDUCTIVE MATERIALS

Naum Parkansky, Raanana; Amir Ben-shalom, Tel Aviv; Raymond L. Boxman, Herzliya; Larisa Kaplan, Rosh-Ha-Ain; Samuel Goldsmith, Herzliya; Hanan Yaloz, Ramat-Gan, and Menachem Nathan, Tel Aviv, all of Israel, assignors to RAMOT-University Authority for Applied Research and Industrial Development Ltd., Tel-Aviv, Israel

Division of Ser. No. 158,427, Nov. 24, 1993, Pat. No. 5,514,229. This application Jul. 19, 1995, Ser. No. 504,115

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—34.1 **4 Claims**

1. A cathode for an electrical deposition apparatus for depositing coatings, said cathode characterized by:

a cup-shaped receptacle of a first metal having an interior cavity filled with a second metal, and the first metal having a higher melting point than the second metal.

5,795,632

PROTECTIVE COVER SET FOR A MEDICAL PROBE

Martin Buchalter, Parsippany, N.J., assignor to Parker Laboratories, Orange, N.J.

Filed Feb. 6, 1996, Ser. No. 595,918

Int. Cl.[6] B65D *85/38*; **G01K** *1/08*

U.S. Cl. 428—35.2 **28 Claims**

1. A protective cover set for a medical probe designed to be inserted in an endocavity or used interoperatively in an incision of a human or an animal body, said cover set comprising:

a probe cover made from a film material having a mouth for inserting said probe; and



an outer wrapper formed from two plies joined along adjacent longitudinal edges, said outer wrapper being joined to said probe cover by an adhesive, said outer wrapper covering at least a length of said probe cover.

5,795,633

MATERIAL COMPOSITION AND SHAPED ARTICLE

Tetsuo Yokoyama; Kyoko Hiraoka, both of Nagasaki, and Hiroto Kidokoro, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/01649, § 371 Date Feb. 21, 1997, § 102(e) Date Feb. 21, 1997, PCT Pub. No. WO96/05871, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 21, 1995, Ser. No. 793,253

Claims priority, application Japan, Aug. 22, 1994, 6-219541; Jul. 5, 1995, 7-210156; Jul. 18, 1995, 7-203950

Int. Cl.[6] C08G *18/48*

U.S. Cl. 428—35.7 **20 Claims**

1. A shaped article of a tubular balloon form comprising a polymeric material prepared by an additional polymerization of:

(a) a polyfunctional isocyanate,

(b) a compound having a molecular weight of 600 to 3,500 and two functional groups capable of being additionally polymerized with an isocyanate group,

(c) a compound having a molecular weight not larger than 500 and two functional groups capable of being additionally polymerized with an isocyanate group; and

(d) a compound having a molecular weight not larger than 700 and at least three functional groups capable of being additionally polymerized with an isocyanate group;

wherein the sum of the functional groups capable of being additionally polymerized with an isocyanate group, in compounds (c) and (d), is 1 to 35 moles per 100 moles of the isocyanate groups in polyfunctional isocyanate (a),

the amount of the functional group capable of being additionally polymerized with an isocyanate group, in compound (d), is 0.1 to 18 moles per 100 moles of the isocyanate groups in polyfunctional isocyanate (a),

the amount of the functional group capable of being additionally polymerized with an isocyanate group, in compound (b), is 60 to 100 moles per 100 moles of the isocyanate groups in polyfunctional isocyanate (a), and

the sum of the functional groups capable of being additionally polymerized with an isocyanate group, in compounds (b), (c), and (d), is 80 to 110 moles per 100 moles of the isocyanate groups in polyfunctional isocyanate (a).

5,795,634

HEAT INSULATING NOISE REDUCING DUCT

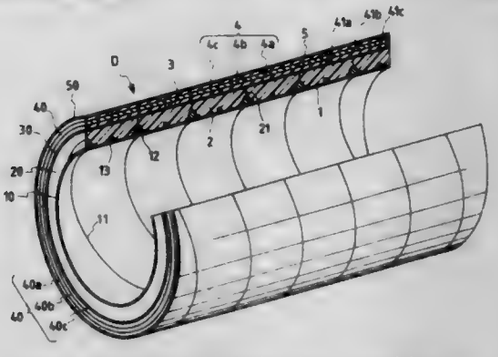
Kouki Fukui, Osaka, Japan, assignor to Totaku Industries, Inc., Osaka, Japan

Filed Sep. 16, 1996, Ser. No. 714,586

Claims priority, application Japan, Sep. 22, 1995, 7-269506

Int. Cl.[6] F16L *59/14;55/02;* **B32B** *5/28;* **C04R** *43/12*

U.S. Cl. 428—36.1 **5 Claims**



1. A heat insulating noise reducing duct, comprising:

a flat fibrous band helically wound, adjacent side edges of said helically wound fibrous band being brought into contact to form a joint;

a resin reinforcing band bonded to an outer circumferential face of said joint, an internal layer with a substantially smooth cylindrical shape being formed of said helically wound flat fibrous band integrally bonded with said resin reinforcing band;

at least one resin linear body helically wound next to said resin reinforcing band and bonded to said fibrous band;

an open-cell foam layer formed of a helically wound open-cell foam resin band on an outer circumferential face of said internal layer, side edges of said open-cell foam resin band being abutted to each other;

an intermediate sheet layer formed of a helically wound resin sheet band on an outer circumferential face of said open-cell foam resin band, parts of said sheet band being overlapped with each other and integrally bonded to each other;

a closed-cell foam layer formed of a helically wound closed-cell foam resin band on an outer circumferential face of said intermediate sheet layer, side edges of said closed-cell foam resin band being abutted to each other; and

an external layer formed of a helically wound resin sheet band on an outer circumferential face of said closed-cell foam layer, parts of said resin sheet band being overlapped with each other and integrally bonded to each other,

wherein said fibrous band, said resin reinforcing band, said resin linear body, said open-cell foam resin band, said resin sheet band forming said intermediate sheet layer, said closed-cell foam resin band, and said resin sheet band forming said external layer are wound at a substantially identical helical pitch.

5,795,635

OIL HOSE

Yasunori Iwasaki, Kawasaki, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01126, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO95/01854, PCT Pub. Date Jan. 19, 1995

PCT Filed Jul. 8, 1994, Ser. No. 583,035

Claims priority, application Japan, Jul. 9, 1993, 5-194028

Int. Cl.[6] F16L *11/04*

U.S. Cl. 428—36.3 **14 Claims**

1. An oil hose comprised of an inner layer and an outer layer, wherein the inner layer is made of a vulcanizate of a hydrogenated nitrile rubber composition comprising a hydrogenated nitrite rubber having an iodine value not larger than 120, which is obtained

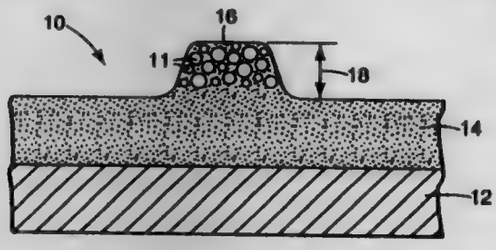
by hydrogenating the conjugated diene units of a copolymer rubber composed of 10 to 50% by weight of units of an unsaturated nitrile, 40 to 70% by weight of units of a conjugated diene and 10 to 50% by weight of units of a copolymerizable ethylenically unsaturated monomer vulcanized with an organic peroxide, and the outer layer is made of a vulcanized ozone-resistant rubber composition.

5,795,636

POSITIONABLE AND REPOSITIONABLE ADHESIVE ARTICLE

Janet T. Keller, Eagan; Kenneth D. Wilson; Clyde D. Calhoun, both of Stillwater, and Larry A. Meixner, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1995, Ser. No. 559,037
Int. Cl.[6] B32B *7/12*
U.S. Cl. 428—40.1 **16 Claims**



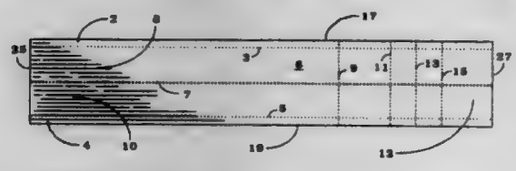
1. An adhesive sheet comprising (1) a backing and (2) an adhesive layer wherein the adhesive layer comprises (a) at least one topologically microstructured surface comprising a plurality of pegs, substantially uniformly distributed and protruding outwardly from an adhesive layer surface, wherein the pegs have tops that are adhesive and comprise less than 25% of the total surface area of the adhesive layer, (b) the adhesive surface layer and (c) an adhesive that has a retained lap shear relaxation stress that exceeds 55% and the adhesive layer has at least two levels of adhesion, an initial contact bond and an application bond, such that the initial contact bond is substantially less than the application bond and such that the contact bond simultaneously changes to the application bond with the application of pressure onto the adhesive sheet.

5,795,637

FLOOR COVERING SEAM SEALER COVER

Wallace Andrew Wilson, 909 Coulter Rd., Sherwood, Ark. 72120, and Charles E. Tanner, Benton, Ark., assignors to Wallace Andrew Wilson, Sherwood, Ark.

Continuation of Ser. No. 599,073, Feb. 9, 1996, abandoned. This application Apr. 17, 1997, Ser. No. 842,761
Int. Cl.[6] B32B *3/06*
U.S. Cl. 428—42.2 **22 Claims**



1. A blank comprising:

a substantially planar, substantially rectangular member having a length and width and upper and lower surfaces, said member having first and second score lines extending lengthwise along said lower surface of said member near first and second edges, respectively, of said member to divide said member into first and second tab portions and a center panel, said first tab portion extending from said first score line to said first edge, said second tab portion extending from said second score line to said second edge, and said center panel extending between said first and second score lines;

said member having a third score line extending lengthwise along said lower surface of said member and dividing said center panel into a first sub-center panel extending between first and third score lines, and a second sub-center panel extending between said second and third score lines; and

an adhesive applied to portions of said lower surface of said member along said first and second tab portions.

16. A blank comprising:

a substantially planar, substantially rectangular member having a length and width and upper and lower surfaces, said member having first and second score lines extending lengthwise along said upper surface of said member near first and second edges, respectively, of said member to divide said member into first and second tab portions and a center panel, said first tab portion extending from said first score line to said first edge, said second tab portion extending from said second score line to said second edge and said center panel extending between said first and second score lines;

said member having a third score line extending lengthwise along said lower surface of said member and dividing said center panel into a first sub-center panel extending between said first and third score lines and a second sub-center panel extending between said second and third score lines; and

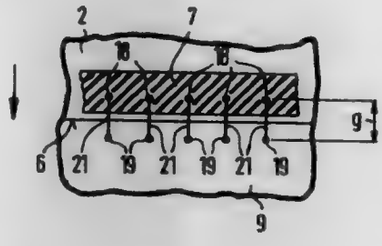
an adhesive applied to portions of said first and second tab portions.

5,795,638

ARRANGEMENT FOR THE ATTACHMENT OF A PAPER WEB LEADING EDGE ON A PAPER SUPPLY ROLL

Klaus Walter Röder, and Hartwig Horst Trutschel, both of Würzburg, Germany, assignors to Koenig & Bauer-Albert Aktiengesellschaft, Wurzburg, Germany

Filed Jul. 14, 1995, Ser. No. 502,779
Claims priority, application Germany, Jul. 14, 1994, 44 24 888.1
Int. Cl.[6] B65H *19/18*
U.S. Cl. 428—57 **9 Claims**



1. A paper supply roll having a first paper web layer with a leading edge portion, and a second paper web layer; said first paper web layer having a first group of dots of a material which rapidly sets at room temperature, said first group of dots being spaced along said first paper web layer adjacent said leading edge portion of said first paper web layer; a second group of dots of said material which rapidly sets at room temperature, said second group of dots being spaced along said second paper web layer; and string extending across said paper web leading edge between said first group of dots and said second group of dots and connecting dots in said first group of dots with dots in said second group of dots.

5,795,639

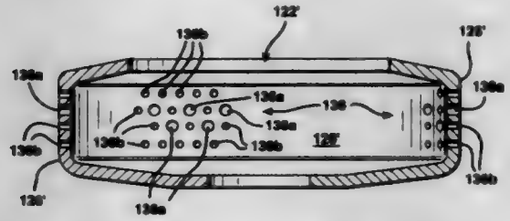
VACUUM INSULATION PANEL HAVING BLENDED WOOL FILLER AND METHOD FOR MANUFACTURING

David C. K. Lin, Worthington, Ohio, assignor to Owens Fiberglas Technology, Inc., Summit, Ill.

Division of Ser. No. 462,937, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 405,129, Mar. 16, 1995. This application Jan. 29, 1997, Ser. No. 792,686

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—68 20 Claims



1. A vacuum insulation panel comprising:

a sealed evacuated jacket defining an interior space; and

an insulating media in said interior space comprising a blended wool media made up of fibers defining at least two different average fiber diameters, said fibers having an overall average diameter no larger than the average diameter of fibers making up the insulating media of a conventional vacuum insulation panel.

5,795,640

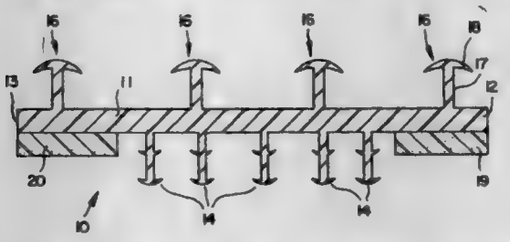
METHOD OF FABRICATING A FASTENER ASSEMBLY FOR BEING MOLDED INTO A FOAMED CUSHION

Patrick J. Billarant, Charlotte, N.C., assignor to Aplix, Inc., Charlotte, N.C.

Division of Ser. No. 633,627, Apr. 17, 1996, Pat. No. 5,665,449, which is a continuation-in-part of Ser. No. 566,870, Dec. 4, 1995, Pat. No. 5,654,070, which is a continuation of Ser. No. 381,507, Jan. 31, 1995, Pat. No. 5,500,268. This application Jan. 17, 1997, Ser. No. 783,939

Int. Cl.[6] A44B *18/00*

U.S. Cl. 428—100 5 Claims



1. A method of fabricating a fastener assembly for being molded into a foamed cushion, comprising the steps of:

(a) forming a base having first and second major surfaces defining first and second opposed ends and first and second opposed side edges;

(b) providing a multiplicity of attachment members on the base, the attachment members extending outwardly from the first major surface of the base and along substantially the entire length of the base;

(c) removing a number of said attachment members from the base a spaced-apart distance inwardly from respective first and second opposed ends to form first and second laterally-extending end sealing gaps extending laterally from the first side edge of the base to the second side edge of the base, each of said sealing gaps being defmed by a widthwise and lengthwise area between the attachment members of the first major surface of the base and being devoid of said attachment members for permitting a sealing dam carried by a mold in which the foamed cushion is molded to fit into said sealing gap and sealingly engage the first major surface of said base to form a foam-tight seal between the end of the base and the sealing dam of the mold to prevent intrusion of liquid foam past the end of the base onto those attachment members located between the sealing gaps during molding of the cushion; and

(d) attaching first and second magnetically-attractable side edge sealing members to said base adjacent respective ones of said first and second opposing side edges of said base for being attracted to magnets positioned in the mold to form a foam-tight seal between the side edges of the base and the mold to prevent intrusion of liquid foam past the side edges of the base onto the attachment members of the base during molding of the cushion.

5,795,641

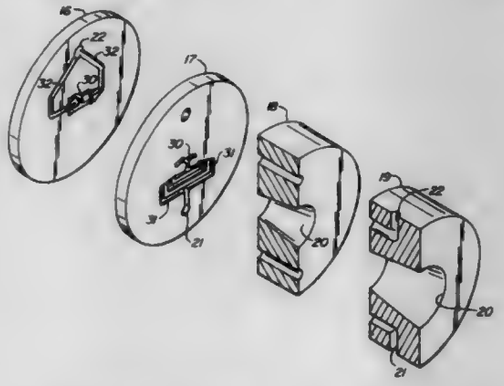
METHOD AND DIE FOR FORMING TRIPLE EXTRUDED PROFILES

Robert Pauley, Troutdale; Noel E. King, Marion, and Douglas H. Chin, Marion, all of Va., assignors to Marley Mouldings Inc., Marion, Va.

Division of Ser. No. 116,153, Sep. 1, 1993, Pat. No. 5,538,777. This application Nov. 1, 1995, Ser. No. 551,563

Int. Cl.[6] B32B *3/10;* A23G *1/20*

U.S. Cl. 428—134 5 Claims



1. An extrusion die comprising:

a tapering orifice for compressing a first extrudable material of foam plastic having a predetermined U-shaped profile at the compression end of said tapering orifice, said tapering orifice positioned to receive said foam plastic material and to communicate said foam plastic material therethrough;

a first opening communicating with said orifice for applying an extrudable coating of a second extrudable plastic coating material onto said foam plastic material within said orifice;

a second opening communicating with said orifice for applying a third extrudable flexible plastic material therethrough to form a flexible flange attached to said first extrudable foam plastic material.

5,795,642

MAGNETIC RECORDING MEDIUM

Akira Ishikawa; Hidehiko Nakayama, and Kazutaka Yamashita, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan

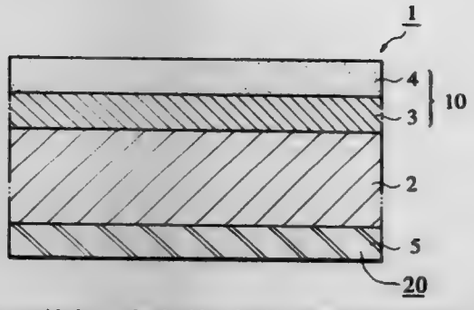
Filed Nov. 1, 1996, Ser. No. 742,815

Claims priority, application Japan, Apr. 26, 1996, 8-107909

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—141 21 Claims

1. A magnetic recording medium, having improved storage stability comprising a nonmagnetic substrate, a surface layer and a back layer, said surface layer having an intermediate layer provided on a surface side of said nonmagnetic substrate and a magnetic layer as a top layer, said back layer having a backcoating



layer provided on a back side of said nonmagnetic substrate, and said magnetic layer containing a ferromagnetic metal powder and a binder, wherein

said surface layer has a residual solvent content of 5 to 1000 ppm;

said ferromagnetic metal powder is a ferromagnetic metal powder mainly comprising iron and containing 0.8 to 20 parts by weight of at least one element selected from Group IIIa elements, inclusive of lanthanides, of the Periodic Table per 100 parts by weight of Fe atoms;

said magnetic layer has a thickness of 0.05 to 0.6 μm;

said magnetic layer has a center-line surface roughness, Ra, of 1 to 5 nm;

said back layer has a residual solvent content of 5 to 800 ppm; and

said backcoating layer has a center-line surface roughness, Ra, of 2 to 8 nm.

5,795,643

ANTICOPYING FILM

Helmut Steininger, Worms; Peter Heilmann, Bad Durkheim, both of Germany, and Peter Hewkin, Cambridge, Great Britain, assignors to BASF Magnetics GmbH, Mannheim, Germany

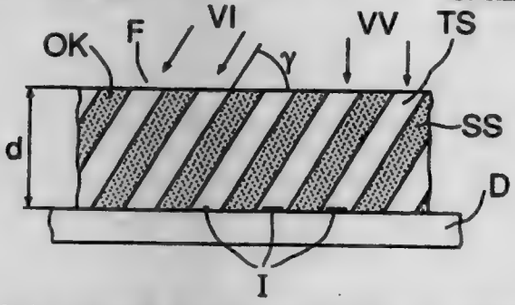
PCT No. PCT/EP93/02860, § 371 Date Feb. 13, 1995, § 102(e) Date Feb. 13, 1995, PCT Pub. No. WO94/09990, PCT Pub. Date May 11, 1994

PCT Filed Oct. 16, 1993, Ser. No. 381,907

Claims priority, application Germany, Oct. 29, 1992, 42 36 563.5

Int. Cl.[6] B32B *3/28;* **G03C** *1/00;* **B42D** *15/00*

U.S. Cl. 428—143 **14 Claims**



1. An anticopying film, consisting of a film of transparent material having a large number of nontransparent or reflecting layers which are arranged essentially equal distances apart and whose planes are arranged essentially parallel to one another and in about the same predetermined position relative to the surfaces of the film on at least one of the surfaces, wherein from a predetermined oblique viewing through angle from about 30° to about 73° onto the surfaces of the anticopying film, the latter is essentially transparent and, and wherein the nontransparent or reflecting layers are formed at least partially from exposed photosensitive material and the nontransparent or reflecting layers are located on the upper and lower surfaces of the anticopying film and are arranged obliquely relative to the surface of anticopying film as to provide for said predetermined oblique viewing angle.

5,795,644

SCENTED BUBBLE WRAP

Joseph C Delarosa, 2010 S. Palo Verde, Tucson, Ariz. 85713

Filed Feb. 21, 1997, Ser. No. 806,255

Int. Cl.[6] B32B *1/00*

U.S. Cl. 428—178 **11 Claims**



1. A scented bubble wrap comprising: a sheet of polyethylene comprising a multiplicity of individual closed cell compartments, said cell compartments being substantially spherical, said cell compartments containing an amount of a scented fluid.

5,795,645

MAGNETIC RECORDING MEDIUM

Masatoshi Takahashi; Nobuyoshi Asada; Hiroshi Hashimoto, and Masashi Aonuma, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 19, 1996, Ser. No. 617,555

Claims priority, application Japan, Mar. 31, 1995, 7-097497

Int. Cl.[6] G11B *5/702*

U.S. Cl. 428—216 **29 Claims**

1. A magnetic recording medium comprising a magnetic layer comprising a ferromagnetic powder and a binder provided on one side of a non-magnetic support and a backing layer provided on another side of said non-magnetic support, wherein said ferromagnetic powder is a ferromagnetic metal powder comprising Fe as a main component and Co and containing Y in an amount of from 1 to 5 atom-% based on the total of Fe and Co in said ferromagnetic metal powder, and said binder comprises a polyurethane mainly comprising a diol component comprising a polyether polyol and a polyester polyol and a polyisocyanate component; wherein said polyurethane has a first glass transition temperature within the range from −200° C. to −5° C. and a second glass transition temperature within the range from 40° C. to 130° C.

5,795,646

MAGNETIC RECORDING MEDIUM

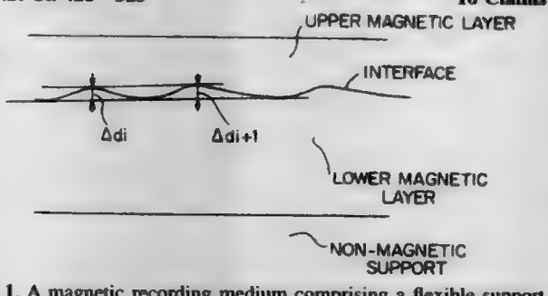
Kiyomi Ejiri; Hiroo Inaba; Shinji Saito, and Satoru Hayakawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Continuation of Ser. No. 873,201, Apr. 24, 1992, Pat. No. 5,645,917, which is a continuation-in-part of Ser. No. 822,975, Jan. 21, 1992, Pat. No. 5,258,223. This application Dec. 4, 1996, Ser. No. 763,620

Claims priority, application Japan, Apr. 25, 1991, 3-121873; Apr. 25, 1991, 3-121875; Jul. 15, 1991, 3-198309; Jan. 8, 1992, 4-18416; Jan. 10, 1992, 4-21782

Int. Cl.[6] B32B *5/16;* **G11B** *5/66*

U.S. Cl. 428—323 **16 Claims**



1. A magnetic recording medium comprising a flexible support having provided thereon at least a lower layer comprising a binder

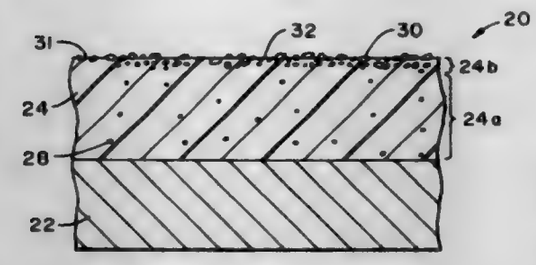
and a non-magnetic powder and an upper magnetic layer over the lower layer, the upper magnetic layer comprising a binder and a ferromagnetic powder on the lower layer, wherein said upper magnetic layer has a dry thickness of not more that 1 μm, and said non-magnetic powder has an average ratio of the longest axis length (r_1) to the shortest axis length (r_2), of r_1/r_2 equal to 2.5 to 15.

5,795,647

PRINTING PLATE HAVING IMPROVED WEAR RESISTANCE

Edward C. Robinson; Robert E. Bombalski, both of New Kensington; Thomas L. Levendusky, Greensburg; Jean Ann Skiles, Gibsonia; Mark L. Weaver, Allison Park, and Nickolas C. Kotow, Bethel Park, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 11, 1996, Ser. No. 712,528
Int. Cl.[6] G03F *7/00;* **B32B** *5/16;* **B05D** *1/36;3/12*
U.S. Cl. 428—329 **19 Claims**



1. A process for making a sheet material suitable for use as a printing plate, comprising:

(a) providing a metal substrate comprising an aluminum alloy or steel sheet having a thickness of about 5–20 mils;

(b) coating said metal substrate with a polymer layer comprising a thermoplastic or elastomeric polymer, said polymer layer including an outer surface spaced from said metal substrate and wherein the polymer layer is ticker than the metal substrate;

(c) maintaining said polymer layer within about 15° F. above or below its melting point;

(d) while maintaining said polymer layer within about 15° F. of its melting point, coating said polymer layer with a plurality of mineral or metal particles having an average particle size of less than about 30 microns; and

(e) compressing said particles into said polymer layer so that most of said particles are below said outer surface and portions of some of said particles extend outwardly of said outer surface.

5,795,648

METHOD FOR PRESERVING PRECISION EDGES USING DIAMOND-LIKE NANOCOMPOSITE FILM COATINGS

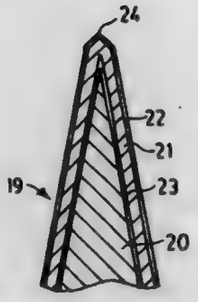
Arvind Goel, Buffalo, and Donald J. Bray, East Amherst, both of N.Y., assignors to Advanced Refractory Technologies, Inc., Buffalo, N.Y.

Filed Oct. 3, 1995, Ser. No. 538,731
Int. Cl.[6] B05D *3/06;* **B26B** *21/00*
U.S. Cl. 428—336 **28 Claims**

1. A method for preserving a precision edge of a precision-edged substrate comprising:

providing a precision-edged substrate, wherein the precision-edged substrate is a cutting apparatus; and

applying to said substrate a coating made from a diamond-like solid state material formed from interpenetrating networks comprising a diamond-like carbon network stabilized by



hydrogen, a silicon network stabilized by oxygen, and optionally at least one network made from dopant elements or dopant compounds containing elements from Groups 1–7*b* and 8 of the periodic table.

5,795,649

RELEASE FILM AND METHOD OF MAKING THEREOF

Steven R. Cosentino, Quinton, Va., and David Edward Higgins, Whitby, England, assignors to ICI Americas Inc., Wilmington, Del.

Filed Jun. 3, 1996, Ser. No. 656,739
Int. Cl.[6] B32B *15/08;27/36;* **B05D** *3/02*
U.S. Cl. 428—336 **26 Claims**

1. A release film which comprises a polymeric film coated on at least one surface thereof with a release layer, said release layer comprising a water soluble copolymer of styrene and an alpha, beta-unsaturated carboxylic acid or alpha, beta-unsaturated cyclic dicarboxylic acid anhydride, said copolymer having a weight average molecular weight of from about 700 to about 10,000.

19. A method of making a release film which comprises the steps of:

(a) coating the film on at least one surface thereof with an aqueous solution of a water soluble copolymer of styrene and an alpha, beta-unsaturated carboxylic acid or an aqueous solution of cyclic dicarboxylic acid anhydride, said copolymer having a weight average molecular weight of from about 700 to about 10,000;

(b) heating the coated film at a temperature sufficient for drying the composition to said film; and

(c) heat setting the dried film.

5,795,650

PRESSURE-SENSITIVE ADHESIVE SHEET

Shunpei Watanabe; Takashi Suzuki, and Shuuichiro Ikeda, all of Saitama-ken, Japan, assignors to Lintec Corporation, Japan

Filed Sep. 9, 1996, Ser. No. 711,213
Claims priority, application Japan, Sep. 27, 1995, 7-273589
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—355 AC **5 Claims**



1. A pressure-sensitive adhesive sheet to be used for a liquid crystal cell of a liquid crystal display, comprising:

a base material layer formed into a light polarizing sheet or a phase difference sheet used in the liquid crystal display; and

a pressure-sensitive adhesive layer including an acrylic-based pressure-sensitive adhesive composition and a plasticizer, wherein the weight-average molecular weight of the main polymer of the pressure-sensitive adhesive composition of said pressure-sensitive adhesive layer is 600,000 to 2,000,000 whereby stress which would be produced by contraction of said base material layer is relieved by the pressure-sensitive adhesive layer to prevent color unevenness or white marking from appearing on the liquid crystal display.

5,795,651

FILAMENT HAVING PLEXIFILAMENTARY STRUCTURE, NONWOVEN FABRIC COMPRISING SAID FILAMENT AND THEIR PRODUCTION

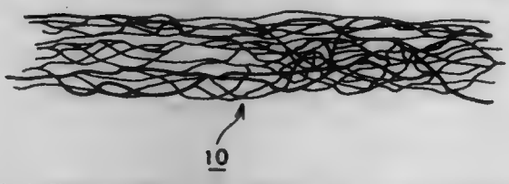
Fumio Matsuoka; Shigemitsu Murase; Koichi Nagaoka, and Hiroshi Nishimura, all of Kyoto, Japan, assignors to Unitika, Ltd., Hyogo, Japan

Continuation of Ser. No. 791,344, Jan. 31, 1997, and a continuation-in-part of Ser. No. 577,244, Dec. 22, 1995, abandoned, which is a division of Ser. No. 341,608, Feb. 27, 1995, abandoned. This application Mar. 11, 1997, Ser. No. 814,665

Claims priority, application Japan, Apr. 8, 1993, 5-81584; Apr. 8, 1993, 5-81585; May 6, 1993, 5-104870

Int. Cl.[6] D02G *3/00*

U.S. Cl. 428—364 **5 Claims**



1. A filament having a fine fibrillated structure comprising a plexifilamentary structured polyolefin element and a plexifilamentary structured polyester element, said polyolefin element and said polyester element being present in a ratio within a range of from 5/95 to 95/5 by weight.

5,795,652

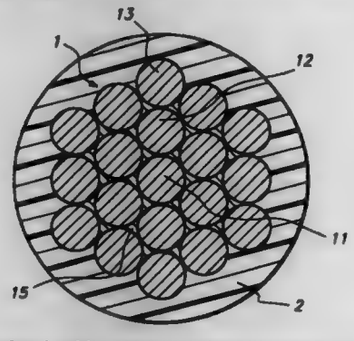
FUEL RESISTANT CABLES

James Bell, San Mateo, and Steven C. Zingheim, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 6, 1996, Ser. No. 761,250

Int. Cl.[6] B32B *27/00*; H02G *15/20*; B05D *5/12*

U.S. Cl. 428—383 **14 Claims**



1. An insulated cable which is suitable for use in gasoline fuel tanks and which comprises

(1) a conductive core which comprises

(a) a stranded wire composed of a plurality of elongate conductors, and

(b) a solid, polymeric blocking material which fills the interstices between the conductors, at least 50% by weight of the blocking material being a polysulfide; and

(2) a polymeric insulating jacket which surrounds the core and is in intimate contact with the core so that gasoline cannot travel along the core, at least the outer surface of said insulating jacket being composed of an insulating material comprising at least 50% by weight of a polyamide.

5,795,653

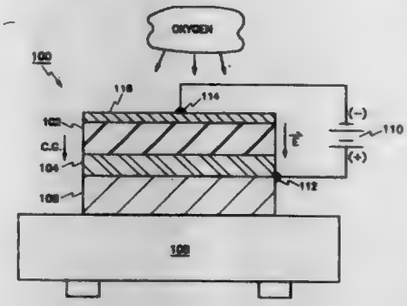
METHOD FOR POLISHING A DIAMOND OR CARBON NITRIDE FILM BY REACTION WITH OXYGEN TRANSPORTED TO THE FILM THROUGH A SUPERIONIC CONDUCTOR IN CONTACT WITH THE FILM

Jerome J. Cuomo, Lincolndale, N.Y., and Joseph E. Yehoda, Fogelsville, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 402,824, Mar. 13, 1995, Pat. No. 5,468,326, which is a division of Ser. No. 6,343, Jan. 19, 1993, Pat. No. 5,403,619. This application Jun. 7, 1995, Ser. No. 478,532

Int. Cl.[6] G11B *11/00*

U.S. Cl. 428—408 **10 Claims**



1. A diamond or a carbon nitride film having a substantially scratchless surface, wherein the substantially scratchless surface is polished in an atmosphere having oxygen by a method comprising the step of:

(1) contacting a first, substantially scratchless surface of a superionic conductor layer with the film to form an interface with said first surface; and

(2) contacting said superionic conductor layer with oxygen at a second surface at a concentration and time sufficient to polish the film, wherein

said superionic conductor layer conducts said oxygen from said second surface to said interface for reaction with carbon in the film to polish the film to a peak-to-valley surface roughness of less than 400 Å.

5,795,654

ADHESIVE FOR BONDING TOGETHER POLYVINYLIDENE FLUORIDE RESIN AND SUBSTRATE

Toshio Koishi, Sakado; Katsunori Kawamura, Kawagoe, and Seiiti Minegishi, Moroyama, all of Japan, assignors to Central Glass Company, Ltd., Ube, Japan

Filed Dec. 4, 1996, Ser. No. 760,080

Claims priority, application Japan, Dec. 4, 1995, 7-315424

Int. Cl.[6] C09J *127/16*

U.S. Cl. 428—421 **24 Claims**

1. An adhesive for bonding together a first substrate made of a material containing a first polyvinylidene fluoride resin and a second substrate, said adhesive comprising:

an elastic fluorohydrocarbon resin;

an acrylic resin;

a second polyvinylidene fluoride resin;

a polyisocyanate; and

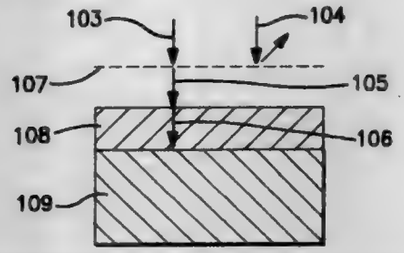
an organic solvent.

5,795,655

METHOD FOR PREPARING A FLUORO-CONTAINING POLYIMIDE FILM

Kazuhiko Endo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 487,243, Jun. 13, 1995, Pat. No. 5,702,773. This application Dec. 4, 1996, Ser. No. 758,816
Claims priority, application Japan, Jun. 13, 1994, 6-129983; Aug. 30, 1994, 6-204085
Int. Cl.[6] B32B 15/08
U.S. Cl. 428—458 4 Claims



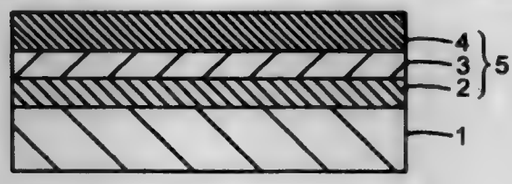
1. A polyimide film containing fluorine formed on a base layer, wherein fluorine is introduced throughout said polyimide film such that a fluorine concentration of said film approaches or equals zero at an interface of said polyimide film to said base layer.

5,795,656

THERMAL TRANSFER SHEET

Keiji Hirose, Tokyo-To, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

Filed Aug. 28, 1996, Ser. No. 704,858
Claims priority, application Japan, Aug. 29, 1995, 7-243634
Int. Cl.[6] B41M 5/26
U.S. Cl. 428—484 2 Claims



1. A thermal transfer sheet comprising:
a substrate film;
a release layer formed of wax;
a protective layer formed of a polymethyl methacrylate resin; and
a hot-melt ink layer formed of a mixture of a novolac phenol/formaldehyde polycondensate with a colorant.

5,795,657

ORGANOBORANE POLYAMINE COMPLEXES AND ADHESIVE COMPOSITIONS MADE THEREWITH

Alphonsus V. Pocius, and Tadesse G. Nigatu, both of Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 422,443, Apr. 14, 1995, Pat. No. 5,616,796. This application Dec. 16, 1996, Ser. No. 767,578
Int. Cl.[6] B32B 27/30; C09J 133/08
U.S. Cl. 428—516 24 Claims

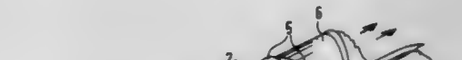
1. A composite article comprising a first substrate, and a second substrate bonded to the first substrate by an acrylic adhesive, wherein the acrylic adhesive comprises the polymerization product of a polymerizable acrylic composition that comprised:
a) at least one acrylic monomer;
b) an effective amount of a complex comprising organoborane and and polyamine, wherein the polyamine comprised the reaction product of a diprimary amine-terminated material and a material having at least two groups reactive with primary amine, wherein a majority of the terminal groups in the polyamine were primary amine; and
c) an effective amount of a compound that was reactive with amine for liberating the organoborane to initiate polymerization of the at least one acrylic monomer.

5,795,658

HONEYCOMB BODY HAVING MICROSTRUCTURES IN AN INTERSECTING CONFIGURATION

Hans Bode, Remscheid, and Udo Martin, Wuppertal, both of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Germany

Filed Mar. 26, 1997, Ser. No. 824,441
Claims priority, application Germany, Sep. 26, 1994, 44 34 363.9; Oct. 7, 1994, 44 35 913.6
Int. Cl.[6] B32B 3/28; F01N 3/28; B01J 35/04
U.S. Cl. 428—593 10 Claims



1. A metal honeycomb body, comprising:
sheet metal layers;
at least some of said layers having at least one macrostructure forming a multiplicity of channels for conducting a fluid in a flow direction and determining a honeycomb shape; and
at least some of said layers having microstructures at least in some regions, said microstructures extending at an angle to the flow direction, succeeding one another at intervals and intersecting one another.

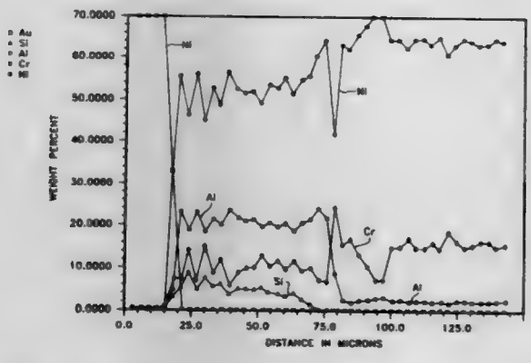
5,795,659

ALUMINIDE-SILICIDE COATINGS COATED PRODUCTS

Mehar C. Meelu, Selly Oak; Alan T. Jones, Mickleover, both of United Kingdom, and Bruce G. McMordie, Perkasie, Pa., assignors to International Inc., Limerick, Pa., and Rolls-Royce, Inc, plc., Derby, England, a part interest

PCT No. PCT/US93/08413, § 371 Date Nov. 4, 1994, § 102(e) Date Nov. 4, 1994, PCT Pub. No. WO94/07004, PCT Pub. Date Mar. 31, 1994
PCT Filed Sep. 7, 1993, Ser. No. 240,691
Claims priority, application United Kingdom, Sep. 5, 1992, 9218859
Int. Cl.[6] B32B 15/00; F01D 5/28
U.S. Cl. 428—610 61 Claims

1. An aluminide-silicide coating on a heat-resistant superalloy substrate, the coating having a highly dispersed distribution of silicide phases throughout the coating's thickness, the coating having resistance to developing cracks and resistance to oxidation and hot corrosion conditions, the coating comprising a layer which comprises a continum of silicide and aluminide phases and a predominantly aluminide layer below and adjacent said layer, the



coating being formed from a slurry comprising aluminum, silicon and a powder of a silicide-forming metal in an amount effective to promote the formation and dispersion in the coating of silicides corresponding to the metal.

5,795,660

ORGANIC COMPOSITE COATED STEEL SHEET HAVING A HIGH CORROSION RESISTANCE IN A RUST-CONTAMINATED ENVIRONMENT

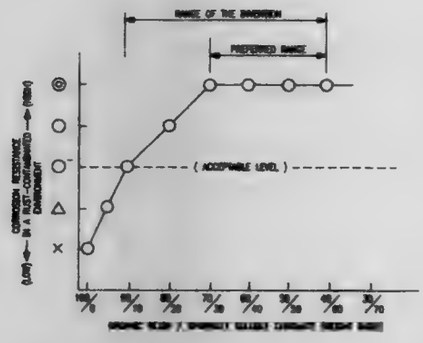
Naoto Yoshimi; Takahiro Kubota; Takashi Ishiyama; Masaaki Yamashita, all of Tokyo, and Yasuhiko Haruta, Kanagawa-ken, all of Japan, assignors to NKK Corporation, Tokyo, and Kansai Paint Co., Ltd., Amagasaki, both of Japan

Continuation of Ser. No. 428,149, Jun. 12, 1995, abandoned. This application Dec. 26, 1996, Ser. No. 773,380

Claims priority, application Japan, Sep. 4, 1993, 5-243737; Sep. 4, 1993, 5-243738; Apr. 28, 1994, 6-113590; Apr. 28, 1994, 6-113591

Int. Cl.[6] B32B *15/04;15/18;27/06;27/38*

U.S. Cl. 428—626 **13 Claims**



1. An organic composite coated steel sheet having an excellent corrosion resistance in a rust-contaminated environment which comprises a zinc or zinc alloy plated steel sheet having a surface coated with a chromate film having a coating weight of 10 to 200 mg/m^2 in terms of metallic chromium, and an organic resin film formed on said chromate film, having a thickness of 0.2 to 2.0 microns, and comprising:

(i) a base resin obtained by adding at least one basic nitrogen atom and at least two primary hydroxyl groups to the ends of molecules of an epoxy resin;

(ii) a polyfunctional polyisocyanate compound containing at least six isocyanate groups in each molecule; and

(iii) a rust-preventing additive at the weight ratio set forth below as a solid content relative to said base resin and said polyfunctional polyisocyanate compound:

(the base resin+the polyfunctional polyisocyanate compound)/the rust-preventing additive=90/10 to 40/60.

5,795,661

ZINC COATED STEEL SHEET AND STRIP HAVING IMPROVED FORMABILITY AND SURFACE QUALITY AND METHOD THEREOF

Berta M. Taffinger, Stroudsburg, Pa., assignor to Bethlehem Steel Corporation

Filed Jul. 10, 1996, Ser. No. 677,746

Int. Cl.[6] B32B *5/16;* **C23C** *22/00*

U.S. Cl. 428—628 **18 Claims**

15. A zinc coated steel sheet or strip product having improved formability, the zinc coated steel sheet or strip having a zinc coating applied to at least one surface thereof and comprising:

a) a zinc oxalate film bonded to the zinc coating applied to at least one surface of the steel sheet or strip, said zinc oxalate film having a coating weight in a range of about 10 mg/ft^2 to about 200 mg/ft^2, and said zinc oxalate film providing up to about 10% improvement in formability measured in limiting dome height value relative to the limiting dome height value measured in a zinc coated steel sheet or strip not having said zinc oxalate film bonded to the zinc coating thereof.

5,795,662

ZINCATE-TREATED ARTICLE OF AL-MG-SI BASE ALLOY AND METHOD OF MANUFACTURING THE SAME

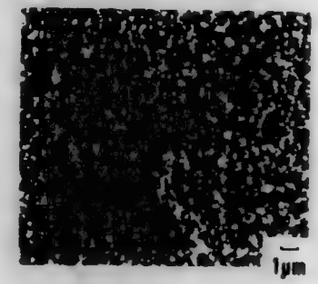
Shunichiro Maezono; Makoto Tawara, and Kikuo Toyose, all of Moka, Japan, assignors to Kobe Alcoa Transportation Products Ltd., Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 628,518

Claims priority, application Japan, Apr. 7, 1995, 7-108264

Int. Cl.[6] B32B *15/20;* **C23C** *22/66*

U.S. Cl. 428—650 **4 Claims**



1. A zincate-treated article of an aluminum-based alloy comprising:

an aluminum-based alloy body containing Mg, Si and 0.1 to 1.5 weight % Cu; and

a zincate coating film having a Zn crystal grain size of 1.0 μm or smaller.

5,795,663

MAGNETORESISTIVE MULTILAYER FILM AND METHODS OF PRODUCING THE SAME

Fumihito Koike, and Naoya Hasegawa, both of Niigata-ken, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed May 23, 1996, Ser. No. 652,223

Claims priority, application Japan, May 26, 1995, 7-128659

Int. Cl.[6] G11B *5/66*

U.S. Cl. 428—692 **25 Claims**

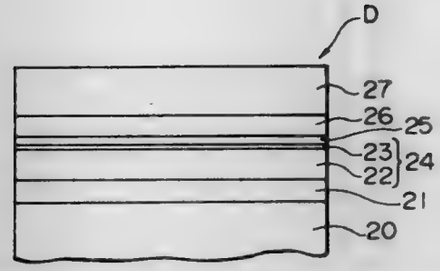
1. A magnetoresistive multilayer film comprising:

a first ferromagnetic layer comprising:

a main layer comprising a material selected from the group consisting of Fe—Ni alloy Ni—Fe—Co alloy. Ni and Fe; and

a thin layer consisting of Co;

a second ferromagnetic layer comprising a material selected from the group consisting of Fe—Ni alloy, Ni—Fe—Co alloy, Co, Ni and Fe; and



a nonmagnetic layer coupling the first ferromagnetic layer to the second ferromagnetic layer;

wherein the magnetization of the first ferromagnetic layer rotates freely in response to an external magnetic field, and the magnetization of the second ferromagnetic layer is pinned and does not rotate freely in response to an external magnetic field.

5,795,664

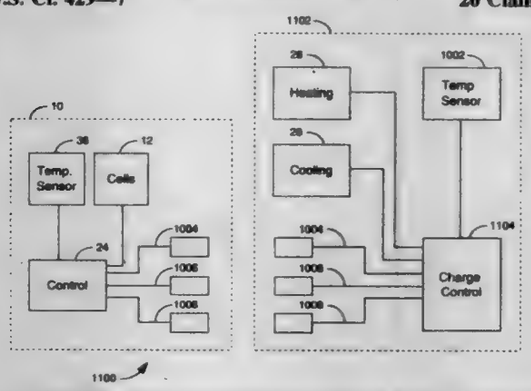
RECHARGEABLE BATTERY SYSTEM HAVING INTELLIGENT TEMPERATURE CONTROL

Stephen J. Kelly, Marion, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Dec. 5, 1996, Ser. No. 761,094

Int. Cl.[6] H01M *10/50*

U.S. Cl. 429—7 **20 Claims**



1. A battery pack used in a portable electronic device, the battery pack comprising:

a plurality of electrochemical cells for storing and delivering energy;

a temperature varying element;

a temperature sensor;

a control circuit responsive to the temperature sensor by selectively controlling the operation of the temperature varying element; and

a housing that encloses the electrochemical cells, the temperature varying element, the temperature sensor and the control circuit.

5,795,665

FUEL CELL SUB-ASSEMBLY WITH A PLURALITY OF DIMPLES

Jeffrey Allen, Naugatuck, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Aug. 19, 1996, Ser. No. 698,439

Int. Cl.[6] H01M *2/18;8/04;8/02*

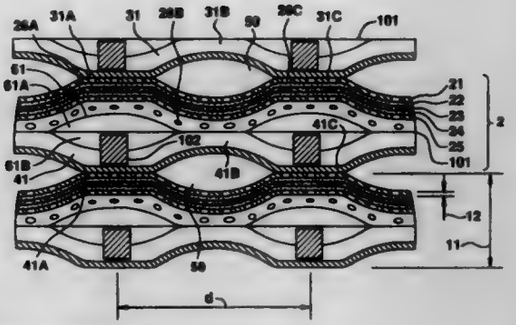
U.S. Cl. 429—12 **4 Claims**

1. Apparatus comprising:

an electrolyte member;

an anode electrode;

a cathode electrode;



an anode current collector;

a cathode current collector;

said anode and cathode electrodes, said anode and cathode current collectors and said electrolyte member being sandwiched together in the sequence of anode current collector, anode electrode, electrolyte member, cathode electrode and cathode current collector to form a composite fuel cell sub-assembly;

said composite fuel cell sub-assembly having a plurality of rows of dimples, the rows of dimples extending through the thicknesses of the anode current collector, the anode electrode, the electrolyte member, the cathode electrode and the cathode current collector of said composite fuel cell sub-assembly, and the dimples in successive rows of dimples protruding in opposing directions from said composite fuel cell sub-assembly.

5,795,666

MODULAR POWER STATION FOR THE PRODUCTION PRIMARILY OF HYDROGEN FROM SOLAR ENERGY AND A METHOD OF GENERATING ELECTRIC ENERGY

Wolf Johnssen, Munich, Germany, assignor to Hannelore Binsmaier nee Gallin-Ast, Erdweg-Grossberghofen, Germany

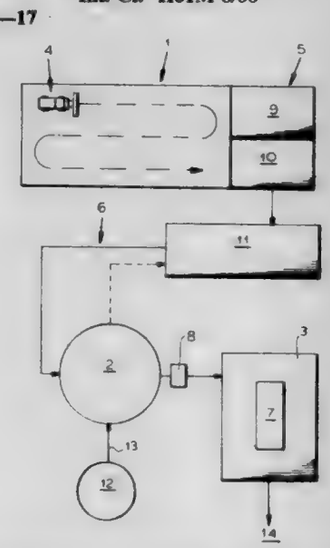
PCT No. PCT/EP94/03766, § 371 Date Jul. 10, 1996, § 102(e) Date Jul. 10, 1996, PCT Pub. No. WO95/15590, PCT Pub. Date Jun. 8, 1995

PCT Filed Nov. 12, 1994, Ser. No. 663,203

Claims priority, application Germany, Dec. 4, 1993, 43 41 438.9

Int. Cl.[6] H01M *8/06*

U.S. Cl. 429—17 **4 Claims**



1. A modular power station primarily for production of hydrogen using solar energy, said power station comprising:

a conversion module for converting solar energy to biomass, said conversion module comprising:

an agricultural cultivation plot of C4 plants convertible into biomass,

a harvesting unit for harvesting said plants from said plot as biomass, and

a processing unit receiving said biomass from said harvesting unit for transforming said biomass into a pregasification product, said processing unit comprising:

at least one device selected from a chopping device and a pelletizing device for preparing said pregasification product, and

means for storing said pregasification product and dimensioned to compensate for fluctuations in amount of processed biomass due to growth conditions;

an allothermic gasification module operating at the lowest temperature at which said processed biomass is gasified in the presence of water vapor to obtain a hydrogen-containing fuel gas with at least 50% hydrogen, said gasification module comprising:

a gasification reactor for transforming said pregasification product into said hydrogen-containing fuel gas and operable at a temperature and for a residence time of said product in said reactor sufficient to suppress tar condensation downstream of a gasification zone of said reactor,

a loading device between said processing unit and said gasification module for supplying said pregasification product from said processing unit to said gasification reactor,

means for generating said water vapor with a partial stream of said fuel gas, and

means selectively utilizing another partial stream of said fuel gas or waste heat for drying harvested biomass; and

a storage module connected to said gasification module by a fuel-gas purifier and storing the fuel gas or hydrogen derived from the fuel gas, said storage module having a capacity matched to a capacity of said gasification module,

said conversion module, said gasification module and said storage module having main components prefabricated as modular units which are transportable selectively in an assembled and a disassembled state.

5,795,667

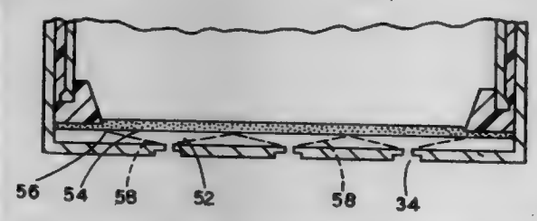
METAL-AIR CATHODE CAN, AND ELECTROCHEMICAL CELL MADE THEREWITH

Rodney Stuart McKenzie, and Robert B. Dopp, both of Madison, Wis., assignors to Rayovac Corporation, Madison, Wis.

Continuation-in-part of Ser. No. 435,477, May 5, 1995. This application Sep. 19, 1995, Ser. No. 530,754

Int. Cl.[6] H01M *2/12;12/06*

U.S. Cl. 429—27 **54 Claims**



1. An effectively operative electrochemical metal-air cell, said electrochemical cell having a maximum sustained load voltage related to the maximum sustained rate of electrochemical reactions therein, and an open cell voltage, said electrochemical cell comprising:

(a) an anode;

(b) a cathode, including a cathode can, said cathode can having a bottom, said bottom having an inner surface, an outer surface, and at least one port extending through said bottom, between said inner surface and said outer surface, said at least one port comprising a step therein between said inner surface and said outer surface of said bottom, said step including a first perimeter inwardly of said outer surface enclosing a first relatively smaller cross-sectional area, a second perimeter at said outer surface enclosing a second relatively larger cross-sectional area, and a connecting wall connecting said first and second perimeters.

5,795,668

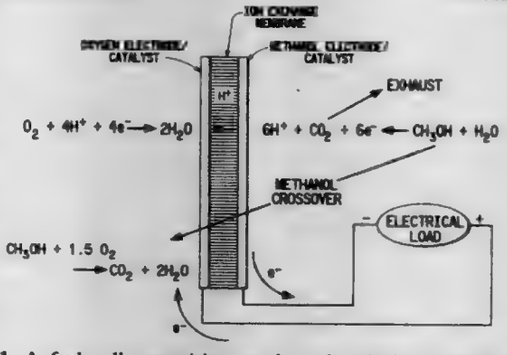
FUEL CELL INCORPORATING A REINFORCED MEMBRANE

Shoibal Banerjee, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 10, 1994, Ser. No. 339,167

Int. Cl.[6] H01M *8/10*

U.S. Cl. 429—33 **10 Claims**



1. A fuel cell comprising anode and cathode compartments partitioned by a reinforced polymeric ion exchange membrane, said membrane consisting essentially of

(a) at least one ion exchange polymer selected from the group consisting of perfluorinated polymers with side chains containing the group $—CF_2CF_2SO_2F$, and

(b) a porous support layer comprising a microporous film of perfluorinated polymer selected from the group consisting of polytetrafluoroethylene and copolymers of tetrafluoroethylene with

$CF_2=CFC_nF_{2n+1}$ (n = 1 to 5) or

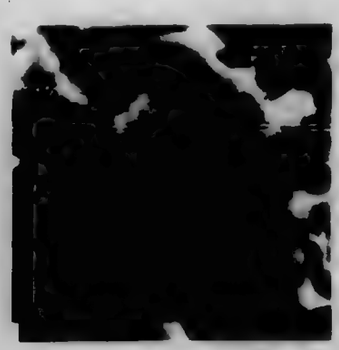
$$CF_2=CFO-(CF_2CFO)_mC_nF_{2n+1}$$
$$\quad\quad\quad

5,795,670

POROUS SINTERED LANTHANUM MANGANITE BODIES AND METHOD OF MANUFACTURING THE SAME

Kiyoshi Araki, Nagoya, and Masao Nishioka, Tokoname, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 27, 1996, Ser. No. 773,847
Claims priority, application European Pat. Off., Dec. 28, 1995, 95309486
Int. Cl.[6] H01M 4/88;4/90
U.S. Cl. 429—40 11 Claims



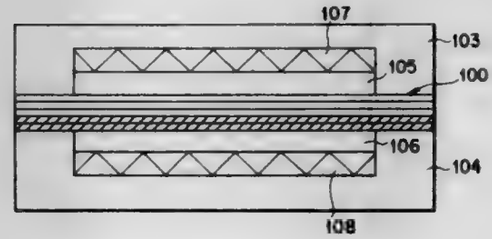
1. A porous sintered lanthanum manganite body comprising lanthanum manganite crystal grains and grain boundaries, wherein the body contains at least one alkali metal element in an amount of at least 100 ppm, said alkali metal element being present in said porous sintered lanthanum manganite body in the form of an oxide, hydroxide, or salt, each containing said alkali metal element, and the alkali metal concentration in the lanthanum manganite crystal grains is higher adjacent the grain boundaries than away from the grain boundaries.

5,795,671

FUEL CELL HAVING ELECTROLYTE LAYER HELD BETWEEN ANODE AND CATHODE

Hitoshi Nirasawa; Takanori Kawachi; Takashi Ogawa, all of Yokohama, and Kenji Murata, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 13, 1997, Ser. No. 816,894
Claims priority, application Japan, Mar. 18, 1996, 8-088753
Int. Cl.[6] H01M 8/14
U.S. Cl. 429—41 5 Claims



1. A fuel cell comprising a plurality of stacked single cells in each of which an electrolyte layer is held between an anode and a cathode and a separator provided between said anode and said cathode, wherein said electrolyte layer includes:

a sheet for holding an electrolyte containing, fine powder having a function of holding the electrolyte,

reinforcing ceramic fiber disposed in said sheet for holding the electrolyte to substantially run parallel to the surface of said sheet for holding the electrolyte and

the length of said reinforcing ceramic fiber is larger than the thickness of said sheet for holding the electrolyte.

5,795,672

DIAMOND-LIKE CARBON BASED ELECTROCATALYTIC COATING FOR FUEL CELL ELECTRODES

Geoffrey Dearnaley, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Division of Ser. No. 398,281, Mar. 3, 1995, Pat. No. 5,624,718.
This application Jul. 2, 1996, Ser. No. 674,671
Int. Cl.[6] H01M 4/86
U.S. Cl. 429—42 12 Claims

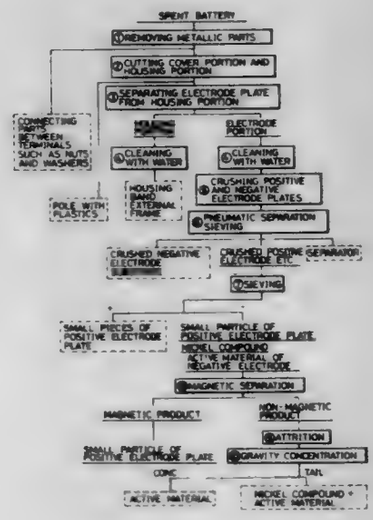
1. A fuel cell electrode bearing an electrocatalytic coating comprising a thin-film of diamond-like carbon comprising a finely-dispersed catalytic agent.

5,795,673

METHOD OF RECOVERING USEFUL MATERIALS FROM SPENT SECONDARY BATTERIES FOR ELECTRIC VEHICLES

Hiroshi Miyagawa, and Ryouichi Shirai, both of Ageo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1996, Ser. No. 714,462
Claims priority, application Japan, Oct. 26, 1995, 7-278726
Int. Cl.[6] H01M 10/54
U.S. Cl. 429—49 3 Claims



1. A method of recovering materials from spent secondary batteries used in electric vehicles, said method comprising the steps of:

providing a spent secondary battery used in an electric vehicle, said spent secondary battery comprising a battery case containing a positive electrode comprising a substrate and a nickel compound, a negative electrode comprising a substrate and active materials and a separator for separating the negative electrode from the positive electrode;

cutting the battery case to form a cover portion and a housing portion containing the positive electrode, negative electrode and separator;

separating the cover portion from the housing portion;

removing the positive electrode, negative electrode and separator from the housing portion;

crushing the positive electrode, negative electrode and separator to form crushed materials; and

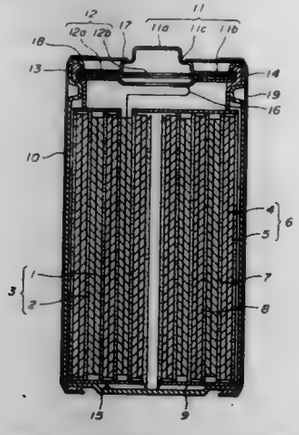
separating the crushed materials into the crushed negative electrode substrate, crushed active materials, crushed positive electrode substrate, crushed nickel compound and crushed separator by pneumatic separation and sieving.

5,795,674

BATTERY HAVING IMPROVED SAFETY FEATURES

Masatsugu Shiota, Fukushima, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 18, 1997, Ser. No. 819,726
Claims priority, application Japan, Mar. 18, 1996, 8-061545
Int. Cl.[6] H01M 2/12
U.S. Cl. 429—54 8 Claims



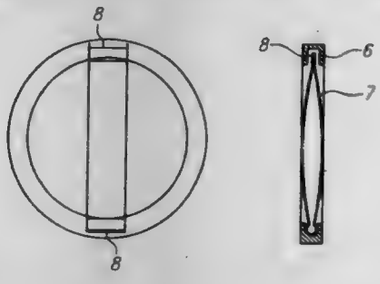
1. A battery comprising: a battery can including a top opening bounded by a peripheral lip and defining an electrode receiving cavity, an electrode assembly including at least one anode, at least one cathode, and at least one separator disposed between the anode and the cathode, the electrode assembly being disposed in the electrode receiving cavity, an electrolyte disposed in the electrode receiving cavity, a safety valve disposed in the electrode receiving cavity adjacent the top opening, a battery cover including a raised central portion disposed in the top opening and sealably closing off the top opening and defining a first venting chamber between the safety valve and the raised central portion, a secondary cover member disposed on an outside surface of the battery cover extending between the raised central portion and the peripheral lip and defining a second venting chamber under the secondary cover member, said raised central portion including an opening connecting the first venting chamber and the second venting chamber.

5,795,675

BATTERY DEVICE

Anthony Maglica, Anaheim, Calif., assignor to MAG Instrument, Inc., Ontario, Calif.

Continuation of Ser. No. 196,860, Feb. 15, 1994. This application Apr. 23, 1996, Ser. No. 636,413
Int. Cl.[6] H01M 2/14
U.S. Cl. 429—129 24 Claims



1. A device for a battery, comprising

an electrically nonconductive spacer including at least one element, each element forming at least a segment of a circular ring defining a void within the inner curvature of the at least a segment of a circular ring;

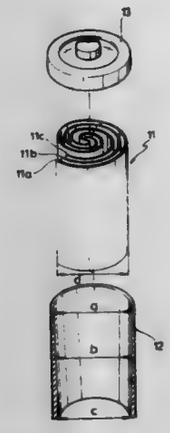
a resilient conductor in the void received by said electrically nonconductive spacer and extending outwardly of the electrically nonconductive spacer in an axial direction of the at least a segment of a circular ring.

5,795,676

BATTERY

Kang-jae Kim, Suwon, and Su-suk Choi, Pyungtaek, both of Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 20, 1996, Ser. No. 753,088
Claims priority, application Rep. of Korea, Apr. 30, 1996, 1996 13903
Int. Cl.[6] H01M 2/02
U.S. Cl. 429—164 5 Claims



1. A battery assembly comprising:

a tubular case having an internal space, an open end, and a closed end;

a cell element loaded in the internal space of said case; and

a cap covering the open end of said tubular case, Wherein the open end of said tubular case has a first internal sectional dimension and the closed end of tubular said case has a second internal sectional dimension, the second internal sectional dimension being smaller than the first internal sectional dimension and said tubular case has a uniform external sectional dimension.

5,795,677

NON-AQUEOUS ELECTROLYTE AND LITHIUM SECONDARY BATTERY

Taketsugu Yamamoto, and Hitoshi Miura, both of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 24, 1996, Ser. No. 685,666
Claims priority, application Japan, Jul. 25, 1995, 7-189335
Int. Cl.[6] H01M 6/14
U.S. Cl. 429—194 22 Claims

1. A non-aqueous electrolyte comprising a non-aqueous mixed solvent and a lithium salt, said non-aqueous mixed solvent comprising:

(a) a halogen-substituted ether compound represented by the general formula (I):

$$R_1—O—R_2 \quad (I)$$

wherein R_1 is an alkyl or halogen-substituted alkyl group having 2 or less carbon atoms and R_2 is a halogen-substituted alkyl group having 2 to 10 carbon atoms, and

(b) at least one compound which increases the solubility of lithium in said mixed solvent relative to the solubility of lithium in said ether compound alone.

wherein said mixed solvent contains the lithium salt in an amount of not less than 0.5 mol/liter.

5,795,678

NEGATIVE ELECTRODE FOR USE IN LITHIUM SECONDARY BATTERY AND PROCESS FOR PRODUCING THE SAME

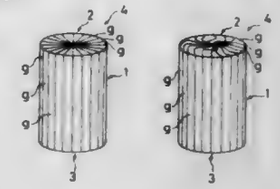
Norio Takami; Takahisa Ohsaki, both of Yokohama; Toshio Tamaki, Kamisu-machi; Hideyuki Nakajima, Kamisu-machi, and Yasushi Katsuta, Kamisu-machi, all of Japan, assignors to Kabushiki Kaisha Toshiba, and Petoca, Ltd., both of Tokyo, Japan

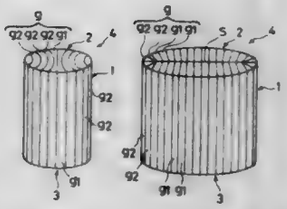
Filed Mar. 31, 1995, Ser. No. 414,195

Claims priority, application Japan, Apr. 1, 1994, 6-085246

Int. Cl.[6] H01M *4/58;4/02*

U.S. Cl. 429—218 **6 Claims**





1. A negative electrode for use in a lithium secondary battery which comprises milled graphite fibers derived from mesophase pitch each having circumferential, upper end and lower end faces, said milled graphite fibers each being composed of graphite layers having voids therebetween, all of said circumferential, upper end and lower end faces having openings of said voids between the graphite layers, which serve as inlets and outlets for lithium ions, said milled graphite fibers having an interlayer distance (D_{002}) being from 0.336–0.338 nm, wherein said milled graphite fibers derived from a mesophase pitch are prepared by steps of:

spinning a mesophase pitch at a viscosity of 5 to 50 poise into a mesophase pitch fiber,

infusibilizing the mesophase pitch fiber by heating at a temperature whose maximum is 200° to 350° C. to obtain an infusibilized pitch fiber,

milling the infusibilized pitch fiber as it is or after preliminary heat treatment at 300° to 800° C. to obtain milled infusibilized pitch fibers; and

graphitizing the milled infusibilized pitch fibers at 2500° C. or higher.

5,795,679

LITHIUM SECONDARY CELL WITH AN ALLOYED METALLIC POWDER CONTAINING ELECTRODE

Soichiro Kawakami, Nara; Shinya Mishina, Kawasaki; Naoya Kobayashi, Nara, and Masaya Asao, Tsuzuki-gun, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

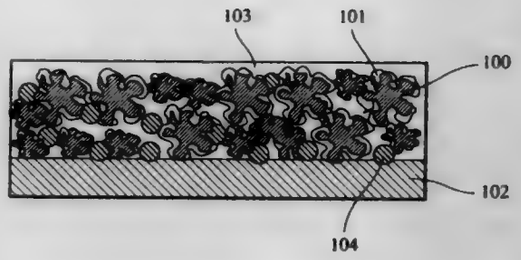
Filed Oct. 17, 1995, Ser. No. 543,896

Claims priority, application Japan, Oct. 19, 1994, 6-279873

Int. Cl.[6] H01M *4/38*

U.S. Cl. 429—218 **15 Claims**

1. A lithium secondary cell comprising a positive electrode and a negative electrode separated from each other by a separator in an electrolyte contained in a case therefor, wherein the negative



electrode comprises at least a metallic powder of at least one metal selected from the group consisting of nickel, cobalt, copper, titanium, and iron alloyed with at least one amphoteric metal selected from the group consisting of aluminum, zinc, tin, lead, gallium, cerium and strontium which reacts with an acid and an alkali and wherein lithium ions undergo oxidation and reduction by charging and discharging reactions.

5,795,680

NON-AQUEOUS ELECTROLYTE TYPE SECONDARY BATTERY

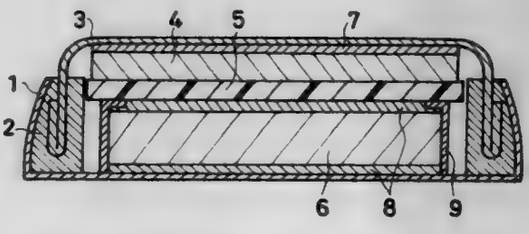
Katsuji Ikeda; Kazuya Hiratsuka; Takeshi Morimoto, all of Tokyo, and Shinji Matsumoto, Fujisawa, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, and Elna Company Ltd., Fujisawa, both of Japan

Filed Nov. 29, 1996, Ser. No. 758,371

Claims priority, application Japan, Nov. 30, 1995, 7-336132

Int. Cl.[6] H01M *4/70;4/80*

U.S. Cl. 429—245 **9 Claims**



1. A non-aqueous electrolyte secondary battery comprising:

a negative electrode comprising negative electrode material particles capable of occluding and releasing lithium;

a positive electrode comprising positive electrode material particles capable of occluding and releasing lithium;

a non-aqueous electrolyte which contains a lithium salt; and

a container for accommodating said negative electrode, said positive electrode, and said electrolyte;

said negative electrode being formed by compressing a foam metal or a fibrous sintered metal structure which contains nickel as a principal component of the metal and which serves as a current collecting body and which is filled with a mixture of a dried slurry of a binder and particles of a carbon material, functioning as the negative electrode material, which is a mesophase spherical carbon or a mesophase carbon short fiber, the carbon material being capable of occluding and releasing lithium, the current collecting body being integrated with the negative electrode material such that it spreads three dimensionally within the negative electrode material to maintain mutual contact of the negative electrode material particles and said negative electrode having a thickness of not less than 0.1 mm and a porosity of 20 to 50%.

5,795,681
STABILIZATION OF HOLOGRAMS FORMED IN GELATIN

Helmut Müller, Christian-Gau-Strasse 45 5093, Köln, and Jörg Gutjahr, Heideweg 18 51588, Numbrecht, both of Germany

PCT No. PCT/EP95/02595, § 371 Date Mar. 24, 1997, § 102(e) Date Mar. 24, 1997, PCT Pub. No. WO96/02019, PCT Pub. Date Jan. 25, 1996

PCT Filed Jul. 5, 1995, Ser. No. 765,399

Claims priority, application Germany, Jul. 9, 1994, 44 24 268.9

Int. Cl.[6] G03H *1/04*; G03C *5/26*; G02B *5/32*

U.S. Cl. 430—2 **2 Claims**

1. A process for the stabilization of holograms based upon silver halide photographic plates, characterized in that after

(i) holographically exposing a silver halide support material,

(ii) developing said material, and

(iii) placing said material into a stop bath, the material is further treated by

(iv) placing said material into a bleaching bath based on an oxidative cross-linking agent at a pH value of at least 3 or more, the bleaching bath being a mixture of a buffered aqueous acidic alkali metal halide solution and an aqueous solution of an oxidative cross linking agent, said aqueous buffered alkali metal halide solution having a pH value of about 4 and containing sodium citrate, sulfuric acid and potassium bromide, and thereafter,

(v) rinsing,

(vi) fixing,

(vii) additional rinsing of said material,

(viii) placing said material into a final bath, and

(ix) subsequently dehydrating said material by the use of one or more baths in series containing a solvent which is water-miscible and does not affect said material.

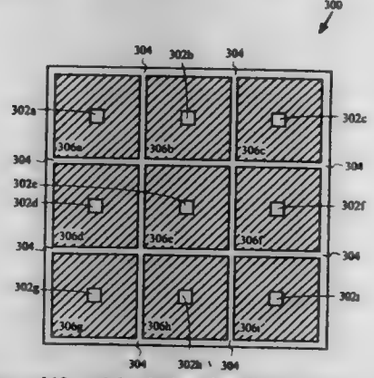
5,795,682
GUARD RINGS TO COMPENSATE FOR SIDE LOBE RINGING IN ATTENUATED PHASE SHIFT RETICLES

Mario Garza, Sunnyvale, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 8, 1996, Ser. No. 613,161

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **17 Claims**



1. A phase shift reticle design for illuminating an integrated circuit design pattern on a resist covered wafer, comprising:

(a) a first transmissive region corresponding to first resist regions on said resist covered wafer identified for exposure to radiation;

(b) a partially transmissive region corresponding to second resist regions on said resist covered wafer identified to be substantially blocked from exposure to radiation, said partially transmissive region shifting radiation passing through it out of phase with radiation passing through said first transmissive region;

(c) a slit-shaped second transmissive region rectangularly surrounding two adjacent first transmissive regions such that radiation passing through said second transmissive region suppresses a side lobe ringing resulting from radiation passing through said adjacent first transmissive regions and radiation passing through said partially transmissive region, wherein each of said two adjacent first transmissive regions are contained within said slit-shaped second transmissive region.

5,795,683
METHOD AND A SYSTEM FOR DESIGNING A PHOTOMASK FOR USE IN MANUFACTURE OF A SEMICONDUCTOR DEVICE

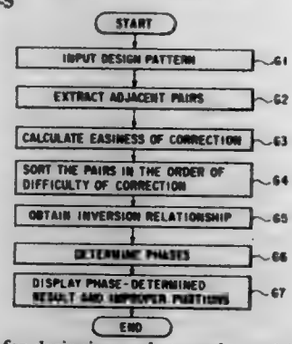
Taiga Uno, Kawasaki; Kiyomi Koyama, Yokohama, and Kazuko Yamamoto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 27, 1996, Ser. No. 622,411

Claims priority, application Japan, Mar. 27, 1995, 7-067269; Mar. 18, 1996, 8-061446

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **32 Claims**



1. A method for designing a photomask, used in photolithography using partially coherent incident light, the photomask having a substrate on which a plurality of transparent regions and opaque regions are formed, at least one of the transparent regions including a phase shifter for providing the incident light transmitting through the transparent regions with a phase difference, the method comprising the steps of:

executing a fetching process for fetching mask layout data representing a plurality of figures corresponding to the plurality of transparent regions;

executing a first process for forming groups of figures adjacent to one another within a distance S1 from a plurality of figures corresponding to the plurality of transparent regions represented by the mask layout data, and determining phases of the figures in each of the groups such that paired figures adjacent to each other have opposite phases, thereby obtaining an improper group of paired figures adjacent to each other having the same phase; and

executing a second process for determining phases of the figures, while an initial figure to initialize phases is successively changed in the improper group, thereby obtaining phase-improper portions and the result of the phase determination.

5,795,684
PHOTOLITHOGRAPHY MASK AND METHOD OF FABRICATION

Patrick M. Troccolo, Palo Alto, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Apr. 5, 1996, Ser. No. 628,184

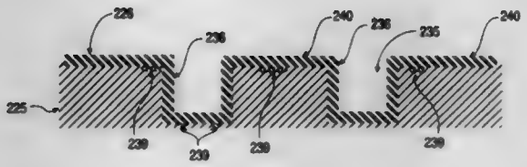
Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **30 Claims**

1. A mask structure for use in photolithography with a preselected wavelength of light, said mask comprising:

a mask substrate containing a surface that is substantially reflective to said preselected wavelength;

a first layer of material on said mask surface that is substantially transmissive to said preselected wavelength;



a trench portion in said first layer;

an absorbing layer portion held within the trench portion, the absorbing layer being absorptive to the preselected wavelength of light; and

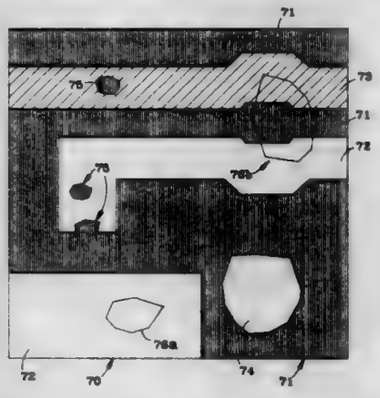
wherein the top surface of the mask structure is substantially smooth and planar.

5,795,685

SIMPLE REPAIR METHOD FOR PHASE SHIFTING MASKS

Lars W. Liebmann, Poughquag, N.Y.; Burn Jeng Lin, Tampa, Fla., and Mark O. Neisser, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1997, Ser. No. 783,631
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 **47 Claims**



1. A method of correcting a plurality of defects in an image enhancing mask, comprising the steps of:

a) locating the plurality of defects;

b) defining a plurality of repair regions;

c) making the plurality of repair regions opaque on the image enhancing mask; and

d) defining a pattern on an image enhancing repair mask to complement the plurality of repair regions.

5,795,686

PATTERN FORMING METHOD AND METHOD OF MANUFACTURING LIQUID CRYSTAL DISPLAY DEVICE

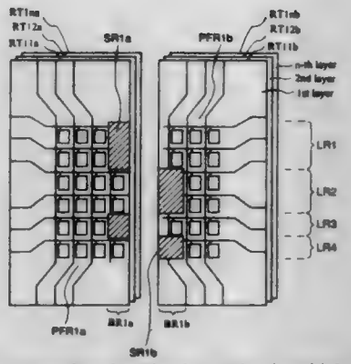
Hideaki Takizawa, and Shougo Hayashi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 19, 1996, Ser. No. 770,231
Claims priority, application Japan, Dec. 26, 1995, 7-339594
Int. Cl.[6] G03F *9/00;7/00*
U.S. Cl. 430—5 **20 Claims**

1. A method of forming a pattern comprising the steps of:

(1) forming a photosensitive resist film on a substrate having first region, second region, third region put between said first region and said second region;

(2) forming a plurality of latent images of first patterns arranged regularly in said photosensitive resist film on said first region by exposing said photosensitive resist film using a first exposure mask, and



forming unexposed regions having a size in which one or more than two of said first patterns are included and latent images of said first patterns in said photosensitive resist film on said third region;

(3) forming a plurality of latent images of said first patterns arranged regularly in said photosensitive resist film on said second region by exposing said photosensitive resist film using a second exposure mask, and

forming latent images of said first patterns in said unexposed regions on said third region;

(4) forming resist masks made of said photosensitive resist film shaped with said first patterns by developing said photosensitive resist film; and

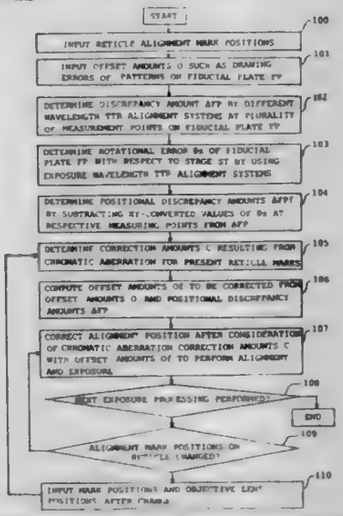
(5) forming a plurality of second patterns arranged regularly using said resist masks by way of etching or lift-off.

5,795,687

PROJECTION EXPOSURE METHOD AND ALIGNMENT

Masahiko Yasuda, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Feb. 23, 1996, Ser. No. 606,527
Claims priority, application Japan, Feb. 24, 1995, 7-036378
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—22 **10 Claims**



1. A projection exposure method including positional adjustment for a mask and a photosensitive substrate in relation to a projection optical system by two-dimensionally moving the mask which includes first mark area, third mark area, and a pattern area, or by two-dimensionally moving the photosensitive substrate and a fiducial plate which includes second mark area and fourth mark area corresponding to the first mark area and third mark area, said projection exposure method comprising the steps of:

inputting position of the first mark area;

computing correction amount for positional adjustment for the mask and the photosensitive substrate on the basis of third

optical information obtained upon detection of a plurality of positions in the second mark area and the position of the first mark area;

irradiating the first mark area and the second mark area with a light beam having a first wavelength characteristic to detect first optical information produced from the first mark area and the second mark area;

irradiating the third mark area and the fourth mark area with a light beam having a second wavelength characteristic different from the light beam having the first wavelength characteristic to detect second optical information produced from the third mark area and the fourth mark area, in a state of being able to detect the first optical information;

computing a correction amount C resulting from chromatic aberration caused by the light beam having the first wavelength characteristic and the light beam having the second wavelength characteristic relative to the projection optical system on the basis of the first optical information and the second optical information;

performing the positional adjustment for the mask and the photosensitive substrate in relation to a projection optical system by using the correction amount C;

exposing the photosensitive substrate with the mask; and

correcting the positional adjustment for the mask and the photosensitive substrate by using the correction amount when a different mask, on which the first mark area is formed in a different position from the mask used in the exposure of the photosensitive substrate, is used for a subsequent exposure of the photosensitive substrate.

5,795,688

PROCESS FOR DETECTING DEFECTS IN PHOTOMASKS THROUGH AERIAL IMAGE COMPARISONS

James Burdorf, Meridian, and Christophe Pierrat, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Aug. 14, 1996, Ser. No. 696,652

Int. Cl.[6] G01N *21/00*; G03F *9/00*

U.S. Cl. 430—30 **24 Claims**

1. A process for detecting defects in masks comprising:

generating an aerial image of a portion of a mask;

generating a simulated image corresponding to original pattern data used to create said mask taking into account expected distortions and corner rounding due to image processing; and

comparing said aerial image to said simulated image.

5,795,689

METHOD OF MAKING A PRINTING PLATE FOR NEWSPAPER PRINTING

Yuichi Okamura, Toyonaka, Japan, assignor to Kabushiki Kaisha Kikai Seisakusho, Osaka-fu, Japan

Filed Aug. 29, 1996, Ser. No. 697,726

Claims priority, application Japan, Aug. 30, 1995, 7-222141

Int. Cl.[6] G03G *13/26*

U.S. Cl. 430—49 **1 Claim**

1. A method for making a printing plate for newspaper printing, comprising:

providing an electrostatic figure-drawing section;

receiving first and second plate portions at said electrostatic figure-drawing section;

providing first and second laser scanning heads at said electrostatic figure-drawing section;

generating figure-drawing image signals by electronic computer;

using said first laser scanning head to draw a first figure on said first plate portion in accordance with said figure-drawing image signals while simultaneously using said second laser scanning head to draw a second figure on said second plate portion in accordance with said figure-drawing image signals;

subjecting said first and second plate portions to a developing and fixing treatment; and,

subjecting said first and second plate portions to an elution treatment, whereby said first and second figures are made onto said first and second plate portions, respectively;

wherein said first and second plates comprise an organic photoconducting layer; and

wherein, said step of drawing a first figure on said first plate portion comprises the step of drawing first and second pages on said first plate portion, and wherein said step of drawing a second figure on said second plate portion comprises the step of drawing third and fourth pages on said second plate portion, said first, second, third, and fourth pages each being different from one another.

5,795,690

ELECTROPHOTOGRAPHIC PHOTORECEPTOR, IMAGE FORMING APPARATUS AND IMAGE FORMING PROCESS

Ichiro Takegawa; Hidemi Nukada; Hiroshi Yamamoto; Koji Goshima, and Takaaki Kimura, all of Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 561,231, Nov. 21, 1995, Pat. No. 5,658,702. This application Jan. 21, 1997, Ser. No. 784,545

Claims priority, application Japan, Jan. 22, 1996, 8-008133; Jan. 23, 1996, 8-008808

Int. Cl.[6] G03G *5/047*; *5/14*

U.S. Cl. 430—58 **15 Claims**

1. An electrophotographic photoreceptor comprising an electrically-conductive substrate having provided thereon an undercoat layer and a photosensitive layer, wherein said undercoat layer comprises a crosslinkable matrix and an electron-transporting material.

5,795,691

DEVELOPER FOR ELECTROSTATIC LATENT IMAGE DEVELOPMENT

Hiroshi Yamazaki; Kishio Tamura, and Mayumi Hayashi, all of Toyko, Japan, assignors to Konica Corporation, Japan

Filed May 14, 1996, Ser. No. 647,864

Claims priority, application Japan, Sep. 1, 1995, 7-225206

Int. Cl.[6] G03G *9/083*

U.S. Cl. 430—106.6 **18 Claims**

1. A two component developer of electrostatic latent image containing a carrier and a toner which contains a colorant and a binder resin,

wherein said carrier comprises a magnetic substance particle and a resin coated on the magnetic substance particle, and said resin for coating is a polyolefin having a weight average molecular weight (Mw) of 20×10^4 to 100×10^4, a number average molecular weight (Mn) of 0.5×10^4 to 10×10^4 and an Mw/Mn of 5 to 100.

5,795,692

CARRIER COMPOSITION AND PROCESSES THEREOF

Richard B. Lewis, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1997, Ser. No. 829,665

Int. Cl.[6] G03G *9/107*; *9/113*

U.S. Cl. 430—106.6 **16 Claims**

1. A carrier composition comprised of a core comprised of a magnetic oxide with a coating thereover comprised of zinc metal obtained by the reaction product of zinc vapor and said magnetic oxide, wherein the weight of zinc metal used to form the zinc vapor is from about 0.5 to about 10 weight percent relative to the weight of the core particles.

5,795,693

CARRIER FOR ELECTROPHOTOGRAPHY, TWO COMPONENT-TYPE DEVELOPER AND IMAGE FORMING METHOD

Kenji Okado, Yokohama; Tsuyoshi Takiguchi, Kawasaki, and Tetsuya Ida, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 794,167, Feb. 3, 1997, abandoned, which is a continuation of Ser. No. 491,704, Jun. 19, 1995, abandoned. This application Aug. 8, 1997, Ser. No. 908,624
Claims priority, application Japan, Jun. 22, 1994, 6-162898
Int. Cl.[6] G03G *9/10*
U.S. Cl. 430—106.6 130 Claims

1. A carrier for electrophotography, comprising: magnetic carrier core particles and a resin coating layer coating the magnetic carrier core particles, wherein

the carrier core particles comprise a magnetic ferrite component represented by the following formula (I):

$$(Fe_2O_3)_x(A)_y(B)_z \quad (I),$$

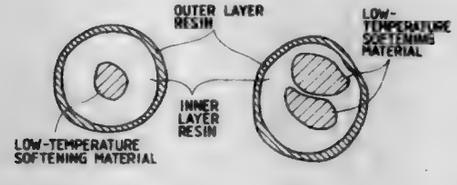
wherein A denotes a member selected from the group consisting of MgO, AgO and mixtures thereof; B denotes a member selected from the group consisting of MnO, CaO, Al_2O_3, SiO_2 and mixtures thereof; and x, y and z are numbers representing weight ratios and satisfying the relation of: $0.2 \leqq x \leqq 0.95$, $0.005 \leqq y \leqq 0.3$, $0 < z \leqq 0.795$, and $x+y+z \leqq 1$.

5,795,694

TONER FOR DEVELOPING ELECTROSTATIC IMAGE

Masaki Uchiyama, Yokohama; Tatsuya Nakamura, Tokyo, and Shinya Yachi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1996, Ser. No. 649,073
Claims priority, application Japan, May 19, 1995, 7-144229
Int. Cl.[6] G03G *9/093*
U.S. Cl. 430—109 20 Claims



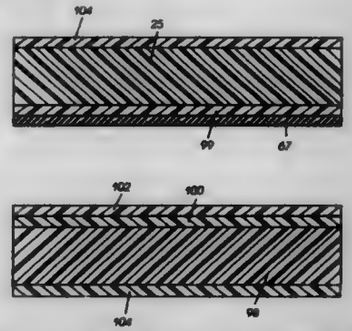
1. A toner for developing an electrostatic image comprising: toner particles each containing a binder resin and a colorant, each said toner particle having at least a core composed of a low-temperature softening substance, an inner layer enclosing the core, and an outer layer enclosing the core and the inner layer; and the core, the inner layer, and the outer layer being constituted respectively of a material which is individually discriminable by staining with triruthenium tetroxide and triosmium tetroxide, wherein said toner particles have a weight-average particle diameter of 4 to 8 μm, said low-temperature softening substance is present in an amount of 5 to 30% by weight and said outer layer has a thickness of 0.01 to 0.5 μm.

5,795,695

RECORDING AND BACKING SHEETS CONTAINING LINEAR AND CROSS-LINKED POLYESTER RESINS

Shadi L. Malhotra; T. Brian Mcaneney; James H. Sharp, and Kirit N. Naik, all of Ontario, Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1996, Ser. No. 720,524
Int. Cl.[6] G03G *15/22*
U.S. Cl. 430—120 34 Claims



1. A method of creating simulated photographic-quality prints using non-photographic imaging, said method comprising:

providing a transparent polyester substrate coated with a polyester toner receiving layer on one of its surfaces;

providing a wrong reading polyester toner image formed on said toner receiving layer using a non-photographic imaging process;

providing one surface of a polyester backing substrate with a first coating comprising a polyester adhesive composition having a glass transition temperature of less than 55° C. and comprised of a polyester resin, a low molecular weight adhesion promoting ester compound, an antistatic agent and, a lightfastness inducing agent;

providing said one surface of said backing substrate with a second coating in contact with said first coating wherein said second coating comprises a polyglycol ester compound;

providing a third coating on another surface of said backing substrate which is hydrophobic, antistatic, scuff and abrasion resistant;

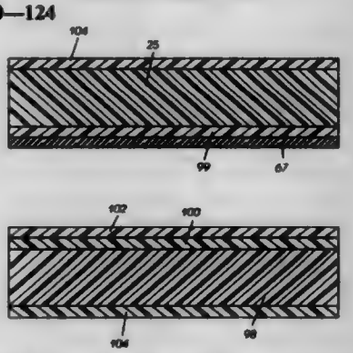
laminating said transparent substrate with heat and pressure to said one surface of said backing substrate.

5,795,696

LAMINATABLE BACKING SUBSTRATES CONTAINING PAPER DESIZING AGENTS

Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 2, 1996, Ser. No. 720,656
Int. Cl.[6] G03G *13/16*
U.S. Cl. 430—124 29 Claims



1. A method of creating simulated photographic-quality prints using nonphotographic imaging, said method comprising:

providing a coated transparent substrate having a wrong reading toner image formed thereon using a non-photographic imaging process;

providing one surface of a backing substrate with a first coating comprising a polymeric adhesive binder having a glass transition temperature less than 55° C., an antistatic agent, a lightfastness inducing agent and an optional filler;

providing said one surface of said backing substrate with a second coating in contact with said first coating wherein said second coating comprises a hydrophilic polymer having a melting point of greater than 50° C.; and a paper desizing agent material having a melting point of less than 75° C.;

providing a coating on another surface of said protective member opposite said one surface which is luminescent, antistatic, scuff resistant, and lightfast;

adhering said substrates to each other by the application of heat and pressure.

5,795,697

IMAGING ELEMENT FOR MAKING AN IMPROVED PRINTING PLATE ACCORDING TO THE SILVER SALT DIFFUSION TRANSFER PROCESS

Paul Coppens, Turnhout, and Eric Hoes, Lille, both of Belgium, assignors to AGFA-Gevart, N.V., Mortsel, Belgium

Filed Jul. 3, 1997, Ser. No. 888,290

Claims priority, application European Pat. Off., Jul. 4, 1996, 96201910

Int. Cl.[6] G03C *8/52;8/06;* **G03F** *7/07*

U.S. Cl. 430—204 **10 Claims**

1. An imaging element comprising in the order given on a hydrophilic surface of a support (i) an image receiving layer containing physical development nuclei, (ii) a photosensitive layer containing a silver halide emulsion being in water permeable relationship with said image receiving layer (iii) a first antistress layer and (iv) a second antistress layer, said antistress layers being in water permeable relationship with said image receiving layer and each independently comprising unhardened gelatin, wherein said second antistress layer comprises at least 30 mg/m^2 of a matting agent with a weight average diameter of more than 3 μm.

5,795,698

ON-PRESS DEVELOPABLE PRINTING PLATE WITH AMPHOTERIC HYDROGEN BOND FORMING DEVELOPABILITY STABILIZER

Maurice J. Fitzgerald, Canton; Michael J. Jurek, Burlington; Rong-Chang Liang, Newton, and Richard J. Sugrue, Quincy, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

PCT No. PCT/US96/14611, § 371 Date Apr. 14, 1997, § 102(e) Date Apr. 14, 1997

PCT Filed Sep. 13, 1996, Ser. No. 817,369

Int. Cl.[6] G03C *1/1725;* **B41N** *1/00*

U.S. Cl. 430—281.1 **4 Claims**

1. A lithographic printing plate developable on a lithographic printing press equipped with means for delivering lithographic ink and aqueous fountain solutions to the printing plate, the lithographic printing plate having in order

(a) a printing plate substrate; and

(b) a photoresist photohardenable upon imagewise exposure to actinic radiation, the photoresist comprising

(i) a macromolecular organic binder;

(ii) a photopolymerizable ethylenically unsaturated monomer having at least one terminal ethylenic group capable of forming a high polymer by chain-propagated polymerization,

(iii) a polymerization initiator activatable by actinic radiation, and

(iv) an amphoteric hydrogen bond-forming developability stabilizer, the hydrogen bond-forming developability stabilizer being a compound that is non-volatile, miscible in the photoresist, and soluble in said lithographic ink and fountain solutions; the amphoteric hydrogen bond-forming developability stabilizer possessing a strong hydrogen bonding functionality with the remainder of the molecule manifesting hydrophilicity.

5,795,699

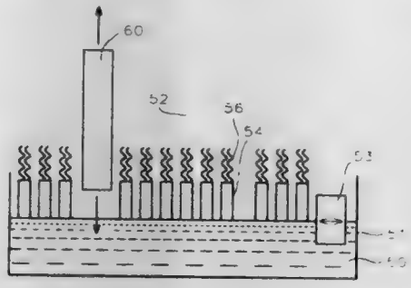
LANGMUIR-BLODGETT (LB) FILMS AS ARC AND ADHESION PROMOTERS FOR PATTERNING OF SEMICONDUCTOR DEVICES

Mei Sheng Zhou, Singapore, and Ron-Fu Chu, Amica, both of Singapore, assignors to Chartered Semiconductor Manufacturing Ltd., Singapore, Singapore

Filed Jul. 15, 1996, Ser. No. 679,858

Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—318 **26 Claims**



1. The method of metal patterning in the fabrication of an integrated circuit comprising:

providing a semiconductor substrate having semiconductor device structures formed in and on said semiconductor substrate;

depositing a metal layer over said semiconductor substrate;

coating onto said metal layer a Langmuir-Blodgett film formed through a Langmuir-Blodgett method wherein said Langmuir-Blodgett film acts as an anti-reflective coating and as an adhesion promoter, said Langmuir-Blodgett film being formed from a dye surfactant comprising a hydrophilic group, a chromatic group and a hydrophobic group;

coating said Langmuir-Blodgett film with a photoresist and patterning said photoresist to provide a photoresist mask;

etching away said metal layer where it is not covered by said photoresist mask; and

removing said photoresist mask completing said metal patterning in the fabrication of said integrated circuit.

14. The method of fabricating an integrated circuit device comprising:

providing a semiconductor substrate having semiconductor device structures formed in and on the semiconductor substrate, wherein said semiconductor device structures include gate eletrodes and source and drain regions;

depositing a metal layer over said semiconductor substrate;

coating onto said metal layer a Langmuir-Blodgett film formed through a Langmuir-Blodgett method wherein said Langmuir-Blodgett film acts as an anti-reflective coating and as an adhesion promoter, said Langmuir-Blodgett film being formed from a dye surfactant comprising a hydrophilic group, a chromatic group and a hydrophobic group;

coating said Langmuir-Blodgett film with photoresist and patterning said photoresist to provide a photoresist mask;

etching away said metal layer where it is not covered by said photoresist mask; and

removing said photoresist mask completing said metal patterning in the fabrication of said integrated circuit.

5,795,700

METHOD FOR FORMING RESIST PATTERN WITH ENHANCED CONTRAST FILM

Jun Hatakeyama, Annaka; Mitsuo Umemura, Usui-gun; Toshinobu Ishihara, and Satoshi Watanabe, both of Jouetsu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 388,899, Feb. 14, 1995, abandoned, which is a continuation of Ser. No. 144,477, Nov. 2, 1993, abandoned. This application Feb. 21, 1996, Ser. No. 604,369
Claims priority, application Japan, Nov. 2, 1992, 4-317878
Int. Cl.[6] G03C *5/00*

U.S. Cl. 430—325 **17 Claims**

1. A process for forming a resist pattern on a substrate, comprising the steps of

forming a water-insoluble resist film on the substrate,

forming a contrast enhancing film on the resist film from a contrast enhancing composition,

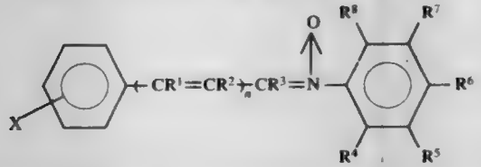
pre-baking the resist film before or after formation of said contrast enhancing film,

exposing said resist film and said contrast enhancing film to light,

baking the films after exposure,

removing said contrast enhancing film after the baking step, and developing said resist film,

said contrast enhancing composition comprising an arylnitrone compound of the following general formula (I):



(I)

wherein R^1, R^2, and R^3 are independently an alkyl radical, an aryl radical or a hydrogen atom,

R^4 to R^8 are independently an alkyl radical, a hydrogen atom or a carboxyl radical, at least one of R^4 to R^8 being a carboxy radical,

X is a dialkylamino radical represented by $R^{10}R^{11}N$— wherein R^{10} and R^{11} are independently an alkyl radical, and

letter n has a value of 0, 1 or 2.

5,795,701

MAKING OF MICROLITHOGRAPHIC STRUCTURES WITH AN UNDERLAYER FILM CONTAINING A THERMOLYZED AZIDE COMPOUND

Willard Earl Conley, Cornwall; James Thomas Fahey, Poughkeepsie; Wayne Martin Moreau, Wappingers Falls, all of N.Y.; Ratnam Sooriyakumaran, San Jose, Calif., and Kevin Michael Welsh, Plymouth, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 354,579, Dec. 13, 1994, Pat. No. 5,663,036. This application Nov. 26, 1996, Ser. No. 756,672
Int. Cl.[6] G03C *5/16*

U.S. Cl. 430—325 **9 Claims**

1. A method of making a microlithographic relief image comprising the steps of:

a) applying, to a microlithographic substrate, a first film comprising a polymeric binder and a precursor of a basic species;

b) heating said first film to produce a basic species, wherein the precursor is an azide that is selected from the group consisting of 1-azidopyridine, methyl 2-(4'-methyloxyanilino)-5-azidobenzoate, 2-anilino-5-azidobenzoic acid, 2-(4'-azidophenyl)-6-methylbenzothiazole, 2-(4'-azidophenyl)(naphtho-1',2'-4,5 oxazole), polymeric azides, and precursors comprising one or more phenylsulfonylazide substituents;

c) applying, over said first film, a second film comprising a chemically amplified photoresist, the second film being capable of generating an acid upon patternwise exposure of the second film to radiation;

d) patternwise exposing the second film to radiation; and

e) developing the patternwise exposed second film.

5,795,702

PHOTORESIST STRIPPING LIQUID COMPOSITIONS AND A METHOD OF STRIPPING PHOTORESISTS USING THE SAME

Masahito Tanabe; Kazumasa Wakiya; Masakazu Kobayashi, and Toshimasa Nakayama, all of Kanagawa-ken, Japan, assignors to Tokyo Ohka Kogyo Co, Ltd., Kanagawa-Ken, Japan

Filed Sep. 24, 1996, Ser. No. 717,778
Claims priority, application Japan, Sep. 29, 1995, 7-276504
Int. Cl.[6] G03C *5/00;* **C11D** *9/04*

U.S. Cl. 430—331 **18 Claims**

1. A photoresist stripping liquid composition comprising (a) 2–30 wt % of a hydroxylamine, (b) 2–35 wt % of water, (c) 2–20 wt % of an amine having an acid dissociation constant (pKa) of 7.5–13 in aqueous solution at 25° C., (d) 35–80 wt % of a water-soluble organic solvent and (e) 2–20 wt % of a corrosion inhibitor.

5,795,703

METHOD FOR PROCESSING SILVER HALIDE PHOTOSENSITIVE PHOTOGRAPHIC MATERIAL

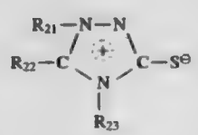
Takatoshi Ishikawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 10, 1996, Ser. No. 763,143
Claims priority, application Japan, Dec. 11, 1995, 7-345451
Int. Cl.[6] G03C *7/42*

U.S. Cl. 430—393 **17 Claims**

1. A method for processing a silver halide photosensitive photographic material which comprises the steps of developing an image-exposed silver halide photosensitive material and desilvering it with a processing solution having fixing function which contains a thiosulfate radical and a compound selected from the group consisting of the compounds represented by the following general formulae (I) and (II), an amount of ammonium ion in the solution being 0 to 50% based on the total counter cations in the solution:

general formula (I)



wherein R_{21}, R_{22} and R_{23}, which may be the same or different from each other, each represents a hydrogen atom, alkyl group, cycloalkyl group, alkenyl group, alkynyl group, aralkyl group, aryl group, heterocyclic group, amino group, acylamino group, sulfonamido group, ureido group, sulfamoylamino group, acyl group, thioacyl group, carbamoyl group or thiocarbamoyl group, with the proviso that both R_{21} and R_{23} cannot be a hydrogen atom at the same time, and general formula (II):



wherein X and Y, which may be the same or different from each other, each represents an alkyl group, alkenyl group, aralkyl group, aryl group, heterocyclic group, $—N(R_{31})R_{32}$, $—N(R_{33})N(R_{34})R_{35}$, $—OR_{36}$, or $—SR_{37}$, or X may together form a ring, with the proviso that at least one of X and Y is substi-

tuted with a carboxylic acid or its salt, sulfonic acid or its salt, phosphonic acid or its salt, amino group, ammonium group or hydroxyl group; R_{31}, R_{32}, R_{33}, R_{34} and R_{35} may be the same or different from each other and each represents a hydrogen atom, alkyl group, alkenyl group, aralkyl group, aryl group or heterocyclic group, and R_{36} and R_{37} may be the same or different from each other and each represents a hydrogen atom, cation, alkyl group, alkenyl group, aralkyl group, aryl group or heterocyclic group,

wherein the processing solution having fixing function contains the thiosulfate radical and the compound represented by the general formula (I) or (II) in a molar ratio of 1:0.02 to 1:0.30.

5,795,704

METHOD OF HARDENER-FREE PROCESSING OF A FOREHARDENED SILVER HALIDE PHOTOGRAPHIC MATERIAL

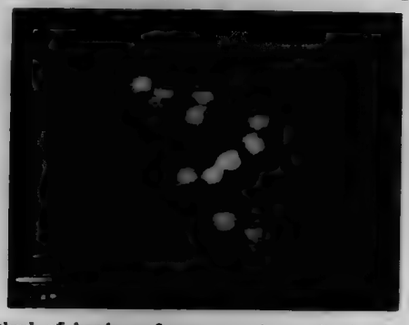
Peter Willems, Stekene; Ann Verbeeck, Begijnendijk, and Freddy Hendrickx, Olen, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Continuation-in-part of Ser. No. 538,126, Oct. 2, 1995, abandoned. This application Nov. 20, 1996, Ser. No. 752,521

Claims priority, application European Pat. Off., Oct. 24, 1994, 94203085

Int. Cl.[6] G03C *5/29*

U.S. Cl. 430—434 **10 Claims**



1. Method of hardener-free processing a forehardened silver halide photographic material comprising a film support and on one or both sides thereof at least one silver halide emulsion layer characterised in that

(1) each silver halide emulsion layer comprises spectrally sensitized cubic silver chloride or silver bromochloride grains having not more than 25 mole % of bromide in a total amount of coated silver expressed as the equivalent amount of silver nitrate in the range of from 2.5 to 4 g/m^2;

(2) the forehardened material has a water absorption of less than 4 grams per gram of gelatin, wherein said water absorption has been determined by making the difference by weight of the material when dry and when having been dipped in demineralized water of 25° C. during 3 minutes followed by squeezing off the superficial water;

(3) hardener-free processing includes development with a developing solution comprising thiocyanate ions in amounts from 10–3 up to 10–2 molar.

5,795,705

METHOD FOR PREPARING PHOTOSENSITIVE FILM, PHOTOGRAPHIC PHOTOSENSITIVE FLM, AND PHOTOGRAPHIC CARTRIDGE

Fumio Kawamoto, Kanagawa, Japan, assignor to Fugi Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 19, 1996, Ser. No. 683,850

Int. Cl.[6] G03C *1/76*

U.S. Cl. 430—501 **10 Claims**

1. A method for preparing a photographic photosensitive film comprising a support having provided on at least one side thereof photographic constituent layers containing a photosensitive silver halide emulsion layer, the photographic photosensitive film having a front end part and a rear end part, wherein the front end part has a length of from 5 mm to 300 mm, the process comprising the steps of:

heating the entire support at a temperature of from 50° C. to the glass transition temperature (T_g) of the support; and

subjecting the photographic photosensitive film to a front-end treatment such that the photographic photosensitive film has an outermost-lap curl value of from 45 m^{-1} to 200 m^{-1} as measured after the treated film is housed in a cartridge, with the emulsion layer side facing inward, wherein the front-end treatment is accomplished by a BTA elimination method in which only the front end part is treated at a temperature not lower than the glass transition temperature (T_g) of the support and not higher than the melting point (T_m) of the support, before the film is wound into a cartridge to curl the film, thereby rendering the front end part more apt to be curled than the rear end part.

5,795,706

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Mikio Ihama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 11, 1996, Ser. No. 613,672

Claims priority, application Japan, Mar. 17, 1995, 7-086413

Int. Cl.[6] G03C *1/46*

U.S. Cl. 430—506 **11 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having provided thereon at least one blue-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer and at least one red-sensitive silver halide emulsion layer, wherein at least one of said blue-sensitive silver halide emulsion layer, said green-sensitive silver halide emulsion layer and said red-sensitive silver halide emulsion layer comprises a low-sensitivity silver halide emulsion layer, a medium-sensitivity silver halide emulsion layer and a high-sensitivity silver halide emulsion layer having substantially the same spectral sensitivity but different in sensitivity, said low-sensitivity silver halide emulsion layer, said medium-sensitivity silver halide emulsion layer and said high-sensitivity silver halide emulsion layer are provided in this order from the side near to the support, the average grain thicknesses of all tabular silver halide grains in said low-sensitivity silver halide emulsion layer is from 0.15 to less than 0.25 μm, the average grain thickness of all tabular silver halide grains in said medium-sensitivity silver halide emulsion layer is from 0.15 to less than 0.25 μm and the average grain thickness of all tabular silver halide grains in said high-sensitivity silver halide emulsion layer is from 0.15 to less than 0.25 μm.

5,795,707

PHOTOGRAPHIC SILVER HALIDE MATERIAL

Klaus Wagner, Bergisch Gladbach; Günter Helling; Torsten Groth, both of Odenthal, and Winfried Joentgen, Köln, all of Germany, assignors to Agfa-Gevaert, Germany

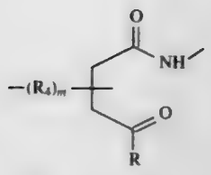
Filed Feb. 19, 1997, Ser. No. 802,713

Claims priority, application Germany, Mar. 1, 1996, 196 07 852.0

Int. Cl.[6] G03C *1/047;1/015*

U.S. Cl. 430—569 **11 Claims**

8. A method of producing a silver halide emulsion by a multi-stage crystal precipitation process having a first section and a final point of precipitation wherein the first section is the precipitation of silver halide nuclei which comprises precipitating the nuclei of silver halide in the presence of a polypeptide at least 90 mole % of which comprises structural units of formula I,



(I)

where

R represents OH, NH_2, NHR_1, NR_1R_2, NH— or NR_1—

R_1 and R_2 independently of one another represent a substitute or unsubstituted hydrocarbon radical,

R_4 represents NH or N—, and

m represents 0 or 1,

wherein the bond between two structural units of formula I is always an —N—C bond and m is equal to 1, in 2 to 35% of the structural units of formula I, and the final point of the precipitation of nuclei is when the number of particles remains substantially constant.

5,795,708

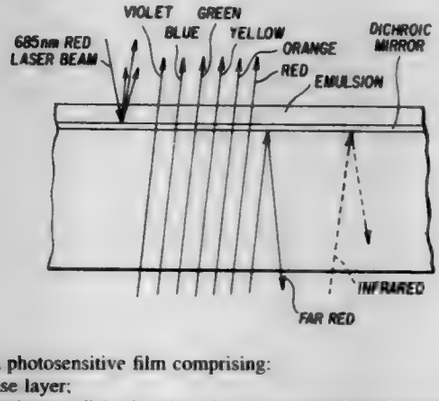
USE OF A DICHROIC MIRROR ANTIHALATION LAYER FOR SPEED AND SHARPNESS BOOST

John Claude Boutet, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 16, 1996, Ser. No. 698,711

Int. Cl.[6] G03C *1/498*

U.S. Cl. 430—617 **7 Claims**



1. A photosensitive film comprising:

a base layer;

a continuous dichroic mirror layer over said base layer; and

a photosensitive dry silver layer over said dichroic mirror layer;

wherein said dry silver layer is exposed by a radiation of narrow range of wavelengths and wherein said dichroic mirror reflects exposure radiation of said narrow range of wavelengths but transmits radiation having wavelengths outside said narrow range of wavelengths;

wherein the exposure speed of said film is substantially increased when exposed to radiation of said narrow range of wavelengths by reflecting said exposure radiation back to said dry silver layer.

5,795,709

PARTICULATE PHOTOGRAPHIC POLYMER

Yutaka Adegawa, and Kentaro Shiratsuchi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

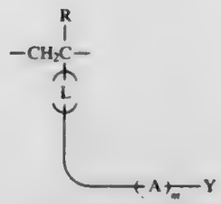
Filed Mar. 20, 1997, Ser. No. 821,075

Claims priority, application Japan, Mar. 29, 1996, 8-104096

Int. Cl.[6] G03C *1/32*

U.S. Cl. 430—627 **18 Claims**

1. A particulate photographic polymer, at least comprising a repeating unit represented by formula (I):



Formula (I)

wherein R represents an alkyl group having 1 to 6 carbon atoms, a phenyl group, or a hydrogen atom; L represents a divalent organic binding group; A represents a repeating unit derived from at least one ethylenically unsaturated monomer, with $-(A)_m-$ being soluble in water or a hydrophilic organic liquid, or a repeating unit derived by ring opening polymerization of a nitrogen-containing heterocyclic compound, with $-(A)_m-$ being soluble in water or a hydrophilic organic liquid; m represents the number-average degree of polymerization of 2 or more but 200 or less; and Y represents a monovalent binding groups;

wherein A is at least one repeating unit selected from the group consisting of (i) a repeating unit derived from N-vinylamides, (ii) a repeating unit derived from acrylic acid and methacrylic acid derivatives, (iii) a repeating unit derived from acrylamides, (iv) a repeating unit derived from maleic acids, (v) a repeating unit derived from vinyl alcohol derivatives, (vi) a repeating unit derived from vinyl ethers, (vii) a repeating unit derived by ring opening polymerization of oxazolines, and (viii) a repeating unit derived by ring opening polymerization of 3-membered cyclic imines;

wherein the particulate photographic polymer comprises polymer particulates having an average particulate diameter of 0.5 to 20 μm.

5,795,710

METHOD AND APPARATUS FOR ORGAN CULTURE

Sung-Su Park, Cheonggu Apt. 103-1306, #929 Mok 6-dong, Yangcheon-gu, Seoul, Rep. of Korea, 158-056

Division of Ser. No. 555,600, Nov. 9, 1995. This application Jan. 27, 1997, Ser. No. 788,253

Claims priority, application Rep. of Korea, Nov. 9, 1995, 94-29214

Int. Cl.[6] A01N *1/02;* C12P *1/00*

U.S. Cl. 435—1 **4 Claims**

1. A method for culturing an organic tissue slice in an oxygenated gas under the supply of a liquid culture medium comprising the steps of: attaching the tissue slice onto an inner side of a mesh which is placed in a static erect incubation chamber so as to form a layer of open space having a substantially uniform thickness between the inner wall of the chamber and the mesh wherein the mesh is made of stainless steel and has a mesh size ranging from 200 to 400 μm and the mesh substantially conforms to the shape of the inner wall and the thickness of the layer of open space between the inner wall of the chamber and the mesh ranges from 2 to 3 mm; and culturing the tissue in the presence of the oxygenated gas while supplying the culture medium to the top of said layer at regular intervals so that the tissue is exposed alternately to the medium and gas at a contact time ratio in a range from 1:2.5 to 1:3.5.

5,795,711

CRYOPRESERVED HEPATOCYTES AND HIGH VIABILITY AND METABOLIC ACTIVITY

Claudy Jean-Paul Mullon, Framingham; Shawn Paul Cain, N. Chelmsford; Timothy Jon Periman, Lexington, all of Mass.; Hugo O. Jauregui, Providence, R.I.; Sharda Naik; Henry A. Santangini, both of Cranston, R.I., and Donna M. Trenkler, Greene, R.I., assignors to Circe Biomedical, Inc., Lexington, Mass.

Filed Apr. 4, 1996, Ser. No. 627,446

Int. Cl.[6] A01N *1/02*

U.S. Cl. 435—1.1 31 Claims

1. An artificial liver support system comprising cryopreserved hepatocytes having an initial viability of 80–99% and having 50–80% of the metabolic activity of fresh cells.

5,795,712

COMPOSITIONS FOR USE IN METHODS FOR NON-DESTRUCTIVE TESTING OF MATERIALS AND WARES

Nadejda G. Beriozkina; Ilia O. Leipunsky, and Victor J. Maklashevsky, all of Moscow, Russian Federation, assignors to Marvic Ltd., Moscow, Russian Federation, and Marotta Scientific Controls, Inc., Montville, N.J.

Division of Ser. No. 329,203, Oct. 26, 1994. This application Nov. 20, 1996, Ser. No. 752,547

Claims priority, application Russian Federation, Jun. 6, 1994, 94021094

Int. Cl.[6] C09K *11/07*

U.S. Cl. 436—5 5 Claims

1. An indicator for detecting defects during non-destructive testing of a surface for imperfections comprising:

a gas permeable base material, such as a chromatographic and/or electrophoretic paper, that is impregnated with a sulfonephthalein indicator in the concentration of 0.0001–0.001 grams per cubic centimeter and chlorhydric acid in the concentration range of 0.00001–0.00002 grams per cubic centimeter.

5,795,713

METHODS FOR IDENTIFYING INDUCERS AND INHIBITORS OF PROGRAMMED CELL DEATH

Bernard Roizman, and Bin He, both of Chicago, Ill., assignors to Arch Development Corporation, Chicago, Ill.

Filed Feb. 4, 1997, Ser. No. 795,470

Int. Cl.[6] C12Q *1/42;1/48;1/70*

U.S. Cl. 435—5 16 Claims

1. A method for identifying inhibitors of programmed cell death in a cell-free system, the method comprising the steps of:

(a) preparing a cell-free system comprising phosphorylated eIF-2α and protein phosphatase 1α (PP1α);

(b) introducing into the cell-free system of step (a) a candidate inhibitor of programmed cell death and allowing the resulting mixture to incubate; and,

(c) measuring the level of phosphorylation of eIF-2α resulting from step (b);

wherein an inhibitor of programmed cell death decreases or prevents increase of the level of phosphorylation of eIF-2α that accompanies programmed cell death when compared to a control.

5,795,714

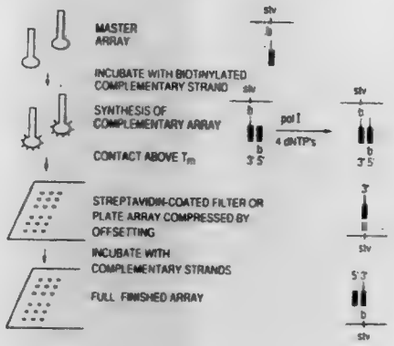
METHOD FOR REPLICATING AN ARRAY OF NUCLEIC ACID PROBES

Charles R. Cantor; Marek Przetakiewicz; Cassandra L. Smith, and Takeshi Sano, all of Boston, Mass., assignors to Trustees of Boston University, Boston, Mass.

Continuation-in-part of Ser. No. 972,012, Nov. 6, 1992, Pat. No. 5,503,980. This application Aug. 23, 1993, Ser. No. 110,691

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 29 Claims



1. A method for replicating an array of single-stranded probes on a solid support comprising the steps of:

a) synthesizing an array of nucleic acids each comprising a non-variant sequence of length C at a 3'-terminus and a variable sequence of length R at a 5'-terminus;

b) fixing the array to a first solid support;

c) synthesizing a set of nucleic acids each comprising a sequence complementary to the non-variant sequence;

d) hybridizing the nucleic acids of the set to the array;

e) enzymatically extending the nucleic acids of the set using the variable sequences of the array as templates;

f) denaturing the set of extended nucleic acids; and

g) fixing the denatured nucleic acids of the set to a second solid support to create the replicated array of single-stranded probes.

5,795,715

PROCESS FOR PREPARING DOUBLE-STRANDED RNA, AND ITS APPLICATIONS

Thierry Livache, Grenoble; Brigitte Fouque, Seyssinet, and Robert Teoule, Grenoble, all of France, assignors to CIS Bio International, Saclay, France

PCT No. PCT/FR92/01209, § 371 Date Jun. 17, 1994, § 102(e) Date Jun. 17, 1994, PCT Pub. No. WO93/12229, PCT Pub. Date Jun. 24, 1993

PCT Filed Dec. 18, 1992, Ser. No. 244,722

Claims priority, application France, Dec. 18, 1991, 91 15710

Int. Cl.[6] C12P *19/34;* C12Q *1/68;* C12N *15/00*

U.S. Cl. 435—6 11 Claims

1. A process for preparing double-stranded RNA comprising the steps of:

a) providing a DNA comprising a sequence to be transcribed into double-stranded RNA, wherein each strand of said DNA sequence to be transcribed is under transcriptional control of a promoter sequence, and wherein the DNA comprising the DNA sequence to be transcribed is attached to a solid support and;

b) in a single reaction mixture, contacting said DNA with appropriate RNA polymerase (s) thereby simultaneously transcribing both strands of said DNA sequence and annealing the transcripts to obtain double-stranded RNA.

5,795,716

COMPUTER-AIDED VISUALIZATION AND ANALYSIS SYSTEM FOR SEQUENCE EVALUATION

Mark S. Chee, 3199 Waverly St., Palo Alto, Calif. 94306

Filed Oct. 21, 1994, Ser. No. 327,525

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* G06F *15/46;* C07H *21/04*

U.S. Cl. 435—6 10 Claims

1. A computer program product that identifies an unknown base in a sample nucleic acid sequence, comprising:

computer code that receives a plurality of signals corresponding to probe intensities for a plurality of nucleic acid probes, each probe intensity indicating an extent of hybridization of a nucleic acid probe with at least one nucleic-acid sequence including said sample sequence, and each nucleic acid probe differing from each other by at least a single base;

computer code that performs a comparison of said plurality of probe intensities to each other;

computer code that generates a base call identifying said unknown base according to results of said comparison and said sequences of said nucleic acid probes; and

a computer readable medium that stores said computer codes.

5,795,717

OLIGONUCLEOTIDES FOR DETECTING BACTERIA AND DETECTION PROCESS

Tomoko Nakayama, Osaka; Jun Tada, Muko; Shigeru Fukushima, Otsu, and Tetsuo Ohashi, Kyoto, all of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Oct. 25, 1994, Ser. No. 328,710

Claims priority, application Japan, Feb. 28, 1994, 6-030277; Mar. 18, 1994, 6-048174

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/02;21/04*

U.S. Cl. 435—6 7 Claims

1. A synthetic oligonucleotide comprising a nucleotide sequence which hybridizes to a primer extension product, said primer extension product being obtained by hybridizing a synthetic oligonucleotide selected from the group consisting of SEQ ID NOS:1–6 to a single stranded target DNA present in a biological specimen and carrying out a primer extension reaction.

2. A method for detecting a Shigella species, or enteroinvasive *Escherichia coli,* wherein the method comprises:

(1) hybridizing a first primer to a single-stranded target DNA as a first template DNA present in a biological specimen and carrying out a primer extension reaction to give a first primer extension product,

(2) denaturing a resulting DNA duplex of said primer extension product and said first template DNA to separate the primer extension product from the template DNA, the first primer extension product functioning as a second template DNA for a second primer,

(3) hybridizing the second primer to said second template DNA and carrying out a primer extension reaction to give a second primer extension product,

(4) repeating a cycle of simultaneous primer extension reaction with the first and second primers, separation of the first and second primer extension products from the first and second templates, and hybridization of first and second primers to amplify a region of the target DNA, in the steps from (1) to (3), said primers being selected from the group consisting of oligonucleotides of SEQ ID NOS:1–6 and a synthetic oligonucleotide of claim 1; and

(5) detecting the region of the target DNA that has been amplified to determine whether a suspected Shigella species or enteroinvasive *Escherichia coli* is present in the biological specimen.

5,795,718

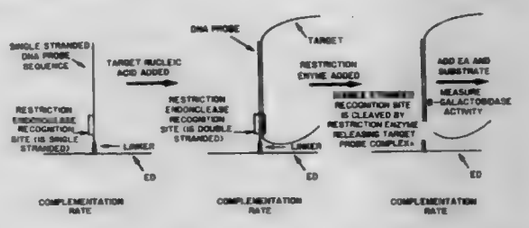
DETECTION OF COMPLEMENTARY NUCLEOTIDE SEQUENCES

Scott J. Eisenbeis, Benicia, Calif., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Continuation of Ser. No. 745,153, Aug. 15, 1991, abandoned. This application May 30, 1995, Ser. No. 453,971

Int. Cl.[6] C07H *21/04;21/00;19/04*

U.S. Cl. 435—6 24 Claims



1. A method for detection of a nucleic acid sequence in a sample which comprises the steps of:

(A) combining, either sequentially or concurrently,

(1) a sample suspected of containing a nucleic acid of interest;

(2) a probe/enzyme donor conjugate consisting essentially of

(a) an enzyme donor comprising a β-galactosidase fragment 1/10–1/20% of the length of the N-terminal β-galactosidase amino acid sequence, which forms active β-galactosidase upon complementation with an enzyme acceptor polypeptide; and

(b) a single-stranded oligonucleotide sequence attached to (a) using a conjugating group and which can hybridize with said nucleic acid;

(3) an enzyme acceptor polypeptide consisting essentially of a fragment of β-galactosidase, wherein said enzyme acceptor polypeptide forms said active β-galactosidase enzyme upon complementation with said probe/enzyme donor conjugate; and

(4) a substrate for β-galactosidase; and

(B) detecting hybridizing between said nucleic acid and said oligonucleotide sequence to form a hybridized sequence by determining the amount or rate of enzyme activity.

5,795,719

BIOTINYLATED LATEX MICROSPHERE, PROCESS FOR THE PREPARATION OF SUCH A MICROSPHERE AND USE AS AGENT FOR BIOLOGICAL DETECTION

Joël Richard, Chantilly; Sophie Vaslin, Bry-sur-Marne; Pierre Blond, Francheville; Françoise Lerat, Mornant, and Jean-Luc Taboureau, Chaponost, all of France, assignors to Societe Prolabo, Fontenay-Sousbois, France

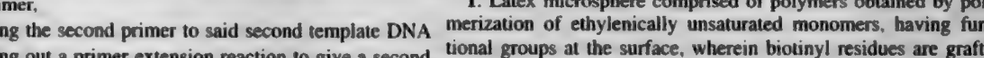
Filed Sep. 8, 1995, Ser. No. 525,065

Claims priority, application France, Sep. 9, 1994, 94 10789

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 35 Claims

1. Latex microsphere comprised of polymers obtained by polymerization of ethylenically unsaturated monomers, having functional groups at the surface, wherein biotinyl residues are grafted onto at least part of said groups, via a divalent chain, and wherein said latex microsphere has the following structure:



$$M—[CO—NH—R—NH—B]_n \quad III$$

in which:

—CO—NH—R—NH— is said divalent chain,

n represents the mean number of molecules grafted per unit of surface area,

M represents the latex microsphere,

B is a biotinyl residue,

R is an optionally substituted divalent hydrocarbon radical optionally containing one or more heteroatoms chosen from the nitrogen, oxygen, sulphur or phosphorus atoms, one or

more carbonyl groups or derivatives selected from the group consisting of imine and oxime, one or more rings or heterocycles.

5,795,720

PROCESS AND DEVICE FOR THE SEPARATION AND DETECTION OF COMPONENTS OF A MIXTURE OF MATERIALS BY TEMPERATURE GRADIENT GEL ELECTROPHORESIS

Karsten Henco, Erkrath; Detlev Riesner, and Gerhard Steger, both of Düsseldorf, all of Germany, assignors to Qiagen GmbH, Hilden, Germany

Continuation of Ser. No. 280,551, Feb. 22, 1994, abandoned, which is a continuation of Ser. No. 847,761, Feb. 19, 1992, abandoned. This application Oct. 31, 1995, Ser. No. 558,594

Claims priority, application Germany, Aug. 19, 1989, 39 27 467.5; Mar. 6, 1990, 40 06 974.5

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **12 Claims**

1. A process for the quantitative and qualitative detection of mutants or specific gene sequences comprising the steps of:

a) adding, to a mixture of different nucleotide sequences, in which one of the different nucleotide sequences has a known concentration, a marker-carrying nucleic acid sequence, the sequence of which is identical to one of the nucleotide sequences, in an amount less than said known concentration, wherein the marker can emit a detectable signal;

b) subjecting the mixture to at least one denaturation/renaturation cycle to obtain hybrids of the different nucleotide sequences with the marker-carrying nucleic acid sequence;

c) analyzing the mixture to detect a mutant or a specific gene sequence by separating nucleic acids in the mixture, using (i) time-controlled temperature gradient gel electrophoresis, wherein the temperature gradient is built up by varying the temperature with time, or (ii) a combination of the time-controlled temperature gradient gel electrophoresis and spatial-controlled temperature gradient gel electrophoresis and examining the separated nucleic acids for the marker signal and measuring relative intensities of detected signals.

5,795,721

HIGH AFFINITY NUCLEIC ACID LIGANDS OF ICP4

Ross S. Rabin; Sumedha D. Jayasena, and Larry Gold, all of Boulder, Colo., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 489,442, Mar. 24, 1995, Pat. No. 5,696,249, which is a continuation of Ser. No. 714,131, Jun. 10, 1991, Pat. No. 5,475,096, which is a continuation-in-part of Ser. No. 536,428, Jun. 11, 1990, abandoned. This application Jan. 25, 1996, Ser. No. 591,989

Int. Cl.[6] C12Q *1/68; C12P 19/34; G01N 33/566; C07H 21/02*

U.S. Cl. 435—6 **13 Claims**

1. A method of identifying nucleic acid ligands to an ICP4 protein family member, comprising:

a) preparing a candidate mixture of nucleic acids;

b) contacting the candidate mixture of nucleic acids with an ICP4 protein family member, wherein nucleic acids having an increased affinity to an ICP4 protein family member relative to the candidate mixture may be partitioned from the remainder of the candidate mixture;

c) partitioning the increased affinity nucleic acids from the remainder of the candidate mixture; and

d) amplifying the increased affinity nucleic acids to yield a mixture of nucleic acids enriched for nucleic acid sequences with relatively higher affinity and specificity for binding an ICP4 protein family member, wherein nucleic acid ligands of an ICP4 protein family member may be identified.

5,795,722

METHOD AND KIT FOR QUANTITATION AND NUCLEIC ACID SEQUENCING OF NUCLEIC ACID ANALYTES IN A SAMPLE

Jean-Michel Lacroix, Etobicoke, and James M. Dunn, Scarborough, both of Canada, assignors to Visible Genetics Inc., Toronto, Canada

Filed Mar. 18, 1997, Ser. No. 819,912

Int. Cl.[6] C12Q *1/68; C12P 19/34*

U.S. Cl. 435—6 **27 Claims**

1. A method for quantitative and qualitative analysis of a nucleic acid analyte in a sample suspected to contain the nucleic acid analyte, comprising the steps of:

(a) combining the sample with a control nucleic acid, and two primer pairs,

a first primer pair effective to amplify a conserved region of the nucleic acid analyte if present in the sample to produce a conserved fragment having a first length and to amplify the control nucleic acid to produce a control fragment having a second length different from the first length, one member of the first primer pair being labeled with a detectable label, and

a second primer pair effective to amplify a second region of the nucleic acid analyte to produce a sequencing fragment, one member of the second primer pair being labeled with a label effective to permit capture of the primer;

(b) amplifying the sample and control nucleic acid using the first and second primer pairs to produce an amplification product mixture containing conserved fragments, sequencing fragments and control fragments when the nucleic acid analyte is present in the sample, and only control fragment when the nucleic acid analyte is not present in the sample;

(c) analyzing the relative amounts of conserved fragments and control fragments in the amplification product mixture to quantify the amount of nucleic acid analyte in the sample; and

(d) determining the sequence of the sequencing fragment in the amplification mixture to determine the qualitative characteristics of any nucleic acid analyte in the sample.

5,795,723

EXPRESSION OF NEUROGENIC BHLH GENES IN PRIMITIVE NEUROECTODERMAL TUMORS

Stephen J. Tapscott, and James M. Olson, both of Seattle, Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Continuation-in-part of Ser. No. 552,142, Nov. 2, 1995, Pat. No. 5,695,995, which is a continuation-in-part of Ser. No. 239,238, May 6, 1994, abandoned. This application Aug. 7, 1997, Ser. No. 910,973

Int. Cl.[6] C12Q *1/68; 1/04; C12P 21/02; C07H 21/04*

U.S. Cl. 435—6 **6 Claims**

1. A method of classifying a human neuroectodermal tumor by analyzing a sample of a tumor comprising:

measuring the expression of at least one basic helix loop helix gene in a sample of a tumor; and

determining that the tumors belongs to a subclass of neuroectodermal tumor if the basic helix loop helix gene expressed in the sample corresponds to a predetermined profile of basic helix loop helix expression associated with the subclass of neuroectodermal tumors.

5,795,724

HUMAN N-ACETYL TRANSFERASE

Jennifer L. Hillman, Mountain View; Y. Tom Tang, Sunnyvale, and Neil C. Corley, Mountain View, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Sep. 12, 1997, Ser. No. 928,443
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 11 Claims

1. An isolated and purified polynucleotide sequence encoding the human N-acetyl transferase of SEQ ID NO:1 or fragments of said polynucleotide sequence having N-acetyl transferase activity.

5,795,725

METHODS FOR THE ASSAY OF TROPONIN I AND T AND SELECTION OF ANTIBODIES FOR USE IN IMMUNOASSAYS

Kenneth F. Buechler, and Paul H. McPherson, both of San Diego, Calif., assignors to Biosite Diagnostics Incorporated, San Diego, Calif.

Filed Apr. 18, 1995, Ser. No. 423,582
Int. Cl.[6] G01N *33/553*
U.S. Cl. 435—7.1 18 Claims

1. An assay for determining the presence or amount of a cardiac specific free and complexed isoform of troponin, said complex comprising isoforms selected from the group consisting of troponin I, troponin C and troponin T, comprising the steps of performing an immunoassay with antibody specific to a cardiac troponin which binds a complex comprising two or more of said isoform and another of said isoform of troponin in said sample, wherein the results of said immunoassay indicate the total amount of said free and complexed cardiac specific troponin isoform in said blood sample.

5,795,726

METHODS FOR IDENTIFYING COMPOUNDS USEFUL IN TREATING TYPE II DIABETES

M. Alexandra Glucksmann, Somerville, Mass., assignor to Millennium Pharmaceuticals, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 760,246, Dec. 4, 1996, which is a continuation-in-part of Ser. No. 749,431, Nov. 15, 1996, which is a continuation-in-part of Ser. No. 748,229, Nov. 12, 1996, abandoned. This application Jan. 10, 1997, Ser. No. 782,047
Int. Cl.[6] C12Q *1/02;1/66;1/68;* C07H *21/04*
U.S. Cl. 435—7.21 10 Claims

1. A method for aiding in the identification of a compound for use in treating Type II diabetes comprising the steps of:

a) incubating a cell in the presence and absence of a test compound, wherein said cells been altered to contain a nucleic acid molecule comprising an HNF1 response element operably linked to a reporter gene and said cell expresses a wild-type HNF1 protein;

b) determining the level of expression of said reporter gene in said cell incubated in the presence and absence of said test compound; and

c) selecting a compound that induces a higher level of expression of said reporter gene in step (b) than that expressed in the absence of said compound, for use in treating Type II diabetes.

5,795,727

GRAVITATIONAL ATTRACTOR ENGINE FOR ADAPTIVELY AUTOCLUSTERING N-DIMENSIONAL DATASTREAMS

Pierre Bierre, Redwood City, Calif., and Ronald A. Mickaels, Moutain View, Calif., assignors to Becton Dickinson and Company, Fraklin Lakes, N.J.

Continuation of Ser. No. 039,465, Apr. 26, 1993, Pat. No. 5,627,040, which is a continuation-in-part of Ser. No. 751,020, Aug. 28, 1991, abandoned. This application May 6, 1996, Ser. No. 643,669
Int. Cl.[6] G01N *33/533;33/49;33/536*
U.S. Cl. 435—7.24 13 Claims

1. An automated method for classifying particles in at least one sample into one or more data clusters comprising the steps of:

(a) automatically collecting a plurality of parameters for each of a plurality of particles in a sample;

(b) automatically displaying each particle on a set of two-dimensional scatterplots;

(c) manually defining an initial position of at least one variable position, geometric boundary surface on the set of two-dimensional scatterplots so as to enclose a group of the displayed particles in a data cluster;

(d) automatically determining the statistical center-of-mass of the data cluster of particles contained within the geometric boundary surface by means of a gravitational attractor engine; and

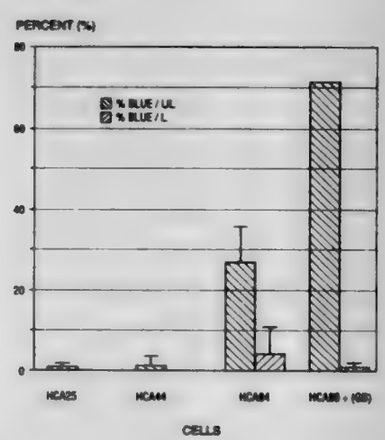
(e) automatically relocating the position of the geometric boundary surface on the set of two-dimensional scatterplots about the newly calculated statistical center-of-mass for the data cluster of particles.

5,795,728

BIOMARKERS OF CELL SENESCENCE

Goberdhan P. Dimri, Simli U.P., India; Judith Campisi, Berkeley, Calif., and Monica Peacocke, Newton, Mass., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 198,436, Feb. 18, 1994, Pat. No. 5,491,069. This application Jun. 7, 1995, Ser. No. 479,082
Int. Cl.[6] C12Q *1/34;* C12N *9/38;* G01N *21/75;21/76*
U.S. Cl. 435—18 5 Claims



1. A kit for differentiating senescent and young cells comprising:

a) a buffer solution having a pH of approximately 5.5 to 6.5;

b) a substrate for β-galactosidase; and

c) a fixing solution.

5,795,729

REDUCTIVE, ENERGY-TRANSFER FLUOROGENIC PROBES

Linda G. Lee, Palo Alto, Calif., assignor to Biometric Imaging, Inc., Mountain View, Calif.

Filed Feb. 5, 1996, Ser. No. 597,018
Int. Cl.[6] C12Q *1/37;1/26;1/00;* G01N *33/53*
U.S. Cl. 435—24 30 Claims



1. A method for fluorescently detecting a reagent in a sample comprising the steps of:

contacting a fluorescent probe including a reporter molecule and a quencher molecule with a sample containing a reagent, the quencher molecule being converted by the reagent from a first state which quenches the fluorescence of the reporter molecule to a second state which has a reduced ability to quench the reporter molecule, the reporter molecule and quencher molecule having absorbance maxima and the absorbance maximum of the quencher molecule being within about 150 nm of the absorbance maximum of the reporter molecule; and

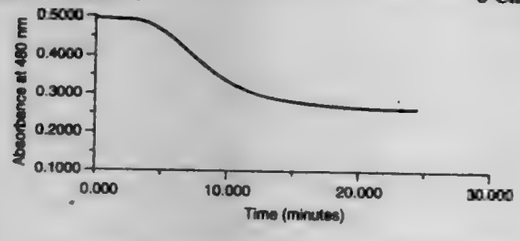
monitoring the fluorescence intensity of the reporter molecule as the quencher molecule is converted from the first state to the second state by the reagent.

5,795,730

RAPID READ-OUT BIOLOGICAL INDICATOR

Kestutis J. Tautvydas, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US95/01984, § 371 Date Jul. 12, 1996, § 102(e) Date Jul. 12, 1996, PCT Pub. No. WO95/21936, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 15, 1995, Ser. No. 669,548
Int. Cl.[6] C12Q *1/22;1/02;1/18;* C12N *1/00*
U.S. Cl. 435—31 6 Claims



1. A method of determining the effectiveness of a sterilization process comprising the steps of

i) contacting an indicator comprising microbial spores with a sterilant to give exposed spores,

ii) contacting the exposed spores with a medium selected to germinate the spores, and

iii) calculating a rate of germination of the exposed spores to determine the effectiveness of the sterilization process.

5,795,731

INTEINS AS ANTIMICROBIAL TARGETS: GENETIC SCREENS FOR INTEIN FUNCTION

Marlene Belfort, Slingerlands, N.Y., assignor to Health Research Incorporated, Albany, N.Y.

Filed Aug. 26, 1996, Ser. No. 702,902
Int. Cl.[6] C12Q *1/18;* C12N *15/00*
U.S. Cl. 435—32 24 Claims

1. A method for screening an agent for antimicrobial activity against a microbial pathogen having an intein in a gene encoding a protein which facilitates growth of said pathogen comprising detecting inhibition of said intein by steps comprising:

preparing recombinant clones of an inducible expression vector containing: (a) an altered reporter gene comprising a silent restriction site within a reporter gene, and (b) said intein;

detecting the production of extein product of said intein by said recombinant clones in the presence of varying concentrations of said agent;

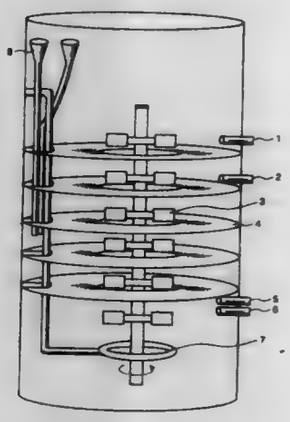
wherein reduced production of said extein product indicates inhibition of said intein, and antimicrobial activity of said agent against said pathogen.

5,795,732

STIRRED-TANK REACTORS AND METHOD OF USE

Bernhard Schilling, Braunschweig; Walter Pfefferle, Halle; Bernd Bachmann, Werther; Wolfgang Leuchtenberger, Bielefeld, and Wolf-Dieter Deckwer, Oldenburg, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Germany

Filed Jun. 3, 1996, Ser. No. 657,381
Claims priority, application Germany, Jun. 3, 1995, 195 20 485.9
Int. Cl.[6] C12M *1/02;* C12P *1/00*
U.S. Cl. 435—41 6 Claims



1. A fermenting device for pretesting microbial and enzymatic processes in simulated production scale conditions comprising:

a stirred-tank reactor having a volume of 10 to 500 l and equipped with at least one shaft driven disk agitator; and

at least one perforated disk attached within the housing in a substantially horizontal plane above and/or below the disk agitator, the ratio of the perforation area of the disk to the entire disk area being 10% to 40%.

4. A method for simulating production scale conditions when pretesting microbial and enzymatic processes, comprising:

introducing matter to be pretested into a stirred-tank reactor having:

(a) a volume of 10 to 500 l;

(b) at least one shaft driven disk agitator; and

(c) at least one perforated disk attached within the housing in a substantially horizontal plane above and/or below the disk agitator, the ratio of the perforation area of the disk to the entire disk area being 10% to 40%; and

fermenting the matter in said reactor.

5,795,733

PROCESS FOR THE EFFICIENT PRODUCTION OF 7-ADCA VIA 3-(CARBOXYETHYLTHIO) PROPIONYL-7-ADCA

Roelof Ary Lans Bovenberg, Rotterdam; Bertus Pieter Koekman, Schipluiden; Andreas Hoekema, Oegstgeest; Jan Metske Van Der Laan, Breda; Jan Verweij, and Erik De Vroom, both of Leiden, all of Netherlands, assignors to Gist-Brocades, B.V., Delft, Netherlands

PCT No. PCT/EP94/02544, § 371 Date May 30, 1996, § 102(e) Date May 13, 1996, PCT Pub. No. WO95/04149, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 29, 1994, Ser. No. 591,501

Claims priority, application European Pat. Off., Jul. 30, 1993, 93202260; Dec. 24, 1993, 93203695

Int. Cl.[6] C12P *35/02;37/02;* **C12N** *1/15*

U.S. Cl. 435—51 **15 Claims**

1. A method for making isolated 3-(carboxyethylthio)propionyl-7-aminodesacetoxycephalosporanic acid (3-(carboxyethylthio)propionyl-7-ADCA) comprising the steps of:

a) culturing a recombinant *Penicillium chrysogenum* strain in a culture medium containing 3,3'-thiodipropionic acid, or a salt or ester thereof;

b) recovering 3-(carboxyethylthio)propionyl-7-ADCA from the culture medium; wherein said recombinant *Penicillium chrysogenum* strain is altered to contain an expandase gene under the transcriptional and translational regulation of fungal expression signals, and said expandase gene encodes an expandase that can expand 3-(carboxyethylthio)propionyl-6-penicillanic acid (3-(carboxyethylthio)propionyl-6-APA) to 3-(carboxyethylthio)propionyl- 7-ADCA.

5,795,734

EPH RECEPTOR LIGANDS, AND USES RELATED THERETO

John G. Flanagan, Newton, and Hwai-Jong Cheng, Boston, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Continuation-in-part of Ser. No. 393,462, Feb. 27, 1995, which is a continuation-in-part of Ser. No. 308,814, Sep. 19, 1994. This application May 31, 1995, Ser. No. 455,001

Int. Cl.[6] C12N *15/12*

U.S. Cl. 435—69.1 **26 Claims**

1. An isolated nucleic acid encoding a recombinant polypeptide, which polypeptide comprises an Elf-1 polypeptide sequence at least 70 percent identical to an amino acid sequence selected from the group consisting of SEQ ID Nos. 2 and 4, and portions thereof, and which Elf-1 polypeptide specifically binds to an EPH-type receptor.

5,795,735

ISOLATED POLYNUCLEOTIDES ENCODING PKA-BINDING PROTEINS AND METHODS OF PRODUCING THE PROTEINS RECOMBINANTLY

Robert Owen Lockerbie, Kirkland, and Adam Kashishian, Mountlake Terrace, both of Wash., assignors to ICOS Corporation, Bothell, Wash.

Filed Jul. 17, 1995, Ser. No. 503,172

Int. Cl.[6] C07K *14/435;* **C12N** *1/21;15/12*

U.S. Cl. 435—69.1 **10 Claims**

1. A purified and isolated polynucleotide encoding an A Kinase Anchor Protein (AKAP) polypeptide having the biological activity of Protein Kinase A (PKA) binding and PKA subcellular localization; said polynucleotide comprising the protein coding sequence set out in SEQ ID NO: 5.

5,795,736

GENES CODING FOR A PROTEIN HAVING HUMAN MACIF ACTIVITY, EXPRESSION VECTORS CONTAINING SAID GENES, TRANSFORMANT CELLS AND PROTEINS HAVING HUMAN MACIF ACTIVITY

Motowo Tomita, Kanagawa; Yuji Sugita, Saitama; Toshiyuki Takemoto, Saitama; Kiyoshi Furuichi, Saitama; Makoto Takayama; Ko Yasukawa, both of Tokyo; Katsuhisa Ito, Saitama; Noboru Yamaji, and Shinya Yano, both of Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd.

Division of Ser. No. 181,392, Mar. 19, 1994, abandoned, Division of Ser. No. 181,392, Mar. 7, 1994, abandoned, which is a division of Ser. No. 510,610, Apr. 18, 1990, abandoned. This application Aug. 11, 1995, Ser. No. 514,183

Claims priority, application Japan, Apr. 21, 1989, 103.088; Jul. 12, 1989, 179.333; Sep. 6, 1989, 230.983; Sep. 21, 1989, 247.818; Oct. 27, 1989, 281.197

Int. Cl.[6] C12N *15/12*

U.S. Cl. 435—65.1 **17 Claims**

1. A recombinant peptide having the following amino acid sequence:

1	2	3	4	5	6	7	8	9	10
Y—Leu	Gln	Cys	Tyr	Asn	Cys	Pro	Asn	Pro	Thr
11	12	13	14	15	16	17	18	19	20
Ala	Asp	Cys	Lys	Thr	Ala	Val	Asn	Cys	Ser
21	22	23	24	25	26	27	28	29	30
Ser	Asp	Phe	Asp	Ala	Cys	Leu	Ile	Thr	Lys
31	32	33	34	35	36	37	38	39	40
Ala	Gly	Leu	Gln	Val	Tyr	Asn	Lys	Cys	Trp
41	42	43	44	45	46	47	48	49	50
Lys	Phe	Glu	His	Cys	Asn	Phe	Asn	Asp	Val
51	52	53	54	55	56	57	58	59	60
Thr	Thr	Arg	Leu	Arg	Glu	Asn	Glu	Leu	Thr
61	62	63	64	65	66	67	68	69	70
Tyr	Tyr	Cys	Cys	Lys	Lys	Asp	Leu	Cys	Asn—Y

wherein

X is H or Met; and

Y is OH, the amino acid sequence:

71	72	73	74	75	76	77	78	79	80
Phe	Asn	Glu	Gln	Leu	Gly	Asn	Gly	Gly	Thr
81	82	83	84	85	86	87	88	89	90
Ser	Leu	Ser	Glu	Lys	Thr	Val	Leu	Leu	Leu
91	92	93	94	95	96	97	98	99	100
Val	Thr	Pro	Phe	Leu	Ala	Ala	Ala	Trp	Ser
101	102	103							
Leu	His	Pro,							

or an amino acid sequence derived from this amino acid sequence by deleting therefrom one to thirty-two amino acid residues from the C terminus thereof.

5,795,737

HIGH LEVEL EXPRESSION OF PROTEINS

Brian Seed, Boston, Mass., and Jurgen Haas, Schriesheim, Germany, assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 324,243, Sep. 19, 1994. This application Sep. 22, 1995, Ser. No. 532,390

Int. Cl.[6] C12N *15/00*

U.S. Cl. 435—69.1 **14 Claims**

1. A synthetic gene encoding a green fluorescent protein, wherein at least one non-preferred or less preferred codon in the natural gene encoding said protein has been replaced by a preferred codon encoding the same amino acid, said preferred codons being selected from the group consisting of gcc, cgc, aac, gac, tgc, cag,

ggc, cac, atc, ctg, aag, ccc, ttc, agc, acc, tac, and gtg, said less preferred codons being selected from the group consisting of ggg, ati, ctc, tcc, and gtc, said non-preferred codons being all codons other than said preferred codons and said less preferred codons, wherein said synthetic gene permits the expression of said green fluorescent protein in a mammalian host cell at a level which is at least 110% of that expressed by said natural gene in an in vitro mammalian cell culture system under identical conditions.

5,795,738

ENGINEERED PEPTIDE SYNTHETASES AND THEIR USE FOR THE NON-RIBOSOMAL PRODUCTION OF PEPTIDES

Guido Grandi, Milan; Francesca de Ferra, Lodi, and Francesco Rodriguez, S. Donato Milanese, all of Italy, assignors to Enitricerche S.p.A., Milan, Italy

Filed Jun. 26, 1996, Ser. No. 670,901

Claims priority, application Italy, Aug. 9, 1995, MI95 A 001764

Int. Cl.[6] **C12P** *21/06;21/04;* **C12N** *1/20;* **C07H** *21/04*

U.S. Cl. 435—69.1 **13 Claims**

1. A method for the non-ribosomal production of a peptide of predefined amino acid sequence and length comprising the steps of:

(a) providing a first DNA sequence containing the coding region of at least one amino acid activating domain of a peptide synthetase;

(b) providing a second DNA sequence containing the coding region of the carboxy-terminus of the last amino acid binding domain of a peptide synthetase downstream of the amino acid sequence of SEQ ID No. 1;

(c) fusing the 3'-end of the first DNA sequence to the 5'-end of the second DNA sequence to form a third DNA sequence;

(d) inserting the third DNA sequence into a vector selected from a group consisting of an expression or an integration vector to form a recombinant vector;

(e) transforming a microorganism with a recombinant vector of step (d);

(f) culturing the transformed microorganism to produce the novel peptide synthetase; and

(g) producing the peptide having a predefined sequence and length using the novel peptide synthetase.

5,795,739

HISTONE FUSION PROTEIN

Jennifer L. Hillman, Mountain View, and Surya K. Goli, Sunnyvale, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Mar. 26, 1997, Ser. No. 824,878

Int. Cl.[6] **C12P** *21/06;* **C07H** *21/02;21/04;* **C07K** *1/00*

U.S. Cl. 435—69.1 **7 Claims**

1. An isolated and purified polynucleotide sequence encoding the human histone fusion protein of SEQ ID NO:1.

5,795,740

PITUITARY DIFFERENTIATION FACTOR AND METHODS OF USE THEREOF

Micsunica Platica; Ovidiu Platica, both of New York, and James F. Holland, Scarsdale, all of N.Y., assignors to Mount Sinai School of Medicine, New York, N.Y.

Filed Jul. 9, 1997, Ser. No. 890,572

Int. Cl.[6] **C12N** *15/00;* **C07K** *14/435;* **C07H** *21/04*

U.S. Cl. 435—69.1 **15 Claims**

1. An isolated nucleic acid fragment that specifically hybridizes under high stringency conditions to a nucleic acid having SEQ ID NO:1 or the nucleic acid complementary thereto, wherein said isolated nucleic acid encodes pituitary differentiation factor.

13. A method of making pituitary differentiation factor comprising introducing the nucleic acid of claim 1 into a host cell, culturing said host cell under conditions whereby said nucleic acid is expressed, and recovering pituitary differentiation factor.

5,795,741

COCCIDIOSIS POULTRY VACCINE

Janene Marilyn Bumstead, Wantage; Paul Patrick James Dunn, Chalgrove; Fiona Margaret Tomley, Oxford, all of England, and Arnoldus Nicolaas Vermeulen, Cuijk, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Filed Nov. 10, 1994, Ser. No. 338,057

Claims priority, application European Pat. Off., Nov. 12, 1993, 93309078

Int. Cl.[6] **A61K** *39/002;* **C12N** *15/00;* **C12P** *21/02*

U.S. Cl. 435—69.3 **16 Claims**

1. A nucleic acid molecule that codes for a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:4.

5,795,742

Patent Not Issued For This Number

5,795,743

HIV-3 RETROVIRUS ANTIGEN COMPOSITIONS

Robert De Leys, Grimbergen; Bart Vanderborght, Geel; Eric Saman, St. Niklaas, and Hugo Van Heuverswyn, Laarne, all of Belgium, assignors to Innogenetics N.V., Ghent, Belgium

Division of Ser. No. 228,519, Apr. 15, 1994, Pat. No. 5,567,603, which is a division of Ser. No. 460,913, Mar. 23, 1990, Pat. No. 5,304,466. This application Jun. 7, 1995, Ser. No. 486,836

Claims priority, application European Pat. Off., Jun. 9, 1988, 88109200

Int. Cl.[6] **C12P** *21/00;* **C12Q** *1/70;* **C12N** *7/01;7/02*

U.S. Cl. 435—69.3 **12 Claims**

1. A composition comprising at least one protein or glycoprotein of HIV-3 retrovirus, said retrovirus (also known as HIV-1 subtype O virus) having the morphological and immunological characteristics of any of the retroviruses deposited in the European Collection of Animal Cell Cultures under V88060301.

5,795,744

Patent Not Issued For This Number

5,795,745

HUMAN GROWTH HORMONE

David V. Goeddel, and Herbert L. Heyneker, both of Burlingame, Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 250,639, May 27, 1994, Pat. No. 5,424,199, which is a continuation of Ser. No. 53,839, Apr. 26, 1993, abandoned, which is a continuation of Ser. No. 859,285, Mar. 26, 1992, abandoned, which is a continuation of Ser. No. 393,808, Aug. 14, 1989, abandoned, which is a continuation of Ser. No. 37,319, Apr. 13, 1987, Pat. No. 4,898,830, which is a continuation of Ser. No. 654,340, Sep. 25, 1984, Pat. No. 4,658,021, which is a division of Ser. No. 356,564, Mar. 9, 1982, Pat. No. 4,601,980, which is a division of Ser. No. 55,126, Jul. 5, 1979, Pat. No. 4,342,832. This application Jun. 1, 1995, Ser. No. 457,282

Int. Cl.[6] C12P *21/02*

U.S. Cl. 435—69.4 1 Claim

1. A method of producing a polypeptide of known amino acid sequence by constructing a replicable cloning vehicle containing DNA encoding said polypeptide, said cloning vehicle contained within a microbial organism, wherein said DNA is under the control of an expression promotor contained in said replicable cloning vehicle, comprising:

a) obtaining by reverse transcription from messenger RNA a first DNA fragment for an expression product other than said polypeptide, which fragment comprises at least a substantial portion of the coding sequence for said polypeptide;

b) where the first fragment comprises protein-encoding codons for amino acid sequences other than those contained in said polypeptide, eliminating the same while retaining at least a substantial portion of said coding sequence, the resulting fragment nevertheless coding for an expression product other than said polypeptide;

the product of step (a) or, where required, step (b) being a fragment encoding less than all of the amino acid sequence of said polypeptide;

c) providing by organic synthesis one or more DNA fragments encoding the remainder of the amino acid sequence of said polypeptide, at least one of said fragments coding for the amino-terminal portion of the polypeptide; and

d) deploying the synthetic DNA fragment(s) of step (c) and that produced in step (a) or (b), as the case may be, in a replicable cloning vehicle in proper reading phase relative to one another and under the control of an expression promoter;

whereby a replicable cloning vehicle capable of expressing the amino acid sequence of said polypeptide is formed; and

e) expressing said DNA to produce said polypeptide.

5,795,746

SYNTHETIC LEADER PEPTIDE SEQUENCES

Thomas Børglum Kjeldsen, Virum, and Knud Vad, Frederiksberg, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 468,674, Jun. 6, 1995, Pat. No. 5,639,642, Continuation-in-part of Ser. No. 282,852, Jul. 29, 1994, abandoned. This application Jan. 8, 1997, Ser. No. 780,571

Claims priority, application Denmark, Jun. 16, 1994, 0705/94

Int. Cl.[6] C12P *21/00;* C07H *21/04;* C12N *1/19;15/81*

U.S. Cl. 435—69.9 27 Claims

1. A DNA expression cassette comprising the following sequence:

5'-P-SP-LS-PS-*gene*-(T)$_i$-3'

wherein

P is a promoter sequence,

SP is a DNA sequence encoding a signal peptide,

LS is a DNA sequence encoding a leader peptide of formula I:

GlnProIle(Asp/Glu)(Asp/Glu)X^1(Glu/Asp)X^2AsnZ(Thr/Ser)X^3 (I)
(SEQ ID NO :77)

wherein

X^1 is a peptide bond or a codable amino acid;

X^2 is a peptide bond, a codable amino acid or a sequence of up to 4 codable amino acids which may be the same or different;

Z is a codable amino acid except Pro; and

X^3 is a sequence of from 4 to 30 codable amino acids which may be the same or different;

PS is a DNA sequence encoding a processing site;

gene is a DNA sequence encoding a polypeptide;

T is a terminator sequence; and

i is 0 or 1.

5,795,747

PROCESS FOR MANUFACTURING NEW BIOPOLYMERS

Karsten Henco, Erkrath, and Manfred Eigen, Gottingen, both of Germany, assignors to Evotec Biosystems GmbH, Hamburg, Germany

Continuation of Ser. No. 133,049, Dec. 7, 1993, abandoned. This application Jun. 26, 1995, Ser. No. 507,190

Claims priority, application Germany, Apr. 16, 1991, 41 12 440.5

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.1 12 Claims

1. A process of preparing new biopolymers with improved characteristics starting with nucleic acids comprising the steps of:

a) subjecting to limited mutagenesis in the range of the error threshold at least one sample of identical nucleic acid sequences or similar sequences of nucleic acids in the mutant distribution of a quasi-species to effect a mixture of nucleic acid sequences;

b) replicating, under less stringent mutagenic pressure than step (a), said mixture of nucleic acid sequences in said at least one sample to effect mutant distributions;

c) separating said mutant distributions into secondary samples;

d) repeating steps a)–c) in at least one cycle;

e) performing steps a) and b);

f) selecting at least one of said secondary samples based on phenotypic characteristics of the mutuant distributions in the secondary sample; and

g) isolating from said selected secondary sample a mutagenized nucleic acid sequence based on its characteristics or the characteristics of its translation product.

5,795,748

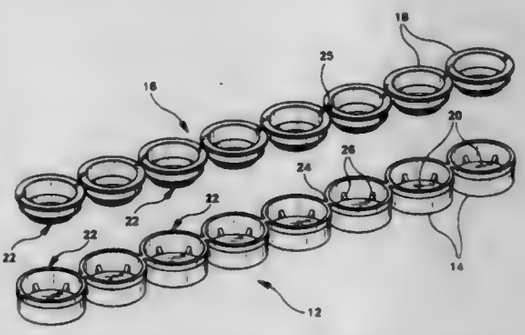
DNA MICROWELL DEVICE AND METHOD

Hugh V. Cottingham, Caldwell, N.J., assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 26, 1996, Ser. No. 721,372

Int. Cl.[6] G01N *21/29;21/64;21/27;* C12P *19/34*

U.S. Cl. 435—91.2 21 Claims



1. An apparatus for carrying out a biological or chemical reaction on a liquid sample, comprising:

a plurality of connected sample wells for receiving a liquid sample, each of said sample wells having an interior portion defined by a substantially flat, upwardly facing bottom wall surface and upstanding side wall surfaces;

an optical window element receivable in each of said sample wells, said optical window element having a circumferential edge and a substantially flat, downwardly facing bottom surface which is maintained in opposed, spaced-apart relationship with the bottom wall surface of each of said sample wells to define a capillary chamber therebetween;

an opening between the circumferential edge of said optical window element and a confronting interior side wall surface of each of said sample wells for allowing a liquid sample to be introduced into said capillary chamber and to be drawn into said chamber by capillary action; and

a closure device for sealing said opening after a liquid sample has been introduced into said capillary chamber.

5,795,749

USE OF 2-DEOXYRIBOSE-5-PHOSPHATE ALDOLASE TO PREPARE 2-DEOXYFUCOSE, ANALOGUES AND DERIVATIVES

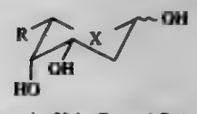
Chi-Huey Wong, Rancho Sante Fe, Calif., and Harrie J. M. Gijsen, Er Roemond, Netherlands, assignors to The Scripps Research Institution, LaJolla, Calif.

Filed Apr. 5, 1995, Ser. No. 416,999

Int. Cl.[6] C12P *19/02;11/00;19/00;* **C07H** *1/00*

U.S. Cl. 435—105 **16 Claims**

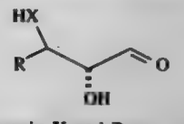
1. A process for using 2-deoxyribose-5-phosphate aldolase (DERA) to prepare a pentose product of Formula I



I

wherein X is O, and R is C_1–C_4 alkyl or phenyl that comprises the steps of:

(a) admixing an aldehyde of Formula II



II

wherein X and R are as defined above and the configuration of the carbon to which R and HX are bonded is S, with acetaldehyde and DERA in an aqueous medium at a pH value of about 6.5 to about 8.5 and at a temperature of about 5° C. to about 45° C. to form a reaction mixture;

(b) maintaining said reaction mixture at said temperature and pH value for a time period sufficient for said pentose product to form; and

(c) recovering said pentose product.

5,795,750

PROCESS FOR THE CONTINUOUS ENZYMATIC EXTRACTION OF HYDROPHOBIC PRODUCTS AND DEVICE SUITABLE THEREFOR

Wolfgang Kruse, Bonn; Udo Kragl, and Christian Wandrey, both of Jülich, all of Germany, assignors to Forschungzentrum Jülich GmbH, Jülich, Germany

Filed Apr. 7, 1997, Ser. No. 826,881

Claims priority, application Germany, Oct. 11, 1994, 44 36 149.1

Int. Cl.[6] C12P *13/00;7/64;* **C12M** *1/12;* **C12N** *11/00*

U.S. Cl. 435—128 **14 Claims**

1. A Process for the continuous enzyme-catalyzed production of hydrophobic products in an aqueous reaction mixture, comprising the steps of: extracting said products from the product-containing reaction mixture, by way of a product-permeable micro-porous membrane, into an organic solvent, and recycling the product-depleted reaction mixture to the production, said process including the step of performing a cofactor-dependent enzymatic reaction and regeneration of said cofactor such that said cofactor remains in said continuous process.

5,795,751

BIOFILTER FOR REMOVAL OF NITROGEN OXIDES FROM CONTAMINATED GASES UNDER AEROBIC CONDITIONS

William A. Apel, Idaho Falls, Id., assignor to Lockheed Martin Idaho Technologies Company, Idaho Falls, Id.

Continuation-in-part of Ser. No. 255,630, Jun. 9, 1994, abandoned. This application Sep. 30, 1996, Ser. No. 719,831

Int. Cl.[6] C12P *3/00;1/04;* **A61L** *9/01*

U.S. Cl. 435—168 **31 Claims**

1. A method of producing a denitrified gas from a gas stream containing nitrogen oxides and optionally up to about 5% oxygen, comprising the steps of:

(a) providing a biofilter comprising

a housing comprising an inlet couplable to gas conducting means for receiving the nitrogen oxide-containing gas stream into the biofilter from said gas conducting means and an outlet for removing the denitrified gas out of the biofilter;

a porous organic filter bed medium disposed in the housing, the bed medium comprising a naturally occurring mixed culture of denitrifying bacteria capable of converting the nitrogen oxides under aerobic conditions to nitrogen gas, carbon dioxide, and water;

(b) receiving the nitrogen oxide-containing gas stream into the biofilter through the inlet so that the gas stream passes through the bed medium wherein the denitrifying bacteria convert the nitrogen oxides under aerobic conditions to nitrogen gas, carbon dioxide, and water thereby producing a denitrified gas; and

(c) removing the denitrified gas out of the biofilter through the outlet.

5,795,752

METHOD FOR CREATING SUPERINDUCED CDNA LIBRARY & ISOLATING LIGAND-STIMULATED GENES

Kendall A. Smith, Hanover, N.H., assignor to Trustees of Dartmouth College, Hanover, N.H.

Continuation of Ser. No. 104,736, Aug. 10, 1993, abandoned, which is a continuation of Ser. No. 796,066, Nov. 20, 1991, abandoned. This application Oct. 27, 1994, Ser. No. 330,108

Int. Cl.[6] C12N *15/00;1/20*

U.S. Cl. 435—172.3 **33 Claims**

1. A method of producing a superinduced complementary DNA (cDNA) library enriched in ligand-inducible genes of a cell, comprising the steps of:

(a) activating a cellular ligand receptor of a cell for a predetermined period of time in the presence of

thiol-labeled RNA precursors which are incorporated into the RNA synthesized by said cell in response to receptor activation and

a substance which enhances the level of RNA in said cell;

(b) separating the thiol-labeled RNA from the remaining RNA;

(c) preparing cDNA from said labeled RNA, and selecting fragments greater than 500 bp; and

(d) cloning said selected cDNA in host cells to obtain a library of cDNA-containing clones.

5,795,753

REVERSIBLE NUCLEAR GENETIC SYSTEM FOR MALE STERILITY IN TRANSGENIC PLANTS

Andrew M. Cigan, and Marc C. Albertsen, both of Des Moines, Iowa, assignors to Pioneer Hi-Bred International Inc., Des Moines, Iowa

Continuation of Ser. No. 474,556, Jun. 7, 1995, Pat. No. 5,689,051, which is a continuation of Ser. No. 351,899, Dec. 8, 1994, Pat. No. 5,512,614. This application Jun. 7, 1995, Ser. No. 479,383

The portion of the term of this patent subsequent to Nov. 18, 2017, has been disclaimed.

Int. Cl.[6] **C12N** *15/00;* **A01H** *1/06;5/00*

U.S. Cl. 435—172.3 **34 Claims**

1. A method for producing reversible male sterility in a plant which comprises:

(a) introducing into the genome of a pollen producing plant capable of being genetically transformed a first recombinant DNA molecule comprising:

(i) a DNA sequence encoding a gene product which when expressed in a plant inhibits pollen formation or function;

(ii) an operator which controls the expression of said DNA sequence; and

(iii) a promoter specific to cells critical to pollen formation or function operatively linked to said DNA sequence encoding a gene product;

(b) growing said transformed plant under conditions such that male sterility is achieved as a result of the expression of the DNA sequences; and

(c) crossing said male sterile plant with pollen derived from a male fertile line to form a hybrid plant which is male fertile, said pollen having integrated into its genome a second recombinant DNA molecule comprising:

a DNA sequence encoding a DNA-binding protein and

a promoter which controls expression of said DNA sequence, said protein capable of binding to the operator of the recombinant DNA of the male-sterile plant.

5,795,754

SYNTHETIC HPV11 VIRUS-LIKE PARTICLES

Steven Ludmerer, Pisataway; Gregory F. Hollis, Westfield; Diana Benincasa, Elizabeth, and George E. Mark, III, Princeton Junction, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 19, 1996, Ser. No. 683,991

Int. Cl.[6] **C12N** *15/00;* **C12Q** *1/70;* **A61K** *39/395;* **A01N** *37/18*

U.S. Cl. 435—172.3 **1 Claim**

1. Synthetic human papilloma (HPV) virus-like particles generated from any of the following constructs:

a) HPV11:G131S wherein an HPV11 gene has been mutated such that it encodes a protein wherein amino acid residue 131 is serine;

b) HPV11:Δ132 wherein an HPV11 gene has been mutated such that it encodes a protein which contains a deletion at amino acid position 132:

c) HPV11:Y246F wherein an HPV11 gene has been mutated such that it encodes a protein wherein amino acid residue 246 is phenylalanine;

d) HPV11:N278G wherein an HPV11 gene has been mutated such that it encodes a protein wherein amino acid residue 278 is glycine; and

e) HPV11:S346T wherein an HPV11 gene has been mutated such that it encodes a protein wherein amino acid residue 346 is tyrosine.

5,795,755

METHOD OF IMPLANTING LIVING CELLS BY LASER PORATION AT SELECTED SITES

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Continuation-in-part of Ser. No. 270,741, Jul. 5, 1994, abandoned. This application Feb. 22, 1996, Ser. No. 605,716

Int. Cl.[6] **C12N** *13/00;15/63;* **C12M** *3/04*

U.S. Cl. 435—173.5 **10 Claims**

1. A method of transferring exogenous material into living cells comprising the steps of:

disposing a specimen of said living cells within a reaction chamber together with the exogenous material;

sensing a plurality of images of the surfaces of said living cells and sections of said living cells, and generating cell sensing signals from said plurality of images;

transmitting said cell sensing signals to a computer and operating said computer to identify desired cells in the specimen, identify desired specific locations on the surfaces of said desired cells, and determine location coordinates within the reaction chamber for the desired specific locations; and

under control of the computer, generating and directing at least one source of laser light energy at the location coordinates, whereby said laser light energy creates transient pores in the desired specific locations through which the exogenous material passes.

5,795,756

METHOD AND COMPOUNDS FOR THE INHIBITION OF ADENYLYL CYCLASE

Roger A. Johnson, 7 Bayview Ave., East Setauket, N.Y. 11733; Laurent Désaubry, 15 Beaverdale La., Stony Brook, N.Y. 11790, and Ilana Shoshani, 27 Artisen Ave., Huntington, N.Y. 11743

Filed Dec. 10, 1996, Ser. No. 762,833

Int. Cl.[6] **C12N** *9/00;* **C07H** *19/20*

U.S. Cl. 435—183 **22 Claims**

1. A method for the determination of inhibition of adenylyl cyclase activity, comprising the steps of:

a) adding an adenine-or 3'-adenosine derivative to a cell extract containing adenylyl cyclase and expressing adenylyl cyclase activity;

b) allowing the adenine-or 3'-adenosine derivative to react with the adenylyl cyclase; and

c) determining the amount of inhibition of adenylyl cyclase activity, wherein the adenine-or 3'-adenosine derivatives is selected from the group consisting of:

1) 2', 5'-dideoxyadenosine-3'-[2-([(5-dimethylamino-1-naphthalenesulfonamido)-(N-methyl)]-aminoethyl)-phosphate];

2) 2', 5'dideoxyadenosine-3'-[(3-cholesteryl)-phosphate];

5) 2', 5'-dideoxyadenosine-3'-tetraphosphate;

6) 2', 5'-dideoxyadenosine-3'-((βγ-imino-triphosphate);

7) 2', 5'-dideoxyadenosine-3'-(βγ-methylene-triphosphate);

8) 2', 5'-dideoxyadenosine-3'-O-thiophosphate;

9) 2', 5'-dideoxyadenosine-3'-(2-O-thiodiphosphate);

10) 2', 5'-dideoxyadenosine-3'-(3-O-thiotriphosphate);

11) 2'-deoxyadenosine-3'-diphosphate;

12) 2'-deoxyadenosine-3'-triphosphate;

13) 2'-deoxyadenosine-3'-tetraphosphate;

14) 2'-deoxyadenosine-3'-(βγ-imino-triphosphate);

15) 2'-deoxyadenosine-3'-(βγ-methylene-triphosphate);

16) 2'-deoxyadenosine-3'-O-thiophosphate;

17) 2'-deoxyadenosine-3'-(2-O-thiodiphosphate);

18) 2'-deoxyadenosine-3'-(3-O-thiotriphosphate);

27) 9-(tetrahydro-3-monophosphoryl-2-furyl)-adenine;

28) 9-(tetrahydro-3-diphosphoryl-2-furyl)-adenine;

29) 9-(tetrahydro-3-triphosphoryl-2-furyl)-adenine;

30) 9-[tetrahydro-3-(2-O-thiodiphosphoryl)- 2-furyl]-adenine;

31) 9-[tetrahydro-3-(3-O-thiotriphosphoryl)- 2-furyl]-adenine;

34) adenosine-3'-diphosphate; and

35) adenosine-3'-triphosphate.

2. A compound, wherein said compound is a 3'-adenosine derivative selected from the group consisting of:

1) 2', 5'-dideoxyadenosine-3'-[2-([(5-dimethylamino-1-naphthalenesulfonamido)-(N-methyl)]-aminoethyl)-phosphate];
2) 2', 5'dideoxyadenosine-3'-[(3-cholesteryl)-phosphate];
5) 2', 5'-dideoxyadenosine-3'-tetraphosphate;
6) 2', 5'-dideoxyadenosine-3'-(βγ-imino-triphosphate);
7) 2', 5'-dideoxyadenosine-3'-(βγ-methylene-triphosphate);
8) 2', 5'-dideoxyadenosine-3'-O-thiophosphate;
9) 2', 5'-dideoxyadenosine-3'-(2-O-thiodiphosphate);
10) 2', 5'-dideoxyadenosine-3'-(3-O-thiotriphosphate);
13) 2'-deoxyadenosine-3'-tetraphosphate;
14) 2'-deoxyadenosine-3'-(βγ-imino-triphosphate);
15) 2'-deoxyadenosine-3'-(βγ-methylene-triphosphate);
16) 2'-deoxyadenosine-3'-O-thiophosphate;
17) 2'-deoxyadenosine-3'-(2-O-thiodiphosphate);
18) 2'-deoxyadenosine-3'-(3-O-thiotriphosphate);
27) 9-(tetrahydro-3-monophosphoryl-2-furyl)-adenine;
28) 9-(tetrahydro-3-diphosphoryl-2-furyl)-adenine;
29) 9-(tetrahydro-3-triphosphoryl-2-furyl)-adenine;
30) 9-[tetrahydro-3-(2-O-thiodiphosphoryl)-2-furyl]-adenine;
31) 9-[tetrahydro-3-(3-O-thiotriphosphoryl)-2-furyl]-adenine; and
32) P^1-2', 5'-dideoxyadenosine-3'-P^3-4-(2-aminoethyl)-aniline triphosphate.

5,795,757

DNA ENCODING THREONYL TRNA SYNTHETASE FROM *STAPHYLOCOCCUS AURENS*

John Edward Hodgson, and Elizabeth Jane Lawlor, both of Malvern, Pa., assignors to SmithKline Beecham, p.l.c., Brentford, United Kingdom

Filed Jan. 17, 1997, Ser. No. 785,430

Int. Cl.[6] C12N *9/00;15/00;1/20;* C07H *21/04*

U.S. Cl. 435—183 **24 Claims**

1. An isolated polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

(a) a polynucleotide having at least a 95% identity to a polynucleotide encoding a polypeptide comprising amino acids 1 to 645 of SEQ ID NO:2; and

(b) a polynucleotide which is complementary to the polynucleotide of (a).

5,795,758

DNA ENCODING HISTIDYL TRNA SYNTHETASE VARIANT FROM STREPTOCOCCUS PNEUMONIAE

Daniel Robert Gentry, Pottstown; Rebecca Claire Greenwood, Berwyn, and Elizabeth Jane Lawlor, Malvern, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 844,055, Apr. 18, 1997. This application Aug. 6, 1997, Ser. No. 906,744

Claims priority, application United Kingdom, Apr. 18, 1996, 9607993

Int. Cl.[6] C12N *9/00;15/00;1/20;* C07H *21/04*

U.S. Cl. 435—183 **26 Claims**

1. An isolated polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

(a) a polynucleotide having at least a 95% identity to a polynucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2;

(b) a polynucleotide having at least a 97% identity to a polynucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2;

(c) a polynucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2;

(d) a polynucleotide hybridizing under stringent conditions to a polynucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2;

(e) a polynucleotide having at least a 95% identity to a polynucleotide encoding the same mature polypeptide expressed by the histidyl tRNA synthetase gene contained in NCIMB Deposit No. 40771;

(f) a polynucleotide having at least a 97% identity to a polynucleotide encoding the same mature polypeptide expressed by the histidyl tRNA synthetase gene contained in NCIMB Deposit No. 40771;

(g) a polynucleotide encoding the same mature polypeptide expressed by the histidyl tRNA synthetase gene contained in NCIMB Deposit No. 40771;

(h) a polynucleotide which is complementary to the polynucleotide of (a), (b), (c), (d), (e), (f) or (g).

5,795,759

CARBOXYLIC ACID REDUCTASE, AND METHODS OF USING SAME

John P. N. Rosazza, and Tao Li, both of Iowa City, Iowa, assignors to The University of Iowa Research Foundation, Iowa City, Iowa

Filed Mar. 10, 1997, Ser. No. 813,437

Int. Cl.[6] C12P *7/24;* C12N *9/02*

U.S. Cl. 435—189 **5 Claims**

1. A substantially purified, biologically-derived carboxylic acid reductase, isolated from Nocardia sp. strain NRRL 5646 having the N-terminal amino acid sequence of SEQ ID NO:1, wherein the enzyme is characterized by its ability to biocatalytically reduce a carboxylic acid, or a derivative thereof, to its corresponding product(s) and intermediary by-product(s), and further characterized by its ability to reduce vanillic acid to vanillin.

5,795,760

PURIFIED *MYCELIOPHTHORA* LACCASES AND NUCLEIC ACIDS ENCODING SAME

Randy Michael Berka; Stephen H. Brown, both of Davis; Feng Xu, Woodland, all of Calif.; Palle Schneider, Ballerup, Denmark; Karen M. Oxenbøll, Charlottenlund, Denmark, and Dorrit A. Aaslyng, Vaerloese, Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark, and Novo Nordisk Biotech, Inc., Davis, Calif.

Continuation of Ser. No. 441,146, May 15, 1995, abandoned, which is a continuation-in-part of Ser. No. 253,781, Jun. 3, 1994, abandoned. This application Sep. 29, 1997, Ser. No. 940,661

Int. Cl.[6] C12N *15/53;9/02;1/15;15/63*

U.S. Cl. 435—189 **19 Claims**

1. A DNA construct comprising a nucleic acid sequence encoding a laccase, wherein the nucleic acid sequence is:

(a) a nucleic acid sequence which encodes a laccase with the amino acid sequence of SEQ ID NO:2; or

(b) a nucleic acid sequence obtained from a Myceliophthora strain which is capable of hybridizing under high stringency conditions to the nucleic acid sequence of SEQ ID NO:1 or its complementary strand.

5,795,761

MUTANTS OF 2,5-DIKETO-D-GLUCONIC ACID (2,5-DKG) REDUCTASE A

David B. Powers, Somerset, and Stephen Anderson, Princeton, both of N.J., assignors to Rutgers, The State University of New Jersey, Piscatway, N.J.

Continuation-in-part of Ser. No. 584,019, Jan. 11, 1996, abandoned. This application Jan. 16, 1996, Ser. No. 585,595

Int. Cl.[6] C12N *9/04;9/02;15/00;* C12P *7/60*

U.S. Cl. 435—190 12 Claims

1. A mutant form of a 2,5 diketo-gluconic acid reductase, 2,5DKG reductase A, having improved ability to convert 2,5-DKG into 2-KLG, wherein said mutant form differs in amino acid sequence from SEQ ID NO:1, a wild-type form of a 2,5-DKG reductase enzyme, by:

(A) the replacement of an amino acid residue selected from the group consisting of residues 21, 22, 23, 24, 25, 46, 47, 48, 49, 50, 51, 52, 164, 169, 170, 199, 200, and 235 of said wild-type enzyme; or

(B) the deletion of an amino acid residue selected from the group consisting of residues 21, 22, 23, 24, 25, 46, 47, 48, 49, 50, 51, 52, 164, 169, 170, 199, 200, and 235 of said wild-type enzyme.

5,795,762

5' TO 3' EXONUCLEASE MUTATIONS OF THERMOSTABLE DNA POLYMERASES

Richard D. Abramson, and David H. Gelfand, both of Oakland, Calif., assignors to Roche Molecular Systems, Inc., Branchburg, N.J.

Continuation of Ser. No. 977,434, Feb. 23, 1993, Pat. No. 5,466,591, which is a continuation-in-part of Ser. No. 746,121, Aug. 15, 1991, Pat. No. 5,310,652, Ser. No. 590,213, Sep. 28, 1990, abandoned, Ser. No. 590,466, Sep. 28, 1990, Pat. No. 5,455,170, and Ser. No. 590,490, Sep. 28, 1990, abandoned, said Ser. No. 590,213 Ser. No. 590,466, and Ser. No. 590,499, each is a continuation-in-part of Ser. No. 523,394, May 15, 1990, Pat. No. 5,079,352, which is a continuation-in-part of Ser. No. 143,441, Jan. 12, 1988, Pat. No. 4,889,818, which is a continuation-in-part of Ser. No. 899,241, Aug. 22, 1986, said Ser. No. 746,121 is a continuation-in-part of Ser. No. 585,471, Sep. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 455,611, Dec. 22, 1989, Pat. No. 5,322,770, which is a continuation-in-part of Ser. No. 143,441, Jan. 12, 1988, said Ser. No. 746,121 is a continuation-in-part of Ser. No. 609,157, Nov. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 557,517, Jul. 24, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 458,819

Int. Cl.[6] C12N *9/12*

U.S. Cl. 435—194 13 Claims

1. A recombinant thermostable DNA polymerase enzyme that is a mutant form of a full-length thermostable DNA polymerase, wherein said full-length thermostable DNA polymerase has an amino acid sequence comprising a first amino acid subsequence that is SEQ ID NO:15 (Ala Xaa Tyr Gly, wherein Xaa is Val or Thr) and a second amino acid subsequence that is SEQ ID NO:20 (Xaa Xaa Xaa Xaa Tyr Lys Ala, wherein the first Xaa is Ile or Leu), wherein said mutant form is an N-terminal deletion mutant of said amino acid sequence, wherein said N-terminal deletion extends at least through said first amino acid subsequence and not beyond said second amino acid subsequence, wherein said mutant form has a lesser amount of 5' to 3' exonuclease activity than that of said full-length thermostable DNA polymerase.

5,795,763

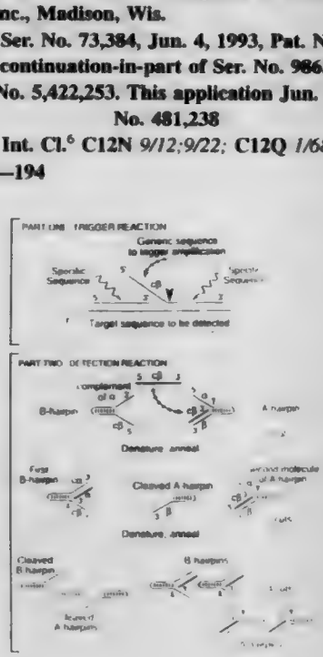
SYNTHESIS-DEFICIENT THERMOSTABLE DNA POLYMERASE

James E. Dahlberg; Victor I. Lyamichev, and Mary Ann D. Brow, all of Madison, Wis., assignors to Third Wave Technologies, Inc., Madison, Wis.

Division of Ser. No. 73,384, Jun. 4, 1993, Pat. No. 5,541,311, which is a continuation-in-part of Ser. No. 986,330, Dec. 7, 1992, Pat. No. 5,422,253. This application Jun. 6, 1995, Ser. No. 481,238

Int. Cl.[6] C12N *9/12;9/22;* C12Q *1/68*

U.S. Cl. 435—194 5 Claims



1. A non-naturally occurring thermostable DNA polymerase comprising an amino acid sequence altered relative to a naturally occurring amino acid sequence of a thermostable DNA polymerase of the genus Thermus such that it exhibits reduced DNA synthetic activity from that of the naturally occurring DNA polymerase but retains substantially the same 5' nuclease activity and specificity of that of the naturally occurring DNA polymerase.

5,795,764

ENZYME EXHIBITING MANNANASE ACTIVITY

Stephan Christgau, Vedbaek; Lene Venke Kofod, Ugerloese; Lene Nonboe Andersen, Birkeroed; Sakari Kauppinen, Copenhagen; Hans Peter Heldt-Hansen, and Henrik Dalboege, both of Virum, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK94/00174, § 371 Date Sep. 21, 1995, § 102(e) Date Sep. 21, 1995, PCT Pub. No. WO94/25576, PCT Pub. Date Nov. 10, 1994

PCT Filed Apr. 28, 1994, Ser. No. 525,697

Claims priority, application Denmark, Apr. 30, 1993, 0486/93

Int. Cl.[6] C12N *9/24;15/00;1/14;* C07H *21/04*

U.S. Cl. 435—200 9 Claims

1. An isolated and purified DNA molecule encoding a mannanase enzyme having the amino acid sequence of SEQ ID NO:2.

5,795,765

GENE ENCODING ENDOGLYCOCERAMIDASE

Hiroyuki Izu; Yoko Kurome, both of Kusatsu; Yoshiya Izumi, Onojyo; Mutsumi Sano, Otsu; Ikunoshin Kato, Uji, and Makoto Ito, Fukuoka, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto-Fu, Japan

Filed Jun. 28, 1996, Ser. No. 672,571

Claims priority, application Japan, Jun. 29, 1995, 7-188465

Int. Cl.[6] C12N *9/24;15/00;5/00;1/20*

U.S. Cl. 435—200 9 Claims

1. An isolated DNA having a sequence encoding a polypeptide possessing endoglycoceramidase activity wherein the isolated DNA comprises a DNA sequence selected from the group consisting of:

(a) a DNA sequence encoding an amino acid sequence of SEQ ID NO:1 or Seg ID NO:3;

(b) a DNA sequence of SEQ ID NO:2 or SEQ ID NO:4; and

(c) a DNA sequence which hybridizes to (a) or (b) above.

5,795,766

PROTEIN HAVING α-GLUCOSIDASE ACTIVITY, DNA HAVING GENETIC INFORMATION THEREOF, AND PRODUCTION OF α-GLUCOSIDASE

Yuzuru Suzuki, Shiga; Yukio Takii, Kyoto; Kazumi Yamamoto, Tsuruga; Yoshiaki Nishiya, Tsuruga; Atsushi Sogabe, Tsuruga; Yukihiro Sogabe, Tsuruga, and Shigenori Emi, Tsuruga, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 39,777, Mar. 22, 1993, Pat. No. 5,550,046. This application Mar. 6, 1996, Ser. No. 611,361

Claims priority, application Japan, Mar. 27, 1992, 4-101658; May 11, 1992, 4-117538

Int. Cl.[6] C12N *9/28;15/56;15/63;5/10;1/00*

U.S. Cl. 435—202 4 Claims

1. An isolated DNA comprising a nucleotide sequence encoding α-glucosidase, wherein said α-glucosidase has the amino acid sequence of SEQ ID NO:3.

5,795,767

EPIMERASE

Yoji Tsukada, Kyota; Yasuhiro Ohta, Uji, and Isafumi Maru, Kyoto, all of Japan, assignors to Marukin Shoyu Co., Ltd., Kagawa, Japan

PCT No. PCT/JP95/00541, § 371 Date Nov. 22, 1995, § 102(e) Date Nov. 22, 1995, PCT Pub. No. WO95/26399, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 24, 1995, Ser. No. 553,703

Claims priority, application Japan, Mar. 25, 1994, 6-056271; Sep. 9, 1994, 6-216333

Int. Cl.[6] C07H *21/04;* C12N *5/00;9/90;15/00*

U.S. Cl. 435—233 13 Claims

1. An isolated DNA molecule coding for acylglucosamine 2-epimerase isolated from mammalian species.

5,795,768

FILARIID NEMATODE CYSTEINE PROTEASE PROTEINS, NUCLEIC ACID MOLECULES AND USES THEREOF

Cynthia Ann Tripp; Nancy Wisnewski; Robert B. Grieve, all of Fort Collins, and Glenn R. Frank, Wellington, all of Colo., assignors to Heska Corporation, and Colorado State University Research Foundation, both of Fort Collins, Colo.

Continuation-in-part of Ser. No. 153,554, Nov. 16, 1993, abandoned, and Ser. No. 101,283, Aug. 3, 1993, abandoned, which is a continuation of Ser. No. 654,226, Feb. 12, 1991, abandoned, said Ser. No. 153,554 is a continuation of Ser. No. 792,209, Nov. 12, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 486,036

Int. Cl.[6] C12N *1/20*

U.S. Cl. 435—252.3 9 Claims

1. An isolated nucleic acid molecule selected from the group consisting of: *Dirofilaria immitis* nucleic acid molecule identical to that present in recombinant cell ATCC 98471; and a nucleic acid molecule having a nucleic acid sequence selected from the group consisting of SEQ ID NO:5, SEQ ID NO:7, a nucleic acid fully complementary to the full length of SEQ ID NO:5, and a nucleic acid sequence fully complementary to the full length of SEQ ID NO:7, wherein said nucleic acid molecule is isolated from other nucleic acid molecules.

5,795,769

GENE ENCODING INTERLEUKIN-2 POLYPEPTIDE, RECOMBINANT DNA CARRYING THE GENE, A LIVING CELL LINE POSSESSING THE RECOMBINANT DNA AND METHOD FOR PRODUCING INTERLEUKIN-2 USING THE CELL

Tadatsugu Taniguchi, Tokyo; Masami Muramatsu, Tokorozawa; Haruo Sugano, Tokyo; Hiroshi Matsui, and Nobukazu Kashima, both of Yokohama, all of Japan, assignors to Ajinomoto Co. Inc., Tokyo, Japan

Continuation of Ser. No. 814,049, Dec. 26, 1991, Pat. No. 5,260,868, which is a continuation of Ser. No. 332,364, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 36,309, Apr. 7, 1987, abandoned, which is a continuation of Ser. No. 463,496, Feb. 3, 1983, Pat. No. 4,738,927. This application Aug. 18, 1995, Ser. No. 516,563

Claims priority, application Japan, Mar. 31, 1982, 57-51122; May 18, 1982, 57-82509; Dec. 15, 1982, 57-219518; Dec. 24, 1982, 57-229619; Dec. 27, 1982, 57-234607; Dec. 29, 1982, 57-230371

Int. Cl.[6] C12N *15/00;15/26;15/70*

U.S. Cl. 435—252.3 4 Claims

1. A DNA vector comprising the DNA sequence of from the adenine at nucleotide position number 52 to the nucleotide at position number 542 of the DNA sequence of FIG. 2(*a*).

5,795,770

GENETICALLY ENGINEERED EUKARYOTIC ORGANISM CAPABLE OF DETECTING THE EXPRESSION OF HETEROLOGOUS ION CHANNELS AND METHOD TO USE THE SAME

Richard F. Gaber, Wilmette, Ill., assignor to Northwestern University, Evanston, Ill.

Continuation of Ser. No. 923,094, Jul. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 874,846, Apr. 27, 1992, abandoned. This application Feb. 5, 1997, Ser. No. 795,788

Int. Cl.[6] C12N *1/19;1/18;15/29*

U.S. Cl. 435—254.2 5 Claims

1. A mutant yeast cell transformed with a DNA molecule that encodes a heterologous potassium ion channel former, the expression of which heterologous potassium ion channel former in the transformed cell corrects a deficiency in potassium uptake of the

mutant, which deficiency is due to a lack of TRK1 or TRK1 and TRK2 potassium transporters.

5,795,771

CULTURE MEDIUM FOR *SACCHAROMYCES CEREVISIAE*

Hugh George, Schwenksville, and Wayne K. Herber, Center Valley, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US94/07264, § 371 Date Apr. 8, 1996, § 102(e) Date Apr. 8, 1996, PCT Pub. No. WO95/01422, PCT Pub. Date Jan. 12, 1995

Continuation of Ser. No. 86,216, Jul. 1, 1993, abandoned. This PCT application Jun. 28, 1994, Ser. No. 578,719

Int. Cl.[6] A01N *63/00;* **C12N** *1/14;1/16;1/18*

U.S. Cl. 435—255.21 **8 Claims**

1. A medium for the growth of *Saccharomyces cerevisiae* which which comprises per liter:

$(NH_4)_2SO_4$	about	10 g
KH_2PO_4	about	10 g
$CaCl_2.2H_2O$	about	0.5 g
NaCl	about	0.5 g
$MgSO_4.7H_2O$	about	3 g
L-tyrosine	about	0.25 g
Chloline.Cl	about	0.1 g
Carbon source	between about	1
	and about	100 g
Amino acid cocktail	between about	50
	and about	150 mL
Vitamin solution	about	30 mL
Trace element solution	about	20 mL
UCON LB-625 antifoam	about	0.3 mL

wherein the amino acid cocktail contains (about g/L in the stock solution): L-arginine, 2.0; L-histidine, 1.0; L-isoleucine, 6.0; L-lysine, 4.0; methionine, 1.0; L-phenylalanine, 6.0; L-tryptophan, 4.0;

the vitamin solution contains (about mg/L in the stock solution): biotin, 10; Ca.pantothenate, 120; myo-inositol, 600; pyridoxine.HCl, 120; thiamine.HCl, 120;

the trace element solution contains (about mg/L in the stock solution): $FeSO_4.7H_2O$, 278; $ZnSO_4.7H_2O$, 288; $CuSO_4.5H_2O$, 80; $Na_2MoO_4.2H_2O$,242; $CoCl_2.6H_2O$, 238; $MnCl_2.2H_2O$, 198; and

the carbon source is selected from the group consisting of glucose, sucrose, fucose, fructose, glycerol, ethanol, formic acid, lactic acid and combinations thereof.

5,795,772

Patent Not Issued For This Number

5,795,773

DEVICE FOR DETECTING MICROORGANISMS

Karen A. Read, Timberlake; David E. Trogdon, Youngsville; Thurman C. Thorpe; Christopher S. Ronsick, both of Durham, and Scott R. Jeffrey, Raleigh, all of N.C., assignors to Akzo Nobel N.V., Arnhem, Netherlands

Continuation of Ser. No. 464,014, Jun. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 410,374, Mar. 24, 1995, Pat. No. 5,518,895. This application Mar. 24, 1997, Ser. No. 823,279

Int. Cl.[6] C12M *1/34;1/24*

U.S. Cl. 45—287.5 **29 Claims**

1. A device for detecting microorganisms comprising:

a container for holding a sample to be analyzed for the presence or absence of micro organaisms;



growth medium within said container for supporting growth of microorganisms;

a sensor within said container separate from said growth medium, said sensor being responsive to changes in concentration of a gas component within said container, the gas component concentration changing due to growth of microorganisms, so that said sensor is capable of indicating the presence or absence of microorganisms within the sample; and

a gas permeable membrane in a wall of said container for allowing passage of gas during use of the device.

5,795,774

BIOSENSOR

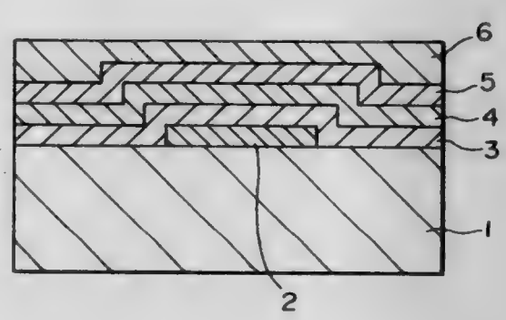
Toru Matsumoto; Masako Furusawa; Narushi Ito, and Shinya Nakamoto, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 10, 1997, Ser. No. 891,197

Claims priority, application Japan, Jul. 10, 1996, 8-180286

Int. Cl.[6] C12M *3/00;* **G01N** *27/36*

U.S. Cl. 435—287.9 **9 Claims**



1. A biosensor comprising:

an insulated base;

a hydrogen peroxide electrode formed on the insulated base,

a first film which is formed on the hydrogen peroxide electrode and in which the major constituent is γ-aminopropyltriethoxysilane;

a second film which is formed on the first film and in which the major constituent is a cellulose derivative;

a third film which is formed on the second film and in which the major constituent is an ion exchange resin having a perfluorocarbon skeleton; and

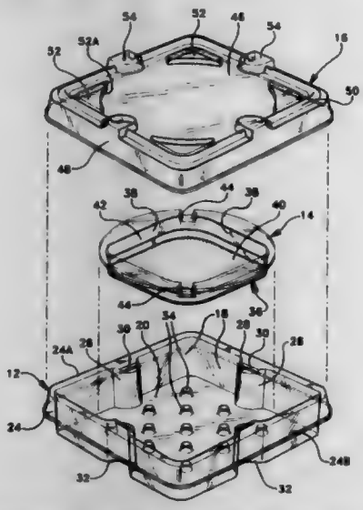
a fourth film which is formed on the third film and in which the major constituent is an organic macromolecular film incorporating an immobilized enzyme with catalytic properties for producing hydrogen peroxide.

5,795,775

CULTURE VESSEL AND ASSEMBLY

William J. Lahm, Sumter, S.C.; Timothy A. Stevens, Warwick, N.Y.; Alexander G. Tschumakow, Sommerville; Leon M. Wilkins, North Andover, both of Mass.; John M. Janson, Piscataway, N.J., and Stephen C. Conley, North Attleboro, Mass., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 26, 1996, Ser. No. 721,393
Int. Cl.[6] C12M *3/06*
U.S. Cl. 435—297.5 13 Claims



1. An assembly for growing cells or tissue cultures, comprising:

a base defining a well bounded by a bottom wall and a plurality of side walls, said side walls defining a well opening including a plurality of corner portions, and further including a plurality of discrete projections extending upwardly from said bottom wall of said well;

a cell culture insert removably mountable to said base, said cell culture insert including a substantially rectangular permeable membrane, a hollow body having a bottom end to which said permeable membrane is affixed and a top portion defining an open end providing access to said permeable membrane, said body being positionable within said well such that said permeable membrane is positioned above said bottom wall of said well above said discrete projections, and further wherein said body of said cell culture insert includes two pairs of opposing, substantially straight side walls, each of said side walls including substantially coplanar top ends and substantially coplanar bottom ends, and further wherein said side walls define two pairs of diagonally opposing corner portions, and a pair of notches defined within the top ends of said side walls at diagonally opposing corner portions, and

an opening defined between said top portion of said body and at least one of said corner portions of said well opening when said cell culture insert is mounted to said base, said opening providing access to said bottom wall of said well.

5,795,776

EXPRESSION PLASMIDS REGULATED BY AN OSMB PROMOTER

Meir Fischer, Rehovot, Israel, assignor to Bio-Technology General Corp., Iselin, N.J.

Filed Mar. 22, 1994, Ser. No. 216,851
Int. Cl.[6] C12N *15/70;15/63;* C12P *21/02;* C07H *21/04*
U.S. Cl. 435—320.1 23 Claims

1. A method for producing a recombinant eucaryotic polypeptide by use of a plasmid comprising an *E. coli* osmB promoter and DNA encoding the recombinant eucaryotic polypeptide, which method comprises culturing a microorganism transformed by the plasmid under conditions permitting expression of the recombinant polypeptide and recovering the recombinant polypeptide so produced, wherein the polypeptide is selected from the group consisting of human copper-zinc superoxide dismutase, acetylcholinesterase, human growth hormone and pre-S1 hepatitis antigen.

5,795,777

GENE CODED FOR INTERLEUKIN-2 POLYPEPTIDE, RECOMBINANT DNA CARRYING THE SAID GENE, A LIVING CELL LINE POSSESSING THE RECOMBINANT DNA, AND METHOD FOR PRODUCING INTERLEUKIN-2 USING THE SAID CELL

Tadatsugu Taniguchi, Tokyo; Masami Muramatsu, Tokorozawa; Haruo Sugano, Tokyo; Hiroshi Matsui, Yokohama; Nobukazu Kashima, Yokohama, and Junji Hamuro, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 516,563, Aug. 18, 1995, which is a continuation of Ser. No. 814,048, Dec. 26, 1991, Pat. No. 5,620,868, which is a continuation of Ser. No. 332,364, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 36,309, Apr. 7, 1987, abandoned, which is a continuation of Ser. No. 463,496, Feb. 3, 1983, Pat. No. 4,738,927. This application Mar. 22, 1996, Ser. No. 621,097

Claims priority, application Japan, Mar. 31, 1982, 57-51122; May 18, 1982, 57-82509; Dec. 15, 1982, 57-219518; Dec. 24, 1982, 57-229619; Dec. 27, 1982, 57-234607; Dec. 29, 1982, 57-230371

Int. Cl.[6] C12N *5/00;15/26*
U.S. Cl. 435—325 18 Claims

1. A recombinant DNA construct comprising a subsequence encoding interleukin-2 with a signal sequence attached to its amino-end.

5,795,778

METHOD AND REAGENT FOR INHIBITING HERPES SIMPLEX VIRUS REPLICATION

Kenneth G. Draper, Boulder, Colo., assignor to Ribozyme Pharmaceuticals, Inc., Boulder, Colo.

Continuation of Ser. No. 238,200, May 4, 1994, abandoned, which is a continuation of Ser. No. 987,133, Dec. 7, 1992, abandoned, which is a continuation-in-part of Ser. No. 948,359, Sep. 18, 1992, abandoned, which is a continuation-in-part of Ser. No. 882,921, May 14, 1992, abandoned. This application Mar. 25, 1996, Ser. No. 623,891
Int. Cl.[6] C12N *5/10;* C07H *19/10;* C61K *31/70*
U.S. Cl. 435—326 10 Claims

1. A catalytic RNA molecule which specifically cleaves RNA encoded by a herpes simplex virus in a gene selected from ICP0, ICP4, ICP22, ICP27, UL5, UL8, UL9, UL30, UL42, UL53, gB and gC.

5,795,779

HUMAN INTERFERON-β (IFN-β) PRODUCED IN CHINESE HAMSTER OVARY (CHO) CELLS

Francis P. McCormick, Albany; Michael A. Innis, Oakland, and Gordon M. Ringold, Palo Alto, all of Calif., assignors to Berlex Laboratories, Inc., Montville, N.J., and Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 819,626, Jan. 9, 1992, Pat. No. 5,376,567, which is a continuation of Ser. No. 546,519, Jun. 29, 1990, abandoned, which is a division of Ser. No. 761,180, Jul. 31, 1985, Pat. No. 4,966,843, which is a continuation-in-part of Ser. No. 438,991, Nov. 1, 1982, abandoned. This application Aug. 12, 1994, Ser. No. 288,796
Int. Cl.[6] C12N *15/22;5/16;* A61K *38/21*
U.S. Cl. 435—360 37 Claims

1. A CHO cell culture composition comprising (a) CHO cells transformed with DNA encoding human IFN-β, or progeny

thereof, and (b) medium comprising IFN-β produced by expression of said DNA, said culture composition directly resulting from secretion of said IFN-β from said CHO cells and wherein the amount of said IFN-β is 150,000–600,000 IU/ml of medium.

5,795,780

METHOD OF USE OF AUTOLOGOUS THROMBIN BLOOD FRACTION IN A CELL CULTURE WITH KERATINOCYTES

Stewart A. Cederholm-Williams, Oxford, United Kingdom, and Ulla Weis-Fogh, Hoersholm, Denmark, assignors to Bristol-Myers Squibb Company, Skillman, N.J.

Division of Ser. No. 465,154, Jun. 5, 1995, which is a continuation of Ser. No. 81,532, Jun. 23, 1993, abandoned. This application Nov. 15, 1996, Ser. No. 752,459

Int. Cl.[6] C12N *5/06;5/22*

U.S. Cl. 435—371 2 Claims

1. In a method for the cell culture growth of keratinocytes from skin that utilizes thrombin, the improvement comprising thrombin that is derived from the same individual animal from which said skin is derived.

5,795,781

CELL COMPETENCY SOLUTION FOR USE IN THE FORMATION OF A HISTOLOGICALLY-COMPLETE, LIVING, HUMAN SKIN SUBSTITUTE

John Jacob Wille, Jr., Lawrenceville, N.J., assignor to Hy-Gene, Inc., Ventura, Calif.

Continuation of Ser. No. 348,569, Dec. 2, 1994, abandoned, which is a continuation of Ser. No. 63,872, May 18, 1993, abandoned, which is a continuation of Ser. No. 471,976, Jan. 29, 1990, Pat. No. 5,292,655. This application Feb. 15, 1996, Ser. No. 601,717

Int. Cl.[6] C12N *5/00*

U.S. Cl. 435—404 7 Claims

1. An aqueous solution for isolating keratinocytes from human skin, said solution consisting essentially of:

a) glucose at a concentration of about 10 mM;

b) N-(2-OH-ethyl-) piperazine -N'-(2-ethanesulfonic acid) at a concentration of 16–22 mM;

c) sodium chloride at a concentration of 90–140 mM;

d) potassium chloride at a concentration of about 3 mM;

e) sodium orthophosphate ($Na_2HPO_4.7H_2O$) at a concentration of 1 mM;

f) phenol red at a concentration of 0.0033 mM;

g) about 100 units of penicillin per ml of solution;

h) about 100 units of streptomycin per ml of solution; and

i) one component selected from the group consisting of:

(i) trypsin at a concentration of 0.1%–0.2% w/v; and

(ii) soy bean trypsin inhibitor at a concentration of 0.1–1.0% w/v.

5,795,782

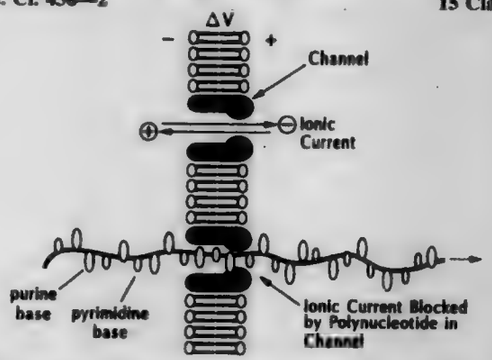
CHARACTERIZATION OF INDIVIDUAL POLYMER MOLECULES BASED ON MONOMER-INTERFACE INTERACTIONS

George Church, Brookline, Mass.; David W. Deamer, Santa Cruz, Calif.; Daniel Branton, Lexington; Richard Baldarelli, Natick, both of Mass., and John Kasianowicz, Darnestown, Md., assignors to President & Fellows of Harvard College, Cambridge, Mass., and The Regents of the University of California, Oakland, Calif.

Filed Mar. 17, 1995, Ser. No. 405,735

Int. Cl.[6] G01N *33/483*

U.S. Cl. 436—2 15 Claims



1. A method for evaluating a single polymer molecule or multiple polymer molecules one at a time, the polymer molecule(s) including linearly connected monomer residues, the method comprising:

a) providing two separate pools of liquid containing medium and an interface between the two pools,

b) providing candidate polymer molecules in one of the pools, and

c) making interface-dependent measurements over time as individual monomer residues of a single polymer molecule interact sequentially with the interface, yielding data suitable to determine a monomer-dependent characteristic of the polymer molecule.

5,795,783

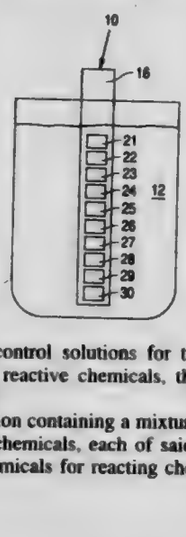
CONTROL SOLUTIONS AND A METHOD OF USE THEREFOR

Jimmie R. Kyle, Simi Valley; Leonard Spolter, Granada Hills, and Marcus Villagran, La Habra, all of Calif., assignors to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Filed Mar. 19, 1996, Ser. No. 618,101

Int. Cl.[6] G01N *31/00*

U.S. Cl. 436—8 7 Claims



1. A plurality of control solutions for testing a mixture of a plurality of different reactive chemicals, the plurality of control solutions comprising:

a first control solution containing a mixture of a first plurality of different active chemicals, each of said first plurality of different active chemicals for reacting chemically with a differ-

ent one of said reactive chemicals to generate a first visual indicator, said first plurality of different active chemicals not reacting chemically with all of the different reactive chemicals; and

one or more second control solutions containing a mixture of a second plurality of different active chemicals, each of said second plurality of different active chemicals for reacting chemically with a different one of said reactive chemicals to generate a second visual indicator different than said first visual indicator, said second plurality of different active chemicals not reacting chemically with any of the different reactive chemicals reacting with said first plurality of different active chemicals; collectively said second plurality of different active chemicals for reacting chemically with all of the different reactive chemicals not reacting to said first plurality of different active chemicals.

5,795,784

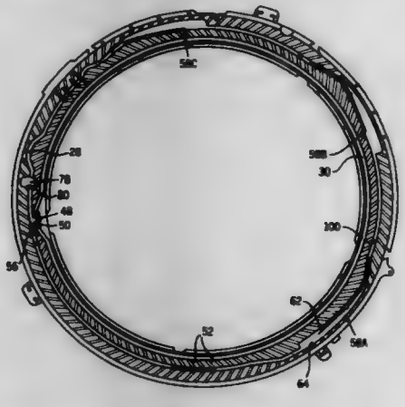
METHOD OF PERFORMING A PROCESS FOR DETERMINING AN ITEM OF INTEREST IN A SAMPLE

David C. Arnquist, The Colony, Tex.; Grady Barnes, III, Grayslake; Chadwick M. Dunn, McHenry, both of Ill.; Richard C. East, Jr., Dallas, Tex.; Patrick P. Fritchie, Southlake, Tex.; Gregory E. Gardner, Euless, Tex.; Cass J. Grandone, Southlake, Tex.; Robert C. Gray, Gurnee; James T. Holen, Mundelein, both of Ill.; Jimmy D. McCoy, Keller, Tex.; James E. Mitchell, Windham, N.H.; Adrian John Murray, Arlington Heights, Ill.; David W. Murray, Allen, Tex.; Jack F. Ramsey, Grayslake, Ill., and Neal T. Sleszynski, Kenosha, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 19, 1996, Ser. No. 716,079

Int. Cl.[6] G01N *35/02*

U.S. Cl. 436—50 **3 Claims**



1. A method of constructing a process lane for determining an item of interest in a sample, the method comprising the steps of:

(a) accepting a container containing said sample in a process lane having a first physical length where a plurality of process steps for determining an item of interest in said sample are selectively automatically performed on said sample;

(b) selectively automatically performing said process steps on the sample in the container on said process lane having said first physical length;

(c) selectively varying a physical length of said process lane to form a second physical length which differs from said first physical length;

(d) accepting said container containing said sample in said process lane having said second physical length;

(e) selectively automatically performing said process steps on said sample in said container on said process lane having said second physical length; and

(f) maintaining an effective length of said process lane on both first and second physical lengths constant wherein said effective length representing a total traveled distance of said container on said process lane,

wherein said process steps performed on said sample on said first physical length and second physical length being substantially the same by maintaining said effective length of said process lane constant.

5,795,785

METHOD FOR THE DIAGNOSIS OF HUMAN MALIGNANT TUMORS

Eugene Ivanovich Suslov, 31[B] Polytechnicheskaya Str., Fl. 24, Kiev 252055; Konstantin Alexandrovich Galakhin, 89 Saksaganskiy Str., Fl. 21, Kiev 252032; Vitaly Alexandrovich Vladimirov, 35 Saksaganskiy Str., Fl. 39, Kiev 252033, and Matveeevich Anatoly Novik, 06, Radyanskoy Ukzaine Str., Fl. 16, Kiev 252208, all of Ukraine

PCT No. PCT/UA93/00007, § 371 Date Aug. 7, 1995, § 102(e) Date Aug. 7, 1995, PCT Pub. No. WO94/14071, PCT Pub. Date Jun. 23, 1994

PCT Filed Mar. 12, 1993, Ser. No. 454,208

Claims priority, application Russian Federation, Dec. 10, 1992, 93030251

Int. Cl.[6] G01N *33/574*

U.S. Cl. 436—64 **4 Claims**

1. A method of diagnosing human malignant tumors based on identification of protein fractions specific for malignant growth, the method comprising the steps of:

preparing a test smear from blood withdrawn from a patient;

consecutively layering the test smear with a solution of complexon selected from the group consisting of EDTA and EGTA, standard blood serum and a developer of calcium-protein complexes which is a solution of nitrogen acid silver;

subjecting the layered serum to a light exposure to obtain a test stain;

comparing the test stain to a reference stain prepared in a similar manner on a blood smear from a healthy individual; and

diagnosing malignancy if the margin of the test stain is brown or dark brown, rather than yellow-brown, in comparison with the margin of the reference stain, and if dark brown grains with indirect outlines are visible in the central zone of the test stain, in comparison with light brown grains with distinct outlines visible in the central zone of the reference stain.

5,795,786

PROCESS AND REAGENT FOR THE SPECIFIC DETERMINATION OF LDL IN SERUM SAMPLES

Karl-Siegfried Boos, Gauting; Dietrich Seidel; Wolf-Dieter Engel, both of Feldafing, and Angelika Kurrle-Weittenhiller, Tutzing, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 375,078, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 092,205, Jul. 15, 1993, abandoned. This application Aug. 6, 1996, Ser. No. 692,642

Claims priority, application Germany, Jul. 16, 1992, 42 23 355.0

Int. Cl.[6] G01N *33/92*

U.S. Cl. 436—71 **20 Claims**

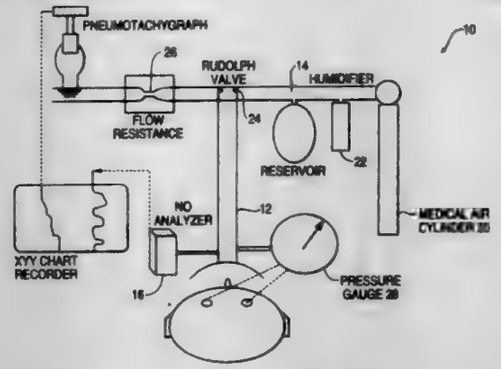
1. Method for directly determining an LDL fraction in the presence of other serum lipoproteins, comprising adding to an LDL containing sample to be analyzed, and LDL-specific aggregating agent which is a poly(meth)acryl polymer having anionic side branches extending from the polymer backbone, and a buffering agent, whereby said LDL fraction and said poly(meth)acryl polymer form an LDL-aggregate complex which precipitates or separates from a dissolved state, and thereby determining said formed LDL-aggregate complex.

5,795,787

METHOD AND APPARATUS FOR THE MEASUREMENT OF EXHALED NITRIC OXIDE IN HUMANS

Philip Silkoff, Apt. 610, 640 Roselawn Ave., Toronto, Ontario, Canada, M5N 1K9, and Patricia McClean, 200 Elizabeth St., Toronto, Ontario, Canada, M5G 2C4

Filed Apr. 9, 1996, Ser. No. 629,594
Int. Cl.[6] G01N *33/00*
U.S. Cl. 436—116 11 Claims



7. A method for measuring nitric oxide exhaled by a subject, comprising the steps of:

causing the subject to exhale by mouth into an apparatus for receiving exhaled air;

wherein said apparatus comprises means to increase the pressure in the mouth of the subject to a level sufficient to cause the vellum of the subject to substantially close and thereby exclude nitric oxide of nasal origin that otherwise would enter the air stream via the nasopharynx during exhalation; and

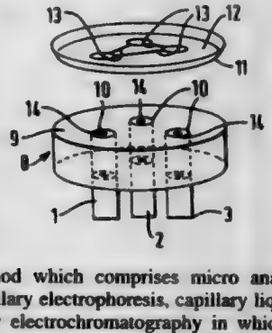
measuring the level of nitric oxide of the collected exhaled breath.

5,795,788

LIQUID FLOW MANAGEMENT MEANS

Christopher David Bevan, and Ian Martin Mutton, both of Stevenage, Great Britain, assignors to Glaxo Group Limited, Greenford, England

PCT No. PCT/EP94/01790, § 371 Date Nov. 21, 1995, § 102(e) Date Nov. 21, 1995, PCT Pub. No. WO94/29690, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 3, 1994, Ser. No. 537,943
Claims priority, application United Kingdom, Jun. 5, 1993, 9311651; Jan. 29, 1994, 9401711
Int. Cl.[6] G01N *30/30*; F17D *1/18*
U.S. Cl. 436—161 20 Claims



1. In a method which comprises micro analytical or micro preparative capillary electrophoresis, capillary liquid chromatography or capillary electrochromatography in which material to be separated is applied through capillary tubing or channels to a column filled with a suitable chromatographic or electrophoretic medium, passed through said column to separate components of said material, and the separated components are passed through capillary tubing or channels to a detector downstream of said column, wherein the improvement comprises managing the flow of liquid through said capillary tubing by freezing the liquid and optionally thawing the frozen liquid in a small segment of the tube or channel wherein the liquid is frozen by means of a jet of cold gas provided from a liquified source of the gas under pressure which is directed onto the required segment of the tube or channel.

5,795,789

STANDARD SOLUTION FOR THE DETERMINATION OF THYROID FUNCTION

Dennis Jerome Dietzen, Bear, Del., assignor to Dade Behring Inc., Deerfield, Ill.

Filed Jun. 4, 1997, Ser. No. 868,528
Int. Cl.[6] G01N *33/53;31/00*
U.S. Cl. 436—500 12 Claims

1. A standard solution useful in determining thyroid function comprising a single thyroid hormone binding protein in combination with known non-zero amounts of at least three analytes selected from the group consisting of total thyroxine, free thyroxine, total triiodothyronine, and free triiodothyronine, wherein said thyroid hormone binding protein is serum albumin.

5,795,790

METHOD FOR CONTROLLING PROLIFERATION AND DIFFERENTIATION OF CELLS ENCAPSULATED WITHIN BIOARTIFICIAL ORGANS

Malcolm Schinstine, Ben Salem, Pa.; Molly S. Sholchet, Toronto, Canada; Frank T. Gentile, Warwick; Joseph P. Hammang, Barrington, both of R.I.; Laura M. Holland, Horsham, Pa.; Brian M. Cain, Everett; Edward J. Doherty, Mansfield, both of Mass.; Shelley R. Winn, Smithfield, R.I., and Patrick Aebischer, Lutry, Switzerland, assignors to Cytotherapeutics, Inc., Lincoln, R.I.

Division of Ser. No. 432,698, May 9, 1995, which is a continuation-in-part of Ser. No. 279,773, Jul. 20, 1994. This application May 23, 1995, Ser. No. 448,201
Int. Cl.[6] C12N *5/00;11/02;11/04*; A61K *35/12*
U.S. Cl. 435—382 10 Claims

6. A bioartificial organ comprising:

(a) a biocompatible jacket; and

(b) a core of living cells encapsulated by the biocompatible jacket wherein said cells are cells that have been exposed to and then removed from exposure to a proliferation-stimulating and differentiation-inhibiting compound prior to encapsulation in the bioartificial organ such that cellular proliferation is inhibited and cellular differentiation is promoted in the absence of said compound upon in vivo implantation in a host.

5,795,791

METHOD OF DETERMINING CALIBRATION CURVE AND ANALYSIS METHOD AND APPARATUS USING THE SAME

Kikuo Hirai, and Yoshihiko Makino, both of Saitama, Japan, assignors to Fuju Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 8, 1997, Ser. No. 780,286
Claims priority, application Japan, Jan. 9, 1996, 8-018299
Int. Cl.[6] G01N *33/53;33/566*
U.S. Cl. 436—501 9 Claims

1. A method for determining a regression function of a calibration curve for quantitative analysis of an analyte comprising:

providing standard samples containing known concentrations of analyte,

measuring the analytical values of the standard samples,

plotting, for each of the standard samples, the value of the known concentration versus the logarithm of the value of the measured analytical value as a point on the calibration curve,

determining an intermediate concentration range over which there is a linear relationship between the known concentra-

tions of the standard samples and the logarithmic values of the corresponding measured analytical values,

determining a low concentration range extending from the lower concentration end of the intermediate concentration range to a minimum concentration of analyte,

determining a high concentration range extending from the higher concentration end of the intermediate concentration range to a maximum concentration of analyte,

representing the calibration curve for the intermediate concentration range by an exponential function,

representing the calibration curve for the low concentration range by a multi-degree function,

representing the calibration curve for the high concentration range by a multi-degree function, and setting boundary conditions that at the boundary points between the multi-degree functions and the exponential function, the values of the first derivative of the multi-degree function and the first derivative of the exponential function are identical,

whereby the functions of the calibration curve for the intermediate, low and high concentration regions are determined.

5,795,792

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A TRENCH STRUCTURE

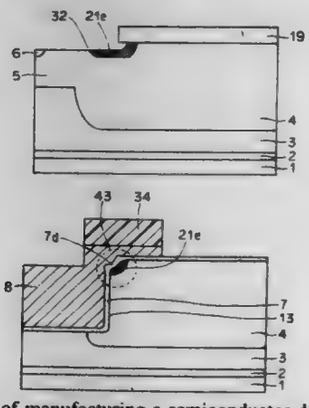
Hidenori Nishihara, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 359,142, Dec. 19, 1994, Pat. No. 5,541,425. This application May 10, 1996, Ser. No. 644,874

Claims priority, application Japan, Jan. 20, 1994, 6-004417; Mar. 25, 1994, 6-056157

Int. Cl.[6] H01L *21/8232*

U.S. Cl. 437—6 **4 Claims**



1. A method of manufacturing a semiconductor device having a trench structure, comprising the steps of:

forming an impurity implanted region by implanting an impurity into a prescribed region of a main surface of a semiconductor substrate;

forming a mask layer patterned into a prescribed shape so as to partially overlap said impurity implanted region on the main surface of said semiconductor substrate;

forming a trench penetrating through a part of said impurity implanted region by anisotropically etching the main surface of said semiconductor substrate using said mask layer as a mask;

removing said mask layer after forming said trench;

forming an oxide film on the entire main surface of said semiconductor substrate by thermally oxidizing the entire main surface of said semiconductor substrate so that the thickness of the oxide film positioned on an upper end corner portion of a sidewall of the trench is greater than the thickness of the oxide film positioned on the sidewall of the trench excluding the upper end corner portion; and

forming a conductive layer on said oxide film extending from the inside of said trench onto the main surface of said semiconductor substrate, wherein

said step of forming said trench includes a step of forming a recess having part of its bottom surface within said impurity implanted region by isotropic etching the main surface of said semiconductor substrate using said mask layer as a mask, before an anisotropic etching treatment for forming said trench.

5,795,793

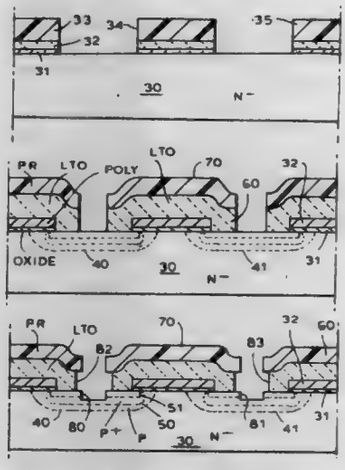
PROCESS FOR MANUFACTURE OF MOS GATED DEVICE WITH REDUCED MASK COUNT

Daniel M. Kinzer, El Segundo, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Sep. 1, 1994, Ser. No. 299,533

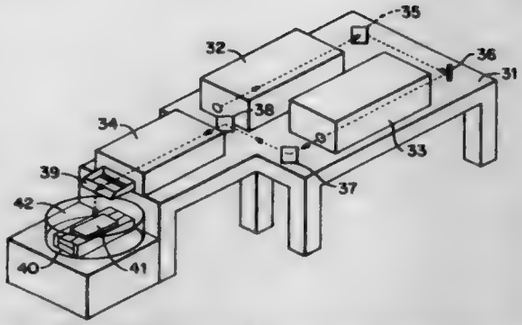
Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—41 DM **23 Claims**



1. A process for the manufacture of a MOS gated semiconductor device; said process comprising the steps of: forming a layer of gate insulation material atop a silicon substrate, forming a layer of polysilicon atop said layer of gate insulation material, forming a first photoresist layer atop said layer of polysilicon, forming a plurality of spaced openings in said first photoresist layer through use of a first photolithographic step to expose portions of said layer of polysilicon; etching the portions of said layer of polysilicon which are exposed through said plurality of spaced openings in said first photoresist layer to form a plurality of corresponding openings in said layer of polysilicon; introducing impurities of a first conductivity type into surface regions of said silicon substrate each corresponding to and located beneath an entire respective one of said plurality of openings in said layer of polysilicon to form first diffused regions that are heavily doped with said impurities of said first conductivity type; introducing impurities of a second conductivity type which is of opposite conductivity type to said first conductivity type into said surface regions of said silicon substrate to form second diffused regions that are heavily doped with said impurities of said second conductivity type, wherein said first diffused regions at each of said surface regions of said silicon substrate have a final depth which is less than that of said second diffused regions; depositing a second insulation layer over the upper surface of said MOS gated semiconductor device; forming a second photoresist layer atop said second insulation layer; forming, by a second photolithographic step which is aligned with said first photolithographic step, a plurality of central openings in said second photoresist layer each of which is substantially centrally aligned with a respective one of said plurality of openings in said layer of polysilicon; said plurality of central openings each having a lateral extent which is less than the lateral extent of a respective one of said first diffused regions; etching away portions of said second insulation layer which are exposed through said plurality of central openings in said second photoresist layer to form openings in said second insulation layer, said openings in said second insulation layer having side walls which are substantially perpendicular to the plane of the surface of said silicon substrate and

expose respective corresponding underlying second surface regions of said silicon substrate; etching depressions in the second surface regions of said silicon substrate to a depth greater than the depth of said first diffused regions, etching said side walls to form undercut portions in said second insulation layer surrounding said second surface regions of said silicon substrate to expose portions of the surface of said silicon substrate which are adjacent to said undercut portions of said surface at said silicon substrate, and depositing a conductive layer over the surface whereby said conductive layer contacts said second diffused regions at the bottom of said depressions and contacts said first diffused regions at the upper portions of said depressions and at the exposed portions of said surface regions of said silicon substrate which are adjacent to said undercut portions; each of said second diffused regions being greatly more heavily doped than a corresponding portion of said silicon substrate that surrounds said each of said second diffused regions, and said each of said second diffused regions further having a common boundary with and surrounding a respective one of said first diffused regions.



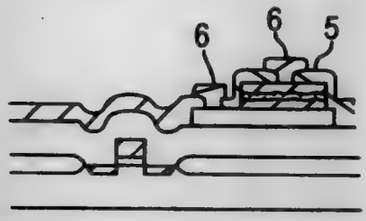
wherein scanning direction of the laser light irradiated in the first step is substantially perpendicular to scanning direction of the laser light irradiated in the second step.

5,795,794

METHOD FOR FORMING A SEMICONDUCTOR DEVICE HAVING A CAPACITOR

Yoshihisa Nagano; Eiji Fujii, both of Osaka; Toru Nasu, Kyoto, and Akihiro Matsuda, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Jul. 11, 1996, Ser. No. 678,291
Claims priority, application Japan, Jul. 14, 1995, 7-178523
Int. Cl.[6] H01L *21/70;27/00*
U.S. Cl. 437—60 **5 Claims**



1. A method of manufacturing semiconductor devices incorporating a built-in capacitor using dielectric substance as capacitance insulation film; wherein said capacitance insulation film is formed by first forming a first dielectric film, and forming a second dielectric film on the surface of said first dielectric film for a thickness greater than the difference in level between extrusion and depression spot on the surface of the first dielectric film, and forming a thin film whose etching speed is identical with that of the second dielectric film on the surface of said second dielectric film making the surface of thin film flat, and then etching the whole of said thin film and part of said second dielectric film off simultaneously to make the surface of second dielectric film flat.

5,795,795

METHOD OF PROCESSING SEMICONDUCTOR DEVICE WITH LASER

Takamasa Kousai, Ohsaka; Hongyong Zhang, and Akiharu Miyanaga, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Jun. 5, 1995, Ser. No. 462,361
Claims priority, application Japan, Nov. 18, 1994, 6-309826
Int. Cl.[6] H01L *21/306*
U.S. Cl. 437—174 **19 Claims**

1. A method of processing a semiconductor device with a laser comprising:

a first step of irradiating the device with laser light; and

a second step, after the first step, of irradiating the device with laser light,

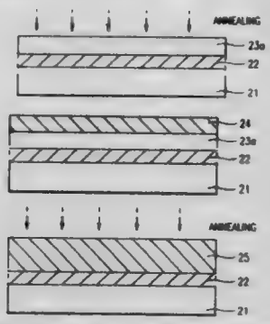
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5,795,796

METHOD OF FABRICATING METAL LINE STRUCTURE

Do Heyoung Kim, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongok-do, Rep. of Korea

Filed Apr. 18, 1996, Ser. No. 634,531
Claims priority, application Japan, Dec. 26, 1995, 1995/56308
Int. Cl.[6] H01L *21/29*
U.S. Cl. 437—189 **18 Claims**



1. A method of fabricating a metal line comprising the steps of:

preparing a semiconductor substrate;

depositing a first metal on the semiconductor substrate;

heat-treating the first metal to form a first metal nitride layer;

depositing a second metal on the first metal nitride layer;

heat treating the second metal;

depositing a third metal on the second metal; and

heat treating both the third metal and the second metal to form a metal insulating layer in which the second and the third metals are mixed.

5,795,797

METHOD OF MAKING MEMORY CHIPS USING MEMORY TESTER PROVIDING FAST REPAIR

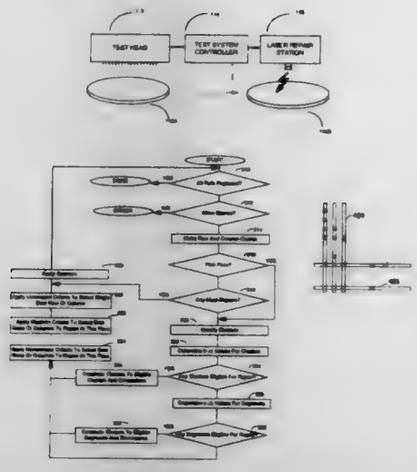
Michael A. Chester, Thousand Oaks, and Steven A. Michaelson, Moorpark, both of Calif., assignors to Teradyne, Inc., Boston, Mass.

Filed Aug. 18, 1995, Ser. No. 516,709
Int. Cl.[6] H01L *21/00;* **G11C** *7/00;29/00*
U.S. Cl. 438—4 **24 Claims**

1. A method of repairing a semiconductor memory having a plurality of memory structures including rows and columns of memory cells and redundant rows and columns, the method comprising:

a) testing the memory to identify faulty cells and creating in a computer a representation of the faulty cells;

b) assigning to selected ones of the faulty cells in the representation a first argument and a second argument, for each



selected faulty cell the first argument representing the number of faulty cells in the same row and the second argument representing the number of faulty cells in the same column as said selected faulty cell, the arguments having values that can be ordered from high to low;

c) assigning priorities to said faulty cells in the representation based

i) primarily on one of either the first or second arguments, with lower valued arguments being assigned a higher priority; and

ii) secondarily on the other of the first or second arguments, with larger valued arguments being assigned a higher priority;

d) using the assigned priorities to select a faulty cell from the faulty cells to which priorities were assigned at step c);

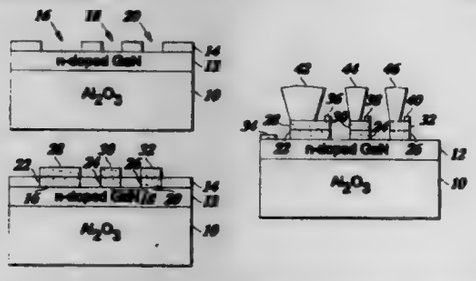
e) allocating a redundant memory structure to repair the faulty cell selected at step d), the redundant memory structure being a row when the argument used in the step of primarily prioritizing represents said number of faulty cells in the same column as the faulty cell selected at step d) and the redundant memory structure being a column when the argument used in the step of primarily prioritizing represents the number of faulty cells in the same row as the faulty cell selected at step d).

5,795,798

METHOD OF MAKING FULL COLOR MONOLITHIC GAN BASED LEDS

Umesh Kumar Mishra; Steven P. DenBaars, and David Joseph Kapolnek, all of Santa Barbara, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 27, 1996, Ser. No. 758,581
Int. Cl.[6] H01L *21/00*
U.S. Cl. 438—35 **4 Claims**



1. A method of producing a white light source, comprising the steps of:

growing a nucleation layer on a substrate;

depositing a mask on the nucleation layer, the mask containing apertures;

depositing at least one conductive doped layer within the apertures of the mask; and

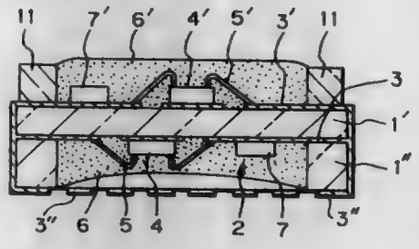
removing the mask.

5,795,799

METHOD FOR MANUFACTURING ELECTRONIC APPARATUS SEALED BY CONCAVE MOLDED RESIN ENVELOPER

Futoshi Hosoya, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed May 31, 1996, Ser. No. 660,184
Claims priority, application Japan, May 31, 1995, 7-133973
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—126 **19 Claims**



1. A method for manufacturing an electronic apparatus comprising the steps of:

preparing an organic substrate having a cavity;

mounting a first electronic component on said organic substrate within said cavity; and

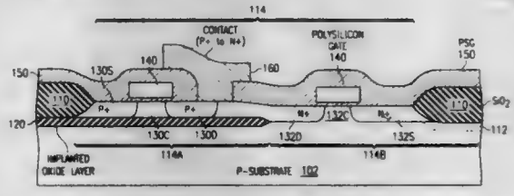
sealing said first electronic component by a concave molded resin enveloper filled into said cavity.

5,795,800

INTEGRATED CIRCUIT FABRICATION METHOD WITH BURIED OXIDE ISOLATION

Tsiu Chiu Chan, Carrollton, and Artur P. Balasinski, Dallas, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 478,247, Jun. 7, 1995. This application Jul. 25, 1996, Ser. No. 686,395
Int. Cl.[6] H01L *21/00*
U.S. Cl. 438—149 **25 Claims**



1. An integrated circuit fabrication method, comprising the steps of:

(a.) providing substantially monolithic semiconductor material having an upper surface;

(b.) selectively forming a buried dielectric layer beneath said upper surface and underlying first, but not second, monocrystalline portions of said semiconductor material;

(c.) introducing dopants of a first conductivity type into said first monocrystalline portions to form source and drain regions of field effect transistors of a first conductivity type in said first monocrystalline portions, said source and drain regions extending entirely through said first monocrystalline portions to abut said buried dielectric layer; and

(d.) introducing dopants of a second conductivity type into said second monocrystalline portions to form source and drain regions of field effect transistors of a second conductivity type in said second monocrystalline portions.

5,795,801

METHODS OF FABRICATING PROFILED DEVICE WELLS FOR IMPROVED DEVICE ISOLATION

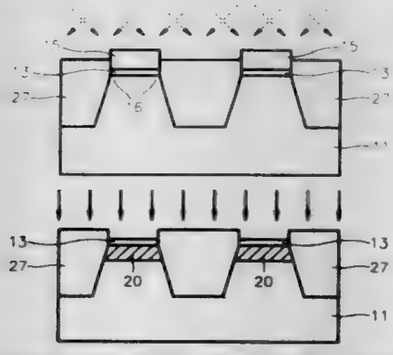
Kang-yoon Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Aug. 9, 1996, Ser. No. 694,641

Claims priority, application Rep. of Korea, Oct. 25, 1995, 95-37168

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 438—199 11 Claims



1. A method of forming an isolated well in a substrate, the method comprising the steps of:

forming a trench in the substrate, the trench defining an active region surface on the substrate adjacent the trench, the trench having a trench sidewall adjacent the active region surface;

forming a trench insulation region in the trench;

first doping the substrate underlying the trench sidewall with impurities; and

after said first doping step, second doping the substrate underlying the active region surface with impurities to thereby form a well in the substrate underlying the active region surface and adjacent the trench sidewall, the well having an impurity concentration which increases towards the trench sidewall.

5,795,802

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

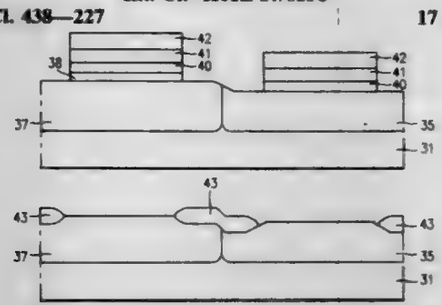
Sang-Gi Ko, Chungcheonbuk-do, and Mun-Mo Jeong, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed Sep. 3, 1997, Ser. No. 922,384

Claims priority, application Rep. of Korea, Dec. 26, 1996, 1996-72201

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 438—227 17 Claims



1. A method for manufacturing a semiconductor device, the method comprising the steps of:

forming an n-type well and a p-type well under a surface of a semiconductor substrate;

forming a pad oxide layer having a first thickness on the p-type well and a second thickness on the n-type well, the first thickness being greater than the second thickness; and

forming a field oxide layer between the n-type well and the p-type well, the field oxide layer having less bird's beak on the n-type well than on the p-type well.

5,795,803

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

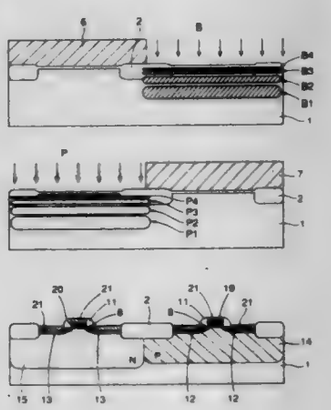
Yoshiji Takamura, Uda-gun; Akio Kawamura, Tenri, and Katsuji Iguchi, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 9, 1997, Ser. No. 871,680

Claims priority, application Japan, Aug. 29, 1996, 8-228901

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 438—228 8 Claims



7. A method of manufacturing a semiconductor device, comprising:

forming a device isolation region in a semiconductor substrate;

forming plural first conductivity type impurity regions having different impurity concentrations in the semiconductor substrate; and

forming on the semiconductor substrate plural transistors each having a different threshold voltage and including a gate insulating film, a gate electrode, source/drain regions and a channel located directly under the gate electrode,

wherein the plural first conductivity type impurity regions having different impurity concentrations are formed by the steps of:

forming a mask pattern on the semiconductor substrate, the mask pattern having an opening at least in a transistor-forming region where a transistor having a threshold voltage of a first absolute value is to be formed;

implanting first conductivity type impurity ions selectively into the transistor-forming region by means of the mask pattern formed by the steps of:

an ion implantation **1'** having a concentration peak around the depth of 0.6 μm;

an ion implantation **2'** having a concentration peak around the depth of 0.35 μm;

an ion implantation **3'** having a concentration peak around the junction regions where the source/drain regions are to be formed; and

an ion implantation **4'** having a concentration peak on the surface or directly under the surface of the region where the channel is to be formed; and

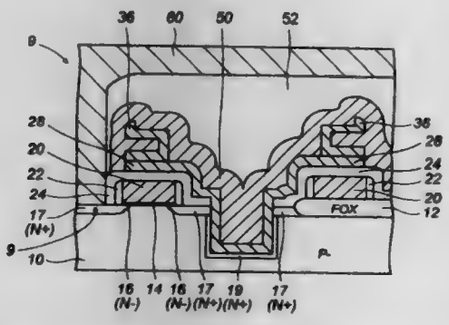
implanting first conductivity type impurity ions by ion implantation **5** that allows ions to penetrate through the mask pattern into the transistor-forming region which is covered with the mask pattern and in which a transistor having a threshold voltage of a second absolute value which is smaller than the first absolute value is to be formed.

5,795,804

METHOD OF FABRICATING A STACK/TRENCH CAPACITOR FOR A DYNAMIC RANDOM ACCESS MEMORY (DRAM)

J.S. Jason Jenq, Pingtung, Taiwan, assignor to United Microelectronics Corporation, Hsin-Chu, Taiwan

Filed Oct. 22, 1996, Ser. No. 731,904
Int. Cl.[6] H01L 21/8242
U.S. Cl. 438—244 19 Claims



1. A method for fabricating an array of memory cells, comprising the steps of:

providing a silicon substrate;

forming a gate oxide layer on device areas for field effect transistors;

depositing a first polysilicon layer on the device areas and patterning the first polysilicon layer to form gate electrodes for the field effect transistors;

forming source/drain areas adjacent to the gate electrodes; and

forming an array of stacked capacitors by:

depositing a first insulating layer on the patterned first polysilicon layer, and elsewhere on the substrate, masking and anisotropically etching contact openings in the first insulating layer to storage node junction areas in the source/drain contact areas, depositing a second polysilicon layer, depositing a first spacer layer on the second polysilicon layer, depositing a second spacer layer on the first spacer layer, patterning the first and second spacer layers by masking and anisotropic etching to leave portions on the second polysilicon layer, isotropically etching the first spacer layer and thereby recessing the first spacer layer under the second spacer layer, depositing a third polysilicon layer on the second and in the recesses on the first spacer layers, and elsewhere on the second polysilicon layer, anisotropically etching back the third polysilicon layer to the third insulating layer, and etching further using the patterned third insulating layer as an etch mask, etching the second polysilicon layer to form bottom electrodes for the stacked capacitors with vertical portions in the recesses, etching remaining portions of the first and second spacer layers to expose more of the bottom electrodes, forming an interelectrode insulator on the bottom electrodes, depositing and patterning a conductive layer on the interelectrode insulator, forming top electrodes, and completing the array of stacked capacitors.

5,795,805

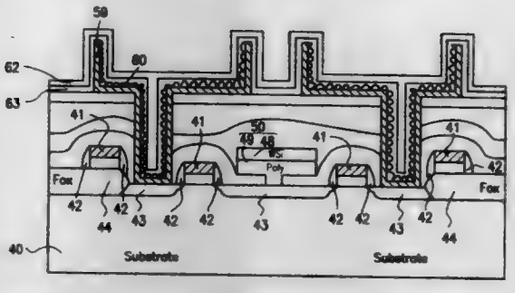
FABRICATING METHOD OF DYNAMIC RANDOM ACCESS MEMORY

Der-Yuan Wu, Hsinchu, and Jason Jenq, Pingtung, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Aug. 4, 1997, Ser. No. 904,543
Int. Cl.[6] H01L 21/8242
U.S. Cl. 438—253 11 Claims

1. A fabricating method of a dynamic random access memory, comprising:

providing a substrate including at least a metal oxide semiconductor which comprises a gate, a spacer around a side wall of the gate, a source/drain, and a field oxide layer;



forming and patterning an insulation layer to form a first opening therein, and to expose a part of the source/drain;

forming and patterning a first heavily doped polysilicon layer and a tungsten silicide layer to form a plurality of openings therein on the substrate;

patterning the first heavily doped polysilicon layer and the tungsten layer to form a bit line which coupling with the source/drain by the first opening;

forming a first oxide layer and a first dielectric layer on the insulation layer and the bit line;

planarizing the first dielectric layer by a step of flow;

forming and patterning a silicon nitride to form a plurality of second openings therein on the first dielectric layer, and to expose the first dielectric layer;

forming and patterning a second oxide layer;

removing the first dielectric layer, the first oxide layer, and the insulation layer within the second openings to form a plurality of vias, and to expose the source/drain;

forming a second heavily doped polysilicon layer of hemispherical grains over the substrate;

forming a second dielectric layer on the second heavily doped polysilicon layer of hemispherical grains;

filling the vias with the second dielectric layers which is thicker than the second oxide layer;

removing the second dielectric layer, the polysilicon layer of hemispherical grains and the second heavily doped polysilicon layer with the second oxide layer as a stop layer; and

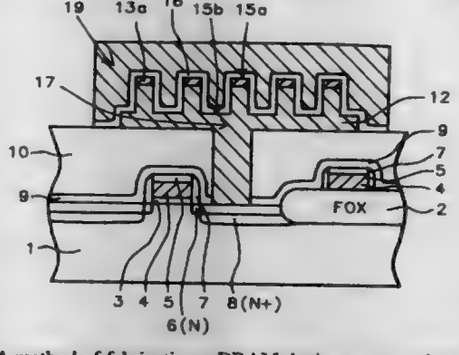
removing the second oxide layer and the second dielectric layer by wet etching with the silicon nitride layer as a stop layer.

5,795,806

METHOD TO INCREASE THE AREA OF A STACKED CAPACITOR STRUCTURE BY CREATING A GRATED TOP SURFACE BOTTOM ELECTRODE

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Apr. 9, 1997, Ser. No. 835,576
Int. Cl.[6] H01L 21/8242
U.S. Cl. 438—255 21 Claims



1. A method of fabricating a DRAM device, on a semiconductor substrate, comprised of an underlying transistor; with a gate insulator, a gate electrode structure, formed from a first insulator layer, and from a first polysilicon layer, insulator sidewall spacers, formed from a second insulator layer, and source and drain regions, and an overlying STC structure; with a polysilicon storage node

electrode, a dielectric layer, and an overlying polysilicon plate electrode, and with the top surface of said polysilicon storage node electrode, exhibiting a grated, top surface topography, comprising the steps of:

depositing a third insulator layer, on said underlying transistor of said DRAM device;

depositing a doped dielectric layer on said third insulator layer;

planarizing said doped dielectric layer;

opening a contact hole, in said doped dielectric layer, and in said third insulator layer, to expose top surface of said source and drain regions, of said underlying transistor;

depositing a second polysilicon layer on top surface of said doped dielectric layer, and on top surface of said source and drain regions, exposed in said contact hole;

depositing HSG polysilicon spots on said second polysilicon layer;

depositing a silicon nitride layer, on said HSG polysilicon spots, completely covering said HSG polysilicon spots, and depositing silicon nitride layer on said second polysilicon layer, exposed between said HSG polysilicon spots;

removing top portion of said silicon nitride layer, exposing a top portion of HSG polysilicon spots, while still leaving bottom portion of said silicon nitride layer, on said second polysilicon layer, in regions not covered by said HSG polysilicon spots;

oxidizing exposed top portion of said HSG polysilicon spots, creating a composite spot structure of a silicon oxide capping layer, overlying an unoxidized, bottom portion of said HSG polysilicon spot;

removing bottom portion of said silicon nitride layer, exposing said second polysilicon layer, in regions not covered by said composite spot structure;

anisotropic dry etching to remove a top portion of said second polysilicon layer in regions where said second polysilicon layer is not covered by said composite spot structure, resulting in a grated, top surface topography, for said second polysilicon layer, comprised of lowered features of bottom portions of said second polysilicon layer, and raised features, comprised of the unoxidized, bottom portions of said HSG polysilicon spots, on unetched, said second polysilicon layer;

removing said silicon oxide capping layer from said composite spot structure;

patterning of said second polysilicon layer, to create said polysilicon storage node electrode, with said grated top surface topography;

forming said dielectric layer on said polysilicon storage node electrode;

depositing a third polysilicon layer on said dielectric layer; and

patterning of said third polysilicon layer to form said plate electrode, of said STC structure.

5,795,807

SEMICONDUCTOR DEVICE HAVING A GROUP OF HIGH PERFORMANCE TRANSISTORS AND METHOD OF MANUFACTURE THEREOF

Mark I. Gardner, Cedar Creek, and Daniel Kadosh, Austin, both of Tex., assignors to Advanced Micro Devices, Austin, Tex.

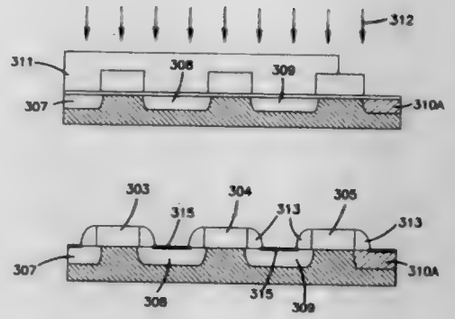
Filed Dec. 20, 1996, Ser. No. 771,131
Int. Cl.[6] H01L *21/265*
U.S. Cl. 438—279 **10 Claims**

1. A process of forming a semiconductor device having a group of transistors connected in series between a high and a low voltage source, the process comprising:

forming a plurality of gate electrodes on a substrate, each gate electrode being used for one of the transistors;

implanting a first dopant of a first conductivity type into regions of the substrate adjacent edges of the plurality of gate electrodes to form a plurality of active regions in the substrate having a first conductivity characteristic; and

selectively implanting a second dopant of a second conductivity type into a first active region formed adjacent one side of a particular gate electrode of the plurality of gate electrodes



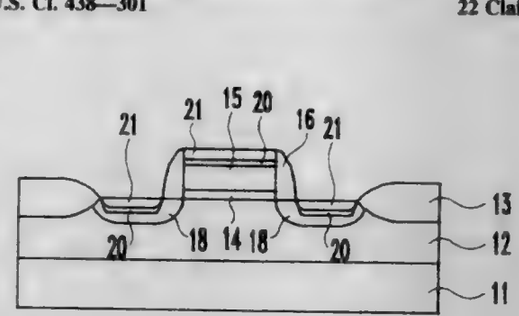
being used to form a particular transistor in the group of transistors, such that the first active region has a second conductivity characteristic while a second active region formed adjacent an opposing side of the particular gate electrode retains the first conductivity characteristic, the particular transistor in the group of transistors being closest to the high voltage source.

5,795,808

METHOD FOR FORMING SHALLOW JUNCTION FOR SEMICONDUCTOR DEVICE

Bo Hyun Park, Ichon, Rep. of Korea, assignor to Hyundai Electronics Industries C., Ltd., Kyoungki-do, Rep. of Korea

Filed Nov. 12, 1996, Ser. No. 744,154
Claims priority, application Rep. of Korea, Nov. 13, 1995, 95-41042
Int. Cl.[6] H01L *21/336;21/265*
U.S. Cl. 438—301 **22 Claims**



12. A method for forming a shallow junction of a semiconductor device, comprising the steps of:

providing a silicon substrate;

forming a well on the silicon substrate and an element isolation film, a gate oxide, a gate electrode and a sidewall spacer on the well, in sequence;

forming a zirconium film over the resulting structure;

implanting impurities in the zirconium film to form a source/drain junction within an active region of the silicon substrate, said impurities having a conductivity opposite to that of said silicon substrate;

forming a titanium film over the resulting structure;

subjecting the zirconium and the titanium films to a first thermal treatment to form a zirconium silicide and a titanium silicide in said source/drain junction;

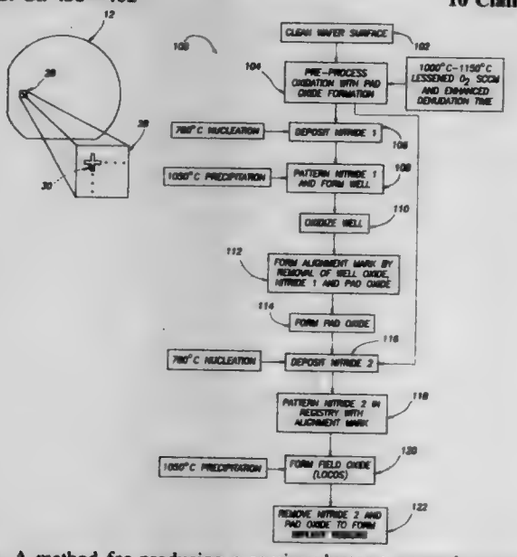
removing unreacted parts of the zirconium and the titanium films; and

subjecting the zirconium silicide and the titanium silicide to a second thermal treatment.

5,795,809
SEMICONDUCTOR WAFER FABRICATION PROCESS INCLUDING GETTERING UTILIZING A COMBINED OXIDATION TECHNIQUE

Mark I. Gardner, Cedar Creek; H. Jim Fulford, Jr., and Said N. Ghneim, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 25, 1995, Ser. No. 450,021
Int. Cl.[6] H01L 21/76
U.S. Cl. 438—402 **10 Claims**



1. A method for producing a semiconductor topography, comprising:

providing a single crystal silicon material having an exposed surface;

growing a pad oxide upon said exposed surface after the exposed surface is subjected to a cleaning solution, wherein the growth of said pad oxide encompasses a denudation step within an intrinsic gettering processing, and wherein said denudation step occurs concurrent with said growing;

depositing a nitride film upon said pad oxide, wherein the deposition of said nitride film encompasses a nucleation step within an intrinsic gettering process, and wherein said nucleation step occurs concurrent with said depositing;

patterning said nitride film and underlying pad oxide to present an opening to said exposed surface;

introducing dopant impurities into said single crystal silicon material through said opening to said exposed surface of said single crystal silicon material, wherein the introduction of said dopant impurities encompasses a precipitation step within an intrinsic gettering process, and wherein said precipitation step occurs concurrent with said introducing;

growing a sacrificial oxide upon said exposed surface within the confines of said opening and thereafter removing said sacrificial oxide to present an elevational recess about the lateral periphery of said opening; and

using said elevational recess to align a mask subsequently placed in proximity with said exposed surface.

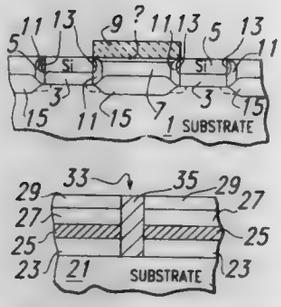
5,795,810
DEEP MESA ISOLATION IN SOI

Theodore W. Houston, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 29, 1995, Ser. No. 412,429
Int. Cl.[6] H01L 21/76
U.S. Cl. 438—404 **4 Claims**

1. A method of making an integrated circuit in semiconductor on insulator material comprising the steps of:

(a) providing a semiconductor on insulator structure having a device layer in contact with one surface of an electrically insulating layer, said electrically insulating layer having said one surface and an opposing surface;



(b) providing an underlying layer of doped semiconductor material, said opposing surface of said electrically insulating layer being in contact with said underlying layer;

(c) patterning a mesa pattern in said device layer;

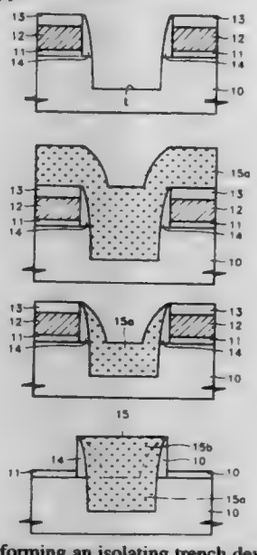
(d) processing said underlying layer with a pattern determined at least in part by said mesa pattern, wherein the step of processing underlying layer sequentially includes etching device layer and insulating layer to form mesas, forming side wall dielectric over said device layer, ion implanting into said underlying layer, thermally oxidizing said underlying layer, and filling a dielectric material having low dielectric constant on the thermally oxidized underlying layer between said mesas; and then

(e) completing fabrication of said integrated circuit in a resulting semiconductor on insulator structure.

5,795,811
METHOD FOR FORMING INSULATING FILMS IN SEMICONDUCTOR DEVICES

Chang-gyu Kim, and Woo-in Chung, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 578,921
Claims priority, application Rep. of Korea, May 30, 1995, 95-13955
Int. Cl.[6] H01L 21/76
U.S. Cl. 438—404 **15 Claims**



1. A method of forming an isolating trench device in a semiconductor device comprising the steps of:

(a) sequentially forming a first material layer and a second material layer over a surface of a semiconductor substrate;

(b) exposing a portion of the semiconductor substrate in which a device isolation region is to be formed by selectively etching the first and second material layers;

(c) forming side wall spacers on exposed lateral sidewalls of the first and second material layers resulting from step (b);
(d) forming a trench by etching the exposed portion of the semiconductor substrate using the side wall spacers as a mask;
(e) depositing an insulating film having an underlayer dependency characteristic over the surface of the structure resulting from step (d);
(f) etching the surface of the insulating film; and
(g) removing the first and second material layers.

5,795,812

Patent Not Issued For This Number

5,795,813

RADIATION-HARDENING OF SOI BY ION IMPLANTATION INTO THE BURIED OXIDE LAYER

Harold Hughes, West River, Md., and Patrick McMarr, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 31, 1996, Ser. No. 655,780
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—423 **14 Claims**

1. A method of increasing the radiation hardness of a silicon-on-insulator device, said device including a silicon substrate, an active silicon layer, and a buried oxide layer sandwiched between said silicon substrate and said active silicon layer, said method including the steps of:
implanting, through said active silicon layer, a dopant ion selected from the group consisting of Al, As, B, N, Ge, and Si ions into said buried oxide layer at an ion implantation energy selected so that said implanted ion has its peak concentration positioned closer to said active silicon layer than to said silicon substrate, thus forming an implanted device;
annealing said implanted device at a temperature of from about 800° C. to below the melting point of silicon;
said implanting step being performed at a dose selected so that any damage to said active silicon layer caused by said implantation is essentially repaired during by said annealing step and so that said implanting step causes said annealed device to have a significantly increased radiation hardness.

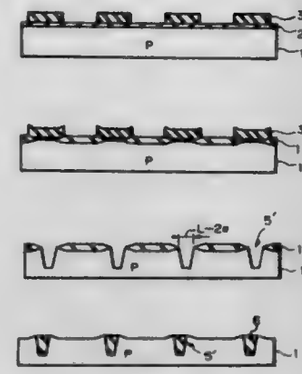
5,795,814

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE HAVING GROOVE-TYPE ISOLATION AREA

Kazuhiro Tasaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 4, 1996, Ser. No. 609,953
Claims priority, application Japan, Mar. 4, 1995, 7-070877
Int. Cl.[6] H01L *21/76*
U.S. Cl. 438—424 **10 Claims**

1. A method for manufacturing a semiconductor device, comprising the steps of:
forming a first silicon oxide layer by thermally oxidizing a silicon substrate;
forming a silicon nitride layer on said first silicon oxide layer;
forming a photoresist pattern on said silicon nitride layer;
etching said silicon nitride layer using said photoresist pattern as a mask;
removing said photoresist pattern after said silicon nitride layer is etched;
forming a second silicon oxide layer having bird beaks on sides thereof by thermally oxidizing said silicon substrate using said silicon nitride layer as a mask;
removing said silicon nitride layer after said second silicon oxide layer is formed;



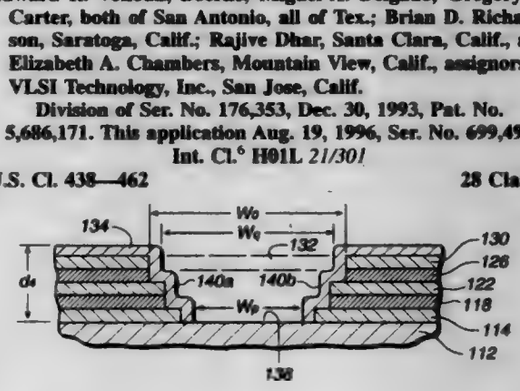
etching said silicon substrate and said second silicon oxide layer by an anisotropic etching process using a selection ratio of said silicon substrate to said second silicon oxide layer so that the bird beaks of said second silicon oxide layer are etched simultaneously with etching of said silicon substrate, thus forming a tapered groove in said silicon substrate, after said silicon nitride layer is removed;
forming an insulating layer on said second silicon oxide layer and said groove;
etching back said insulating layer so that said insulating layer remains in said groove; and
selectively etching second silicon oxide layer.

5,795,815

INTEGRATED CIRCUIT SCRIBE LINE STRUCTURES AND METHODS FOR MAKING SAME

Edward R. Vokoun, Boerne; Miguel A. Delgado; Gregory N. Carter, both of San Antonio, all of Tex.; Brian D. Richardson, Saratoga, Calif.; Rajive Dhar, Santa Clara, Calif., and Elizabeth A. Chambers, Mountain View, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Division of Ser. No. 176,353, Dec. 30, 1993, Pat. No. 5,686,171. This application Aug. 19, 1996, Ser. No. 699,492
Int. Cl.[6] H01L *21/301*
U.S. Cl. 438—462 **28 Claims**



20. A method for forming a scribe line in multiple layers provided over a substrate comprising the steps of:
providing a substrate;
providing a first layer over said substrate;
creating a first elongated opening of a first width in said first layer relative to a desired scribe line position;
providing a second layer over said first layer;
creating a second elongated opening of a second width in said second layer relative to said desired scribe line position, said second width being greater than said first width;
providing a third layer over said second layer;
creating a third elongated opening in said third layer relative to said desired scribe line position, said third elongated opening having a width substantially the same as said second width;
providing a fourth layer over said third layer;
creating a fourth elongated opening of a third width in said fourth layer relative to said desired scribe line position, said third width being greater than said second width;
providing a fifth layer over said fourth layer,

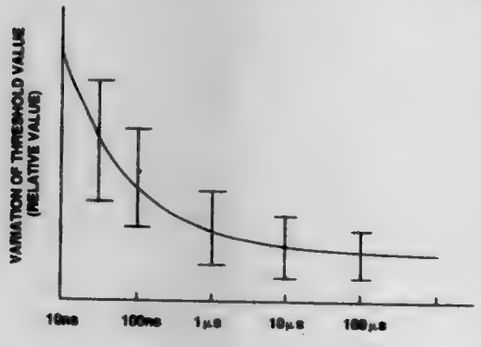
creating a fifth elongated opening of a fourth width in said fifth layer relative to said desired scribe line position, said fourth elongated opening having a width substantially the same as said third width, wherein said first, second, third, fourth and fifth layers form a scribe line having a pair of sloped sidewalls.

5,795,816

METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Satoshi Teramoto; Akira Takenouchi, and Hisashi Ohtani, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Japan

Filed May 26, 1995, Ser. No. 452,285
Claims priority, application Japan, Jun. 14, 1994, 6-156648
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—479 14 Claims



1. A method of fabricating a semiconductor device, comprising the steps of:

forming an amorphous or amorphized semiconductor film on an insulating surface; and

irradiating said semiconductor film,

wherein said semiconductor film is irradiated with pulsed light having a pulse width of 1 μs to 100 ms and another light having a wavelength of 0.1 to 2 μm.

5,795,817

MOS TRANSISTOR ADOPTING TITANIUM-CARBON-NITRIDE GATE ELECTRODE AND MANUFACTURING METHOD THEREOF

Suk-ho Joo, Seoul; Choong-ryul Paik, Kyungki-do, and Ki-hong Lee, Cheju-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Mar. 21, 1996, Ser. No. 619,361
Claims priority, application Rep. of Korea, Mar. 30, 1995, 95-7050
Int. Cl.[6] H01L *21/28*
U.S. Cl. 438—591 5 Claims

1. A method for manufacturing a MOS transistor, comprising the steps of:

forming a gate insulating film on a semiconductor substrate; and

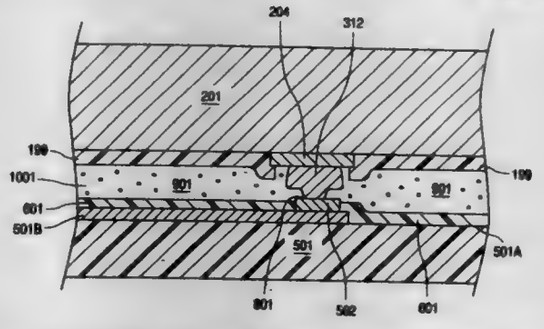
forming a TiCN film as a gate electrode on said gate insulating film.

5,795,818

INTEGRATED CIRCUIT CHIP TO SUBSTRATE INTERCONNECTION AND METHOD

Robert C. Marrs, Scottdale, Ariz., assignor to Amkor Technology, Inc., Chandler, Ariz.

Filed Dec. 6, 1996, Ser. No. 761,472
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—612 17 Claims



1. A method for forming an interconnection between an integrated circuit chip and a substrate, said method comprising the steps of:

providing an integrated circuit chip having a first surface with bonding pads formed thereon and a substrate having a first surface with bonding contacts formed thereon, said bonding contacts comprising an electrically conductive material;

forming a metallization on selected ones of said bonding contacts;

forming a ball bond bump on selected ones of said bonding pads;

coining each of said ball bond bumps to form coined ball bond bumps; and

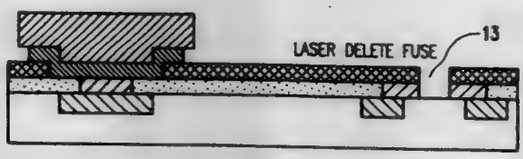
placing said first surface of said integrated circuit chip adjacent said first surface of said substrate such that each of said coined ball bond bumps forms a metal-to-metal bond with a corresponding one of said metallizations.

5,795,819

INTEGRATED PAD AND FUSE STRUCTURE FOR PLANAR COPPER METALLURGY

William Thomas Motsiff, Essex Junction; Robert Michael Geffken, Burlington, and Ronald Robert Uttecht, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 671,903, Jun. 28, 1996, Pat. No. 5,731,624. This application Sep. 9, 1997, Ser. No. 925,655
Int. Cl.[6] H01L *29/40;23/48;23/52*
U.S. Cl. 438—618 2 Claims



1. A method of making an interconnection structure for a semiconductor circuit comprising the steps of:

providing a substrate having coplanar damascene non-self-passivating conductors embedded in a first insulator defining a first electrical interconnect layer;

forming second electrical interconnect layer comprising coplanar self-passivating conductors in a second insulator, said second electrical interconnect layer overlying said first electrical interconnect layer and said second interconnect self-passivating conductors contacting said non-self-passivating conductors; and

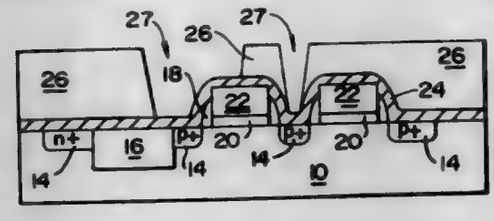
depositing a final pássivation layer over said second electrical interconnect layer.

5,795,820

METHOD FOR SIMPLIFYING THE MANUFACTURE OF AN INTERLAYER DIELECTRIC STACK

Nick Kepler, San Jose, Calif., assignor to Advanced Micro Devices, Sunnyvale, Calif.

Filed Jul. 1, 1996, Ser. No. 673,005
Int. Cl.[6] H01L 21/441
U.S. Cl. 438—624 21 Claims



1. A method for manufacturing an interlayer dielectric (ILD) stack in a semiconductor device comprising the steps of:

(a) depositing a layer of oxide etch stop over a silicon substrate at a pressure of less than 50 torr;

(b) depositing a first layer of undoped oxide over the oxide etch stop at a pressure of less than 50 torr;

(c) etching a portion of the first layer of oxide to the oxide etch stop;

(d) etching a portion of the oxide etch stop to the silicon substrate thereby forming a first local interconnect (LI) stack including a first LI opening;

(e) depositing LI wiring to fill the first LI opening;

(f) depositing a second layer of doped oxide over the first LI stack at a pressure of less than 50 torr;

(g) etching a portion of the second oxide layer to form a first contact stack including a first contact opening;

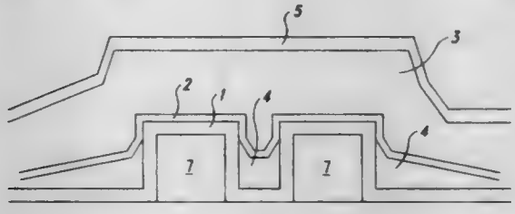
(h) depositing a plug metal into the first contact opening thereby forming an ILD stack.

5,795,821

PROCESS FOR IMPROVING THE INTERFACE UNION AMONG DIELECTRIC MATERIALS IN AN INTEGRATED CIRCUIT MANUFACTURE

Maurizio Bacchetta, Cologno Monzese; Laura Bacci, Milan, and Luca Zanotti, Crema, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Agrate Brianza, Italy

Continuation of Ser. No. 235,173, Apr. 28, 1994, abandoned.
This application Nov. 18, 1996, Ser. No. 751,244
Claims priority, application European Pat. Off., May 31, 1993, 93830243
Int. Cl.[6] H01L 21/318
U.S. Cl. 438—624 31 Claims



1. A method for improved adhesion between dielectric material layers at the interface thereof, during the manufacture of a semiconductor device, comprising:

forming a first layer of a nitride based dielectric material over at least a portion of a structure defined on a substrate of a semiconductor material;

forming a second layer of nitride based dielectric material overlying at least a portion of said first layer; and

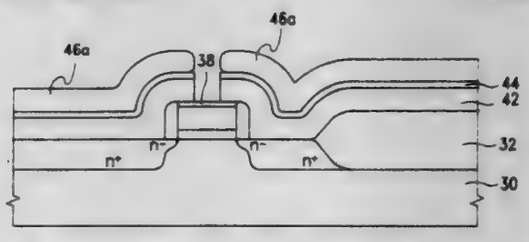
forming an oxide adhesion promoting layer in at least one region between said first and second layers of dielectric materials, in contact with both, the thickness of said layer being within the 5 to 50 nm range.

5,795,822

METHOD FOR MANUFACTURING AN ALIGNED OPENING IN AN INTEGRATED CIRCUIT

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed Aug. 7, 1996, Ser. No. 689,353
Int. Cl.[6] H01L 21/302;21/31
U.S. Cl. 438—637 14 Claims



10. A method of forming an aligned opening over a feature in a semiconductor substrate, the method comprising the steps of:

(a) forming a layer of expansion polysilicon at least over said feature;

(b) masking and etching an approximate opening in said layer of expansion polysilicon over said feature; and

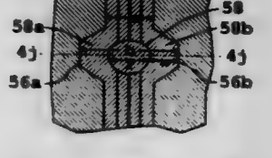
(c) oxidizing said polysilicon into a polysilicon-oxide layer that is expanded in volume relative to said expansion polysilicon layer thereby narrowing said approximate opening into said aligned opening.

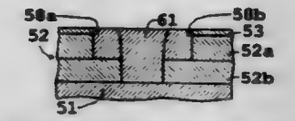
5,795,823

SELF ALIGNED VIA DUAL DAMASCENE

Steven Avanzino, Cupertino; Subhash Gupta, San Jose; Rich Klein, Mountain View; Scott D. Luning, Menlo Park, and Ming-Ren Lin, Cupertino, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 478,318, Jun. 7, 1995, Pat. No. 5,614,765.
This application Nov. 20, 1996, Ser. No. 752,807
Int. Cl.[6] H01L 21/441
U.S. Cl. 438—639 20 Claims





1. A method of fabricating interconnecting conductive lines and conductive vias in a layer of insulating material comprising the steps of:

creating a pattern for a conductive line opening having enlarged regions at sections in the line opening to be via openings and about half of the width of the width of the conductive line;

etching said pattern partially through the insulating layer so that a conductive line opening is formed in the upper half of the layer;

depositing a material having etch selectivity different from the material of the insulating layer;

etching said deposited material to form sidewalls in the enlarged regions and to expose the insulating layer between the sidewalls;

etching said exposed insulating layer between the sidewalls with the sidewalls and the deposited material at each end of the sidewalls serving as an etch mask so that a via opening is formed in the lower half of the insulating layer; and

filling said conductive line opening and via opening with conductive material.

5,795,824

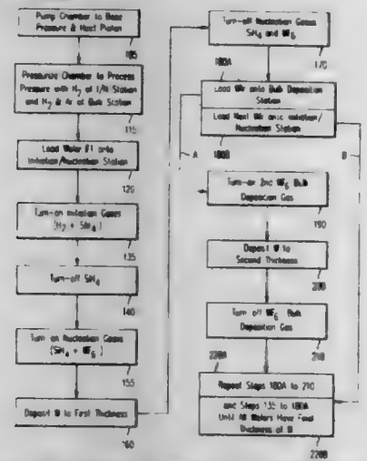
METHOD FOR NUCLEATION OF CVD TUNGSTEN FILMS

Shawn Diane Hancock, Alviso, Calif., assignor to Novellus Systems, Inc., San Jose, Calif.

Filed Aug. 28, 1997, Ser. No. 919,384

Int. Cl.[6] C23C *16/08*

U.S. Cl. 438—656 **6 Claims**



1. A method for initiating growth of a tungsten (W) film on a surface of a semiconductor substrate comprising:

positioning said semiconductor substrate at a deposition station within a deposition chamber;

heating said semiconductor wafer to a temperature between approximately 350 to 475 degrees Centigrade at said deposition station;

providing initiation gases to said surface, wherein said initiation gases consist of hydrogen (H_2) and silane (SiH_4); and

providing nucleation gases to said surface, wherein said nucleation gases replace said initiation gases, said nucleation gases consisting of tungsten hexafluoride (WF_6), H_2 and SiH_4, and wherein said tungsten film is formed at a rate in excess of approximately 100 nm/min on said surface.

5,795,825

CONNECTION LAYER FORMING METHOD

Yukiyasu Sugano, Kanagawa, and Junichi Sato, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 389,990, Feb. 16, 1995, which is a continuation of Ser. No. 113,898, Aug. 31, 1993, abandoned. This application Apr. 8, 1996, Ser. No. 627,511

Claims priority, application Japan, Aug. 31, 1992, 4-255786; May 29, 1993, 5-151481

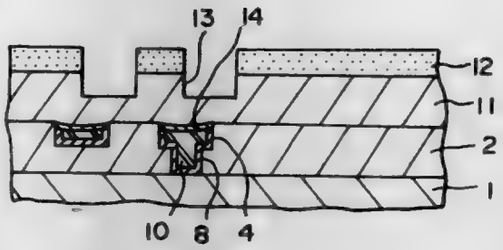
Int. Cl.[6] H01L *21/465*

U.S. Cl. 438—690 **10 Claims**

1. A method of forming multi-layer connection layers on a semiconductor integrated circuit, comprising the steps of:

depositing a first interlayer insulating film on a substrate;

forming a concave section extending partially through the first interlayer insulating film by etching the first interlayer insulating film;



forming a three-layer resist over the concave section and first interlayer insulating film;

forming a contact hole through the concave section and through the first interlayer insulating film to the substrate by a plurality of etching operations, the contact hole being narrower than the concave section;

depositing a unitary lower metal film layer on the concave section, the contact hole, the substrate and the first interlayer insulating film;

depositing a lower connection layer on the lower metal film to fill up the concave section and contact hole and to extend laterally above a surface of the first interlayer insulating film;

polishing a surface of the lower connection layer to planarize a surface of the deposited connection layer and the first interlayer insulating film;

depositing an antireflection film on the surface of the deposited connection layer and the first interlayer insulating film; and

forming an upper wiring layer by depositing a second interlayer insulating film.

5,795,826

METHOD OF CHEMICALLY MECHANICALLY POLISHING AN ELECTRONIC COMPONENT

Jeffrey Peter Gambino, Gaylordsville, Conn.; Mark Anthony Jaso, Yorktown Heights, N.Y., and Larry Allan Nesbit, Wallingford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 557,225, Nov. 14, 1995, Pat. No. 5,573,633. This application Jul. 25, 1996, Ser. No. 687,273

Int. Cl.[6] H01L *21/02*

U.S. Cl. 438—692 **9 Claims**

1. A method of forming interlevel studs through a planar insulating layer on a semiconductor wafer, said method comprising the steps of:

a) forming a first group of vias through a planar surface of an insulating layer;

b) forming a layer of a first conductive material on said planar surface;

c) forming a second group of vias through said first conductive material layer and said insulating layer;

d) forming a layer of a second conductive material, said layer of second conductive material filling said first and second group of vias;

e) removing said second conductive layer to expose said first conductive material layer, such that said second conductive material remains only in said first and second via groups; and,

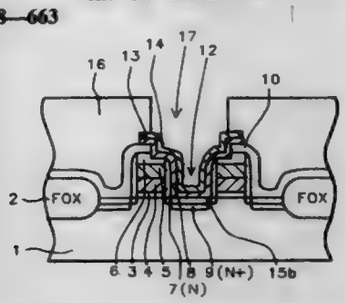
f) removing said exposed first conductive material layer.

5,795,827

METHOD FOR REDUCING THE RESISTANCE OF SELF-ALIGNED CONTACTS, FOR TRIPLE POLYSILICON SRAM DEVICES

Jhon-Jhy Liaw, Taipei, and Ding-Shan Wang, Hsin-Chu, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Jan. 15, 1997, Ser. No. 783,981
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—663 **28 Claims**



1. A method of fabricating metal oxide semiconductor field effect transistor (MOSFET) devices, for a static random access memory (SRAM) cell, on a semiconductor substrate, in which an anneal is used to reduce an interface resistance between an overlying polycide structure, and an underlying source and drain region, of said MOSFET devices, comprising the steps of:

forming field oxide regions in said semiconductor substrate;

growing a gate insulator layer on said semiconductor substrate, in areas not covered by said field oxide regions;

depositing a first polysilicon layer on said gate insulator layer;

depositing a first metal silicide layer on said first polysilicon layer;

depositing a first insulator layer on said first metal silicide layer;

patterning of said first insulator layer, of said first metal silicide layer, and of said first polysilicon layer, to form polycide gate structures, on said gate insulator layer;

ion implanting a first conductivity imparting dopant into said semiconductor substrate, in regions not covered by said polycide gate structures, to form a lightly doped source and drain region;

depositing a second insulator layer;

anisotropic etching of said second insulator layer to form insulator spacers on sides of said polycide gate structures;

ion implanting a second conductivity imparting dopant into said semiconductor substrate, in regions not covered by said polycide gate structures, or not covered by said insulator spacers, to form a heavily doped source and drain region;

depositing a third insulator layer;

opening a hole in said third insulator layer, creating a self-aligned contact, (SAC), opening, exposing said heavily doped source and drain region, in said semiconductor substrate, in a space between said polycide gate structures, with said insulator spacers;

depositing a second polysilicon layer, including deposition on said heavily doped source and drain region in said SAC opening, in said space between said polycide gate structures;

depositing a second metal silicide layer on said second polysilicon layer;

patterning of said second metal silicide layer, and of said second polysilicon layer, to create a polycide, self-aligned contact, (SAC), structure, completely overlying said SAC opening, and with said polycide SAC structure partially overlying a portion of said polysilicon gate structures, in regions where said polycide gate structures are adjacent to said SAC opening;

depositing a composite interlevel dielectric layer on said semiconductor substrate, including deposition on said polycide SAC structure;

annealing to dissolve native oxide at an interface between overlying said second polysilicon layer, of said polycide SAC structure, and said heavily doped source and drain region;

opening a hole in said composite interlevel dielectric layer to expose top surface of said polycide SAC structure;

forming a metal plug in said hole, in said composite interlevel dielectric layer, contacting underlying, said polycide SAC structure; and

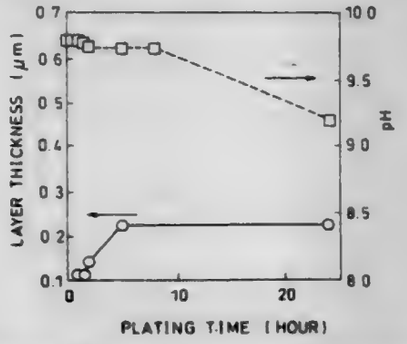
forming an interconnect metallization structure, overlying and contacting, said metal plug, in said hole, in said composite interlevel dielectric layer.

5,795,828

ELECTROLESS PLATING BATH USED FOR FORMING A WIRING OF A SEMICONDUCTOR DEVICE, AND METHOD OF FORMING A WIRING OF A SEMICONDUCTOR DEVICE

Masayuki Endo; Akemi Kawaguchi; Mikio Nishio, and Shin Hashimoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 502,175, Jul. 13, 1995, Pat. No. 5,645,628.
This application Jul. 3, 1996, Ser. No. 675,667
Claims priority, application Japan, Jul. 14, 1994, 6-162030
Int. Cl.[6] H01L *21/44*
U.S. Cl. 438—678 **9 Claims**



1. A method of forming a wiring of a semiconductor device, comprising:

the first step of forming a concave at a contact zone of a wiring zone of a resist pattern or an insulating layer formed on the semiconductor substrate; and

the second step of forming an embedded metallic layer in said concave with the use of an electroless plating bath comprising: a metallic material containing metallic ions which is composed of silver nitrate; a reducing agent of said metallic ions which is composed of tartaric acid; a complexing agent of said metallic ions which is composed of ethylenediamine; and a pH control agent which is composed of tetramethylammoniumhydroxide.

5,795,829

METHOD OF HIGH DENSITY PLASMA METAL ETCHING

Lewis Shen, Cuppertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 3, 1996, Ser. No. 657,261
Int. Cl.[6] H01L *21/311*
U.S. Cl. 438—694 **16 Claims**

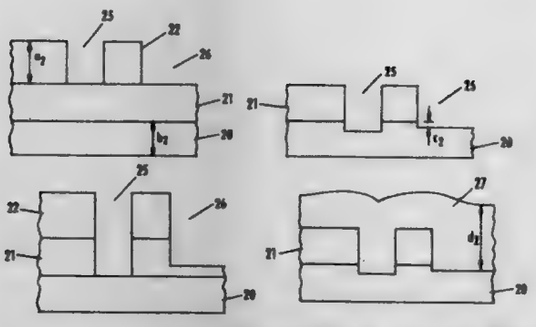
1. A method of manufacturing a semiconductor device having a dense array of conductive lines, which method comprises:

forming an insulating layer;

forming a layer of conductive material on the insulating layer;

forming a mask on the layer of conductive material, which mask contains a pattern defining a dense array of conductive lines bordered by an open field; and

etching the conductive layer through the mask with a high density plasma generated by a gas flow containing nitrogen in an amount ranging from about 20 to about 50% volume of the total gas flow and sufficient to increase the etch rate of the conductive material within the dense array to no less than the



etch rate of the conductive material in the open field, wherein the conductive material is an aluminum alloy containing more than about 0.5% by weight of copper, and further comprising depositing the aluminum alloy at a temperature less than about 150° C. or at a temperature greater than about 350° C.

5,795,830

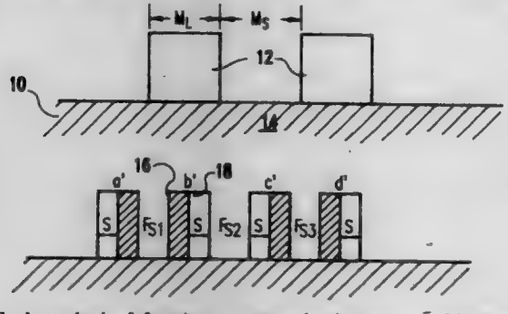
REDUCING PITCH WITH CONTINUOUSLY ADJUSTABLE LINE AND SPACE DIMENSIONS

John E. Cronin, Milton, and Carter W. Kaanta, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 469,111, Jun. 6, 1995, abandoned. This application Jul. 26, 1996, Ser. No. 686,481

Int. Cl.[6] H01L *21/3065*; **C03C** *25/06*

U.S. Cl. 438—696 **14 Claims**



1. A method of forming a pattern having any combination of lithographic and sub-lithographic lines, with lithographic or sub-lithographic dimensioned spaces therebetween on a substrate, the method comprising the steps of:

forming a plurality of spaced convertible mandrels on a substrate wherein a substrate surface is exposed between said spaced mandrels, and wherein said convertible mandrels each have a width, vertical side mandrel surface portions, and an upper horizontal mandrel surface portion;

converting said vertical side mandrel surface portions and said upper horizontal mandrel surface portion of one or more of said plurality of convertible mandrels to form a converted portion layer including vertical wall portions and a horizontal portion located over an unconverted mandrel portion of each of said one or more mandrels, and said unconverted mandrel portion has a width less than said convertible mandrel width;

depositing a conformal layer of material over said substrate surface, and said vertical wall portions and said horizontal portion of said converted portion layer;

directionally etching said conformal layer to remove said conformal layer material portion where located on said horizontal portion of said converted portion layer and where located on said exposed substrate;

removing said unconverted portions of said mandrels to provide spaced composite vertical wall structures on said substrate, wherein said composite vertical wall structures each comprise one of said vertical wall portions of said converted portion layer adjoining a wall portion comprised of nonetched conformal layer material.

5,795,831

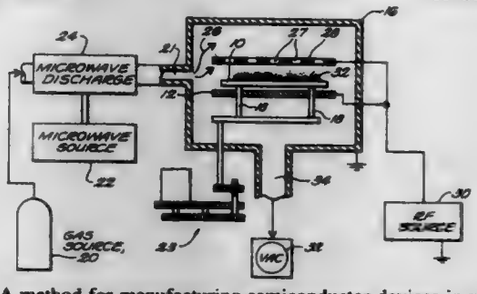
COLD PROCESSES FOR CLEANING AND STRIPPING PHOTORESIST FROM SURFACES OF SEMICONDUCTOR WAFERS

Izumi Nakayama, Groton; Yukio Masuda, North Andover; Richard L. Bersin, Boxford; Han Xu, Lexington, and Quain Geng, Acton, all of Mass., assignors to Ulvac Technologies, Inc., Andover, Mass.

Filed Oct. 16, 1996, Ser. No. 731,612

Int. Cl.[6] C23F *1/02*

U.S. Cl. 438—714 **18 Claims**



1. A method for manufacturing semiconductor devices in which the devices are in an intermediate stage of manufacture and have formed thereon a resist layer to be removed, the removal of the resist being performed in a processing chamber, the method comprising the steps of:

(a) ashing the resist layer with a reactive ion etching (RIE) process that includes forming an RF plasma in the processing chamber; and

(b) ashing the resist layer with a microwave downstream process including causing a microwave generated gas to be introduced into the processing chamber;

wherein steps (a) and (b) are each performed such that the wafer is at a temperature no greater than about 60° C.

5,795,832

METHOD AND APPARATUS FOR DRY ETCHING

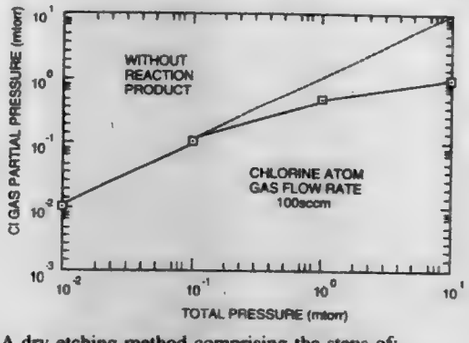
Takao Kumihashi, Musashino; Kazunori Tsujimoto, Higashiyamato, and Shinichi Tachi, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 570,689, Dec. 11, 1995, Pat. No. 5,650,038, which is a division of Ser. No. 301,388, Sep. 7, 1994, Pat. No. 5,474,650, which is a continuation-in-part of Ser. No. 176,461, Jan. 3, 1994, Pat. No. 5,354,418, which is a division of Ser. No. 34,126, Mar. 18, 1993, Pat. No. 5,318,667, which is a continuation-in-part of Ser. No. 859,336, Mar. 27, 1992, Pat. No. 5,242,539. This application May 22, 1997, Ser. No. 861,600

Claims priority, application Japan, Apr. 4, 1991, 3-071464; Jan. 13, 1992, 4-003675; Mar. 18, 1992, 4-061736; Mar. 26, 1992, 4-068098

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—714 **5 Claims**



1. A dry etching method comprising the steps of:

introducing a material to be etched into a chamber;

introducing an etching gas into the chamber;

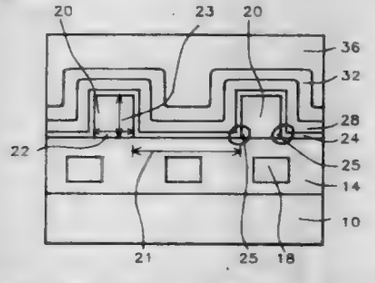
forming the etching gas in the chamber into a plasma; and
etching the material in the chamber with the plasma;
wherein the number of etching gas particles introduced into the chamber is greater than the number of plasma particles consumed during the etching step.

5,795,833

METHOD FOR FABRICATING PASSIVATION LAYERS OVER METAL LINES

Chen-Hua Yu, Hsin-Chu, and Yao-Yi Cheng, Taipei, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd, Hsin-Chu, Taiwan

Filed Aug. 1, 1996, Ser. No. 691,080
Int. Cl.[6] H04H *1/24*; B05D *3/14*; H01L *21/02*
U.S. Cl. 438—763 **4 Claims**



4. A method of fabricating passivation layers over spaced metal lines over a semiconductor structure, comprising:

a) forming said spaced metal lines over said semiconductor structure; said spaced metal lines have a spacing of between about 0.5 and 1.0 μm;

b) forming a first silicon nitride layer, using a first plasma enhanced chemical vapor deposition process, on said metal lines and said semiconductor structure, said first silicon nitride layer having a first thickness in a range of about 900 and 1000 Å; said first silicon nitride layer is formed using said first plasma enhanced chemical vapor deposition process with an argon plasma, with a silane (SiH_4) flow rate between about 200 and 300 sccm, and an ammonia flow rate between about 50 and 120 sccm and N_2 flow rate between about 3000 and 4000 sccm, deposited at a pressure between 4.0 and 6.0 Torr, at a temperature between 380° and 420° C., at a power of between 680 and 740 watts and an electrode gap spacing is between 580 and 620 mils;

c) forming a silicon oxide layer on said first silicon nitride layer, said silicon oxide layer having a second thickness in a range of between about 4000 and 9000 Å; said silicon oxide layer formed using a second plasma enhanced chemical vapor deposition (PECVD) process and tetraethoxysilane (TEOS);

d) forming a second nitride layer, using a third plasma enhanced chemical vapor deposition process, on said silicon oxide layer, said second nitride layer having a third thickness in a range of between about 4000 and 7000 Å.

5,795,834

ADHESIVE TAPE AND METHOD OF MAKING

Gerald S. Deeb, Mendota Heights, Minn.; Dennis L. Krueger; Robert H. Menzies, both of Hudson, Wis.; Herbert W. Morris, St. Paul; Patrick D. Hyde, Burnsville, both of Minn.; Felix P. Lau, Austin, Tex.; Eumi Pyun, Austin, Tex.; Pamela S. Tucker, Austin, Tex., and Roy Wong, White Bear Lake, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Dec. 22, 1995, Ser. No. 577,855
Int. Cl.[6] B32B *7/12*
U.S. Cl. 442—62 **16 Claims**

1. An adhesive tape comprising:
a woven cloth,



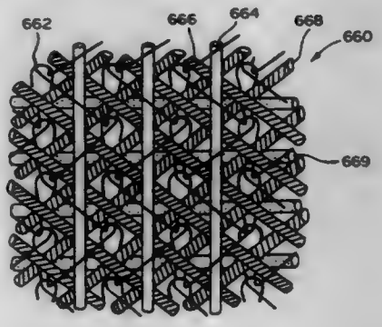
a polyethylene-based polymer extrusion coated and embedded into said cloth and capable of adhering to said cloth, and
a pressure sensitive adhesive comprised of a blend of an acrylic and a thermoplastic elastomer coated onto at least a portion of said polymer, wherein the adhesive tape is hand tearable in a substantially straight line without fraying and the unwind tension of a roll of the tape is less than 14N/dm in the absence of a low adhesion backsize.

5,795,835

BONDED COMPOSITE KNITTED STRUCTURAL TEXTILES

Jeffrey W. Bruner, Greensboro, N.C., and Peter E. Stevenson, Easley, S.C., assignors to The Tensar Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 520,018, Aug. 28, 1995, abandoned. This application Aug. 14, 1996, Ser. No. 696,604
Int. Cl.[6] B32B *5/08*
U.S. Cl. 442—310 **80 Claims**



1. A bonded composite knitted structural textile, comprising:
a knitted structure of open mesh or closely knit form including knitted yarn associated with a plurality of laid-in weft and warp yarns;
a portion of the warp and/or weft yarns comprising load bearing yarns, the load bearing yarns being high tenacity, high modulus, low elongation yarns; and
the bonded composite knitted structural textile comprising at least one polymer component encapsulating and bonding adjacent yarns at junctions of the laid-in weft and warp yarns to improve the structural integrity, initial modulus, stiffness and durability of the textile.

5,795,836

MEDICAL NON-WOVEN FABRICS CONTAINING INORGANIC OXIDES COMPLEX POWDER

Rui Jin; Kesen Zhao; Jun Liu; Yan Jin; Qin Lei, and Xinnong Li, all of Guangdong, China, assignors to Wonder & Bioenergy Hi-Tech International, Inc., Guangdong, China

Filed Aug. 7, 1997, Ser. No. 907,431

Claims priority, application China, Dec. 10, 1996, 96 1 21670.0

Int. Cl.[6] D02G *3/00*

U.S. Cl. 442—417 2 Claims

1. A medical non-woven fabric containing inorganic oxides complex powder, which is characterized in that it contains 2.5–10% (weight) of inorganic oxides complex powder, and said powder comprises 80–95% (weight) of TiO_2, 2–10% (weight) of Al_2O_3 and 1–10% (weight) of SiO_2.

5,795,837

PROCESS FOR PREPARING MOLYBDENUM, MOLYBDENUM SILICIDES OR CARBIDES/CERAMIC ADMIXTURES AND SINTERED COMPOSITES

Wen-Cheng J. Wei, Taipei; Ming-Hung Lo, Taoyuan Hsien, and Feng-Huei Cheng, Taipei, all of Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Aug. 28, 1996, Ser. No. 697,697

Claims priority, application Taiwan, Jul. 5, 1996, 85108125

Int. Cl.[6] C04B *35/58*

U.S. Cl. 501—87 35 Claims

31. A process for preparing a ceramic admixture including molybdenum, the method comprising the steps of:

(a) dissolving molybdenum trioxide powder with an alkaline solvent to obtain an aqueous solution of molybdate;

(b) incorporating ceramic powder into the aqueous solution of molybdate to obtain a molybdate/ceramic slurry;

(c) subjecting the molybdate/ceramic slurry to spray drying to obtain a molybdate/ceramic admixture; and

(d) subjecting the molybdate/ceramic admixture to reduction in the presence of a reducing atmosphere at 600°–1000° C. to obtain the ceramic admixture.

5,795,838

OLEFIN POLYMERIZATION CATALYST AND PROCESS FOR OLEFIN POLYMERIZATION

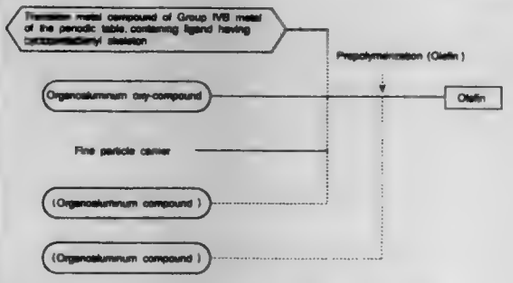
Toshiyuki Tsutsui; Ken Yoshitsugu; Masaaki Ohgizawa; Tetsuhiro Matsumoto, and Junichi Imuta, all of Waki-cho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 9, 1995, Ser. No. 513,088

Claims priority, application Japan, Aug. 9, 1994, 6-207965; Dec. 28, 1994, 6-328737; Feb. 15, 1995, 7-27031

Int. Cl.[6] B01J *31/00;37/00;* C08F *4/02;4/60*

U.S. Cl. 502—103 23 Claims



1. An olefin polymerization solid catalyst comprising:

a fine particle carrier having an adsorbed water content of less that 1.0% by weight and a surface hydroxyl group content of not less than 1.0% by weight

(A) a transition metal compound of a Group IVB metal of the periodic table, containing a ligand having a cyclopentadienyl skeleton;

(B) an organoaluminum oxy-compound having a molar ratio of alkyl groups to aluminum atoms of 1.3 to 2.1; and optionally

(C) an organoaluminum compound;

said transition metal compound (A), said organoaluminum oxy-compound (B) and said organoaluminum compound (C) being supported on the fine particle carrier; and

said solid catalyst having a bulk density of not less than 0.3 g/cm^3 and a fluidity index of not less than 45.

5,795,839

CATALYST COMPONENTS FOR POLYMERIZATION OF OLEFINS

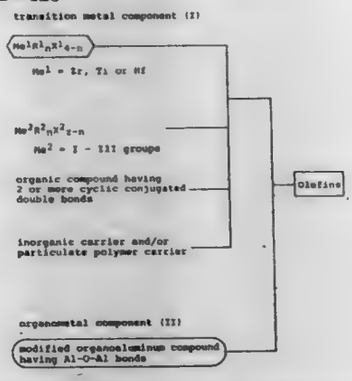
Naoki Kataoka; Yosuke Numao; Takashi Seki; Yoshio Tajima, and Kazuo Matsuura, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 212,444, Mar. 14, 1994, abandoned, which is a division of Ser. No. 974,546, Nov. 12, 1992, Pat. No. 5,331,071. This application Jun. 5, 1995, Ser. No. 461,604

Claims priority, application Japan, Nov. 12, 1991, 3-323848; Nov. 12, 1991, 3-323849

Int. Cl.[6] C08F *04/64*

U.S. Cl. 502—126 24 Claims



1. A catalyst composition for use in the manufacture of polyolefins which is comprised of a first component (I) and a second component (II), wherein said first component (I) consists essentially of a reaction product of

a compound (i) of formula

$$Me^1R^1_nX^1_{4-n}$$

wherein R^1 is selected from the group consisting of an alkyl, alkenyl, aryl, alkoxy, aryloxy, and aralkyloxy moiety of 1–24 carbon atoms, X^1 is a halogen atom, Me^1 is zirconium, titanium or hafnium, and n is an integer of $0<n<4$;

a compound (ii) of formula

$$Me^2R^2_mX^2_{z-m}$$

wherein R^2 is a hydrocarbon group of 1–24 carbon atoms, X^2 is a halogen atom, Me^2 is an element of Groups II–III in the Periodic Table, z is the valence of Me^2, and m is a number such that $0 \leqq m \leqq 3$;

a cyclic hydrocarbon compound (iii) having two or more conjugated double bonds;

wherein the molar ratio of the compound (ii) to the compound (i) is in the range of 0.1:1 to 100:1, and the molar ratio of the compound (iii) to the compound (i) is in the range of0.1:1 to 10:1; and

a carrier (iv) selected from the group consisting of inorganic carriers, particulate polymer carriers, and mixtures thereof;

said second component (II) being a modified organoaluminum compound having at least one Al—O—Al bond derived from the reaction of an organoaluminum compound and water.

5,795,840

BURNED GAS PURIFYING CATALYST

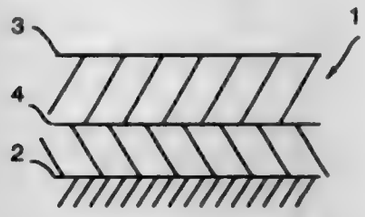
Akihide Takami; Hideharu Iwakuni; Makoto Kyogoku, and Hiroshi Murakami, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 29, 1996, Ser. No. 638,751

Claims priority, application Japan, Apr. 28, 1995, 7-104498; Mar. 29, 1996, 8-112911

Int. Cl.[6] B01J *23/44;23/40;21/00;* B01D *50/00*

U.S. Cl. 502—327 20 Claims



1. A catalyst construction for purifying gas comprising:

a catalyst carrier;

an under catalyst layer coated on said catalyst carrier, said under catalyst layer comprising catalyst particles of palladium and alumina particles as a support for supporting said palladium particles; and

an over catalyst layer coated on said under catalyst layer, said over catalyst layer comprising catalyst particles of platinum and rhodium and a crystalline metal silicate support for supporting said catalyst particles of platinum and rhodium.

5,795,841

PROCESS FOR PRODUCING COATED, NONPOROUS SUPPORT MATERIALS

Stefan Kürschner, Bergisch Gladbach; Jörg-Dietrich Jentsch, Mülheim, and Heinz-Gerd Darius, Solingen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 17, 1996, Ser. No. 682,177

Claims priority, application Germany, Jul. 24, 1995, 19526926.8

Int. Cl.[6] B01J *23/00;23/42;* B05D *3/02*

U.S. Cl. 502—325 4 Claims

1. A process for producing supports coated with metal or metal oxide and having a low specific surface area, without using organic and inorganic binders, comprising applying an aqueous solution containing about 0.01% to about 2.0% by weight of a water-soluble noble metal compound calculated as metal to an inorganic rollable support material which is kept in motion having a BET surface area of less than 3 m^2/g at a temperature which allows immediate vaporization.

5,795,842

OIL-ABSORBING ARTICLE COMPRISING WOOL FELT FORMING AN ENCLOSURE CONTAINING PINE BARK

Tore Sundquist, Bleikerfaret 88, N-1370 Asker, Norway

PCT No. PCT/NO95/00015, § 371 Date Jul. 18, 1996, § 102(e) Date Jul. 18, 1996, PCT Pub. No. WO95/19842, PCT Pub. Date Jul. 27, 1995

PCT Filed Jan. 19, 1995, Ser. No. 676,291

Claims priority, application Norway, Jan. 19, 1994, 940192

Int. Cl.[6] B01J *20/00;* C02F *1/42*

U.S. Cl. 502—400 9 Claims

1. An article for absorbing oil comprising an outer covering comprising wool felt forming an enclosure and an inner core comprising fine-grained dried pine bark contained within said enclosure.

5,795,843

PITCH-BASED ACTIVATED CARBON FIBER

Morinobu Endo, Suzaka, Japan, assignor to Petoca, Ltd., Tokyo, Japan

Continuation of Ser. No. 205,345, Mar. 3, 1994, abandoned, which is a continuation of Ser. No. 899,901, Jun. 17, 1992, abandoned. This application Feb. 7, 1995, Ser. No. 385,378

Claims priority, application Japan, Jun. 19, 1991, 3-173293

Int. Cl.[6] B01J *20/02*

U.S. Cl. 502—416 2 Claims

1. An optically isotropic pitch-based activated carbon fiber having pores with radii in the range of 0.15 to 2.5 nm. and having a specific surface area of at least 500 m^2/g and a fractal dimension of the pore structure obtained by a transmission electron microscope method in the range of 2.1 to 2.9.

5,795,844

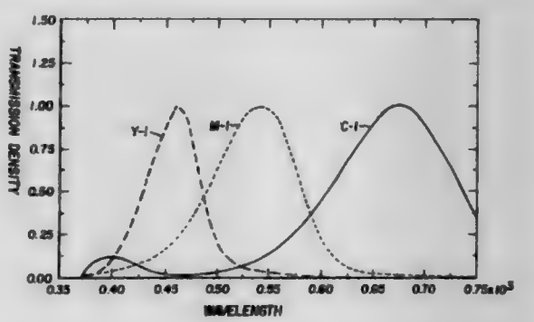
DYE SETS FOR THERMAL IMAGING HAVING IMPROVED COLOR GAMUT

Steven Evans, Rochester; Daniel J. Harrison, Pittsford; Elizabeth McInerney, Rochester; Kevin E. Spaulding, Spencerport, and Helmut Weber, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1997, Ser. No. 808,289

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 13 Claims



5. A process of forming a dye transfer image comprising imagewise-heating a dye-donor element comprising a support having thereon a dye layer comprising a dye dispersed in a polymeric binder and transferring a dye image to a dye image-receiving layer of a dye-receiving element to form said dye transfer image, wherein said dye-donor element comprises a support having thereon a set of sequential repeating dye patches of yellow, magenta and cyan image dyes dispersed in a polymeric binder, said dye-donor element also having at least one additional dye patch comprising a dye dispersed in a polymeric binder, the dye of each said additional dye patch which, when transferred to said dye image-receiving layer before or after transfer of said yellow, magenta and cyan image dyes, has a hue measured at its maximum density which is outside the color gamut defined by the hues of said transferred yellow, magenta and cyan image dyes by more than 5 CIELAB ΔE_{ab} units.

5,795,845

METHOD FOR THE CONTROL OF WEEDS WITH WEAKLY VIRULENT OR NON-VIRULENT PLANT PATHOGENS

Shaw-Ming Yang, Frederick, Md.; William Minor Dowler, Clemson, S.C.; Norman Werth Schaad, Myersville, Md., and William Joseph Connick, Jr., New Orleans, La., assignors to The United States of America as represented by the Secretary of Argiculture, Washington, D.C.

Filed Jan. 17, 1997, Ser. No. 785,635
Int. Cl.[6] A01N *63/00*
U.S. Cl. 504—117 13 Claims

1. A bioherbicidal composition comprising an invert emulsion carrier, and a microorganism which is a non- or weakly-virulent pathogen in the absence of said carrier, said microorganism being present in an amount effective for herbicidal activity to occur in the presence of said carrier.

5,795,846

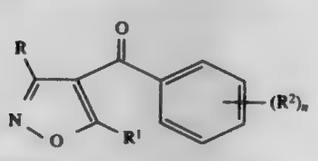
HERBICIDAL COMPOSITIONS

Alan Gamblin, and Richard Henry Hewett, both of Ongar, United Kingdom, assignors to Rhone-Poulenc Agriculture Limited, Ongar, United Kingdom

Continuation of Ser. No. 508,556, Jul. 28, 1995, abandoned, which is a continuation of Ser. No. 283,756, Aug. 1, 1994, abandoned. This application Jun. 24, 1997, Ser. No. 881,381
Int. Cl.[6] A01J *43/74*
U.S. Cl. 504—128 49 Claims

1. A method of controlling the growth of weeds at a locus which comprises applying to said locus a synergistic herbicidally effective amount of:

(a) a 4-benzoylisoxazole of formula I:



(I)

wherein

R is hydrogen or $—CO_2R^3$, where R^3 is as defined below;

R^1 is cyclopropyl;

R^2 is selected from the group consisting of halogen, $—S(O)_pMe$ and trifluoromethyl;

n is two or three; p is zero, one or two; and R^3 is C_{1-4} alkyl; and

(b) a chloroacetamide herbicide.

5,795,847

HERBICIDE PREPARATION, A PROCESS FOR PRODUCING IT AND AN ACTIVATING ADDITIVE FOR APPLICATION THEREWITH

Erik Nielsen, Greve, and Arne Oxbøl, Rødovre, both of Denmark, assignors to KVK Agro A/S, Koge, Denmark

PCT No. PCT/DK94/00099, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO94/19941, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 8, 1994, Ser. No. 464,863
Claims priority, application Denmark, Mar. 9, 1993, 0255/93; Oct. 5, 1993, 1117/93
Int. Cl.[6] A01N *57/02*
U.S. Cl. 504—206 16 Claims

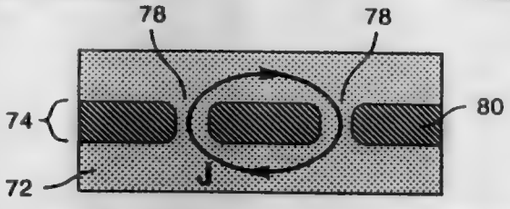
1. A herbicide suspension composition comprising 5–58% by weight of at least one herbicide, said herbicide being suspended in a liquid, aqueous phase and comprising at least one amino group, at least one carboxylic acid group and at least one phosphor containing acid group; and an electrolyte, which is not a surfactant, wherein the electrolyte is dissolved in the liquid, aqueous phase in an amount corresponding to at least 5% by weight of the total herbicide composition and said composition is surfactant-free.

5,795,848

OXIDE SUPERCONDUCTOR DEVICES FABRICATED BY IMPURITY ION IMPLANTATION

Qi Yuan Ma, New York, N.Y., assignor to The University of British Columbia, Vancouver, Canada

Division of Ser. No. 390,940, Feb. 17, 1995, Pat. No. 5,547,922, which is a continuation of Ser. No. 061,320, May 14, 1993, abandoned. This application Aug. 19, 1996, Ser. No. 699,655
Int. Cl.[6] H01L *39/06*
U.S. Cl. 505—162 5 Claims



1. A superconducting quantum interference device comprising:

a) a substrate;

b) an oxide superconductor material on said substrate, said material having a surface;

c) an inhibited layer within said oxide superconductor material, said inhibited layer containing implanted impurity ions of a species which is more reactive with oxygen than an element in said oxide superconductor material in a concentration sufficient to render said oxide superconductor material substantially electrically insulating within said inhibited layer; p1 d) a first superconducting layer adjacent said inhibited layer within said oxide superconductor material between said inhibited layer and said surface;

e) a second superconducting layer adjacent said inhibited layer within said oxide superconductor material between said inhibited layer and said substrate; and,

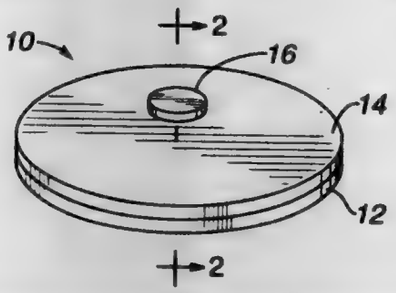
f) a pair of spaced apart superconducting gaps in said inhibited layer, said gaps connecting said first and second superconducting layers to permit electrical current to flow through said gaps in a closed loop extending in a plane generally perpendicular to said surface.

5,795,849

BULK CERAMIC SUPERCONDUCTOR STRUCTURES

Paul L. Hickman, P.O. Box 391837, Mtn. View, Calif. 94039-1837

Division of Ser. No. 49,628, Apr. 19, 1993, abandoned, which is a division of Ser. No. 418,786, Oct. 3, 1989, abandoned, which is a continuation of Ser. No. 136,008, Dec. 21, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 477,671
Int. Cl.[6] H01L *39/24*
U.S. Cl. 505—329 28 Claims



1. A method for producing a superconductor structure comprising:

preparing a first bulk ceramic superconductor having a first essentially random pattern of superconductor domains of a copper-oxide ceramic superconductor and non-superconductor domains at a temperature, said first bulk ceramic superconductor having a first surface;

preparing a second bulk ceramic superconductor having a second essentially random pattern of superconductor domains of a copper-oxide ceramic superconductor and non-superconductor domains at said temperature, said second bulk ceramic superconductor having a second surface;

juxtaposing said first surface and said second surface of said first bulk ceramic superconductor and said second bulk ceramic superconductor, respectively; and

sintering together said first and second surfaces of said first bulk ceramic superconductor and said second bulk ceramic superconductor, respectively, such that a superconductor structure is produced;

whereby, when said superconductor structure is positioned with respect to a magnetic field comprising multiple flux lines such that a magnetic flux line of said magnetic field is not parallel to said first and second surfaces and such that said magnetic flux line penetrates through said one of said bulk ceramic superconductors due to its first essentially random pattern of superconductor domains and non-superconductor domains, that said flux line is reflected by a superconductor domain of the other bulk ceramic superconductor due to their differing essentially random patterns of superconductor domains and non-superconductor domains.

5,795,850

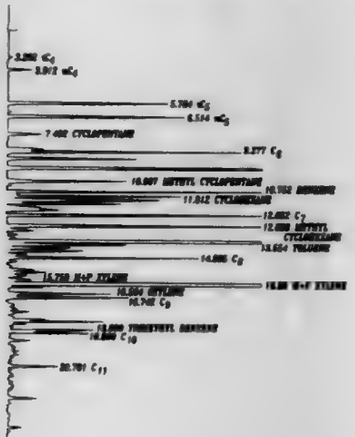
OIL AND GAS WELL OPERATION FLUID USED FOR THE SOLVATION OF WAXES AND ASPHALTENES, AND METHOD OF USE THEREOF

Donald A. Thorssen, and Dwight N. Loree, both of Calgary, Canada, assignors to Trysol Limited, Calgary, Canada

Continuation of Ser. No. 195,993, Feb. 14, 1994, abandoned. This application May 20, 1996, Ser. No. 650,656

Int. Cl.[6] C09K *7/00*

U.S. Cl. 507—203 **21 Claims**



1. A method of treating a well with a wax and asphaltene solvating oil well site operation fluid, the method comprising the steps of:

obtaining a hydrocarbon feedstock that has been produced directly from an oil or gas bearing formation, the hydrocarbon feedstock containing at least hydrocarbons having eight, nine, ten, eleven and twelve carbon atoms, including trimethylbenzene and n-decane;

performing a gas chromatographic analysis on the feedstock to verify that the mass percentage of trimethylbenzene exceeds the mass percentage of n-decane; and

subsequently applying the feedstock or a residual fluid derived from the feedstock to an oil or gas well having contaminants selected from the group consisting of wax and asphaltenes.

5,795,851

PROCESS FOR TREATING METALS USING ANTI-CORROSION AGENTS AND CORROSION INHIBITORS CONTAINING LACTOBIONIC ACID AMIDES

Klaus Gerling, Winsen/Aller; Helge Rau, Burgdorf; Kornelia Wendler, Sehnde, and Karlheinz Uhlig, Krefeld, all of Germany, assignors to Solvay Deutschland GmbH, Hanover, Germany

Filed Aug. 8, 1997, Ser. No. 908,809

Claims priority, application Germany, Aug. 8, 1996, 196 31 959.5

Int. Cl.[6] C10M *133/16;173/02*

U.S. Cl. 508—307 **7 Claims**

1. A process for corrosion inhibition of a metal comprising contacting said metal with an aqueous composition or an oil-containing emulsion containing an effective corrosion-inhibiting amount of at least one lactobionic acid N-alkyl amide compound selected from the group consisting of lactobionic acid N-alkylamides having an amide function to which saturated or partially unsaturated alkyl groups having a chain length of more than 18 carbon atoms are bonded, lactobionic acid alkylamine amides having an amide function to which saturated or partially unsaturated alkyl groups having a chain length of 8 to 30 carbon atoms are bonded, and di-lactobionic acid alkyl diamides having amide functions to which saturated or partially unsaturated alkyl groups having a chain length of 8 to 30 carbon atoms are bonded.

5,795,852

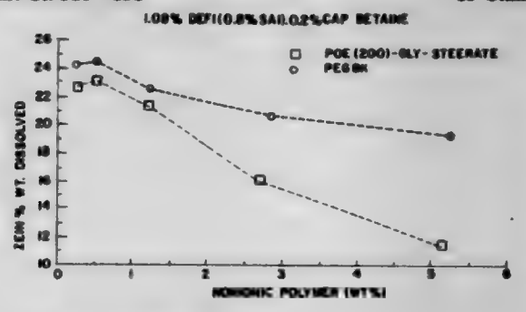
BAR COMPOSITION COMPRISING NONIONIC POLYMERIC SURFACING AS MILDNESS ENHANCEMENT AGENTS

Mengtao He, Wayne; Michael Fair, Hackensack, both of N.J., and Michael Massaro, Congers, N.Y., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.

Filed Apr. 24, 1996, Ser. No. 637,145

Int. Cl.[6] C11D *17/00;9/32*

U.S. Cl. 510—151 **13 Claims**



1. A bar composition comprising

(a) 10% to 70% by weight of total composition of a surfactant system selected from the group consisting of anionic surfactants, nonionic surfactants other than the nonionic polymer surfactant of item (c) below, cationic surfactants, amphoteric surfactants and mixtures thereof, wherein the anionic surfactant comprises 50% or greater of the surfactant system, and wherein anionic comprises no more than about 60% by wt. of the total composition

(b) 20% to 85% by wt. of the composition of a bar structurant selected from the group consisting of alkylene oxide components having a molecular weight of from about 2,000 to about 25,000; C_8–C_{22} free fatty acids; C_2 to C_{20} alkanols; paraffin waxes; water-soluble starches; and

(c) 2 to 30% by wt. total composition of a polyalkylene glycol polymeric surfactant having the structure

$$R_1—(OCH_2CH_2)_m—OH; \text{ or}$$

$$R_1—(OCH_2CH_2)_m—OR_2;$$

wherein:

m is greater than about 150;

R_1 and R_2 are independently selected from the group consisting of C_2 to C_{60} linear or branched alkyl, acyls, aryls, alkylaryls, alkenyls and fat and oil derivatives thereof;

melting temperature of the structure is between 25°- and 85°-C.;

molecular weight of structure is between 3000 and 25,000;

and portion of R_1 and/or R_2 in each mole of the structure is between 2% and 30% by wt. of the structure;

wherein the ratio by weight total composition of polyalkylene nonionic polymer to anionic surfactant is between 1:1.5 to 1:10.

5,795,853

MICROEMULSION OR NON-MICROEMULSION GLASS CLEANING COMPOSITIONS

Jean-Pierre Denis, Thimister-Clermont; Antonio Minicucci, Herve, and Michel Julemont, Heuzy, all of Belgium, assignors to Colgate-Palmolive Company, Piscataway, N.J.

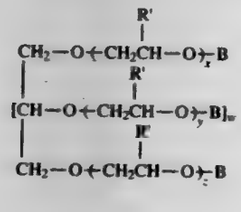
Filed Nov. 21, 1997, Ser. No. 975,939

Int. Cl.[6] C11D 1/62

U.S. Cl. 510—182 **4 Claims**

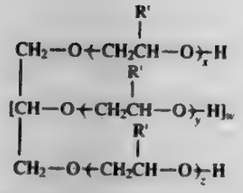
1. A glass cleaning composition comprising:

(a) 0.1 wt. % to 15 wt. % of a nonionic surfactant, betaine surfactant and/or a compound which is a mixture of



(I)

and



(II)

wherein w equals one to four, B is selected from the group consisting of hydrogen and a group represented by:



wherein R is selected from the group consisting of alkyl group having 6 to 22 carbon atoms, and alkenyl groups having 6 to 22 carbon atoms, wherein at least one of the B groups is represented by said



R' is selected from the group consisting of hydrogen and methyl groups; x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, wherein in Formula (I) the weight ratio of monoester/diester/triester is 45 to 90/5 to 40/1 to 20, wherein the weight ratio of Formula (I) to Formula (II) is a value between 3 to 0.02;

(b) 0.05 wt. % to 6 wt. % of an anionic surfactant;

(c) 0.1 wt. % to 15 wt. % of a glycol ether;

(d) 0 wt. % to 10 wt. % of a perfume;

(e) 0.05% to 1% of a C_8–C_{20} quaternized alkylolamine methosulfate;

(f) 0 to 25% of a C_1 to C_3 alcohol; and

(g) the balance being water.

5,795,854

DETERGENT COMPOSITION CONTAINING CYLINDRICALLY-SHAPED BLEACH ACTIVATOR EXTRUDATES

Adrian John Waynforth Angell, West Chester; Joseph Adam Pauley, III, Loveland; Steven Matthew Gabriel, Cincinnati, and Donald Ray Brown, Middletown, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 20, 1997, Ser. No. 974,784

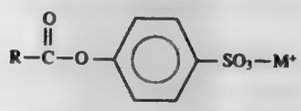
Int. Cl.[6] C11D 7/14;7/26;7/38;7/54

U.S. Cl. 510—312 **15 Claims**

1. A bleach-containing detergent composition comprising:

(a) from about 0.1% to about 75% by weight of the detergent composition of a peroxygen bleaching compound capable for yielding hydrogen peroxide in an aqueous solution;

(b) from about 0.1% to 50% by weight of the detergent composition of a bleach activator having the general formula



wherein R is an alkyl group containing from about 5 to about 18 carbon atoms, M is sodium or potassium wherein the molar ratio of hydrogen peroxide yielded by (a) to bleach activator (b) is greater than about 1.0, and said bleach activator is in the form of a substantially cylindrically-shaped extrudate having a mean extrudate length of from about 500 microns to about 3500 microns and a mean extrudate diameter of from about 450 microns to about 850 microns.

5,795,855

ENHANCEMENT OF LACCASE REACTIONS

Palle Schneider, Ballerup, and Anders Hjelholt Pedersen, Lyngby, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd

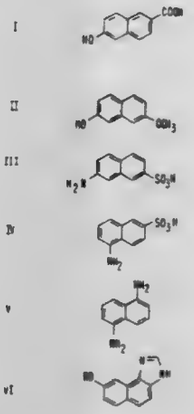
PCT No. PCT/DK94/00210, § 371 Date Dec. 21, 1995, § 102(e) Date Dec. 21, 1995, PCT Pub. No. WO95/01426, PCT Pub. Date Jan. 12, 1995

PCT Filed May 31, 1994, Ser. No. 569,101

Claims priority, application Denmark, Jun. 29, 1993, 0773/93

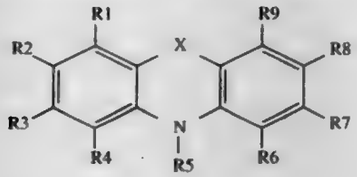
Int. Cl.[6] C11D 3/386;3/26;3/393

U.S. Cl. 510—376 **26 Claims**



1. A method of oxidizing a substrate, comprising treating the substrate with an enzyme selected from the group consisting of laccase, chatechol oxidase, monophenol monooxygenase and

bilirubin oxidase and an enhancing agent of the following formula:



in which

X is (—O—), (—S—), (—NR^{15}—), (—CHR^{15}—), (>C=O), (—CH=CH—), (—CH=N—), or (—N=N—); and R^1–R^9 and R^{15}, which may be identical or different, independently are a radical selected from the group consisting of; hydrogen, hydroxy, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts of, sulfamoyl, phospho, phosphono, phosphonooxy and esters and salts thereof, nitro, amino, phenyl, C_1–C_{14}-alkyl, C_1–C_5-alkoxy, carbonyl-C_1–C_5-alkyl, and amyl-C_1–C_5-alkyl; in which the carbamoyl, sulfamoyl, and amino groups may be unsubstituted or substituted once or twice with a substituent group R^{10}; in which phenyl may be unsubstituted or substituted with one or more substituent groups R^{10}; and in which C_1–C_{14}-alkyl, C_1–C_5-alkoxy, carbonyl-C_1–C_5-alkyl, and aryl-C_1–C_5-alkyl groups may be saturated or unsaturated, branched or unbranched, and may be unsubstituted or substituted with one or more substituent groups R^{10}; in which R^{10} independently represents a radical selected from the group consisting of hydroxy, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts thereof, sulfamoyl, phospho, phosphono, phosphonooxy and esters and salts thereof, nitro, amino, phenyl, aminoalkyl, piperidino, piperazinyl, pyrrolidino, C_1–C_5-alkyl, and C_1–C_5-alkoxy; in which the carbamoyl, sulfamoyl, and amino groups may be unsubstituted or substituted once or twice with hydroxy, C_1–C_5-alkyl, or C_1–C_5-alkoxy; in which phenyl may be substituted with one or more radicals selected from the group consisting of hydroxy, amino, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts of, and sulfamoyl; and in which C_1–C_5-alkyl and C_1–C_5-alkoxy groups may be saturated or unsaturated, branched or unbranched, and unsubstituted or substituted once or twice with any radicals selected from he group consisting of hydroxy, amino, formyl, carboxy and esters and salts thereof, carbamoyl, sulfo and esters and salts thereof, and sulfamoyl; OR

in which two of R^1–R^8 may together form a group —B— which is selected from the group consisting of (—CHR^{10}—N=N—), (—CH=CH—), $(—CH=N—)_n$ and (—N=CR^{10}—NR^{11}—), in which n is an integer of from 1 to 3, R^{10} is a substituent group as defined above and R^{11} is defined as R^{10}.

5,795,856

METHOD FOR PRODUCING DETERGENT PARTICLES HAVING HIGH BULK DENSITY

Koichi Hatano; Hiroyuki Yamashita; Masaaki Sakaue; Koji Toyoda, and Yasuji Yamada, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP95/00553, § 371 Date Sep. 24, 1996, § 102(e) Date Sep. 27, 1996, PCT Pub. No. WO95/26394, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 24, 1995, Ser. No. 716,460

Claims priority, application Japan, Mar. 28, 1994, 6-082485

Int. Cl.[6] C11D *11/00*

U.S. Cl. 510—444 **12 Claims**

1. A method for producing detergent particles comprising mixing granulated detergent particles having a bulk density of from 500 to 1,000 g/liter, while applying a shearing force to particles caused by mutual contact of the particles in a rotary vessel mixer under conditions having a Froude number of from 0.2 to 0.7 and a volume packing fraction of from 15 to 50%, the Froude number being defined by an equation given below:

$$Fr=V^2/(R\times g)$$

wherein Fr stands for a Froude number; V stands for a peripheral speed of the outermost circumference of the rotary vessel mixer; R stands for a radius from a center of rotation of the outermost circumference of the rotary vessel mixer; and g stands for a gravitational acceleration, to thereby increase the bulk density of said granulated detergent particles by 50 to 200 g/liter and to thereby improve sphericity and/or surface smoothness of said granulated detergent particles.

5,795,857

MIMETIC INSECT PYROKININ ANALOGS FOR INSECT CONTROL

Ronald J. Nachman, Willis, Tex.; Peter E. A. Teal, Gainesville, Fla., and Grant Mark Holman, Bryan, Tex., assignors to The United States of America as represented by the Secretary of the Agriculture, Washington, D.C.

Filed Aug. 22, 1996, Ser. No. 700,915

Int. Cl.[6] A01N *37/18;* **A61K** *38/28*

U.S. Cl. 514—2 **22 Claims**

1. A compound of the formula

$$R—X_1—Pro—Arg—Leu—NH_2$$

wherein X_1 is selected from the group consisting of Gly, Ser, Thr, and Val, and R is:

(a) Cb—(CH_2)—C(O)— and

(i) Cb is a carborane, and

(ii) n is 1, 2, or 3; or

(b) R_1—L_n—X_2—Phe— and

(i) R_1 is a hydrophobic moiety selected from the group consisting of aromatic containing amine groups and aromatic containing acyl groups, said hydrophobic moiety being effective to render said compound amphiphilic,

(ii) n is 0 or 1,

(iii) L is a spacer which, when R_1 is an aromatic containing acyl group, is selected from the group consisting of non-polar hydrocarbon groups having an amino group and acyl group, and uncharged α-amino acids, or when R_1 is an aromatic containing amine group, said spacer is a diacyl group, and

(iv) X_2 is selected from the group consisting of a bond, an amino acid, and a polypeptide group, said polypeptide group comprising all or a portion of a pyrokinin neuropeptide which is naturally contiguous to the C terminal pentapeptide —Phe—X_1—Pro—Arg—Leu—NH_2, and which said polypeptide group is sufficiently small as to retain the hydrophobicity of said compound introduced by said hydrophobic moiety.

5,795,858

TREATMENT OR PREVENTION OF CROHN'S DISEASE AND/OR ULCERATIVE COLITIS

Jurgen Michaelis, Kariong, and Merilyn J. Sleigh, North Sydney, both of Australia, assignors to Peptide Technology Limited, New South Wales, Australia

PCT No. PCT/AU94/00575, § 371 Date Mar. 31, 1995, § 102(e) Date Mar. 31, 1995, PCT Pub. No. WO95/08339, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 26, 1994, Ser. No. 403,718

Claims priority, application Australia, Sep. 24, 1993, PM1448

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—8 **7 Claims**

1. A method of treating Crohn's Disease in a subject comprising administering to the subject a therapeutic amount of a linear or cyclic peptide of General Formula 2:

X—Ser—Thr—Thr—Thr—Asn—Tyr—Y (General Formula 2) (SEQ ID NO: 4)

wherein X is an amino acid terminal residue selected from Ala and D—Ala and Y is a carboxy terminal residue selected from Met, Thr and Thr-amide,

or a pharmaceutically acceptable salt thereof.

5,795,859

PEPTIDE WHICH ABROGATES TNF AND/OR LPS TOXICITY

Deborah A. Rathjen; Fred Widmer; Geoffrey W. Grigg, and Philip O. Mack, all of Sydney, Australia, assignors to Peptide Technology Limited, Dee Why, Australia

PCT No. PCT/AU92/00332, § 371 Date Mar. 15, 1994, § 102(e) Date Mar. 15, 1994, PCT Pub. No. WO93/01211, PCT Pub. Date Jan. 21, 1993

PCT Filed Jul. 3, 1992, Ser. No. 178,268

Claims priority, application Australia, Jul. 5, 1991, PK7097; Aug. 22, 1991, PK7924

Int. Cl.[6] **A61K** *38/00;* **C07K** *14/00*

U.S. Cl. 514—12 **6 Claims**

1. A peptide selected from the group consisting of:

Arg-Thr-Pro-Ser-Ala-Lys-Pro-Val-Ala-His-Val-Val-Ala; SEQ ID NO:19 Arg-Thr-Pro-Ser-Lys-Asp-Pro-Val-Ala-His-Val-Val-Ala; SEQ ID NO:21 Val-Arg-Ser-Ser-Ser-Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-Arg-Val-Val-Ala;

SEQ ID NO:22 Val-Arg-Ser-Ser-Ser-Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-Gln-Val-Val-Ala;

SEQ ID NO:23 Ac-Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val-NH2; SEQ ID NO :7 Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-Ala-Val; SEQ ID NO:33 Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-Lys-Val; SEQ ID NO:34 Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val-Val; SEQ ID NO:8 Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val; SEQ ID NO:9 Pro-Ser-Asp-Lys-Pro-Val-Ala-His; SEQ ID NO: 10 Pro-Ser-Asp-Lys-Pro-Val; SEQ ID NO: 12 Val-Arg-Ser-Ser-Ser-Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Val-His-Val-Val-Ala;

SEQ ID NO:25 Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val-Val-Ala-Asn-Pro-Gln-Ala-Glu-Gly-Gln-Leu; SEQ ID NO:26 Val-Arg-Ser-Ser-Ser-Arg-Thr-Pro-Ser-Asp; SEQ ID NO:28 Ac-Pro-Ser-Asp-Lys-Pro-Val-Ala-NH2; SEQ ID NO: 11 Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-Asp-Val; SEQ ID NO:35 Val-Arg-Ser-Ser-Ser-Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val-Val-Ala-Asn-Pro-Gln-Ala-Glu-Gly-Gln-Leu; SEQ ID NO:4 Asp-Lys-Pro-Val-Ala-His-Val-Val-Ala; SEQ ID NO;5 Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val; SEQ ID NO :7 Thr-Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val-Val-Ala; SEQ ID NO: 13 Pro-Ser-Asp-Lys-Pro-Val-Ala-His-Val-Val-Ala; SEQ ID NO:14 Pro-Val-Ala-His-Val-Val-Ala; SEQ ID NO: 17 and Arg-Thr-Pro-Ser-Asp-Lys-Pro-Val-Val-His-Val SEQ ID NO:31.

5,795,860

ANALOGS FOR SPECIFIC OLIGOSACCHARIDE-PROTEIN INTERACTIONS AND USES THEREFOR

Daniel P. Witt, Hamilton, and Walter C. Herlihy, Jr., Beverly, both of Mass., assignors to Repligen Corporation, Needham, Mass.

Continuation-in-part of Ser. No. 24,558, Mar. 1, 1993, abandoned. This application Feb. 28, 1994, Ser. No. 202,989

Int. Cl.[6] **A01N** *37/18;* **A61K** *31/70*

U.S. Cl. 514—12 **67 Claims**

1. A method for modulating the activity of a ligand selected from the group consisting of a chemokine ligand, a growth factor ligand, a lipoprotein ligand and an amyloid protein ligand, said ligand having a first binding site specific for a cell surface receptor and a second binding site specific for a glycosaminoglycan sequence, said method comprising the step of contacting said ligand with a glycosaminoglycan sequence analog, said analog being identified by a method comprising:

providing said ligand and a glycosaminoglycan sequence having a known binding specificity for said ligand;

providing a candidate glycosaminoglycan sequence analog, said candidate analog being a synthetic molecule that mimics a naturally-occurring glycosaminoglycan sequence, and said candidate analog having a predetermined composition other than polysulfonated naphthylurea;

combining said ligand, said glycosaminoglycan sequence and said candidate analog under conditions to promote binding of said ligand to said glycosaminoglycan sequence to form a complex;

determining the ability of said candidate analog to compete with said glycosaminoglycan sequence for binding to said ligand with a half maximum inhibition activity of less than about 1×10^{-6}M; and

isolating said analog.

5,795,861

METHODS FOR REGULATING GASTROINTESTINAL MOTILITY

Orville G. Kolterman, Poway, and Timothy J. Rink, La Jolla, both of Calif., assignors to Amylin Pharmaceuticals Inc., San Diego, Calif.

Division of Ser. No. 302,069, Sep. 7, 1994, which is a continuation-in-part of Ser. No. 118,381, Sep. 7, 1993. This application Jun. 5, 1995, Ser. No. 471,675

Int. Cl.[6] **A61K** *38/00;38/23;* **C04K** *5/00;7/00*

U.S. Cl. 514—12 **6 Claims**

1. A method of treating gastric hypomotility in a subject comprising administering to said subject a therapeutically effective amount of an amylin antagonist.

5,795,862

ECTOPARASITE SALIVA PROTEINS AND APPARATUS TO COLLECT SUCH PROTEINS

Glenn R. Frank, Wellington; Shirley Wu Hunter, and Lynda Wallenfels, both of Ft. Collins, all of Colo., assignors to Heska Corporation, Ft. Collins, Colo.

Continuation-in-part of Ser. No. 319,590, Oct. 7, 1994, Pat. No. 5,646,115. This application Jun. 7, 1995, Ser. No. 487,001

Int. Cl.[6] **A61K** *39/00;* **C07K** *7/00;14/00;14/435*

U.S. Cl. 514—12 **29 Claims**

1. A composition comprising a protein selected from the group consisting of fspE, fspF, fspG1, fspG2, fspG3, fspH, fspI, fspJ1, fspJ2, fspK, fspL1, fspL2, fspM1, fspM2, fspN1, fspN2, fspN3 and mixtures thereof.

5,795,863

RECOMBINANT AGENTS AFFECTING THROMBOSIS

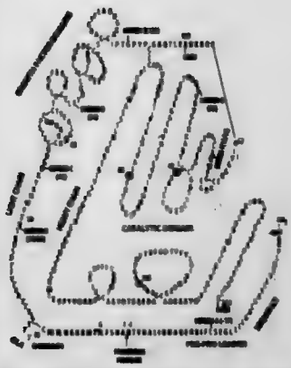
David Wolf, Palo Alto, Calif., assignor to COR Therapeutics, Inc., South San Francisco, Calif.

Continuation of Ser. No. 249,777, May 26, 1994, Pat. No. 5,597,799, which is a continuation of Ser. No. 808,329, Dec. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 578,646, Sep. 4, 1990, Pat. No. 5,278,144. This application Jun. 7, 1995, Ser. No. 487,037

Int. Cl.[6] **A61K** *38/36;38/48;35/14;* **C07K** *14/745*

U.S. Cl: 514—12 **16 Claims**

1. A slow release form of Factor Xai, comprising a Factor Xai peptide modified from the native amino acid sequence of light chain positions 1–139 and heavy chain positions 1–245 of FIG. 1, wherein said Factor Xai is capable of competing with Factor Xa in the formation of the prothrombinase complex and wherein said Factor Xai does not result in proteolytic activity when included in said complex, wherein the serine residue at position 184 of the heavy chain shown in FIG. 1 is replaced by an alternate amino acid and/or the aspartic acid residue at position 88 of the heavy chain



shown in FIG. 1 is replaced by an alternate amino acid and/or the histidine residue at position 42 of the heavy chain shown in FIG. 1 is replaced by an alternate amino acid.

5,795,864

STABLE OMEGA CONOPETIDE FORMULATIONS

Gary Arthur Amstutz, San Jose; Stephen Scott Bowersox, Menlo Park; Kishorchandra Gohil, Richmond; Peter Isadore Adriaenssens, Mountain View, and Ramasharma Kristipati, Fremont, all of Calif., assignors to Neurex Corporation, Menlo Park, Calif.

Filed Jun. 27, 1995, Ser. No. 496,847

Int. Cl.[6] A61K *38/00;* **C07K** *5/00;7/00*

U.S. Cl. 514—12 **7 Claims**

1. A stable omega conopeptide formulation comprising an omega conopeptide and an anti-oxidant composition capable of preventing methionine oxidation.

5,795,865

KALLIKREIN-INHIBITING "KUNITZ DOMAIN" PROTEINS AND ANALOGUES THEREOF

Willaim Markland, Milford, Mass., and Robert Charles Ladner, Ijamsville, Md., assignors to Dyax Corp., Cambridge, Mass.

PCT No. PCT/US95/00299, § 371 Date Sep. 25, 1996, § 102(e) Date Sep. 25, 1996, PCT Pub. No. WO95/21601, PCT Pub. Date Aug. 17, 1995

Continuation-in-part of Ser. No. 208,264, Mar. 10, 1994, and a continuation-in-part of Ser. No. 179,964, Jan. 11, 1994, abandoned. This PCT application Jan. 11, 1995, Ser. No. 676,125

Int. Cl.[6] A61K *38/12;* **C07K** *5/12;1/22;* **G01N** *33/53*

U.S. Cl. 514—12 **13 Claims**

1. A kallikrein inhibiting protein which comprises a non-naturally naturally occurring Kunitz domain, wherein, at each of the residues of said domain corresponding to the below identified residues of BPTI, one of the following allowed amino acids is found:

BPTI residue #	Allowed Amino Acid
10	Asp, Glu, Ala, Gly, Ser, Thr
11	Asp, Gly, Ser, Val, Glu, Leu, Met, Asn, Ile, Ala, Thr
12	Gly, and, if residue 14 or 38 is not Cys, any conservative or semi-conservative substitution for a "normal" conformation Gly as defined in Table 9
13	Arg, His, Pro, Asn, Ser, Thr, Ala, Gly, Lys, Gln
14	Cys, and, if residue 38 is not Cys, any conservative or semi-conservative substitution for Cys
15	Arg, Lys, Ala, Ser, Gly, Met, Asn, Gln
16	Ala, Gly, Ser, Asp, Asn
17	Ala, Asn, Ser, Ile, Gly, Val, Gln, Thr
18	His, Leu, Gln, Ala
19	Pro, Gln, Leu, Asn, Ile
20	Arg, Leu, Ala, Ser, Lys, Gln, Val
21	Trp, Phe, Tyr, His, Ile
31	Glu, Asp, Gln, Asn, Ser, Ala, Val, Leu, Ile, Thr
32	Glu, Gln, Asp, Asn, Pro, Thr, Leu, Ser, Ala, Gly, Val
33	Phe, Tyr
34	Ser, Thr, Ile, Val, Ala, Asn, Gly, Leu
35	Tyr, Trp, Phe
36	Gly, Ser, Ala
37	Gly, and, if residue 14 or 38 is not Cys, any conservative or semi-conservative substitution for a "normal" conformation Gly as defined in Table 9
38	Cys, and, if residue 14 is not Cys, any conservative or semi-conservative substitution for Cys
39	Gly, Glu, Ala, Ser, Asp.

5,795,866

ETS1 GENE: A HUMAN TUMOR SUPPRESSOR GENE

Hiroaki Suzuki, Sapporo, Japan; Narayan K. Bhat, North Potomac, Md., and Takis S. Papas, Charleston, S.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 191,889, Feb. 4, 1994, Pat. No. 5,629,192. This application May 12, 1997, Ser. No. 854,522

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—12 **6 Claims**

1. A method for reducing cell tumorigenicity of a cell, said method comprising:

contacting a tumor cell with a peptide expressed by an ETS1 gene, said tumor cell not endogenously expressing said ETS1 gene.

5,795,867

PLATELET AGGREGATION INHIBITORS

Robert M. Scarborough, Belmont, Calif., assignor to COR Therapeutics, Inc., South San Francisco, Calif.

Continuation of Ser. No. 806,558, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,610, Sep. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 542,488, Jun. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 483,229, Feb. 20, 1990, Pat. No. 5,318,899, which is a continuation-in-part of Ser. No. 418,028, Oct. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 367,509, Jun. 16, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 462,231

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 514—16 **4 Claims**

1. A peptide selected from the group consisting of:

PAI 82 Mpr-A-Har-G-D-W-P-C-NH_2 and (SEQ ID No:3)

PAI 92 Mpr-S-Har-G-D-W-P-C-NH_2 (SEQ ID No:13).

5,795,868

PLATELET AGGREGATION INHIBITORS

Robert M. Scarborough, Belmont, Calif., assignor to COR Therapeutics, Inc., South San Francisco, Calif.

Continuation of Ser. No. 806,558, Dec. 13, 1991, abandoned, which is a continuation-in-part of Ser. No. 586,610, Sep. 24, 1990, abandoned, which is a continuation-in-part of Ser. No. 542,488, Jun. 22, 1990, abandoned, which is a continuation-in-part of Ser. No. 483,229, Feb. 20, 1990, Pat. No. 5,318,899, which is a continuation-in-part of Ser. No. 418,028, Oct. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 367,509, Jun. 16, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 462,660

Int. Cl.[6] A61K *38/00;38/02;* C07K *5/00;7/00*

U.S. Cl. 514—16 23 Claims

1. A peptide selected from the group consisting of:

PAI 80	Mpr-P-Har-G-D-W-P-C-NH_2	(SEQ ID No:1)
PAI 81	Mpr-G-Har-G-D-W-P-C-NH_2	(SEQ ID No:2)
PAI 83	Mpr-Aib-Har-G-D-W-P-C-NH_2	(SEQ ID No:4)
PAI 84	Mpr-(N-Me-Arg)-Har-G-D-W-P-C-NH_2	(SEQ ID No:5)
PAI 85	Mpr-(N-Me-Ser)-Har-G-D-W-P-C-NH_2	(SEQ ID No:6)
PAI 86	Mpr-(D-Ala)-Har-G-D-W-P-C-NH_2	(SEQ ID No:7)
PAI 87	Mpr-(β-Ala)-Har-G-D-W-P-C-NH_2	(SEQ ID No:8)
PAI 88	Mpr-(N-Me-Leu)-Har-G-D-W-P-C-NH_2	(SEQ ID No:9)
PAI 89	Mpr-(N-Me-Ala)-Har-G-D-W-P-C-NH_2	(SEQ ID No:10)
PAI 90	Mpr-Sar-Har-G-D-W-P-C-NH_2	(SEQ ID No:11)
PAI 91	Mpr-V-Har-G-D-W-P-C-NH_2	(SEQ ID No:12)
PAI 93	Mpr-Har-G-D-W-P-A-C-NH_2	(SEQ ID No:14)
PAI 94	Mpr-Har-G-D-W-P-(N-Me-Ala)-C-NH_2	(SEQ ID No:15)
PAI 95	Mpr-Har-G-D-W-P-C-NH_2	(SEQ ID No:16)
PAI 96	Mpr-Har-G-D-W-P-(D-Ala)-C-NH_2	(SEQ ID No:17)
PAI 97	Mpr-Har-G-D-W-P-P-C-NH_2	(SEQ ID No:18)
PAI 98	Mpr-Har-G-D-W-P-(Sar)-C-NH_2	(SEQ ID No:19)
PAI 99	Mpr-Har-G-D-W-P-(Aib)-C-NH_2	(SEQ ID No:20)
PAI 100	Mpr-A-(Har)-G-D-W-P-Pen-NH_2	(SEQ ID No:21)
PAI 101	Mpr-A-K-G-D-W-P-Pen-NH_2	(SEQ ID No:22), and
PAI 102	Mpr-D-(Har)-G-D-W-P-Pen-NH_2	(SEQ ID No:23)

5,795,869

SULFATED LYSO-GANGLIOSIDE DERIVATIVES

Aurelio Romeo, Rome; Gunter Kirschner, Abano Terme; Carlo Chizzolini, Padvova, all of Italy; Hari Manev, Pittsburgh, Pa., and Laura Facci, Vicenza, Italy, assignors to Fidia S.p.A., Abano Terme, Italy

PCT No. PCT/US94/01966, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/20516, PCT Pub. Date Sep. 15, 1994

PCT Filed Mar. 4, 1994, Ser. No. 530,267

Claims priority, application Italy, Mar. 4, 1993, PD93A000044

Int. Cl.[6] A61K *31/70;* C07H *15/00*

U.S. Cl. 514—25 37 Claims

1. Semisynthetic ganglioside analogues, having a sialic acid residue portion and oligosaccharide hydroxyl groups, selected from the group consisting of N-sulfo-, N-hydrocarbyl-sulfonyl- and N-hydrocarbyloxy-sulfonyl-N,N'-dilyso-gangliosides and N'-acyl derivatives thereof, N'-sulfo-, N'hydrocarbyl-sulfonyl- and N'-hydrocarbyloxy-sulfonyl-N,N'-dilyso-gangliosides and N-acyl derivatives thereof; N,N'-di or polysulfo-N,N'-di-or poly-lyso-gangliosides, N,N'-di or polyhydrocarbylsulfonyl-N,N'-di- or poly-lyso-gangliosides and N,N'-di- or polyhydrocarbyloxy-N,N'-di- or poly-lyso-gangliosides; salts of said ganglioside analogues; esters and amides of the carboxyl groups of the sialic acid residue portion of said ganglioside analogues; inner esters of the sialic acid carboxyl groups and the oligosaccharide hydroxyl groups of said ganglioside analogues; and organic or sulfonic acid esters of the hydroxyl groups of said ganglioside analogues.

5,795,870

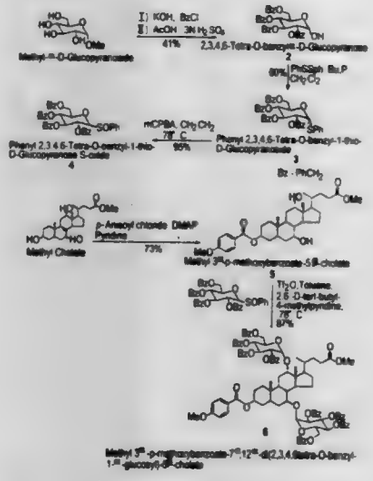
COMPOSITIONS AND METHODS FOR CELL TRANSFORMATION

Suzanne Walker Kahne, Princeton, N.J., assignor to Trustees of Princeton University, Princeton, N.J.

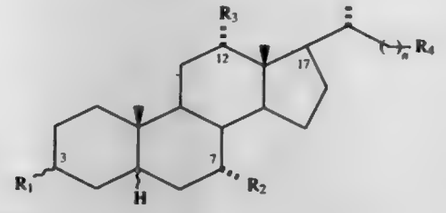
Continuation-in-part of Ser. No. 264,488, Jun. 23, 1994, Pat. No. 5,627,270, which is a continuation-in-part of Ser. No. 230,685, Apr. 20, 1994, which is a continuation-in-part of Ser. No. 989,667, Dec. 14, 1992, Pat. No. 5,571,795, which is a continuation-in-part of Ser. No. 806,985, Dec. 13, 1991, Pat. No. 5,338,837. This application Nov. 7, 1994, Ser. No. 336,675

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—26 3 Claims



1. A method of enhancing the transformability of a host cell comprising contacting a host cell with a compound of the formula (I):



(I)

in which

R_1 can be an H, OH, OR_5, NH_2, NHR_6 or NR_6R_7;

R_2 and R_3 may be the same or different and can be an H, OH or OR_5;

R_4 can be $CONH_2$, $CONHR_6$, $CONR_6R_7$, CH_2NH_2, CH_2NHR_6, $CH_2NR_6R_7$, CO_2—Y—NH_2, CO_2—Y—NHR_6, or CO_2—Y—NR_6R_7;

R_5 is a protected or unprotected glycosyl moiety comprising 1–10 monosaccharide units in which the glycosidic linkage at the anomeric carbon atom of each monosaccharide unit is independently alpha or beta;

NH_2, NHR_6, and NR_6R_7 represent an unsubstituted amino group, a monosubstituted amino group, and a disubstituted amino group, respectively, in which R_6 and R_7 may be the same or different and represent a hydrocarbon group comprising 1–15 carbon atoms substituted with one or more unsubstituted, monosubstituted or disubstituted amino groups;

Y represents a linear or branched alkylene group comprising 1–10 carbon atoms;

n is an integer from 0–10;

or its acid addition or quaternary ammonium salt; provided that said compound comprises at least one R_6 group as defined above; and

(b) allowing said compound to remain in contact with said host cell while exposing said host cell to transforming nucleic acid.

5,795,871

PHARMACEUTICAL COMPOSITION FOR TREATMENT OF NON-SMALL CELL LUNG CANCER

Nobuhiro Narita, Uda-gun; Masayoshi Sawaki, Izumi; Keiichi Mikasa, Yao, and Eiji Kita, Nara, all of Japan, assignors to Nobuhiro Narita, Japan

PCT No. PCT/JP95/00819, § 371 Date Oct. 23, 1996, § 102(e) Date Oct. 23, 1996, PCT Pub. No. WO95/28939, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 26, 1995, Ser. No. 727,547

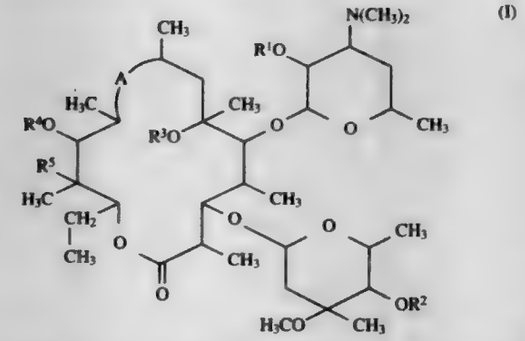
Claims priority, application Japan, Apr. 26, 1994, 6-088297

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—29 16 Claims

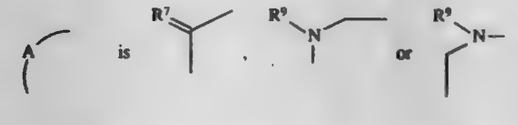
1. A method for the treatment of non-small cell lung cancer in a human comprising:

administering to said human an effective amount of a compound represented by the formula:



(I)

wherein R^1, R^2, R^3 and R^4 are each a hydrogen atom, an optionally substituted alkyl group or an acyl group, R^5 is a hydrogen atom or —OR^6 (wherein R^6 is a hydrogen atom, an optionally substituted alkyl group or an acyl group, or R^4 and R^6 together form >C=O), and



wherein R^7 is an oxygen atom or $=N-O-(CH_2)_n-X-R^8$, wherein:

n is an integer of 1 to 6,

X is an oxygen atom, a sulfur atom or —NY—, (wherein Y is a hydrogen atom or an optionally substituted hydrocarbon group), and

R^8 is an optionally substituted hydrocarbon group; and

wherein R^9 is a hydrogen atom or an optionally substituted hydrocarbon group; or

a pharmaceutically acceptable salt thereof.

5,795,872

DNA CONSTRUCT FOR IMMUNIZATION

Joseph W. Ricigliano, and Barbara A. Araneo, both of Salt Lake City, Utah, assignors to Pharmadigm, Inc., Salt Lake City, Utah

Filed Sep. 19, 1995, Ser. No. 530,529

Int. Cl.[6] A61K *45/00;45/05;* C12N *15/11;15/63*

U.S. Cl. 514—44 16 Claims

1. A vaccine DNA construct for the expression of a heterologous DNA sequence in muscle tissue comprising a muscle specific regulatory element of muscle isozyme of creatine kinase (MCK) having the nucleotide sequence set forth in SEQ ID NO:1 and a heterologous DNA sequence operably linked to said element, wherein said heterologous DNA sequence codes for an antigen, an antigenic determinant or an epitope of an antigen and is expressed when said DNA construct is introduced into muscle tissue.

5,795,873

METHOD FOR TREATMENT AND PREVENTION OF DEFICIENCIES OF VITAMINS B_{12}, FOLIC ACID AND B_6

Robert H. Allen, Englewood, Colo., assignor to Metabolite Laboratories, Inc., Denver, Colo.

Division of Ser. No. 999,499, Dec. 29, 1992, Pat. No. 5,563,126. This application Aug. 2, 1996, Ser. No. 693,515

Int. Cl.[6] A01N *43/04;43/58;43/40*

U.S. Cl. 514—52 48 Claims

7. A method of treating or preventing elevated serum metabolite levels of at least one of homocysteine, methylmalonic acid, cystathionine, or 2-methylcitric acid comprising periodically administering orally a single formulation having between 0.3–10 mg vitamin B_{12}, 0.1–0.4 mg folic acid, and 5–75 mg B_6.

5,795,874

WATER SOLUBLE ANTIBIOTICS

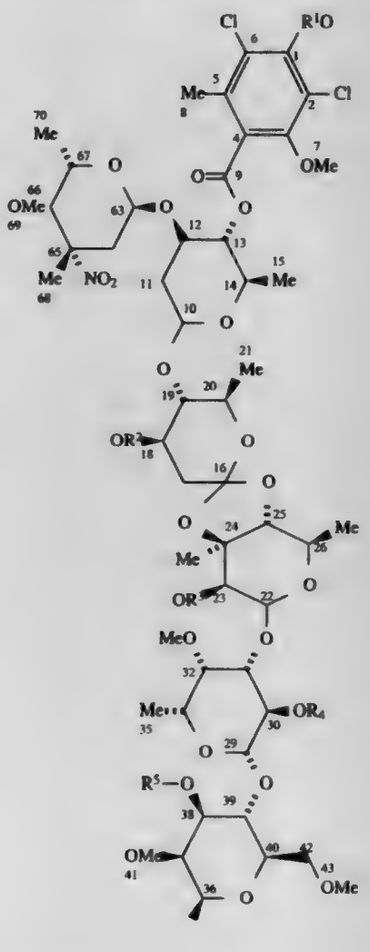
Vlyyoor M. Girijavallabhan, Parsippany; Anil K. Saksena, Upper Montclair; Frank Bennett, Piscataway; Edwin Jao, Warren; Naginbhai M. Patel, Piscataway, and Ashit Ganguly, Upper Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 577,656, Dec. 22, 1995, Pat. No. 5,652,226. This application Dec. 20, 1996, Ser. No. 770,469

Int. Cl.[6] A81K *31/72;* C07H *15/24*

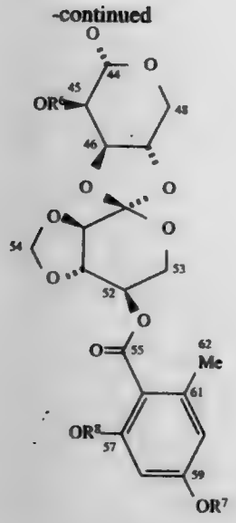
U.S. Cl. 514—54 6 Claims

1. A method for preventing susceptible gram positive or gram negative bacterial infections in a mammal which comprises administering an antibacterial effective amount of a compound of of the formula I



I

-continued



wherein one to seven of R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are hydrogen and the remaining R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are groups convertible in vivo into hydrogen or a pharmaceutically acceptable salt thereof.

5,795,875

THERAPEUTIC METHODS OF USING O-DESULFATED HEPARIN DERIVATIVES

Kevin R. Holme, Alameda, Calif.; Patrick N. Shaklee, Waunakee, Wis., and Masayuki Ishihara, Alameda, Calif., assignors to Glycomed Incorporated, Alameda, Calif.

Division of Ser. No. 239,075, May 6, 1994. This application Jan. 9, 1997, Ser. No. 781,098

Int. Cl.[6] A61K *31/725;* **C08B** *37/10*

U.S. Cl. 514—56 **16 Claims**

1. A method for inhibiting angiogenesis or treating a disease selected from the group consisting of cancer, ischemia reperfusion injury, inflammation, restenosis, and cardiovascular diseases, in an animal host, comprising administering to said animal host an effective amount of a composition comprising a substantially unfragmented N-sulfated 6-O-desulfated heparin, or an N-sulfated 6-O-desulfated heparin fragment, which heparin or heparin fragment has less than 30% of the anticoagulant activity of unmodified heparin.

5,795,876

METHOD OF INHIBITING VASCULAR CELL ADHESION MOLECULE-1 AND TREATING CHRONIC INFLAMMATORY DISEASES WITH 2, 6-DI-ALKYL-4-SILYL-PHENOLS

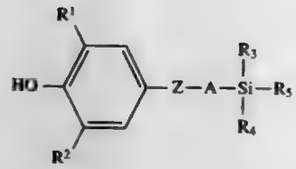
Paul S. Wright, Cincinnati, and Steven J. Busch, West Chester, both of Ohio, assignors to Hoechst Marion Rousssel, Inc., Cininnati, Ohio

Filed Mar. 25, 1997, Ser. No. 824,221

Int. Cl.[6] A61K *31/695*

U.S. Cl. 514—63 **46 Claims**

1. A method of inhibiting cytokine-induced expression of vascular cell adhesion molecule-1 in a patient in need thereof which comprises administering to said patient an effective vascular cell adhesion molecule-1 inhibiting amount of a compound of the formula



wherein

R_1, R_2, R_3 and R_4 are each independently a C_1–C_6 alkyl group;

Z is a thio, oxy or methylene group;

A is a C_1–C_4 alkylene group;

R_5 is a C_1–C_6 alkyl or $—(CH_2)_n—(Ar)$

wherein n is an integer 0, 1, 2 or 3; and Ar is phenyl or naphthyl unsubstituted or substituted with one to three substituents selected from the group consisting of hydroxy, methoxy, ethoxy, chloro, fluoro or C_1–C_6 alkyl.

5,795,877

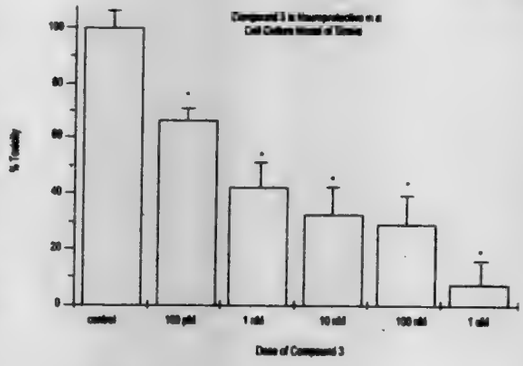
INHIBITORS OF NAALADASE ENZYME ACTIVITY

Paul F. Jackson, Bel Air; Barbara S. Slusher, Kingsville; Kevin L. Tays, Elkridge, and Keith M. Maclin, Baltimore, all of Md., assignors to Guilford Pharmaceuticals Inc., Baltimore, Md.

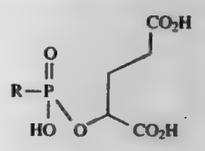
Filed Dec. 31, 1996, Ser. No. 775,586

Int. Cl.[6] C07F *9/30;9/38;* **A61K** *31/66*

U.S. Cl. 514—75 **24 Claims**



1. A compound having the following formula:



where

R is hydrogen, C_1–C_9 straight or branched chain alkyl or alkenyl group, C_3–C_8 cycloalkyl, C_3 or C_5 cycloalkyl, C_5–C_7 cycloalkenyl, or Ar_1, wherein said alkyl, alkenyl, cycloalkyl, cycloalkenyl or aryl groups are optionally substituted with C_3–C_8 cycloalkyl, C_3 or C_5 cycloalkyl, C_5–C_7 cycloalkenyl, C_1–C_4 alkyl, C_1–C_4 alkenyl, hydroxy, halo, hydroxyl, nitro, trifluoromethyl, C_1–C_6 straight or branched chain alkyl or alkenyl, C_1–C_4 alkoxy, C_1–C_4 alkenyloxy, phenoxy, benzyloxy, amino, or Ar_1, and where Ar_1 is selected from the group consisting of 1-naphthyl, 2-naphthyl, and phenyl, having one to three substituents which are independently selected from the group consisting of hydrogen, halo, hydroxyl, nitro, trifluoromethyl, C_1–C_6 straight or branched alkyl or alkenyl, C_1–C_4 alkoxy or C_1–C_4 alkenyloxy, phenoxy, benzyloxy, and amino; or pharmaceutically acceptable salts or hydrates thereof.

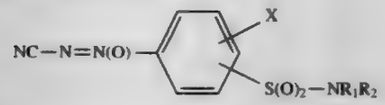
5,795,878

BIOCIDAL COMPOUNDS THEIR PREPARATION AND USE

Werner Simon, Hüffelsheim, Germany, assignor to American Cyanamid Company, Madison, N.J.

Filed Jun. 6, 1997, Ser. No. 871,016
Int. Cl.[6] A01N 41/06; C07C 311/20
U.S. Cl. 514—149 18 Claims

1. A compound of the formula (I):



(I)

wherein

R_1 represents a hydrogen atom or a C_1–C_4alkyl group;

R_2 represents a C_3–C_8cycloalkyl group, which may be substituted by one to three C_1–C_6alkyl groups or may be condensed with a benzene or a cyclohexane ring; and

X represents a hydrogen, fluorine, chlorine or bromine atom or a C_1–C_6alkyl group.

5,795,879

USE OF SALICYLIC ACID FOR REGULATING SKIN WRINKLES AND/OR SKIN ATROPHY

Roy Lonnie Blank, Spring Valley, N.Y., assignor to Richardson-Vicks Inc., Shelton, Conn.

Continuation of Ser. No. 641,296, Apr. 30, 1996, Pat. No. 5,616,572, which is a continuation of Ser. No. 434,250, May 3, 1995, which is a continuation of Ser. No. 28,756, Mar. 9, 1993, which is a continuation of Ser. No. 796,750, Nov. 25, 1991.
This application Feb. 26, 1997, Ser. No. 805,514
Int. Cl.[6] A61K 31/60;7/42;7/44;7/40
U.S. Cl. 514—159 2 Claims

1. A method for regulating wrinkles or atrophy in mammalian skin comprising treating the skin with a safe and effective amount of a composition comprising:

(a) a safe and effective amount of salicylic acid;

(b) a safe and effective amount of an anti-oxidant or radical scavenger; and

(c) a pharmaceutically-acceptable carrier.

5,795,880

METHOD AND COMPOSITION FOR TREATING OBESITY AND RELATED DISORDERS IN ANIMALS COMPRISING DEHYDROEPIANDROSTERONE (DHEA), OR A DERIVATIVE THEREOF, AND AN ANORECTIC AGENT

Frank Svec, and Johnny Porter, both of Metairie, La., assignors to Louisiana State University Medical Center Foundation, New Orleans, La.

Filed Dec. 30, 1996, Ser. No. 774,521
Int. Cl.[6] A61K 31/56;31/495;31/415;31/135
U.S. Cl. 514—169 37 Claims

1. A method for treating obesity in an animal comprising administering a therapeutically effective amount of a composition comprising

dehydroepiandrosterone (DHEA) or a derivative or metabolite thereof and at least one anorectic agent.

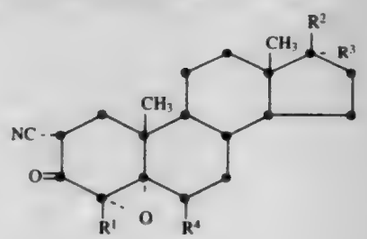
5,795,881

COMBINED USE OF AN ANTIGESTAGEN AND A PROGESTERONE SYNTHESIS INHIBITOR OF THE TRILOSTANE AND EROSTANE TYPE

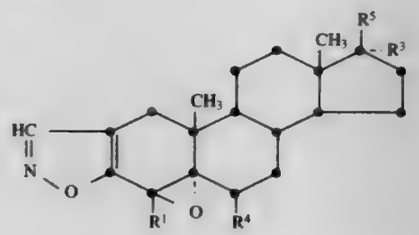
Walter Elger; Sybille Beier; Beate Kosub; Marianne Faehnrich; Krzysztof Chwalisz; Syed Hamiduddin Hasan, all of Berlin, Germany, and Gordon Oliver Potts, North Chatham, N.Y., assignors to Shering Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 69,653, Jun. 1, 1993, abandoned, which is a continuation of Ser. No. 448,477, Dec. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 206,750, Jun. 15, 1988, abandoned. This application Feb. 9, 1995, Ser. No. 385,801
Claims priority, application Germany, Jun. 16, 1987, P 37 20 420 .3
Int. Cl.[6] A61K 31/56;31/58
U.S. Cl. 514—170 31 Claims

1. A pharmaceutical combination comprising effective amounts of a progesterone synthesis inhibitor of formula I



or, of formula II



wherein

R^1 is H or methyl;

R^2 is hydroxy or C_{1-6}-alkanoyloxy;

R^3 is H, C_{1-3}-alkyl, -alkenyl or -alkynyl, or R^2 and R^3 together are oxo or ethylenedioxy;

R^4 is H or methyl;

R^5 is hydroxy;

or 3-enol C_{1-3}-alkanoate esters thereof;

with the proviso that when R^1 is H, R^4 is α-methyl, and when R^1 is methyl, R^4 is H or β-methyl;

and an antigestagen.

5,795,882

METHOD OF TREATING PROSTATIC DISEASES USING DELAYED AND/OR SUSTAINED RELEASE VITAMIN D FORMULATIONS

Charles W. Bishop; Joyce C. Knutson, both of Madison, and Charles R. Valliere, Waunakee, all of Wis., assignors to Bone Care International, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 485,354, Jun. 7, 1995, Pat. No. 5,614,513, which is a division of Ser. No. 196,116, Feb. 22, 1994, Pat. No. 5,529,991, which is a continuation-in-part of Ser. No. 901,886, Jun. 22, 1992, abandoned. This application Dec. 30, 1996, Ser. No. 775,447
Int. Cl.[6] A01N 45/00
U.S. Cl. 514—170 24 Claims

1. A method of inhibiting the hyperproliferative cellular activity of human prostatic cancer or hyperplasia, comprising administer-

ing to a subject suffering therefrom and having a stomach and a small intestine, an effective amount of an oral medicament including a vitamin D compound which is 1α-hydroxyprevitamin D or an active vitamin D contained in a matrix, said matrix having means for releasably binding and controllably releasing said active vitamin D over a sustained period of time.

5,795,883

ANDROGENS AND ANABOLIC AGENTS

Rolf-Dieter Hesch, Constance; Michael Oettel, Jena; Peter Droescher, Weimar; Sigfrid Schwarz, Jena; Bernd Menzenbach, Jena; Wolfgang Römer, Jena; Günter Kaufmann, Jena, and Jens Schröder, Jena, all of Germany, assignors to Jenapharm GmbH, Jena, Germany

Filed Nov. 6, 1995, Ser. No. 537,725

Claims priority, application Germany, Apr. 13, 1993, 43 12 034.2

Int. Cl.[6] A61K *31/58;* **C07J** *17/00*

U.S. Cl. 514—172 **12 Claims**

1. A compound selected from the group consisting of androgens having at least one substituent providing radical trapping properties, wherein said at least one substituent is selected from the group consisting of an α-tocopherol group and a trolox group.

5,795,884

3-KETO-NOR-PREGNENES SUBSTITUTED IN THE 6-POSITION AND TREATMENT OF MENOPAUSE

Robert Bucourt; Alain Piasco, both of Nice, and Claude Tchernatinsky, Beausoleil, all of France, assignors to Laboratoire Theramex SA, France

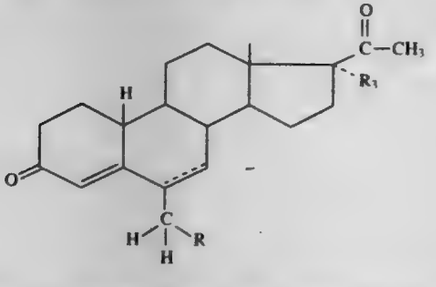
Continuation of Ser. No. 185,945, Feb. 15, 1994, abandoned. This application May 6, 1996, Ser. No. 643,623

Claims priority, application France, Jul. 18, 1991, 91 09097

Int. Cl.[6] A61K *31/56;* **C07J** *5/00*

U.S. Cl. 514—178 **7 Claims**

1. A 3-keto-19-nor-pregnene of the formula



wherein R is selected from the group consisting of —OH and lower acyloxy of an organic carboxylic acid and R_3 is selected from the group consisting of methyl, —OH and lower acyloxy of an organic carboxylic acid.

5,795,885

METHOD OF INHIBITING PROFILERATION OF CELLS BY ADMINISTERING AN AMINOSTEROL COMPOUND

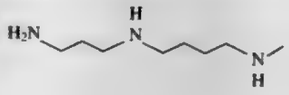
Michael Zasloff, Merion Station, Pa.; Ann Shinnar, Teaneck, N.J.; William Kinney, Churchville, Pa.; Mark Anderson, Norristown, Pa.; Jon Williams, Robbinsville, N.J., and Michael McLane, Lansdale, Pa., assignors to Magainin Pharmaceuticals Inc., Plymouth Meeting, Pa.

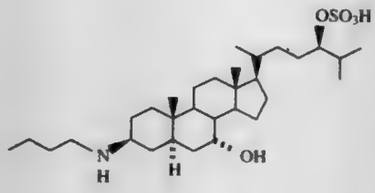
Filed Jun. 7, 1995, Ser. No. 483,057

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—182 **5 Claims**

1. A method of inhibiting the proliferation of cells in vitro or in human or non-human animals, comprising administering an effective amount of a compound having the following structure:





or a pharmaceutically acceptable salt thereof.

5,795,886

DIHYDRO-2,3-BENZODIAZEPINE DERIVATIVES

Benjamin A. Anderson, Zionsville; Marvin M. Hansen, and Nancy K. Harn, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

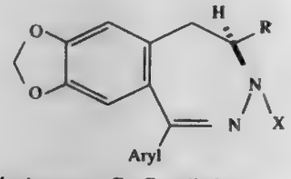
PCT No. PCT/US95/10945, § 371 Date Feb. 11, 1997, § 102(e) Date Feb. 11, 1997, PCT Pub. No. WO96/06606, PCT Pub. Date Mar. 19, 1996

Continuation-in-part of Ser. No. 413,029, Mar. 28, 1995, abandoned, which is a continuation-in-part of Ser. No. 298,645, Aug. 31, 1994, abandoned. This PCT application Aug. 30, 1995, Ser. No. 776,892

Int. Cl.[6] A61K *31/55;* **C07D** *243/02*

U.S. Cl. 514—220 **13 Claims**

1. A compound having the general formula:



(I)

wherein R is hydrogen or C_1–C_{10} alkyl;

X is an aromatic moiety selected from phenyl, thienyl, furyl, pyridyl, imidazolyl, benzimidazolyl, benzothiazolyl and phthalazinyl which is unsubstituted or substituted with one or more moieties chosen from the group consisting of halogen, hydroxy, cyano, nitro, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_4 alkoxy, carboxy, C_1–C_6 alkoxycarbonyl, acetyl, formyl, carboxymethyl, hydroxymethyl, amino, aminomethyl, methylenedioxy and trifluoromethyl; and

"Aryl" represents p-nitrophenyl, p-aminophenyl or p-(protected amino) phenyl;

or a pharmaceutically acceptable salt thereof.

5,795,887

METHOD OF INDUCING CHOLECYSTOKININ AGONIST ACTIVITY USING 1,4- BENZODIAZEPINE COMPOUNDS

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PCT No. PCT/EP95/01335, § 371 Date Oct. 11, 1996, § 102(e) Date Oct. 11, 1996, PCT Pub. No. WO95/28399, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 13, 1995, Ser. No. 718,552

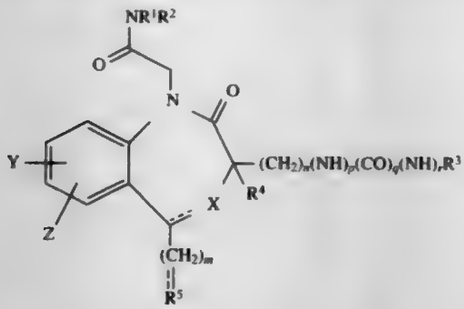
Claims priority, application United Kingdom, Apr. 15, 1994, 9407468; Apr. 15, 1994, 9407499; Oct. 14, 1994, 9420699; Oct. 14, 1994, 9420702

Int. Cl.[6] A01N *43/62;* **C07D** *243/24;243/12*

U.S. Cl. 514—221 **12 Claims**

1. A method of inducing a Cholescystokinin-A receptor agonist response in a mammal in need of treatment of a gastrointestinal or

central nervous system related disease which comprises administering to such mammal a therapeutically effective amount of a 1,4-benzodiazepine compound of the following formula (I):



(I)

wherein:

R^1 is selected from the group consisting of C_{1-6} alkyl, C_{3-6}cycloalkyl, phenyl, or phenyl mono-, di-, or trisubstituted independently with hydroxy, C_{1-6} alkyl, C_{1-6}alkyl substituted with 1–8 fluorine atoms, C_{1-6}alkoxy, carboxyC_{1-6} alkoxy, halo, amino, mono- or di(C_{1-6}alkyl)amino, —COO(C_{1-6}alkyl), C_{1-6} alkylthio, carboxymethylthio, trifluoromethylsulfonylamino, phenylC_{1-6}alkoxy, C_{1-6}alkylsulfonyl or C_{1-6}alkylsulfinyl substituents;

R^2 is selected from the group consisting of C_{3-6} alkyl, C_{3-6}cycloalkyl, C_{3-6}alkenyl, benzyl, phenylC_{1-3}alkyl or phenyl mono-, di-, or trisubstituted independently in the ortho or para positions with hydroxy, C_{1-6}alkyl, C_{1-6} alkoxy, cyano, benzyloxy, pyrrolidino, morpholino, carboxyC_{1-6}alkoxy, halo, amino, mono- or di(C_{1-6}alkyl)amino, —COO(C_{1-6}alkyl), C_{1-6}alkylthio, carboxymethylthio, trifluoromethyl, trifluoromethylsulfonylamino, phenylC_{1-6} alkoxy, C_{1-6}alkylsulfonyl or C_{1-6}alkylsulfinyl substituents; or

NR^1R^2 together form 1,2,3,4-tetrahydroquinoline or benzazepine mono-, di-, or trisubstituted independently with C_{1-6}alkyl, C_{1-6}alkoxy or halogen substituents;

n is an integer selected from the group consisting of 0, 1, 2, or 3;

p is the integer 0 or 1;

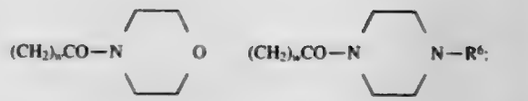
q is the integer 0 or 1;

r is the integer 0 or 1, provided that when q is 0 then r is 0;

R^3 is selected from the group consisting of hydrogen, C_{1-6}alkyl, C_{1-6} cycloalkyl, phenyl, phenyl mono-, di-, or trisubstituted independently with C_{1-6}alkyl, hydroxy, C_{1-6}alkoxy, halogen, amino, mono- or di(C_{1-6}alkyl)amino, nitro, carboxy, —COO(C_{1-6}alkyl), carboxyC_{1-6}alkoxy, carboxyC_{1-6}alkyl, carboxymethylthio, heteroaryl, mono- or di(C_{1-6}alkyl)aminoC_{1-6}alkyl, trifluoromethyl, trifluoromethoxy, C_{1-6}alkylthio, —SO_v(C_{1-6}alkyl), —SO_vNH(C_{1-6}alkyl), —$SO_v$$CF_3$, —$SO_v$$C_6H_5$, —$(CH_2)_v$$NO_2$, —$(CH_2)_v$CN, —$(CH_2)_v$COOH, —$(CH_2)_v$COO($C_{1-6}$alkyl), —$(CH_2)_v$$SCH_3$, —$(CH_2)_v$$SOCH_3$, —$(CH_2)_v$$SO_2CH_3$, —$(CH_2)_v$$CONH_2$, —$SCH_2COOH$, —$CONH(SO_2CH_3)$, —$CONH(SO_2CF_3)$, —$(CH_2)_v$N($C_{1-6}$alkyl)$_2$, —$(CH_2)_v$NH($SO_2CF_3$), —$(CH_2)_v$N($SO_2CF_3$)($C_{1-6}$alkyl), —$(CH_2)_v$$SO_2$NHCO($C_{1-6}$alkyl), —$(CH_2)_v$$SO_2$N($C_{1-6}$alkyl)CO($C_{1-6}$alkyl), —$(CH_2)_v$$CONHSO_2$($C_{1-6}$alkyl), —$(CH_2)_v$CON($C_{1-6}$alkyl)$SO_2$($C_{1-6}$alkyl), —$(CH_2)_v$NHR^6 or —$(CH_2)_v$OR^7 substituents, heteroaryl, substituted heteroaryl, napthyl, bicycloheteroaryl or substituted bicycloheteroaryl, provided when R^3 is oxadiazole then R^4 is not hydrogen, further provided when n is 1, p is 0, q is 0 and r is 0 then R^3 is not 2-indolyl, substituted 3-indolyl or substituted 1-isoindolyl, still further provided that when n is 0, p is 1, q is 1 and r is 0 then R^3 is not 2-indolyl and substituted indolyl is bound at the 2 position, even still further provided that when n is 1, p is 1, q is 1 and r is 0 then R^3 is not phenyl or 2-indolyl;

R^6 is hydrogen, C_{1-6} alkyl, —SO_3H, —SO_2CH_3, —SO_2CF_3, —$SO_2C_6H_5$, —COO(C_4H_9) or —COO($CH_2C_6H_5$);

R^7 is hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, —$CH_2C_6H_5$, —CH_2COOH, —CH_2CONH_2, —CH_2CONH(C_{1-6}alkyl), —CH_2CON(C_{1-6}alkyl)$_2$ or



v is an integer selected from the group consisting of 0, 1 or 2;

w is an integer selected from the group consisting of 0, 1 or 2;

R^4 is selected from the group consisting of hydrogen, C_{1-6}alkyl, halogen, C_{1-6}alkoxy, C_{1-6}alkoxyC_{1-3}alkyl, carboxyC_{1-3}alkyl or C_{1-6} alkoxycarbonylC_{1-3}alkyl;

X is nitrogen, nitroso, or NR8, provided that when X is nitrogen or nitroso then ———— is a double bond between X and the C-5 position of the diazepine ring, and is a single bond when X is NR^8;

R^8 is selected from the group consisting of hydrogen, C_{1-6}alkyl or $(CH_2)_kR^9$;

k is an integer selected from the group consisting of 0, 1, 2, 3 or 4;

R^9 is selected from the group consisting of amino, mono- or di(C_{1-6} alkyl)amino, pyrrolidinyl, morpholinyl, piperidinyl, piperazinyl, phenyl, nitro, carboxyl, carboxamide, hydroxyl, heteroaryl, —COO(C_{1-6}alkyl), —CONH(C_{1-6}alkyl), —SO_t(C_{1-6}alkyl), —SO_tNH(C_{1-6}alkyl), —$SO_t$$CF_3$, —$SO_t$$C_6H_5$, —O($C_{1-6}$alkyl) or —CON($C_{1-6}$alkyl)$_2$;

t is an integer selected from the group consisting of 0, 1 or 2;

m is an integer selected from the group consisting of 0, 1, 2, or 3,

R^5 is selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_3–C_7 cycloalkyl, oxygen, phenyl, phenyl mono or di-substituted with halogen substituents, heteroaryl, substituted heteroaryl or 5, 6 or 7 membered saturated heterocycle, provided that when R^5 is oxygen and m is 0 then ———— is a double bond between R^5 and the C-5 position of the diazepine ring, and is a single bond when R^5 is not oxygen; or

XR^5 together form a heteroaryl or substituted heteraryl where X is nitrogen, provided ———— is a double bond between R5 and the C-5 position of the diazepine ring and m is 0;

Y and Z are independently hydrogen or halogen;

5, 6 or 7 membered saturated heterocycle in more detail is a 5, 6 or 7 membered saturated heterocycle interrupted by 1, 2, 3, or 4 N or O heteroatoms, with the proviso that any two O atoms are not bonded to each other;

heteroaryl in more detail includes a 5 or 6 membered aromatic ring optionally interrupted by 1, 2, 3 or 4 N, S, or O heteroatoms, with the proviso that any two O or S atoms are not bonded to each other;

substituted heteroaryl in more detail includes heteroaryl mono-, di-, or trisubstituted independently with hydroxy, C_{1-6}alkyl, C_{1-6}alkoxy, carboxyC_{1-6}alkoxy, halogen, amino, mono- or di(C_{1-6}alkyl)amino, nitro, carboxy, —COO(C_{1-6}alkyl), —CONH(C_{1-6}alkyl), C_{1-6}alkylthio, carbosamide, carboxymethylthio, phenyl, benzyl, benzoxy, cyano, trifluoromethyl, —CONH(C_{1-6}alkyl), —CONHC_{1-6}alkyl)$_2$, —SO_z(C_{1-6}alkyl), —SO_2NH(C_{1-6}alkyl), —SO_2CF_3 or —$SO_2C_6H_5$, pyrrolidinyl, morpholinyl, piperidinyl, piperazinyl, trifluoromethylsulfonylamino, phenylC_{1-6}alkoxy, C_{1-6}alkylsulfonyl, C_{1-6}alkylsulfinyl, phenyl, carboxamide, or heteroaryl substituents;

z is an integer selected from the group consisting of 0, 1 or 2;

bicycloheteroaryl in more detail is a 9 or 10 membered bicyclo aromatic ring interrupted by 1, 2, 3 or 4 N, O or S heteroatoms, with the proviso that any two O or S heteroatoms are not bonded to each other, with the further proviso that bicycloheteroaryl is not quinoline;

substituted bicycloheteroaryl in more detail includes bicyclo heteroaryl mono-, di-, or trisubstituted independently with hydroxy, (C_{1-6}alkyl), C_{1-6} alkoxy, cyano, carboxy(C_{1-6}alkyl), phenyl, heteroaryl, phenyl(C_{1-6}alkyl) or (C_{1-6}alkyl)COO(C_{1-6}alkyl);

or a pharmaceutically acceptable acid-addition or organic base-addition salt thereof.

5,795,888

N-SUBSTITUTED AZAHETEROCYCLIC CARBOXLIC ACIDS AND ESTERS THEREOF

Knud Erik Andersen, Smørum; Uffe Bang Olsen, Vallensbæk; Hans Petersen, Vanløse; Frederik Christian Grønvald, Vedbæk; Ursula Sonnewald, Trondheim; Tine Krogh Jørgensen, Herlev, and Henrik Sune Andersen, København, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

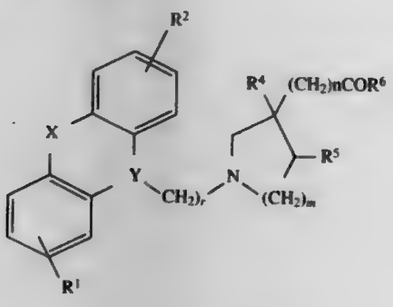
Division of Ser. No. 367,648, Jan. 3, 1995, Pat. No. 5,595,989. This application Oct. 18, 1995, Ser. No. 544,682

Claims priority, application Denmark, Jan. 4, 1994, 0019/94; Nov. 9, 1994, 1290/94

Int. Cl.[6] A61K *31/645;* C07D *413/06;401/06;403/06*

U.S. Cl. 514—225.2 19 Claims

1. A compound of formula I



(I)

wherein

R^1 and R^2 independently are hydrogen, halogen, trifluoromethyl, C_{1-6}-alkyl or C_{1-6}-alkoxy;

Y is a nitrogen atom;

X is —O— or —(S=O)—;

r is 2, 3 or 4;

m is 1 or 2;

n is 1 when m is 1 and n is 0 when m is 2;

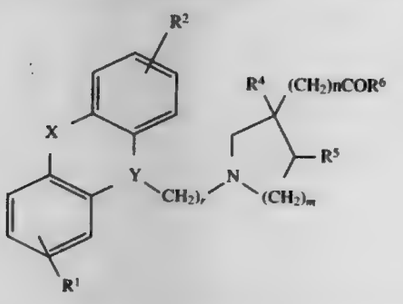
R^4 and R^5 are hydrogen when m is 1;

R^4 and R^5 are hydrogen or form a bond when m is 2; and

R^6 is OH or C_{1-8}-alkoxy; or

a pharmaceutically acceptable salt thereof.

3. A method of treating diabetic neuropathy, migraine, neurogenic inflammation, or rheumatoid arthritis in a subject in need of such treatment comprising administering to the subject an effective amount of a compound of formula I



(I)

wherein

R^1 and R^2 independently are hydrogen, halogen, trifluoromethyl, C_{1-6}-alkyl or C_{1-6}-alkoxy;

Y is a nitrogen atom;

X is —S—;

r is 2, 3 or 4;

m is 2;

n is 0;

R^4 and R^5 are hydrogen or form a bond; and

R^6 is OH or C_{1-8}-alkoxy; or

a pharmaceutically acceptable salt thereof.

5,795,889

BIS MONO- AND BICYCLIC ARYL AND HETEROARYL COMPOUNDS WHICH INHIBIT EGF AND/OR PDGF RECEPTOR TYROSINE KINASE

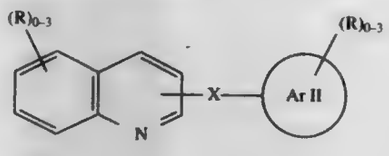
Alfred P. Spada, Lansdale; Michael R. Myers, Reading; Martin P. Maguire, Mont Clare, and Paul E. Persons, King of Prussia, all of Pa., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Division of Ser. No. 166,199, Dec. 10, 1993, Pat. No. 5,480,883, which is a continuation-in-part of Ser. No. 988,515, Dec. 10, 1992, abandoned, which is a continuation-in-part of Ser. No. 698,420, May 10, 1991, abandoned. This application Feb. 9, 1995, Ser. No. 386,271

Int. Cl.[6] A61K *31/47;31/495;31/535;* C07D *215/16*

U.S. Cl. 514—233.5 17 Claims

1. A compound of the formula



wherein

Ar II is phenyl, naphthyl, thienyl, pyridyl, piperzinyl, morpholinyl, cyclohexyl or cyclopentyl;

X is $(CHR_1)_{0-4}$ or $(CHR_1)_m$—Z—$(CHR_1)_n$;

Z is O, NR', S, SO or SO_2;

m and n are 0–3 and m+n=0–3;

R substitution besides hydrogen independently includes alkyl, phenyl, hydroxy, hydroxyalkyl, alkoxy, alkoxyalkyl, aralkoxy, acyloxy, halo, haloalkyl, nitro, amino, monoaklylamino, dialkylamino, acylamino, carboxy, carboxyalkyl, carbalkoxy, carbaralkoxy, carbalkoxyalkyl, carbalkoxyalkenyl, aminoalkoxy, amido, monoalkylamido, dialkylamido, N,N-cycloalkylamido, halophenyl or benzoyl, or R and R taken together as substituents on morpholinyl, cyclohexyl or cyclopentyl are keto; and

R_1 and R' are hydrogen or alkyl; or

a pharmaceutically acceptable salt thereof or N-oxide thereof, provided that when Ar II is phenyl and the R substituent is only hydrogen and X is NH or NCH_3, then the quinolinyl moiety of the compound is not substituted in the 6,7 positions by methoxy or ethoxy.

5,795,890

SULFONAMIDE DERIVATIVES

Takahiko Nakae; Masashi Kato; Takehito Fujita; Kazuhito Kawabata, and Hiroyuki Ohno, all of Osaka, Japan, assignors to ONO Pharmaceutical Co., Ltd., Osaka, Japan

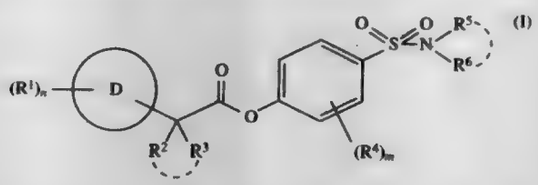
Filed Sep. 24, 1996, Ser. No. 718,722

Claims priority, application Japan, Sep. 27, 1995, 7-272568; Feb. 8, 1996, 8-045663

Int. Cl.[6] A61K *31/535;* C07D *413/12*

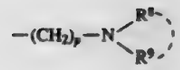
U.S. Cl. 514—235.5 13 Claims

1. A sulfonamide derivative of the formula (I)



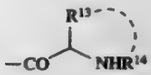
(I)

wherein R^1 is C1–8 alkyl, C1–8 alkoxy, hydroxy, keto, nitro, halogen atom, trihalomethyl, cyano, amidino, —$COOR^7$ (in which R^7 is hydrogen atom or C1–8 alkyl), or

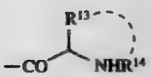


(in which p is an integer from 0 to 4, and

R^8 and R^9 each, independently, is hydrogen atom, C1–4 alkyl, C2–5 acyl, — $COOR^{10}$ (in which R^{10} is hydrogen atom or C1–8 alkyl), —$CONR^{11}R^{12}$ (in which R^{11} and R^{12} each, independently, is hydrogen atom or C1–4 alkyl),



(in which



is an α-amino acid residue), or

R^8 and R^9 taken together with the nitrogen atom to which they are attached represent an aliphatic heterocyclic ring which is unsubstituted or substituted by C1–4 alkyl or phenyl C1–4 alkyl);

n is an integer from 0 to 5;



is a carbocyclic ring;



is



in which R^2 and R^3 each, independently, is hydrogen atom, C1–4 alkyl, C1–4 alkoxy, halogen atom, trihalomethyl or phenyl, or

R^2 and R^3, taken together, represent C1–4 alkylidene, or



is



in which R^2 and R^3, taken together with the carbon atom to which they are attached represent C3–7 cycloalkyl;

R^4 is C1–4 alkyl or C1–4 alkoxy or two of R^4, attached to the benzene nucleus at ortho positions relative to each other, taken together, represent C3–5 alkylene;

m is an integer from 0 to 4; and



-continued

is



in which R^5 and R^6 each, independently, is

1) hydrogen atom,
2) hydroxy,
3) C1–8 alkyl,
4) C1–8 alkoxy
5) phenyl C1–4 alkoxy,
6) amidino,
7) —M—R^{16}

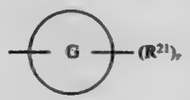
(in which M is single bond or C1–8 alkylene, and

R^{16} is

i) —$NR^{17}R^{18}$ (in which R^{17} and R^{18} each, independently, is hydrogen atom or C1–4 alkyl),

ii) —$CONR^{19}R^{20}$ (in which R^{19} and R^{20} each, independently, is hydrogen atom or C1–4 alkyl),

iii)



(in which



is a carbocyclic ring,

r is an integer from 0 to 5, and

R^{21} is C1–4 alkyl, C1–4 alkoxy, nitro, amidino, —$COOR^{22}$ (in which R^{22} is hydrogen atom, C1–8 alkyl, phenyl or phenyl C1–4 alkyl), —SO_3H, —$CONR^{23}$—E—R^{24} (in which R^{23} is hydrogen atom or C1–4 alkyl, E is 1–4 alkylene and alkylene and R^{24} is —$COOR^{25}$ (in which R^{25} is hydrogen atom, C1–8 alkyl, phenyl or phenyl C1–4 alkyl) or tetrazole ring), tetrazole ring or morpholino ring),

iv) heterocyclic ring, unsubstituted or substituted by 1 to 4 substituents selected from C1–4 alkyl, C1–4 alkoxy, hydroxy, phenyl C1–4 alkyl, —$COOR^{26}$ (in which R^{26} is hydrogen atom, C1–8 alkyl, phenyl or phenyl C1–4 alkyl), hydroxy C1–4 alkyl or C2–4 alkoxyalkyl),

8) C1–8 alkyl substituted by one or two of —OR^{27} (in which R^{27} is hydrogen atom, C1–4 alkyl, C2–4 alkoxyalkyl or C2–4 alkyl substituted by —OR^{28} (in which R^{28} is hydrogen atom or C2–4 alkoxyalkyl)),

9) —J—$COOR^{29}$ (in which R^29 is hydrogen atom, C1–8 alkyl, phenyl or phenyl C1–4 alkyl, and

J is a single bond, —$(CH_2)_s$— or



(in which s is an integer from 2 to 6, and

R^{30} and R^{31} each, independently, is

i) hydrogen atom,

ii) C1–8 alkyl, .

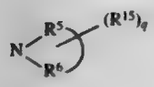
iii) —$COOR^{32}$ (in which R^{32} is hydrogen atom, C1–8 alkyl, phenyl or phenyl C1–4 alkyl),

iv) carbocyclic or heterocyclic ring, unsubstituted or substituted by one or more substituents selected from C1–4 alkyl, C1–4 alkoxyalkyl, amino, nitro, hydroxy, halogen atom, nitrile, guanidino and amidino, or

v) C1–8 alkyl substituted by one or more substituents selected from hydroxy, —$COOR^{33}$ (in which R^{33} is hydrogen atom, C1–8 alkyl, phenyl or phenyl C1–4 alkyl), —$NR^{34}R^{35}$ (in which R^{34} and R^{35} each, independently, is hydrogen atom or C1–4 alkyl), carbocyclic or heterocyclic ring, unsubstituted or substituted by one or more substituents selected from C1–4 alkyl, C1–4 alkoxyalkyl, amino, nitro, hydroxy, halogen atom, nitrile, guanidino and amidino, with the proviso that a carbon atom of C1–8 alkyl may be replaced by a sulfur atom), or



is



in which R^5 and R^6, taken together with the nitrogen atom to which they are attached represent a heterocyclic ring,

q is an integer from 0 to 4, and

R^{15} is

1) hydroxy,
2) keto,
3) protected keto,
4) C1–4 alkyl,
5) C1–4 alkoxy,
6) phenyl,
7) phenoxy,
8) phenyl C1–4 alkyl,
9) phenyl C1–4 alkoxy,
10) nitro,
11) —$COOR^{36}$ (in which R^{36} is hydrogen atom, C1–8 alkyl, C1–4 alkyl substituted by —$CONR^{37}R^{38}$ (in which R^{37} and R^{38} each, independently, is hydrogen atom or C1–4 alkyl), C1–4 alkyl substituted by —$NR^{39}R^{40}$ (in which R^{39} and R^{40} each, independently, is hydrogen atom or C1–4 alkyl), C1–4 alkyl substituted by —OR^{41} (in which R^{41} is C2–4 alkyl substituted by —OR^{42} (in which R^{42} is hydrogen atom or C2–4 alkoxyalkyl)) or C1–4 alkyl substituted by piperadino ring),
12) —$NR^{43}R^{44}$ (in which R^{43} and R^{44} each, independently, is hydrogen atom, C1–4 alkyl or C2–5 acyl),
13) —$CONR^{45}R^{46}$ (in which R^{45} and R^{46} each, independently, is hydrogen atom, hydroxy, C1–4 alkyl, phenyl C1–4 alkyloxy or C1–4 alkyl substituted by hydroxy or —$COOR^{47}$ (in which R^{47} is hydrogen atom or C1–8 alkyl),),
14) C1–4 alkyl substituted by one or more substituents selected from hydroxy, —$COOR^{48}$ (in which R^{48} is hydrogen atom or C1–8 alkyl), —$NR^{49}R^{50}$ (in which R^{49} and R^{50} each, independently, is hydrogen atom or C1–4 alkyl), —OSO_3H or 5- or 6-membered heterocyclic ring containing one or two nitrogen atoms,
15) 5- or 6-membered heterocyclic ring containing one or two nitrogen atoms,
16) halogen atom,
17) —CHO, or
18) —NR^{51}—$COOR^{52}$ (in which R^{51} and R^{52} each, independently, is hydrogen atom or C1–8 alkyl);

or a non-toxic salt, acid addition salt or solvate thereof.

5,795,891

ACYLPHENYLGLYCINE DERIVATIVE AND PREVENTIVE AND REMEDY FOR DISEASES CAUSED BY INCREASED COLLAGENASE ACTIVITY CONTAINING SAID COMPOUND AS ACTIVE INGREDIENT

Ryoichi Hirayama, Akashi; Takahiro Tsukida; Minoru Yamamoto, both of Osaka; Shoji Ikeda, Kobe; Fumio Sakamoto, Daito; Yuji Obata, and Konomi Matsuo, both of Osaka, all of Japan, assignors to Kanebo Ltd., Tokyo, Japan

PCT No. PCT/JP94/01284, § 371 Date Feb. 8, 1996, § 102(e) Date Feb. 8, 1996, PCT Pub. No. WO95/04715, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 3, 1994, Ser. No. 596,278

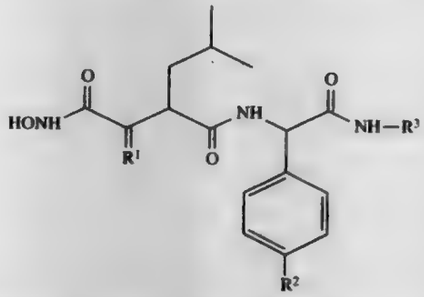
Claims priority, application Japan, Aug. 9, 1993, 5-218124

Int. Cl.[6] C07C *259/06;* A61K *31/16*

U.S. Cl. 514—238.2 **12 Claims**

1. An acylphenylglycine compound of formula (I),

(I)



wherein R^1 is hydrogen, methyl, methylaminomethyl or morpholinomethyl; R^2 is hydrogen, hydroxy, fluorine, or C_1–C_4 linear or branched chain alkyl; and R^3 is C_1–C_4 linear or branched chain alkyl, or

a pharmaceutically acceptable salt thereof.

5,795,892

4-AMINOPYRIDAZINES, METHOD OF PREPARING THEM AND DRUGS CONTAINING THESE COMPOUNDS

Wolfgang Von Der Saal, Weinheim; Reinhard Heck, Eberbach; Ralf Kucznierz, Ilvesheim; Herbert Leinert, and Karlheinz Stegmeier, both of Heppenheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP95/03383, § 371 Date Feb. 28, 1997, § 102(e) Date Feb. 28, 1997, PCT Pub. No. WO96/06832, PCT Pub. Date Mar. 7, 1996

PCT Filed Aug. 26, 1995, Ser. No. 793,445

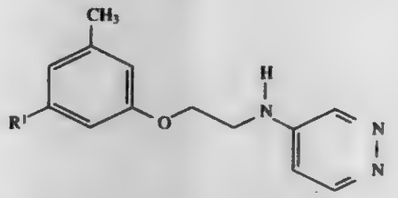
Claims priority, application Germany, Aug. 30, 1994, 44 30 757.8

Int. Cl.[6] A61K *31/50;* C07D *237/22;405/12;401/12*

U.S. Cl. 514—247 **14 Claims**

1. Compound of the formula

(I)



wherein

R^1 is an R^2—SO_2—O— or R^2—SO_2—NR^3— group wherein

R^2 is C_3–C_7 cycloalkyl or a member selected from the group consisting of phenyl, naphthyl, thiophenyl and pyridyl, wherein said member is unsubstituted or substituted at least once by nitro, halogen, nitrile, hydroxy, carboxy, C_1–C_{16}-alkoxycarbonyl, phenyl-C_1–C_6 alkoxycarbonyl, phenyl, C_1–C_6 alkyl, trifluoromethyl, C_1–C_6 alkoxy, C_3–C_6 alkenyloxy, C_1–C_6 alkinyloxy, benzyloxy, C_1–C_6 alkylthio, C_1–C_6

alkylsulfinyl, C_1–C_6 alkylsulfonyl, amino, C_1–C_6 alkylamino, di C_1–C_6 alkylamino, benzylamino, bis(benzyl)amino, C_1–C_6 alkylsulfonylamino, C_1–C_6 alkylcarbonylamino, formylamino, carbamoyl, thiocarbamoyl, C_1–C_6 alkylaminocarbonyl, di-C_1–C_6-alkylaminocarbonyl or C_1–C_6-alkoxycarbonyl-C_1–C_6-alkoxy, and

R^3 is hydrogen, C_1–C_6 alkyl or C_1–C_6-alkyloxy-C_1–C_6-alkyl, wherein the alkyl or alkyloxyalkyl group is unsubstituted or substituted at least once by hydroxy which in turn is unsubstituted or substituted by C_1–C_5 alkyl, hydroxy C_1–C_5 alkyl, C_1–C_5 alkyloxy-C_1–C_5-alkyl, C_1–C_5 hydroxy alkyloxy-C_1–C_5-alkyl or C_2–C_6-alkylcarbonyl, and wherein in each case two vicinal hydroxyl groups are unlinked or are linked together by an C_3–C_6-alkylidene group,

and optically active forms, racemates, diastereomer mixtures, hydrates, or physiologically tolerated salts thereof.

5,795,893

FIBRINOGEN RECEPTOR ANTAGONISTS

William E. Bondinell, Wayne, and Thomas Wen-Fu Ku, Dresher, both of Pa., assignors to SmithKline Beecham Corporation, King of Prussia, Pa.

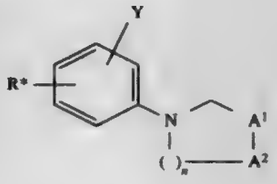
PCT No. PCT/US95/16961, § 371 Date Jun. 20, 1997, § 102(e) Date Jun. 20, 1997, PCT Pub. No. WO96/19475, PCT Pub. Date Jun. 27, 1996

Continuation of Ser. No. 363,430, Dec. 22, 1994, abandoned. This PCT application Dec. 22, 1995, Ser. No. 604,940

Int. Cl.[6] A61K *31/495;31/445;* **C07D** *401/14*

U.S. Cl. 514—252 **7 Claims**

1. A compound of the formula:



wherein:

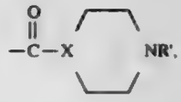
A^1 is CH_2 or CHR^1 and A^2 is CH_2, CHR^1, or NR^2, with the proviso that A^1 or A^2 are not simultaneously CH_2;

Y is hydrogen, C_{1-6}alkyl, halo, CF_3, CH_2OR^4, COR^4, $CONR^4R^4$, CO_2R^4, CN, aryl, heteroaryl, NR^4R^4, NR^4COR^4, $NR^4CO_2R^4$, $NR^4CONR^4R^4$, $NR^4SO_2R^4$, NO_2, OR^4, $S(O)_{0-2}R^4$, or $SO_{(0-2)}CF_3$;

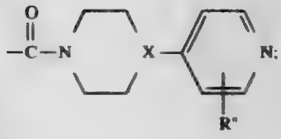
R^1 is $-(CH_2)_nCOR^3$;

R^2 is $-(CH_2)_qCOR^3$;

R^* is



or



R^3 is OR' or NR'R';

R^4 is hydrogen, C_{1-6}alkyl, aralkylC_{1-6}, aryl, heteroaralkylC_{1-6}, or heteroaryl;

each R' independently is hydrogen or C_{1-6}alkyl;

R" is hydrogen, C_{1-6}alkyl, or NR'R';

X is CH or N;

each n independently is 0–3;

each q independently is 1–3; and wherein heteroaryl in the R^4 definition is selected from the group consisting of benzofuryl-,benzimidazolyl, benzothiophenyl,furyl,imidazolyl and pyridinyl;

or a pharmaceutically acceptable salt thereof.

5,795,894

PIPERAZINO DERIVATIVES AS NEUROKINN ANTAGONISTS

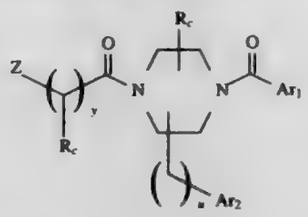
Ho-Jane Shue, Pine Brook; Neng-Yang Shih; David J. Blythin, both of North Caldwell; Xiao Chen, Edison; Wing C. Tom, Cedar Grove; John J. Piwinski, Clinton Township, and Kevin D. McCormick, Edison, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 432,739, May 2, 1995, Pat. No. 5,719,156. This application Jun. 14, 1996, Ser. No. 663,830

Int. Cl.[6] A61K *31/495;* **C07D** *241/04;401/12*

U.S. Cl. 514—253 **8 Claims**

1. A compound of the formula:



u is 0 to 2;

y is 1 to 3;

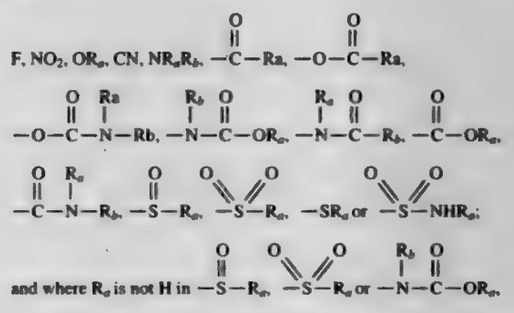
with the proviso that no more than one R_c is other than H in the



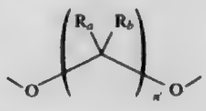
moiety;

each R_c is independently H, C_1–C_6 alkyl, hydroxy(C_1–C_6)alkyl, carboxy(C_1–C_6)alkyl or $H_2NC(O)$-(C_1C_6)alkyl;

each R_1 and R_2 is independently H, C_1–C_6 alkyl, CF_3, C_2F_5, Cl, Br, I,

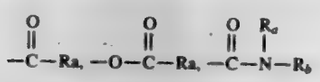


or when R_1 and R_2 are on adjacent carbons on a ring, they can form



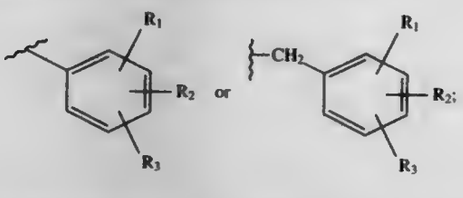
wherein n' is 1 or 2;

each R_3 is independently H, C_1–C_6 alkyl, CF_3, C_2F_5,



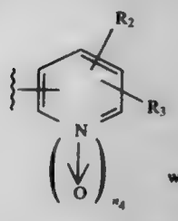
Cl, Br, I, or F, OR_a, OCF_3 or phenyl;

each R_a and R_b is independently selected from the group consisting of H, C_1–C_6 alkyl, phenyl, benzyl, allyl,

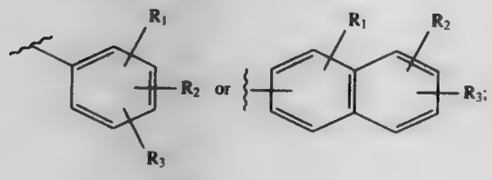


or R_a and R_b together are C_2–C_6 alkylene and are attached to the same nitrogen, so that R_a and R_b, together with the nitrogen to which they are attached, join to form a 4 to 7 membered ring;

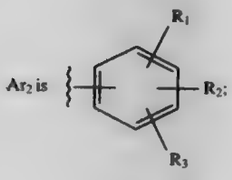
Ar_1 is



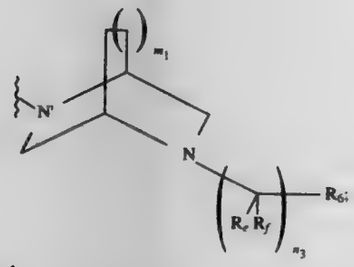
wherein n_4 is 0 or 1,



Ar_2 is



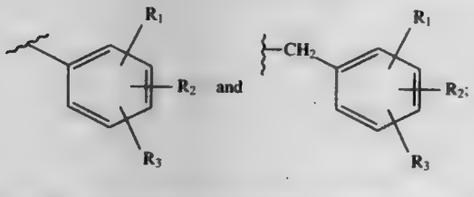
Z is



m_1=0 to 1;

n_3 is 0 to 4;

each R_e and R_f is independently selected from the group consisting of H, C_1–C_6 alkyl, phenyl, benzyl, allyl,

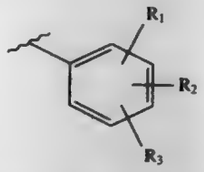


or R_e and R_f taken together with the carbon to which they are attached can also form a carbonyl group, with the proviso that no more than one carbonyl group is in the



moiety;

R_6 is H, C_3–C_6 cycloalkyl,



heteroaryl, substituted heteroaryl, or, provided that Re,R_f taken together with the carbon atom to which they are attached form a carbonyl group and n_3 is R1, R_6 is OR_a wherein R_a is not H;

wherein heteroaryl is selected from the group consisting of imidazolyl, oxadiazolyl, thiadiazolyl, benzimidazolyl, indolyl, thiazolyl, thienyl, pyrrolyl, furyl, pyridyl, isoxazolyl, pyrimidyl and quinolyl; and wherein substituted heteroaryl are heteroaryl rings substituted with R_1, R_2 and R_3;

or a pharmaceutically acceptable salt thereof.

5,795,895

COMBINATION ANOREXIANT DRUG THERAPY FOR OBESITY USING PHENTERMINE AND AN SSRI DRUG

J. Michael Anchors, 16220 Frederick Rd. Suite 210, Gaithersburg, Md. 20877

Filed Jun. 13, 1997, Ser. No. 874,329

Int. Cl.[6] A61K *31/50;31/135;31/495*

U.S. Cl. 514—253 **10 Claims**

1. A method of treating obesity its a patient in need of long term treatment which comprises admninistration of an effective amont of an SSRI anti depressant and phenteramine.

5,795,896

ANTITHROMBOTIC FORMULATION, PROCESS FOR ITS MANUFACTURING, AND USE THEREOF

Jan-Erik Löfroth, Mölndal, and Anna-Lena Ungell, Göteborg, both of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

PCT No. PCT/SE95/01425, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO96/16671, PCT Pub. Date Jun. 6, 1996

PCT Filed Nov. 29, 1995, Ser. No. 564,122

Claims priority, application Sweden, Dec. 2, 1994, 9404196

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—256 **22 Claims**

1. A pharmaceutical formulation comprising the therapeutically active compound HOOC—CH_2—(R)Cgl-Aze-Pab as such or a stereoisomer thereof or a physiologically acceptable salt thereof and one or more absorption enhancing agents, and optionally a pharmaceutical carrier.

5,795,897

OXOHEXYL METHYLXANTHINE COMPOUNDS

Gail Underiner, Brier, Wash., assignor to Cell Therapeutics, Inc., Seattle, Wash.

Continuation of Ser. No. 977,993, Nov. 18, 1992. This application Apr. 13, 1994, Ser. No. 227,295

Int. Cl.[6] A61K *31/52*

U.S. Cl. 514—261 5 Claims

1. A pharmaceutical composition consisting essentially of 1-(5-oxohexyl)-3-methylxanthine, and an anti-P450 agent other than nifedipine in admixture with a pharmaceutically acceptable excipient.

5,795,898

METHOD FOR TREATING DISEASES MEDIATED BY CELLULAR PROLIFERATION IN RESPONSE TO PDGF,EGF,FGF AND VEGF

Paul A. Brown, Snohomish; Stuart L. Bursten, Snoqualmie; Glenn C. Rice, and Jack W. Singer, both of Seattle, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Division of Ser. No. 181,947, Jan. 14, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 485,325

Int. Cl.[6] A61K *31/52;31/445;31/415;31/40*

U.S. Cl. 514—263 9 Claims

1. A method for treating Kaposi's sarcoma in a patient in need thereof which comprises administering a compound that inhibits signal transduction through cellular accumulation of non-arachidonyl phosphatidic acid (PA) selected from the group consisting of 1-o-octadecanyl 2-oleoyl PA, 1-oleoyl 2-linoleoyl PA, 1-o-octadecanyl 2-linoleoyl PA, 1-o-octadecanyl-9,12-dienyl 2-linoleoyl PA, 1-myristoyl 2-oleoyl PA, 1-o-myristoyl 2-stearoyl PA, 1,2-sn-dilinoleoyl PA, 1-oleoyl 2-linoleoyl PA, 1-stéaroyl 2-oleoyl PA, 1-o-oleoyl 2-20:4 PA, 1-o-linoleoyl 2-20:4 PA, 1-o-linoleoyl 2-20:5 PA.

5,795,899

SOLUBLE SALTS OF 4-AMINO-2-(4,4-DIMETHYLIMIDAZOLIDIN-2-ON-1-YL) PYRIMIDINE-5-CARBOXYLIC ACID N-METHYL-N-(3-TRIFLUOROMETHYLPHENYL)-AMIDE, A PROCESS FOR THE PREPARATION THEREOF, THE USE THEREOF AS PHARMACEUTICALS AND STARTING MATERIALS

Klaus-Dieter Kampe, Bad Soden am Taunus; Ernold Granzer, Kelkheim; Michael Leineweber, Frankfurt am Main, and Manfred Hüttinger, Wien, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

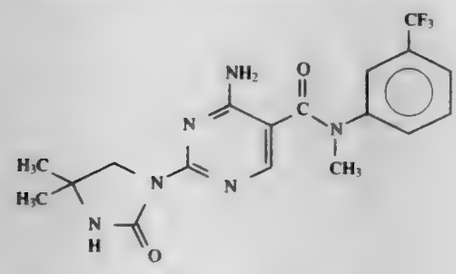
Continuation of Ser. No. 16,527, Feb. 11, 1993, abandoned. This application Feb. 23, 1995, Ser. No. 394,521

Claims priority, application Germany, Feb. 22, 1992, 42 05 453.4

Int. Cl.[6] C07D *403/02;* A61K *31/505*

U.S. Cl. 514—275 3 Claims

1. A water soluble or water freely soluble physiologically tolerable acid addition salt of a compound of the formula



selected from the group consisting of:

a. 4-amino-2-(4,4-dimethylmidazolidin-2-on-1-yl)pyrimidine-5-carboxylic acid N-methyl-N-(3-trifluoromethylphenyl)amide hydrochloride;

b. 4-amino-2-(4,4-dimethylimidazolidin-2-on-1-yl)primidine-5-carboxylic acid N-methyl-N-(3-trifluoromethylphenyl)amide hydrobromide;

c. 4-amino-2-(4,4-dimethylmidazolidin-2-on-1-yl)primidine-5-carboxylic acid N-methyl-N-(3-trifluoromethylphenyl)amide nitrate;

d. 4-amino-2-(4,4-dimethylimidazolidin-2-on-1-yl)primidine-5-carboxylic acid N-methyl-N-(3-trifluoromethylphenyl)amidehydrogen (R,R)-tartrate;

e. 4-amino-2-(4,4-dimethylimidazolidin-2-on-1-yl)primidine-5-carboxylic acid N-methyl-N-(3-trifluoromethylphenyl)amide para-toluenesulfonate.

5,795,900

SYMMETRICAL BIS-HETEROARYL-METHOXY-PHENYLALKYL CARBOXYLATES AS INHIBITORS OF LEUKOTRIENE BIOSYNTHESIS

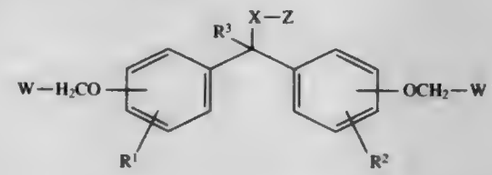
Clint D. Brooks; Pramila Bhatia, both of Libertyville; Teodozyj Kolasa, Lake Villa; Andrew O. Stewart, Libertyville, all of Ill.; David E. Gunn, Hamden, Conn., and Richard A. Craig, Racine, Wis., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Sep. 17, 1996, Ser. No. 703,441

Int. Cl.[6] C07D *213/30;215/14;401/10;* A61K *31/47*

U.S. Cl. 514—314 16 Claims

1. A compound of formula



W is selected from the group consisting of

(a) quinolyl;

(b) quinolyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms,
phenyl,
phenyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms,
pyridyl,
pyridyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms;

(k) pyridyl;

(l) pyridyl substituted with a substituent selected from the group consisting of
phenyl,
phenyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms,
haloalkyl of one to six carbon atoms, and
alkoxy of one to six carbon atoms,
pyridyl,
pyridyl substituted with a substituent selected from the group consisting of
halogen,
alkyl of one to six carbon atoms, and

alkoxy of one to six carbon atoms;

R^1 and R^2 are independently selected from the group consisting of:

(a) hydrogen,

(b) alkyl of one to six carbon atoms,

(c) haloalkyl of one to six carbon atoms,

(d) alkoxy of one to six carbon atoms, and

(e) halogen;

R^3 is selected from the group consisting of

(a) hydrogen and

(b) alkyl of one to six carbon atoms;

X is absent or is selected from the group consisting of:

(a) alkylene of one to six atoms,

(b) alkenylene of one to six carbon atoms, and

(c) alkynylene of one to six carbon atoms;

Z is selected from the group consisting of:

(a) —COM,

(b) —CH=N—O—A—COM,

(c) —CH_2—O—N=A—COM, and

(d) —OR^3 where R^3 is hydrogen or alkyl of one to six carbon atoms wherein

A is selected from the group consisting of

(a) alkylene of one to six carbon atoms, and

(b) cycloalkylene of three to eight carbon atoms; and

M is selected from the group consisting of

(a) a pharmaceutically acceptable metabolically cleavable group,

(b) —OR^3 where R^3 is selected from the group consisting of:

hydrogen, and

alkyl of one to six carbon atoms, and

(c) —NR^7R^8 where R^7 and R^8 are independently selected from the group consisting of:

hydrogen,

alkyl of one to six carbon atoms,

hydroxy, and

alkoxy of one to six carbon atoms,

or R^7 and R^8 taken together define a five- to eight-membered ring, with the proviso that R^7 and R^8 may not simultaneously be hydroxyl,

(d) —$NR^3SO_2R^9$ wherein R^3 is as defined above and R^9 is alkyl of one to six carbon atoms,

(e) —NH-tetrazolyl, and

(f) glycinyl.

5,795,901

INSECTICIDAL N-(SUBSTITUTED ARYLMETHYL)-4-[BIS(SUBSTITUTED ARYL)HYDROXYMETHYL]PIPERIDINIUM SALTS

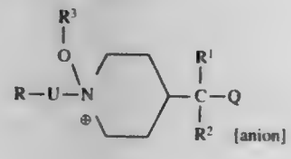
Steven W. Szczepanski, Morrisville, Pa., assignor to FMC Corporation, Phila., Pa.

Filed May 6, 1997, Ser. No. 852,160

Int. Cl.[6] C07D 211/22; A01N 43/40

U.S. Cl. 514—326 **27 Claims**

1. A compound of the formula:

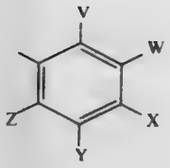


in which

Q is hydroxy;

U is —$(CH_2)_n$—, where n is 1;

R is



in which:

V, W, Y, and Z are each hydrogen;

X is alkoxy, cycloalkylalkoxy, alkoxycarbonyl, alkoxycarbonylamino, or a five- or six-membered heteroaryl or heteroaryloxy, each heteroaryl optionally substituted with halogen, cyano, alkyl, haloalkyl, alkoxy, haloalkoxy, alkoxyalkyl, or haloalkoxyalkyl;

R^1 and R^2 are independently selected from haloalkyl; phenyl substituted with halogen, halothio, haloalkyl, or haloalkoxy; or a five- or six-membered heteroaryl substituted with halogen or haloalkyl;

R^3 is alkyl, haloalkyl, hydroxyalkyl, alkoxyalkyl, dialkylaminoalkyl, alkylaminocarbonyloxyalkyl, alkylthioalkyl, alkylsulfonylalkyl, alkylcarbonyloxyalkyl, alkoxycarbonylalkyl, carboxyalkyl, carboxyarylalkyl, arylcarbonyl, sulfonato, or sulfonatoalkyl, and may bear a negative charge resulting in an inner salt; and

a separate anion is chloride, bromide, iodide, or an phenyl or alkyl sulfate or sulfonate;

with the proviso that at least one of R^1 and R^2 is phenyl substituted in the para position or pyrid-2-yl or pyrimidin-2-yl, each substituted in the the 5-position; each aliphatic moiety contains not more than 4 carbon atoms, except that R^3 may contain up to eighteen carbon atoms; halogen means bromine, chlorine, or fluorine; each heteroaryl contains from 1 to 4 nitrogen atoms, or 1 or 2 oxygen or sulfur atoms, or 1 or 2 nitrogen atoms and an oxygen or sulfur atom.

5,795,902

3-SUBSTITUTED 2-OXINDOLE-1 CARBOXAMIDE PHARMACEUTICAL COMPOSITIONS

Imram Ahmed, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/US93/08063, § 371 Date Apr. 6, 1995, § 102(e) Date Apr. 6, 1995, PCT Pub. No. WO94/07488, PCT Pub. Date Apr. 14, 1994

Continuation of Ser. No. 416,721, Mar. 6, 1995, abandoned. This PCT application Sep. 2, 1993, Ser. No. 715,748

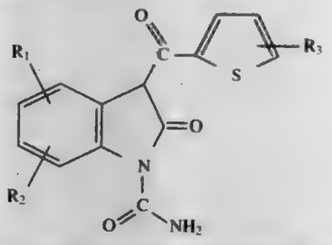
Int. Cl.[6] A61K 31/40

U.S. Cl. 514—354 **3 Claims**

1. A pharmaceutical preparation comprising:

(A) at least one triglyceride or propylene glycol diester of fractionated coconut oil fatty acids, wherein said coconut oil fatty acids include C_8 to C_{10} fatty acids; and

(B) at least one compound of the formula



I

where R_1, R_2, and R_3 are each independently hydrogen, fluoro, bromo, or chloro, or a pharmaceutically acceptable salt thereof,

wherein the ratio of % by weight of (A) to % by weight of (B) ranges from 5.6 to 999.

5,795,903

6-POLYFLUOROALKOXY-AND 6-POLYFLUOROALKYL-2-AMINOBENZOTHIAZOLE DERIVATIVES

Philip Chapelle, Draveil; Claude Gaillard, Thiais; Patrick Jimonet, Villepreux; Erik Louvel; Michel Martinet, both of Paris; Serge Mignani, Chatenay-Malabry, and Gérard Sanderink, Saint-Remy-les-Chevreuse, all of France, assignors to Rhone-Poulenc Rorer S.A., Antony, France

PCT No. PCT/FR95/01392, § 371 Date Apr. 24, 1997, § 102(e) Date Apr. 24, 1997, PCT Pub. No. WO96/13492, PCT Pub. Date May 9, 1996

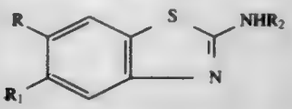
PCT Filed Oct. 23, 1995, Ser. No. 817,744

Claims priority, application France, Oct. 26, 1994, 94 12796

Int. Cl.[6] A61K *31/425;* **C07D** *277/82*

U.S. Cl. 514—367 **9 Claims**

1. A compound of formula (I):



(I)

in which R represents a polyfluoroalkoxy or polyfluoroalkyl radical, and either R_1 represents a hydrogen atom and R_2 represents a hydroxyl radical, or R_1 represents a hydroxyl radical and R_2 represents a hydrogen atom;

it being understood that the alkoxy and alkyl portions of said radicals contain 1 to 4 straight- or branched-chain carbon atoms,

and the salts of said compound of formula (I).

5,795,904

ENHANCED FUNCTIONAL RECOVERY OF THE HEART BY LOSARTAN TREATMENT AFTER AN ISCHEMIC ATTACH

Sheila M. Cohen, Cranford, and Jeffrey G. Werrmann, Pittstown, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 6, 1996, Ser. No. 761,261

Int. Cl.[6] A61K *31/41*

U.S. Cl. 514—381 **5 Claims**

1. A method of acute treatment for enhancing functional recovery of a heart post-ischemia comprising the administration of a single dose of a therapeutically effective amount of losartan, EXP3174, or a pharmaceutically acceptable salt of either compound, to a patient or a patient's isolated heart in need of said treatment.

5,795,905

CRF RECEPTOR ANTAGONISTS AND METHODS RELATING THERETO

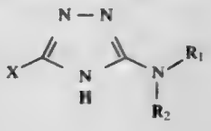
James R. McCarthy, Solana Beach; Yun Feng Xie, Carlsbad; Jeffrey P. Whitten, San Diego; Thomas R. Webb, Olivenhain; Chen Chen, San Diego, all of Calif., and John Y. Ramphal, Lafayette, Colo., assignors to Neurocrine Biosciences, Inc., San Diego, Calif.

Filed Jun. 6, 1995, Ser. No. 468,799

Int. Cl.[6] A61K *31/41;* **C07D** *249/14*

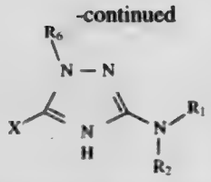
U.S. Cl. 514—383 **54 Claims**

1. A compound represented by structure V or VI:



V

-continued



VI

wherein

R_1 and R_2 are independently selected from a C_1–C_6 alkyl group, a C_3–C_6 alkenyl group, a C_2–C_6 alkylether group, a C_2–C_6 alkylthioether group, a C_4–C_9 cycloalkylalkyl group, a C_7–C_{20} dicycloalkylalkyl group, a C_7–C_{20} cycloalkylarylalkly group, a C_7–C_{20} arylalkyl group, a C_7–C_{20} diarylalkyl group, a C_3–C_4 heteroaryl group, a C_3–C_4 heteroarylalkyl group, and substituted derivatives thereof,

R_6 is selected from hydrogen and methyl; and

X is a 2,4-, 2,6-, 2,4,5- or 2,4,6-substituted phenyl group wherein each substituent of the substituted phenyl group is individually selected from a C_1–C_3 alkyl, a C_1–C_3 alkoxy, halogen, a C_1–C_3 thioalkyl group and a C_2–C_3 haloalkyl.

5,795,906

Patent Not Issued For This Number

5,795,907

GASTIN AND CCK RECEPTOR LIGANDS

Sarkis Barret Kalindjian, Surrey; Katherine Isobel Mary Steel, Kent; Michael John Pether, Kent; Jonathan Michael Richard Davies, Kent; Caroline Minli Rachel Low, Surrey; Martin Lyn Hudson, Brightton; Ildiko Maria Buck, London; Iain Mair McDonald, Kent; David John Dunstone, London, and Matthew John Tozer, London, all of United Kingdom, assignors to James Black Foundation Limited, London, United Kingdom

PCT No. PCT/GB94/01741, § 371 Date Mar. 18, 1996, § 102(e) Date Mar. 18, 1996, PCT Pub. No. WO95/04720, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 9, 1994, Ser. No. 583,008

Claims priority, application United Kingdom, May 27, 1994, 9410688; May 27, 1994, 9410688

Int. Cl.[6] A61K *31/40;31/415;* C07D *415/54;453/02*

U.S. Cl. 514—397 13 Claims

1. A compound of the formula



(Ia)

wherein A represents indole or benzimidazole , wherein W and X replace hydrogen on adjacent carbon atoms,

m is from 0 to 6, provided that m is not more than 2 unless R^1 is exclusively halo,

each R^1 is independently selected from the group consisting of halo, amino, amidino, nitro, cyano, hydroxy, sulphamoyl, hydroxysulphonyl, carboxy, esterified carboxy, amidated carboxy, tetrazolyl, C_1 to C_8 alkyl, aryl, substituted aryl, C_1 to C_6 hydroxyalkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy, C_1 to C_6 alkylcarboxyamino, HON=C—, R^{27}—SO_2—NH—, R^{27}—SO_2—NH—CO—, R^{27}—CO—, R^{27} —CO—NH—, R^{27}—CO—NH—SO_2—, R^{27}—CO—NH—SO— and R^{28}—NH—SO_2—,

wherein R^{27} is H, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, aryl or substituted aryl, and R^{28} is H, C_1 to C_6 alkyl, C_1 to C_6 haloalkyl, aryl, substituted aryl, —OH or —CN except that R^{27} cannot be H when attached to a sulphur atom,

W is a carbonyl, sulphonyl or sulphinyl group, and

X is a carbonyl, sulphonyl or sulphinyl group, provided that at least one of W and X contains carbonyl,

Y is R^3—N(R^4)— or $R^{3'}$—O—, wherein R^3 is H or C_1 to C_{15} hydrocarbyl, optionally substituted by halogen, wherein up to two CH groups of the hydrocarbyl moiety optionally may be replaced by a nitrogen atom, and wherein up to two CH_2 groups of the hydrocarbyl moiety optionally may be replaced by an oxygen or sulphur atom, $R^{3'}$ is C_6 to C_{15} hydrocarbyl, optionally substituted by halogen, wherein up to two carbon atoms of the hydrocarbyl moiety optionally may be replaced by a nitrogen oxygen or sulphur atom, and

R^4 is H, C_1 to C_3 alkyl, carboxymethyl or esterified carboxymethyl, provided that Y does not contain a —O—O— group, and Z is selected from

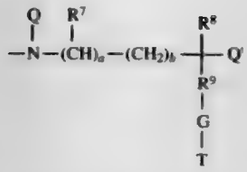
i) —O—R^5

wherein R^5 is H, C_1 to C_5 alkyl, phenyl, substituted phenyl, benzyl or substituted benzyl;

ii) —N(Q)—H

wherein Q is H, C_1 to C_5 hydrocarbyl, or R^6—U, wherein R^6 is a bond or C_1 to C_5 alkylene and U is aryl, substituted aryl, heterocyclic, substituted heterocyclic or cycloalkyl,

(iii)



wherein a is 0 or 1 and b is from 0 to 3,

R^7 is H or methyl,

R^8 is H or methyl; or R^8 is CH_2= and Q' is absent; or R^7 and R^8 are linked to form a 3- to 7-membered ring,

R^9 is a bond or C_1 to C_5 hydrocarbylene,

G is a bond, —CHOH— or —C(0)—

Q' is as recited above for Q or Q' is R^6—$(C(0))_d$—L—$(C(0))_e$— R^5, wherein R^5 and R^6 are as defined above, L is O, S or —$N(R^{10})$—, wherein R^{10} is as defined above for R^4, and d and e are 0 or 1, provided that d+e<2);

or Q' and R^8, together with the carbon atom to which they are attached, form a 3- to 7-membered ring,

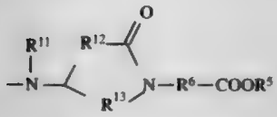
Q is as defined above;

or Q and R^8 together form a group of the formula $—(CH_2)_f—V—(CH_2)_g$ wherein V is —S—, —S(0)—, $S(0)_2$—, $—CH_2—$, —CHOH— or —C(0)—, f is from 0 to 2 and g is from 0 to 3;

or, when Q' is $—R^6—U$ and U is an aromatic group, Q may additionally represent a methylene link to U, which link is ortho to the R^6 link to U,

T is H, cyano, C_1 to C_4 alkyl, $—CH_2OH$, carboxy, esterified carboxy, amidated carboxy or tetrazolyl; and

iv)



wherein R^5 and R^1 are as defined above, R^{11} is as defined above for R^4, and R^{12} and R^{13} are independently a bond or C_1 to C_3 alkylene, provided that R^{12} and R^{13} together provide from 2 to 4 carbon atoms in the ring,

wherein said heterocyclic groups are selected from the group consisting of benzimidazolyl, thienyl, furanyl, pyrrolyl, imidazolyl, pyrazolyl, thiazolyl, isothiazolyl, oxazolyl, pyrrolidinyl, pyrrolinyl, imidazolidinyl, imidazolinyl, pyrazolidinyl, tetrahydrofuranyl, pyranyl, pyronyl, pyridyl, pyrazinyl, pyridazinyl, piperidyl, piperazinyl, morpholinyl, thionaphthyl, benzafuranyl, isobenzofuryl, indolyl, oxyindolyl, isoindolyl, indazolyl, indolinyl, 7-azaindolyl, isoindazolyl, benzopyranyl, coumarinyl, isocoumarinyl, quinolyl, isoquinolyl, naphthridinyl, cinnolinyl, quinazolinyl, pyridopyridyl, benzoxazinyl, quinoxadinyl, chromenyl, chromanyl, isochromanyl and carbolinyl,

and wherein said substituted aryl, benzyl, phenyl, or heterocyclic groups independently are substituted with up to 3 substituents, independently selected from the group consisting of halo, amino, amidino, nitro, cyano, hydroxy, sulphamoyl, hydroxysulphonyl, carboxy, esterified carboxy, amidated carboxy, tetrazolyl, C_1 to C_8 alkyl, C_1 to C_6 hydroxyalkyl, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy, C_1 to C_6 alkylcarboxyamino, HON=C—, R^{27} $—SO_2—NH—$, R^{27} $—SO_2—NH—CO—$, $R^{27}—CO—$, R^{27} —CO—NH—, $R^{27}—CO—NH—SO_2—$, $R^{27}—CO—NH—SO—$ and $R^{28}—NH—SO_2—$,

or a pharmaceutically acceptable salt thereof.

5,795,908

SMALL MOLECULE INHIBITORS OF ROTAMASE ENZYME ACTIVITY

Gregory S. Hamilton, Catonsville, and Joseph P. Steiner, Hampstead, both of Md., assignors to GPI Nil Holdings, Inc., Wilmington, Del.

Continuation of Ser. No. 650,461, May 21, 1996, which is a continuation of Ser. No. 479,436, Jun. 7, 1995, Pat. No. 5,614,547. This application Jan. 23, 1997, Ser. No. 787,161

Int. Cl.[6] C07D *207/16;* **A01K** *31/40*

U.S. Cl. 514—423 **15 Claims**

7. A method of promoting neuronal regeneration and growth in mammals, comprising administering to a subject an effective non-immunosuppressive amount of a neurotrophic N-glyoxyl prolyl ester compound having an affinity for FKBP-type immunophilins wherein the immunophilin exhibits rotamase activity and the neurotrophic compound inhibits the rotamase activity of the immunophilin.

5,795,909

DHA-PHARMACEUTICAL AGENT CONJUGATES OF TAXANES

Victor E. Shashoua, Brookline, Mass.; Charles S. Swindell, Merion; Nigel L. Webb, Bryn Mawr, both of Pa., and Matthews O. Bradley, Laytonsville, Md., assignors to Neuromedica, Inc., Conshohocken, Pa.

Filed May 22, 1996, Ser. No. 651,312

Int. Cl.[6] A61K *31/335;31/22*

U.S. Cl. 514—449 **12 Claims**

1. A method of treating a mammalian cell proliferative disorder comprising:

administering to a subject in need of such treatment a covalent conjugate of cis-docosahexanoic acid and a pharmaceutical agent effective for treating said condition, wherein the pharmaceutical agent is a taxane.

5,795,910

METHOD AND COMPOSITIONS FOR INHIBITING PROTEIN KINASES

Neill A. Giese, and Nathalie Lokker, both of San Francisco, Calif., assignors to Cor Therapeutics, Inc., So. San Francisco, Calif.

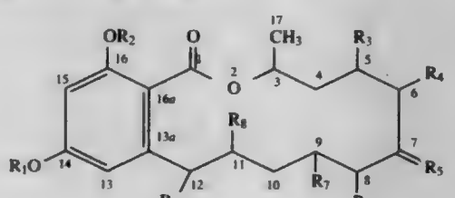
Filed Oct. 28, 1994, Ser. No. 332,597

Int. Cl.[6] A61K *31/335*

U.S. Cl. 514—450 **28 Claims**

1. A method for inhibiting a protein kinase, which comprises:

contacting a composition containing a protein kinase with a compound of the formula



wherein:

R_1 is H, lower alkyl, or lower alkanoyl;

R_2 is H, lower alkyl, or lower alkanoyl;

R_3 and R_4 together represent a cis double bond,

R_5 is =O;

R_6 and R_7 together represent a double bond or —O— or each of R_6 and R_7 independently represents H or OR;

R_8 and R_9 together represent a double bond or —O— or each of R_8 and R_9 independently represents H or OR, and

each R independently represents H, lower alkyl, or lower alkanoyl, in an amount effective to inhibit said protein kinase.

5,795,911
COMPOSITION FOR TREATING *CONDYLOMA ACUMINATA*

Shu Jun Cheng; De Chang Wang, both of Beijing, China, and Yukihiko Hara, Fujieda, Japan, assignors to Cancer Institute (Hospital), Chinese Academy of Medical Sciences, Beijing, China, and Mitsui Norin Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1997, Ser. No. 835,920
Claims priority, application Japan, Nov. 18, 1996, 8-321195
Int. Cl.[6] A61K *31/35*
U.S. Cl. 514—456 **15 Claims**

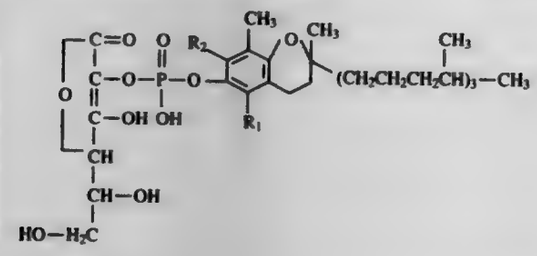
1. A method of treating Condyloma acuminata caused by human papillomavirus, comprising applying to an infected area on a human a composition which comprises a tea catechin as a main component in an amount effective for treating Condyloma acuminata.

5,795,912
THERAPEUTIC COMPOSITION FOR CORNEAL IMPAIRMENT

Kazuo Tsubota, Funabashi, Japan, assignor to Senju Pharmaceutical, Co., Ltd., Osaka, Japan

Continuation of Ser. No. 670,236, Jun. 17, 1996, which is a continuation of Ser. No. 427,902, Apr. 26, 1995. This application Mar. 12, 1997, Ser. No. 815,511
Int. Cl.[6] A61K *31/355*
U.S. Cl. 514—458 **1 Claim**

1. A method of treating corneal impairment selected from electricity-related ophthalmia and snow-related ophthalmia, which comprises administering to a human in need thereof an effective amount of a compound of the formula



wherein R_1 and R_2 are the same or different and each represents a hydrogen atom or a methyl group; or a pharmacologically acceptable salt thereof.

5,795,913
OPHTHALMIC COMPOSITION

Kari Lehmussaari; Eija Vartiainen; Timo Reunamaki; Olli Oksala, all of Tampere; Sakari Alaranta, Kangasala, and Esko Pohjala, Tampere, all of Finland, assignors to Santen Oy, Tampere, Finland

PCT No. PCT/FI95/00167, § 371 Date Mar. 15, 1996, § 102(e) Date Mar. 15, 1996, PCT Pub. No. WO95/26712, PCT Pub. Date Oct. 12, 1995
PCT Filed Mar. 29, 1995, Ser. No. 535,033
Claims priority, application Sweden, Mar. 31, 1994, 9401109
Int. Cl.[6] A61K *31/35*
U.S. Cl. 514—459 **10 Claims**

1. Ophthalmic composition in the form of a topical aqueous solution consisting essentially of:

an ophthalmologically active agent containing basic groups,

an ion sensitive, hydrophilic polymer containing acidic groups in an amount of 0.004 to 1.5% by weight,

at least one salt selected from the group of inorganic salts and buffers in a total amount of from 0.01 to 2.0% by weight,

a wetting agent in an amount of 0 to 3.0% by weight,

a preservative in an amount of 0 to 0.02% by weight, as well as water,

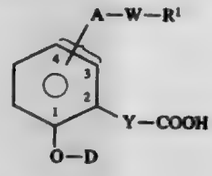
the ratio between salt and polymer being such that the solution exhibits a viscosity of less than 1000 centipoise, and the pH of the solution is between about 4.0 and about 8.0.

5,795,914
PHENYLALKAN(EN)OIC ACID

Mitoshi Konno; Takahiko Nakae, and Nobuyuki Hamanaka, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 90,456, Jul. 13, 1993, Pat. No. 5,457,122, which is a division of Ser. No. 921,342, Jul. 29, 1992, Pat. No. 5,256,686, which is a division of Ser. No. 760,043, Sep. 13, 1991, Pat. No. 5,155,104, which is a division of Ser. No. 524,521, May 17, 1990, Pat. No. 5,086,065. This application Jun. 5, 1995, Ser. No. 462,815
Claims priority, application Japan, Jun. 27, 1989, 1-164213; Dec. 1, 1989, 1-310545; Jan. 9, 1990, 2-1799
Int. Cl.[6] A61K *31/195*
U.S. Cl. 514—562 **3 Claims**

1. A phenylkan(en)oic acid of the formula:

 (I)

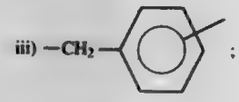
wherein A is:

—O—;

W is:

i) $C_{1\text{-}13}$ alkylene,

ii) phenylene, or

 ;

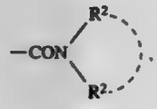
R^1 is:

i) hydrogen,

ii) $C_{1\text{-}4}$ alkyl,

iii) —COOH,

iv)



or

v) $—CH_2OH$;

two R^2 are the same or different,

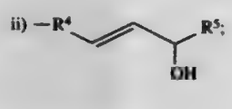
i) hydrogen or

ii) $C_{1\text{-}4}$ alkyl;

Y is ethylene or vinylene;

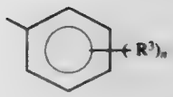
D is:

i) —Z—B, or

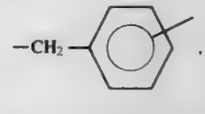
 ;

Z is $C_{3\text{-}11}$ alkylene or alkenylene;

B is



R^3 is:
i) hydrogen,
ii) halogen,
iii) C_{1-8} alkyl, alkoxy or alkylthio, or
iv) C_{2-8} alkenyl, alkenyloxy or alkenylthio;
n is 1-3;
R^4 is C_{1-7} alkylene;
R^5 is:
i) C_{1-12} alkyl,
ii) C_{2-12} alkenyl,
iii) C_{5-7} cycloalkyl, or
iv) phenethyl or phenethyl wherein the ring is substituted by one C_{1-4} alkoxy;
with the proviso that:
i) —A—W—R^1 should bind to the 3- or 4-carbon in the benzene ring, and
ii) when W is phenylene or



A does not represent —O—; and non-toxic salts thereof.

5,795,915

USE OF (X-AMINOMETHYL-3,4-DICHLOROBENZYL) THIOACETAMIDE DERIVATIVES FOR INHIBITING DOPAMINE REUTAKE AND NEW COMPOUNDS FOR THIS USE

Philippe Laurent, Oullins, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Filed May 17, 1996, Ser. No. 649,530
Claims priority, application France, May 19, 1995, 95 06000
Int. Cl.[6] A61K *31/555*
U.S. Cl. 514—567 **18 Claims**

1. A method for the treatment of anhedonia, which comprises administering to a patient in need thereof an effective amount of a compound selected from the group consisting of:
[α-(tert-butylaminomethyl)-3,4-dichlorobenzyl]thioacetamide and its levorotatory isomer;
[α-(tert-amylaminomethyl)-3,4-dichlorobenzyl]thioacetamide and its isomers; and
[α-(1-adamantylaminomethyl)-3,4-dichlorobenzyl]thioacetamide and its isomers; as well as addition salts of the compound with pharmaceutically acceptable acids.

5,795,916

COMPOSITION OF EXTERNAL PREPARATION

Takashi Sekine; Eiji Ogura; Shinichi Ota, and Kazuyuki Ishikawa, all of Ibaraki-ken, Japan, assignors to Tsumura & Co., Tokyo, Japan

PCT No. PCT/JP95/01576, § 371 Date Apr. 21, 1997, § 102(e) Date Apr. 21, 1997, PCT Pub. No. WO96/04902, PCT Pub. Date Feb. 22, 1996
PCT Filed Aug. 8, 1995, Ser. No. 776,700
Claims priority, application Japan, Aug. 9, 1994, 6-206139
Int. Cl.[6] A61K *31/19;31/16*
U.S. Cl. 514—567 **9 Claims**

1. An external preparation composition comprising 0.05 to 5 wt. % of a water-soluble salt of diclofenac, 0.01 to 10 wt. % of a fatty acid dialkylolamide and water, and having a pH of from 7 to 9.

5,795,917

ENZYME INHIBITOR ACARICIDES I

Ida K. Yu, 2727 Marina Blvd., #28, San Leandro, Calif. 94577

Filed Aug. 23, 1996, Ser. No. 703,605
Int. Cl.[6] A01N *37/52*
U.S. Cl. 514—634 **5 Claims**

1. A method of treating a plant infested with mites, said method comprising the step of applying an acaricidally effective amount of guanidine to said plant to reduce mite infestation.

5,795,918

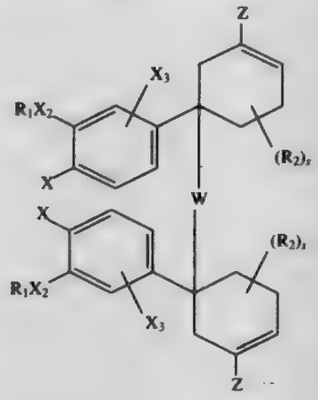
1,3,3-(TRISUBSTITUTED)CYCLOHEX-1-ENE DIMERS AND RELATED COMPOUNDS

Siegfried B. Christensen, IV, Philadelphia, and Joseph M. Karpinski, Pottstown, both of Pa., assignors to SmithKline Beecham Corporation, Phila, Pa.

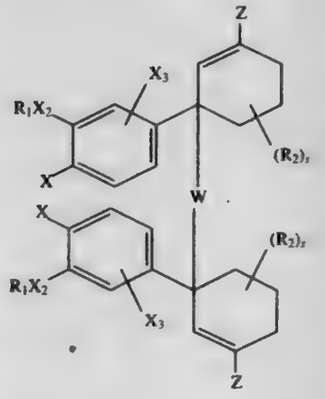
PCT No. PCT/US95/16714, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO96/19978, PCT Pub. Date Jul. 4, 1996
PCT Filed Dec. 21, 1995, Ser. No. 605,182
Int. Cl.[6] A01N *41/10;31/00;* C07C *41/00*
U.S. Cl. 514—709 **4 Claims**

1. A compound of Formula (Ia) or (Ib)

(Ia)



(Ib)



wherein:
R_1 is $—(CR_4R_5)_nC(O)O(CR_4R_5)_mR_6$, $—(CR_4R_5)_nC(O)NR_4(CR_4R_5)_mR_6$, $—(CR_4R_5)_nO(CR_4R_5)_mR_6$, or $—(CR_4R_5)_rR_6$ wherein the alkyl moieties are unsubstituted or substituted with one or more halogens;
m is 0 to 2;
n is 0 to 4;
r is 0 to 6;
R_4 and R_5 are independently hydrogen or a C_{1-2} alkyl;
R_6 is hydrogen, methyl, hydroxyl, aryl, halo substituted aryl, aryloxyC_{1-3} alkyl, halo substituted aryloxyC_{1-3} alkyl, indanyl, indenyl, C_{7-11} polycycloalkyl, tetrahydrofuranyl, furanyl, tet-

rahydropyranyl, pyranyl, tetrahydrothienyl, thienyl, tetrahydrothiopyranyl, thiopyranyl, C_{3-6} cycloalkyl, or a C_{4-6} cycloalkyl containing one or two unsaturated bonds, wherein the cycloalkyl or heterocyclic moiety may be unsubstituted or substituted by 1 to 3 methyl groups, one ethyl group or an hydroxyl group;

provided that:

a) when R_6 is hydroxyl, then m is 2; or

b) when R_6 is hydroxyl, then r is 2 to 6; or

c) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then m is 1 or 2; or

d) when R_6 is 2-tetrahydropyranyl, 2-tetrahydrothiopyranyl, 2-tetrahydrofuranyl, or 2-tetrahydrothienyl, then r is 1 to 6;

e) when n is 1 and m is 0, then R_6 is other than H in $—(CR_4R_5)_nO(CR_4R_5)_mR_6$;

X is YR_2, fluorine, NR_4R_5, or formyl amine;

Y is O or $S(O)_{m'}$;

m' is 0, 1, or 2;

X_2 is O or NR_8;

X_3 is hydrogen or X;

R_2 is $—CH_3$ or $—CH_2CH_3$ unsubstituted or substituted by 1 or more halogens;

s is 0 to 4;

W is alkyl of 2 to 6 carbons, alkenyl of 2 to 6 carbons or alkynyl of 2 to 6 carbons;

Z is $S(O)_mR_9$, $OS(O)_2R_9$, OR_9, $OC(O)NR_7R_7$, $OC(O)(O)_qR_7$, $O(CR_4R_5)_nOR_9$, or NR_9R_9;

q is 0 or 1;

R_7 is hydrogen or R_9;

R_8 is hydrogen or C_{1-4} alkyl unsubstituted or substituted by one to three fluorines, or when R_8 and R_{10} are as $—NR_8R_{10}$ they may together with the nitrogen form a a 5 to 7 membered ring comprised only of carbon atoms or carbon atoms and at least one heteroatom selected from O, N, or S;

R_9 is C_{1-10}alkyl, C_{2-10} alkenyl, C_{3-7}cycloalkyl, C_{4-6} cycloalkenyl, aryl, arylalkyl, heteroaryl, heteroarylalkyl, each of which may be unsubstituted or substituted by one or more fluorine atoms, or two R_9 terms appearing as NR_9R_9 may together with the nitrogen form a 5 to 7 membered ring comprised only of carbon atoms or carbon atoms and at least one heteroatom selected from O, N, or S;

R_{10} is OR_8 or R_8;

provided that:

f) when q is 1 in $OC(O)(O)_qR_7$, then R_7 is not hydrogen; or the pharmaceutically acceptable salts thereof.

5,795,919

INSULATING PAINTS

Seiichi Mitumoto; Shigeto Maejima; Takashi Masuda, and Isamu Karino, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1997, Ser. No. 827,452

Claims priority, application Japan, Apr. 3, 1996, 8-081689

Int. Cl.[6] C08J *5/22*

U.S. Cl. 521—28 **7 Claims**

1. A coating composition for repairing printed circuit boards that have been damaged by contact with an electrolyte, comprising:

a) a cation exchange resin and an anion exchange resin in a ratio of 9:1 to 1:9 by weight, each resin having an average particle size from 1 μm to 100 μm, and

b) a hydrophilic film forming resin.

5,795,920

POLYMERIC DOPE SOLUTION FOR USE IN THE PREPARATION OF AN INTEGRALLY SKINNED ASYMMETRIC MEMBRANE

Yong Soo Kang; Bumsuk Jung, and Un Young Kim, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jun. 21, 1996, Ser. No. 667,627

Claims priority, application Rep. of Korea, Aug. 21, 1995, 95-25635

Int. Cl.[6] C08J *9/28*

U.S. Cl. 521—64 **2 Claims**

1. A polymeric dope solution for the production of an integrally skinned asymmetric membrane, in either hollow fiber or flat sheet form, made by dry-wet phase inversion, which comprises:

(a) a polymeric material selected from the group consisting of polysulfone, polyethersulfone, polyimide, polyetherimide, and a mixture thereof;

(b) a mixed solvent of a main solvent and a co-solvent, the main solvent being selected from the group consisting of N-methyl pyrrolidone, dimethyl formamide, dimethyl acetamide, and dimethyl sulfoxide, the co-solvent being selected from the group consisting of tetrahydrofurane, dioxane, methylene chloride, methyl acetate, ethyl acetate, propyl acetate, chloroform, and a mixture thereof, and the ratio by weight of the main solvent to the co-solvent being within the range of from about 9:1 to about 1:1; and

(c) an additive selected from the group consisting of formic acid, ethanol and methanol;

wherein the ratio by weight of the polymeric material (a) to the mixed solvent (b) is within the range of from about 1:6 to about 2:3.

5,795,921

FOAMS MADE FOR HIGH INTERNAL PHASE EMULSIONS USEFUL AS ABSORBENT MEMBERS FOR CATAMENIAL PADS

John Collins Dyer, Cincinnati, and Susan Nicole Lloyd, Middletown, both of Ohio, assignors to The Procter & Gamble Co., Cincinnati, Ohio

Division of Ser. No. 542,497, Oct. 13, 1995, which is a continuation-in-part of Ser. No. 370,697, Jan. 10, 1995, abandoned. This application Jul. 30, 1996, Ser. No. 688,496

Int. Cl.[6] C08J *9/28;* **A61F** *13/15*

U.S. Cl. 521—146 **9 Claims**

1. A polymeric foam material which is capable of absorbing blood and blood-based fluids, said polymeric foam material comprising a hydrophilic, flexible, nonionic polymeric foam structure of interconnected open cells, which foam structure has:

A) the ability to wick artificial menstrual fluid (AMF) vertically to a height of 5 cm in less than about 60 minutes;

B) a capillary specific surface area in the range of from about 0.0080 to about 0.040 m^2/cc;

C) a resistance to compression deflection of from about 5 to about 95% when measured under a confining pressure of 0.74 psi at 31° C. after 15 minutes;

D) a free absorbent capacity of from about 20 to about 125 g/g; and

E) less than about 2% residual hydratable salts.

5,795,922

BONE CEMENT COMPOSISTION CONTAINING MICROENCAPSULATED RADIOPACIFIER AND METHOD OF MAKING SAME

Hany W. Demian, Potomac, Md., and Shalaby W. Shalaby, Anderson, S.C., assignors to Clemson University, Clemson, S.C.

Filed Jun. 6, 1995, Ser. No. 467,361

Int. Cl.[6] B32B *9/00;5/16;* **A61K** *9/50;* **A61L** *25/00*

U.S. Cl. 523—117 **25 Claims**

1. A radiopaque composition for combining with a liquid monomer to produce a bone cement, said composition comprising:

an acrylic powder capable of polymerizing and ultimately hardening when combined with a corresponding liquid monomer; and

a predetermined amount of hollow microspheres, said hollow microspheres comprising a spherical wall made from a bone cement compatible polymer that dissolves in said liquid monomer, said hollow microspheres further including a radiopacifier contained within said spherical wall, said radiopacifier comprising an inorganic compound and wherein, when said hollow microspheres are combined with a liquid monomer, said bone cement compatible polymer dissolves dispersing said radiopacifier throughout a bone cement matrix, said predetermined amount of hollow microspheres being sufficient to make a bone cement made with said composition radiopaque.

5,795,923

PHOTO-DEGRADABLE SHOTSHELL OF POLYETHYLENE AND EVA-CO TERPOLYMER

Mohammed Shahid, Minneapolis, Minn., assignor to Federal Cartridge Company, Anoka, Minn.

Filed Oct. 17, 1995, Ser. No. 543,946

Int. Cl.[6] F42B *5/30;* **C08K** *3/20;5/095;* **C08L** *23/06*

U.S. Cl. 523—125 **35 Claims**

1. A photo-degradable, injection molded, high strength plastic shotshell component having a degradation composition comprising as its combination of active ingredients:

(a) linear polyethylene having a melt index of 0.1–5.0, and

(b) an ethylene-vinyl acetate-carbon monoxide terpolymer having a ratio by weight to said linear polyethylene of approximately 0.100:1 to 0.270:1, said terpolymer being present in sufficient amounts thereof, to render said linear polyethylene photodegradable.

5,795,924

RESILIENT WELL CEMENT COMPOSITIONS AND METHODS

Jiten Chatterji; Bobby J. King; Patty L. Totten, all of Duncan, and David D. Onan, Lawton, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 673,987, Jul. 1, 1996, abandoned. This application Apr. 17, 1997, Ser. No. 839,839

Int. Cl.[6] C09K *7/02;3/34;* **C08J** *9/00*

U.S. Cl. 523—130 **45 Claims**

1. A well cement composition having improved mechanical properties including elasticity and ductility comprising:

a hydraulic cement;

fumed silica present in an amount in the range of from about 5% to about 30% by weight of hydraulic cement in said composition;

an aqueous rubber latex present in an amount in the range of from about 2.5% to about 45% by weight of hydraulic cement in said composition; and

an effective amount of a latex stabilizer.

5,795,925

VARNISH WITH SKID RESISTANT UV LIGHT RESISTANT PROPERTIES

Newell W. Heywood, 952 Laurel Ave., San Mateo, Calif. 94401

Continuation-in-part of Ser. No. 669,134, Jun. 24, 1996, abandoned, which is a continuation-in-part of Ser. No. 378,046, Jan. 24, 1995, Pat. No. 5,541,239. This application Sep. 12, 1997, Ser. No. 928,942

Int. Cl.[6] C08J *3/00;* **C08K** *7/16;9/00;* **C08L** *75/00*

U.S. Cl. 523—223 **6 Claims**

1. A liquid varnish for forming on a surface a substantially translucent film to confer on said surface the properties of mar and skid resistance, and resistance to degradation by ultraviolet light, said varnish including:

a clear varnish forming liquid polymer system;

particles of cross linked translucent polymer particles having an average diameter in a range of diameters extending from 20 microns to 200 microns that contain uv absorber;

said particles suspended in said liquid polymer system providing said liquid varnish for forming a substantially translucent film on said surface to confer on said surface the properties of mar and skid resistance and resistance to degradation by ultraviolet light.

5,795,926

PREPARATION OF FINELY DIVIDED POLYMER POWDERS

Manfred Niessner, Ludwigshafen; Norbert Grund, Ludwigshafen; Wilfried Heide, Freinsheim, and Heinrich Hartmann, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 564,132, Aug. 8, 1990, abandoned. This application Nov. 21, 1991, Ser. No. 795,307

Claims priority, application Germany, Aug. 8, 1989, 39 26 129.4

Int. Cl.[6] C08K *00/00*

U.S. Cl. 523—339 **6 Claims**

1. A process for the preparation of a finely divided polymer powder comprising:

i) polymerizing water-soluble monomers in the aqueous phase of a water-in-oil emulsion in the presence of

(a) a water-in-oil emulsifier;

(b) from 50 to 5,000 ppm of at least one crosslinking agent;

(c) from 1 to 20% by weight, based on the monomers employed in the polymerization of at least one oil-in-water emulsifier; and

(d) free-radical polymerization initiators;

(ii) adding a protective colloid to the water-in-oil emulsion in an amount of from 0.1 to 10% by weight, based on the polymer, after the polymerization is complete;

(iii) removing water from the resultant water-in-oil polymer suspension by azeotropic distillation; and

(iv) isolating the suspended finely divided polymer powder;

wherein sorbitan esters are not employed as both said water-in-oil emulsifier and said protective colloid and

wherein said finely divided polymer powder consists of an agglomeration of primary particles having a mean particle size of from 0.1 to 20 μm.

5,795,927

COLOR STABLE WRINKLE FINISH EPOXY POWDER COATING

Owen H. Decker, Wyomissing; David A. Mountz, Douglasville, and Charles P. Tarnoski, Sinking Sprink, all of Pa., assignors to Morton International, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 650,081, May 17, 1996, Pat. No. 5,688,878. This application Jan. 3, 1997, Ser. No. 775,976

Int. Cl.[6] C08L 63/00; C08F 283/00

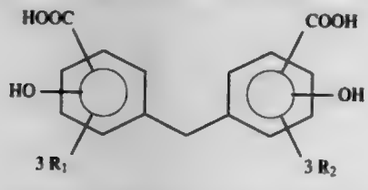
U.S. Cl. 523—401 7 Claims

1. A powdered coating composition providing a light color wrinkled finish, said composition comprising:

an epoxy resin,

a catalyst,

a curing agent selected from the group consisting of methylenedisalicylic acid and other than methylenedisalicylic acid having a structure in general accordance with the formula



wherein each R_1 is selected from the group consisting of H, C_1–C_{20}alkyl groups, C_6–C_{10} aryl groups and aryl substituted methylene groups and wherein each R_2 is selected from the group consisting of H, C_1–C_{20} alkyl groups, C_6–C_{10} aryl groups and aryl substituted methylene groups, and

a color stabilizer comprising at least one compound selected from the group consisting of hindered phenolic compounds, divalent sulfur compounds, trivalent phosphorous compounds and metal chelators, said color stabilizer present at a level between about 0.1 and about 5 phr and effective to avoid a red color shift Δa of more than about 1.5 upon cure of said composition, as compared to the same composition which has been fused but not cured.

5,795,928

CELLULOSE ETHERS IN EMULSION POLYMERIZATION DISPERSIONS

Bernardus J. W. Janssen, Zwijndrecht; Gijsbert Kroon, Sliedrecht; Dirk Kruythoff, Papendrecht, and Willemina G. Salomons, Zwijndrecht, all of Netherlands, assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 542,269, Oct. 20, 1995, abandoned, which is a continuation of Ser. No. 333,697, Nov. 3, 1994, abandoned. This application Nov. 3, 1995, Ser. No. 553,007

Int. Cl.[6] C08L 3/064

U.S. Cl. 524—48 63 Claims

1. In a process for preparing a latex system that has a tendency to flocculate because of grafting, the improvement comprising aqueous emulsion polymerizing of at least one ethylenically unsaturated monomer selected from the group consisting of acrylic acid, methacrylic acid, butyl acrylate, methyl methacrylate, acrylic esters, styrene, vinyl ethers, vinyl, vinylidene halides, N-vinyl pyrrolidone, ethylene, C_3 or greater alpha-olefins, allyl amines, allyl esters of saturated monocarboxylic acids and amides thereof, propylene, 1-butene, 1-pentene, 1-hexene, 1-decene, allyl amines, allyl acetate, allyl propionate, allyl lactate, their amides, and mixtures thereof, in the presence of an amount effective for stabilizing the latex system, of a water soluble protective colloid with a weight average molecular weight of less than about 75,000, selected from the group consisting of carboxymethylcellulose and derivatives thereof having a carboxyl degree of substitution lower limit of about 0.7, hydroxyethylcellulose, ethyl hydroxyethylcellulose, methylcellulose, methyl hydroxypropylcellulose, hydroxypropylcellulose, poly(acrylic acid) and alkali metal salts thereof, ethoxylated starch derivatives, sodium and other alkali metal polyacrylates, water soluble starch glue, gelatin, water soluble alginates, casein, agar, natural and synthetic gums, partially and fully hydrolyzed poly(vinyl alcohol), polyacrylamide, poly(vinyl pyrrolidone), poly(methyl vinyl ether-maleic anhydride), gelatin, and casein.

5,795,929

POLYMER ENHANCED ASPHALT EMULSION

William E. Grubba, Red Lion, Pa., assignor to Koch Enterprises, Inc., Wichita, Kans.

Filed Apr. 22, 1997, Ser. No. 837,727

Int. Cl.[6] C08L 95/00

U.S. Cl. 524—60 19 Claims

1. An emulsified asphalt-polymer composition comprising;

asphalt;

effective amounts to produce the desired performance characteristics of a polymer-sulfur mix combined with said asphalt, where said polymer-sulfur mix is comprised of a radial copolymer which is a radial styrene-conjugated diene block copolymer with a weight average molecular weight (M_w) between about 75,000 and 400,000 and a linear copolymer which is a linear styrene-conjugated diene di-block copolymer with a weight average molecular weight (M_w) from about 50,000 to about 300,000 and where said radial copolymer and said linear copolymer are in a ratio effective to of from about 50 to 50 percent by weight to about 2.5 to 97.5 percent by weight, respectively;

effective amounts of sulfur required to meet desired performance characteristics; and

effective amounts of an emulsifying agent and water to allow emulsification of the resulting composition.

5,795,930

WATER INSOLUBLE AMMONIUM POLYPHOSPHATE POWDER FOR FLAME-RETARDANT THERMOPLASTIC POLYMER COMPOSITION

Tikashi Fukumura, Kitakyushu; Masuo Iwata, Yokohama; Noriaki Narita, Yokohama; Kouji Inoue, Yokohama; Masaya Tanaka, Kitakyushu; Mika Seki, Yokohama, and Ryoji Takahashi, Tokyo, all of Japan, assignors to Chisso Corporation, Osaka, Japan

PCT No. PCT/JP94/02294, § 371 Date Aug. 3, 1995, § 102(e) Date Aug. 3, 1995

PCT Filed Dec. 28, 1994, Ser. No. 464,605

Claims priority, application Japan, Dec. 28, 1993, 5-354089; Dec. 28, 1993, 5-354672; Apr. 6, 1994, 6-93721

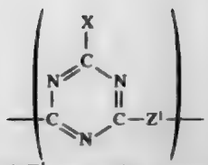
Int. Cl.[6] C08K 9/04; 34/92

U.S. Cl. 524—100 46 Claims

1. A flame-retardant thermoplastic polymer composition comprising;

(A) a solid oxygen-containing metal compound including at least one element selected from the group consisting of Ca, Ba, Sr, Mg, Al, Si, Zn, Cd, Ti, Zr and Sn, and wherein said solid oxygen-containing metal compound is at least one compound selected from the group consisting of a hydroxide, a basic carbonate, a carbonate, a carbonate hydrate, a silicate, a silicate hydrate, an oxide, and an oxide hydrate, said solid oxygen-containing metal compound in an amount of 0.1 to 5% by weight,

(B) a nitrogen-containing organic compound selected from the group consisting of a homopolymer and a copolymer, wherein each of said homopolymer and said copolymer comprises units represented by the following formula (II):



(II)

wherein X and Z^1 are each a group bonded to a triazine skeleton through a nitrogen atom; X is an alkylamino group represented by —NHR^1 or —NR^2R^3, wherein R^1, R^2 and R^3 are each independently a linear or branched alkyl group having 1 to 6 carbon atoms, a morpholino group, a piperidino group or a hydroxyalkylamino group represented by —NHR^4 or —NR^5R^6, wherein R^4, R^5 and R^6 are each independently a linear or branched hydroxyalkyl group having 2 to 6 carbon atoms; and Z^1 is a divalent group selected from the group consisting of piperazine, —$HN(CH_2)_mNH$— wherein m is a number of 2 to 6, and —$NR^7(CH_2)_nR^8N$— wherein n is a number of 2 to 6, and wherein one of said R^7 and R^8 is a hydroxyethyl group, said nitrogen-containing compound in an amount of 0.1 to 20% by weight,

(C) at least one powder selected from the group consisting of a melamine-coated ammonium polyphosphate powder obtained by adding or adsorbing melamine on surfaces of ammonium polyphosphate powder to chemically link a melamine coating to the ammonium polyphosphate powder via an oxygen-proton bond of a polyphosphoric acid derived from the ammonium polyphosphate powder, and a water-insoluble ammonium polyphosphate powder obtained by adding or adsorbing melamine on surfaces of ammonium polyphosphate powder to chemically link a melamine coating to the ammonium polyphosphate powder via an oxygen-proton bond of a polyphosphoric acid derived from the ammonium polyphosphate powder, and reacting an active hydrogen on an amine group of the melamine with a crosslinking agent having a functional group reactive to said active hydrogen to produce a crosslinked structure in the melamine coating, said at least one powder in an amount of 10 to 40% by weight, and

(D) a thermoplastic polymer in an amount of 35 to 88.9% by weight, the total amount of said components (A), (B), (C) and (D) being 100% by weight.

5,795,931

INJECTION WELDING MATERIAL

Tsutomu Katayama; Seiichi Arakawa, and Akio Miyamoto, all of Yamaguchi, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Mar. 29, 1996, Ser. No. 625,453

Claims priority, application Japan, Mar. 31, 1995, 7-074851; Aug. 25, 1995, 7-217758

Int. Cl.[6] C08K *7/14*

U.S. Cl. 524—494 **14 Claims**

1. An injection welded article comprising;

an injection welding material consisting essentially of:

(A1) 40 to 95% by weight, based on the total amount of components (A1) and (B), of a polyamide copolymer comprising 2 to 25% by weight, based on the amount of component (A1), of polyamide 6 component and 98 to 75% by weight, based on the amount of component (A1), of polyamide 66 component, and

(B) 5 to 60% by weight, based on the total amount of components (A1) and (B), of an inorganic filler, wherein said component (A1) and said component (B) are a heat-resistant injection welding material capable of attaching a first member to a second member by forming an injection weld between said first member and said second member and of heat sealing an article.

5,795,932

SURFACE SIZING COMPOSITION

Louis R. Dragner, Rock Hill; Douglas W. Harper, Columbia, and Nolan H. Thompson, Rock Hill, all of S.C., assignors to Sequa Chemicals, Inc., Chester, S.C.

Continuation of Ser. No. 101,459, Aug. 2, 1993, abandoned, which is a continuation-in-part of Ser. No. 910,208, Jul. 8, 1992, abandoned. This application Mar. 7, 1995, Ser. No. 399,894

Int. Cl.[6] C08L *91/06*

U.S. Cl. 524—276 **21 Claims**

1. A surfactantless surface sizing composition for non-woven substrates comprising a mixture of:

a) 15% to 85% by dry weight of the sizing composition of a surfactantless aqueous vinyl polymer or copolymer emulsion containing as the sole emulsifying agent an alkali soluble, acid containing copolymer having a weight average molecular weight of from 5,000 to 15,000; and

b) 85% to 15% by dry weight of the sizing composition of a hydrophobic waxy material that is emulsified by said alkali soluble, acid containing copolymer, and which is mixed with said surfactantless aqueous vinyl polymer or copolymer emulsion.

5,795,933

WATERBORNE COATING COMPOSITIONS HAVING ULTRA LOW FORMALDEHYDE CONCENTRATION

Louis J. Sharp, Libertyville, and Hilda R. Dimaano, Chicago, both of Ill., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Dec. 19, 1996, Ser. No. 769,124

Int. Cl.[6] C08K *3/20*

U.S. Cl. 524—596 **21 Claims**

1. A waterborne coating composition for application to a metal substrate comprising:

(a) about 0.1% to 100%, by weight of nonvolatile material, of a formaldehyde-containing resin, wherein the formaldehyde-containing resin is selected from the group consisting of a phenolic resin, an aminoplast and mixtures thereof;

(b) a formaldehyde scavenger, said scavenger consisting essentially of an organic compound having at least one active methylene hydrogen and a pKa of about 5 to about 13, and present in a sufficient amount to maintain a concentration of free formaldehyde in the composition at 0.1% or less, by weight, for at least six months; and

(c) an aqueous carrier in an amount sufficient such that the waterborne coating composition contains about 10% to about 60% by weight nonvolatile material,

wherein the composition has a pH of about 7 to about 9.5.

5,795,934

METHOD FOR PREPARING A UREA-EXTENDED PHENOLIC RESOLE RESIN STABILIZED WITH AN ALKANOLAMINE

Claude Phillip Parks, Olympia, Wash., assignor to Georgia-Pacific Resins, Jr., Atlanta, Ga.

Filed May 20, 1997, Ser. No. 859,094

Int. Cl.[6] C08G *63/48;63/91;12/34*

U.S. Cl. 525—54.3 **19 Claims**

1. In a method for preparing a urea-extended phenolic resole resin, comprising preparing a phenolic resole resin by reacting formaldehyde (F) and phenol (P) at an F:P mole ratio in the range of about 2:1 to 6:1 under aqueous alkaline reaction conditions and reacting free formaldehyde in the phenolic resole resin with urea to form a urea-extended phenolic resole resin, the improvement comprising adding an alkanolamine to the phenolic resole resin, in an amount sufficient to improve the storage stability of the urea-extended phenolic resole resin, either prior to or contemporaneously with the urea reaction with the phenolic resole resin.

5,795,935

THERMOPLASTIC COMPOSITION OF POLYESTER, POLYAMIDE AND GLYCIDYL-MODIFIED POLYOLEFIN

Mitsuteru Mutsuda, Hyogo, Japan, assignor to Daicel Chemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 661,655, Jun. 11, 1996, abandoned, which is a continuation of Ser. No. 357,660, Dec. 16, 1994, abandoned. This application May 12, 1997, Ser. No. 854,486

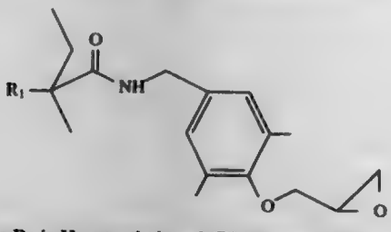
Claims priority, application Japan, Dec. 28, 1993, 5-336525; May 20, 1994, 6-106592

Int. Cl.[6] C08L *51/06;67/04;51/04;77/10*

U.S. Cl. 525—66 **13 Claims**

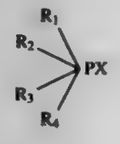
1. A thermoplastic resin composition which comprises (A) a polyester resin, (B) a polyamide resin, (C) a modified polyolefin containing glycidyl units shown by the formula (IA) in an amount of 10^{-4} to 10^{-2} eq/g in terms of epoxy equivalent:

(IA)

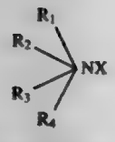


wherein R_1 is H or methyl, and (D) a quaternary phosphonium salt having the formula (II) or a quaternary ammonium salt having the formula (III):

(II)



(III)



wherein R_1–R_4 are independently each a hydrocarbyl group and X is a halogen atom, the weight ratio of the component (A) to the component (B) being from 30:70 to 70:30, the component (C) being contained in an amount of 1 to 50 parts by weight per 100 parts by weight of the sum in total of the components (A) and (B), the component (D) being contained in an amount of 0.01 to 0.1 part by weight per 100 parts by weight of the component (A).

5,795,936

STYRENIC RESIN COMPOSITION

Chuan-Ming Lin, Tainan Hsien, and Dong-Bi Shiueh, Tainan, both of Taiwan, assignors to Chi Mei Corporation, Tainan Hsien, Taiwan

Filed Jun. 27, 1996, Ser. No. 690,452

Int. Cl.[6] C08L *55/02;51/04*

U.S. Cl. 525—71 **3 Claims**

1. A styrenic resin composition comprising:

(1) 5 to 90 weight percent of a graft copolymer (C) prepared by bulk or solution polymerization of 100 parts by weight of monomers including 80 to 45 parts by weight of vinyl aromatic monomers, 15 to 50 parts by weight of vinyl cyanide monomers, and 0 to 40 parts by weight of copolymerizable monomers, in the presence of 0.1 to 10 parts by weight of a rubber graft copolymer (A) having a weight average particle size of 0.05 to 0.8 μm and 0.1 to 10 parts by weight of an acrylic copolymer (B) which is resinous polymer and which is rigid and which is soluble in said monomers, wherein, the acrylic copolymer (B) is prepared from 10 to 100 wt % of at least one monomer selected from (meth)acrylate monomers and acrylonitrile monomer, 0 to 80 wt % of vinyl aromatic monomers and 0 to 30 wt % of copolymerizable monomers;

(2) 95 to 10 weight percent of a graft copolymer (D) prepared by emulsion polymerization of 50 to 15 parts by weight of a mixture of 45 to 80 parts by weight of vinyl aromatic monomers, 15 to 50 parts by weight of vinyl cyanide monomers and, optionally, 0 to 40 parts by weight of copolymerization monomers, in the presence of 50 to 85 parts by weight of a butadienic rubber having a weight average particle size of 0.05 to 0.8 μm; and

(3) 0 to 80 weight percent of a copolymer (E) prepared by polymerization of 80 to 50 parts by weight of vinyl aromatic monomers, 20 to 50 parts by weight of vinyl cyanide monomers and, optionally, 0 to 40 parts by weight of copolymerizable monomers.

5,795,937

Patent Not Issued For This Number

5,795,938

PREPARATION OF TOUGHENED POLYSTYRENE MOLDING MATERIALS

Konrad Knoll, Ludwigshafen; Wolfgang Loth, Bad Dürkheim; Wolfgang Fischer, Ludwigshafen, and Hermann Gausepohl, Mutterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/04809, § 371 Date Jun. 16, 1997, § 102(e) Date Jun. 16, 1997, PCT Pub. No. WO96/18682, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 7, 1995, Ser. No. 849,894

Claims priority, application Germany, Dec. 17, 1994, 44 45 141.5

Int. Cl.[6] C08L *53/02;25/06*

U.S. Cl. 525—98 **8 Claims**

8. A process for continuous preparation of toughened vinyl aromatic compounds, which comprises:

producing a first polymer stream having a temperature above 150° C. by subjecting, at an entry temperature of from 30° to 65° C., a vinyl aromatic compound to anionic polymerization in a first reaction zone (I), without heat exchange with the environment and, if required, with the addition of a solvent, until complete conversion is achieved, and the living chain ends are terminated in a manner known per se;

producing a second polymer stream by subjecting, in a second reaction zone (II) which is operated parallel to the first reaction zone (I), the vinyl aromatic compound and a diene to isothermal anionic polymerization with the use of a suitable solvent, likewise to complete conversion, to give an elastomeric block copolymer whose living chain ends are terminated with a proton-active substance either immediately or after appropriate coupling by means of a polyfunctional compound; and

combining the two polymer streams in a mixing zone (III) and freeing the combined polymer streams from solvent and volatile components in a devolatilization zone.

5,795,939
ADHESION BINDERS WITH GLUTARIMIDE UNITS

Serge Lorek, Pau, France, assignor to Elf Atochem S.A., France

PCT No. PCT/FR94/00488, § 371 Date Aug. 1, 1996, § 102(e) Date Aug. 1, 1996, PCT Pub. No. WO94/25524, PCT Pub. Date Nov. 10, 1994

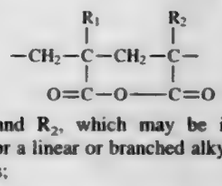
PCT Filed Apr. 28, 1994, Ser. No. 537,929

Claims priority, application France, Apr. 30, 1993, 93 05156

Int. Cl.[6] C08F *8/32*

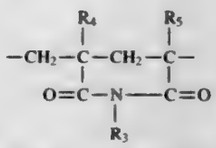
U.S. Cl. 525—199 **9 Claims**

1. An adhesion binder for a fluorinated polymer, which enables the fluorinated polymer to adhere to polymers with which it is incompatible, wherein the adhesion binder comprises a polymer A comprising the moieties:



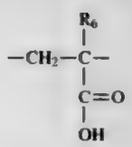
(1)

in which R_1 and R_2, which may be identical or different, represent H or a linear or branched alkyl having from 1 to 20 carbon atoms;



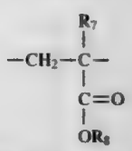
(2)

in which (i) R_4 and R_5, which may be identical or different, represent H or a linear or branched alkyl having 1 to 20 carbon atoms and (ii) R_3 represents H, an alkyl, cycloalkyl, aryl, alkaryl, aralkyl or a heterocycle;



(3)

in which R_6 represents H or a linear or branched alkyl having from 1 to 20 carbon atoms; and



(4)

in which R_7 represents H or a linear or branched alkyl having from 1 to 20 carbons and R_8 represents a linear or branched alkyl having from 1 to 20 carbon atoms;

and wherein it also comprises a second polymer in sufficient quantity to render it less rigid.

5,795,940
PIGMENTARY MATERIAL

Roy W. J. Pearce, Newcastle, and Nigel B. Smith, Stoke on Trent, both of United Kingdom, assignors to Cookson Matthey Ceramics PLC, London, United Kingdom

Filed Sep. 23, 1996, Ser. No. 717,890

Claims priority, application United Kingdom, Dec. 1, 1995, 9524588

Int. Cl.[6] C08L *33/04*

U.S. Cl. 525—222 **26 Claims**

1. Colour concentrate pellets for pigmenting polyvinyl chloride, which pellets are substantially all of diameter 0.1–3 mm and which pellets comprise pigment dispersed in a carrier comprising ethylene-vinyl acetate polymer which is ethylene-vinyl acetate copolymer and/or alloy thereof with polyethylene, the polymer having a vinyl acetate content of 13–28% by weight and a melt flow index (as measured by the method of ASTM D1238 using a 2.16 kg weight at 190° C.) of 3.5–150 g/10 minutes, the pellets comprising at least 30% by weight of the pigment and at least 10% by weight of the polymer.

5,795,941
CROSSLINKABLE BIMODAL POLYOLEFIN COMPOSITIONS

Stephen H. Cree, Terneuzen, Netherlands; Craig A. Wilson, Bois-Guillaume, France, and Sjoerd A. de Vries, Terneuzen, Netherlands, assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 3, 1995, Ser. No. 538,689

Int. Cl.[6] C08L *23/08*

U.S. Cl. 525—240 **14 Claims**

1. A bimodal polyolefin composition comprising two or more ethylene polymer components, said composition satisfying the following conditions:

$M_{n1}/M_{n2}>7$

$M_{n2}>3000$ and

$0.7 \geqq (A_1/(A_1+A_2)) \geqq 0.15$,

wherein A_1, A_2, M_{n1}, and M_{n2} are derived from the molecular weight distribution of the composition obtained via gel permeation chromatography (GPC) by deconvoluting the relative response (RR) as function of the molecular weight (MW) to fit RR and MW to the following function which is a weighted sum of two log normal distribution functions:

$$RR = \frac{A_1}{\sigma_1\sqrt{2\pi}} \exp\left(-\left(\frac{\log(MW)-\mu_1}{\sigma_1\sqrt{2}}\right)^2\right) + \frac{A_2}{\sigma_2\sqrt{2\pi}} \exp\left(-\left(\frac{\log(MW)-\mu_2}{\sigma_2\sqrt{2}}\right)^2\right)$$

using a nonlinear regression technique to obtain values for A_1, A_2, μ_1, μ_2, σ_1, and σ_2, wherein

MW is the GPC molecular weight value,

RR is the relative response which for an individual RR/M_w data set is

$$RR[i] = \frac{\text{Normalized Height}[i]}{\log(MW[i-1]) - \log(MW[i])}$$

in which the Normalized Height [i] is the GPC output for the corresponding MW (i);

μ_1 and σ_1^2 represent the mean and standard deviation of the first log normal distribution;

μ_2 and σ_2^2 represent the mean and standard deviation of the second log normal distribution;

$A_1+A_2=1$ and $0<A_1<1$;

$M_{n1}=10^{\mu 1}$ exp $(-0.5\ (\ln(10)\times\sigma_1)^2)$ and

$M_{n2}=10^{\mu 2}$ exp $(-0.5\ (\ln(10)\times\mu_2)^2)$, and

said composition having an overall density less than 0.900 g/cm^3.

5,795,942

WATER SOLUBLE CONDUCTIVE POLYANILINE COMPOSITES AND PROCESS FOR PREPARING THE SAME

Suh Bong Rhee; Chang Jin Lee, both of Taejeon, Rep. of Korea, and Xianhong Wang, Changchun, China, assignors to Korea Research Institute of Chemical Technology, Taejeon, Rep. of Korea

Filed Jul. 29, 1997, Ser. No. 902,276

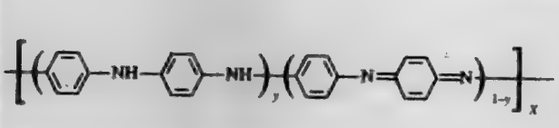
Claims priority, application Rep. of Korea, Aug. 5, 1996, 1996-32545

Int. Cl.[6] C08L 79/02

U.S. Cl. 525—540 3 Claims

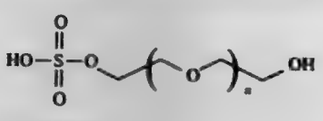
1. A process for preparing water soluble conductive polyaniline composite representing by the formula(III) which comprises reacting emeraldine base-type polyaniline (EB) represented by the formula(I) with poly(ethyleneglycol) hydrogen sulfate (PEGSF) represented by the Formula(II)

Formula I



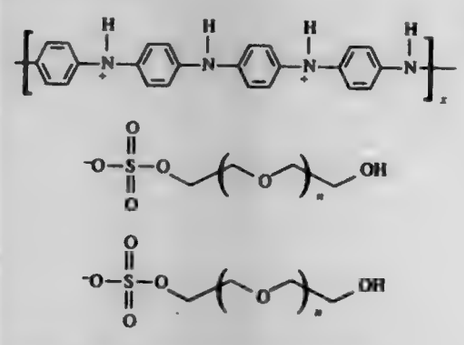
wherein, x is an integer or fractional number; y is 0 to 1.

Formula II



wherein, n is 4 to 200

Formula III



wherein, x and n are same as defined above.

5,795,943

Patent Not Issued For This Number

5,795,944

PROGRAMMED ADDITION OF HEAVY ETHERS FOR MICROSTRUCTURE CONTROL OF DIENE POLYMERS

Teunis Graafland, Overeen, Netherlands, and Arthur Robinson Bean, Jr., Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 12, 1997, Ser. No. 820,404

Int. Cl.[6] C08F 236/10;297/04

U.S. Cl. 526—181 5 Claims

1. In a process for the polymerization of dienes which comprises anionically polymerizing dienes in the presence of an anionic polymerization initiator and a microstructure control agent for control of the vinyl content of the polymer, the improvement which comprises carrying out the polymerization in a first adiabatic stage and a second isothermal stage wherein the control agent is added to the polymerization mixture in two or more doses during the adiabatic stage in amounts and at times sufficient to maintain a constant polymer vinyl content.

5,795,945

POLYMER CONTAINING A CYCLIC OLEFIN MONOMER UNIT

Itaru Natori, Yokohama, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 513,957, Sep. 7, 1995, abandoned. This application Dec. 21, 1995, Ser. No. 576,684

Claims priority, application Japan, Jun. 16, 1993, 5-168341

Int. Cl.[6] C08F 32/02

U.S. Cl. 526—309 17 Claims

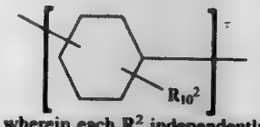
1. A polymer containing a cyclic olefin monomer unit, comprising a main chain represented by the following formula (I):

$$[\leftarrow A\rightarrow_a \leftarrow B\rightarrow_b \leftarrow C\rightarrow_c \leftarrow D\rightarrow_d \leftarrow E\rightarrow_e \leftarrow F\rightarrow_f] \quad (I)$$

wherein A to F are monomer units constituting said main chain in which monomer units A to F are arranged in any order, and a to f are, respectively, weight percentages of monomer units A to F, based on the total weight of monomer units A to F;

wherein:

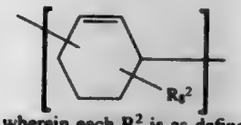
A is selected from the class consisting of cyclic olefin monomer units each being independently represented by the following formula (IV):



(IV)

wherein each R^2 independently represents a hydrogen atom a halogen atom, a C_1–C_{20} alkyl group, a C_2–C_{20} unsaturated aliphatic hydrocarbon group, a C_5–C_{20} aryl group, a C_3–C_{20} cycloalkyl group, a C_4–C_{20} cyclodienyl group or a 5 to 10-membered heterocyclic group having at least one nitrogen, oxygen or sulfur atom as a heteroatom,

B is selected from the class consisting of cyclic conjugated diene monomer units each being independently represented by the following formula (V):



(V)

wherein each R^2 is as defined for formula (IV),

C is selected from the class consisting of chain conjugated diene monomer units,

D is selected from the class consisting of vinyl aromatic monomer units,

E is selected from the class consisting of polar monomer units, and

F is selected from the class consisting of an ethylene monomer unit and α-olefin monomer units; and

wherein

a to f satisfy the following requirements:

$a+b+c+d+e+f=100$,

$0.001 \leqq a \leqq 100$,

$0 \leqq b < 100$,

$0 \leqq c < 100$,

$0 \leqq d < 100$,

$0 \leqq e < 100$, and

$0 \leqq f < 100$,

with the proviso that said monomer unit A is present in an amount of from 0.1 to 100 mole %, based on the total number of moles of the monomer units A and B; and

wherein at least one A monomer unit is bonded in said main chain by a 1,4-bond, with the proviso that when a=100 and said A monomer units are comprised of cyclic olefin monomer units which are the same, said polymer has a number average molecular

weight of from 10,000 to 5,000,000, that when a=100 and said A monomer units are comprised of cyclic olefin monomer units which are different, said polymer has a number average molecular weight of from 1,000 to 5,000,000, and that when $0.001 \leq a+b<100$, said polymer is a block copolymer which contains at least one polymer block containing a contiguous arrangement of at least two A monomer units and which has a number average molecular weight of from 500 to 5,000,000.

5,795,946

HIGH BARRIER PROPYLENE COMPOSITIONS AND THEIR USE IN PACKAGING APPLICATIONS

Pawan Kumar Agarwal, Houston; Aspy Keki Mehta, Humble; Wai Yan Chow, and James John McAlpin, both of Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Houston, Tex.

Continuation of Ser. No. 529,863, Sep. 18, 1995, abandoned. This application Aug. 8, 1997, Ser. No. 908,831

Int. Cl.[6] C08F *10/06;* **B32B** *27/32*

U.S. Cl. 526—348.1 **7 Claims**

1. Composite film having one or more layers comprising polypropylene co-polymer, a majority of whose backbone is derived from propylene, wherein said film has a water vapor transmission rate of less than or equal to about (−7.4428 g×μm/m²×day×% polymer crystallinity) (% polymer crystallinity)+627.32 g×μm/m²×day, or (−0.0189 g×mil/100 in²×day×% polymer crystallinity) (% polymer crystallinity)+1.593 g×mil/100 in²×day.

3. A film having one or more layers comprising isotactic propylene homopolymer having a primary melting temperature in the range of from 140° C. to 160° C., said film having a water vapor transmission rate of less than or equal to (−7.4428 g×μm/m²×day×% polymer crystallinity) (% polymer crystallinity)+627.32 g×μm/m²×day, or (−0.0189 g×mil/100 in²×day×% polymer crystallinity) (% polymer crystallinity)+1.593 g×mil/100 in²×day.

5,795,947

OLEFINICALLY FUNCTIONAL POLYORGANOSILOXANES AND CURABLE SILICONE COMPOSITIONS COMPRISED THEREOF

Jean-Marc Frances, Villeurbanne, and Andre Soldat, Lyon, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Continuation of Ser. No. 267,749, Jul. 5, 1994, abandoned. This application Jul. 11, 1996, Ser. No. 678,174

Claims priority, application France, Jul. 2, 1993, 93 08115

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 **17 Claims**

1. A functional mixed polyorganosiloxane comprising:

(a) identical or different recurring structural units of the formula (I):

$$R_aY_bX_cSiO_{(4-a-b-c)/2} \quad (I)$$

in which the radicals R, which may be identical or different, are each a C_1–C_{18} alkyl radical, a vinyl radical, a C_6–C_{12} aryl or aralkyl radical optionally substituted by halogen atoms, at least 80 mol % of the radicals R being methyl radicals;

wherein:

(i) the radicals X, which may be identical or different, are each a hydrogen atom or a reactive polar functional group devoid of the heteroatoms nitrogen and sulfur and bonded to silicon via an Si—C or Si—O—C linkage; and the radicals Y, which may be identical or different, are each a linear or branched, at least C_{10} alkenyl or at least C_4 alkenyloxy radical bonded to silicon by an Si—C bond, said alkenyl or alkenyloxy radical containing at least one site of ethylenic unsaturation at the end of a polymer chain and/or along the polymer chain; or

(ii) the radicals X, which may be identical or different, are each a hydrogen atom or a reactive polar functional group devoid of the heteroatoms nitrogen and sulfur and bonded to silicon via an Si—C or Si—O—C linkage, said polar functional groups being either hydrogen and/or groups containing from 1 to 20 carbon atoms selected from the group consisting of hydroxyfunctional groups, aryloxyfunctional groups, acyloxyfunctional groups, alkenylcarbonyloxyfunctional groups, and trialkoxysilylfunctional groups; and the radicals Y, which may be identical or different, are each a linear or branched, at least C_4 alkenyl or alkenyloxy radical bonded to silicon by an Si—C bond, said alkenyl or alkenyloxy radical containing at least one site of ethylenic unsaturation at the end of a polymer chain and/or along the polymer chain;

a, b and c are equal to 0, 1, 2 or 3; and a+b+c=0, 1, 2 or 3; with the proviso that the proportin of $SiO_{4/2}$ units is less than 30 mol %;

(b) optionally, recurring structural units of the formula (II):

$$Y'[SiR_aX_cO_{(4-a-c-1)/2}]_n \quad (II)$$

in which Y' is a polyvalent radical prepared by hydrosilylation of at least one ethylenic double bond in the radical Y; n is equal to the valency of the radical Y'; with the proviso that the number of units of formula (II) per molecule is lower than 1 when X is a C_1–C_4 alkoxy functional group, with Y being an alkenyl residue; and

(c) optionally, recurring structural units of the formula (III):

$$R_aY''_bX_cSiO_{(4-a-b-c)/2} \quad (III)$$

in which Y'' is a monovalent radical isomeric with the radical Y; with the proviso that the number of units of formula (I) in which the silicon atom is substituted by a functional group X and/or radical Y and of units of formula (II) in which the silicon atom is substituted by a functional group X is such that said mixed polyorganosiloxane contains (i) at least 0.1 mol % of X functional groups, and (ii) at least 0.1 mol % of Y radicals.

5,795,948

MULTISTAGE PROCESS FOR PRODUCTION OF THERMOPLASTIC POLYURETHANE ELASTOMERS

Herbert Heidingsfeld, Frechen; Wolfgang Bräuer, Leverkusen; Friedemann Müller, Neuss, and Willi Meister, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 336,344, Nov. 8, 1994, abandoned, which is a continuation of Ser. No. 63,375, May 18, 1993, abandoned. This application May 28, 1996, Ser. No. 654,508

Claims priority, application Germany, May 26, 1992, 42 17 364.7

Int. Cl.[6] C08G *18/12;* **C08L** *75/04*

U.S. Cl. 528—59 **7 Claims**

1. A multistage process for the continuous production of thermoplastically processable polyurethane elastomers from a) one or more substantially linear polyols having number average molecular weights of from 500 to 5,000, b) one or more diisocyanates corresponding to the general formula OCN—Z—NCO wherein Z is a difunctional organic radical and c) one or more diol chain extenders having formula molecular weights of from 62 to 500 comprising:

A) continuously mixing the total amount of component a) with the total amount of component b),

B) continuously reacting the mixture prepared in stage A) in a first reactor at a temperature of >100° C. to a conversion of >80 mol % based upon the amount of component a), to form an isocyanate-terminated prepolymer,

C) continuously mixing said prepolymer with component c), with the total amounts of components a), b) and c) being such that the total NCO:active hydrogen ratio for the combined amounts of components a), b), and c) is from 0.9:1 to 1.2:1, and

D) continuously reacting the mixture prepared in stage C) in a high shear reactor, said high-shear being separate from said first reactor.

5,795,949

USE OF DIMERDIOL IN POLYURETHANE MOLDINGS

Peter Daute, Essen; Roland Gruetzmacher, Wuelfrath; Alfred Westfechtel, and Nicole Mertscheit, both of Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP95/02094, § 371 Date Dec. 10, 1996, § 102(e) Date Dec. 10, 1996, PCT Pub. No. WO95/34592, PCT Pub. Date Dec. 21, 1995

PCT Filed Jun. 1, 1995, Ser. No. 750,609

Claims priority, application Germany, Jun. 10, 1994, 44 20 310.1

Int. Cl.[6] C08G *18/32*

U.S. Cl. 528—65 **35 Claims**

1. In the process for producing polyurethane articles in the form of moldings, castings and coatings from a polyurethane resin comprising at least one isocyanate resin and at least one polyol, wherein the improvement comprises adding as the polyol a polyol mixture consisting of:

about 10 to about 40% by weight of fatty alcohols selected from the group consisting of dimerdiol, trimer triol and mixtures thereof; and

about 60 to about 90% by weight of polyol selected from the group consisting of polyester polyols selected from the group consisting of polycarbonates and hydroxyl-terminated polyesters derived from the dicarboxylic acids adipic phthalic maleic and azelaic acid and dimer fatty acids and diols and (b) oleochemical polyols and mixtures thereof.

5,795,950

STRAIGHT CHAIN CRYSTALLINE POLYURETDIONE

Kenshi Sugimoto; Shinji Suzuki, and Ichiro Ibuki, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/00797, § 371 Date Nov. 18, 1996, § 102(e) Date Nov. 18, 1996, PCT Pub. No. WO95/32231, PCT Pub. Date Nov. 30, 1995

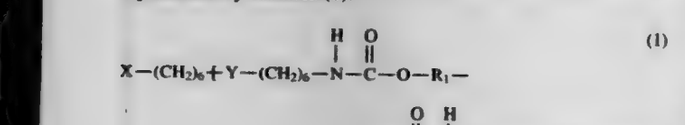
PCT Filed Apr. 21, 1995, Ser. No. 737,772

Claims priority, application Japan, May 20, 1994, 6-106588; May 20, 1994, 6-106589; May 24, 1994, 6-109850; May 24, 1994, 6-109851

Int. Cl.[6] C08G *18/74*

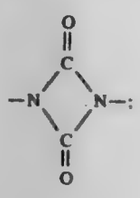
U.S. Cl. 528—73 **22 Claims**

1. Straight-chain crystalline polyuretdione which has a structure represented by formula (1):

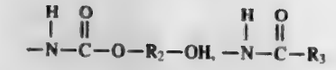


(1)

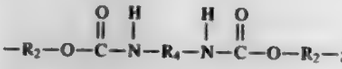
wherein Y represents



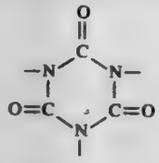
X represents



or —NCO; R_1 is R_2 or



R_2 is a residual group obtained by removing OH groups from a diol compound; R_3 is a residual group obtained by removing an active hydrogen from a compound having one active hydrogen; R_4 is a residual group obtained by removing two NCO groups from diisocyanate; and n is 1 or more, in formula (1), Y being replaced with a triazine ring represented by



in the range of 0 to 15%, the polyuretdione having a latent NCO group content of 12 to 21% by weight, a weight-average molecular weight of 2000 to 2000 and a melting point of 60° to 140° C., and is able to flow as a powder at or lower than 40° C.

5,795,951

Patent Not Issued For This Number

5,795,952

TWO-STAGE PROCESS FOR THE PREPARATION OF POLYCARBONATE COPOLYETHER DIOLS

Alberto Greco, Milan, Italy, assignor to Enichem S.p.A., Milan, Italy

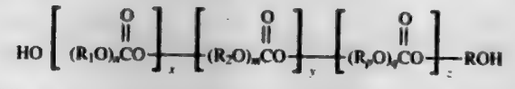
Filed Mar. 17, 1997, Ser. No. 818,939

Claims priority, application Italy, Mar. 28, 1996, MI96A0615

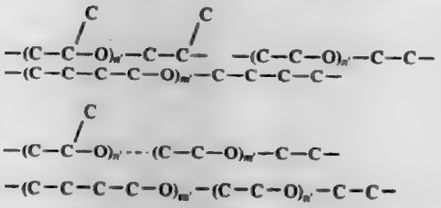
Int. Cl.[6] C08G *64/00*

U.S. Cl. 528—196 **11 Claims**

1. A process for the preparation of a polycarbonate copolyether diol (PEG CD) having formula (I):

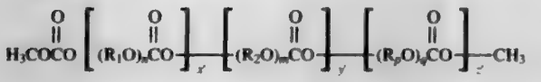


wherein R_1, R_2, ... R_p are the same or different and are divalent organic radicals and correspond to the following structures:



wherein n' and m' are whole or fractional numbers between 1 and 10; n, m and q can have any value between 1 and 10; x, y and z either individually or as a sum can have any value between 1 and 40, said process comprises:

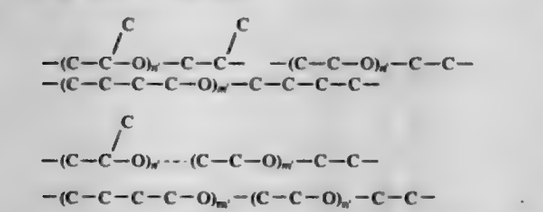
preparing in a first reaction stage, a precursor bisdimethylcarbonate of polyetherglycol polycarbonate (MC PEG C) having the formula:



wherein R_1, R_2. . . R_p, are the same or different, and are divalent organic radicals and have the meaning previously defined; x', y' . . . z', alone or as a sum, can have any value between 1 and 10, by reacting, in a reactor equipped with a distillation column, one or more polyetherglycols (PEG) having the formula:



wherein R' is a divalent organic radical corresponding to one of the following structures:



wherein m' and n' have the meaning defined above, with dimethyl carbonate (DMC), at a temperature of between 90° and 120° C., in a molar ratio DMC/PEG of between 2 and 12 and in the presence of a basic catalyst selected from the group consisting of an oxide, a hydroxide, a carbonate and an alcoholate of a metal belonging to the group of alkaline or earth-alkaline metals, at a concentration of between 0.001 and 0.1% by weight,

converting in a second reaction stage said precursor, bismethylcarbonate of polyetherglycol polycarbonate (MC PEG C), after having freed from the catalyst and excess dimethyl carbonate (DMC), to a polycarbonate copolyether diol by a transesterification reaction with polyetherglycol (PEG), having formula HO—R"OH, wherein R" is one of the following structures:

—(C—C—O_n)—C—C, —(C—C—C—C—O)$_{m'}$—C—C—C—C—, or a mixture thereof, in a reactor equipped with a distillation column, at a temperature of between 140° and 185° C., at atmospheric pressure, in a ratio between bisdimethylcarbonate of polyetherglycol polycarbonate (MC PEG C) and polyetherglycols (PEG) of between 0.8 and 2, in the presence of a solvent and an organometallic catalyst selected from the group consisting of compounds of tin, lead, titanium, zirconium and antimonium at a concentration of between 0.0001–0.0010% by weight.

5,795,953

SOLUBLE, ELECTROCONDUCTIVE POLYPYRROLE AND METHOD FOR PREPARING THE SAME

Chung Yup Kim; Jun Young Lee, and Dong Young Kim, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Sep. 22, 1995, Ser. No. 532,131

Claims priority, application Rep. of Korea, Jan. 19, 1995, 837/1995

Int. Cl.[6] C08G *73/06*

U.S. Cl. 528—423 **6 Claims**

1. A method for preparing soluble, electroconductive polypyrrole comprising the step of polymerizing pyrrole monomer in an aqueous solution containing dodecylbenzene sulfonic acid as a dopant, in the presence of about 0.05 moles to about 0.5 moles of a persulfate oxidant per mole of said pyrrole monomer to produce said soluble, electroconductive polypyrrole.

5,795,954

FACTOR VIIA INHIBITORS FROM KUNITZ DOMAIN PROTEINS

Robert A. Lazarus, Millbrae, and Mark S. Dennis, San Carlos, both of Calif., assignors to Genetech, Inc., South San Francisco, Calif.

Filed Mar. 4, 1994, Ser. No. 206,310

Int. Cl.[6] C07K *14/81;* **A61K** *38/16;38/57*

U.S. Cl. 530—324 **16 Claims**

1. A polypeptide comprising a Kunitz-type serine protease inhibitor domain having an equilibrium dissociation constant of less than 100 nM for tissue factor-Factor VIIa represented by Structural Formula (I):

$$R_1\text{-}Xaa_{11}\text{-}Xaa_{12}\text{-}Xaa_{13}\text{-}Xaa_{14}\text{-}Xaa_{15}\text{-}Xaa_{16}\text{-}Xaa_{17}\text{-}Xaa_{18}\text{-}Xaa_{19}\text{-}R_2\text{-}Xaa_{34}\text{-}R_3\text{-}Xaa_{38}\text{-}Xaa_{39}\text{-}R_4 \quad (I)$$

where

R_1 is a 5 to 10 residue peptide and wherein at least one residue is Cys;

R_2 is a peptide having 14 amino acid residues wherein at least one residue is Cys;

R_3 is a tripeptide;

R_4 is a 12 to 19 residue peptide wherein at least one residue is Cys;

Xaa_{11} is selected from the group Pro, Arg, Ala, Glu, Gly, and Thr;

Xaa_{12} is Gly;

Xaa_{13} is selected from the group Pro, Leu, Trp, Val, Gly, Phe, His, Tyr, Ala, Ile, Glu, and Gln;

Xaa_{14} is selected from Cys, Ala, Ser, Thr, and Gly;

Xaa_{15} is selected from Met, Arg, and Lys;

Xaa_{16} is selected from Gly and Ala;

Xaa_{17} is selected from the group Met, Leu, Ile, Arg, Tyr, and Ser;

Xaa_{18} is selected from the group Ile, His, Leu, Met, Tyr, and Phe;

Xaa_{19} is selected from the group Leu, Arg, Ala, Lys, Ile;

Xaa_{34} is selected from the group Phe, Ile, Ser, Leu, Tyr, Trp, and Val;

Xaa_{38} is selected from Cys, Ala, Ser, Thr, and Gly; and

Xaa_{39} is selected from the group Y, G, W, H, and F Tyr, Gly, Trp, His, and Phe; provided

R_1 is not Xaa_1-Asp-Ile-Cys-Lys-Leu-Pro-Lys-Asp (SEQ ID NO: 1), where Xaa_1 is His or 1–5 amino acid residues; and

Xaa_{11} through Xaa_{19} are not

Pro-Gly-Phe-Ala-Lys-Ala-Ile-Ile-Arg (SEQ ID NO: 2);

Thr-Gly-Leu-Cys-Lys-Ala-Tyr-Ile-Arg (SEQ ID NO: 3);

Thr-Gly-Leu-Cys-Lys-Ala-Arg-Ile-Arg (SEQ ID NO: 4); and

Ala-Gly-Ala-Ala-Lys-Ala-Leu-Leu-Ala (SEQ ID NO: 5).

5,795,955

TANDEM SYNTHETIC HIV-1 PEPTIDES

Charles D. Y. Sia, Thornhill; Pele Chong, Richmond Hill, and Michel H. Klein, Willowdale, all of Canada, assignors to Connaught Laboratories Limited, Ontario, Canada

Continuation of Ser. No. 257,528, Jun. 9, 1994, Pat. No. 5,639,854, which is a continuation-in-part of Ser. No. 73,378, Jun. 9, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 463,966

Int. Cl.[6] A61K *38/00;39/21;39/12;* **C07K** *5/00*

U.S. Cl. 530—324 **6 Claims**

1. A synthetic peptide, which consists of at least one amino acid sequence which contains a T-cell epitope of the gag protein of a human immunodeficiency virus (HIV) isolate linked at the C-terminal end thereof to at least one amino acid sequence which contains a B-cell epitope and consisting of a hybrid V3 loop sequence from at least two different HIV-1 isolates.

5,795,956

Patent Not Issued For This Number

5,795,957

POLYPEPTIDE COMPOUNDS CONTAINING D-2-ALKYLTRYPTOPHAN CAPABLE OF PROMOTING THE RELEASE OF GROWTH HORMONE

Romano Deghenghi, Chesaux Dessus B1, 1264 St. Cergue, Switzerland

Filed Sep. 20, 1995, Ser. No. 530,853

Claims priority, application Italy, Sep. 27, 1994, MI94A1954; Jun. 16, 1995, MI95A1293

Int. Cl.[6] A61K *38/00;38/02;* **C07K** *5/00;7/00*

U.S. Cl. 530—329 **12 Claims**

1. A peptide of formula:

A-D-Mrp-$(Ala)_n$-B-C

and pharmaceutically acceptable salts thereof, wherein:

A is selected from the group consisting of any single natural L-amino acid, any single D-isomer of an amino acid, imidazolylacetyl, isonipectoyl, 4-aminobutyryl, 4-(aminomethyl)cyclohexanecarbonyl, Glu-Tyr-Ala-His, Tyr-Ala-His, Tyr-His, and D-Thr-His;

Mrp is 2-alkyltryptophan, wherein alkyl is selected from the group consisting from methyl, ethyl, n-propyl and iso-propyl;

n=0 or 1;

B is selected from the group consisting of Trp, D-Trp, Phe and D-β-Nal; and

C is selected from the group consisting of NH_2, D-Phe-Lys-NH_2, Phe-Lys-NH_2, D-Trp-Lys-NH_2, D-Phe-Lys-Thr-NH_2, D-Phe-Lys-D-Thr-NH_2 and O-C_1–C_3 alkyl group;

with the proviso that A is not His when B is L-Trp or D-Trp and when C is D-Phe-Lys-NH_2.

5,795,958

LIBRARY OF GLYCO-PEPTIDES USEFUL FOR IDENTIFICATION OF CELL ADHESION INHIBITORS

Narasinga Rao, Alameda, Calif.; Morten Meldal, Måløv; Klaus Bock, Hørsholm, both of Denmark, and Ole Hindsgaul, Edmonton, Canada, assignors to Glycomed Corporation, Alameda, Calif.

Continuation of Ser. No. 134,958, Oct. 12, 1993, abandoned. This application Jun. 10, 1996, Ser. No. 664,303

Int. Cl.[6] A61K *38/06*

U.S. Cl. 530—331 **7 Claims**

1. A glycopeptide selected from the group consisting of:

Ac-Ser(α-L-Fuc)-Asp-Asp-NH_2,
Ac-Ser(α-L-Fuc)-Ser-Asp-NH_2,
Ac-Ser(α-L-Fuc)-Phe-Asp-NH_2,
Ac-Ser(α-L-Fuc)-Asn-Asp-NH_2,
Ac-Ser(α-L-Fuc)-Leu-Asp-NH_2,
Ac-Ser(α-L-Fuc)-Pro-Asp-NH_2,
Ac-Ser(β-L-Fuc)-Gly-Asp-NH_2,
Ac-Ser(β-L-Fuc)-Asp-Asp-NH_2,
Ac-Ser(β-L-Fuc)-Leu-Asp-NH_2,
Ac-Ser(β-L-Fuc)-Asn-Asp-NH_2,
Ac-Ser(α-L-Fuc)-Ala-Asp-NH_2,
Ac-Ser(β-L-Fuc)-Ala-Asp-NH_2,
Ac-Ser(β-L-Fuc)-Ser-Asp-NH_2,
Ac-Ser(β-L-Fuc)-Pro-Asp-NH_2,
Ac-Ser(α-L-Fuc)-Arg-Asp-OH,
Ac-Ser(α-L-Fuc)-P he-Asp-OH,
Ac-Ser(α-L-Fuc)-Ser-Asp-OH,
Ac-Ser(α-L-Fuc)-Asn-Asp-OH,
Ac-Ser(α-L-Fuc)-Asp-Asp-OH,
Ac-Ser(α-L-Fuc)-Leu-Asp-OH,
Ac-Ser(α-L-Fuc)-Gly-Asp-OH,
Ac-Ser(α-L-Fuc)-Pro-Asp-OH,
Ac-Ser(β-L-Fuc)-Arg-Asp-OH,
Ac-Ser(β-L-Fuc)-P he-Asp-OH,
Ac-Ser(β-L-Fuc)-Ser-Asp-OH,
Ac-Ser(β-L-Fuc)-Asn-Asp-OH,
Ac-Ser(β-L-Fuc)-Asp-Asp-OH,
Ac-Ser(β-L-Fuc)-Leu-Asp-OH,
Ac-Ser(β-L-Fuc)-Gly-Asp-OH,
Ac-Ser(β-L-Fuc)-Pro-Asp-OH,
Ac-Ser(α-L-Fuc)-Arg-Gly-OH,
Ac-Ser(α-L-Fuc)-Phe-Gly-OH,
Ac-Ser(α-L-Fuc)-Ser-Gly-OH,
Ac-Ser(α-L-Fuc)-Asn-Gly-OH,
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Ac-Ser(β-L-Fuc)-Ser-Gly-OH,
Ac-Ser(β-L-Fuc)-Asn-Gly-OH,
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Ac-Ser(β-L-Fuc)-Gly-Gly-OH,
Ac-Ser(β-L-Fuc)-Pro-Gly-OH,
Ac-Ser(β-L-Fuc)-Arg-Glu-NH_2,
Ac-Ser(α-L-Fuc)-Phe-Glu-NH_2,
Ac-Ser(α-L-Fuc)-Ser-Glu-NH_2,
Ac-Ser(α-L-Fuc)-Asn-Glu-NH_2,
Ac-Ser(α-L-Fuc)-Asp-Glu-NH_2,
Ac-Ser(α-L-Fuc)-Leu-Glu-NH_2,
Ac-Ser(α-L-Fuc)-Gly-Glu-NH_2,
Ac-Ser(α-L-Fuc)-Pro-Glu-NH_2,
Ac-Ser(β-L-Fuc)-Arg-Glu-NH_2,
Ac-Ser(β-L-Fuc)-Phe-Glu-NH_2,
Ac-Ser(β-L-Fuc)-Ser-Glu-NH_2,
Ac-Ser(β-L-Fuc)-Asn-Glu-NH_2,
Ac-Ser(β-L-Fuc)-Asp-Glu-NH_2,
Ac-Ser(β-L-Fuc)-Leu-Glu-NH_2,
Ac-Ser(β-L-Fuc)-Gly-Glu-NH_2, and
Ac-Ser(β-L-Fuc)-Pro-Glu-NH_2.

5,795,959

Patent Not Issued For This Number

5,795,960

Patent Not Issued For This Number

5,795,961

RECOMBINANT HUMAN ANTI-LEWIS B ANTIBODIES

T. Paul Wallace, Aberdeenshire; William J. Harris, Carnoustie; Frank J. Carr, Balmedie, all of Great Britain; Lloyd J. Old, New York; Sydney Welt, Armonk, both of N.Y., and Kunio Kitamura, Nagoya, Japan, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Filed Feb. 14, 1995, Ser. No. 388,672

Int. Cl.[6] C07K *14/00;* A61K *38/16;* C12P *21/08*

U.S. Cl. 530—350 5 Claims

1. A humanized antibody which specifically binds to a Lewis B antigen, comprising a humanized variable region having a heavy chain region and a light chain region, said heavy chain region having an amino acid sequence as set forth in SEQ ID NO: 20, and said light chain region having an amino acid sequence as set forth in SEQ ID NO: 21.

3. A polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NOS: 20 and 21.

5,795,962

HORSESHOE CRAB AMEBOCYTE LYSATE FACTOR G SUBUNIT A

Sadaaki Iwanaga; Tatsushi Muta; Noriaki Seki, all of Fukuoka, and Toshio Oda, Higashiyamato, all of Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation), Japan

PCT No. PCT/JP94/01057, § 371 Date Feb. 28, 1995, § 102(e) Date Feb. 28, 1995, PCT Pub. No. WO95/01432, PCT Pub. Date Jan. 12, 1995

PCT Filed Jun. 29, 1994, Ser. No. 392,828

Claims priority, application Japan, Jun. 29, 1993, 5-184403

Int. Cl.[6] C07K *14/435;14/745;* C12N *9/50*

U.S. Cl. 530—350 4 Claims

1. An isolated polypeptide having an amino acid sequence defined by amino acid residue numbers 1–654 in SEQ ID No. 2.

5,795,963

AMYLOID PRECURSOR PROTEIN IN ALZHEIMER'S DISEASE

Michael John Mullan, Tampa, Fla., assignor to Alzheimer's Institute of America, Prairie Village, Kans.

Continuation of Ser. No. 487,118, Jun. 7, 1995, abandoned, which is a division of Ser. No. 94,547, Feb. 19, 1993, abandoned, which is a continuation of Ser. No. 894,211, Jun. 4, 1992, Pat. No. 5,455,169. This application Mar. 13, 1997, Ser. No. 815,637

Int. Cl.[6] C07K *1/00*

U.S. Cl. 530—350 1 Claim

1. A purified and isolated polypeptide encoded by a nucleic acid which encodes a human amyloid precursor protein including the nucleotides encoding codon 670 and 671 of human amyloid precursor protein 770 (APP NO.), wherein the nucleic acid encodes an asparagine at codon 670 and/or a leucine at codon 671.

5,795,964

LYMPHOTOXIN-BETA AND LYMPHOTOXIN-BETA COMPLEXES

Jeffrey Browning, Brookline, Mass., and Carl F. Ware, Riverside, Calif., assignors to Biogen, Inc., Cambridge, Mass., and University of California, Oakland, Calif.

Division of Ser. No. 222,614, Apr. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 544,862, Jun. 27, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 467,070

Int. Cl.[6] C07K *14/46;14/52;14/435*

U.S. Cl. 530—351 11 Claims

1. Lymphotoxin-β, unaccompanied by other normally associated animal proteins, consisting of the amino acid sequence of SEQ ID NO:2.

5,795,965

RESHAPED HUMAN TO HUMAN INTERLEUKIN-6 RECEPTOR

Masayuki Tsuchiya; Koh Sato, both of Gotenba, Japan; Mary Margaret Bendig, West Hamsteaad; Steven Tarran Jones, Radlett, and José William Saldanha, Endfield, all of Great Britain, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP92/00544, § 371 Date Dec. 20, 1993, § 102(e) Date Dec. 20, 1993, PCT Pub. No. WO92/19759, PCT Pub. Date Nov. 12, 1992

PCT Filed Apr. 24, 1992, Ser. No. 137,117

Claims priority, application Japan, Apr. 25, 1991, 3-095476; Feb. 19, 1992, 4-032084

Int. Cl.[6] C07K *16/00*

U.S. Cl. 530—387.3 6 Claims

3. A reshaped human antibody to the human IL-6 receptor, comprising

(A) L chains of an antibody to said human IL-6 receptor, each comprising:

(1) a variable (V) region of a light (L) chain of an antibody to the human IL-6 receptor having the following structure:

$FR1^1$-$CDR1^1$-$FR2^1$-$CDR2^1$-$FR3^1$-$CDR3^1$-$FR4^1$

wherein $CDR1_1$, $CDR2^1$ and $CDR3^1$ represent a set of three complementarity determining regions comprising a set of the following amino acid sequences:

SEQ ID No. 117 $CDR1^1$ Arg Ala Ser Gln Asp Ile Ser Ser Tyr Leu Asn

SEQ ID No. 118 $CDR2^1$ Tyr Thr Ser Arg Leu His Ser

SEQ ID No. 119 $CDR3^1$ Gln Gln Gly Asn Thr Leu Pro Tyr Thr;

and

the $FR1^1$, $FR2^1$, $FR3^1$ and $FR4^1$ comprise a set of the following amino acid sequences:

SEQ ID No. 120 $FR1^1$ Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys

SEQ ID No. 121 $FR2^1$ Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr

SEQ ID No. 122 $FR3^1$ Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys

SEQ ID No. 123 $FR4^1$ Phe Gly Gln Gly Thr Lys Val Glu Ile Lys;

or

SEQ ID No. 120 $FR1^1$ Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys

SEQ ID No. 121 $FR2^1$ Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr

SEQ ID No. 124 $FR3^1$ Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys

SEQ ID No. 123 $FR4^1$ Phe Gly Gln Gly Thr Lys Val Glu Ile Lys;

and

(2) a C region of an L chain of a human antibody C_K; and N

(B) H chains of an antibody to the human IL-6 receptor, each comprising:

(1) a V region of a heavy (H) chain of an antibody to the human IL-6 receptor having the following structure:

$FR1^2$-$CDR1^2$-$FR2^2$ $CDR2^2$-$FR3^2$-$CDR3^2$-$FR4^2$

wherein $CDR1_2$ $CDR2^2$ and $CDR3^2$ represent a set of three complementarity determining regions comprising a set of the amino acid sequences shown by:

SEQ ID No. 125 $CDR1^2$ Ser Asp His Ala Trp Ser

-continued

SEQ ID No. 126 $CDR2^2$ Tyr Ile Ser Tyr Ser Gly Ile Thr Thr Tyr Asn Pro Ser Leu Lys Ser

SEQ ID No. 127 $CDR3^2$ Ser Leu Ala Arg Thr Thr Ala Met Asp Tyr;

and

the $FR1^2$, $FR2^2$, $FR3^2$ and $FR4^2$ comprise a set of the following amino acid sequences:

SEQ ID No. 135 $FR1^2$ Gln Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Arg Pro Ser Gln Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Tyr Ser Ile Thr

SEQ ID No. 129 $FR2^2$ Trp Val Arg Gln Pro Pro Gly Arg Gly Leu Glu Trp Ile Gly

SEQ ID No. 132 $FR3^2$ Arg Val Thr Met Leu Arg Asp Thr Ser Lys Asn Gln Phe Ser Leu Arg Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala Arg

SEQ ID No. 131 $FR4^2$ Trp Gly Gln Gly Ser Leu Val Thr Val Ser Ser;

and

(2) a C region of an H chain of a human antibody Cγ.

6. A reshaped human antibody to the human IL-6 receptor, comprising:

(A) L chains of an antibody to the human IL-6 receptor, each comprising:

(1) a variable (V) region of a light (L) chain of an antibody to the human IL-6 receptor having the following structure:
$FR1^3$-$CDR1^3$-$FR2^3$-$CDR2^3$-$FR3^3$-$CDR3^3$-$FR4^3$
wherein $CDR1^3$, $CDR2^3$ and $CDR3^3$ represent a set of three complementarity determining regions comprising a set of the following amino acid sequences:

SEQ ID No. 136 $CDR1^3$ Arg Ala Ser Lys Ser Val Ser Thr Ser Gly Tyr Ser Tyr Met His

SEQ ID No. 137 $CDR2^3$ Ala Ser Asn Leu Glu Ser

SEQ ID No. 138 $CDR3^3$ Gln His Ser Arg Glu Asn Pro Tyr Thr;

and

$FR1^3$, $FR2^3$, $FR3^3$ and $FR4^3$ comprise a set of the following amino acid sequences:

SEQ ID No. 139 $FR1^3$ Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys

SEQ ID No. 140 $FR2^3$ Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile Tyr

SEQ ID No. 141 $FR3^3$ Gly Val Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys

SEQ ID No. 142 $FR4^3$ Phe Gly Gln Gly Thr Lys Val Glu Ile Lys;

and

(2) a C region of an L chain of a human antibody Cκ; and

(B) H chains of an antibody to the human IL-6 receptor, each comprising:

(1) a V region of a heavy (H) chain of an antibody to the human IL-6 receptor having the following structure:
$FR1^4$-$CDR1^4$-$FR2^4$-$CDR2^4$-$FR3^4$-$CDR3^4$-$FR4^4$
wherein $CDR1^4$, $CDR2^4$ and $CDR3^4$ represent a set of three complementarity determining regions comprising a set of the following amino acid sequences:

SEQ ID No. 143 $CDR1^4$ Ser Tyr Tyr Ile His

SEQ ID No. 144 $CDR2^4$ Tyr Ile Asp Pro Phe Asn Gly Gly Thr Ser Tyr Asn Gly Lys Phe Lys Gly

SEQ ID No. 145 $CDR3^4$ Gly Gly Asn Arg Phe Ala Tyr;

and

$FR1^4$, $FR2^4$, $PR3^4$ and $FR4^4$ comprise a set of the following amino acid sequences:

SEQ ID No. 146 $FR1^4$ Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr

SEQ ID No. 147 $FR2^4$ Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Val Gly

SEQ ID No. 150 $FR3^4$ Lys Val Thr Met Thr Val Asp Thr Ser Thr Asn Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg

SEQ ID No. 149 $FR4^4$ Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser;

SEQ ID No. 146 $FR1^4$ Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr

SEQ ID No. 151 $FR2^4$ Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile Gly

SEQ ID No. 150 $FR3^4$ Lys Val Thr Met Thr Val Asp Thr Ser Thr Asn Thr Asn Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg

SEQ ID No. 149 $FR4^4$ Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser;

SEQ ID No. 152 $FR1^4$ Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr

SEQ ID No. 155 $FR2^4$ Trp Val Arg Gln Ala Pro Gly Gln Arg Leu Glu Trp Ile Gly

SEQ ID No. 154 $FR3^4$ Arg Val Thr Ile Thr Val Asp Thr Ser Ala Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg

SEQ ID No. 149 $FR4^4$ Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser;

SEQ ID No. 152 $FR1^4$ Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr

SEQ ID No. 153 $FR2^4$ Trp Val Arg Gln Ala Pro Gly Gln Arg Leu Glu Trp Met Gly

SEQ ID No. 156 $FR3^4$ Lys Val Thr Ile Thr Val Asp Thr Ser Ala Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg

SEQ ID No. 149 $FR4^4$ Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser;

or

SEQ ID No. 152 $FR1^4$ Gln Val Gln Leu Val Gln Ser Gly AlaGlu Val Lys Lys Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ser Phe Thr

SEQ ID No. 155 $FR2^4$ Trp Val Arg Gln Ala Pro Gly Gln Arg Leu Glu Trp Ile Gly

SEQ ID No. 156 $FR3^4$ Lys Val Thr Ile Thr Val Asp Thr Ser Ala Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg

SEQ ID No. 149 $FR4^4$ Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser;

and

(2) a C region of an H chain of a human antibody Cγ.

5,795,966

ANTAGONISTS OF INTERLEUKIN-15

Kenneth H. Grabstein, 6121 86th Ave. SE., Mercer Island, Wash. 98040; Dean K. Pettit, 2524 24th Ave. East, Seattle, Wash. 98112, and Raymond J. Paxton, 6311 141st Ave. SE., Bellevue, Wash. 98006

Filed Feb. 22, 1995, Ser. No. 392,317

Int. Cl.[6] C07K *16/00;* **C12N** *5/12;5/20;* **A61K** *39/395*

U.S. Cl. 530—388.23 **7 Claims**

6. A monoclonal antibody against interleukin-15 (IL-15) that prevents IL-15 from transducing a signal through either of the β- or γ-subunits of the IL-15 receptor complex, wherein the monoclonal antibody interferes with binding of (a) amino acid Asp^{56} of the IL-15 molecule to the β-subunit of the IL-15 receptor complex or (b) amino acid Gln^{156} of the IL-15 molecule to the γ-subunit of the IL-15 receptor complex.

5,795,967

TUMOR NECROSIS FACTOR ANTAGONISTS AND THEIR USE

Bharat B. Aggarwal; Michael A. Palladino, both of San Mateo, and Mohamed R. Shalaby, San Rafael, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 342,676, Nov. 21, 1994, abandoned, which is a continuation of Ser. No. 174,212, Dec. 28, 1993, abandoned, which is a continuation of Ser. No. 26,717, Mar. 5, 1993, abandoned, which is a continuation of Ser. No. 707,412, May 28, 1991, abandoned, which is a continuation of Ser. No. 417,171, Oct. 4, 1989, abandoned, which is a continuation of Ser. No. 898,272, Aug. 20, 1986, abandoned, which is a continuation-in-part of Ser. No. 754,507, Jul. 12, 1985, abandoned, and Ser. No. 881,311, Jul. 2, 1986, abandoned, which is a continuation-in-part of Ser. No. 677,156, Dec. 3, 1984, abandoned, which is a continuation-in-part of Ser. No. 627,959, Jul. 5, 1984, abandoned. This application Jun. 7, 1995, Ser. No. 482,226

Int. Cl.[6] C07K *16/00;* **C12N** *5/06;* **A61K** *39/395*

U.S. Cl. 530—388.23 **15 Claims**

1. A tumor necrosis factor-alpha (TNF-alpha) antagonist comprising an antibody which neutralizes cytotoxic activity of human TNF-alpha.

5,795,968

POLYPEPTIDE DERIVATIVES OF HUMAN GRANULOCYTE COLONY STIMULATING FACTOR

Tetsuro Kuga, Yamaguchi; Hiromasa Miyaji; Moriyuki Sato, both of Tokyo; Masami Okabe; Makoto Morimoto, both of Shizuoka; Seiga Itoh, Kanagawa; Motoo Yamasaki, Toyko; Yoshiharu Yokoo, Kanagawa; Kazuo Yamaguchi, Kanagawa; Hajime Yoshida, Kanagawa, all of Japan, and Yoshinori Komatsu, Salt Lake City, Utah, assignors to Kyowa Hakko Kogyo Co., Ltd., Japan

Division of Ser. No. 274,433, Jul. 13, 1994, which is a division of Ser. No. 994,924, Dec. 22, 1992, Pat. No. 5,362,853, which is a division of Ser. No. 337,002, Apr. 12, 1989, Pat. No. 5,214,132, which is a continuation-in-part of Ser. No. 318,527, Mar. 3, 1989, Pat. No. 5,194,592, which is a continuation-in-part of Ser. No. 136,647, Dec. 22, 1987, abandoned. This application Jan. 10, 1997, Ser. No. 783,288

Claims priority, application Japan, Dec. 23, 1986, 61-306799; Mar. 4, 1988, 63-51357; Mar. 31, 1988, 63-80088

Int. Cl.[6] C07K *14/535;1/107*

U.S. Cl. 530—402 **8 Claims**

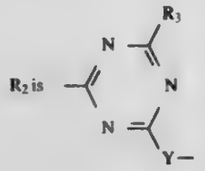
1. A modified polypeptide having human granulocyte colony stimulating factor (hG-CSF) activity comprising a polypeptide having an amino acid sequence of the hG-CSF polypeptide wherein the amino acids sequence is derived from the amino acid sequence of the hG-CSF, which is defined in the Sequence listing by SEQ ID: No. 1, by substitution of at least one amino acid out of the first to sixth amino acids on the N terminus side and optionally the seventeenth amino acid thereof with proviso that a polypeptide wherein the amino acids in the first, third, fourth, fifth and seventeenth position from the N terminus side are Ala, Thr, Tyr, Arg and Ser, respectively, is excluded, and with at least one amino group thereof modified by a group of the formula

$$R_1\text{—}(OCH_2CH_2)_n\text{—}X\text{—}R_2\text{—} \qquad (I)$$

wherein R_1 is an alkyl or alkanoyl group;

n is an optionally variable positive integer;

X is O, NH or S;



where R_3 is OH, Cl or $O\text{—}(CH_2CH_2O)_n\text{—}R_1$, where R_1 and n are as defined above, Y may not be present or represents $Z\text{—}(CH_2)_pCO$, where Z is O, S or NH and p is an optionally variable positive integer;

or R_2 is $(CO)_m\text{—}(CH_2)_lCO$, where m is 0 or 1 and l is an optionally variable positive integer.

5,795,969

SOYBEAN VEGETABLE OIL HAVING ELEVATED CONCENTRATIONS OF BOTH PALMITIC ACID AND STEARIC ACID

Walter R. Fehr, and Earl G. Hammond, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Division of Ser. No. 375,340, Jan. 19, 1995, Pat. No. 5,557,037, which is a continuation of Ser. No. 101,407, Aug. 3, 1993, abandoned, which is a continuation of Ser. No. 643,277, Jan. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 461,341, Jan. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 445,393, Dec. 5, 1989, abandoned. This application May 22, 1996, Ser. No. 651,551

Int. Cl.[6] C11B *1/10;1/00;* **A23D** *9/00*

U.S. Cl. 554—9 **9 Claims**

1. A soybean oil formed by the process consisting essentially of crushing and extraction from mature soybeans, said oil containing an endogenously formed palmitic acid content of from about 14% to about 24% by weight of the total fatty acid composition, an endogenously formed stearic acid content of from about 20% to about 30% by weight of the total fatty acid composition, and an endogenously formed linolenic acid content of no more than 6.9% by weight of the total fatty acid composition, with said palmitic stearic and linolenic acid contents being determined by gas chromatography.

5,795,970

MIXED DISAZO-DYE COMPOSITION AND BLACK AQUEOUS INK COMPOSITION CONTAINING THE SAME THAT PROVIDES HIGH GRADE IMAGE ON PRINT

Takashi Ono; Tatsuya Yagyu; Yoshihiro Sawatari, all of Neyagawa; Masaki Sasaki, Osaka; Miharu Kanaya, Suwa; Hiroko Hayashi, Suwa; Akio Owatari, Suwa, and Yasuhiro Ouki, Suwa, all of Japan, assignors to Orient Chemical Industries, Ltd., Osaka-fu, and Seiko Epson Corporation, Tokyo-to, both of Japan

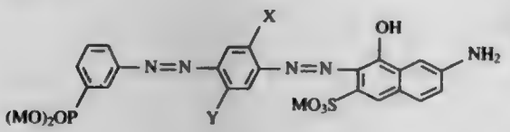
Filed Aug. 22, 1996, Ser. No. 701,578

Claims priority, application Japan, Aug. 25, 1995, 7-217300

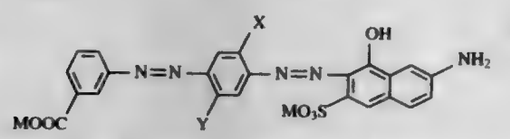
Int. Cl.[6] C09B *67/22;* **C09D** *11/02;* **B41J** *2/01*

U.S. Cl. 534—573 **12 Claims**

1. A disazo dye composition comprising at least a disazo dye represented by the formula (I) and a disazo dye represented by the formula (II):



(I)



(II)

(wherein X and Y indicate an alkoxy group having 1 to 4 carbon atoms, and M indicates hydrogen or a cation selected from the group consisting of alkaline metal, NH_4, alkyl-substituted ammonium, alkanolammonium, morpholinium and piperidinium),

wherein, when the disazo dye composition is analyzed by liquid chromatography, the area ratio of the peak area (Sp) of the disazo dye represented by the formula (I) to the peak area (Sc) of the disazo dye represented by the formula (II), that is Sp:Sc is from 1:0.4 to 1:2.4.

5,795,971

AMINOMETHYLNAPHTHALENECARBOXLIC ACID DYESTUFFS

Klaus Kunde, Neunkirchen-Seelscheid, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

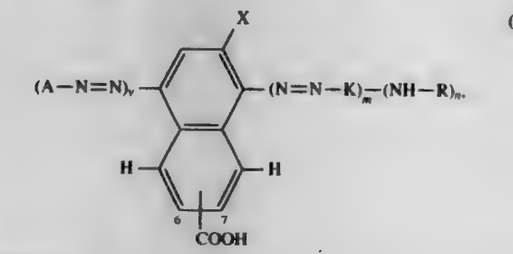
Filed Sep. 2, 1997, Ser. No. 921,781

Claims priority, application Germany, Sep. 9, 1996, 196 36 540.6

Int. Cl.[6] C09B *31/08;62/09;* **C07C** *309/35*

U.S. Cl. 534—637 **12 Claims**

1. A dyestuff of the general formula (I)



(I)

in which

A and K independently of one another represent in each case optionally substituted phenyl or naphthyl,

R represents hydrogen, an unsubstituted acyl radical or a 1,3,5-triazine or pyrimidine radical, each of which is substituted in an identical or different manner by chlorine, fluorine or an aniline or naphthyl-amine radical which is substituted by β-sulfatoethylsulfonyl or vinylsulfonyl,

X represents C_1–C_3-alkyl,

the carboxyl group is bonded in position 6 or 7,

m and n represent 0 or 1, where n represents 1 if m represents 0, and

v represents 0 or 1, with the proviso that v+m≧1.

5,795,972

CHIMERIC MUTATIONAL VECTORS HAVING NON-NATURAL NUCLEOTIDES

Eric B. Kmiec, Malvern, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Continuation of Ser. No. 664,487, Jun. 17, 1996, Pat. No. 5,731,181. This application Dec. 2, 1997, Ser. No. 982,867

Int. Cl.[6] C07H *21/00;* **C12N** *15/00*

U.S. Cl. 536—23.1 **24 Claims**

1. A compound for introducing an alteration in a gene of a eukaryotic cell, which comprises:

a. a first strand having a 3' end and a 5' end, which first strand comprises:

i. a total of at least 15 nucleotides;

ii. at least three nuclease resistant nucleotides that are selected from the group consisting of 2'O-substituted ribonucleotides and 2'-haloribonucleotides; and

iii. at least 3 contiguous ribonucleotides, which can be the same as or in addition to the nuclease resistant ribonucleotides; and

b. a second strand of nucleotides having a 3' end and a 5' end, wherein the nucleotides of the second strand are Watson-Crick paired to the nucleotides of the first strand,

in which the contiguous ribonucleotides of the first strand are Watson-Crick paired to 2'-deoxyribo-type nucleotides.

5,795,973

Patent Not Issued For This Number

5,795,974

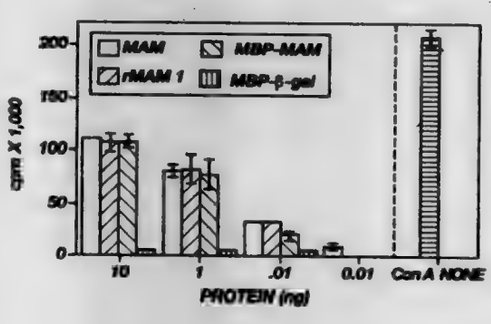
MYCOPLASMA ARTHRITIDIS SUPERANTIGEN

Barry C. Cole, Sandy; Curtis L. Atkin, Holladay, and Kevin L. Knudtson, Salt Lake City, all of Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 165,038, Dec. 10, 1993, Pat. No. 5,639,869. This application Mar. 22, 1996, Ser. No. 621,081

Int. Cl.[6] C07N *21/04*

U.S. Cl. 536—23.7 **17 Claims**



1. A recombinant MAM protein that exhibits superantigen activity comprising an amino acid sequence identified as SEQ ID NO:19.

5,795,975

TNF RECEPTOR PROMOTER

David Wallach, Rehovot, Israel; Oliver Kemper, Bockenheim, Germany, and Peter Kuhnert, Berne, Switzerland, assignors to Yeda Research and Development Co. Ltd., Rehovot, Israel

Continuation-in-part of Ser. No. 178,564, Jan. 7, 1994, abandoned. This application Sep. 22, 1995, Ser. No. 532,309
Claims priority, application Israel, Jan. 10, 1993, 104355
Int. Cl.[6] C07H *21/04;* C12N *15/00*
U.S. Cl. 536—24.1 9 Claims

1. A DNA molecule comprising the endogenous first intron-located p55 TNF-R gene promoter/enhancer sequence, provided that said molecule contains no more of the p55 TNF-R gene than the first intron thereof.

5,795,976

DETECTION OF NUCLEIC ACID HETERODUPLEX MOLECULES BY DENATURING HIGH-PERFORMANCE LIQUID CHROMATOGRAPHY AND METHODS FOR COMPARATIVE SEQUENCING

Peter Josef Oefner, Innsbruck, Austria, and Peter Anton Underhill, Palo Alto, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Aug. 8, 1995, Ser. No. 512,681
Int. Cl.[6] C12N *15/10;* C07H *21/02;* C12Q *1/68;* C12P *19/34*
U.S. Cl. 536—25.4 20 Claims

1. A chromatographic method for separating heteroduplex and homoduplex DNA molecules in a mixture, comprising:

applying the mixture to a stationary reverse phase support,

eluting the heteroduplex and homoduplex molecules of said mixture with a mobile phase containing an ion-pairing reagent and an organic solvent, where said eluting is carried out under conditions effective to at least partially denature said heteroduplexes and where said eluting results in the separation of said heteroduplexes from said homoduplexes.

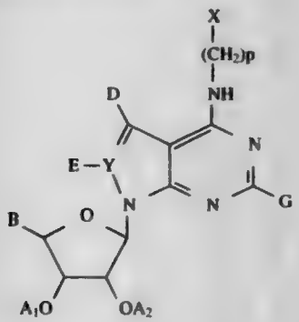
5,795,977

WATER SOLUBLE ADENOSINE KINASR INHIBITORS

Bheemarao G. Ugarkar, Escondido; Mark D. Erion, Del Mar, and Jorge E. Gomez Galeno, La Jolla, all of Calif., assignors to Metabasis Therapeutics, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 473,492, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 812,916, Dec. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 647,117, Jan. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 466,979, Jan. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 408,707, Sep. 18, 1989, abandoned. This application Jun. 7, 1996, Ser. No. 660,532
Int. Cl.[6] C07H *19/16*
U.S. Cl. 536—27.13 21 Claims

1. A compound of the formula



wherein:

A_1 and A_2 are each hydrogen or acyl, or together form a cyclic carbonate;

B is alkenyl, or $(CH_2)_n$—B', where n is from 1 to 4 and B' is hydrogen, hydroxy, alkyl, alkoxy, amino, azido, halogen, or alkenyl;

D is alkyl or alkenyl;

X is a carbocyclic or heterocyclic aryl ring substituted with a water solubilizing group $(CH_2)_rT$, where r is from 0 to 3 and T is one of

an alkyl or an alkenyl chain of 1 to 16 carbons containing a carboxylic acid and optionally containing one or more nitrogen or oxygen atoms,

a 5- or 6-membered nitrogen-containing heterocyclic aryl group,

sulfonate, mono- or disubstituted squaric acid group, 5-tetrazolyl, N-sulfonylated amino, amidoximo, N-aminoguanidino, amidino, guanidino, a cyclic amidine, a cyclic guanidine, acylated sulfonamide, acylated guanidino,

a 5 or 6 membered alicyclic ring containing nitrogen and optionally containing oxygen,

the group $CONR^1R^2$, where R^1 and R^2 are independently an alkyl chain containing one or more basic nitrogen atoms, and optionally containing oxygen, or R^1 and R^2 together form a 5 or 6-membered ring containing at least one basic nitrogen;

Y is carbon or nitrogen;

E is nothing when Y is nitrogen, and is hydrogen or halogen when Y is carbon;

G is hydrogen or halogen;

p is from 0 to 3;

and pharmaceutically acceptable salts thereof.

5,795,978

EMULSIFIERS

Achim Ansmann, Erkrath; Rolf Kawa, Monheim; Michael Nitsche, Solingen, and Helga Gondek, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Filed Nov. 14, 1996, Ser. No. 748,882
Claims priority, application Germany, Nov. 15, 1995, 195 42 572.3; Sep. 5, 1996, 196 36 039.0
Int. Cl.[6] C07H *15/04;1/00;* C11D *3/22;* A61K *9/10*
U.S. Cl. 536—120 12 Claims

1. An emulsifier consisting essentially of: (a) from about 43% to about 99% by weight of an alkyl and/or an alkenyl oligoglycoside; and (b) from about 1% to about 57% by weight of a fatty alcohol.

5,795,979

WATER-INSOLUBLE GLUCAN PURIFICATION METHOD

Masayoshi Kusatsu; Tetsuo Tanegawa, and Shigeyoshi Miyashiro, all of Saga, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jun. 2, 1997, Ser. No. 867,354
Claims priority, application Japan, Jun. 6, 1996, 8-144126
Int. Cl.[6] C07H *1/00;1/06;* C08B *37/00*
U.S. Cl. 536—123.12 4 Claims

1. A water-insoluble glucan purification method wherein a culture solution of a microbe that produces water-insoluble glucan or

a microbial cell-containing solution comprising water-insoluble glucan as a component is treated with both an oxide of 0.175–3.5 wt.—wt. % and a hydroxide such that the pH value becomes 10–12.5.

5,795,980

METHOD OF PREPARING GANGLIOSIDE

Goro Hanagata, Sayama; Susumu Miura, Kawagoe, and Kiyoshi Tatsumi, Iruma, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Continuation-in-part of Ser. No. 535,834, Sep. 28, 1995, abandoned. This application Jan. 23, 1997, Ser. No. 789,325
Claims priority, application Japan, Sep. 30, 1994, 6-261966
Int. Cl.[6] C08B *37/00;* **A61K** *31/715*
U.S. Cl. 536—124 **18 Claims**

1. A method of preparing Ganglioside G_{M3} which consists essentially of thermally treating a lipid containing material which includes Ganglioside G_{D3} at a temperature of from 60° to 140° C., for a period of from 45 to 180 minutes when the temperature is from 60° C. to 95° C., or for a period of from 2 minutes to 120 minutes when the temperature is from 95° C. to 140° C.

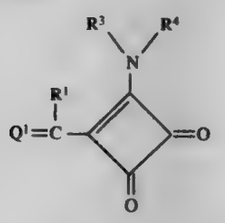
5,795,981

PROCESSES FOR THE PREPARATION OF SQUARYLIUM DYES

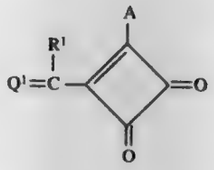
John W. Lee, Still River; Donald A. McGowan, Bedford; Mark R. Mischke, Arlington; Socorro M. Ramos, Belmont, and Stephen J. Telfer, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 485,240, Jun. 6, 1995, Pat. No. 5,656,750, which is a division of Ser. No. 235,483, Apr. 29, 1994, Pat. No. 5,492,795, which is a division of Ser. No. 979,250, Nov. 20, 1992, Pat. No. 5,354,873, which is a continuation-in-part of Ser. No. 795,034, Nov. 20, 1991, Pat. No. 5,227,498. This application Dec. 16, 1996, Ser. No. 764,992
Int. Cl.[6] C07D *311/58;309/34;335/06;345/00*
U.S. Cl. 540—1 **15 Claims**

1. A process for the preparation of a squaric acid derivative of the formula:



in which Q^1 is a a pyrylium, thiopyrylium, selenopyrylium, benzpyrylium, benzthiopyrylium or benzselenopyrylium nucleus, R^1 is a hydrogen atom or an alkyl group containing not more than about 6 carbon atoms, and R^3 and R^4 are each independently a hydrogen atom, or an alkyl or acyl group containing not more than about 6 carbon atoms, or R^3 and R^4 together form a hydrocarbon group such that R^3 and R^4 together with the intervening nitrogen atom form a nitrogenous heterocyclic ring containing no hetero atoms other than said intervening nitrogen atom, which process comprises reacting a corresponding squaric acid derivative of the formula:



in which A is a chlorine or bromine atom, or a hydroxyl or alkoxyl group, and Q^1 and R^1 are as defined above, with ammonia or a compound of formula NHR^3, NHR^4, or NHR^3R^4, in which R^3 and R^4 are as defined above.

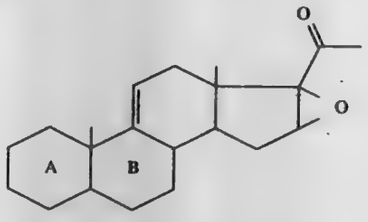
5,795,982

INTERMEDIATES FOR 16β-METHYL STEROIDS

Catherine Geurts, Betz, and Michel Vivat, Lagny sur Marne, both of France, assignors to Roussel Uclaf, France

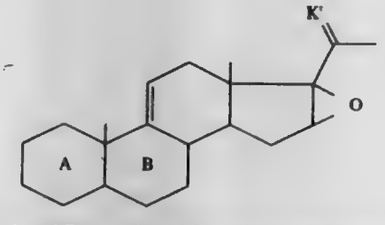
Division of Ser. No. 444,229, May 18, 1995, Pat. No. 5,596,168. This application Sep. 13, 1996, Ser. No. 710,198
Claims priority, application France, Jun. 2, 1994, 94 06743
Int. Cl.[6] C07J *71/00*
U.S. Cl. 546—25 **1 Claim**

1. A compound having a formula selected from the group consisting of



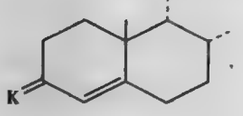
V

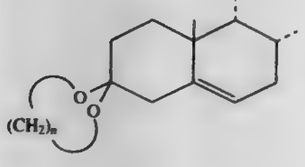
and



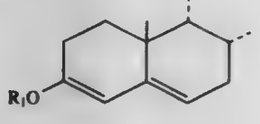
VI

wherein A and B are selected from the group consisting of

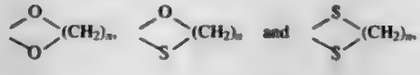




and



K and K' are selected from the group consisting of



n is 2 or 3 and R_1 is an ether or ester residue.

5,795,983

PREPARATION OF AMMONIUM SALTS OF 3-ISOPROPYL-2, 1, 3-BENZOTHIA-DIAZIN-4-ONE 2,2-DIOXIDE

Hans Rupert Merkle, Ludwigshafen; Alfons Durein, Römerberg; Hanspeter Hansen, Ludwigshafen, and Karl-Friedrich Jäger, Limburgerhof, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP96/00420, § 371 Date Aug. 15, 1997, § 102(e) Date Aug. 15, 1997, PCT Pub. No. WO96/25407, PCT Pub. Date Aug. 22, 1996

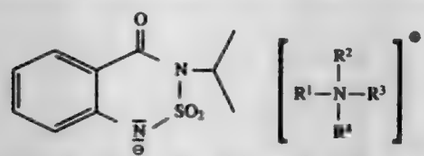
PCT Filed Feb. 1, 1996, Ser. No. 894,157

Claims priority, application Germany, Feb. 15, 1995, 195 05 036.3

Int. Cl.[6] C07D *285/16*

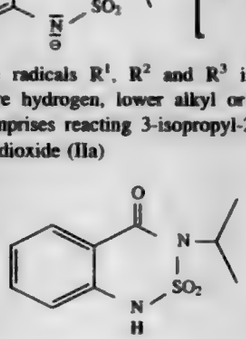
U.S. Cl. 544—11 **9 Claims**

1. A process for preparing salts of 3-isopropyl-2,1,3-benzothiadiazin-4-one 2,2-dioxide of the general formula I



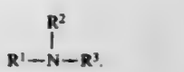
(I)

where the radicals R^1, R^2 and R^3 independently of one another are hydrogen, lower alkyl or lower hydroxyalkyl, which comprises reacting 3-isopropyl-2,1,3-benzothiadiazin-4-one 2,2-dioxide (IIa)



(IIa)

in an organic solvent with an amine of the general formula IIIa



(IIIa)

5,795,984

PROCESS FOR PRODUCING ISATOIC ANHYDRIDES

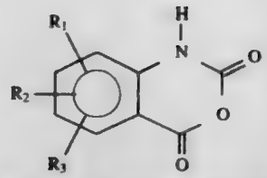
Shinji Nishii; Masashi Komatsu, and Hiroshi Ueda, all of Osaka, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Dec. 26, 1996, Ser. No. 773,357

Claims priority, application Japan, Dec. 26, 1995, 7-339145; Apr. 26, 1996, 8-107469

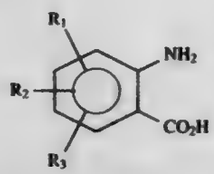
U.S. Cl. 544—100 **5 Claims**

1. A process for producing an isatoic anhydride compound represented by the formula (II)



(II)

wherein R_1 and R_2 each represent a hydrogen atom, a halogen atom, a nitro group, a lower alkyl group which is optionally substituted with a halogen atom, an aralkyl group which is optionally substituted with a halogen atom, an alkoxy group which is optionally substituted with a halogen atom, an alkoxycarbonyl group which is optionally substituted with a halogen atom, an acyloxy group or XNR_4R_5 (wherein X is a direct bond, a lower alkylene group or a carbonyl group provided that, when X is a direct bond or a lower alkylene group, R_4 and R_5 each represent a lower alkyl group or N, R_4 and R_5 may form a five- or six-membered heterocycle which optionally contain another hetero atom and, when X is a carbonyl group, R_4 and R_5 each represent a hydrogen atom or a lower alkyl group or N, R_4 and R_5 may form a five- or six-membered heterocycle which optionally contain another hetero atom and further, when containing another hetero atom, said hetero atom may be substituted); and R_3 is a hydrogen atom, a lower alkyl group which is optionally substituted with a halogen atom, an aralkyl group which is optionally substituted with a halogen atom, an alkoxy group which is optionally substituted with a halogen atom or an alkoxycarbonyl group which is optionally substituted with a halogen atom, which comprises the step of reacting phosgene with an anthranilic acid compound represented by the formula (I)



(I)

wherein R_1 R_2 and R_3 are as defined above, or a salt thereof in the presence of an alkylpyridium salt in an aqueous solvent.

5,795,985

PHENYL ALKYL KETONE SUBSTITUTED BY CYCLIC AMINE AND A PROCESS FOR THE PREPARATION THEREOF

Rinaldo Häsler, Wünnewil; Rudolf Schwabe, Worb, and Reto Luisoli, Hölstein, all of Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

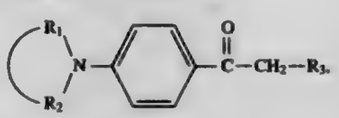
Filed Apr. 21, 1997, Ser. No. 847,519

Claims priority, application Switzerland, Mar. 5, 1996, 1138/96

Int. Cl.[6] C07D *295/116;* C07C *221/00;225/16;225/22*

U.S. Cl. 544—106 **16 Claims**

1. A compound of formula (I)



(I)

wherein:

R_1 and R_2 together are straight-chain or branched, unsubstituted or substituted C_3–C_{20}-alkylene which is interrupted by one or more than one —O— group, and R_3 is straight-chain or branched, unsubstituted or substituted C_2-C_{20}alkyl.

5,795,986

PYRIMIDO[4,5-B]INDOLES

Gordon L. Bundy, Portage, and John R. Palmer, Kalamazoo, both of Mich., assignors to Pharmacia & Upjohn Company, Kalamazoo, Mich.

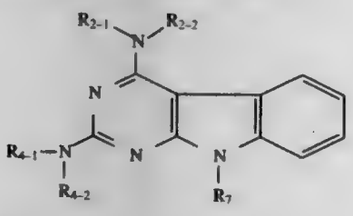
PCT No. PCT/US96/02397, § 371 Date Jul. 25, 1997, § 102(e) Date Jul. 25, 1997, PCT Pub. No. WO96/26941, PCT Pub. Date Sep. 6, 1996

Continuation-in-part of Ser. No. 398,201, Mar. 2, 1995, abandoned. This PCT application Mar. 1, 1996, Ser. No. 875,466

Int. Cl.[6] C07D *487/04*

U.S. Cl. 544—115 **12 Claims**

1. Pyrimido[4,5-b]indoles of the formula (I)



(I)

where R_{2-1} is

(A) —H,

(B) C_1–C_8 alkyl optionally substituted with 1 thru 4

(1) —OR_{2-10} where R_{2-10} is

(a) —H,

(b) C_{1-C4} alkyl,

(c) —CO—R_{2-11} where R_{2-11} is C_1–C_4 alkyl or C_6–C_9 aralkyl,

(d) —CO—$NR_{2-12}R_{2-13}$ where R_{2-12} and R_{2-13} are the same or different and are —H or C_1–C_2 alkyl,

where R_{2-2} is

(A) —H,

(B) C_1–C_8 alkyl optionally substituted with 1 thru 4

(1) —OR_{2-10} where R_{2-10} is as defined above, or R_{2-1} and R_{2-2} are taken together with the attached nitrogen atom to form a heterocyclic ring selected from the group consisting of 1-pyrrolidinyl, 1-piperdinyl4-morpholinyl, 4-methylpiperazinyl, 4-thiomorpholinyl and 1-piperazinyl,

where R_{4-1} is defined the same as R_{2-1}, but may be the same or different than R_{2-1},

where R_{4-2} is defined the same as R_{2-2} but may be the same or different than R_{2-2};

where R_7 is

(A) C_1–C_8 alkyl substituted with 1 thru 4 R_{7-1} where R_{7-1} is

(1) —OR_{7-2} where R_{7-2} is

(a) —H,

(b) C_1–C_4 alkyl,

(c) —CO—R_{7-8} where R_{7-8} is C_1–C_4 alkyl or C_6–C_9 aralkyl,

(d) —CO—$NR_{7-10}R_{7-11}$ where R_{7-10} and R_{7-11} are the same or different and are —H or C_1–C_3 alkyl,

(2) —$NR_{7-4}R_{7-5}$ where R_{7-4} and R_{7-6} are the same or different and are C_1–C_4 alkyl or may taken together with the attached nitrogen atom to form the heterocyclic ring —N*—$(CH_2)_{n1}$—R_{5-6}—$(CH_2)_{n2}$* where the atoms marked with an asterisk (*) are bonded together resulting in the formation of a ring, where n_1 is 1 thru 5, n_2 is 0 thru 3 and R_{5-6} is

(a) —C_2—,

(b) —O—,

(c) —S—,

(3) —$(CH_2)_{n3}CO_2R_{7-2}$, where n_3 is 0 thru 6 and R_{7-2} is as defined above,

(4) —$(CH_2)_{n3}CON(R_{7-3})_3$ where n_3 is as defined as above and where R_{7-3} may be the same or different and is —H or C_1–C_3 alkyl,

(5) —$(CH_2)_{n3}CONR_{7-4}R_{7-5}$ where n_3, R_{7-4}, R_{7-5} are as defined above,

(6) —$(CH_2)_{n1}OR_{7-2}$ where R_{7-2} and n_1 are as defined above,

(7) —$(CH_2)_{n2}OCOR_{7-3}$ where R_{7-3} and n_1 are as defined above, and pharmaccutically acceptable salts thereof.

5,795,987

ALKENE INTERMEDIATES FOR PREPARING 1,2-DIOXETANE COMPOUNDS

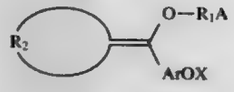
Arthur P. Schaap, and Louis J. Romano, both of Detroit, Mich., assignors to Board of Governors of Wayne State University, Detroit, Mich.

Division of Ser. No. 218,308, Mar. 25, 1994, which is a continuation-in-part of Ser. No. 289,837, Dec. 27, 1988, Pat. No. 5,616,729, which is a continuation-in-part of Ser. No. 887,139, Jul. 17, 1986, abandoned. This application Aug. 12, 1997, Ser. No. 910,072

Int. Cl.[6] C07D *207/00;311/82;* **C07F** *7/00*

U.S. Cl. 548—528 **19 Claims**

1. An alkene compound of the formula shown below used to produce a 1,2-dioxetane compound:



wherein Ar is an aromatic substituent selected from the group consisting of phenyl and naphthyl, wherein A is a substituent which couples with an organic or biological molecule to provide the dioxetane compound as a label on the molecule and wherein A is selected from the group consisting of hydroxyl, amino, halogen, cyano, carboxylic acid, $NH(CH_2)_mOH$ where m is 2 to 20, succinimidoxy, biotin and carboxyfluorescein substituents, wherein R_1 is a linking substituent selected from the group consisting of a —$(CH2)_n$ group, a —$(CH2)_nNH$— group and a —$(CH_2)_nCO$— group, where n is an integer between about 1 and 30, wherein X is a chemically labile substituent which is removed by an activating agent other than an enzyme so that light is produced by the 1,2-dioxetane and R_2 C is a polycyclic alkylene substituent containing 6 to 30 carbon atoms.

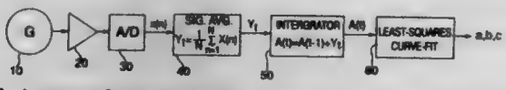
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5,795,988

GYROSCOPE NOISE REDUCTION AND DRIFT COMPENSATION

Pei-hwa Lo, Ramsey; Peter Halatyn, Wayne, both of N.J.; Eric Geoca, New City, and James B. Archibald, North Tonowanda, both of N.Y., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jul. 1, 1996, Ser. No. 674,389
Int. Cl.[6] G01P 7/00
U.S. Cl. 73—1.77 11 Claims



1. A system for processing the output of an angular rate sensor, comprising:

means for reducing noise in the sensor output; and

compensation means for compensating for drift, the compensation means comprising

means for initially adjusting the sensor output for a predetermined rate of drift; and

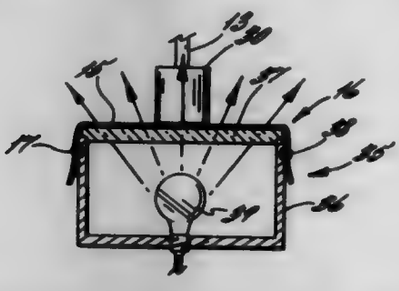
means for subsequently computing a new rate of drift when the angular rate is less than a pre-defined threshold and adjusting the sensor output in response to the new rate of drift.

5,795,989

FABRIC ABRASION TESTER AND ASSOCIATED ABRADING METHODS

Harry Evans Simmons, and Khalid Ahmad Achagzai, both of Charlotte, N.C., assignors to Industrial Laboratory Equipment Co., Inc., Charlotte, N.C.

Filed Apr. 4, 1997, Ser. No. 833,285
Int. Cl.[6] G01N 3/56
U.S. Cl. 73—7 15 Claims



1. A fabric abrasion testing device for abrading a fabric sample in a predetermined manner comprising:

at least one fabric sample holder for supporting the fabric sample;

at least one abrasion element having an abrasive lower surface, said abrasion element having a predetermined weight for urging the abrasive lower element toward the fabric sample supported by a corresponding fabric sample holder;

an optically transmissive motion plate comprised of a material selected from a group consisting of a translucent material and a transparent material such that abrasion of the fabric sample can be observed through said optically transmissive motion plate, said optically transmissive motion plate defining at least one aperture for mounting said abrasion element therethrough; and

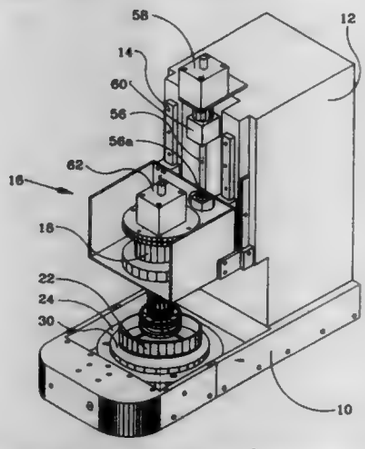
a motor, operably connected to said optically transmissive motion plate for moving said optically transmissive motion plate in a predetermined pattern relative to said at least one fabric sample holder such that said at least one abrasion element also moves in a predetermined pattern relative to the fabric sample mounted on the corresponding fabric sample holder.

5,795,990

METHOD AND APPARATUS FOR MEASURING FRICTION AND WEAR CHARACTERISTICS OF MATERIALS

Norm Gitis, Cupertino; Leo Levinson, Mountain View; Vlad Dorfman, Mountain View, and Michael Vinogradov, Mountain View, all of Calif., assignors to Center for TriBology, Inc., Mountain View, Calif.

Filed Jul. 30, 1997, Ser. No. 902,728
Int. Cl.[6] G01N 3/56;19/02
U.S. Cl. 73—9 14 Claims



1. An apparatus for measuring friction and wear characteristics of test specimens having friction contact with each other, comprising:

a stationary rigid frame with guide means;

a carriage slidingly installed on said guide means;

a linear means for moving said carriage along said guide means;

a rotary drive means supported by said carriage and having an output member with means for fixation of a first test specimen, said first test specimen having a longitudinal axis;

a flexible coupling having an input member attached to said output member of said rotary drive means, an output member attached to said input member of said flexible coupling, and a flexible means that interconnects said input and output members of said flexible coupling, said output member of said flexible coupling having at least one degree of freedom, said flexible coupling being installed between said output member of said rotary drive means and said means for fixation of said first test specimen;

means for fixation of a second test specimen in a testing position, said means for fixation of a second test specimen being attached to said stationary rigid frame, said second test specimen having a longitudinal axis, said means for fixation of said first and second specimens being formed so that in said testing position said longitudinal axis of said first test specimen is parallel to said longitudinal axis of said second test specimen, said at least one degree of freedom of said flexible coupling being a degree of freedom in a direction of said longitudinal axis of said first test specimen; and

a measuring system for measuring friction and wear characteristics of said test specimens in a friction contact.

5,795,991

ARRANGEMENT OF AN IMPACT-SENSITIVE DEVICE IN A HOUSING

Alfons Hesse, and Franz-Josef Puttman, both of Lennestadt, Germany, assignors to Tracto-Technik Paul Schmidt Spezialmaschinen, Lennestadt, Germany

Filed Aug. 23, 1996, Ser. No. 697,414
Claims priority, application Germany, Aug. 23, 1995, 195 30 973.1; Sep. 20, 1995, 195 34 806.0
Int. Cl.[6] G01N 3/00
U.S. Cl. 73—12.09 16 Claims

1. A drilling apparatus comprising:

a cylindrical shock-sensitive apparatus;



a housing with a chamber accommodating the shock-sensitive apparatus;

shock-absorbing buffers at respective ends of the shock-sensitive apparatus, at least one of the buffers having an axial hole with an undercut, the buffers having greater diameter than the shock-sensitive apparatus, the buffers holding the shock-sensitive apparatus at a distance from the walls of the chamber, at least in a main shock direction; and

a pin, forming a head at its end, mounted on at least one end of the shock-sensitive apparatus, the pin and head extending into and engaging the hole and undercut of the buffer, whereby the buffer is attached to the shock-sensitive apparatus.

5,795,992

METHOD OF TESTING DURABILITY OF EXHAUST GAS PURIFICATION DEVICE

Toshio Tanahashi, Susono; Masakatsu Sanada, Numazu; Hiroyuki Domyo, Susono; Hiroshi Hirayama, Okazaki; Kazuaki Sobue, Toyota; Tsuneo Higashi, Susono; Koji Yokota, Nagoya; Hideo Sobukawa, Nisshin; Tadashi Suzuki, Seto, and Shinichi Matsunaga, Owariasahi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi, Japan

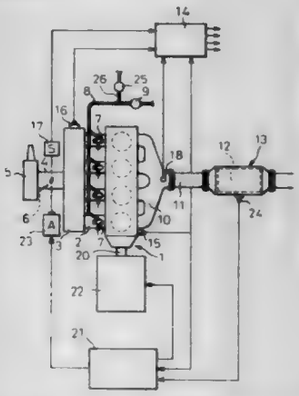
PCT No. PCT/JP96/01318, § 371 Date Feb. 10, 1997, § 102(e) Date Feb. 10, 1997, PCT Pub. No. WO96/36863, PCT Pub. Date Nov. 21, 1996

PCT Filed May 17, 1996, Ser. No. 765,365

Claims priority, application Japan, May 18, 1995, 7-119877

Int. Cl.[6] G01M *15/00*

U.S. Cl. 73—23.31 **47 Claims**



1. A method of testing durability of an exhaust gas purification device by creating a same state of deterioration of the exhaust gas purification device as if a vehicle were actually market driven for a predetermined target driving distance or target driving time, comprising: obtaining in advance a relationship between a magnitude of stress causing deterioration of an exhaust gas purification catalyst and a representative value indicative of a degree of deterioration of a performance of the catalyst; obtaining a shortened deterioration time taken for the catalyst to reach about a same degree of deterioration as when the vehicle is market driven for the target driving distance or target driving time under a higher stress than the catalyst has when the vehicle is market driven from the above relationship; and applying high stress to the catalyst over a shortened deterioration time in operating the engine or the vehicle.

5,795,993

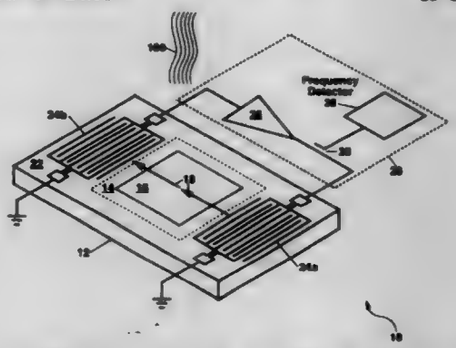
ACOUSTIC-WAVE SENSOR FOR AMBIENT MONITORING OF A PHOTORESIST-STRIPPING AGENT

Kent B. Pfeifer, Los Lunas; Andrea E. Hoyt, Albuquerque, and Gregory C. Frye, Cedar Crest, all of N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Nov. 29, 1995, Ser. No. 564,764

Int. Cl.[6] G01N *29/02*

U.S. Cl. 73—24.01 **15 Claims**



1. An acoustic-wave sensor for measuring an ambient concentration of a low-volatility photoresist-stripping agent comprising;

an acoustic-wave device having a sensing region on a surface thereof, the sensing region including a photoresist-stripping-agent sensing film;

a housing for holding the acoustic-wave sensor: and

sampling means for providing a flow of ambient air in contact with the sensing film for sorbing a quantity of the low-volatility photoresist-stripping agent and thereby altering a frequency of an acoustic wave propagating through the sensing region, the altered frequency providing an indication of the ambient concentration of the photoresist-striping agent.

5,795,994

PROCESS AND APPARATUS FOR MEASURING CONDENSED MOISTURE AND APPLICATIONS THEREOF

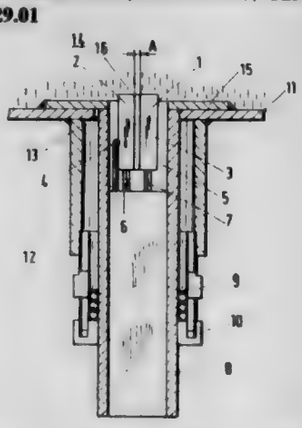
Horst Kalfa, Idstein, and Knut Schroeder, Frankfurt am Main, both of Germany, assignors to Metallgesellschaft Aktienegesellschaft, Frankfurt Am Main, Germany

Filed Nov. 25, 1996, Ser. No. 755,959

Claims priority, application Germany, Nov. 24, 1995, 195 43 770.5

Int. Cl.[6] G01N *27/02*; G01W *01/11*; C23F *13/00*

U.S. Cl. 73—29.01 **8 Claims**



1. A process for monitoring and/or controlling moisture in devices and/or pipe conduits which are part of a dry desulfurization plant with a circulating fluidized bed, said process comprising the step of measuring at least one difference of electrochemical potentials between at least two elements (1, 2) arranged one beside the other and electrically insulated from each other at at least one point

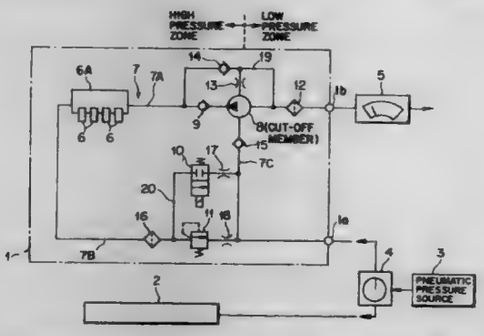
in the devices and/or pipe conduits by means for measuring said at least one difference of electrochemical potentials, each of said at least two elements consisting of materials having different electrochemical potentials.

5,795,995

LEAK TESTER AND LEAK TESTING METHOD

Kiyoshige Shimaoka, and Mauri Ukonmaanaho, both of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1997, Ser. No. 821,857
Claims priority, application Japan, Mar. 22, 1996, 8-066855
Int. Cl.[6] G01M *3/26*
U.S. Cl. 73—40 **16 Claims**



1. A leak tester for testing the tightness and outward leakage of a test object provided with first and second openings and having an internal volume between said first and second openings, where no fluid is allowed to flow from said first opening to said second opening for the case of the non-leaking test object, comprising:

a master having substantially the same internal volume as said test object;

a pressure source for supplying a fluid of a predetermined pressure to said test object and said master, said pressure source supplying said fluid to said test object through said first opening;

a first measuring instrument for measuring a pressure difference between a pressure of said fluid within said test object and that within said master; and

a second measuring instrument for measuring a flow rate of said fluid flowing out of said test object only through said second opening to detect an internal leakage inside the test object,

wherein said leak tester detects outward leakage of said fluid from said test object other than that internal leakage through said second opening on a basis of said measured pressure difference and said measured flow rate.

5,795,996

METHOD AND APPARATUS FOR MONITORING WATER QUALITY

Chen-Chang Chang; Shu-Fei Chan; Dong-Yuan Lin; Jen-Chung Chen, all of Hsinchu; Guo Chen Chen, Taipei, and Don H.C. Chen, Taipei-Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

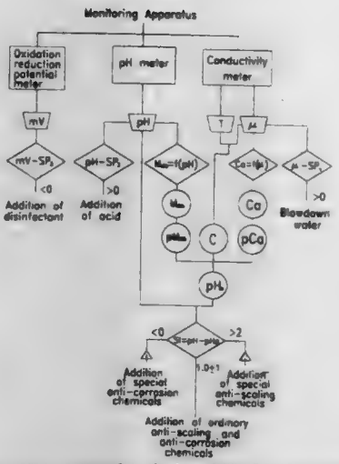
Filed Jun. 30, 1997, Ser. No. 884,850
Int. Cl.[6] G01N *33/00;22/00;31/16;* **B01D** *21/30*
U.S. Cl. 73—61.41 **17 Claims**

1. A method for monitoring water quality, comprising the following steps of:

(a) obtaining readings of the temperature and specific conductivity of water so as to find out a temperature constant (C);

(b) obtaining a reading of the pH value of water to derive therefrom the M alkalinity and PM_{Alk};

(c) deriving calcium hardness and pCa value from the specific conductivity of water; and



(d) finding out a saturation index (SI) from the constant (C), PM_{Alk} and pCa using the following two equations so as to serve as a reference parameter in scaling inclination and corrosion risks:

$$pHs=pCa+pM_{Alk}+C=f(\mu,pH,T)$$

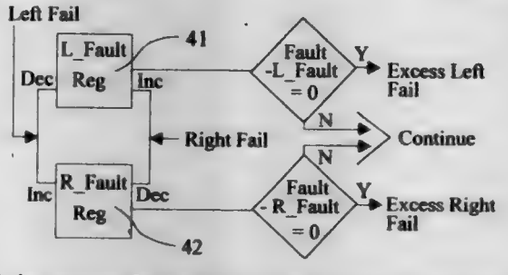
$$SI=pH-pHs.$$

5,795,997

VEHICLE STEERING OFFSET MONITOR

Arthur J. Gittins, 853 2nd Ave., Salt Lake City, Utah 84103; Richard H. Adamson, 44 W. 700 N, Bountiful, Utah 84010, and Lawrence J. Wanner, 670 E Browning Ave., Salt Lake City, Utah 84105

Filed Aug. 1, 1996, Ser. No. 633,579
Int. Cl.[6] G01M *19/00*
U.S. Cl. 73—118.1 **20 Claims**



1. An apparatus for detecting an out-of-alignment condition of a wheeled vehicle with at least one steered wheel controlled by a steering wheel by comparing the relative number of periodic samples during a sampling period in which the vehicle steering wheel is positioned right of the center position as compared to left of the center position, the apparatus comprising;

sampler that periodically samples the position of the steering wheel and determines whether the steering wheel is in a center position, or a left position left of the center position, or a right position right of the center position,

fault determiner that determines a left fault condition when the number of samples in the left position exceeds the number of samples in the right position by a first predetermined number during the sampling period, or determines a right fault condition when the number of samples in the right position exceed the number of samples in the left position by the first predetermined number during the sampling period,

auto-reset that initiates a new sampling period when a left fault condition is determined, or a right fault condition is determined, or the number of samples made by the sampler during the sampling period reaches a second predetermined duration number,

a status indicator that indicates to a user a left failure or a right failure based upon a comparison of accumulated right fault conditions and accumulated left fault conditions over one or more sampling periods.

5,795,998

FLOW SENSOR AND FUEL CONTROL SYSTEM

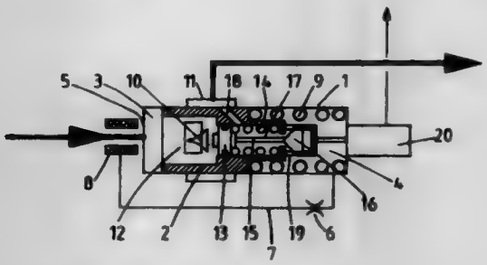
Trevor Stanley Smith, Sutton Coldfield, England, assignor to Lucas Industries Public Limited Company, Solihull, England

Filed Dec. 5, 1996, Ser. No. 760,820

Claims priority, application United Kingdom, Dec. 12, 1995, 9525370

Int. Cl.[6] G01F *01/22*

U.S. Cl. 73—118.1 **14 Claims**



1. A flow sensor comprising:

a cylinder;

a first piston movable within the cylinder and dividing the cylinder into first and second chambers, the first chamber communicating with an inlet, the cylinder having an orifice which cooperates with the first piston to define an outlet from the first chamber whose area varies with the position of the first piston within the cylinder, the first piston being biased so as to tend to close the outlet;

a pressure varying arrangement for varying the pressure in the second chamber so as to move the first piston to maintain a substantially constant pressure drop between the inlet and the outlet; and

a transducer for supplying a signal representing the position of the first piston within the cylinder.

5,795,999

Patent Not Issued For This Number

5,796,006

VIBRATION ANGULAR-VELOCITY SENSOR AND PROCESS FOR PRODUCING IT

Takamitsu Fujiu, Zama; Shunji Watanabe, Setagaya-ku; Yoshinori Sango, Machida, and Tatsushi Nomura, Kawasaki, all of Japan, assignors to Nikon Corporation

Continuation of Ser. No. 306,226, Sep. 14, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 674,708

Claims priority, application Japan, Sep. 14, 1993, 5-228719; Oct. 15, 1993, 5-25102; Nov. 29, 1993, 5-298032; Dec. 1, 1993, 5-301668; Dec. 27, 1993, 5-330736

Int. Cl.[6] G01P *3/02*

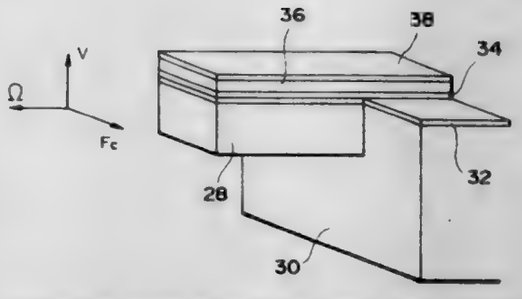
U.S. Cl. 73—504.15 **4 Claims**

1. A vibration angular-velocity sensor comprising:

a base made of silicon;

a sensor portion made of silicon and projecting from said base, said sensor portion being continuously extending from said base, and a top surface of said sensor portion and a top surface of said base forming a flat plane;

a SiN layer formed on said flat plane and having a flat surface, said SiN layer being located above both of at least one portion of said top surface of said sensor portion and at least one portion of said top surface of said base;



a first electrode formed on a first predetermined area of said SiN layer and adapted to be connected with an AC voltage, said first electrode layer being located above both of at least one portion of said top surface of said sensor portion and at least one portion of said top surface of said base;

a second electrode formed on a second predetermined area of said SiN layer and adapted to be connected with a detector, said second electrode layer being located above both of at least one portion of said top surface of said sensor portion and at least one portion of said top surface of said base;

a piezoelectric layer formed on said first and second electrodes; and

a conductive layer formed on said piezoelectric layer, said conductive layer being located above both of at least one portion of said top surface of said sensor portion and at least one portion of said top surface of said base,

said first and second electrodes electrically and physically contacting with said piezoelectric layer.

5,796,001

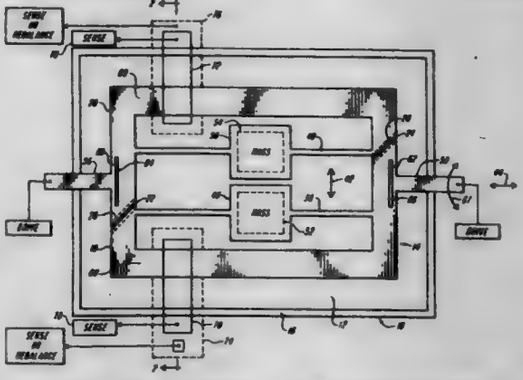
MONOLITHIC MICROMECHANICAL TUNING FORK ANGULAR RATE SENSOR

Paul Greiff, Wayland, and Burton Boxenhorn, Chestnut Hill, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Division of Ser. No. 212,320, Mar. 14, 1994, Pat. No. 5,505,084, which is a continuation of Ser. No. 757,706, Sep. 11, 1991, , which is a continuation-in-part of Ser. No. 757,706, Sep. 11, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 481,898

Int. Cl.[6] G01P *9/04*

U.S. Cl. 73—504.16 **4 Claims**



1. A method for fabricating a micromechanical tuning fork angular rate sensor capable of detecting angular rotation about a rotation sensitive axis, comprising the steps of:

forming a gimbal ring;

attaching said gimbal ring to a substrate with a plurality of flexures;

forming first and second closed-ended vibratable structures in a plane within said gimbal ring, said first and second closed-

ended vibratable structures being energizable to vibrate laterally along an axis normal to said rotation sensitive axis, wherein said first and second closed-ended vibratable structures are responsive to angular rotation about said rotation sensitive axis for vertical displacement of at least a portion of said first and second closed-ended vibratable structures normal to said plane and said gimbal ring; and

forming a sense electrode for sensing said vertical displacement of said gimbal ring resulting from said vertical displacement of at least a portion of said first and second closed-ended vibratable structures to provide an output signal proportional to said sensed vertical movement and indicative of said angular rotation.

5,796,002

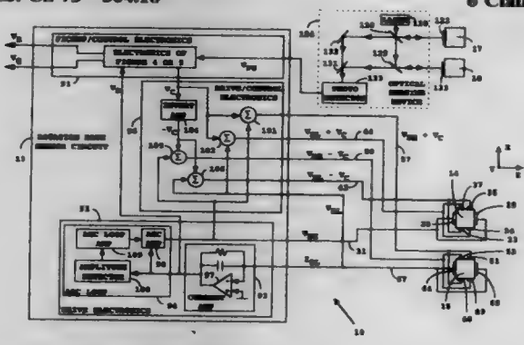
ROTATION RATE SENSOR WITH OPTICAL SENSING DEVICE

Michael R. Layton, Clayton, Calif., assignor to BEI-Systron Donner, Concord, Calif.

Continuation of Ser. No. 475,401, Jun. 7, 1995, abandoned. This application Apr. 30, 1997, Ser. No. 848,323

Int. Cl.[6] G01P *9/04*

U.S. Cl. 73—504.16 **6 Claims**



1. A sensor comprising:

a piezoelectric structure;

drive electronics to generate a drive signal;

drive electrodes coupled to the drive electronics and disposed on the piezoelectric structure to apply the drive signal to the piezoelectric structure and cause drive mode displacement of the piezoelectric structure;

an optical sensing device comprising:

a laser to produce a laser beam;

means for splitting the laser beam into a pair of beams and directing the beams to the piezoelectric structure such that each of the beams is reflected by the piezoelectric structure;

means for recombining the reflected beams to produce a recombined beam having a modulated intensity corresponding to motion induced pickup mode and quadrature displacements of the piezoelectric structure; and

a photodetector to sense the modulated intensity of the recombined beam and producing in response a pickup signal corresponding to the motion induced pickup mode and quadrature displacements of the piezoelectric structure; and

pickup electronics coupled to the optical sensing device and responsive to the pickup signal to generate an output signal corresponding to the motion induced pickup mode displacement of the piezoelectric structure.

5,796,003

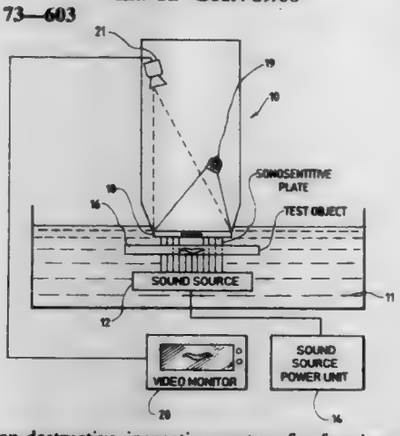
ACOUSTIC IMAGING SYSTEMS

Jaswinder S. Sandhu, 454 Carman Ave., Buffalo Grove, Ill. 60089; Witold J. Popek, 500 W. Huntington Commons, Apt. 348, Mount Prospect, Ill. 60056, and Honghui Wang, 1529 S. Wolf Rd., Apt. F-7, Prospect Heights, Ill. 60070

Filed Jan. 30, 1996, Ser. No. 594,040

Int. Cl.[6] G01N *29/06*

U.S. Cl. 73—603 **8 Claims**



1. A non-destructive inspection system for forming a substantially artifact-free image of a test object, which system includes:

a source of ultrasonic energy to be directed at a test object;

a liquid crystal detector for receiving ultrasonic energy exiting the test object and providing a visual display for an image;

a medium for coupling the source test object and the detector;

a first device for moving said source about a fixed pivot that is substantially within said source, whereby the normal to the source is caused to move through a small angle relative to the liquid crystal detector which minimizes disturbance of the medium due to movement of the source and cooperates in assuring an artifact-free image; and

a second device for exciting said source so as to cause ultrasonic energy therefrom to oscillate between a pair of predetermined frequencies and scan the frequencies therebetween in a period of time sufficiently short so as to provide a flicker-free image; and

wherein said first device for moving includes rotatable disc and a link connected to the source and eccentrically connected to the disc.

5,796,004

METHOD AND APPARATUS FOR EXCITING BULK ACOUSTIC WAVE

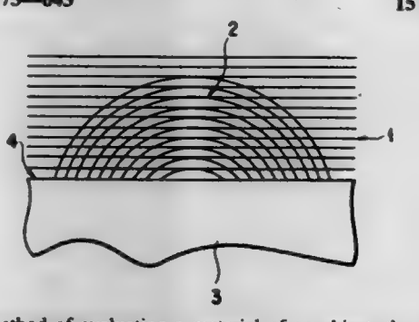
Noritaka Nakaso, and Yusuke Tsukahara, both of Tokyo, Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1996, Ser. No. 736,424

Claims priority, application Japan, Oct. 24, 1995, 7-274609; Jul. 9, 1996, 8-179483

Int. Cl.[6] G01N *29/04*

U.S. Cl. 73—643 **15 Claims**



2. A method of evaluating a material of an object, the method comprising the following steps of:

irradiating a surface of an object having a predetermined specific acoustic speed with coherent parallel energy beams and coherent focusing energy beams, said coherent parallel energy beams and said coherent focusing energy beams having different frequencies such that the parallel energy beams and the focusing energy beams overlap each other to generate interference fringes in the form of concentric circles propagating from the periphery to the center of the object at a propagation speed;

exciting acoustic waves in accordance with a distortion distribution generated in the surface of the object attributable to a photo-thermal effect of the interference fringes, the acoustic waves being focused to a small region in the object, a position of which region is determined by the specific acoustic speed of the object and the propagation speed of the interference fringes; and

detecting the acoustic waves reflected by the small region or allowed to pass through the small region and then allowed to reach a front surface or a rear surface of the object with a probe beam so as to analyze characteristics of the material of the object.

5,796,005

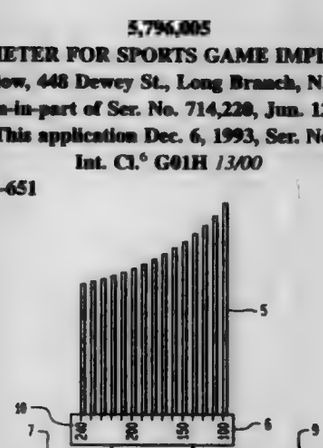
FLEX METER FOR SPORTS GAME IMPLEMENTS

Jack L. Frolow, 448 Dewey St., Long Branch, N.J. 07740

Continuation-in-part of Ser. No. 714,220, Jun. 12, 1991, abandoned. This application Dec. 6, 1993, Ser. No. 161,975

Int. Cl.[6] G01H *13/00*

U.S. Cl. 73—651 **26 Claims**



1. A combination for measuring the flexing of an implement said implement being a second body employed by a player in a sports game to have an impact with a first body, a single said impact being for a short interval of time, said implement responsive to a single impact having a mode of natural vibratory flexing in said implement, said mode of natural vibratory flexing having a natural frequency having an unknown value f_r and an amplitude having a value A_x at a location x on said implement; said combination comprising a measuring means measuring said implement subsequent to said impact, providing a measured value indicating said value f_r, said measuring means comprising at least one mechanical element having a known natural frequency of vibration; said natural frequency being substantially the same as said frequency f_r; a coupling means coupling said measuring means to said mode of natural vibratory flexing, the amplitude and natural frequency of vibration of said mechanical element indicating said value f_r and thereby the vibratory flexing of said implement, a higher said value f_r indicating said natural vibratory flexing having an amplitude having a value A_x being lesser.

5,796,006

METHOD AND APPARATUS FOR MEASURING VIBRATIONS

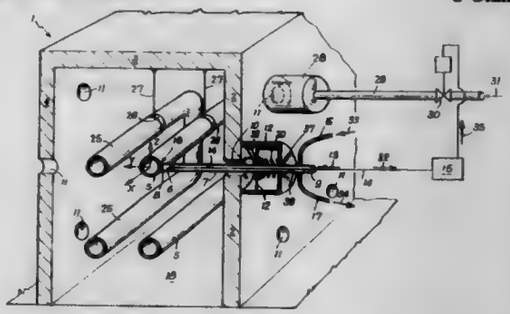
Serge Bellet, Chateauneuf-les-Martigues; Jean-Luc Brouillet, Lavera, and Daniel Bazzoni, Martigues, all of France, assignors to Naphtachimie, Courbevoie, France

Filed Dec. 17, 1996, Ser. No. 775,711

Claims priority, application France, Dec. 22, 1995, 95 15870

Int. Cl.[6] G01H *11/00*

U.S. Cl. 73—661 **8 Claims**



1. A method of measuring the vibration of a duct disposed in a thermal enclosure in which duct there flows at least one fluid, in which method use is made of a vibration sensor disposed inside said thermal enclosure, said sensor being secured to a sensor support, said sensor support being pressed against said duct to enable and facilitate transmission of vibration by conduction from said duct to said sensor support, and from said sensor support to said sensor, at least the portion of the sensor support adjacent the sensor being within the thermal enclosure, and said duct and said portion of the sensor support being exposed to heat provided within said thermal enclosure, said sensor being cooled by a cooling fluid flowing within said sensor support.

5,796,007

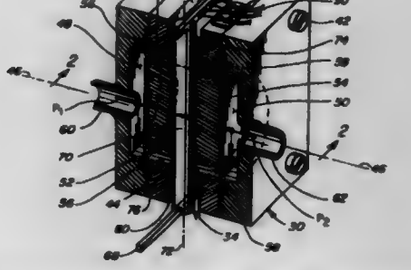
DIFFERENTIAL PRESSURE TRANSDUCER

Louis J. Panagotopulos, Walpole, and Herman W. Erichsen, Holliston, both of Mass., assignors to Data Instruments, Inc., Acton, Mass.

Filed Sep. 23, 1996, Ser. No. 710,814

Int. Cl.[6] G01L *13/02*

U.S. Cl. 73—716 **64 Claims**



53. A displacement sensing unit for use in a pressure transducer, the displacement sensing unit comprising:

a first sensing beam having first and second ends;

a second sensing beam having first and second ends; and

a cross beam connected to the first and second sensing beams intermediate the first and second ends, the cross beam being constructed and arranged to deflect the first and second sensing beams when the cross beam is moved in response to pressure.

5,796,008

PRESSURE GAGE DEVICE HAVING A TUBE SPRING ASSOCIATED WITH A VENTING VALVE TO ADJUST A PRESET

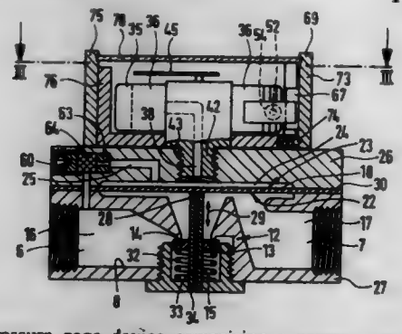
Kurt Stoll, Esslingen, Germany, and Hendrik E. Smit, Rotterdam, Netherlands, assignors to Festo KG, Esslingen, Germany

Filed Mar. 5, 1997, Ser. No. 811,611

Claims priority, application Germany, Mar. 7, 1996, 196 08 868.2

Int. Cl.[6] G01L 7/14;19/02

U.S. Cl. 73—740 **14 Claims**



1. A pressure gage device comprising a pressure gage of the spring tube type having a housing and being provided with a curved tube spring secured to the housing at one end thereof, an interior space of such spring being arranged to receive pressure medium via a pressure gage inlet, the spring tube having a degree of curvature which is dependent on the instantaneous actuating pressure obtaining in its interior space and being adapted to undergo a deformation in the form of an expansion or contraction in response to a change in the actuating pressure, and a display means coupled with the tube spring, whose reading is dependent on the instantaneous degree of deformation of the tube spring, wherein the tube spring is associated with a venting valve adapted to control a venting opening communicating with the interior space in the tube spring, an adjusting device being present for resetting a preset for the condition of switching of the venting valve in a manner dependent on the degree of deformation of the tube spring.

5,796,009

METHOD FOR MEASURING IN A FLUID WITH THE AID OF SING-AROUND TECHNIQUE

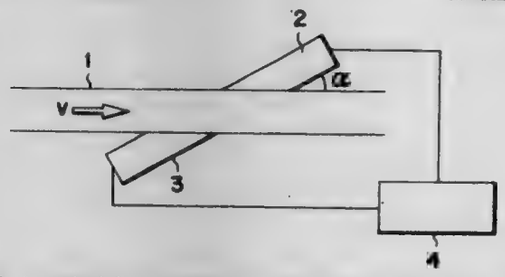
Jerker Delsing, Kungsljusvägen 56, S-240 21 Löddeköpinge, Sweden

Filed Oct. 23, 1995, Ser. No. 546,721

Claims priority, application Sweden, Oct. 24, 1994, 9403632

Int. Cl.[6] G01F 1/66

U.S. Cl. 73—861.28 **25 Claims**



1. A method for measuring in a fluid with the aid of a sing-around technique, according to which a transmitter repeatedly transmits sound pulses comprising at least two sound periods in the fluid, and these sound pulses are received by a receiver, which acoustically is disposed opposite to the transmitter, the detection of the reception by the receiver triggering the transmission of a subsequent sound pulse by the transmitter, wherein, at the time of each or every second reception of a sound pulse, a delay is produced, and the transmission of the subsequent sound pulse by the transmitter is triggered with this delay, the delay avoiding interference between a directly received sound pulse and a multiple-reflected sound pulse and the delay equaling at least half the length of the multiple-reflected sound pulse, wherein the delay between reception of the sound pulse and transmission of the subsequent sound pulse is established as a function of the frequency of the received sound pulse.

5,796,010

CORIOLIS MASS FLOWMETER

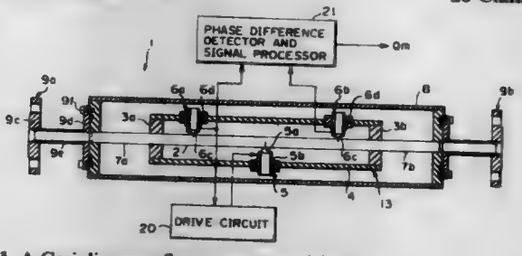
Masami Kishiro, and Hironobu Yao, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Mar. 8, 1996, Ser. No. 613,007

Claims priority, application Japan, Mar. 9, 1995, 7-049371

Int. Cl.[6] G01F 1/84

U.S. Cl. 73—861.357 **26 Claims**



1. A Coriolis mass flowmeter comprising:

a housing;

at least one measuring pipe contained in said housing, said at least one measuring pipe enabling measurement of a flow rate of a fluid which flows in said pipe under application of a vibration which generates a Coriolis force in said flowing fluid;

a supporting mechanism connected to both ends of said measuring pipe, said supporting mechanism having a principal natural frequency;

a vibration generator which imparts vibration to said measuring pipe;

at least two sensors for detecting the vibration of said measuring pipe;

an inlet conduit which introduces a fluid to be measured into said measuring pipe; and

an outlet conduit which discharges said fluid out of said measuring pipe;

wherein said Coriolis vibration applied to said measuring pipe has a frequency which is at least $\sqrt{2}$ times as high as the principal natural frequency of said supporting mechanism.

5,796,011

CORIOLIS-TYPE MASS FLOW SENSOR

Mamadi Keita, Basel, and Ennio Bitto, Aesch, both of Switzerland, assignors to Endress + Hauser Flowtech AG, Reinach, Switzerland

Continuation-in-part of Ser. No. 277,497, Jul. 19, 1994, abandoned. This application Nov. 13, 1996, Ser. No. 747,637

Claims priority, application European Pat. Off., Jul. 20, 1993, 93810516

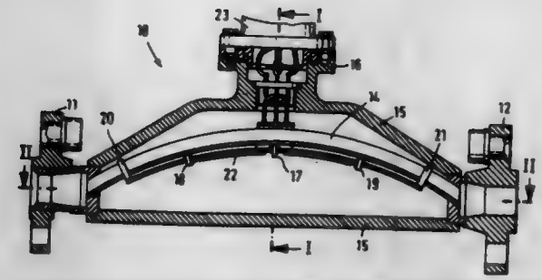
Int. Cl.[6] G01F 1/84

U.S. Cl. 73—861.357 **9 Claims**

1. A sensor of a mass flow meter through which a fluid flows working on the Coriolis principle, the sensor comprising

first and second parallel measuring tubes each having a circular cross-section and each forming an arc segment of a circle having a chord length L,

first and second flanges, the first and second parallel measuring tubes extending between the first and second flanges,



means for exciting the first and second parallel measuring tubes into opposite sympathetic vibrations perpendicular to the respective circular-arc segment,

means for sensing the vibrations of the first and second parallel measuring tubes at least two points spaced along the first and second parallel measuring tubes,

each of the tubes having a wall thickness w chosen for maximum permissible pressure of the fluid flowing through the tubes,

each of the tubes having a stress value σ_T due to a maximum permissible temperature change δT of the fluid which is chosen to be less than a $\sigma_{0.2}$-value of the material forming the tubes,

each of the tubes having an internal diameter D determined as a function of the maximum permissible pressure loss H_v in the tubes with the chord length L, and the circular-arc segment formed by each tube having a height h_{min} which is a minimum height for the circular-arc segment determined as a function of the chosen wall thickness w, the chosen stress value σ_T, and the determined internal diameter D.

5,796,012

ERROR CORRECTING CORIOLIS FLOWMETER

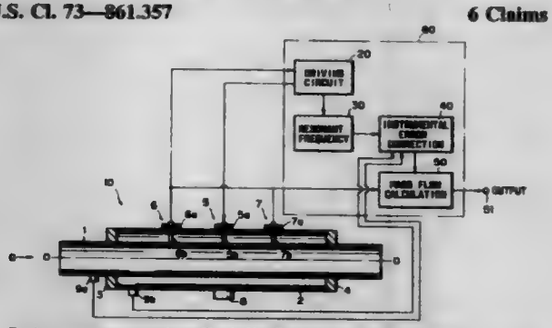
Shingo Gomi; Hirokazu Kitami; Takashi Endo; Kenichi Matsuoka; Kimihiro Ichinose; Osamu Futagawa; Seiji Kobayashi, and Kazuhide Kobayashi, all of Tokyo, Japan, assignors to Oval Corporation, Tokyo, Japan

Filed Jan. 23, 1997, Ser. No. 788,119

Claims priority, application Japan, Sep. 19, 1996, 8-247538; Sep. 30, 1996, 8-258814

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.357 **6 Claims**



5. An error correcting Coriolis flowmeter, comprising:

a convertor which comprises a double conduit composed of an inner tube in which fluid to be measured flows and an outer tube coaxially mounted on the inner tube and secured at both ends thereto, said outer tube having a balance weight attached thereto for making a natural frequency of vibration of the outer tube equal to a natural frequency of vibration of the inner tube;

driving means for driving the double conduit at a resonant frequency having a constant amplitude;

a pair of sensors for detecting a phase difference proportional to a Coriolis force acting on the double conduit, which converter determines a mass flow-rate according to outputs of the paired sensors;

temperature detecting means for detecting a temperature of the inner tube, and temperature detecting means for detecting a temperature of the outer tube;

temperature correcting means for compensating an instrumental error according to a change of temperature of the inner tube;

temperature difference correcting means for compensating an instrumental error according to a difference between a temperature of the inner tube and a temperature of the outer tube;

resonant frequency correcting means for compensating an instrumental error caused by a difference of a resonant frequency of the oscillating double conduit measured with a flow of fluid passing therethrough, as compared with a resonant frequency of the oscillating double conduit measured with a flow of corrected and standardized fluid passing therethrough; and

an instrumental error correcting means for correcting an instrumental error according to a sum of respective compensative instrumental-error values determined by the temperature correcting means, the temperature difference correcting means and the resonant frequency correcting means.

5,796,013

TORSION DETECTION APPARATUS FOR POWER TRANSMISSION SHAFT AND POWER TRANSMISSION APPARATUS

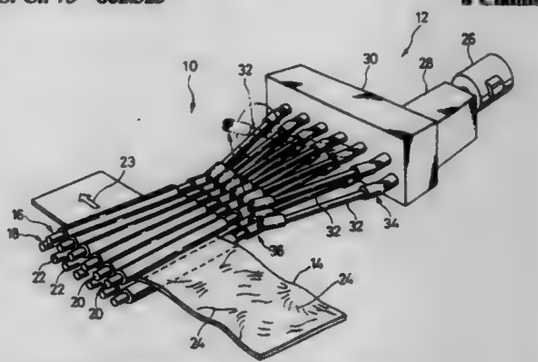
Toshio Nagata, 14-2, 4-chome Minamisoyama, Minato-ku, and Jinichi Akayama, 501, 3-51-13, Eifuku, Suginami-ku, both of Tokyo, Japan

Filed Mar. 19, 1997, Ser. No. 820,572

Claims priority, application Japan, Sep. 17, 1996, 8-265078

Int. Cl.[6] G01L *3/02;3/10*

U.S. Cl. 73—862.325 **8 Claims**



1. A power transmission apparatus, comprising:

a power transmission shaft having a pair of universal joints provided at opposite ends thereof; and

a torsion detection apparatus for detecting a torsion of said power transmission shaft;

said torsion detection apparatus including a pair of rotatable members mounted on said power transmission shaft for rotation together with said power transmission shaft, and detection means;

said rotatable members having at least one pair of opposing portions which are opposed to each other in a spaced relationship from each other around said power transmission shaft;

said detection means including a sensor mounted on one of said opposing portions of said rotatable members for detecting an approach of the other opposing portion to the one opposing portion.

5,796,014

TORQUE SENSOR

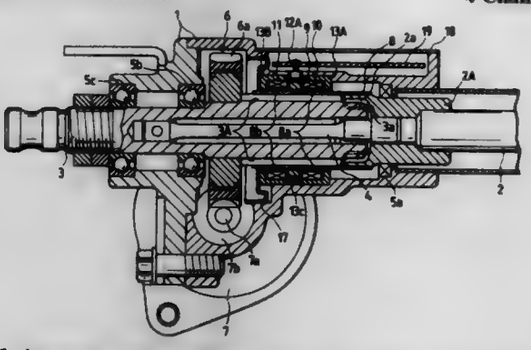
Kazuo Chikaraishi, and Kouichi Satoh, both of Gunma, Japan, assignors to NSK Ltd., Tokyo, Japan

Filed Aug. 28, 1997, Ser. No. 919,195

Claims priority, application Japan, Sep. 3, 1996, 8-250873; Dec. 3, 1996, 8-336259

Int. Cl.[6] G01L *3/10*

U.S. Cl. 73—862.331 **4 Claims**



1. A torque sensor comprising:

first and second rotating shafts disposed coaxially and connected to each other through a torsion bar;

a cylindrical member made of a conductive and non-magnetic material and integrated with said second rotating shaft in a direction of rotation to surround an outer surface of said first rotating shaft;

at least a surrounded portion of said first rotating shaft surrounded by said cylindrical portion and made of a magnetic material;

a groove formed in said surrounded portion and extending in an axial direction;

a window formed in said cylindrical member in such a manner that a state of superimposition on said groove is changed in accordance with a relative rotational position with respect to said first rotating shaft;

a coil disposed to surround a portion of said cylindrical member where said window is formed so that torque generated in said first and second rotating shafts is detected in accordance with change in the impedance of said coil; and

a yoke member covering said coil;

wherein said yoke member is provided with a first cut portion for drawing an end of said coil to the outside of said yoke member and at least one second cut portion distinct from said first cut portion so that change in impedance of said coil occurring due to irregularity of a magnetic field in said coil caused by said first cut portion, and change in impedance of said coil occurring due to irregularity of the magnetic field in said coil caused by said second cut portion, are mutually reduced.

5,796,015

APPARATUS FOR TAKING A VOLUME-ADJUSTABLE SAMPLE FROM A MOVING FLUID

Peter Dangelmaier, Wiggensbach, and Martin Steiger, Pfronten-Weissbach, both of Germany, assignors to Endress+Hauser Wetzer GmbH+Co. KG, Nesselwang, Germany

Filed Dec. 6, 1996, Ser. No. 761,384

Claims priority, application European Pat. Off., Dec. 11, 1995, 95710019

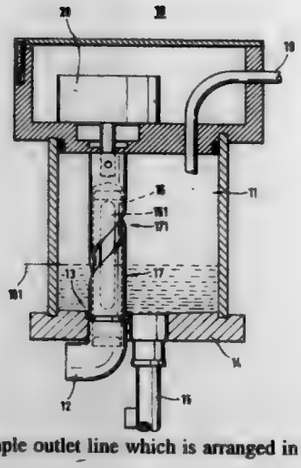
Int. Cl.[6] G01N *1/20*

U.S. Cl. 73—863.56 **2 Claims**

1. An apparatus for taking a volume-adjustable sample from a fluid moving in an open channel or flowing in an unpressurized state in a pipe

having a chamber for receiving the sample,

having an intake/discharge line which is immersed in the fluid and is connected to an opening in a base of the chamber,



having a sample outlet line which is arranged in the base of the chamber;

having a vertical inner intake pipe, into which the intake/discharge line opens,

having a rotatable outer intake pipe which is placed over the inner intake pipe,

where the wall of the inner intake pipe is provided with an axially parallel elongate hole and the wall of the outer intake pipe is provided with a helical elongate hole extending over a rotational angle of less than 360°, and

having a rotary actuator for the outer intake pipe.

5,796,016

DISSOLUTION TESTER

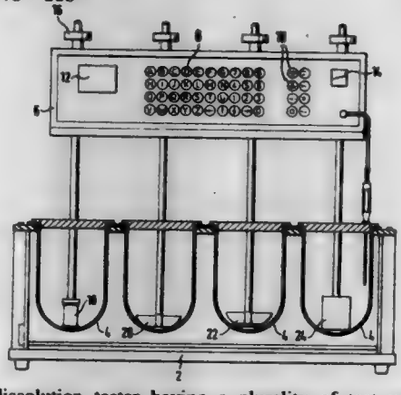
Werner G. Müller, Heusenstamm, Germany, assignor to ERWEKA Gmbh, Heusenstamm, Germany

Filed Nov. 21, 1996, Ser. No. 752,991

Claims priority, application Germany, Dec. 12, 1995, 295 19 713 U

Int. Cl.[6] G01N *33/15*; B01F *1/00*

U.S. Cl. 73—866 **3 Claims**



1. A dissolution tester having a plurality of test vessels for receiving dissolution samples, comprising:

a plurality of stirring elements for stirring the dissolution samples, the stirring elements being disposed in a vertically adjustable housing,

a discharging device with discharging tubes for discharging predetermined volume fractions of the dissolution samples from the test vessels, said discharging tubes being disposed at a predetermined working position in the test vessels in accordance with a filling level of the dissolution sample and the stirring element used,

a frame on which the discharging tubes are disposed, the frame being disposed on the housing in vertically adjustable fashion,

a motor for moving the frame and the discharging tubes to a working position in program-controlled manner in accordance with input data of the filling level and the stirring element, and

a computing device for storing measurement data and predetermined parameters.

5,796,017

SILVER-BASED CONTACT MATERIAL, USE OF SUCH A CONTACT MATERIAL, IN SWITCHGEAR FOR POWER ENGINEERING APPLICATIONS AND METHOD OF MANUFACTURING THE CONTACT MATERIAL

Franz Hauner, Röttenbach, Germany, assignor to Siemens Aktiengesellschaft, Münich, Germany

PCT No. PCT/DE94/00935, § 371 Date Feb. 23, 1996, § 102(e) Date Feb. 23, 1996, PCT Pub. No. WO95/06321, PCT Pub. Date Mar. 2, 1995

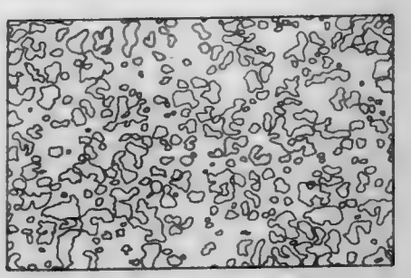
PCT Filed Aug. 16, 1994, Ser. No. 601,059

Claims priority, application Germany, Aug. 23, 1993, 43 28 281.4; Mar. 25, 1994, 44 10 462.6

Int. Cl.[6] B22F *3/16*; C22C *1/05*;*5/06*

U.S. Cl. 75—232 **18 Claims**

1. A composition comprising: silver, iron oxide, and at least one additional oxide of an element of the third subgroup of the Periodic Table of the Elements.



50μm

wherein the precious metal powder is platinum or an alloy containing at least 50% platinum and the remainder at least one metal selected from the group consisting of Ir, Ru, Rh or Pd, and

is selected to have a mean particle size of at least 10 μm and no more than 10% by weight has a particle size of less than 2 μm;

the refractory ceramic contains Al_2O_3, MgO, ZrO_2 or oxides of rare earth metals; and

sintering occurs at temperatures between 1500° C. and 1750° C.

5,796,018

PROCESS FOR COATING IRON PARTICLES WITH PHOSPHORUS AND FORMING COMPACTED ARTICLES

Kenneth H. Moyer, Cinnaminson; David J. Geveke, Milltown; Thomas R. Parr, South Bound Brook, and Robert B. Roaper, Martinsville, all of N.J., assignors to Procedyne Corp., New Brunswick, and Magna-Tech P/M Labs., Cinnaminson, both of N.J.

Filed Jan. 29, 1997, Ser. No. 790,711

Int. Cl.[6] B22F *1/02*;*3/12*; C22C *33/02*;*38/00*

U.S. Cl. 75—230 **20 Claims**

1. A process for coating particles of a ferrous powder with phosphorus, which comprises;

providing a fluidized bed of the ferrous particles;

introducing a reducing gas atmosphere into the fluidized bed; and

coating the particles in the bed with phosphorus vapor.

5,796,019

METHOD OF MANUFACTURING AN ELECTRICALLY CONDUCTIVE CERMET

David Francis Lupton, Geinhausen; Jörg Schielke, Bruchköbel; Hans-Joachim Graf, Mannheim, and Arno Reckziegel, Frankfurt, all of Germany, assignors to W.C. Heraeus GmbH, and Friatec AG, both of Germany

Filed Jan. 5, 1996, Ser. No. 583,516

Claims priority, application Germany, Jan. 25, 1995, 195 02 129.0

Int. Cl.[6] C22C *29/12*

U.S. Cl. 75—235 **22 Claims**

1. A method of manufacturing an electrically conductive cermet having less than 35% by volume of a precious metal comprising the steps of

mixing a powdered refractory ceramic with powdered precious metal, the precious metal powder and the ceramic powder being selected such that during sintering, the precious metal powder shrinks less and exhibits less sintering tendency as it creates the metallic phase than the ceramic powder does as it creates the ceramic phase;

molding the mixture into a green; and

sintering the green to form a cermet with a dense ceramic phase and a metallic phase in the form of a coherent network

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5,796,020

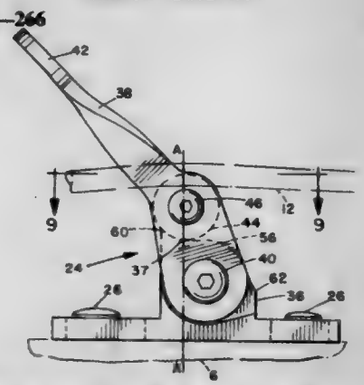
HAND-MANIPULATED SHARPING LEVER FOR A HARP

Betty R. Truitt, P.O. Box 211, Mt. Laguna, Calif. 91948-0211

Continuation-in-part of Ser. No. 597,600, Feb. 6, 1996, abandoned. This application Jan. 22, 1997, Ser. No. 792,958

Int. Cl.[6] G10D *1/04*

U.S. Cl. 84—266 **20 Claims**



1. A sharping lever for mounting on a folk harp and releasably engaging a string of said folk harp, comprising:

a vibration-resistant support for attachment securely to said folk harp;

a hand-operable handle pivotally mounted to said support; and

a string engaging fret pin projecting from said handle and moveable therewith, said fret pin and said support being in contact when said fret pin is in contact with said string;

the contact points of engaged string and fret pin and of engaged fret pin and support defining a straight line through a base of said support;

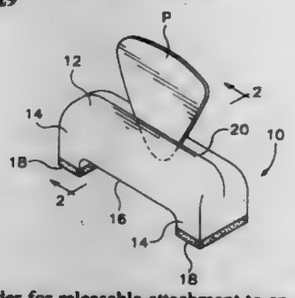
whereby operation of said handle when said lever is mounted on said folk harp causes said fret pin to sequentially engage and disengage said string, engagement therebetween causing the tone of said string to be raised, with engaged string, fret pin and support aligned without inducing distortion of said raised tone, and disengagement therebetween causing said tone of said string to resume its natural frequency.

5,796,021

PICK HOLDER FOR GUITARS AND OTHER STRINGED INSTRUMENTS

Larry E. Longshore, 3314 Siletz Hwy., Lincoln City, Oreg. 97367

Filed Apr. 29, 1997, Ser. No. 841,208
Int. Cl.[6] G10D *3/00*
U.S. Cl. 84—329 3 Claims



1. A pick holder for releasable attachment to an exterior surface of quitars and other stringed instruments, the pick holder comprising:

a) a body member configured as a block member having an upper side and an opposite, lower, base side,

b) pick retaining means on the body member provided in said upper side of the block member for releasably engaging and frictionally holding the working tip end of at least one instrument pick for presentation of the pick in proper position for grasping and immediate use, and

c) body member mounting means on the body member for adherably engaging an exterior surface of a stringed instrument to releasably secure the body member to the exterior surface with the block member supported a spaced distance from the exterior surface of the instrument and forming an open air space between said exterior surface and the lower, base side of the body member.

5,796,022

HELICAL AIR PATH INDUCTION IN WIND INSTRUMENTS

Robert W. Miller, 868 E. 7th St., Moscow, Id. 83843

Filed Dec. 31, 1996, Ser. No. 775,320
Int. Cl.[6] G10D *7/00;7/02;7/06;7/08*
U.S. Cl. 84—380 R 13 Claims



1. A wind instrument, comprising:

an elongated tubular body; and

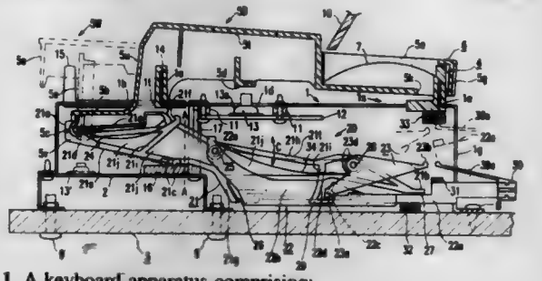
a helical member in the tubular body and extending longitudinally therein for inducing a helical airflow in the tubular body from air passing through the instrument.

5,796,023

KEYBOARD APPARATUS WITH WHITE KEYS AND BLACK KEYS HAVING ACTION MEMBER DRIVING SECTIONS AT SUBSTANTIALLY THE SAME LOCATION

Shinji Kumano, and Tsuyoshi Sato, both of Shizuoka-ken, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed May 16, 1996, Ser. No. 649,061
Claims priority, application Japan, May 22, 1995, 7-122873
Int. Cl.[6] G10C *3/12*
U.S. Cl. 84—433 15 Claims



1. A keyboard apparatus comprising:

a support member;

a keyboard including a plurality of white keys and black keys, each of the white keys and the black keys being mounted on the support member and having a first fulcrum on one end thereof and a free end portion on another end thereof and capable of pivoting about the first fulcrum with respect to the support member, each of the white keys having an operation section closer to the free end portion thereof;

a movable section mounted on the support member and associated with each of the white keys and the black keys;

a white key driving member connected adjacent to the free end portion of each of the white keys, the white key driving member for moving the movable section associated with each of the white keys;

an extended section connected to the free end portion of each of the black keys, the extended section extending under the operation sections of two adjacent white keys to an area adjacent to the free end portions of the two adjacent white keys to thereby form a free end at an end of the extended section; and

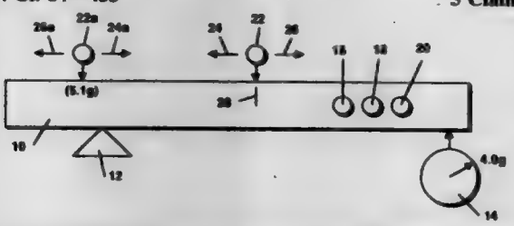
a black key driving member connected adjacent to the free end of the extended section of each of the black keys, the black key driving member for moving the movable section associated with each of the black keys.

5,796,024

METHOD FOR INERTIAL BALANCING OF MUSICAL INSTRUMENT KEYBOARDS

David C. Stanwood, R.F.D. 340, Vineyard Haven, Mass. 02568

Filed Feb. 5, 1997, Ser. No. 794,431
Int. Cl.[6] G10C *3/12*
U.S. Cl. 84—433 5 Claims



1. In the method of balancing key assemblies for musical instrument keyboards having a plurality of said assemblies each of said assemblies having a keystick, each of said assemblies relating to a note of the instrument wherein a specified keystick front weight is determined for each of said key sticks, the improvement which comprises the steps of:

specifying a uniform calibration keystick front weight for a selected portion of said keyboard;

selecting and determining the position of at least one appropriate module key lead in each of said keysticks, said module key lead arranged to produce said specified front weight for each of said key sticks when added to said uniform calibration front weight;

drilling a mounting hole for each of said module key leads in each of said key sticks;

placing the key stick on a front weight measuring jig;

adding and positioning a calibration key lead to each of said key sticks to produce said uniform calibration front stick weight;

drilling a mounting hole for each of said calibration key leads;

installing the appropriate calibration key leads and module key leads for each of said key sticks to achieve said specified front weight for each of said key sticks.

5,796,025

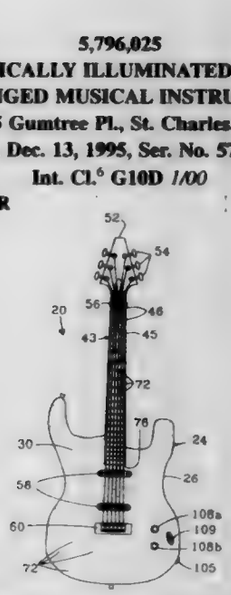
FIBEROPTICALLY ILLUMINATED ELECTRIC STRINGED MUSICAL INSTRUMENT

John M. Hanke, 5 Gumtree Pl., St. Charles, Mo. 63301-1296

Filed Dec. 13, 1995, Ser. No. 571,587

Int. Cl.[6] G10D *1/00*

U.S. Cl. 84—464 R **20 Claims**



1. A stringed musical instrument having a body, a neck, and at least one electrical pickup, comprising:

at least one light source disposed within the body of said musical instrument;

control circuitry, housed within the body of said musical instrument, connected to said pickup and said light source, for selectively controlling the illumination of said light source based upon electrical signals generated by the pickup; and

a plurality of optical fibers structurally bonded along their lengths within said musical instrument and attached to a top portion inside the musical instrument, having a first end disposed in close proximity to said light source, and a second end positioned at a predetermined location on an exterior surface of said musical instrument, said fibers strengthening said musical instrument and providing a fixed transmission path for the light emitted from the light source to the exterior surface of the musical instrument.

5,796,026

ELECTRONIC MUSICAL APPARATUS CAPABLE OF AUTOMATICALLY ANALYZING PERFORMANCE INFORMATION OF A MUSICAL TUNE

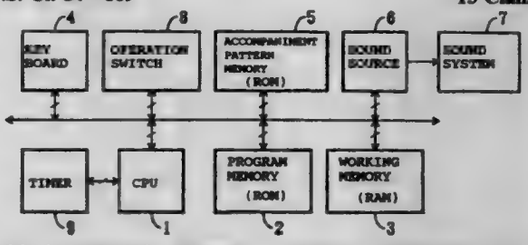
Yutaka Tohgi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Continuation of Ser. No. 319,616, Oct. 7, 1994, abandoned. This application Feb. 11, 1997, Ser. No. 798,611

Claims priority, application Japan, Oct. 8, 1993, 5-253410; Oct. 8, 1993, 5-253411; Oct. 8, 1993, 5-253412

Int. Cl.[6] G10H *1/26;1/28;1/38*

U.S. Cl. 84—609 **15 Claims**



14. A method for analyzing performance information in an electronic musical instrument, said method comprising the steps of:

generating performance information including performance data, tone pitch data and timing data for a musical tune;

storing previously generated performance information;

detecting a performance style of the performance information based on said tone pitch data and a combination of said performance data and said timing data; and

separating the performance information into a plurality of respective performance parts to be performed at the same timing in accordance with the detected performance style and said previously generated performance information.

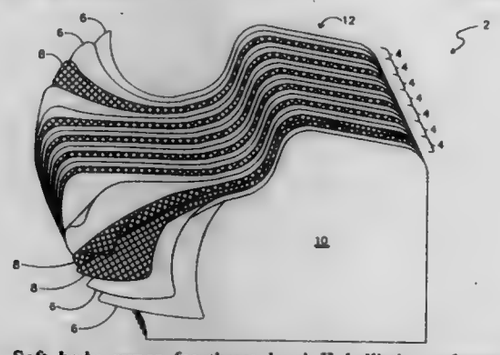
5,796,027

Patent Not Issued For This Number

5,796,028
SOFT BODY ARMOR

Bradley J. Field, and Roger Soar, both of Kelowna, Canada, assignors to Pacific Safety Products, Inc., Canada

Filed Aug. 17, 1995, Ser. No. 516,324
Claims priority, application Canada, Jun. 26, 1995, 2152663
Int. Cl.[6] F41H *5/04*
U.S. Cl. 89—36.05 **24 Claims**



1. Soft body armor for threat level II ballistic performance projectiles comprising a ballistic panel having an interleaved construction of a generally vertically oriented plurality of layers of non-quilted interleaved sheets of aramid fiber woven cloth and sheets of high molecular weight polyethylene filaments in a flexible resin matrix adjacently interleaved in an interleave ratio of plies or said sheets of polyethylene filaments to plies of said aramid fiber woven cloth within each layer of said plurality of layers, so as to form a multiplicity of impedance mis-matched transition zones in an array between a front face of said ballistic panel and a back face of said ballistic panel, said plurality of layers forming a non-quilted array between said front face of said ballistic panel and said back face of said ballistic panel, wherein said interleave ratio of plies of said sheets of polyethylene filaments to plies of aramid fiber woven cloth within each layer of said plurality of layers is between 1:1 and 4:4, and wherein the total number of said plies of said sheets of polyethylene filaments is equal to or greater than the total number of said plies of aramid fiber woven cloth within said plurality of layers, and

wherein said plurality of layers comprises at least six of said layers interleaved in said ballistic panel, and

wherein said interleave ratio in each of said layers of said plurality of layers changes from said front face of said ballistic panel to said back face of said ballistic panel.

5,796,029
PROXIMITY FUSE/TIME FUSE FOR MISSILES

Manfred Held, Aresing, and Horst Kaltschmidt, Neubiberg, both of Germany, assignors to Daimler-Benz Aerospace AG, München, Germany

Filed Jul. 7, 1995, Ser. No. 551,062
Claims priority, application Germany, Aug. 7, 1994, 44 24 074.0
Int. Cl.[6] F42C *13/02*
U.S. Cl. 102—213 **8 Claims**

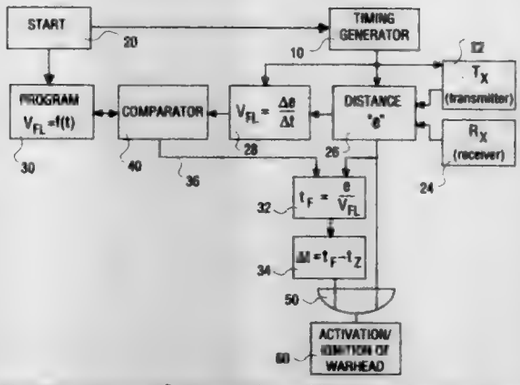
1. A proximity fuse/time fuse for missiles, comprising:

an optical distance sensor for forming a distance value, representing flight time until impact, for activation of a warhead;

measured velocity means for forming a measured velocity value based on a change in said distance value over time;

programmed velocity means for holding a programmed velocity value based on one of a preprogrammed velocity value or measured velocity value;

a time delay unit for forming a time value until impact, for activation of a warhead upon the expiration of said time value, said time value being based on said distance value and one of said measured velocity value and said programmed velocity value;

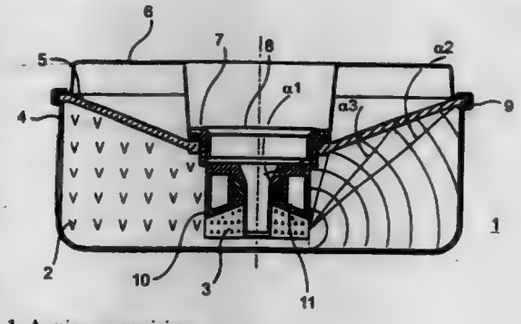


comparator means for comparing said measured velocity value and said programmed velocity value and upon determining either a same value or a difference within a given range, supplying said measured velocity value to said time delay unit and upon determining a difference outside said given range supplying said programmed velocity value to said time delay unit whereby in the case of disturbances or obstacles appearing at a short distance from the target to be hit data for forming said necessary time delay are preset automatically from data of distance measurements made previously by said optical distance sensor.

5,796,030
MINE

Göran Olofsson, Eskilstuna, Sweden, assignor to Bofors AB, Karlskoga, Sweden

PCT No. PCT/SE95/00247, § 371 Date Sep. 13, 1996, § 102(e) Date Sep. 13, 1996, PCT Pub. No. WO95/25938, PCT Pub. Date Sep. 28, 1995
PCT Filed Mar. 10, 1995, Ser. No. 716,251
Claims priority, application Sweden, Mar. 22, 1994, 9400941
Int. Cl.[6] F42B *23/00*
U.S. Cl. 102—424 **9 Claims**



1. A mine comprising:

a casing;

an explosive secured inside said casing;

a primary charge arranged in said explosive and located close to a bottom of said mine;

a liner positioned over said explosive and delimiting said explosive for generating the shape charge effect;

a spacing member arranged between said primary charge and said liner, said spacing member having an upper portion defining an opening and a bottom portion opposite said upper portion and facing said bottom of said mine, said bottom portion being shaped substantially as a circumferential surface of a frustum of a cone, with a base facing towards said bottom of said mine, said primary charge having a frustum upper surface mating with said circumferential surface; and

a triggering arrangement, having a trigger and a fuze, supported by a holder, said holder being located above said opening in said spacing member whereby said trigger extends from an

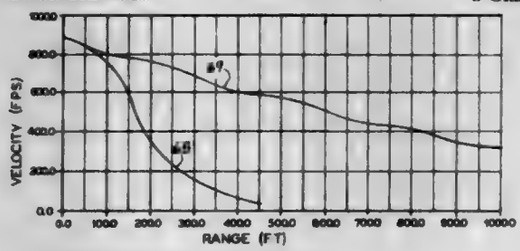
upper side of said mine through said opening and communicates with said primary charge.

5,796,031

FOWARD FIN FLECHETTE

John W. Sigler, La Mirada, Calif., assignor to Primex Technologies, Inc., Downey, Calif.

Filed Feb. 10, 1997, Ser. No. 798,204
Int. Cl.[6] F42B *14/06;12/64*
U.S. Cl. 102—520 6 Claims



1. A multi-flechette weapon comprising:

a flechette holding canister;

a plurality of first flechettes, each having a tip end and a fin end with a plurality of integral fins at the fin end; and

a plurality of second flechettes, each having a tip end and an opposite end and a plurality of integral fins offset from the opposite end toward the tip end, wherein said offset is of a length effective for said integral fins of said plurality of first flechettes to interleave with said integral fins of said plurality of second flechettes whereby a middle portion, disposed between respective adjacent tip ends and fin ends, abut, and

wherein the first flechettes and the second flechettes are substantially of equal length and located in the canister and adjacent to each other in an alternating fashion with the tip ends aligned in the same direction.

5,796,032

ELECTRIC WIRE INSULATING COVER INSPECTION DEVICE

William A. Hadley, 15267 75th Way North, Palm Beach, Fla. 33418

Filed May 19, 1997, Ser. No. 858,747
Int. Cl.[6] H01B *17/00*
U.S. Cl. 174—5 R 9 Claims



1. A device for opening of an electric wire insulating cover allowing access to the interior walls of the cover for purposes of inspection or cleaning, said device comprising:

a first separator sidewall formed from a rigid structure having a front end and a back end forming a longitudinal length and an inner surface and an outer surface defining a thickness therebetween, said first sidewall having a first insertion edge spaced apart from said inner surface in a semi-circular shape forming a partial cavity;

a second separator sidewall formed from a rigid structure having a front end and a back end forming a longitudinal length and an inner surface and an outer surface defining a thickness therebetween equal to said first sidewall, said second sidewall having a second insertion edge spaced apart from said inner surface in a semi-circular shape forming a partial cavity;

a base section means maintaining said first insertion edge in a spaced apart position from said second insertion edge;

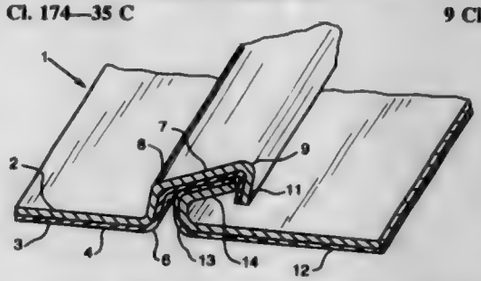
wherein said insertion edges engage the interior walls of said electric wire insulating cover with a portion of said insulating cover insertable into said partial cavities for maintaining said insulating cover in an open position.

5,796,033

ELECTRICALLY CONDUCTIVE JOINT

Michael T. Stoyko, Newberg, Oreg., assignor to Gerome Manufacturing Company, Inc., Uniontown, Pa.

Filed May 31, 1996, Ser. No. 656,464
Int. Cl.[6] H05K *9/00*
U.S. Cl. 174—35 C 9 Claims



1. A method of forming an electrically conductive joint in a sheet of material having top and bottom surfaces wherein one of said surfaces is formed of an electrically conductive layer and the other of said surfaces is formed of a layer of electrically insulative material overlying and bonded to the electrically conductive layer, comprising bending a portion of a first end of said sheet material to form an off-set portion spaced from the remainder of said first end of said sheet material, bending an edge part of the off-set portion into the form of a first dependent leg forming an angle with the remainder of the off-set portion and having said insulative layer on the inside of the bent part, bending an edge portion of a second end of said sheet material into the form of a second dependent leg forming an angle with the remainder of said second end of said sheet material and having said insulative layer on the outside of the bent portion, assembling the first and second ends of the sheet material with the first and second dependent legs juxtaposed to each other, and compressing the first and second ends to collapse each of said first and second legs into a position parallel to the top and bottom surfaces of the sheet material whereby conductive surface portions of each of the first and second legs are in face-to-face relationship forming a continuous electrically conductive contact.

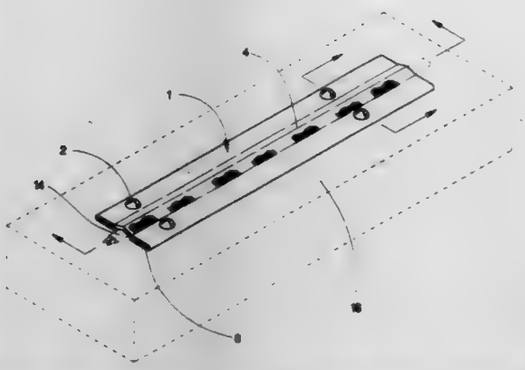
5,796,034

WIRE PROTECTING SHIELD

Britt Pate, 525 Circle Lake Rd., Wichita, Kans. 67209

Filed Apr. 2, 1997, Ser. No. 832,366
Int. Cl.[6] E04H *12/24*
U.S. Cl. 174—45 R 7 Claims

1. A wire protecting shield comprising an oblongated sheet metal plate, the sheet metal plate having an upper surface, a lower surface, a right side, a left side, a right edge, a left edge, a first end, a second end, and having a midline axis extending from the midpoint of the first end to the midpoint of the second end; the right side of the sheet metal plate being under-folded so that the right edge of the sheet metal plate is positioned substantially parallel with the midline axis, and below and to the right of the midline axis; the left side of the sheet metal plate being under-folded so that the left edge of the sheet metal plate is positioned substantially parallel with the midline axis, and below and to the left of the midline axis; the sheet metal plate forming a wire



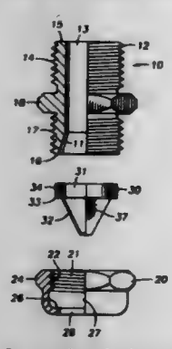
protecting channel having a pair of sidewalls and a ceiling, the sidewalls comprising the right and left edges of the sheet metal plate, and the ceiling comprising the lower surface of the sheet metal plate.

5,796,035

CONDUIT DRAIN FOR USE IN NON-HAZARDOUS LOCATIONS

Patrick A. Walker, 802 Riedel, Houston, Tex. 77024

Filed Mar. 12, 1996, Ser. No. 615,537
Int. Cl.[6] H02G *3/04*
U.S. Cl. 174—48 **26 Claims**



1. A drain assembly for an electrical conduit system comprising:

a coupling having a throughbore and an upper end and a lower end, said upper and lower ends each having an exteriorly-threaded portion and said throughbore having at least one nontortuous fluid path;

an end cap having an upper end and a lower end and an interior bowl, said bowl including an internally threaded upper portion adjacent said upper end of said end cap threadedly engaging said lower end of said coupling, and including a bottom adjacent said lower end of said end cap, said bottom having an aperture; and

a screen member disposed in said bowl between said lower end of said coupling and said bowl bottom,

said fluid path of said throughbore, said screen member and said aperture forming a passageway for water to drain from the conduit system.

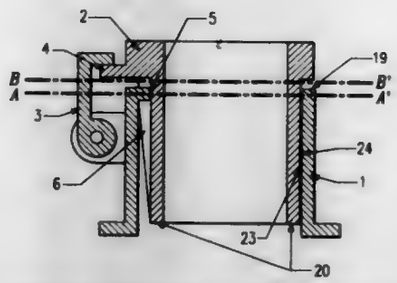
5,796,036

REGUIDED CONNECTOR BOX

Bertrand Courtaigne, Paris, France, assignor to Blue Moon WW, France

Filed Mar. 15, 1996, Ser. No. 616,850
Claims priority, application France, Mar. 22, 1995, 95 03320
Int. Cl.[6] H02G *3/08*
U.S. Cl. 174—50 **7 Claims**

1. A connector box comprising a first box element and a second box element which can be fitted into one another in a coupled



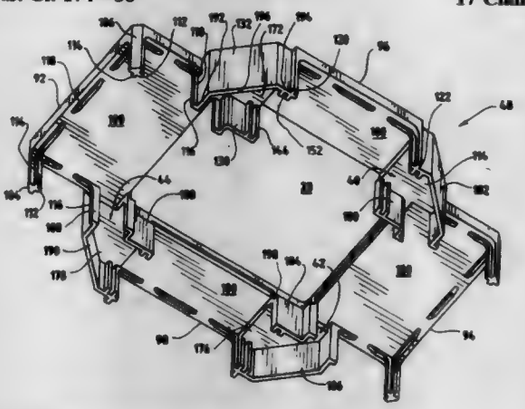
position in which said first and second box elements each have a respective surface, with the respective surface of each box element facing the respective surface of the other box element, and disconnectable locking means acting in a single zone of a periphery of said first and second box elements situated outside said respective surfaces of said box elements, to maintain said first and second box elements in said coupled position, the respective surface of said first box element having constant cross-sectional areas in a direction along a longitudinal axis of said first box element, whereas the respective surface of said second box element has in a direction along a longitudinal axis of said second box element increasing cross-sectional areas comprising a greater cross-sectional area, the respective surface of said first box element having a single generating line coming to bear against a generating line of the respective surface of said second box element in said coupled position, said generating lines being situated in an axial plane passing through said zone, said greater cross-sectional area having substantially a complementary shape with a facing cross-sectional area of said first box element in said coupled position.

5,796,037

SHALLOW RECESSED FLOOR BOX

Joe A. Young, Reedsville, Ohio, and Richard L. Arthur, Vienna, W. Va., assignors to Walker Systems, Inc., Parkersburg, W. Va.

Continuation of Ser. No. 542,393, Oct. 12, 1995, abandoned. This application Apr. 26, 1996, Ser. No. 639,991
Int. Cl.[6] H02G *3/12*
U.S. Cl. 174—50 **17 Claims**



1. An electrical floor box comprising:

a housing defining a hollow interior, a plurality of wiring compartments extending radially from and opening to the hollow interior, and a plurality of conductor tunnels formed radially external of the hollow interior and interconnecting the plurality of wiring compartments.

5,796,038

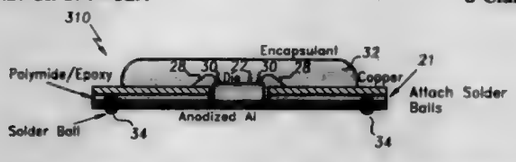
TECHNIQUE TO PRODUCE CAVITY-UP HBGA PACKAGES

Kamran Manteghi, Manteca, Calif., assignor to VLSI Technology, Inc., Sunnyvale, Calif.

Filed Jun. 16, 1997, Ser. No. 876,389

Int. Cl.[6] H01L *23/02;* **H05K** *7/20*

U.S. Cl. 174—52.4 **8 Claims**



1. A high density ball-grid array package for packaging an integrated-circuit die comprising:

a laminated structure consisting of a dielectric layer and a highly conductive layer disposed thereon;

said dielectric layer having a plurality of first drilled holes to expose selective solderable areas on a bottom side of said conductive layer and said conductive layer being formed with a desired pattern wherein said dielectric layer is comprised of a material selected from the group consisting of a polyimide material and an epoxy material;

an insulated substrate having a plurality of second drilled holes wherein said insulated substrate is comprised of an aluminum layer which is anodized so as to form an insulation layer thereon;

said laminated structure being bonded to said insulated substrate so that said plurality of first drilled holes are aligned with corresponding ones of said plurality of second drilled holes in order to expose the selective solderable areas on the bottom side of the conductive layer of the high density ball-grid array package;

said laminated structure having an open portion overlying a central region of said insulated substrate;

an integrated-circuit die being mounted in the central region of said insulated substrate on a top side of said high density ball-grid array package;

bonding wires interconnected between bonding pads formed on said integrated-circuit die and bonding fingers formed on said conductive layer of said laminated structure;

a plastic material being molded over a top surface of said die, bonding fingers and bonding wires all located on the top side of said high density ball-grid array package; and

solder balls being directly attached to said selective solderable areas exposed on the bottom side of the conductive layer of said high density ball-grid array package.

5,796,039

WEATHERPROOFING OF ELECTRICAL CONNECTIONS WITH TERMINALS ON OUTDOOR PANELS

Bassel H. Daoud, Parsippany, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 18, 1996, Ser. No. 718,111

Int. Cl.[6] H10R *9/22*

U.S. Cl. 174—59 **10 Claims**

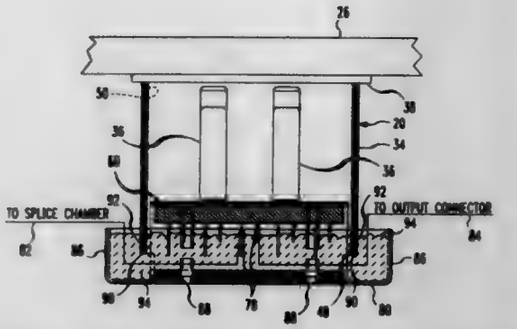
1. A method of protecting electrical connections with terminals on a component mounting panel from environmental conditions, comprising;

placing a component mounting panel having connection terminals inside a housing having side walls, a top opening and a bottom opening;

connecting wire leads to said connection terminals;

placing a pan having a pan wall across the bottom opening of said housing so that the pan wall extends beyond the side walls of the housing, and defining a clearance gap between said pan and a lower portion of said housing;

routing said wire leads from said connection terminals through said clearance gap;



pouring a sealant material between the pan wall and the side walls of the panel housings through said clearance gap and into said pan; and

protectively shielding said connection terminals by sealing the bottom opening of said housing with the sealant material.

5,796,040

ANGLED CABLE UNION

Herbert Feketitsch, Schechingen, Germany, assignor to Jacob GmbH Elektrotechnische Fabrik, Wurtt, Germany

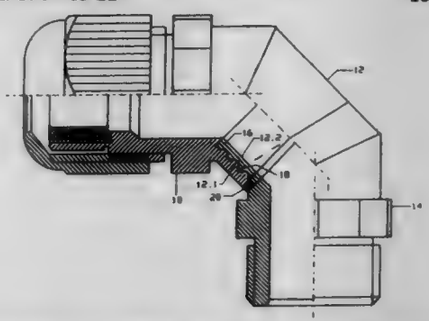
PCT No. PCT/EP95/01409, § 371 Date Oct. 11, 1996, § 102(e) Date Oct. 11, 1996, PCT Pub. No. WO95/28759, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 14, 1995, Ser. No. 722,061

Claims priority, application Germany, Apr. 16, 1994, 94 06 382.6

Int. Cl.[6] H02G *3/06*

U.S. Cl. 174—65 SS **10 Claims**



1. An angled cable union for electrical equipment comprising an enclosure including two end sections each having one continuous bore with an axis, the axes intersecting after assembly, wherein the end sections are connected with each other for entry and exit respectively of a cable by at least one intermediate section therebetween, wherein each said at least one intermediate section has a continuous bore with an axis intersecting at an obtuse angle to each of the axes of the continuous bores of said end sections.

5,796,041

WATERPROOF PROTECTIVE COVER

Yasuhiro Suzuki, and Yukio Ohashi, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed May 28, 1996, Ser. No. 653,902

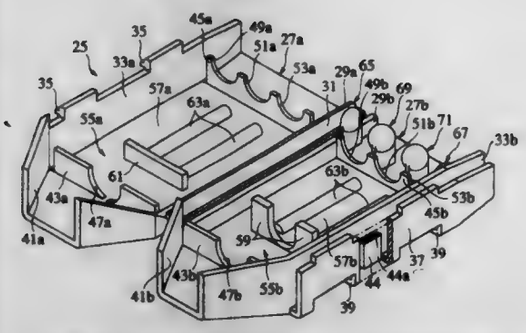
Claims priority, application Japan, May 29, 1995, 7-130355

Int. Cl.[6] H02G *15/08*

U.S. Cl. 174—92 **5 Claims**

1. A waterproof protective cover for a connection portion of an electric wire comprising:

an upper casing member and a lower casing member, each of said casing members having a pair of side walls aligning with a direction of travel of the electric wire, cooperable to define



a chamber, said chamber including a receiving position for receiving the connection portion of the electric wire, said receiving position being provided at a preselected position in the chamber along the direction of travel of the electric wire, one of said side walls of said lower member including an inner side wall and an outer side wall spaced from said inner wall; and

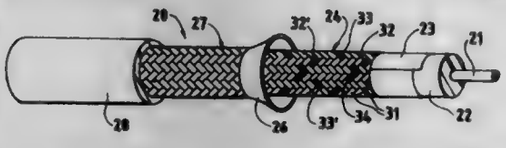
a reinforcing rib provided on said inner side wall, an upper portion of said reinforcing rib defining a receiving position location marker for identifying said receiving position of the connection portion of the electric wire, said receiving position location marker being aligned with the preselected position of the receiving position on a line generally perpendicular to the direction of travel of the electric wire.

5,796,042

COAXIAL CABLE HAVING A COMPOSITE METALLIC BRAID

Bradley Gene Pope, Richmond, Ind., assignor to Belden Wire & Cable Company, Richmond, Ind.

Filed Jun. 21, 1996, Ser. No. 667,243
Int. Cl.[6] H01B 7/28
U.S. Cl. 174—102 SP **15 Claims**



1. A coaxial cable comprising: a central conductor, a dielectric surrounding said conductor, at least one metallic braid surrounding said dielectric and a cable jacket surrounding said at least one metallic braid, said at least one metallic braid being a composite braid, said composite braid being a plurality of interwoven metallic strands and at least two water expandable strands of yarn interwoven with the metallic stands to provide a plurality of yarn cross-over points.

5,796,043

HIGH-TENSION CABLE

Masaru Maruyama, Gotenba, Japan, assignor to Yazaki Corporation, Tokyo, Japan

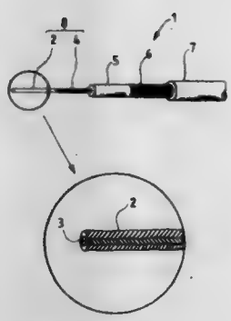
Filed Jan. 8, 1997, Ser. No. 780,301
Claims priority, application Japan, Jan. 9, 1996, 8-001484
Int. Cl.[6] H01B 7/00
U.S. Cl. 174—102 SC **4 Claims**

1. A high-tension cable comprising:

a reinforcing core;

a metallic resistance wire wound around said reinforcing core;

an insulator covering said metallic resistance wire;



a braid covering said insulator; and

a jacket covering said braid,

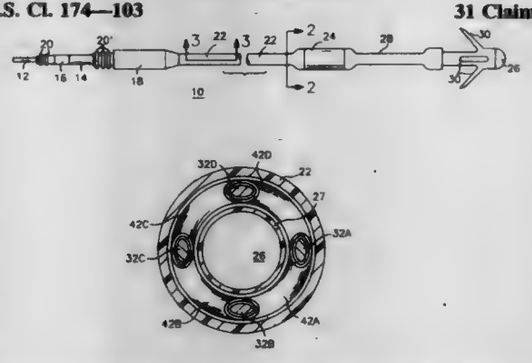
wherein said reinforcing core has a hollow cylindrical braiding structure so as to increase pliability of said reinforcing core.

5,796,044

COILED WIRE CONDUCTOR INSULATION FOR BIOMEDICAL LEAD

Kenneth E. Cobian, St. Anthony; Michael J. Ebert, Fridley; Peter B. McIntyre, Moundsview, and David W. Mayer, Bloomington, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 10, 1997, Ser. No. 797,435
Int. Cl.[6] A61N 1/05
U.S. Cl. 174—103 **31 Claims**



1. A biomedical lead conductor body of the type comprising:

a first coiled wire conductor formed of a first electrical wire having a predetermined wire diameter and wound into a first coil extending between proximal and distal first wire ends; and

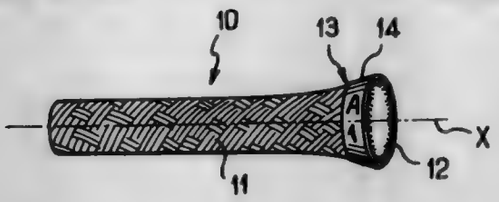
a first insulative sheath formed in a coil and having a first coiled insulative sheath lumen having a diameter exceeding the predetermined wire diameter of said first coiled wire conductor, loosely receiving said first coiled wire conductor therein, for electrically insulating coil turns of said first coiled wire conductor whereby any corrosion occurring from a defect in the first insulative sheath may extend over a portion of a wire surface beyond a first portion of the wire surface adjacent to the defect.

5,796,045

BRAIDED SHEATH SLEEVE FOR THREADING OVER AT LEAST ONE ELONGATE ELEMENT TO BE PROTECTED, AND A METHOD OF MANUFACTURING SUCH A SLEEVE

Jean-Claude Lancien, Cuvergnon, and Christian Guillemin, Saint-Ouen, both of France, assignors to Gremco S.A., France

Filed Jan. 9, 1997, Ser. No. 780,791
Claims priority, application France, Jan. 10, 1996, 96 00206
Int. Cl.[6] B32B 31/20
U.S. Cl. 174—109 13 Claims



1. A braided sheath sleeve for threading over at least one elongate element to be protected, wherein the sleeve has at least one expanded end having an expanded shape whose diameter is greater than a nominal diameter of the sleeve, said expanded end including a first adhesive between component filaments so as to maintain the expanded shape of said at least one end and being surrounded, at least as far as a free edge, by a ring of a heat-shrink plastic material, said ring being partially shrunk on the expanded end of the sleeve and being able to be further shrunk for clamping said expanded end onto said at least one elongate element.

5,796,046

COMMUNICATION CABLE HAVING A STRIATED CABLE JACKET

Kerry Newmoyer, Denver; Paul R. Freese, Mohnton, and William P. Mulligan, Denver, all of Pa., assignors to Alcatel NA Cable Systems, Inc., Claremont, N.C.

Filed Jun. 24, 1996, Ser. No. 670,801
Int. Cl.[6] H01B 7/02
U.S. Cl. 174—113 AS 8 Claims



1. A communication cable, comprising:

a core including a plurality of electrical conductors, each conductor of said plurality of electrical conductors having a layer of electrical insulation thereon; and

a cable jacket, said cable jacket encasing said plurality of electrical conductors along the length thereof and having an inner surface proximate said plurality of electrical conductors, said inner surface including a plurality of sharply angled striations disposed such that adjacent striations define sharply angled inwardly directed projections, said projections maintaining said electrical conductors in said core and out of said striations.

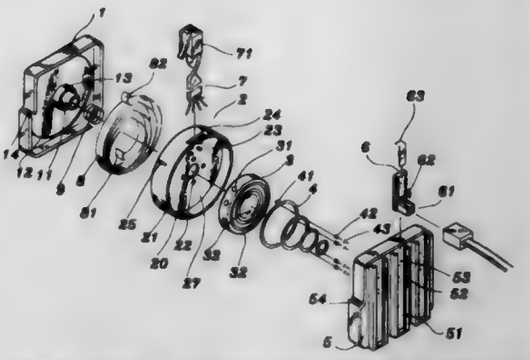
5,796,047

ELECTRIC BOX FOR CONNECTION BETWEEN A HANDSET AND A TELEPHONE BASE

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Filed Jul. 21, 1997, Ser. No. 897,602
Int. Cl.[6] H04M 1/100
U.S. Cl. 174—135 6 Claims

1. An electric box connected between a telephone base and a handset, comprising:



a housing having a cable hole, said housing comprised of a bottom shell and a cover shell placed on said bottom shell, said bottom shell comprising a hollow upright shaft on an inside at a center, and a split upright stub tube spaced around said upright shaft, said cover shell having a plurality of through holes;

a rotary member mounted inside said housing and turned about said upright shaft of said bottom shell, said rotary member comprising a bottom chamber, a partition wall, a top chamber separated from said bottom chamber by said partition wall, an axle hole at a center of said partition wall which receives the upright shaft of said bottom shell, a slot and a notch at a periphery;

a spiral spring mounted in said bottom chamber of said rotary member, having a hooked inner end fastened to a split of said split upright stub tube of said bottom shell and a hooked outer end fastened to the notch of said rotary member;

a metal ring holder mounted in said top chamber of said rotary member and having a plurality of circular grooves of different diameters concentrically disposed at a top side;

a flat cable wound around said rotary chamber, having one end inserted into the slot of said rotary member and connected to said metal ring holder and an opposite end extended out of the cable hole of said housing and mounted with a first module plug for connection to said handset;

a plurality of metal rings respectively mounted in the circular grooves of said metal ring holder, having a respective pointed tip raised from a ring periphery and forced into contact with respective conductors in said flat cable;

a plurality of metal springs respectively mounted in the through holes of said cover shell and disposed in contact with said metal rings;

a plurality of terminals respectively supported on said metal springs in the through holes of said cover shell;

a mounting block mounted on said cover shell; and

a second module plug mounted on said mounting block for connection to said telephone base, having contacts respectively disposed in contact with said terminals.

5,796,048

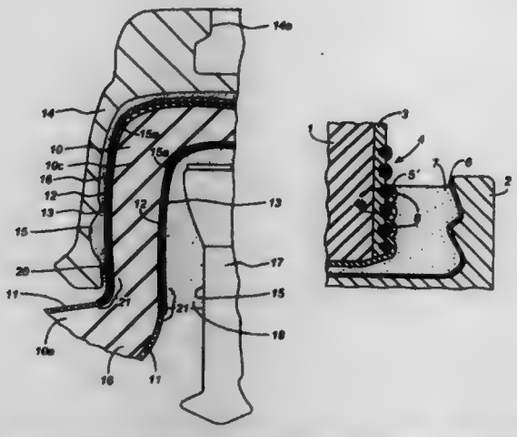
INSULATOR HAVING CONDUCTIVE SURFACE COATING TO PREVENT CORONA DISCHARGE

Yoshihiro Suzuki, Okazaki; Eiji Kutsuna, Aichi; Hiroshi Nozaki, Nagoya, and Shigeo Mori, Kuwana, all of Japan, assignors to NGK Insulators, Ltd., Japan

PCT No. PCT/JP95/00574, § 371 Date Nov. 22, 1995, § 102(e) Date Nov. 22, 1995, PCT Pub. No. WO95/26560, PCT Pub. Date Oct. 5, 1995
PCT Filed Mar. 28, 1995, Ser. No. 553,417
Claims priority, application Japan, Mar. 28, 1994, 6-057761
Int. Cl.[6] H01B 17/48
U.S. Cl. 174—141 C 15 Claims

1. An insulator with conductive coating comprising:

an insulator body,



a metal fitting fitted to the insulator body via a cement material such that a portion of the insulator body is buried in the cement material, said cement material conducting electricity by ionic conduction,

a conductive layer having a first portion covering an exposed outer surface portion of the insulator body and a second portion provided on at least a part of a surface portion of the insulator body buried in the cement material, the second portion of the conductive layer including conductive grains, and

a conductive covering film formed on and covering the second portion of the conductive layer and the conductive grains, the conductive covering film being more flexible than the second portion of the conductive layer.

5,796,049

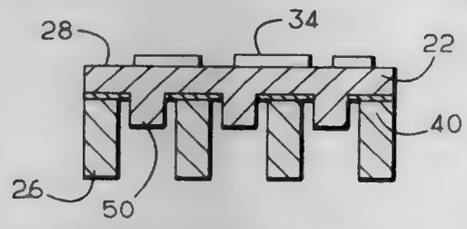
ELECTRONICS MOUNTING PLATE WITH HEAT EXCHANGER AND METHOD FOR MANUFACTURING SAME

Michael G. Schneider, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 4, 1997, Ser. No. 832,998

Int. Cl.[6] H05K *1/00*

U.S. Cl. 174—252 **6 Claims**



1. A combination electronics mounting plate and heat exchanger, comprising:

a substrate made of metal matrix composite having a first planar surface and a second, opposed planar surface, the first planar surface having electronic components mounted directly thereon, the substrate including a plurality of pin fins integrally formed therewith, and extending from, the second planar surface to increase the total surface area and enhance the thermal conductivity and heat dissipation of the substrate; and

a heat exchanger having a plurality of fins brazed directly to the second, opposed planar surface of the substrate, the plurality of heat exchanger fins being interposed between the substrate pin fins, the pin fins being laterally spaced from the heat exchanger fins to increase the surface area of the substrate and heat exchanger.

5,796,050

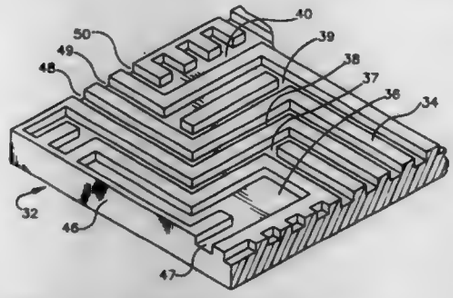
FLEXIBLE BOARD HAVING ADHESIVE IN SURFACE CHANNELS

Jeffrey Scott Campbell, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 5, 1997, Ser. No. 796,010

Int. Cl.[6] H05K *1/03*

U.S. Cl. 174—255 **8 Claims**



1. A circuit board assembly comprising:

a) a substrate comprising:

i) a top surface defining a mating region and a channel, wherein the portion of the top surface defining the mating region and the portion of the top surface defining the channel are formed from the same material;

ii) a side surface having disposed therein a port in communication with the channel;

b) a flexible circuit in direct contact with the mating region of said substrate, said flexible circuit comprising:

i) a dielectric layer that is transmissible to actinic radiation of a preselected wavelength, said dielectric layer having two opposing surfaces; and

ii) a conductive layer disposed on one of said two opposing surfaces of the dielectric layer, said conductive layer having an opening therethrough for allowing passage of the actinic radiation through said flexible circuit; and

c) an adhesive cured by actinic radiation of the preselected wavelength; said adhesive being disposed in the channel of said substrate and in contact with the dielectric layer of said flexible circuit; wherein substantially no adhesive is present between the mating region of the top surface of said substrate and said flexible circuit.

5,796,051

PROCESS FOR IN-LINE CAPSULE CHECK WEIGHING AND THE APPARATUS WHICH ALLOWS THE PROCESS TO BE IMPLEMENTED

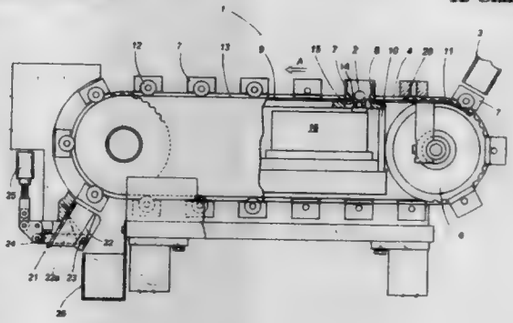
Franco Chiari, Bologna, and Bruno Zanarini, San Lazzaro ei Savena, both of Italy, assignors to MACOFAR S.p.A., Bologna, Italy

Filed Jun. 1, 1995, Ser. No. 456,311

Claims priority, application Italy, Jun. 2, 1994, BO94 A 0261; Jun. 6, 1994, BO94 A 0265

Int. Cl.[6] G01G *19/40;19/00;* B07C *5/16*

U.S. Cl. 177—17 **12 Claims**



1. A method for in-line capsule check weighing, which comprises:

feeding capsules to be weighed to a device;

separating and feeding the capsules over a transfer surface via said device;

positioning said capsules so that the longitudinal axes of said capsules are horizontal and transversal to the direction of feeding of the capsules over said transfer surface;

feeding the capsules thus positioned to checkweigher pans housed in the transfer surface and respectively connected to weighing transducers; and

measuring the weight of the capsules and pans at the moment which the capsules come to rest on the pans; the weight of the pans being measured after the capsules have been moved away, so as to allow the calculation of the net weight of the capsules.

5,796,052

TELESCOPIC CONVEYOR FOR CONVEYING AND MEASURING ARTICLES

Jürgen Christmann, Hattersheim, Germany, assignor to Caljan A/S, Hasselager, Denmark

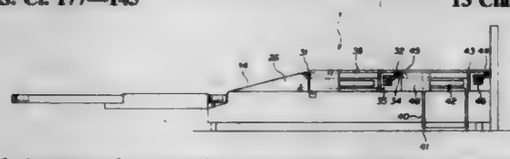
PCT No. PCT/DE94/01470, § 371 Date Aug. 10, 1995, § 102(e) Date Aug. 10, 1995, PCT Pub. No. WO95/16626, PCT Pub. Date Jun. 22, 1995

PCT Filed Dec. 10, 1994, Ser. No. 492,121

Claims priority, application Germany, Dec. 14, 1993, 43 42 534.8

Int. Cl.[6] G01G *13/02;19/00;* **B65G** *43/00;15/26*

U.S. Cl. 177—145 **13 Claims**



1. Apparatus for conveying and measuring articles, comprising:

a telescoping conveyor having

a basic housing,

at least one telescoping segment that is adjustable relative to said basic housing in a conveying direction, and

a first conveyor belt to convey articles with its upper run, said first conveyor belt being guided about at least one drive roller rotatably supported in said basic housing and about at least one deflection roller rotatably supported on said telescoping segment; and

a weighing device including a frame, a second conveyor belt, a drive roller and a deflection roller rotatably supported in said frame and about which said second conveyor belt is guided, and a weighing cell mounted on said frame under said second conveyor belt for weighing articles being transported on an upper run of said second conveyor belt;

wherein said weighing cell and said second conveyor belt are positioned over a portion of said telescoping conveyor; and

wherein said upper run of said first conveyor belt is lower than said upper run of said second conveyor belt, and further comprising a ramp between said first and second conveyor belts, with articles on said upper run of said first conveyor belt being guided up along said ramp.

5,796,053

STETHOSCOPE STRUCTURE

Wei-Kang Shieh, 4F, No. 63, Hua Ling Street, Taipei, Taiwan

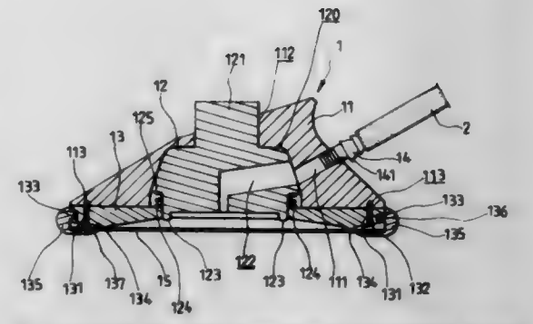
Filed Aug. 4, 1997, Ser. No. 905,500

Int. Cl.[6] A61B *7/02*

U.S. Cl. 181—131 **6 Claims**

1. A stethoscope comprising a pair of binaurals and a chest piece with a sound transmitting path connected therebetween, the chest piece comprising:

a body having a substantially flat front side adapted to be placed on a patient's body and a convex back side adapted to be held



by a hand with the sound transmitting path extending from the back side thereof to the binaurals, the body having a cavity formed therein with an opening on the front side, a through hole extending from the cavity to the back side of the body;

a frequency switching member movably received within the cavity between a low frequency mode position closer to the back side of the body and a high frequency mode position away from the back side of the body and closer to the opening of the cavity on the front side of the body, the frequency switching member having a projection extending through the through hole of the body to at least partially project out of the back side of the body to be accessible by the hand, the frequency switching member being provided with a circumferential rib on a front side thereof which defines a predetermined area;

a retainer ring fixed to the front side of the body, having a bore smaller is size than the opening of the cavity and partially overlapping the opening of the cavity to retain the frequency switching member within the cavity, the bore of the retainer ring being sized to allow the circumferential rib of the frequency switching member to move therethrough in moving from the low frequency mode position to the high frequency mode position, the retainer ring comprising a circumferential rib surrounding the bore and thus the circumferential rib of the frequency switching member so as to define an area greater than the predetermined area defined by the circumferential rib of the frequency switching member;

a biasing element provided between the frequency switching member and the retainer ring so as to bias the frequency switching member toward the low frequency mode position to have the projection thereof extending out of the back side of the body through the through hole of the body; and

a membrane fixed to the retainer ring to be in contact engagement with the circumferential rib of the retainer ring which separates the membrane from the front side of the body and defines thereon a first confined zone providing a first, low frequency vibration mode of the membrane; and

wherein the frequency switching member is movable from the low frequency mode position toward the high frequency mode position by depressing the projection thereof against the biasing element so as to bring the circumferential rib of the frequency switching member into contact engagement with the membrane to define thereon a second confined zone providing a second, high frequency vibration mode of the membrane.

5,796,054

LOUDSPEAKER DIAPHRAGM

Fumiteru Shingu; Kiyotaka Miyashita, both of Akishima; Kouichi Ogawa, Osaka; Akira Kose, Tachikawa, and Asa Kimura, Yokohama, all of Japan, assignors to Foster Electric Co., Ltd.; Nihon Koken Kogyo Co., both of Tokyo, and Shiseido Co., Ltd., Kanagawa, all of Japan

Filed Apr. 9, 1997, Ser. No. 827,705

Claims priority, application Japan, Apr. 12, 1996, 8-115543

Int. Cl.[6] G10K *13/00*

U.S. Cl. 181—167 **7 Claims**

1. A loudspeaker diaphragm comprising an injection molded form of a material including 50 to 80 weight % of a matrix resin of polyolefins, and 20 to 50 weight % of flaky mica having an

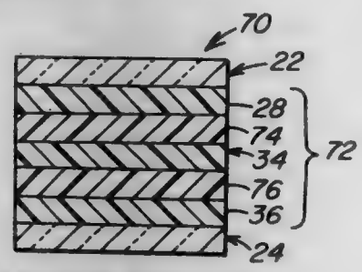
average aspect ratio of more than 10 and including at least about 3 weight % or more of pearl mica, the material being injection molded to have flakes of the flaky mica orientated in parallel within the matrix resin of polyolefins.

5,796,055

SOUND ABSORBING ARTICLE AND METHOD OF MAKING SAME

Vernon C. Benson, Jr., Arnold, and Glenn E. Freeman, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 13, 1997, Ser. No. 783,596
Int. Cl.[6] F16F *15/00*
U.S. Cl. 181—208 **11 Claims**



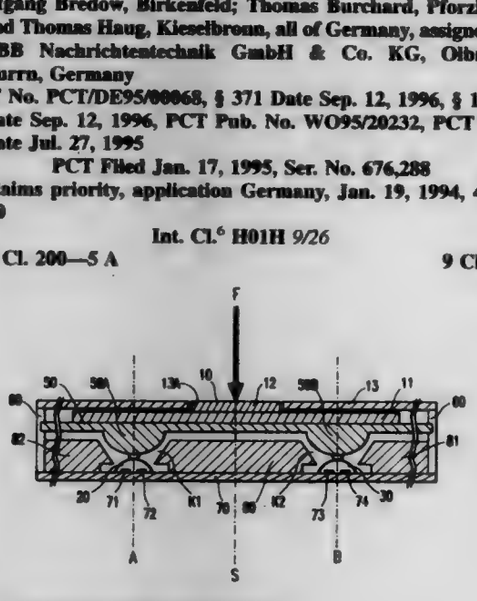
1. A sound dampening article comprising:
a first rigid sheet having a major surface;
a second rigid sheet having a major surface;
a first intermediate sheet;
a second intermediate sheet, the first and second intermediate sheets between the first and second rigid sheets;
a sheet of dampening material between the first and second intermediate sheets, wherein
the first intermediate sheet secures the sheet of dampening material to the first rigid sheet and the second intermediate sheet secures the dampening sheet to the second rigid sheet to transmit vibration of one rigid sheet through the sheet of dampening material to dampen vibration from the one rigid sheet.

5,796,056

MULTI-STAGE SWITCH

Wolfgang Bredow, Birkenfeld; Thomas Burchard, Pforzheim, and Thomas Haug, Kieselbronn, all of Germany, assignors to NBB Nachrichtentechnik GmbH & Co. KG, Olbronn-Durrn, Germany

PCT No. PCT/DE95/00068, § 371 Date Sep. 12, 1996, § 102(e) Date Sep. 12, 1996, PCT Pub. No. WO95/20232, PCT Pub. Date Jul. 27, 1995
PCT Filed Jan. 17, 1995, Ser. No. 676,288
Claims priority, application Germany, Jan. 19, 1994, 44 01 314.0
Int. Cl.[6] H01H *9/26*
U.S. Cl. 200—5 A **9 Claims**



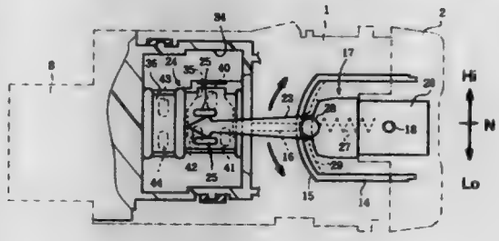
1. A multi-stage switch comprising:
a circuit board carrying at least two pairs of contact elements, said pairs of contact elements being spaced from one another;
at least two switch elements disposed on said circuit board, each of said switch elements being operatively associated with a respective pair of said contact elements and being movable into a closed state for bridging said contact elements of said respective pair;
a common actuating element operatively associated with said switch elements, said common actuating element having an actuating area which is located between said switch elements, and said common actuating element being movable in response to an increasing force applied to said actuating area to move said switching elements successively into the closed state;
a plastic diaphragm located above said common actuating element and having a central protrusion via which said diaphragm transmits the increasing force to said actuating area of said common actuating element; and
a spacer disposed on said circuit board and having a conduit which extends to said actuating area and in which said central protrusion of said plastic diaphragm is guided, wherein:
said switch elements and said common actuating element cooperate to cause said common actuating element to pivot about an axis which is essentially parallel to said circuit board in response to the increasing force to move said switching elements successively into the closed state.

5,796,057

ROCKER-TYPE ELECTRICAL SWITCH

Akira Nakajima, and Norio Sekine, both of Saitama, Japan, assignors to Toyodenso Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1996, Ser. No. 706,701
Claims priority, application Japan, Sep. 8, 1995, 7-231838
Int. Cl.[6] H01H *3/20*
U.S. Cl. 200—6 B **29 Claims**



20. A switch comprising:
a cylindrical case;
a knob swingably supported at one end of the case; and
a contact holder adapted to interlock with the swinging action of the knob to move in a direction perpendicular to the longitudinal direction of the case, thereby switching a plurality of circuits,
wherein a rocking member for connecting the knob to the contact holder and an energizing mechanism for energizing the rocking member are provided, the energizing mechanism comprising an engaging groove and a coil spring for energizing a ball into the engaging groove.

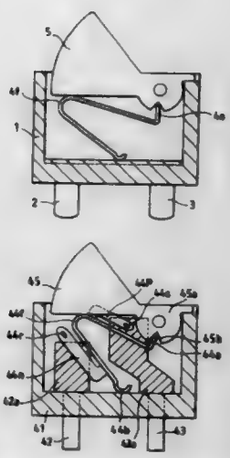
5,796,058

LEVER OPERATED SLIDE SWITCH

Mitsuo Aimi, and Masayoshi Nishida, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 31, 1996, Ser. No. 655,837
Claims priority, application Japan, Jun. 6, 1995, 7-139084
Int. Cl.[6] H01H *15/00*
U.S. Cl. 200—16 D **11 Claims**

1. A lever switch comprising:



a casing shaped into a box-like configuration with an open top and a bottom;

first and second terminals, each having a stationary contacts provided on said bottom of said casing;

an operational lever inserted from said open top of said casing and swingably supported on an upper part of said casing; and

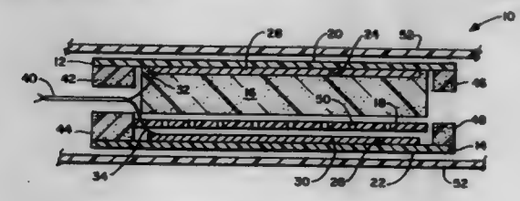
a contact piece resiliently deformable and disposed under said operational lever, said contact piece being formed into a U-shaped configuration, said U-shaped configuration having a first portion extending along the underside of said lever, and a second portion of said contact piece having one end provided with a movable contact said movable contact being brought into sliding contact with one of said stationary contacts of said terminal provided on said bottom of said casing, and a second contact maintained in continuous sliding contact with another of said stationary contacts as said one contact enters sliding contact with a respective stationary contact when said U-shaped configuration is deflected by said lever engaging said contact piece at the junction of said first and second portion whereby an electrical path is provided between said first and second terminals through said stationary contacts and said contact piece.

5,796,059

PRESSURE-SENSITIVE SWITCH APPARATUS

Stephen W. Boon, 215 Hazardville Rd., Longmeadow, Mass. 01106

Filed Mar. 19, 1996, Ser. No. 617,608
Int. Cl.[6] H01C *10/10;* **H01H** *35/00*
U.S. Cl. 200—85 R **16 Claims**



13. A pressure-sensitive apparatus comprising:

a first conductor including a thin, flexible member having an outer surface and an inner surface and an electrically conductive path mounted on the inner surface;

a second conductor including a thin, flexible member having an outer surface and an inner surface;

a thin, flexible, resilient electrical conductor disposed adjacent to the inner surface of the first conductor, said resilient conductor comprising a variable resistor, wherein the resistive value of said resilient conductor is inversely proportional to the pressure applied to said resilient conductor; and

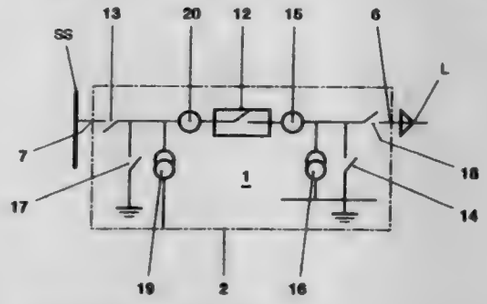
a thin, flexible, substantially non-conductive member disposed adjacent to the inner surface of the second conductor defining a plurality of apertures for the passage of at least a portion of the resilient conductor therethrough in response to pressure applied to at least one of the first and second conductors.

5,796,060

GAS INSULATED SWITCHGEAR WITH GROUNDING AND DISCONNECTING SWITCHES

Dieter Füchsle, Lengnau; Peter Högg, Wettingen; Lothar Mantel, Otelfingen, and Georg Schett, Winterthur, all of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Feb. 5, 1996, Ser. No. 596,746
Claims priority, application Germany, Mar. 28, 1995, 195 11 168.0
Int. Cl.[6] H01H *33/59;* **H02B** *5/06;13/035*
U.S. Cl. 218—79 **24 Claims**



1. A switching apparatus comprising:

a grounded, insulating gas-filled housing, the housing having a housing wall;

a power circuit-breaker disposed in the housing;

a current connection for a first busbar;

a current connection for a second busbar;

a current connection for a load outgoer;

a grounding switch disposed in the housing, the grounding switch being connected between the power circuit-breaker and the current connection for the load outgoer;

a busbar disconnector, the busbar disconnector being disposed in the housing connected between the current connection of the first busbar and the power circuit-breaker and between the current connection of the second busbar and the power circuit-breaker;

an outwardly extended, first tubular flange arrangement attached over a first opening in the housing wall;

an outwardly extended, second tubular flange arrangement attached over a second opening in the housing wall;

a first outdoor bushing, the first outdoor bushing being fastened to the first tubular flange attachment, the current connection for the first busbar extending through the first outdoor bushing;

a second outdoor bushing, the second outdoor bushing being fastened to the second tubular flange attachment, the current connection for the second busbar extending through the second outdoor bushing,

wherein the busbar disconnector is movable between at least three positions, the busbar disconnector having a first and a second fixed contact and a movable contact arrangement the movable contact arrangement interacting with the first and second fixed contacts and being electrically conductively connected to the power circuit-breaker, the first fixed contact defining an end of the current connection of the first busbar and being disposed in the housing, and the second fixed contact defining an end of the current connection of the second busbar and being disposed in the housing.

5,796,061

MINIATURIZED AUTOMATIC CIRCUIT BREAKER WITH A MULTI-FUNCTIONAL TERMINAL AND A SCREEN FOR PROTECTION AGAINST INTERNAL ELECTRIC ARCS

Fabrizio Fabrizi, Bergamo, and Sergio Pianezzola, Varese, both of Italy, assignors to Bticino S.p.A., Milan, Italy

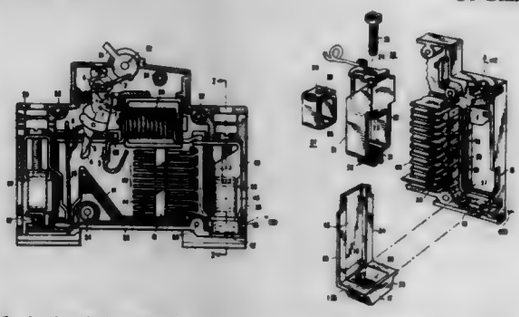
PCT No. PCT/EP95/04081, § 371 Date Sep. 23, 1996, § 102(e) Date Sep. 23, 1996, PCT Pub. No. WO96/12292, PCT Pub. Date Apr. 25, 1996

PCT Filed Oct. 17, 1995, Ser. No. 666,415

Claims priority, application Italy, Oct. 18, 1994, MI94A2126

Int. Cl.[6] H01H *33/04*

U.S. Cl. 218—157 **14 Claims**



1. A circuit breaker in which electrical continuity between first and second terminals for connection to ends of leads outside the circuit breaker is controlled by a manual arming and disarming device and by overload protection devices operating automatically by means of the opening of two contacts, and the arc caused by the opening of the contacts develops and excess pressure of ionized air in an arc-extinguishing chamber housing a deionizing cell, characterized in that the first of the terminals comprises:

a screw claim terminal opening in a first face of the circuit breaker for receiving ends of external leads and a spring-clip terminal opening in a rear face of the circuit breaker for receiving a blade terminal of an external lead,

and in that the circuit breaker comprises

an insulating diaphragm interposed between the first terminal and said deionizing cell, separate from and forming with an insulating casing of the circuit breaker at least one vent duct opening in the first face and electrically insulated from the first terminal.

5,796,062

METHOD FOR PRODUCING MOLDING DIE FOR SYNTHETIC RESIN LENS BARREL HAVING A HELICOID AND FOR PRODUCING THE LENS BARREL

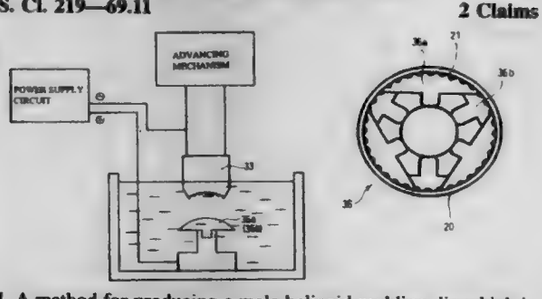
Hiroshi Nomura; Kazuyoshi Azegami, and Takamitsu Sasaki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1997, Ser. No. 781,590

Claims priority, application Japan, Feb. 21, 1996, 8-034124; Sep. 19, 1996, 8-247567

Int. Cl.[6] B23H *1/00*; G02B *15/14*

U.S. Cl. 219—69.11 **2 Claims**



1. A method for producing a male helicoid molding die which is adapted to manufacture an inner barrel having a male helicoid, and for producing a female helicoid molding die which is adapted to manufacture an outer barrel having a female helicoid for engaging with said male helicoid of said inner barrel, the method comprising:

setting an included angle of trapezoidal threads of said male helicoid to be identical to an included angle of trapezoidal grooves of said female helicoid in a section perpendicular to a direction of an extension of said threads and preparing a cutting tool having an angle identical to said set angle;

machining said male helicoid molding die to form a helicoid portion using said cutting tool;

preparing an electric spark machining electrode having a helicoid portion by a mechanical cutting operation using said cutting tool, said helicoid portion of said electric spark machining electrode having a shape identical to a shape of said helicoid portion of said male helicoid molding die; and

forming a helicoid portion of said female helicoid molding die by electric spark machining using said electric spark machining electrode.

5,796,063

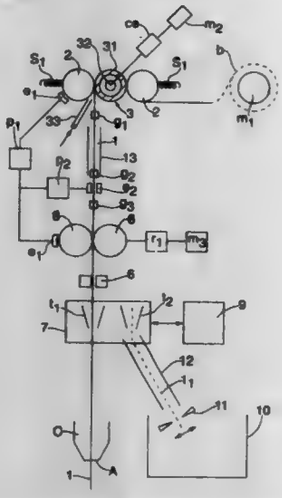
AUTOMATIC CUTTING AND THREADING PROCEDURE AND MECHANISM FOR AN ELECTROEROSION MACHINE

Javier Maidagan, Vizcaya, Spain, assignor to Ona Electro-Erosion, S.A., Spain

Filed Oct. 29, 1996, Ser. No. 739,297

Int. Cl.[6] B23H *7/10*

U.S. Cl. 219—69.12 **6 Claims**



6. A process for automatically cutting and re-threading wire on an electroerosion machine for starting a fresh job wherein a microprocessor is used for controlling the process, the process comprising:

(a) braking drawer rollers (8) to hold wire (1) and reversing feeder-roller (3) to rotate feeder-roller (3) a predetermined angle (α);

(b) heating wire (1) by means of a first circuit which is connected between pressure roller (2) and drawer rollers (8), said heating taking place when the feeder roller (3) rotates through the predetermined angle (α) so as to stretch wire (1);

(c) cutting said wire by disconnecting said first circuit and connecting a second circuit so as to supply electrical current which is greater than that applied by the first circuit, to a cutoff electrode (e_2) so as to cut wire (1) and provide a bottom wire (l_1) for waste;

(d) drawing the bottom wire (1_1) by means of the drawer rollers (8);

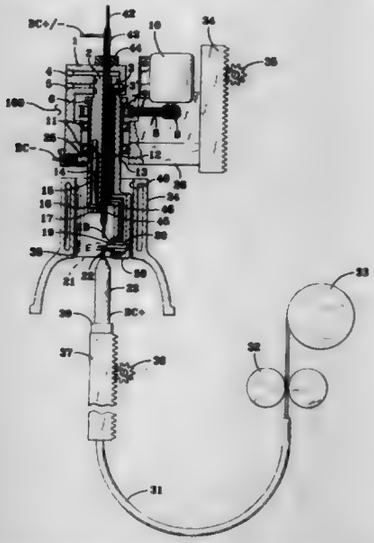
(e) separating the drawer rollers (8) and activating the feeder roller (3) to cause the wire (1) to move downstream and become re-threaded.

5,796,064

METHOD AND APPARATUS FOR DUAL COAT THERMAL SPRAYING CYLINDRICAL BORES

Edwin E. Rice, Ann Arbor, Mich., and Walter C. Vliet, Columbia, N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 29, 1996, Ser. No. 739,347
Int. Cl.[6] B23K 9/04
U.S. Cl. 219—76.16 10 Claims



1. A method of thermal spraying a material onto an internal cylindrical surface of a cylinder having a first cylindrical axis comprising:

an arc spraying process with a plurality of consumable electrode and a non-consumable electrode, wherein said non-consumable electrode and a first consumable electrode are introduced into the cylinder from one open end and said non-consumable electrode is rotated within the cylinder about the cylindrical axis but offset therefrom as well as being linearly translated along the cylindrical axis, said first consumable electrode being fed into and maintained in arc striking distance with said non-consumable electrode in a first operating function and maintained at a non arc striking distance in a second operating function;

a second consumable electrode being fed into and maintained in arc striking distance from the non-consumable electrode from the opposite open end of the cylinder in said second operating function;

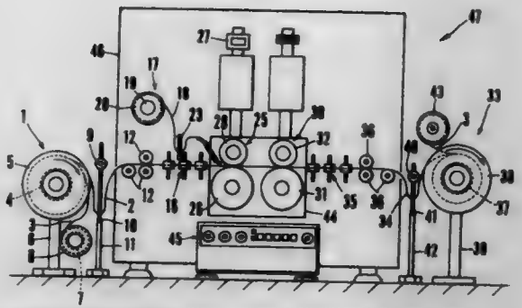
an arc being struck between one of said first and said second consumable electrode and said non-consumable electrode and atomizing gas being directed past the arc formed across the first cylindrical axis to atomize molten material from one of said first and said second consumable electrode in the arc and carry it towards and deposit it on the inner cylindrical surface.

5,796,065

APPARATUS FOR PRODUCING CONTACT/CONNECTION MEMBER FOR ELECTRIC AND ELECTRONIC PARTS

Kageakira Fujiyoshi; Daisuke Fujiyoshi, and Takamichi Fujiyoshi, all of Kanagawa-ken, Japan, assignors to Jasty R & D Inc., Kanagawa-ken, Japan

Filed May 29, 1996, Ser. No. 654,966
Claims priority, application Japan, May 29, 1995, 7-153916
Int. Cl.[6] B23K 11/00; 37/00
U.S. Cl. 219—78.02 20 Claims



1. A contact/connection member production apparatus comprising:

a contact/connection member base material supply unit for continuously supplying a belt-shaped contact/connection member base material which is a flexible base metal material;

a contact/connection member wire material supply unit for continuously supplying a contact/connection member wire material which is a precious metal material;

a welding unit for diffusion bonding the contact/connection member wire material to a predetermined position of the front or rear surface of the contact/connection member base material by applying electricity to a mother rotation electrode and a variable rotation roller electrode while the contact/connection member wire material is pressed against the front or rear surface of the contact/connection member base material between these electrodes at a welding location; and

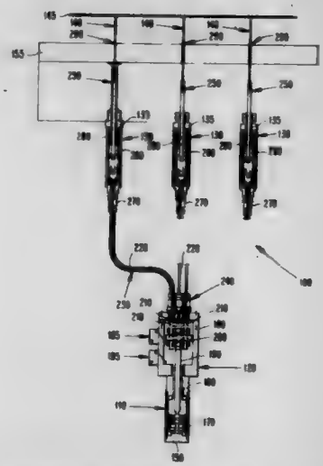
a contact/connection member take-up unit for winding a contact/connection member in which the contact/connection member wire material is fusion bonded to the contact/connection member base material.

5,796,066

CABLE ACTUATED DRIVE ASSEMBLY FOR VACUUM CHAMBER

Francois L. Guyot, Milpitas, Calif., assignor to Lam Research Corporation, Fremont, Calif.

Filed Mar. 29, 1996, Ser. No. 623,880
Int. Cl.[6] B23K 10/00
U.S. Cl. 219—121.48 28 Claims



1. A drive assembly for moving an article in a vacuum chamber, the drive assembly comprising:

a pin engageable with the article so as to move the article in the vacuum chamber, the pin being slidably supported within a housing;

a flexible cable and sleeve assembly comprising a cable slidable within a sleeve surrounding the cable, the cable having an end mechanically coupled to the pin and the sleeve having an end mechanically coupled to the housing; and

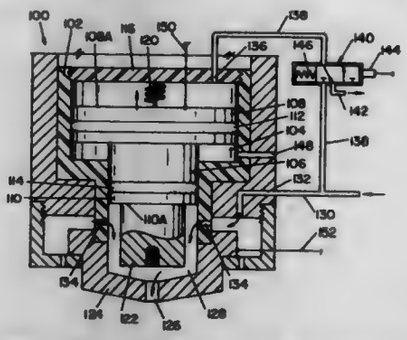
an actuator engaged with the cable so as to move the cable with respect to the sleeve and move the pin with respect to the housing.

5,796,067

PLASMA ARC TORCHES AND METHODS OF OPERATING AND TESTING THE SAME

Edward A. Enyedy, Eastlake, and Steven R. Sumner, Chardon, both of Ohio, assignors to The Lincoln Electric Company

Filed Oct. 30, 1995, Ser. No. 550,008
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.52 **84 Claims**



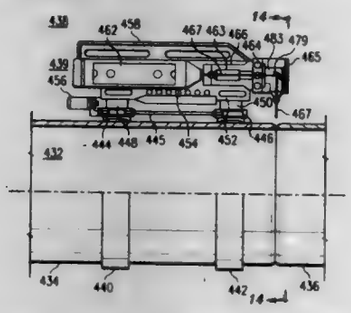
1. In a plasma torch comprising relatively displaceable electrode and nozzle means having first and second positions relative to one another in which said electrode respectively contacts said nozzle means and is spaced an operating distance from said nozzle means, said nozzle means providing a gas chamber having a plasma outlet opening, means for flowing gas into said chamber, means for flowing an arc current between said electrode and nozzle means, and means for relatively displacing said electrode and nozzle means between said first and second positions, whereby a starting arc is created as said electrode and nozzle means move from said first toward said second position, the improvement comprising: said means for relatively displacing said electrode and nozzle means including means selectively operable for relatively displacing said electrode and nozzle means from said second position toward said first position during the flow of gas into said chamber and independent of the flow of arc current between said electrode and nozzle means.

5,796,068

EXTERNAL LASER WELDER FOR PIPELINE

Richard L. Jones, Houston, Tex., assignor to CRC-Evans Pipeline International, Inc., Houston, Tex.

Division of Ser. No. 321,214, Oct. 11, 1994, Pat. No. 5,593,605.
This application Jan. 8, 1997, Ser. No. 780,638
Int. Cl.[6] B23K *26/00*
U.S. Cl. 219—121.63 **7 Claims**



1. An external welder for a pipeline for welding together a junction of abutting ends of first and second pipe segments, comprising:

a track mounted on the outside of said pipeline;

a carriage assembly connected to said track for carrying said carriage assembly orbitally about the axis of said pipeline on said track;

a laser source mounted on said carriage assembly to produce a laser beam;

a reflecting surface positioned in the path of said beam for directing said laser beam to the abutting ends of said first and second pipe segments; and

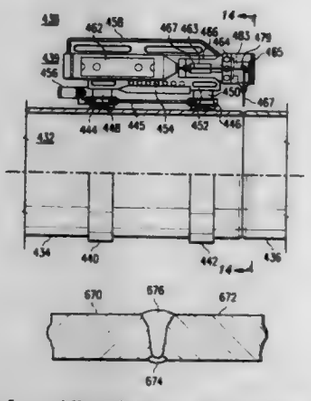
a drive mounted on said carriage assembly, said drive propelling said carriage assembly around the axis of said pipeline to direct said laser beam along the junction of the abutting ends of said pipe segments for welding said pipe segments together.

5,796,069

ARC AND LASER WELDING PROCESS FOR PIPELINE

Richard L. Jones, and Brian S. Laing, both of Houston, Tex., assignors to CRC-Evans Pipeline International, Inc., Houston, Tex.

Filed Jan. 10, 1997, Ser. No. 781,661
Int. Cl.[6] B23K *26/00;9/00*
U.S. Cl. 219—121.64 **12 Claims**



1. A method for welding abutting pipe segments at the junction of the pipe segments, comprising the steps of:

holding said abutting pipe segments stationary;

forming a first partial weld joint at said junction by operation of an internal arc welder making a circumferential pass of said pipe segments along said junction on the interior of said pipe segments; and

forming, after completion of said internal arc welder operation, a second partial weld joint at said junction by operation of an external laser welder making a circumferential pass of said pipe segments along said junction on the exterior of said pipe segments;

wherein said first partial weld joint and said second partial weld joint together form a weld joint between said pipe segments.

5,796,070

WELDING GUN SPATTER SHIELD

James B. Karp, Rt. 4, Box 771, New Caney, Tex. 77357

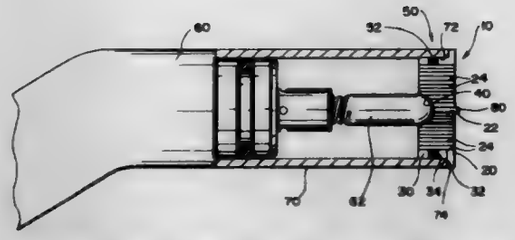
Filed Oct. 1, 1996, Ser. No. 724,424
Int. Cl.[6] B23K *9/16*
U.S. Cl. 219—137.43 **20 Claims**

1. A welding gun spatter shield for use in a welding gun sleeve having a forward end with an opening, said shield comprising:

a body having an axis, a back end, and a front end;

said body constructed and sized to be removably inserted within said sleeve opening;

wherein, when said shield is inserted within said sleeve opening, said shield back end is distal to said sleeve forward end and said shield extends within said sleeve opening from said



shield back end in the direction of said sleeve forward end so that said shield front end is at least flush with said sleeve forward end;

retaining means for removably maintaining said body in said opening;

said body constructed and sized to fill said opening and cover the full cross sectional area of said opening when mounted therein;

a wire feed bore extending through said body in an axial direction;

said wire feed bore diameter sufficiently large to permit a welding wire to pass therethrough;

said wire feed bore positioned for alignment with said welding wire when said body is mounted in said opening; and

at least one communication passageway providing fluid communication through said body in an axial direction.

5,796,071

PANE FOR AUTOMOBILE VEHICLE

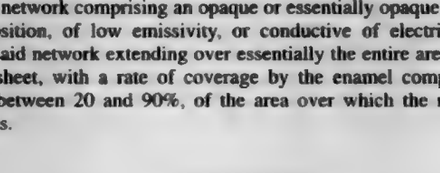
Claude Morin, Puteaux, and Andre Beyrie, Tracy-le-Val, both of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Feb. 21, 1996, Ser. No. 604,608

Claims priority, application France, Feb. 21, 1995, 95 01964

Int. Cl.[6] B60L *1/02*; E06B *3/24*; B44L *5/08*

U.S. Cl. 219—203 **17 Claims**



1. A pane comprising a glass sheet coated on one face thereof with a network comprising an opaque or essentially opaque enamel composition, of low emissivity, or conductive of electricity, or both, said network extending over essentially the entire area of the glass sheet, with a rate of coverage by the enamel composition lying between 20 and 90%, of the area over which the network extends.

5,796,072

ELECTRIC SOLDERING IRON WITH METAL PIPE IN GRIP TO DISSIPATE HEAT

Ryuhei Okuno, Osaka, Japan, assignor to Hozan Tool Industrial Co., Ltd., Osaka, Japan

Filed Apr. 3, 1996, Ser. No. 627,098

Claims priority, application Japan, Apr. 13, 1995, 7-087874

Int. Cl.[6] B23K *3/02*

U.S. Cl. 219—229 **4 Claims**

1. An electric soldering iron comprising:

a rod-shaped heater having a front end and a rear end;

a heat accumulator provided at said front end of said rod-shaped heater;



a grip surrounding said heater such that said heat accumulator protrudes from said grip, said grip having a tip portion and an inner periphery;

a heat dissipating metal pipe mounted in said grip so as to surround said rod-shaped heater and so as to be in partial contact with said inner periphery of said grip and out of contact with said grip at said tip portion thereof; and

a heater holder mounted in said metal pipe and supporting the rear end of said rod-shaped heater;

wherein said pipe extends substantially the entire length of said grip, and wherein said pipe and said rod-shaped heater are not in contact with each other.

5,796,073

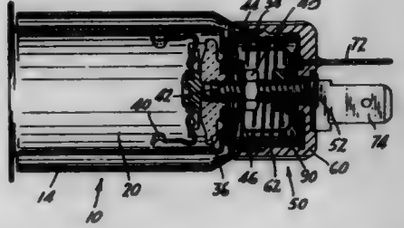
CONNECTOR RECEPTABLE CONSTRUCTION FOR ELECTRIC CIGAR LIGHTERS

Donald J. Mattis, Norwalk, and Ali El-Haj, Trumbull, both of Conn., assignors to Casco Products Corporation, Bridgeport, Conn.

Continuation of Ser. No. 394,735, Feb. 27, 1995, abandoned, which is a division of Ser. No. 201,700, Feb. 25, 1994, Pat. No. 5,403,996. This application Jul. 15, 1997, Ser. No. 892,764

Int. Cl.[6] F23Q *7/00*; B60N *3/14*

U.S. Cl. 219—265 **18 Claims**



1. A cigar lighter receptacle construction, comprising in combination:

a) a well part and a separate safety connector cartridge part,

b) means for disconnectably carrying the cartridge part at the rear of the well part,

c) said well part and said safety connector cartridge part having electrical connector means comprising engageable and disengageable pairs of contactors,

d) at least one disconnectable pair of said contactors comprising telescopic separable cup-like formations, and

e) bimetallic means carried by the well part, for shunting and electrically short-circuiting the connector means of the cartridge part in response to overheating of the well part.

5,796,074

WAFER HEATER ASSEMBLY

Sergio Edelstein, Los Gatos; Steven A. Chen, Fremont, and Vijay D. Parkhe, Sunnyvale, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Nov. 28, 1995, Ser. No. 565,185

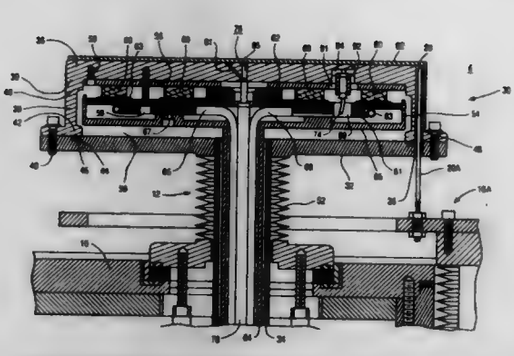
Int. Cl.[6] F27B *5/14*

U.S. Cl. 219—390 **21 Claims**

1. A wafer heater assembly for a deposition/etch chamber comprising:

a base;

a wafer support comprising a wafer-chucking surface;



a circumferential barrier support having a wafer end at the wafer support and a base end at the base;

a heater sub-assembly thermally coupled to the wafer support;

a fluid seal positioned between the base end of the barrier support and the base; and

a user-accessible attachment element securing the base to the wafer support with the barrier support therebetween thereby pressing the base end of the barrier support against the base with the fluid seal captured therebetween.

5,796,075

HEATER, PARTICULARLY FOR KITCHEN APPLIANCES

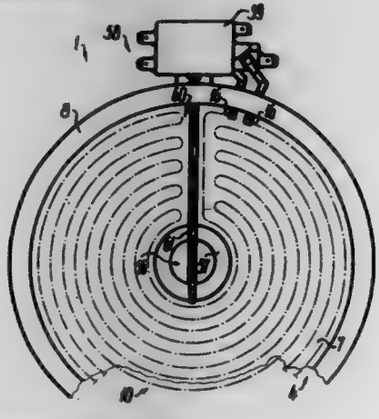
Martin Gross, Kampfelbach, and Werner Renz, Sternenfels, both of Germany, assignors to E.G.O. Elektro-Gerate Blanc und Fisher GmbH & Co. KG, Oberderdingen, Germany

Continuation-in-part of Ser. No. 117,519, Sep. 3, 1993, Pat. No. 5,498,853. This application Feb. 23, 1996, Ser. No. 604,819

Claims priority, application Germany, Mar. 9, 1992, 42 29 375.8

Int. Cl.[6] H05B *3/68*

U.S. Cl. 219—457 **30 Claims**



1. A heater unit comprising:

a base body defining a thermal outlet and including a support bottom made from electrically insulating material, said support bottom defining a central axis oriented perpendicular to said support bottom, on a heating side (20) said support bottom including a substantially planar bottom surface;

a heating resistor including wire-like elongated radiant resistor portions directly engaging said support bottom on said heating side in the vicinity of said substantially planar bottom surface, said resistor portions being curved around said central axis, said heating resistor defining a heating field, a center zone and a heating plane substantially parallel to said support bottom;

said radiant resistor portions defining a gap area above said support bottom and between said resistor portions when seen in a view perpendicular to said heating plane, said radiant resistor portions providing lateral flank boundaries of said gap area; and,

a rod-shaped temperature sensor freely projecting over said heating side substantially parallel to and in the vicinity of said gap area when seen in said view perpendicular to said heating plane,

wherein said gap area is free from said radiant resistor portions, said gap area being solely provided by said substantially planar bottom surface.

5,796,076

SAUNA HEATER CONTROL

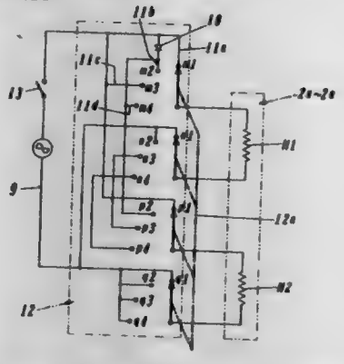
Yoshihiko Azuma, 6-28, Nakajima-cho, Nishinomiyn-shi, Hyogo, Japan

Filed Oct. 13, 1995, Ser. No. 542,558

Claims priority, application Japan, Jan. 9, 1995, 7-001511

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—486 **4 Claims**



1. A sauna heater control which comprises a plurality of electrical heater elements for heating a sauna chamber, an alternating current heater power circuit, a half-wave rectifier for selective inclusion in said alternating current heater power circuit, a plurality of circuits for connecting said electrical heater elements and said half-wave rectifier in various conductive pathways in said alternating current heater power circuit, a switch for switching said electrical heater elements and said half-wave rectifier between said various conductive pathways, means for setting the desired temperature in said sauna chamber, a temperature sensor for measuring the temperature in said sauna chamber, and a controller for regulating the heating of said electrical heater elements and for automatically changing said conductive pathways with said switch by increasing or decreasing the total power consumption of said electrical heater elements in response to said temperature sensor sensing the temperature, and comparing at preselected time intervals the sauna chamber temperature measured by said sensor (THd) with the desired temperature set by said means for setting (THs), wherein some of said conductive pathways include said half-wave rectifier, and some other of said conductive pathways do not include said half-wave rectifier, and wherein a first set of said conductive pathways disposes said electrical heater elements in parallel, and a second set of conductive pathways disposes said electrical heater elements in series, whereby the total power consumption of said electrical heater elements differs depending on whether said half-wave rectifier is within the heater power circuit, and whether said first set or said second set of conductive pathways is employed.

5,796,077

OPTIMUM FUZZY METHOD FOR CONTROLLING A RICE COOKER

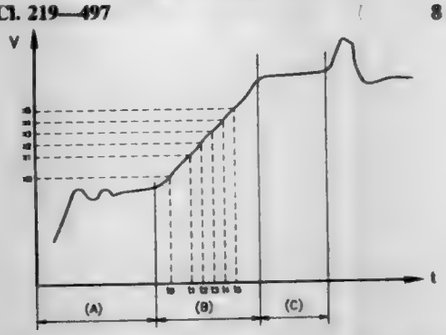
Sung-O Jo, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jan. 21, 1997, Ser. No. 784,553

Claims priority, application Rep. of Korea, Jan. 19, 1997, 1996 1083

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—497 8 Claims



1. An optimum fuzzy method for controlling a rice cooker by controlling the on/off times of a heater of the rice cooker by the use of a fuzzy function in the cooking cycle, said method comprising:

obtaining experimental data and converting the experimental data into desirable data to fit heating conditions of the rice cooker;

a performing fuzzy logic step comprising dividing said desirable data into fuzzy areas, constructing a fuzzy function according to said divided fuzzy areas, and producing an error value of said fuzzy function after verifying the constructed fuzzy function;

comparing said error values with a range of reference values and applying said fuzzy function to a microcomputer if said error value is within the range of reference values; and

applying a genetic algorithm to the fuzzy function if said error value is not within the range of reference values, and, after the genetic algorithm is applied, returning to said fuzzy logic step.

5,796,078

METHOD FOR THE INDUCTIVE SURFACE HARDENING OF WORKPIECES

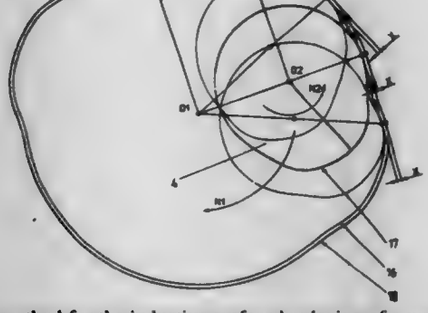
Adalbert Ottenwaelder, Stimpfach; Manfred Machnig, Aalen; Dieter Kullick, Trochtelfingen, and Rudolf Fuchs, Aalen, all of Germany, assignors to Maschinenfabrik Alfing Kessler Gmbh, Aalen-Wasseralfingen, Germany

Filed Feb. 28, 1997, Ser. No. 808,202

Claims priority, application Germany, Mar. 16, 1996, 196 10 416.5

Int. Cl.[6] H05B *6/40;6/10*

U.S. Cl. 219—639 4 Claims



1. A method for the inductive surface hardening of a workpiece, including a camshaft of an internal combustion engine, said workpiece having an inductor with an internal contour positioned about the workpiece, said workpiece revolving about a central axis in the interior of the inductor, a coupling distance between said workpiece and said inductor, said method comprising maintaining said coupling distance constant while maintaining the internal contour of the inductor in a line parallel to the contour of the workpiece at the point of closest proximity of said inductor and said workpiece, and rotating said workpiece about an axis at an integral transmission ratio during one revolution.

5,796,079

RAPID THERMAL PROCESSING METHOD FOR FERROELECTRIC, HIGH DIELECTRIC, ELECTROSTRICTIVE, SEMICONDUCTIVE, OR CONDUCTIVE CERAMIC THIN FILM USING MICROWAVES

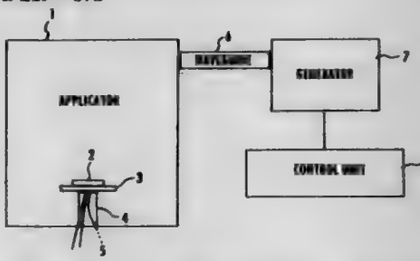
Tae Song Kim; Hyung Jin Jung, both of Seoul; Do Kyung Kim, and Yoon Chang Kim, both of Daejeon, all of Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Nov. 27, 1996, Ser. No. 757,859

Claims priority, application Rep. of Korea, Jul. 16, 1996, 1996 28713

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—678 8 Claims



1. A rapid thermal processing method for a ferroelectric, high dielectric, electrotrictive, semiconductive, or conductive ceramic thin film using microwaves, which method comprising:

disposing a material deposited with the ceramic thin film on a first supporting means;

applying microwaves uniformly on the material and heating the material deposited with the ceramic thin film rapidly;

measuring a temperature of the material by using a temperature measuring means; and

halting the generation of the microwaves when the temperature of the material reaches a desired temperature.

5,796,080

MICROWAVE APPARATUS FOR CONTROLLING POWER LEVELS IN INDIVIDUAL MULTIPLE CELLS

William Edward Jennings, Wingate; Dennis Palmer Manchester, Matthews; Edward E. King, and David A. Barclay, both of Charlotte, all of N.C., assignors to CEM Corporation, Matthews, N.C.

Filed Oct. 3, 1995, Ser. No. 538,745

Int. Cl.[6] H05B *6/74;6/68*

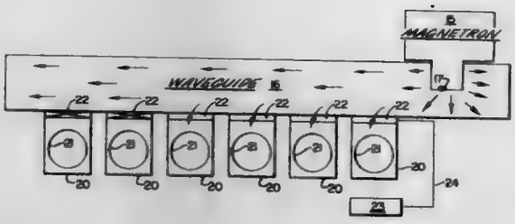
U.S. Cl. 219—697 13 Claims

1. A microwave processing system that is particularly useful for concurrently controlling a plurality of chemical reactions from a single microwave source, said system comprising:

a microwave source for producing electromagnetic radiation in the microwave range;

a waveguide in communication with said microwave source and into which said microwave source propagates microwave radiation that includes a dominant mode in said waveguide;

a plurality of individual and separate resonators in communication with said waveguide; and



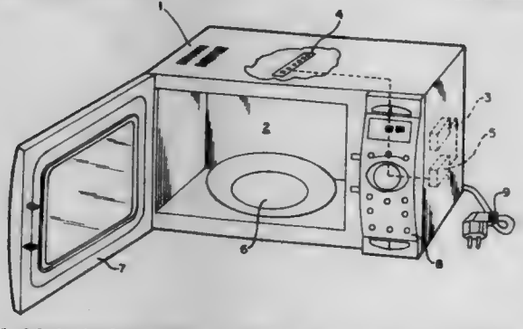
a plurality of adjustable dynamic moderating means with one of said respective adjustable dynamic moderating means between each said resonator and said waveguide for adjustably moderating the wave energy passing from said waveguide to each said resonator independent of said remaining resonators, without affecting the wave energy transmitted to said remaining resonators and without substantially changing the propagated dominant mode of microwave radiation in said wave guide.

5,796,081

MICROWAVE OVEN WITH TWO DIMENSIONAL TEMPERATURE IMAGE IR-SENSORS

Hakan Carlsson, Norrkoping, and Mats Idebro, Linkoping, both of Sweden, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 20, 1996, Ser. No. 771,726
Claims priority, application Sweden, Dec. 21, 1995, 9504585
Int. Cl.[6] H05B *6/68*
U.S. Cl. 219—711 **12 Claims**



1. Method of controlling a heating procedure in a microwave oven comprising an oven cavity, a microwave source for supplying microwaves to the oven cavity, means for obtaining heat radiation from a cooking zone in said cavity, and a control unit for controlling the supply of microwaves into said cavity dependent on said obtained heat radiation, characterized by

establishing a two-dimensional temperature image of the cooking zone by obtaining heat radiation from at least partly separated portions of the cooking zone by using a plurality of IR-sensor elements having each a discrete sensing area, the size of said sensing areas being fitted for obtaining temperature information from a smallest predictable spot load within the cooking zone, and in which the number of sensed portions have been adapted in order to provide said temperature image of a resolution allowing for an evaluation of actual temperature variations,

establishing at least one load related parameter, from parameters including presence of load, type of load, extension of load, start temperature of load, temperature variations within surface of load and mean, and maximum and minimum temperatures of load, by means of pre-programmed decision algorithms based on said temperature image, and

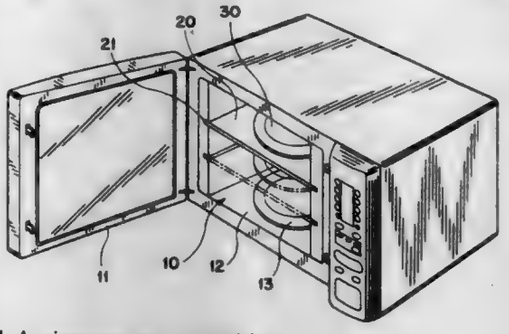
generating, based on the load parameters established in this manner from said two-dimensional temperature image, control information for controlling the supply of microwaves by means of said control unit.

5,796,082

MICROWAVE OVEN HAVING PARTITIONS IN COOKING CHAMBER FOR CARRYING ROTARY TRAYS

Je Myung Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 7, 1996, Ser. No. 726,655
Claims priority, application Rep. of Korea, Oct. 26, 1995, 1995 30362
Int. Cl.[6] H05B *6/78*
U.S. Cl. 219—752 **7 Claims**



1. A microwave oven comprising:

a body forming a cooking chamber;

a microwave generator for supplying high frequency waves to the cooking chamber;

a plurality of trays mounted in the cooking chamber in vertically superimposed relationship, each tray being rotatable about a vertical axis, one of the trays mounted on a horizontal partition dividing the cooking chamber into respective compartments containing respective ones of the trays;

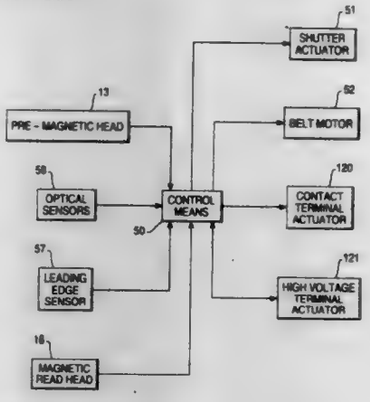
a plurality of motors mounted in the body and operably connected to respective ones of the trays for providing separate control of the trays.

5,796,083

SELF-SERVICE TERMINAL CAPABLE OF DETECTING FRAUDULENT USE OF AN INTEGRATED CIRCUIT CARD

Alexander R. Kenneth, and Mark J. Stewart, both of Dundee, Scotland, assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 23, 1996, Ser. No. 681,541
Claims priority, application United Kingdom, Dec. 14, 1995, 9525519.6
Int. Cl.[6] G06K *5/00;19/06*
U.S. Cl. 255—380 **4 Claims**



1. An apparatus comprising:

card reader means for receiving an integrated circuit (IC) card from a user;

detector means for detecting attempted fraudulent use of an IC card when the card reader means receives the IC card from a user; and

actuatable high voltage means for, when actuated in response to the detector means detecting attempted fraudulent use of an IC card, applying a high voltage to a set of card terminals of the IC card to destroy an IC chip of the IC card and thereby to render the IC card permanently non-usable.

5,796,084

DEVICE FOR THE REGISTRATION OF VEHICLE FEES

Lars Olsson, Jönköping, Sweden, assignor to Saab-Scania Combitech Aktiebolag, Jonkoping, Sweden

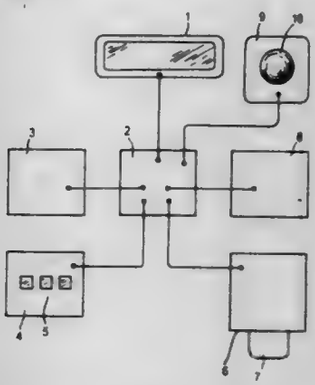
PCT No. PCT/SE94/00850, § 371 Date Jun. 11, 1996, § 102(e) Date Jun. 11, 1996, PCT Pub. No. WO95/08162, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 13, 1994, Ser. No. 615,231

Claims priority, application Sweden, Sep. 16, 1993, 9303025

Int. Cl.[6] G07B *15/02*

U.S. Cl. 235—384 **8 Claims**



1. A device for the registration of vehicle fees located in a vehicle and comprising an activation unit (1) arranged for remote communication, a timer counter (3), a sensor (8) arranged for sensing the vehicle travelling status from travel to immobility, and a registration unit (6) for the vehicle fees, arranged for debiting successively registered fees against a prepaid card (7) and also a signal unit (9) arranged to indicated the momentary status regarding the registration of the vehicle fees, characterized in that the sensor (8) for sensing the travelling status of the vehicle is constituted by an accelerometer, which is arranged under the effect of the inertial forces on movement of the vehicle to detect its travelling status and thereby arranged to control the registration unit (6).

5,796,085

CHIP CARD READER

Robert Bleier, Bad Wimpfen, Germany, assignor to Amphenol-Tuchel Electronics GmbH, Heilbronn, Germany

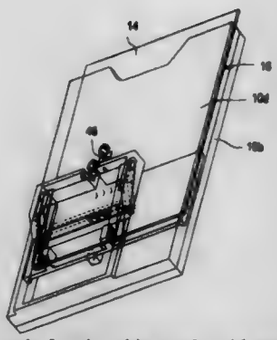
Filed Feb. 22, 1996, Ser. No. 605,748

Claims priority, application Germany, Feb. 24, 1995, 195 06 606.5

Int. Cl.[6] G06K *7/06;19/00*

U.S. Cl. 235—441 **9 Claims**

1. A chip card reader comprising a housing, a guide track within the housing for receiving a chip card and a contact carrier containing contacts which make contact in the housing with corresponding contacts on said chip card when the chip card is inserted in a read position, wherein the contacts of the contact carrier are protected in a non-use position of said chip card reader by a separating element



over the guide track for the chip card, said separating element being arranged between said contacts of the contact carrier and said guide track.

5,796,086

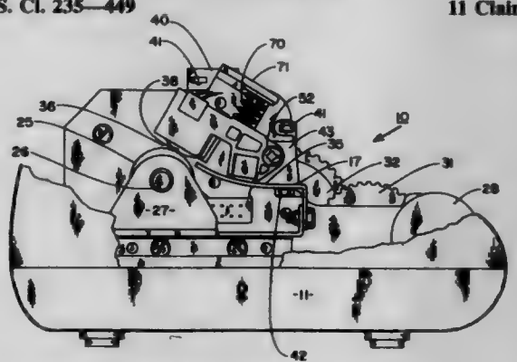
READ HEAD BRACKET FOR MAGNETIC READER

Colleen Gannon, Jordan, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Feb. 12, 1996, Ser. No. 599,706

Int. Cl.[6] G06K *7/08*

U.S. Cl. 235—449 **11 Claims**



1. A magnetic reader that includes

a housing

a rotatable drive roller for engaging an article bearing magnetizable characters and advancing said article along a prescribed path of travel,

drive means for rotating said drive roller,

a bracket means pivotally supported in said housing adjacent to said path of travel,

said bracket supporting a magnetic read head in juxtaposition to said drive roller and a magnet upstream from said read head in relation to said path of travel for magnetizing characters on an article moving along said path of travel, and

biasing means acting against said bracket for urging the read head into contact with said drive roller whereby an article is passed between the read head and the drive roller is moved along the path of travel beneath the magnet and said read head.

5,796,087

NONCOAXIAL BAR CODE READER OPERABLE WITHOUT CONDENSER LENS

Akihito Hazama, Osaka, Japan, assignor to Keyence Corporation, Osaka, Japan

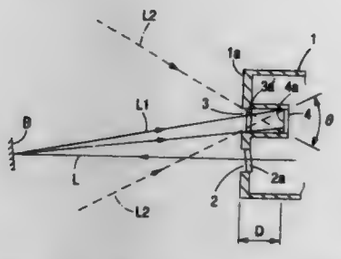
Filed Jul. 9, 1996, Ser. No. 678,058

Claims priority, application Japan, Jul. 18, 1995, 7-205301

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **15 Claims**

1. A bar code reader comprising:



a case having a front-disposed face and a rear-disposed face, said front-disposed face having a way-out window therein;

light projecting means for generating a projectable light suitable for illumination of a bar code;

scanning means, including a light source and a polygon mirror disposed within said case, proximate to said front-disposed face, for generating a scanning pattern by scanning said projectable light from the light projecting means out of said case via said way-out window;

a way-in window disposed in said front-disposed face for allowing reflected light from the bar code to pass therethrough; and

light receiving means disposed within said case and having a light receiving surface, for receiving the reflected light through the way-in window and transforming the reflected light into an electrical signal, wherein the light receiving surface of the light receiving means is formed substantially as a rectangle corresponding substantially to a shape and a size of the way-in window, the light receiving means is further disposed a predetermined distance apart from the way-in window but close to the front-disposed face in order to determine an angle of light incident on said light receiving means, while facing the way-in window, and no condenser lens is provided between the light receiving surface and the way-in window.

5,796,088

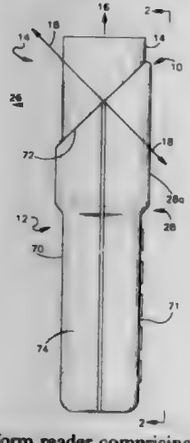
HAND HELD PORTABLE BAR CODE DATAFORM READER HAVING A ROTATABLE READER MODULE PORTION

Daniel G. Wall, Uniontown, Ohio, assignor to Teletransactions, Inc., Akron, Ohio

Filed Aug. 15, 1995, Ser. No. 515,254

Int. Cl.[6] G06K *7/10;13/00*

U.S. Cl. 235—472 **19 Claims**



1. A hand held dataform reader comprising:

(a) a main body portion configured to be gripped in an operators hand, the main body portion including a top surface and a generally parallel bottom surface separated by an inclined front surface and a side surface, said front surface intersecting said top surface at an angle between 30 degrees and 60 degrees from perpendicular, and

(b) a reader module portion mounted to said front surface and rotatable about an axis of rotation substantially perpendicular to said main body portion front surface, said reader module portion including a dataform reader module for reading a target dataform in a target area, the reader module portion being rotated such that the dataform reader module is directed towards the target area, the reader module portion having an inclined surface which is complimentary to the inclined front surface of the main body portion such that when the reader module portion is rotated with respect to the main body portion, the reader module portion inclined surface and the main body portion inclined front surface move relative to each other in a single plane.

5,796,089

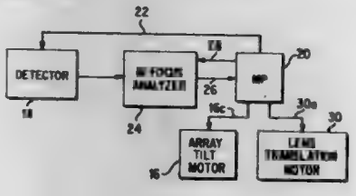
BAR CODE SCANNER WITH SIMPLIFIED AUTO-FOCUS CAPABILITY

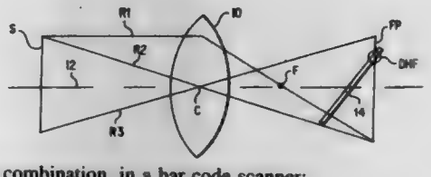
Emanuel Marom, Tel Aviv, Israel, assignor to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Sep. 21, 1995, Ser. No. 531,498

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **29 Claims**





1. In combination, in a bar code scanner:

(a) a collection optical system having an optical axis for collecting an image frame;

(b) a detector array comprising transducers arranged in a plurality of rows adapted for receiving a collected image frame; and

(c) a projection-independent drive mechanism for rotating said detector about a row thereof and for translating said detector along said optical axis adapted to place the collected image frame in focus on the detector array.

5,796,090

MICROFILM READER FOR HIGH DENSITY, TWO DIMENSIONAL BAR CODE SYMBOLOGY

Theodosios Pavlidis, Setauket; Yajiun Paul Wang, Port Jefferson Station, and Jerome Swartz, Old Field, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

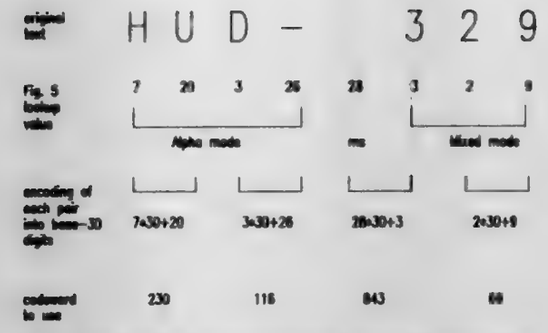
Division of Ser. No. 329,635, Oct. 26, 1994, Pat. No. 5,504,322, which is a division of Ser. No. 126,965, Sep. 27, 1993, Pat. No. 5,399,846, which is a division of Ser. No. 461,881, Jan. 5, 1990, Pat. No. 5,304,786. This application Apr. 1, 1996, Ser. No. 625,998

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **28 Claims**

2. An apparatus for identifying a subset of desired items from a set of items, comprising:

input means for allowing a user to provide item criteria;



means for reading machine-readable symbols included on a medium, each symbol containing data describing content associated with a respective item of the set of items; and

search means for determining which of the read symbols satisfies the item criteria, wherein:

each symbol comprises a bar code symbol having at least two adjacent rows of codewords, each codeword representing at least one information-bearing character, and being selected from among a set of detectable mark/space patterns, each mark/space pattern having a determinable discriminator function value,

each row has codewords selected from a subset of mark/space patterns corresponding to a unique discriminator function value, and

the discriminator function values corresponding to adjacent rows of codewords are mutually exclusive to one another.

5,796,091

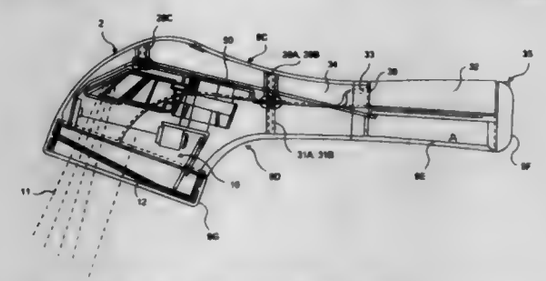
AUTOMATIC HAND-SUPPORTABLE OMNIDIRECTIONAL LASER PROJECTION SCANNER WITH HANDLE-CONTROLLABLE PROJECTION AXIS

Mark C. Schmidt, Blackwood; Carl H. Knowles, Moorestown; David M. Wilz, Sr., Sewell, and George B. Rockstein, Audobon, all of N.J., assignors to Metrologic Instruments, Inc., Blackwood, N.J.

Continuation-in-part of Ser. No. 615,054, Mar. 12, 1996, Ser. No. 573,949, Dec. 18, 1995, Ser. No. 292,237, May 17, 1994, Ser. No. 365,193, Dec. 28, 1994, Pat. No. 5,557,093, Ser. No. 293,493, Aug. 19, 1994, Pat. No. 5,525,789, Ser. No. 561,479, Nov. 20, 1995, Pat. No. 5,661,242, Ser. No. 278,109, Nov. 24, 1993, Pat. No. 5,484,992, Ser. No. 489,305, Jun. 9, 1995, abandoned, Ser. No. 476,069, Jun. 7, 1995, Pat. No. 5,591,953, and Ser. No. 584,135, Jan. 11, 1996, Pat. No. 5,616,908. This application May 13, 1996, Ser. No. 645,486

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **22 Claims**



1. A hand-supportable projection laser scanner

(a) a hand-supportable housing having a light transmission window through which laser light can exit said hand-supportable housing, travel towards an object bearing a code symbol and reflect therefrom, and at least a portion of said reflected laser light travel back through said light transmission window and enter said hand-supportable housing;

(b) an optical bench mounted in said hand-supportable housing and having a longitudinal extent which extends along a central reference axis;

(c) a laser beam producing means disposed within said hand-supportable housing for producing a laser beam;

(d) a laser beam sweeping means mounted within said hand-supportable housing with respect to said optical bench for rotation about a rotational axis intersecting said central reference axis, where the intersection of said rotational axis and said central reference axis defines a central reference plane which extends along the longitudinal extent of said optical bench,

said laser beam sweeping means having at least first, second and third rotating light reflective surfaces each being disposed at a different acute angle with respect to said rotational axis, for sequentially sweeping the laser beam about said rotational axis along a plurality of different paths;

(e) a stationary array of at least first, second, third and fourth stationary light reflective surfaces mounted within said hand-supportable housing with respect to said optical bench and disposed substantially under said light transmission window;

said first and second stationary light reflective surfaces being symmetrically disposed on opposite sides of said central reference plane, and closely adjacent said laser beam sweeping means, and

said third and fourth stationary light reflective surfaces being symmetrically disposed on opposite sides of said central reference plane, and closely adjacent said first and second stationary light reflective surfaces, respectively;

(f) a light collection subsystem disposed within said hand-supportable housing, and including

(1) a light collection element, mounted along said central reference plane and adjacent said third and fourth stationary light reflective surfaces, for allowing the laser beam produced from said laser beam producing means to pass along a portion of said central reference plane, to said laser beam sweeping means, for sweeping about said rotational axis thereof along said plurality of different paths, and

(2) light receiving means for receiving light from said light collection element at a point substantially within said central reference plane, and detecting the intensity of said received light and producing an electrical signal indicative of said detected intensity;

(g) signal processing means disposed within said hand-supportable housing, for processing said electrical signal and producing scan data representative of a scanned code symbol;

(h) control means within said hand-supportable housing for controlling the operation of said hand-supportable projection laser scanner so that, during scanner operation, the laser beam produced from said laser beam producing means passes along a portion of said central reference plane, to the first, second and third rotating light reflective surfaces of said laser beam sweeping means, and as the laser beam sequentially reflects off said first, second and third rotating light reflective surfaces, the laser beam is repeatedly swept across said first, second, third, and fourth stationary light reflective surfaces thereby producing first, second, third, and fourth groups of plural scan lines, respectively, which are projected out through said light transmission window and intersect about a projection axis within a narrowly confined scanning volume extending from adjacent said light transmission window to at least about six inches therefrom so as to produce a highly collimated projected scanning pattern within said narrowly confined scanning volume; and

(i) said hand-supportable housing being supportable relative to an object bearing a code symbol so that

when a code symbol is presented within said narrowly confined scanning volume,

(i) the code symbol is scanned omnidirectionally by said highly collimated scanning pattern,

(ii) at least a portion of the laser light reflected from said scanned code symbol is directed through said light transmission window, reflected off at least one of said first, second, third and fourth stationary light reflective surfaces, and then reflected off at least one of said first, second and

third rotating light reflective surfaces of said laser beam sweeping means, and

(iii) thereafter said reflected laser light is collected by said light collection element, and received by said light receiving means for detection, whereupon said electrical signal is produced for processing by said signal processing means;

wherein said hand-supportable housing allows the user to easily control the direction of said projection axis by way of the handle portion of said hand-supportable housing, and thus align said narrowly confined scanning volume with the bar code symbol on the object to be scanned and identified.

5,796,092

IC CARD AND IC CARD SYSTEM

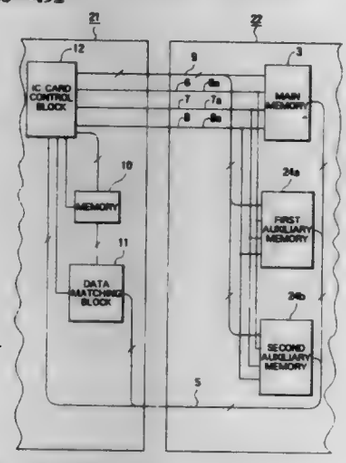
Noriharu Nagata, Sanda, and Hidenobu Gochi, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1995, Ser. No. 532,498

Claims priority, application Japan, Sep. 29, 1994, 6-235273

Int. Cl.[6] G06K *19/06; 5/00*

U.S. Cl. 235—492 **14 Claims**



1. An IC card comprising:

a main memory for storing data to be transmitted to and received from a host system;

a read-only first matching memory for storing first identification data to be read and compared by the host system in a checking process; and

a read/write second matching memory for storing second identification data to be read and compared by the host system in the checking process.

5,796,093

RECEPTACLE FOR A CHIP CARD

Manfred Reichardt, Weinsberg, and Robert Bleier, Bad Wimpfen, both of Germany, assignors to Amphenol-Tuchel Electronics GmbH, Heilbronn, Germany

Filed Mar. 8, 1996, Ser. No. 613,178

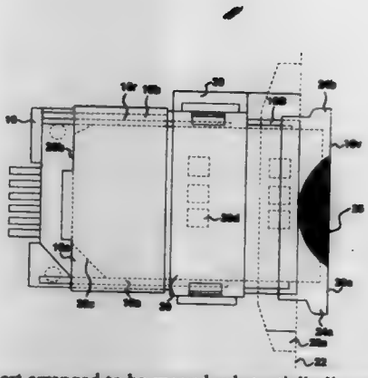
Claims priority, application Germany, Mar. 10, 1995, 195 08 363.6

Int. Cl.[6] G06K *19/067*

U.S. Cl. 235—492 **9 Claims**

1. A housing for receiving a chip card insertable into a hand telephone, comprising:

a housing body; and



a cover part arranged to be moved substantially linearly into and out of said housing body, said cover part serving as a carrier for the chip card,

wherein said cover part forms one side of a guide slot for said chip card such that the chip card is guided between the cover part and the housing body as the cover part is moved into the housing body, and wherein the cover part includes an indentation arranged to permit the card to be grasped when it situated in said guide slot in order move the card and the cover part into and out of the reading position.

5,796,094

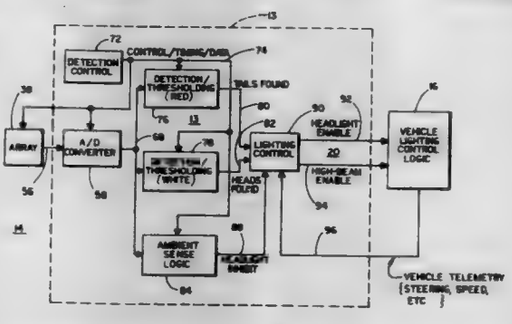
VEHICLE HEADLIGHT CONTROL USING IMAGING SENSOR

Kenneth Schofield, Holland; Mark L. Larson, Grand Haven, and Keith J. Vadas, Coopersville, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 23,918, Feb. 26, 1993, Pat. No. 5,550,677. This application Mar. 25, 1996, Ser. No. 621,863

Int. Cl.[6] B60Q *1/02;* **H05B** *37/02*

U.S. Cl. 250—208.1 **53 Claims**



1. A vehicle headlamp control, comprising:

an imaging sensor that senses light in spatially separated regions of a field of view forward of a vehicle; and

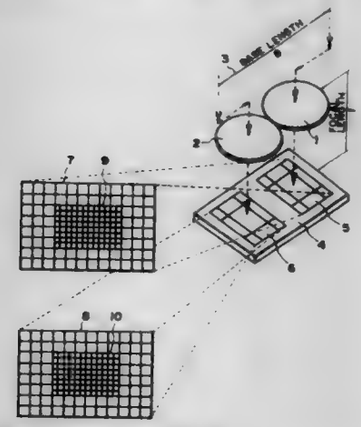
a control circuit that is responsive to said imaging sensor in order to determine if individual regions of the field of view include light levels having a particular intensity level in order to identify light sources of interest and provide a control output to said vehicle that is a function of the identification of light sources of interest including sensing oncoming vehicle headlights using a particular sensitivity and sensing leading vehicle taillights using a sensitivity higher than said particular sensitivity.

5,796,095

OPTICAL APPARATUS HAVING AN AREA SENSOR WITH A COARSE PICTURE ELEMENT PITCH AND FINE PICTURE ELEMENT PITCH

Shinichi Matsuyama, Tokyo, and Takashi Kawabata, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 663,539, Jun. 13, 1996, abandoned. This application Jul. 28, 1997, Ser. No. 901,332
Claims priority, application Japan, Jun. 19, 1995, 7-173919
Int. Cl.[6] H01J *40/14*
U.S. Cl. 250—208.1 **11 Claims**



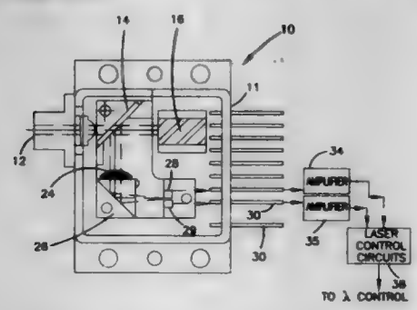
1. An optical apparatus comprising:
an objective lens; and
an area sensor disposed at a position of an image formed by said objective lens and comprising a plurality of picture elements and constructed with a picture element pitch of a central portion made finer than a picture element pitch of a marginal portion.

5,796,096

FABRICATION AND APPLICATIONS OF LONG-LIFETIME, HOLOGRAPHIC GRATINGS IN PHOTOREFRACTIVE MATERIALS

George Anthony Rakuljic, Santa Monica; Victor Leyva, Los Angeles; Amnon Yariv, San Marino; Koichi Sayano, Montebello; Arthur Bruce O'Connor, Redondo Beach; Charles E. Tyler, Sunnyvale; Xiaoping Mao, Los Angeles, and Harold Everett Miller, Jr., Westminster, all of Calif., assignors to Accuwave Corporation, Santa Monica, Calif.

Continuation-in-part of Ser. No. 908,298, Jul. 2, 1992, Pat. No. 5,440,669, which is a continuation-in-part of Ser. No. 736,736, Jul. 26, 1991, abandoned. This application Apr. 13, 1995, Ser. No. 422,509
Int. Cl.[6] G01J *3/50;3/28;* **G03H** *1/02;* **G02B** *27/00*
U.S. Cl. 250—226 **4 Claims**



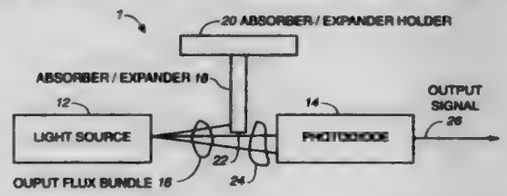
1. A device for providing an indication of the operating wavelength from a source, comprising:
means for providing radiation at an operating wavelength in a range that does not photo-excite electrons;
photorefractive crystal means having at least a pair of compensated gratings therein, the compensated gratings being arranged to reflect the radiation at different wavelengths in different directions; and
a pair of detectors each responsive to the reflected radiation in different directions.

5,796,097

CHEMICAL SENSOR AND METHOD

William R. Lawrence, Downieville, Calif., assignor to California Lightwave Laboratories, Inc., Downieville, Calif.

Filed Mar. 5, 1997, Ser. No. 811,692
Int. Cl.[6] H01J *5/16;* **G01D** *5/34*
U.S. Cl. 250—229 **26 Claims**



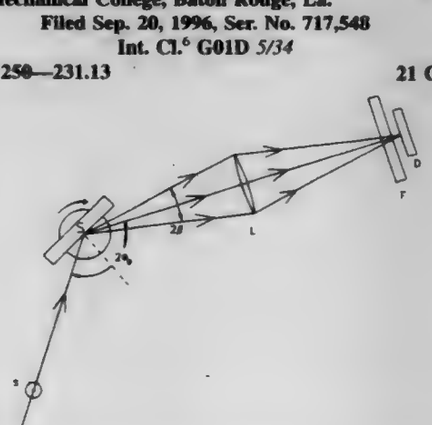
1. A chemical sensor comprising:
a light source operable to generate a light flux along a light path;
an optical detector positioned along the light path in spaced relation to the light source to receive the light flux, the detector being operable to sense changes in the intensity of the light flux;
an absorber/expander positioned between the light source and the optical detector and having an edge thereof supported for movement across at least a portion of said light path to change the intensity of the light flux sensed by the optical detector, the absorber/expander being made of a material that expands in the presence of a preselected chemical analyte and contracts in the absence of the chemical analyte to produce movement of the edge and changes in the intensity of the light flux sensed by the optical detector by an amount proportional to the amount of chemical analyte present at the absorber/expander.

5,796,098

SENSOR FOR ROTATIONAL VELOCITY AND ROTATIONAL ACCELERATION

Rasheed M. A. Azzam, Metairie, La., assignor to Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Filed Sep. 20, 1996, Ser. No. 717,548
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—231.13 **21 Claims**



1. A sensor for measuring rotational velocity, comprising:
(a) a specularly reflective coated surface;

(b) a source of monochromatic light positionable so that the light reflects from said coated surface;
(c) means for measuring, as a function of time, the intensity of light reflected from said coated surface over a range of incident angles; and
(d) means for calculating the rotational velocity of said coated surface as being proportional to the time rate of change of the measured intensity of reflected light within the range of incident angles thereby measured.

5,796,099

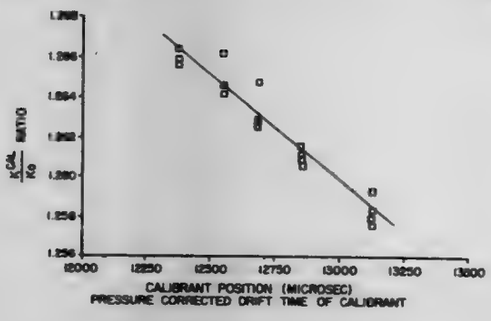
PRESSURE BASED CALIBRATION CORRECTION OF AN ION MOBILITY SPECTROMETER

Ronald A. Jackson, Mississauga, Canada, assignor to Barringer Instruments Ltd., Mississauga, Canada

Continuation-in-part of Ser. No. 477,321, Jun. 7, 1995, Pat. No. 5,552,600. This application Jun. 19, 1996, Ser. No. 665,821

Int. Cl.[6] **B01D** *59/44*; **H01J** *49/60*

U.S. Cl. 250—286 **20 Claims**



RATIO (Ko CAL/Ko ROX-N) VS CALIBRANT DRIFT TIME AT VARIOUS TEMPERATURE CONDITIONS

1. An ion mobility spectrometer comprising:
(1) a drift tube having a drift gas inlet, a drift region, electronic field generation means for establishing an electrostatic field within the drift region and drift gas containing calibrant ions;
(2) a sample gas inlet for introducing sample ions into the drift tube that may include target ions;
(3) an exhaust gas outlet;
(4) pressure measurement means for measuring the absolute pressure of the drift gas in the drift region of the system;
(5) ion detection means for measuring the drift time of said calibrant ions and for detecting the presence of target ions amongst the sample ions; and
(6) output means coupled to said ion detection means for providing an indication whether target ions are detected as being present in the sample gas,
wherein the ion detection means provides an output indicating the presence of target ions within the sample gas based on an expected drift time for such target ions that is established by reference to the measured absolute pressure in the drift region and the temperature condition within the drift region as determined by measuring the drift time of calibration ions within the spectrometer.

5,796,100

QUADRUPOLE ION TRAP

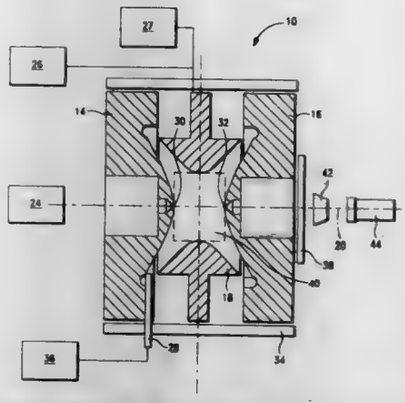
Stephen Palermo, Livermore, Calif., assignor to Hitachi Instruments, San Jose, Calif.

Continuation of Ser. No. 597,677, Jan. 16, 1996, Pat. No. 5,629,519. This application Jul. 16, 1996, Ser. No. 682,983

Int. Cl.[6] **B01D** *59/44*; **H01J** *49/00*

U.S. Cl. 250—292 **29 Claims**

1. A three dimensional quadrupole ion trap for analyzing samples, comprising



two end cap electrodes attached within the ion trap, the end cap electrodes being generally opposed to one another and defining a first axis between them;
a ring electrode attached within the ion trap between the end cap electrodes and surrounding the first axis, the end cap electrodes and the ring electrode define a cavity therebetween, the electrodes generate an electrical field for ionizing samples in the cavity;
each of the end cap electrodes and ring electrodes having a coefficient of thermal expansion of less than 0.0234 inches/inch at the operating temperature; and
a heater for heating the ion trap to an operating temperature.

5,796,101

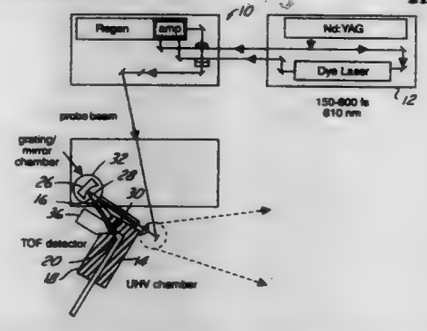
METHOD OF PROCESSING NUCLEIC ACIDS

Richard Allan Haight, Mahopac, N.Y., and Paul Fredrich Seidler, Ridgefield, Conn., assignors to IBM Corporation, Armonk, N.Y.

Filed Mar. 20, 1996, Ser. No. 619,048

Int. Cl.[6] **H01J** *37/26*

U.S. Cl. 250—306 **21 Claims**



1. A method of using a tunable, high resolution electron spectroscopy for chemical analysis (ESCA) system utilizing laser harmonics for investigating features on a sample with high spatial resolution comprising the steps of:
providing a pulsed laser beam for producing odd multiple harmonics in a noble gas,
selecting a predetermined laser harmonic by a reflective grating positioned in the path of said pulsed laser beam,
focussing said predetermined laser harmonic into a small spot of less than 1 micron in diameter on a surface of said sample, and
analyzing photoelectrons emitted by said sample surface at said focussed small spot.

5,796,102

MEASURING DEVICE FOR MEASURING THE INTENSITY AND/OR POLARIZATION OF ELECTROMAGNETIC RADIATION, FOR DETERMINING PHYSICAL PROPERTIES OF A PREPARATION, AND FOR READING INFORMATION FROM A STORAGE MEDIUM

Herman Van Kempen; Daniel Lee Abraham; Menno W. J. Prins; Ronald Jansen, all of Nijmegen, and Maurice C. M. M. van der Wielen, Nistelrode, all of Netherlands, assignors to Stichting Katholieke Universiteit Nijmegen, Nijmegen, Netherlands

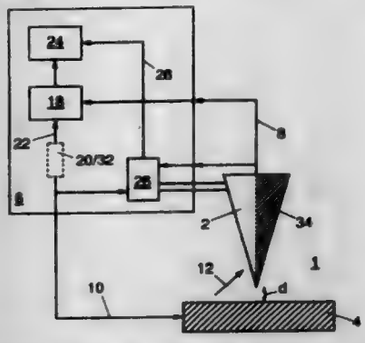
PCT No. PCT/NL94/00227, § 371 Date Oct. 15, 1996, § 102(e) Date Oct. 15, 1996, PCT Pub. No. WO95/08109, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 16, 1994, Ser. No. 619,643

Claims priority, application Netherlands, Sep. 17, 1993, 9301617

Int. Cl.[6] H01J *37/00*

U.S. Cl. 250—306 **35 Claims**



1. A measuring device for measuring electromagnetic radiation, comprising:

a body;

a tunnel tip positionable to face the body at a separation distance less than a wavelength of the electromagnetic radiation, the tip being at least partly composed of a semiconductor material and positionable so that the electromagnetic radiation to be measured is incident on the tunnel tip;

a control unit connected to the body and to the tunnel tip to detect one of a tunnel current and a surface photovoltage generated under influence of the electromagnetic radiation incident on the tunnel tip, the control unit generating information about the electromagnetic radiation in response to the one of the tunnel current and the photovoltage;

wherein only a limited collection volume of the tunnel tip contributes to generation of the one of the tunnel current and the surface photovoltage under influence of the electromagnetic radiation incident on the tunnel tip, and the limited collection volume is defined by variations in transport properties of the tunnel tip.

5,796,103

CHARGING DEVICE AND DESIGN METHOD THEREOF

Takashi Sakai, Kitakatsuragi-gun; Haruo Nishiyama, Nara, and Kazuhiro Matsuyama, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

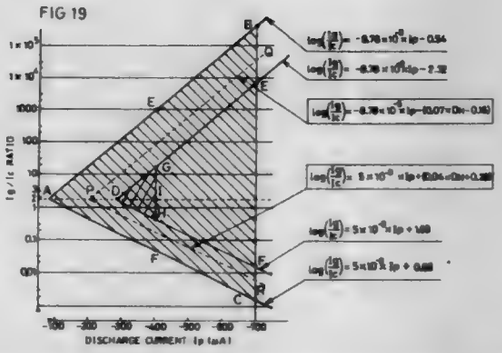
Filed Jul. 31, 1996, Ser. No. 690,730

Claims priority, application Japan, Aug. 8, 1995, 7-202473

Int. Cl.[6] H01T *19/04*

U.S. Cl. 250—326 **23 Claims**

1. A charging device provided with a discharge electrode having a plurality of discharging tip portions at predetermined intervals and an electrically conductive case for supporting said discharge electrode, said case being electrically insulated from said discharge electrode, said charging device generating discharge from said plurality of discharging tip portions with respect to a photoreceptor via a grid provided between said plurality of discharging tip



portions and a surface of the photoreceptor according to a voltage applied to said discharge electrode in order to charge the surface of the photoreceptor, wherein:

a discharge current (μA), a grid current (μA) flowing through said grid and a leakage current (μA) leaking from said plurality of discharging tip portions to said electrically conductive case which are respectively designated by I_p, I_g and I_c are all set within an area surrounded by:

a straight line I_p=−700,

a straight line $\log (I_g/I_c)$=$-8.78\times10^{-3}I_p-0.54$, and

a straight line $\log (I_g/I_c)$=$5\times10^{-3}I_p+0.68$, in a coordinate system formed by a log (I_g/I_c) axis that is a common logarithm of (I_g/I_c) and an axis of I_p indicating the discharge current.

5,796,104

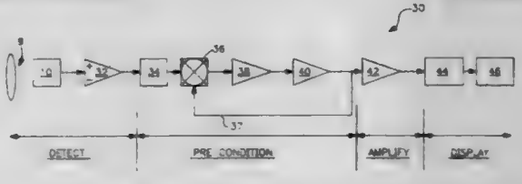
PYROELECTRIC CENTER OF MASS IMAGING

Andrew S. Filo, Cupertino, Calif., assignor to Optum Corporation, Cupertino, Calif.

Filed Mar. 7, 1997, Ser. No. 812,052

Int. Cl.[6] G01T *5/10*

U.S. Cl. 250—330 **10 Claims**



1. A device for forming stabilized thermal images of thermally active objects without the need for chopping or rapid panning comprising:

a pyroelectric detector;

focusing means for focusing thermal radiation flux from a thermally active object under investigation onto said pyroelectric detector;

decoupling means responsive to said pyroelectric detector for decoupling a DC signal component from an output signal generated by said pyroelectric detector, said output signal representing the detected thermal radiation flux;

signal boosting means responsive to said decoupling means for boosting signal strength of said DC signal component;

mixing means for mixing said boosted DC signal component with said output signal of said pyroelectric detector; and

display means responsive to said mixing means for displaying said mixed signal as a thermal image.

5,796,105

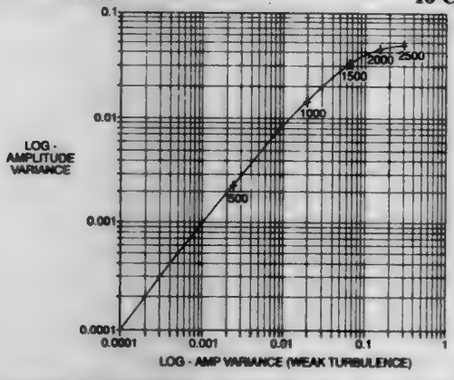
EXTENDED RANGE OPTICAL SCINTILLOMETER WITH INTERRUPTION PROTECTION FOR MEASURING ATMOSPHERIC REFRACTIVE TURBULENCE

Ting-I Wang, 205 Perry Pkwy., Suite 14, Gaithersburg, Md. 20877

Filed Sep. 6, 1996, Ser. No. 709,159

Int. Cl.[6] G01N *21/41*

U.S. Cl. 250—338.5 **16 Claims**



1. A method of determining temporally and spatially averaged atmospheric turbulence comprising:

generating an infrared optical signal,

partially collimating said infrared optical signal utilizing an optical collimator,

transmitting said collimated optical signal through atmosphere over a distance greater than one kilometer and up to 2.5 kilometers,

receiving said transmitted optical signal and focusing said transmitted optical signal onto a photodetector utilizing a focusing device, thereby generating received analog signals,

converting said received analog signals to digital form to produce received digital signals,

comparing each of said received digital signals with a predetermined digital threshold level to produce data output signals for only those of said received digital signals that are at least as great as said predetermined digital threshold level, and

calculating the path averaged log amplitude variance of said data output signals to provide an atmospheric turbulence refractive structure constant.

5,796,106

ICE AND LIQUID DETECTOR

Raymond James Noack, P.O. Box 898, Springwood, Queensland, 4127, Australia

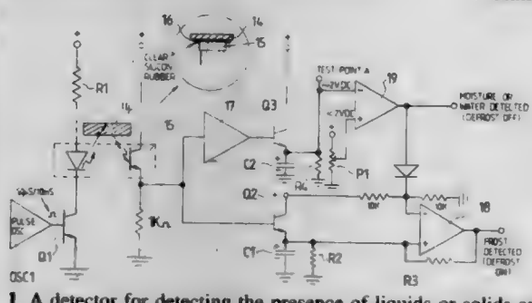
PCT No. PCT/AU95/00345, § 371 Date Dec. 18, 1996, § 102(e) Date Dec. 18, 1996, PCT Pub. No. WO95/35493, PCT Pub. Date Dec. 28, 1995

PCT Filed Jun. 13, 1995, Ser. No. 765,236

Claims priority, application Australia, Jun. 20, 1994, PM 6319

Int. Cl.[6] G01N *21/88;21/01*

U.S. Cl. 250—341.8 **9 Claims**



1. A detector for detecting the presence of liquids or solids and discriminating between the presence of the solids and the liquids, the detector comprising: a sensing surface provided by a medium substantially transparent to electromagnetic radiation and upon which the solids or the liquids may be deposited, the sensing surface being patterned, grooved, dimpled, rippled, sandblasted or etched, a radiation transmitter for directing radiation onto the medium from a side of the medium opposed to the sensing surface, a radiation receiver receiving radiation reflected from the surface and a discriminator circuit operable in response to an output from the receiver to discriminate between the presence of the liquids or the solids on the surface and providing an output indicative of whether a solid or a liquid is present on the surface, the receiver and the transmitter both being bonded to the medium.

5,796,107

INFRARED MODULATOR

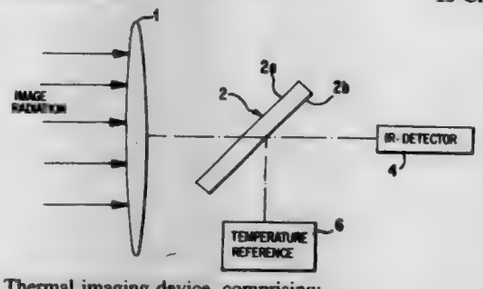
Wolf Büchtemann, Tübingen; Werner Scherber, Bermatingen, and Hartmut Downar, Salem, all of Germany, assignors to Dornier GmbH, and Zeiss-Eltro Optronic GmbH, both of Germany

Filed Aug. 1, 1996, Ser. No. 691,916

Claims priority, application Germany, Aug. 1, 1995, 195 28 094.6

Int. Cl.[6] G01J *5/62*

U.S. Cl. 250—351 **13 Claims**



1. Thermal imaging device, comprising:

a radiation detector;

a reference radiation source for calibrating the radiation detector;

a modulator comprising a layer of thermorefractive material located in an IR-radiation path of the thermal imaging device; and

means for changing temperature of the thermorefractive layer, such that the thermorefractive layer chances between an IR transparent state and an IR reflecting state;

said radiation source being oriented so that reference radiation therefrom is reflected by said modulator into said detector when said modulator is in said IR reflecting state.

5,796,108

ALPHA-BETA RADIATION DETECTOR

Dale M. Fleming, Richland; Kevin L. Simmons, Kennewick; Thomas J. Froelich, West Richland, and Gregory L. Carter, Richland, all of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Sep. 30, 1996, Ser. No. 724,534

Int. Cl.[6] G01T *1/20;* G01V *5/02*

U.S. Cl. 250—368 **40 Claims**

1. A survey probe for surveying ionizing radiation, having:

(a) a housing made of a first optically opaque plastic, the housing having a top, a nose, a bottom, sides and a heel, said top extending from the nose to the heel, and said sides extending from said top to said bottom, interior surfaces of said top, nose, heel and sides are optically reflective;

(b) a face having a scintillation material made of a plastic sheet coated with a scintillator on a sheet face of the plastic sheet, said sheet face covered with a thin metallic sheet;



(c) a retaining bracket holding said face onto the bottom of said housing together with a gasket between said retaining bracket and said face;

(d) a protective grid or screen placed over the thin metallic sheet to protect it from abrasion and tearing during surveying as the face of the survey probe is passed over surfaces which are often not geometrically flat or uniform; and

(e) a cylindrical housing containing a photomultiplier tube, said cylindrical housing attached to the housing;

wherein the improvement comprises:

the optically opaque plastic of the housing has an anti-static compound.

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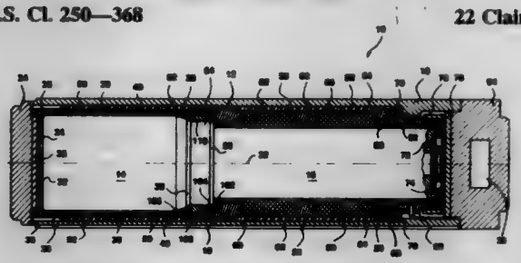
UNITIZED RADIATION DETECTOR ASSEMBLY

Larry D. Frederick, Huntsville, and Larry D. Frederick, Jr., Madison, both of Ala., assignors to Frederick Energy Products, Huntsville, Ala.

Continuation-in-part of Ser. No. 642,525, May 3, 1996. This application Mar. 12, 1997, Ser. No. 814,908

Int. Cl.[6] G01T *1/20*

U.S. Cl. 250—368 **22 Claims**



1. A unitized radiation detector assembly comprising:

means for receiving and transforming radiation into light impulses;

a rigid scintillation shield receiving said radiation receiving and transforming means, said shield having an open end;

means for receiving and quantifying said light impulses;

elastomeric material surrounding said light impulse receiving and quantifying means, said elastomeric material including a plurality of outwardly extending projections;

an inner housing surrounding said elastomeric material, said inner housing having a plurality of openings for receiving said projections;

an optical coupling positioned between said radiation receiving and transforming means and said light impulse receiving and quantifying means, wherein said optical coupling is in contact with said means for receiving and transforming radiation into light impulses, said optical coupling including an optical window and a first plurality of concentric ridges;

a compression cap located at an end of said light impulse receiving and quantifying means farthest from said optical coupling, said compression cap axially biasing said light impulse receiving and quantifying means toward said optical coupling;

a first pad positioned between said light impulse receiving and quantifying means and said compression cap; and

radially disposed shock absorbing means, wherein said shield is radially supported by said shock absorbing means.

5,796,110

GAS IONIZATION ARRAY DETECTORS FOR RADIOGRAPHY

Jigang An, and Haifeng Wu, both of Beijing, China, assignors to Tsinghua University, Beijing, China

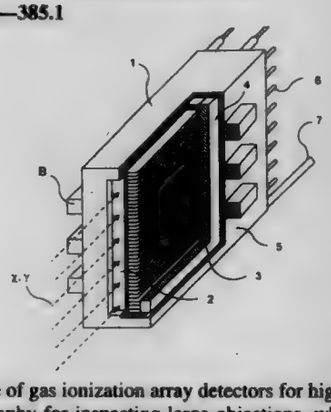
PCT No. PCT/CN94/00008, § 371 Date Sep. 18, 1995, § 102(e) Date Sep. 18, 1995, PCT Pub. No. WO94/22163, PCT Pub. Date Sep. 29, 1994

PCT Filed Jan. 31, 1994, Ser. No. 525,580

Claims priority, application China, Mar. 18, 1993, 93102728.4

Int. Cl.[6] G01T *1/185*

U.S. Cl. 250—385.1 **10 Claims**



1. A device of gas ionization array detectors for high energy X or γ-ray radiography for inspecting large objections, which is constituted by a plurality of ion-chamber units wherein each ion-chamber unit comprises a case, pressurized gas and an electrode system constituted by a plurality of strap electrodes, and the object is inspected by causing the gas to be ionized to generate output signals; the said a plurality ion-chamber units are pressurized gas array ion-chamber units which are mounted on a frame; each of array ion-chamber units has its own pressured sealed housing and respectively comprises a plurality of pixel ion-chamber elements; the central axis of each of the array ion-chamber units points to the radiation source, with an opening angle less than 2°; the radiation field defined by the total opening angle of the combined array detectors with respect to the radiation source accommodates the object to be inspected; each of the array ion-chamber units is filled with pressurized gas, with filling pressure high than 1×10^6 pascals, and lower than 1×10^7 pascals, and the product Pd of pressure P and length d of the electrode along the traveling direction of the ray is treater than 2.5×10^5 pascal-m; a set of auxiliary array ion-chamber units is provided in front of the boundary of every two array ion-chamber units to avoid the dead area of detection caused by the case of the array ion-chamber unit.

5,796,111

APPARATUS FOR CLEANING CONTAMINATED SURFACES USING ENERGETIC CLUSTER BEAMS

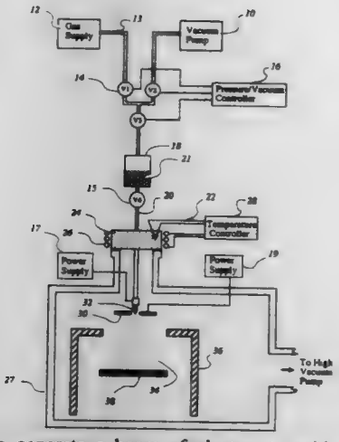
John F. Mahoney, South Pasadena, Calif., assignor to Phrasor Scientific, Inc., Duarte, Calif.

Filed Oct. 30, 1995, Ser. No. 550,302

Int. Cl.[6] H05H *3/00*

U.S. Cl. 250—492.2 **20 Claims**

1. A system to remove contaminants from a surface, the system comprising:



a source to generate a beam of clusters to said surface, said source having an opening;

a feed system to feed a liquid to said opening; and

a device to generate an electric field to exert, upon liquid fed to a vicinity of said opening, electrostatic forces higher than a surface tension of said liquid.

5,796,112

LASER SCANNING OPTICAL SYSTEM AND LASER SCANNING OPTICAL APPARATUS

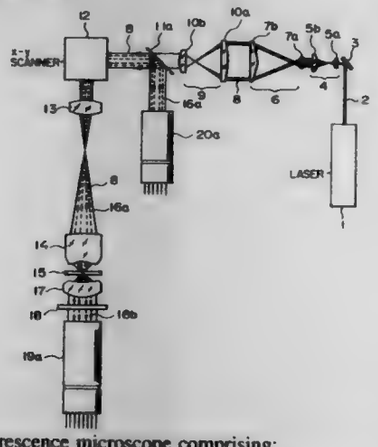
Koji Ichie, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan

Continuation of Ser. No. 525,419, Sep. 7, 1995, Pat. No. 5,583,342, which is a continuation of Ser. No. 252,789, Jun. 2, 1994, abandoned. This application Aug. 9, 1996, Ser. No. 699,058

Claims priority, application Japan, Jun. 3, 1993, 5-133659; Apr. 28, 1994, 6-091551

Int. Cl.[6] G01N *21/64*

U.S. Cl. 250—458.1 **6 Claims**



1. A fluorescence microscope comprising:

a laser scanning unit including:

a stage for supporting a fluorescence sample thereon;

a laser beam generator; and

a beam scanning unit for causing a laser beam from said laser beam generator to spot scan a sample to cause fluorescence generated by multiphoton absorption;

a first detector for detecting fluorescence emitted from a laser beam incident side of said sample to output a first signal corresponding to the detected fluorescence;

a second detector for detecting fluorescence emitted from a laser beam transmitted side of the sample to output a second signal corresponding to the detected fluorescence;

means for summing and amplifying the first and second signals; and

means for displaying a microscopic image of the sample in synchronization with scanning of the laser beam based on the amplified summed signals.

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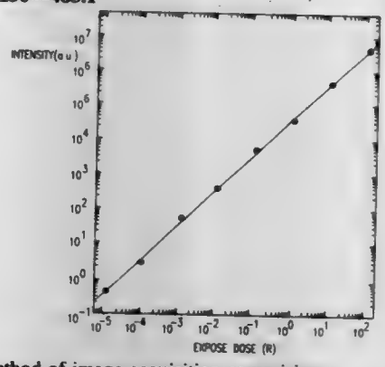
METHODS AND APPARATUS FOR RECORDING AND READING-OUT AN IONIZATION RADIATION IMAGE

Lev Nagli, Petah Tikva, and Abraham Zvi Meiri, Haifa, both of Israel, assignors to Z.M.Z. Advanced Systems Ltd., Haifa, Israel

Filed Oct. 3, 1996, Ser. No. 726,340

Int. Cl.[6] G01T *1/10*

U.S. Cl. 250—483.1 **52 Claims**



1. A method of image acquisition comprising:

providing a material having a pattern of luminescent centers;

exciting said material with excitation radiation to emit light by luminescence; and

acquiring said light.

5,796,114

EXPOSURE APPARATUS AND METHOD FOR POSITIONING WITH A HIGH ACCURACY

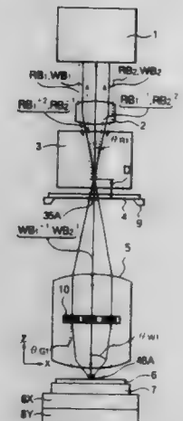
Hideo Mizutani, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 26, 1995, Ser. No. 576,999

Claims priority, application Japan, Dec. 28, 1994, 6-327919

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—548 **11 Claims**



1. An exposure apparatus for transferring a pattern formed on a mask to a photosensitive substrate comprising:

an illumination optical system for supplying exposure light to said mask;

a first irradiation optical system which irradiates a first grating mark formed with a constant pitch P_1 on one of said mask and photosensitive substrate with a first light beam from a first direction, while irradiating said first grating mark with a

second light beam, which is coherent with said first light beam, from a second direction which is different from said first direction, and said constant pitch P_1 is substantially expressed by:

$$P_1=\{\lambda_1/(2 \sin \theta_1)\}(2n-1)$$

wherein λ_1 is wavelength of said first and second light beams, θ_1 is a half of angle formed by directions in which said first and second light beams are irradiated, and n is an integer not lower than 2;

a first detector which photoelectrically converts interference light formed by a first diffracted light component, which is other than zero-order and generated from said first grating mark upon irradiation with said first light beam, and a second diffracted light component, which is other than zero-order and generated from said first grating mark upon irradiation with said second light beam, into a signal and, based on thus converted signal, detects a position of said first grating mark, said first and second diffracted light components having diffraction orders different from each other and being generated in the same direction; and

a positioning mechanism for positioning said mask and said photosensitive substrate with respect to each other based on the position of said first grating mark detected by said first detector.

5,796,115

Patent Not Issued For This Number

5,796,116

THIN-FILM SEMICONDUCTOR DEVICE INCLUDING A SEMICONDUCTOR FILM WITH HIGH FIELD-EFFECT MOBILITY

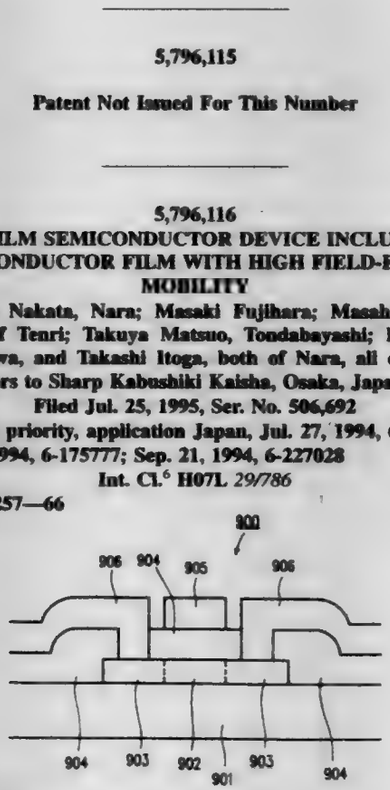
Yukihiko Nakata, Nara; Masaki Fujihara; Masahiro Date, both of Tenri; Takuya Matsuo, Tondabayashi; Michiteru Ayukawa, and Takashi Itoga, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 25, 1995, Ser. No. 506,692

Claims priority, application Japan, Jul. 27, 1994, 6-175776; Jul. 27, 1994, 6-175777; Sep. 21, 1994, 6-227028

Int. Cl.[6] H07L *29/786*

U.S. Cl. 257—66 **7 Claims**



1. A thin film transistor comprising:

a substrate;

a semiconductor film formed above the substrate;

an insulating film formed on the semiconductor substrate;

a gate electrode formed on the insulating film; and

a source and a drain electrode connected to the semiconductor film,

wherein at least a portion of the semiconductor film has a microcrystalline structure with a dark conductivity in a range of about 5×10^{-10} S/cm to about 1×10^{-7} S/cm, and

wherein the semiconductor film includes a channel portion of i-type silicon.

5,796,117

PREPARATION OF WATERBORNE SILANE/TITANIUM CHELATES COMPOSITION

Gerald L. Larson, Newtown, Pa.; James R. Steinmetz, Princeton, N.J., and Joel M. Zazyczny, Collegeville, Pa., assignors to Huls America Inc., Somerset, N.J.

Filed Jul. 15, 1996, Ser. No. 679,852

Int. Cl.[6] C09K *3/00*

U.S. Cl. 252—182.14 **19 Claims**

1. A method for preparing a stable aqueous solution of a silane/titanium chelate comprising the steps of

(a) forming a mixture in alcoholic solution of N,N-bis-2-hydroxyethy)aminopropyltriethoxysilane and a titanium chelate selected from the group consisting of titanium acetylacetonate, triethanolamine titanate and butyltitanate monomer;

(b) adding water to the mixture of step (a) in a quantity sufficient to effect the hydrolysis of the silane;

(c) completing the silane hydrolysis reaction; and

(d) removing the alcohol from the solution.

18. A stable aqueous solution of a chelate formed by the hydrolysis reaction product of bis-hydroxyethylaminopropyltriethoxysilane and a titanate selected from the group consisting of monomer that is substantially free of VOC.

5,796,118

PHOTODETECTION SEMICONDUCTOR DEVICE

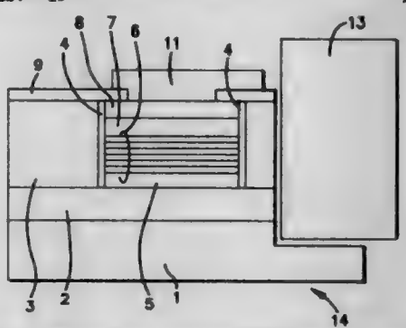
Takenori Morikawa, and Tsutomu Tashiro, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1996, Ser. No. 777,350

Claims priority, application Japan, Jan. 25, 1996, 8-010899

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—19 **7 Claims**



1. A photodetection semiconductor device comprising:

a silicon substrate;

a photodiode formed on said silicon substrate;

an Si/SiGe super-lattice layer, which forms a layer in parallel with a surface of said silicon substrate and serves as a light absorbing layer for said photodiode; and

SiGe epitaxial layers, which are formed in upper and lower portions, said SiGe epitaxial layers sandwiching said Si/SiGe super-lattice layer and serving as light absorbing layers for said photodiode, wherein a Ge concentration in each of said upper and lower SiGe epitaxial layers is set lower than Ge concentration in said Si/SiGe super-lattice layer.

5,796,119

SILICON RESONANT TUNNELING

Alan C. Seabaugh, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

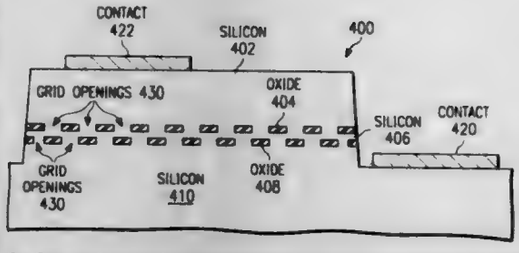
Filed Oct. 29, 1993, Ser. No. 145,267

Int. Cl.[6] H01L *29/04;29/88*

U.S. Cl. 257—25 **9 Claims**

1. A resonant tunneling diode, comprising:

(a) a first terminal, a second terminal, and a quantum well; and



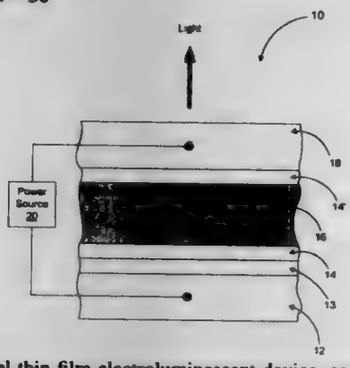
(b) first and second tunneling barriers, said first tunneling barrier separating said quantum well from said first terminal and said second tunneling barrier separating said quantum well from said second terminal, said first tunneling barrier including a region of material having the same bandgap as at least one of said first terminal and said quantum well and which abuts both said quantum well and said first terminal and also including a second region of material having a bandgap larger than at least one of said first terminal and said quantum well.

5,796,120

TUNNEL THIN FILM ELECTROLUMINESCENT DEVICE

Christopher J. Summers, Dunwoody, and Brent K. Wagner, Marietta, both of Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Dec. 28, 1995, Ser. No. 577,976
Int. Cl.[6] H01L *29/06;39/00*
U.S. Cl. 257—30 **27 Claims**



1. A tunnel thin film electroluminescent device, comprising:
a source layer;
a first tunneling barrier layer contiguously overlying said source layer, said first tunneling barrier layer having a positive conduction band off-set with respect to said source layer;
a luminescent layer contiguously overlying said first tunneling barrier layer, said luminescent layer having a negative conduction band off-set with respect to said first tunneling barrier layer, said negative conduction band off-set being greater than said positive conduction band off-set;
a second tunneling barrier layer overlying said luminescent layer; and
an electrode overlying said second tunneling barrier layer;
whereby a voltage placed across said source layer and said electrode produces luminescence in said device.

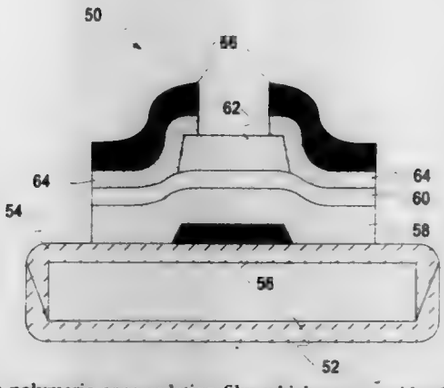
5,796,121

THIN FILM TRANSISTORS FABRICATED ON PLASTIC SUBSTRATES

Stephen McConnell Gates, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 25, 1997, Ser. No. 823,844
Int. Cl.[6] H01L *29/786;27/12*
U.S. Cl. 257—59 **38 Claims**

1. A thin film transistor comprising:
a) a substrate,



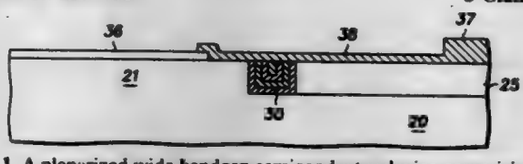
b) a polymeric encapsulation film which covers said substrate,
c) a gate electrode,
d) a gate insulating layer,
e) a semiconducting channel layer deposited on top of said gate insulating layer,
f) an insulating encapsulation layer positioned on said channel layer,
g) a source electrode,
h) a drain electrode, and
i) a contact layer situated beneath each of said source and drain electrodes and in contact with at least said channel layer
wherein said substrate is a plastic having a low glass transition temperature.

5,796,122

METHOD FOR PLANARIZING WIDE BANDGAP SEMICONDUCTOR DEVICES

Charles E. Weitzel; Edward L. Fisk, both of Mesa, and Sung P. Pack, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 566,333, Dec. 1, 1995, Pat. No. 5,677,230.
This application May 9, 1997, Ser. No. 853,283
Int. Cl.[6] H01L *29/12*
U.S. Cl. 257—76 **5 Claims**



1. A planarized wide bandgap semiconductor device comprising:
a wide bandgap semiconductor substrate selected from a group including SiC, GaN and diamond;
a mesa defined in the substrate by a trench in the substrate with a depth in the range of approximately 1 to 2 micrometers and a width in the range of 2 to 10 micrometers;
a layer of dielectric material deposited on the substrate to a height approximately equal to the height of the mesa and spaced from the mesa to define a surrounding area; and
layers of spin on glass deposited in the trench so as to fill the surrounding area and achieve a planar surface including the mesa and the layer of dielectric material.

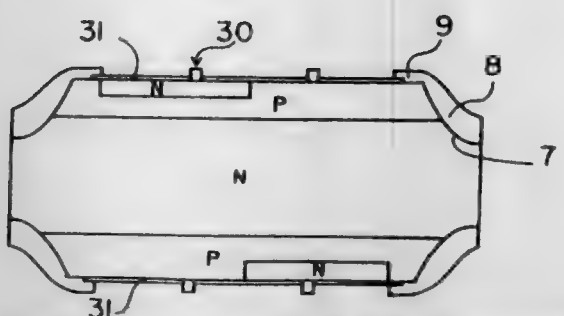
5,796,123

SEMICONDUCTOR COMPONENT MOUNTED BY BRAZING

Jean-Claude Salbreux, Saint Cyr sur Loire, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Nov. 25, 1996, Ser. No. 755,196
Claims priority, application France, Nov. 30, 1995, 95 14382
Int. Cl.[6] H01L *29/87;23/13;29/60;23/50*
U.S. Cl. 257—110 **15 Claims**

1. A mesa-type semiconductor component, comprising:



a circumferential ring formed by glassivation on at least one of its surfaces; and

at least one pad formed by said glassivation on said at least one of said surfaces, said at least one pad acting as a spacer configured to prevent a connection member from contacting said at least one of said surfaces.

5,796,124

MOS GATE CONTROLLED THYRISTOR

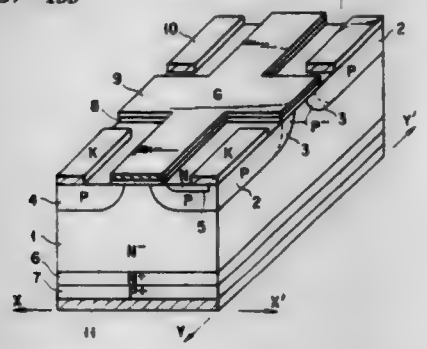
Hidetoshi Nakanishi, Kawasaki; Yasunori Usui, and Shigenori Yakushiji, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 133,434, Oct. 8, 1993, Pat. No. 5,543,639. This application Feb. 29, 1996, Ser. No. 610,070

Claims priority, application Japan, Oct. 8, 1992, 4-270172; Feb. 23, 1993, 5-056396

Int. Cl.[6] **H01L** *29/74;31/111*

U.S. Cl. 257—133 **4 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a first semiconductor region of a second conductivity type formed on a first major surface of said semiconductor substrate;

a second semiconductor region of the first conductivity type formed in said first semiconductor region;

a first electrode being formed to be in contact with both said first and second semiconductor regions;

a third semiconductor region of the second conductivity type formed on a second major surface of said semiconductor substrate;

a second electrode formed to be in contact with said third semiconductor region;

a fourth semiconductor region of the second conductivity type formed in only a part of an end portion of said first semiconductor region and in contact with said first semiconductor region and having an impurity concentration lower than that of said first semiconductor region;

a gate electrode formed above said semiconductor substrate, with an insulating film interposed, and surrounding said first and fourth semiconductor regions; and

a fifth semiconductor region of the second conductivity type formed on the first major surface of said semiconductor substrate to be adjacent to said first semiconductor region such that said semiconductor substrate is located between said first semiconductor region and fifth semiconductor region, and said gate electrode formed on said semiconductor substrate, said first semiconductor region, and said fifth semiconductor region through said insulating film, wherein said first electrode is formed to be in contact with said fifth semiconductor region.

5,796,125

HIGH BREAKDOWN VOLTAGE SEMICONDUCTOR DEVICE USING TRENCH GROOVES

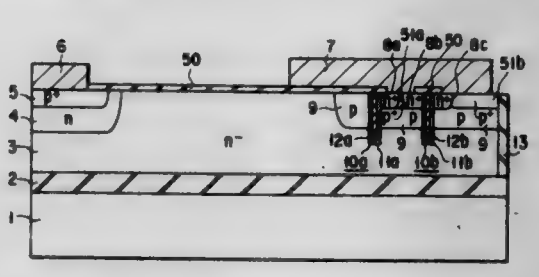
Tomoko Matsudai; Mitsuhiko Kitagawa, both of Tokyo, and Akio Nakagawa, Hiratsuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 15, 1995, Ser. No. 528,570

Claims priority, application Japan, Sep. 16, 1994, 6-221438; Sep. 30, 1994, 6-238108; Jun. 30, 1995, 7-165212

Int. Cl.[6] **H01L** *29/74;31/111;29/76;29/94*

U.S. Cl. 257—141 **25 Claims**



1. A high breakdown voltage semiconductor device comprising:

a semiconductor substrate;

an insulating film formed on said semiconductor substrate;

a first conductivity type active region formed on said insulating film;

a drain region formed in a surface portion of said active region;

a second conductivity type base region formed in a surface portion of said active region at a distance from said drain region;

first conductivity type first and second source regions formed in a surface portion of said base region;

a first gate insulating film formed on an inner surface of a first groove penetrating said base region so as to come in contact with said first source region and reaching said active region;

a first gate electrode buried in said first groove, on the inner surface of which said first gate insulating film is formed;

a second gate insulating film formed on an inner surface of a second groove penetrating said base region so as to come in contact with said second source region in a position located apart from said first groove and reaching said active region;

a second gate electrode buried in said second groove, on the inner surface of which said second gate insulating film is formed;

a source electrode put in electrical contact with said first and second source regions and said base region; and

a drain electrode put in electrical contact with said drain region,

wherein two or more channel regions are formed in a MOS structure constructed by said first and second gate insulating films, said first and second gate electrodes, said first and second source regions, said base region and said active region, and

a conditional formula ($1 \times d/w > 3.45 \times 10^{-6}$cm, is satisfied, where l is a distance between a bottom portion of one of the first and second grooves and a bottom portion of said active region w is the distance between said grooves, and d is a depth of a portion of said one of the grooves which is in contact with said active region.

5,796,126

HYBRID SCHOTTKY INJECTION FIELD EFFECT TRANSISTOR

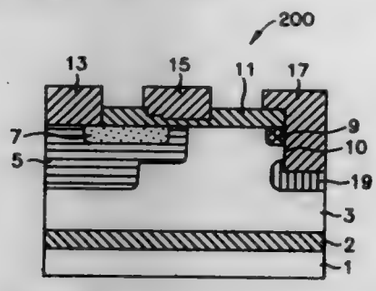
Min-Koo Han; Yearn-Ik Choi, both of Seoul; Jae-Hyung Kim, Kwangjoo, and Han-Soo Kim, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Mar. 29, 1996, Ser. No. 623,768

Claims priority, application Rep. of Korea, Jun. 14, 1995, 15732

Int. Cl.[6] H01L *29/74*

U.S. Cl. 257—141 **10 Claims**



1. A hybrid schottky injection field effect transistor integrated on a silicon layer of a first conductivity type separated from a semiconductor substrate by an insulator, comprising;

a first diffusion region of a second conductivity type and a second diffusion region of said first conductivity type said first and second diffusion regions being spaced from each other and being formed at a top surface of said silicon layer, said silicon layer comprising a space region disposed between said first and second diffusion regions;

a third diffusion region of said first conductivity type formed within said first diffusion region;

an insulating layer disposed over at least a portion of said silicon layers said second diffusion region and at least a part of said third diffusion region;

a gate electrode formed on said insulating layer at a position directly over at least a part of each of said first and third diffusion regions and said silicon layer;

a cathode electrode commonly connected to said third diffusion region and said first diffusion region; and

an anode electrode comprising electrode material which fills a trench having a side wall defined by a portion of each of said silicon layer, said second diffusion region and said insulating layer, whereby electron current of said third diffusion region is concentrated on said anode electrode.

5,796,127

HIGH ELECTRON MOBILITY TRANSISTOR

Norio Hayafuji; Yoshitsugu Yamamoto, and Hirotaka Kizuki, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 654,113, May 28, 1996, abandoned. This application Aug. 21, 1997, Ser. No. 915,791

Claims priority, application Japan, Nov. 16, 1995, 7-298117

Int. Cl.[6] H01L *29/201;29/737*

U.S. Cl. 257—194 **4 Claims**

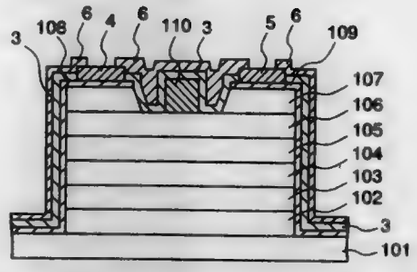
1. A semiconductor device comprising:

a compound semiconductor substrate;

an undoped channel layer disposed on the substrate;

an electron supply layer disposed on the channel layer, the electron supply layer comprising a mixed crystal semiconductor material comprising AlAs and InAs and, having a high concentration of a dopant impurity producing n type conductivity, and free of fluorine;

a Schottky barrier formation layer disposed on the electric supply layer, the Schottky barrier formation layer comprising an undoped mixed crystal semiconductor material comprising AlAs and InAs and free of fluorine;



an ohmic contact layer disposed on the Schottky barrier formation layer and having a high concentration of a dopant impurity producing n type conductivity;

a source electrode and a drain electrode on the ohmic contact layer;

a gate electrode disposed on a portion of the Schottky barrier formation layer between the source electrode and the drain electrode; and

a protective film disposed on a portion of the Schottky barrier formation layer adjacent to the gate electrode and between the source electrode and the drain electrode.

5,796,128

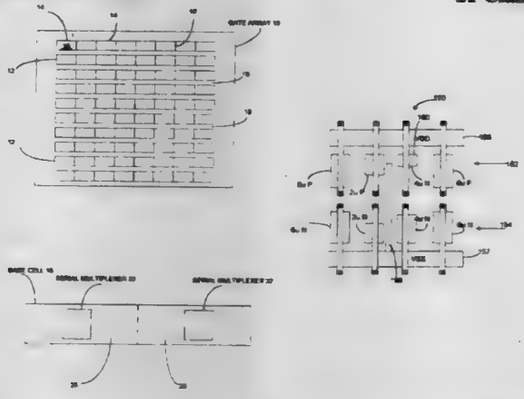
GATE ARRAY WITH FULLY WIRED MULTIPLEXER CIRCUITS

Dzung Joseph Tran, and Mark Warren Acuff, both of Hillsboro, Oreg., assignors to TransLogic technology, Inc., Beaverton, Oreg.

Filed Jul. 25, 1996, Ser. No. 695,868

Int. Cl.[6] H01L *27/105*

U.S. Cl. 257—202 **21 Claims**



1. A gate array architecture for use in a master wafer comprising:

a base cell having first and second sections isolated from each other;

a first fully wired serial multiplexer circuit within the first section, the first serial multiplexer circuit having a first number of inputs;

a second fully wired, serial multiplexer circuit within the second section, the second serial multiplexer circuit having a second number of inputs, the second number of inputs being greater than the first number of inputs;

wherein the base cell is one of a plurality of base cells in the gate array; and

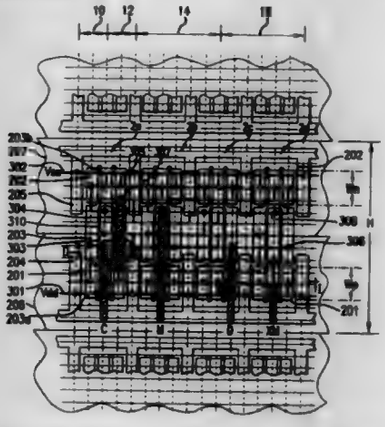
wherein the first and second serial multiplexer circuits are electrically isolated from each other.

5,796,129

MASTER SLICE TYPE INTEGRATED CIRCUIT SYSTEM HAVING BLOCK AREAS OPTIMIZED BASED ON FUNCTION

Masao Mizuno, Suwa, Japan, assignor to Seiko Epson Corp., Tokyo, Japan

Filed Aug. 1, 1994, Ser. No. 283,766
Claims priority, application Japan, Aug. 3, 1993, 5-192541
Int. Cl.[6] H01L 27/10
U.S. Cl. 257—206 16 Claims



1. A master slice type integrated circuit system comprising:

a plurality of block areas formed in a large scale integration chip;

a plurality of basic cells formed within each of said plurality of block areas, said plurality of basic cells arranged in a matrix having at least one row of basic cells, wherein each of said plurality of basic cells includes a plurality of P-channel type MOS transistors and a plurality of N-channel type MOS transistors, said plurality of P-channel type MOS transistors having a common P-type diffusion area corresponding to one of a source and a drain in each of said plurality of P-channel type MOS transistors and said plurality of N-channel type MOS transistors having a common N-type diffusion area corresponding to one of a source and a drain in each of said plurality of N-channel type MOS transistors, each of said plurality of P-channel type MOS transistors being disposed opposite to one of said plurality of N-channel type MOS transistors, and wherein channel widths W_p and W_n of said plurality of P- and N-channel type MOS transistors, respectively, within at least one of said plurality of block areas are different from channel widths W_p and W_n of said plurality of P- and N-channel type MOS transistors, respectively, within another one of said plurality of block areas;

a plurality of first wiring layers disposed over said plurality of basic cells for connecting basic cells of said at least one row of basic cells in each of said plurality of block areas together to form a function cell having a logical function; and

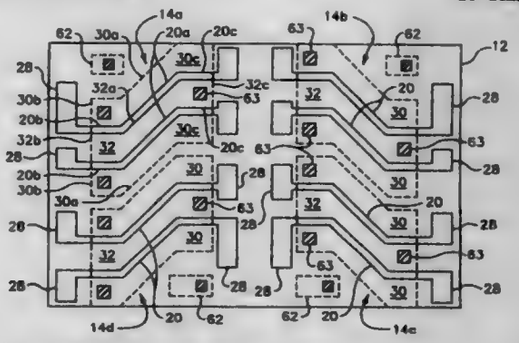
a plurality of first contacts for connecting sources and drains of said plurality of P- and N-channel type MOS transistors with said plurality of first wiring layers, said plurality of first contacts having a layout pattern which remains the same for said plurality of basic cells in each of the plurality of block areas having different channel widths W_p and W_n.

5,796,130

NON-RECTANGULAR MOS DEVICE CONFIGURATIONS FOR GATE ARRAY TYPE INTEGRATED CIRCUITS

Tim Carmichael, San Jose; Gobi Padmanabhan, Sunnyvale; Abraham Yee, Santa Clara, and Stanley Yeh, Fremont, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation of Ser. No. 485,789, Jun. 7, 1995, which is a division of Ser. No. 86,217, Jul. 1, 1993, Pat. No. 5,440,154.
This application Dec. 26, 1995, Ser. No. 578,745
Int. Cl.[6] H01L 27/02;29/78
U.S. Cl. 257—206 10 Claims



1. An integrated circuit structure, comprising:

a substrate of semiconductor material;

a plurality of MOS devices formed on said substrate;

each individual one of said plurality of MOS devices including a source region, a drain region and a gate region, said source region and said drain region being separated by a channel over which said gate regions is formed;

each individual source region including a source middle portion disposed between a pair of horizontally and vertically displaced source end portions;

each individual drain region including a drain middle portion disposed between a pair of horizontally and vertically displaced drain end portions;

each individual gate region including a gate middle portion disposed between a pair of horizontally and vertically displaced gate end portions;

each individual gate middle portion having a longitudinal axis oriented along the length of the gate middle portion;

each individual gate end portion having another longitudinal axis oriented along the length of the gate end portion; and

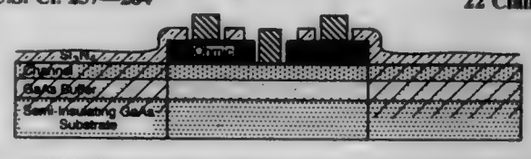
said another longitudinal axis being oriented at an acute angle to said longitudinal axis to provide a bent gate configuration for each individual MOS device.

5,796,131

METAL SEMICONDUCTOR FIELD EFFECT TRANSISTOR (MESFET) DEVICE WITH SINGLE LAYER INTEGRATED METAL

Kenichi Nakano, Beavercreek; Christopher A. Bozada, Dayton; Tony K. Quach, Kettering; Gregory C. DeSalvo, Beavercreek; G. David Via; Ross W. Dettmer, both of Dayton; Charles K. Havasy; James S. Sewell, both of Kettering; John L. Ebel, Beavercreek, and James K. Gillespie, Cedarville, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 22, 1996, Ser. No. 684,759
Int. Cl.[6] H01L 29/80
U.S. Cl. 257—284 22 Claims



1. Field effect transistor apparatus comprising the combination of:

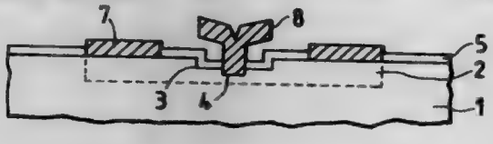
a lowermost-situated semiconductor material substrate layer;
a semiconductor material buffer layer overlaying said substrate layer;
a charged carrier-conveying semiconductor material channel layer overlaying said buffer layer;
a gate contact member of first metallic composition received on said channel layer, said gate contact member having Schottky barrier electrical characteristics with respect to said channel layer semiconductor material;
a layer of lower level to upper level composition-graded semiconductor material overlaying said channel layer in surface regions laterally adjoining said gate member;
a layer of ohmic contact semiconductor material overlaying said graded composition semiconductor material layer in said surface regions laterally adjoining said gate member;
source and drain contact members of said same first metallic composition received on said ohmic contact semiconductor material layer in laterally opposed locations with respect to said gate member, said source and drain contact members having ohmic electrical characteristics with respect to said semiconductor material of said ohmic contact layer;
a permanent secondary mask layer overlaying said layer of ohmic contact semiconductor material in regions laterally adjoining said gate contact member and said source and drain contact members;
said secondary mask layer being a residual mask member retained after use during fabrication of said field-effect transistor apparatus.

5,796,132

SEMICONDUCTOR DEVICE

Hirofumi Nakano, and Osamu Ishihara, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 566,091, Dec. 1, 1995. This application Aug. 13, 1997, Ser. No. 910,349
Claims priority, application Japan, Jul. 14, 1995, 7-178732
Int. Cl.[6] H01L *31/0328;29/80*
U.S. Cl. 257—284 **7 Claims**



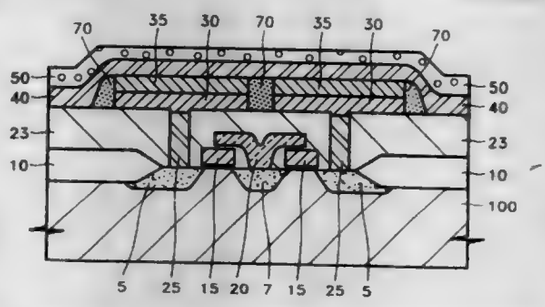
1. A semiconductor device comprising:
a semiconductor substrate including an active layer at an upper surface of said semiconductor substrate;
a first-stage recess groove in said semiconductor substrate in said active layer, the first-stage recess groove having a bottom surface and side surfaces;
a high resistivity surface passivation film covering the upper surface of said semiconductor substrate and disposed on and covering the side surfaces and part of the bottom surface of the first-stage recess groove;
an ohmic electrode disposed on the upper surface of said semiconductor substrate in and filling a first opening in said surface passivation film, the first opening exposing the upper surface of said semiconductor substrate;
a second-stage recess groove within the first-stage recess groove and including a second opening in said surface passivation film, within the first-stage recess groove, the second opening exposing said active layer; and
a gate electrode disposed within the first-stage and second-stage recess grooves and contacting said active layer in and filling the second opening in said surface passivation film, wherein said gate electrode has a T-shape in a cross section transverse to said semiconductor substrate and said high resistivity surface passivation film contacts but does not cover either of said ohmic electrode and said gate electrode.

5,796,133

SEMICONDUCTOR DEVICE CAPACITOR HAVING LOWER ELECTRODES SEPARATED BY LOW DIELECTRIC SPACER MATERIAL

Kee-Won Kwon, Suwon, and Chang-Seok Kang, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 187,037, Jan. 27, 1994, abandoned. This application Jan. 13, 1997, Ser. No. 782,827
Claims priority, application Rep. of Korea, Jan. 27, 1993, 1993 963
Int. Cl.[6] H01L *27/108*
U.S. Cl. 257—295 **16 Claims**



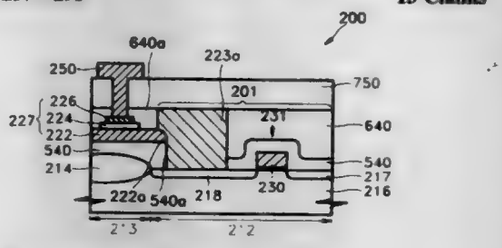
1. A semiconductor device having a capacitor, said semiconductor device comprising:
a plurality of lower electrodes each having side surfaces;
a spacer formed on each of the side surfaces of said lower electrodes, said spacer comprising a material having a low dielectric constant, and at least two of said spacers and corresponding lower electrodes forming rounded edges, the height of said spacers not exceeding the height of said lower electrodes;
a ferroelectric film formed over said plurality of lower electrodes and over said spacers, including over said rounded edges; and
an upper electrode formed over said ferroelectric film including the film formed over said rounded edges.

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MEMORY CELLS WITH A REDUCED AREA CAPACITOR INTERCONNECT AND METHODS OF FABRICATION THEREFOR

Yun-gi Kim, Kangwon-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 20, 1997, Ser. No. 803,285
Claims priority, application Rep. of Korea, Feb. 21, 1996, 96-4067
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—295 **13 Claims**



1. A memory cell, comprising;
a substrate;
an insulation region on said substrate;
a transistor including a gate on said substrate and a source/drain region in said substrate disposed between said gate and said insulation region;
a capacitor including an electrode overlying said insulation region, said electrode having a lateral surface adjacent said source/drain region; and

a conductive interconnecting region on said substrate which extends from said source/drain region to contact said lateral surface of said first electrode of said capacitor.

5,796,135

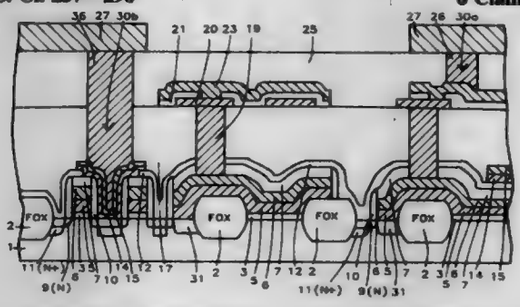
PROCESS TO FABRICATE STACKED CAPACITOR DRAM AND LOW POWER THIN FILM TRANSISTOR SRAM DEVICES ON A SINGLE SEMICONDUCTOR CHIP

Mong-Song Liang; Shou-Gwo Wuu; Chen-Jong Wang, and Chung-Hui Su, all of Hsin-Chu, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Division of Ser. No. 623,243, Mar. 28, 1996, Pat. No. 5,716,881. This application Oct. 29, 1997, Ser. No. 960,142

Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—296 **6 Claims**



1. A stacked capacitor DRAM structure, and a thin film transistor SRAM structure, on a single semiconductor substrate, comprising:

field oxide regions on the surface of said semiconductor substrate;

device regions for said DRAM structure, and for said SRAM structure, between said field oxide regions;

two, first polycide gate structures on underlying gate oxide, on said device region of said DRAM structure;

two, said first polycide gate structures on said underlying gate oxide, on said device region of said SRAM structure;

a buried contact structure, for said SRAM structure, partially overlying said underlying gate oxide, and partially overlying said semiconductor substrate;

a second polycide gate structure contacting said semiconductor substrate, between said two, first polycide gate structures, of said DRAM structure;

said second polycide gate structure contacting said semiconductor substrate, between said two, first polycide gate structures, of said SRAM structure;

a first insulator layer, with a contact hole filled with a capacitor structure, contacting said semiconductor substrate, and adjacent to said first polycide gate, of said DRAM structure;

said first insulator layer, with contact holes filled with polysilicon, contacting top surface of said buried contact structure of said SRAM structure;

a thin film transistor structure, on top surface of said first insulator layer, and contacting said polysilicon, in said contact hole, of said SRAM structure;

a first via hole in an overlying second insulator layer, and in an underlying said first insulator layer, and filled with tungsten, contacting top surface of said second polycide gate structure, of said DRAM structure;

said first via hole in said overlying second insulator layer, and in underlying said first insulator layer, and filled with tungsten, contacting top surface of said second polycide gate structure, of said SRAM structure;

a second via hole in said second insulator layer, filled with tungsten, and contacting top surface of said capacitor structure, of said DRAM structure;

said second via hole in said second insulator layer, filled with tungsten, and contacting top surface of said thin film transistor structure, of said SRAM structure; and

metal contact structures to said tungsten filled via holes.

5,796,136

DRAM SEMICONDUCTOR DEVICE WITH COMPOSITE BIT LINE

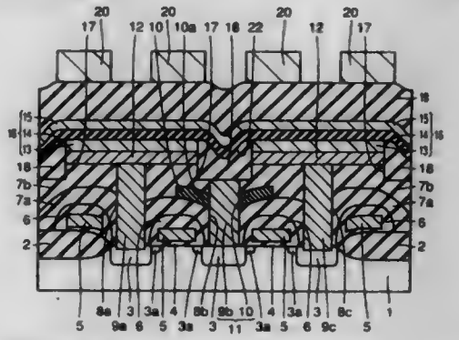
Hiroki Shinkawata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 612,524

Claims priority, application Japan, Oct. 26, 1995, 7-278924

Int. Cl.[6] H01L *27/108*

U.S. Cl. 257—306 **8 Claims**



1. A semiconductor memory device, comprising:

a semiconductor substrate of a first conductivity type having a major surface;

first and second impurity diffusion layers of a second conductivity type formed with a space therebetween, defining a channel region at the major surface of said semiconductor substrate;

a gate electrode formed on said channel region with a gate insulating layer interposed;

a bit line formed on said first impurity diffusion layer, and having a protruded portion at the upper surface located above a contact portion with said first impurity diffusion layer; and

a capacitor electrically connected with said second impurity diffusion layer, wherein

said bit line includes a column-like portion extending upward, formed on the surface of said first impurity diffusion layer, and a film-like portion, having a hole therein, connected to said column-like portion by receiving said column-like portion within said hole and extending in a direction almost parallel to the major surface of said semiconductor substrate, and

an upper portion of said column-like portion is protruded from the top surface of said film-like portion thereby forming said protruded portion.

5,796,137

SEMICONDUCTOR MEMORY DEVICE HAVING CAPACITOR OF THIN FILM TRANSISTOR STRUCTURE

Kiyofumi Ochii, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

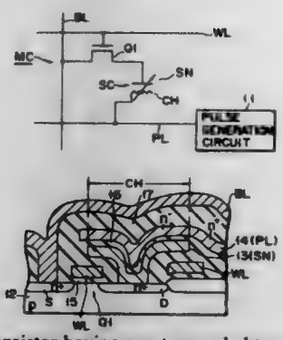
Division of Ser. No. 468,385, Jun. 6, 1995, Pat. No. 5,563,434, which is a continuation of Ser. No. 320,777, Oct. 11, 1994, abandoned, which is a continuation of Ser. No. 160,287, Dec. 2, 1993, abandoned, which is a continuation of Ser. No. 704,924, May 23, 1991, abandoned. This application Aug. 9, 1996, Ser. No. 694,668

Claims priority, application Japan, May 24, 1990, 2-134938

Int. Cl.[6] H01L *29/92;* **G11C** *11/401;11/409*

U.S. Cl. 257—306 **10 Claims**

1. A semiconductor memory device having a word line and a bit line, the semiconductor memory device comprising:



a selection transistor having a gate coupled to the word line and a current path having a first end coupled to the bit line, and a second end;

a capacitor having a storage node coupled to the second end of the current path and a plate electrode insulated from said storage node, a portion of said plate electrode in opposition to the storage node having an impurity concentration lower than a remaining portion thereof and serving as a channel region, the plate electrode having no direct electrical connection with the second end;

pulse generation means for supplying a pulse to said plate electrode; and

means, operative during an occurrence of the pulse, for enabling the word line.

5,796,138

SEMICONDUCTOR MEMORY DEVICE HAVING A TREE TYPE CAPACITOR

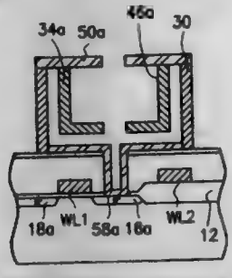
Fang-Ching Chao, Hsinchu, Taiwan, assignor to United Microelectronics Corporation, Taiwan

Filed Nov. 29, 1996, Ser. No. 757,670

Claims priority, application Taiwan, Aug. 16, 1996, 85110007

Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—306 **27 Claims**



1. A storage capacitor electrode structure for use in a semiconductor memory cell including a transfer transistor formed on a substrate, comprising:

a first insulating layer extending over the transfer transistor;

a first conducting layer which penetrates the first insulating layer and contacts a source/drain region of the transfer transistor;

a second conducting layer in contact with the first conducting layer at a periphery thereof and extending away from the substrate;

a third conducting layer in contact with the second conducting layer and extending from an end of the second conducting layer in a direction parallel to the substrate; and

a fourth conducting layer having an end in contact with the third conducting layer, with a remainder of said fourth conducting layer being free of contact with said first, second and third conducting layers, said fourth conducting layer extending from a bottom surface of the third conducting layer;

wherein the storage capacitor electrode structure includes the first, second, third and fourth conducting layers.

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SEMICONDUCTOR DEVICE

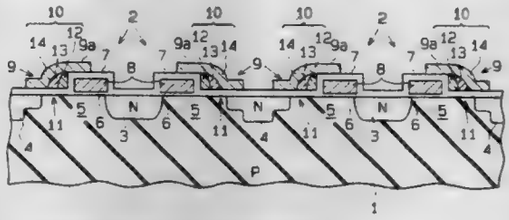
Kenji Fukase, Ogaki, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 20, 1996, Ser. No. 603,747

Claims priority, application Japan, Feb. 23, 1995, 7-035656; Jan. 22, 1996, 8-008581

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—315 **20 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a first conductivity and first and second regions spaced apart from each other;

a projection located on said semiconductor substrate and containing a first impurity which is capable of diffusing into said first region and which when present in said first region causes said first region to have a second conductivity;

said first region being directly below said projection and comprising said impurity from said projection;

an insulating layer on said projection and said semiconductor substrate;

a gate electrode located on said insulating layer; and

a channel region between said first and second regions in said semiconductor substrate.

5,796,140

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE AND A METHOD OF MAKING THE SAME

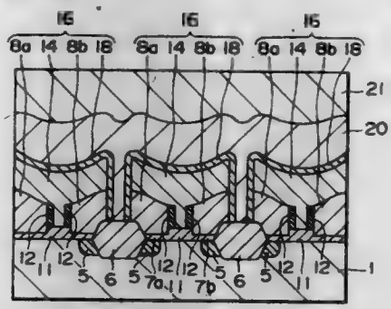
Yugo Tomioka, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 21, 1995, Ser. No. 517,022

Claims priority, application Japan, Aug. 23, 1994, 6-221010

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—316 **10 Claims**



1. A nonvolatile semiconductor memory device including a plurality of memory cells, each of said memory cells including a MOS type field-effect transistor having a floating gate, said semiconductor memory device comprising:

a semiconductor substrate;

an element-isolation structure formed on a surface of said semiconductor substrate so as to define a plurality of element regions, each of said element regions being defined between at least two linear portions, which extend in parallel to a longitudinal direction, of said element-isolation structure;

each of said MOS transistors being formed in one of said element regions and including a gate oxide film formed on the surface of said semiconductor substrate and having tunneling oxide films at both end portions of said gate oxide film, each of said MOS transistors further including a pair of impurity

diffusion layers constituting its source and drain, respectively, formed in the surface of said semiconductor substrate at its regions below respective parts of said tunneling oxide films so that said tunneling oxide films overlap partially with said impurity diffusion layers, respectively; and

a pair of separating regions extending from longitudinal center lines of said two linear portions, respectively, perpendicular to the surface of said substrate, each of said separating regions being effective to electrically separate the floating gate of the memory cell formed in one of the element regions defined between said two linear portions from the floating gate of the memory cell formed in another element region adjacent to said one element region.

5,796,141

COMPACT CONTACTLESS TRENCHED FLASH MEMORY CELL

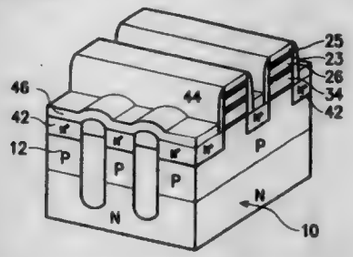
Ruei-Ling Lin, Hsiung; Ching-Hsiang Hsu, and Gary Hong, both of Hsinchu, all of Taiwan, assignors to United Microelectronics Corporation, Taiwan

Filed Jan. 23, 1997, Ser. No. 784,588

Claims priority, application Taiwan, May 31, 1996, 85106472

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—316 **33 Claims**



1. A compact contactless trenched flash memory array for semiconductor EEPROM devices, said memory array comprising a plurality of memory cell units, each of said cell units including a body line, source and drain regions and a stacked gate constructed over a wafer substrate, wherein said source and drain regions are buried regions, said body line being isolated by the buried source and drain regions, said substrate and trenches formed to cut deep down to the substrate such that said buried source and drain regions, said substrate and said trenches surround said body line; and said stacked gate substantially sits directly atop said body line, and wherein said stacked gate includes a first polysilicon layer, an oxide-nitride-oxide configuration, a second polysilicon layer, a pad oxide layer and a nitride layer.

5,796,142

SOI COMPACT CONTACTLESS FLASH MEMORY CELL

Ruei-Ling Lin, Kao Hsiung City; Ching-Hsiang Hsu, and Gary Hong, both of Hsinchu City, all of Taiwan, assignors to United Microelectronics Corporation, Taiwan

Filed Jan. 22, 1997, Ser. No. 786,908

Claims priority, application Taiwan, May 31, 1996, 85106473

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—316 **10 Claims**

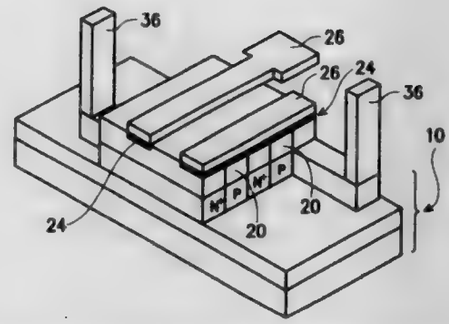
1. A compact contactless flash memory array for semiconductor EEPROM devices comprising a plurality of memory cell units,

wherein each of said cell units includes a body line, source and drain lines and a stacked gate constructed over a silicon-on-insulator wafer, and wherein:

said source and drain lines are buried lines;

said body line is isolated by surrounding buried source/drain lines and a SiO_2 layer of said silicon-on-insulator wafer;

said stacked gate including a first polysilicon layer, an oxide-nitride-oxide configuration and a second polysilicon layer; and



said source and drain buried lines sandwiches said body line, and said stacked gate substantially sits directly atop said body line.

5,796,143

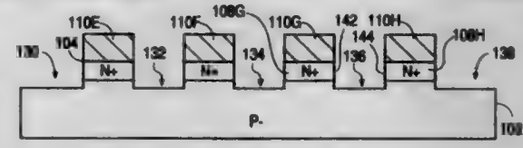
TRENCH TRANSISTOR IN COMBINATION WITH TRENCH ARRAY

H. Jim Fulford, Jr., Austin; Mark I. Gardner, Cedar Creek, and Derick J. Wristers, Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 30, 1996, Ser. No. 739,597

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—330 **25 Claims**



1. An IGFET in combination with a trench array, comprising:

a semiconductor substrate including first and second x-direction trenches and first, second and third y-direction trenches generally orthogonal to intersecting with the x-direction trenches, wherein the x-direction trenches and the first and second y-direction trenches surround a first generally rectangular region of the substrate, the x-direction trenches and the second and third y-direction trenches surround a second generally rectangular region of the substrate, and the second y-direction trench is between the first and second substrate regions;

a gate insulator on a bottom surface of the second y-direction trench;

first and second spacers in the second y-direction trench and adjacent to first and second substrate regions, respectively;

a gate electrode on the gate insulator and the spacers and in the second y-direction trench;

a source in the first substrate region and beneath the bottom surface; and

a drain in the second substrate region and beneath the bottom surface.

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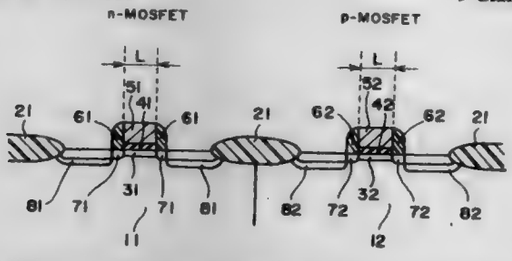
Patent Not Issued For This Number

5,796,145

SEMICONDUCTOR DEVICE COMPOSED OF MOSFET HAVING THRESHOLD VOLTAGE CONTROL SECTION

Norifumi Sato, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 707,824, Sep. 4, 1996, abandoned, which is a continuation of Ser. No. 353,502, Dec. 9, 1994, abandoned. This application Apr. 21, 1997, Ser. No. 843,834
Claims priority, application Japan, Dec. 13, 1993, 5-311506
Int. Cl.[6] H01L 29/76
U.S. Cl. 257—336 9 Claims



1. A semiconductor device comprising:

a MOSFET disposed on a semiconductor substrate and having a source region and a drain region of a first conductivity type, a gate electrode, and an ion implanted channel section disposed between said source and drain regions and lying directly beneath and within an extent of said gate electrode and having a width equal to said gate electrode; and

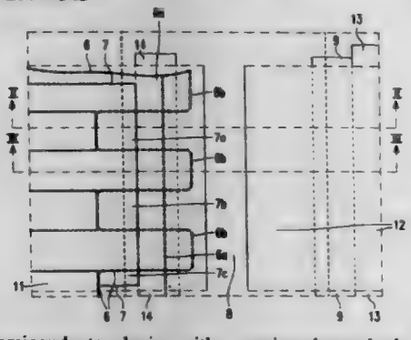
a pair of threshold voltage control sections of a second conductivity type, one being disposed in a substrate surface between said channel section and said source region and the other being disposed in the substrate surface between said channel section and said drain region, and each of said threshold voltage control sections having an impurity concentration sufficiently high such that a threshold voltage of said MOSFET can be controlled, said threshold voltage control sections also being disposed substantially outside of said extent of said gate electrode.

5,796,146

SEMICONDUCTOR DEVICE HAVING A LATERAL INSULATED GATE BIOPOLAR TRANSISTOR

Adrianus W. Ludikhuize, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 22, 1996, Ser. No. 621,758
Claims priority, application European Pat. Off., Mar. 23, 1995, 95200726
Int. Cl.[6] H01L 29/76;29/74;31/111
U.S. Cl. 257—343 6 Claims



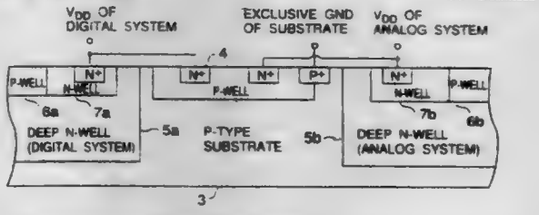
1. A semiconductor device with a semiconductor body which at a surface is provided with a circuit element of the lateral insulated gate bipolar transistor type, and which comprises a surface layer of a first conductivity type adjoining the surface and contacting a substrate region of a second, opposed conductivity type at a pn junction at a side opposed to the surface, which circuit element comprises a base region of the second conductivity type provided in the surface layer, a source comprising a surface zone of the first conductivity type provided in the base region, a drift region formed by a portion of the surface layer of the first conductivity type which adjoins the base region, a drain separated from the base region by the drift region and comprising a surface zone of the second conductivity type, and an insulated gate electrode above a channel region formed by a portion of the base region situated between the drift region and the source, characterized in that the source comprises sub-regions which, seen at the surface, are situated adjacent but spaced apart from one another, and in that the base region comprises a first sub-zone and a second sub-zone, the first sub-zone extending from the surface down to a comparatively small depth into the surface layer and separating said sub-regions of the source from the surface layer, and the second sub-zone of the base region extending from the surface down to a comparatively great depth into the surface layer and, seen at the surface, extending in a lateral direction between the sub-regions of the source farther into the drift region than do the adjoining portions of the first sub-zone.

5,796,147

SEMICONDUCTOR DEVICE HAVING A PLURALITY OF CIRCUITS DRIVEN BY DIFFERENT POWER SOURCES AND FORMED ON THE SAME SUBSTRATE

Masayoshi Ono, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 9, 1994, Ser. No. 288,188
Claims priority, application Japan, Aug. 9, 1993, 5-197350
Int. Cl.[6] H01L 23/62
U.S. Cl. 257—355 13 Claims



1. A semiconductor device comprising:

a semiconductor substrate having at least a first well and a second well which are electrically divided from each other;

a first electric circuit formed in said first well and connected to a first circuit power source through a source terminal;

a second electric circuit formed in said second well and connected to a second circuit power source through a source terminal;

a substrate ground well formed on said semiconductor substrate and connected to a third circuit power source which outputs a stable reference potential;

a first protection diode connected between said source terminal of said first power source and said substrate ground well in the manner of being a reverse bias direction; and

a second protection diode connected between said source terminal of said second power source and said substrate ground well in the manner of being a reverse direction;

whereby interference between said first and second power sources is prevented by said first and second protection diodes;

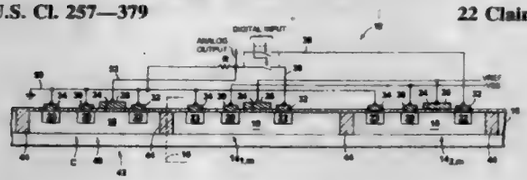
wherein said first protection diode and/or said second protection diode comprises or respectively comprise any or combination of a diode, bipolar transistors which are connected with each other in a diode connection, and metal oxide layer semiconductor (MOS) transistors which are connected with each other in a diode connection.

5,796,148

INTEGRATED CIRCUITS

Christopher Gorman, Ballykeefe, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Filed May 31, 1996, Ser. No. 644,685
Int. Cl.[6] H01L 27/10;27/15
U.S. Cl. 257—379 22 Claims



1. An integrated circuit chip having an electrical circuit formed therein, comprising:

a plurality of substantially identical devices formed in a region of the chip;

a first portion of the plurality of substantially identical devices being formed in an active device region of the chip, such first portion of the devices being connected as active devices for the electrical circuit;

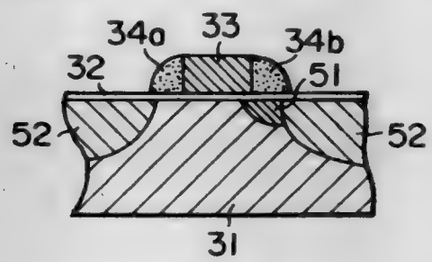
a second portion of the plurality of substantially identical devices being disposed peripherally, and adjacent, to the active device region, a plurality of such second portion of the devices being electrically interconnected to form a passive device for the electrical circuit.

5,796,149

SEMICONDUCTOR MEMORY USING DIFFERENT CONCENTRATION IMPURITY DIFFUSED LAYERS

Fumitaka Sugaya, and Yasuo Sato, both of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 524,672
Claims priority, application Japan, Sep. 9, 1994, 6-242099; Mar. 10, 1995, 7-079819
Int. Cl.[6] H01L 29/76;29/94
U.S. Cl. 257—391 12 Claims



1. A semiconductor memory comprising:

a first memory cell including a first MOS transistor having a pair of first impurity diffused layers of a second electric conduction type, which have relatively high concentration and are provided within a semiconductor substrate of a first electric conduction type at both sides of a gate electrode, and also having a pair of second impurity diffused layers of the second electric conduction type which have relatively low concentration and are provided within the semiconductor substrate inside said pair of first impurity diffused layers;

a second memory cell including a second MOS transistor having said pair of first impurity diffused layers and only one of said pair of second impurity diffused layers; and

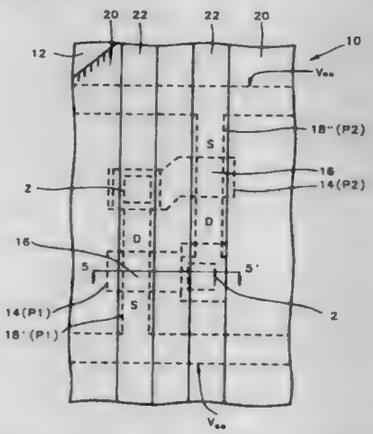
a third memory cell including a third MOS transistor having said pair of first impurity diffused layers and neither of said pair of second impurity diffused layers.

5,796,150

HIGH-PERFORMANCE AND RELIABLE THIN FILM TRANSISTOR (TFT) USING PLASMA HYDROGENATION WITH A METAL SHIELD ON THE TFT CHANNEL

Shou-Gwo Wuu, Chu-Tong; Kan-Yuan Lee, Hou-P, and Mong-Song Liang, Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Inc., Hsin-Chu, Taiwan

Division of Ser. No. 684,818, Jul. 22, 1996, Pat. No. 5,686,335.
This application Jul. 24, 1997, Ser. No. 899,673
Int. Cl.[6] H01L 29/76;9/94;31/062;31/113
U.S. Cl. 257—401 3 Claims



1. A thin film transistor with improved electrical characteristics comprised of:

a semiconductor substrate having a partially completed static random access memory (SRAM) device comprised of device areas and field oxide areas and further having field effect transistors (FETs) and word lines formed from a first polysilicon layer, and further thin film transistors comprised of;

a first insulating layer on said substrate;

a patterned second polysilicon layer forming gate electrodes for said thin film transistors;

a second insulating layer forming a gate oxide on said gate electrodes;

a patterned N^- doped third polysilicon layer on said second insulating layer over said gate electrodes having ion implanted P doped regions adjacent to said N^- doped third polysilicon layer over said gate electrodes, thereby providing N^- polysilicon channel regions for said gate electrodes with P-doped portions of said third polysilicon layer providing source/drain regions;

a conformal third insulating layer on said patterned N^- polysilicon channel regions and elsewhere on said substrate;

a patterned metal layer on said third insulating layer with portions of said patterned metal extending completely over said N^- doped polysilicon channel regions, thereby providing metal shielding for said N^- doped channel regions and further exposed to a hydrogen plasma thereby reducing interface traps at the interface between said patterned third polysilicon layer and said gate oxide;

said patterned metal layer also providing bit lines for said static random memory device;

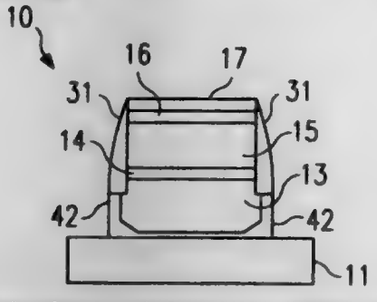
a fourth insulating layer on said patterned metal layer and elsewhere on said substrate, and thereby passivating said thin film transistors.

5,796,151

SEMICONDUCTOR STACK HAVING A DIELECTRIC SIDEWALL FOR PREVENTION OF OXIDATION OF TUNGSTEN IN TUNGSTEN CAPPED POLY-SILICON GATE ELECTRODES

Wei-Yung Hsu, Dallas; Dirk N. Anderson, and Robert Kraft, both of Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1996, Ser. No. 770,019
Int. Cl.[6] H01L 29/76;29/94;31/62;23/58
U.S. Cl. 257—410 7 Claims



1. A semiconductor stack formed on a substrate, said stack comprising:

a gate oxide layer formed on said substrate;

a poly-silicon layer formed on said gate layer oxide, wherein said poly-silicon layer and said gate oxide layer have an oxide sidewall;

a diffusion barrier layer formed on said poly-silicon layer; and

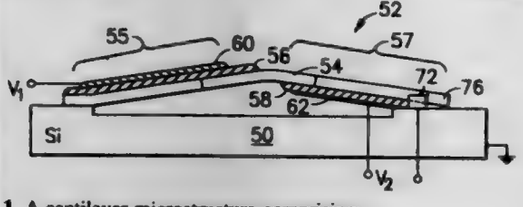
a conducting layer formed on said diffusion barrier layer, said conducting layer selected from at least one of the group of materials consisting of tungsten and molybdenum wherein said diffusion barrier layer and said conducting layer having a sidewall barrier comprised of SiN_x.

5,796,152

CANTILEVERED MICROSTRUCTURE

William N. Carr, Montclair, and Xi-qing Sun, Kearny, both of N.J., assignors to Roxburgh Ltd., Douglas, Isle of Man

Filed Jan. 24, 1997, Ser. No. 787,281
Int. Cl.[6] H01L 29/82
U.S. Cl. 257—415 15 Claims



1. A cantilever microstructure comprising:

a substrate;

a cantilever arm having a length dimension extending between a proximal end connected to said substrate and a free distal end, said cantilever arm including at least a first section and a second section, respectively disposed at different locations along said length dimension, said cantilever arm comprised of a material exhibiting a first thermal coefficient of expansion (TCE);

contact means positioned near said distal end;

first layer means positioned on a surface of said cantilever arm in said first section, said first layer means exhibiting a second TCE which is different from the first TCE;

second layer means positioned on a surface of said cantilever arm in said second section, said second layer means exhibiting a third TCE which is different from the first TCE;

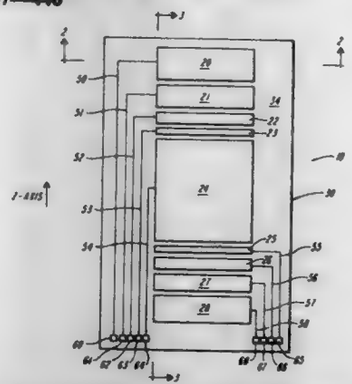
control means for selectively applying signals to said first layer means and/or said second layer means to cause a flexure of said cantilever arm so as to bring said distal end into or out of contact with said contact means.

5,796,153

VARIABLE-RESPONSE X-RAY DETECTION ASSEMBLIES AND METHODS OF USING SAME

Sorin Marcovici, Lexington, Mass., assignor to Analogic Corporation, Peabody, Mass.

Continuation-in-part of Ser. No. 436,572, May 8, 1995, Pat. No. 5,587,611. This application Sep. 12, 1995, Ser. No. 527,268
Int. Cl.[6] H01L 31/105;31/117
U.S. Cl. 257—446 52 Claims



1. A coplanar, non-dielectrically isolated photodiode for X-ray detection comprising semiconductor means having an absorption face and adjoining said face: (a) a first doped region having a first polarity and defined by planar walls extending substantially perpendicularly from said absorption face into said semiconductor means to a first depth; (b) a second doped region having a polarity opposite that of said first doped region and defined by planar walls extending substantially perpendicularly from said absorption face into said semiconductor means to a second depth that is substantially equal to or greater than said first depth; (c) at least a third doped region having the same polarity as that of said first doped region and defined by planar walls extending substantially perpendicularly from said absorption face into said semiconductor means to a third depth, said second doped region being spaced from said first doped region along a first axis, and said third doped region being spaced from said first doped region along a second axis which is orthogonal to said first axis; (d) a substantially undoped region extending from said absorption face into said semiconductor means so as to separate and completely surround said first, second and third doped regions and to create a single p-n junction between said first and second doped regions; and (e) first-polarity electrical contact means connected to said first and third doped regions along said absorption face for selectively activating said first and third doped regions individually or simultaneously.

5,796,154

SOLID-STATE IMAGING DEVICE WITH DUAL LENS STRUCTURE

Yoshikazu Sano, Osaka; Yoko Shigeta, Nara, and Hiromitsu Aoki, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

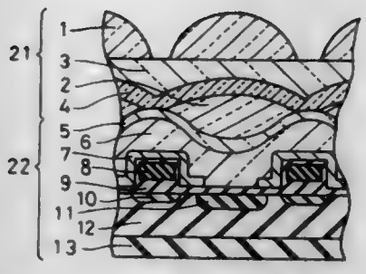
Filed Aug. 31, 1995, Ser. No. 522,131
Claims priority, application Japan, May 22, 1995, 7-122866
Int. Cl.[6] H01L 31/0232
U.S. Cl. 257—432 13 Claims

1. A solid-state imaging device, comprising:

a semiconductor substrate having a solid-state imaging element formed thereon, the solid state imaging element comprising a plurality of photodiode parts on its surface;

a semiconductor element surface protective coating above the solid-state imaging element;

a plurality of lower microlenses above the protective coating, one of the lower microlenses being located at a position corresponding to the position of a corresponding one of the photodiode parts and having a convex shape of increased thickness at a central part, the central part of the convex shape extending in a direction toward the substrate;



an intermediate layer above the lower microlenses;

a plurality of upper microlenses above the intermediate layer, one of the upper microlenses being located at a position corresponding to the position of a corresponding one of the photodiode parts, a single upper microlens and a single lower microlens being provided for each photodiode part;

wherein the upper and lower microlenses have substantially the same photorefractive index and substantially equivalent photopermeability, the photorefractive index of the upper and lower microlenses being greater than that of the intermediate layer, and being greater than the average refractive index of the portion of the solid state imaging device from the protective coating to the photodiode part.

5,796,155

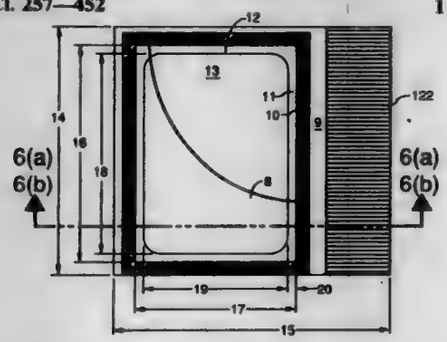
SCHOTTKY BARRIER INFRARED DETECTOR ARRAY WITH INCREASED EFFECTIVE FILL FACTOR

Freeman D. Shepherd, Chelmsford, and Jonathan M. Mooney, Winchester, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 502,407, Jul. 14, 1995, abandoned. This application Jun. 25, 1997, Ser. No. 903,392

Int. Cl.[6] H01L *27/146;31/07;31/108*

U.S. Cl. 257—452 **1 Claim**



1. A Schottky barrier infrared detector comprising:

a semiconductor substrate which has a first p-type doping level ranging between 10^{14} cm^{-3} and 10^{15} cm^{-3};

a metallic photoemissive element which forms an active infrared detection area placed on said first semiconductor substrate to function as a photodetector in an infrared portion of the electromagnetic spectrum and produce a detector signal by internal photoemission of holes over an electrical barrier, where it has an interface with the semiconductor substrate;

an n-type guard ring implant with an outer edge and an inside edge that circumscribes the metallic photoemissive element, but whose lateral spreading of its p-type depletion region under said photoemissive element acts as an iris, which reduces the active infrared detection area of said photoemissive element, thereby reducing detector signal and producing a reduced active area in the active infrared detection area; and

a second p-type doping region, in the semiconductor substrate, having a shape as a closed thin strip and open in its center, similar to a picture frame, beside and contiguous with the inside edge of the guard ring implant, at its interface with the metallic photoemissive element, which acts as a depletion termination barrier, wherein said second p-type doping region area has a second p-type doping level, in a region of the specified shape, that ranges between ten and five hundred times the first p-type doping level of the semiconductor substrate, thereby pinning the guard ring implant's p-depletion region very close to the inside edge of the n-type guard ring implant, thereby having the effect of dilating the iris caused by the depletion region, so as to recover most of the lost active area, resulting in an increase in detector signal and detector emission efficiency, and preserve thereby an original barrier height of the metallic photoemissive element, so as to avoid the necessity of additional cooling.

5,796,156

HIGH-VOLTAGE SEMICONDUCTOR DEVICE WITH INTEGRATED EDGE STRUCTURE AND ASSOCIATED MANUFACTURING PROCESS

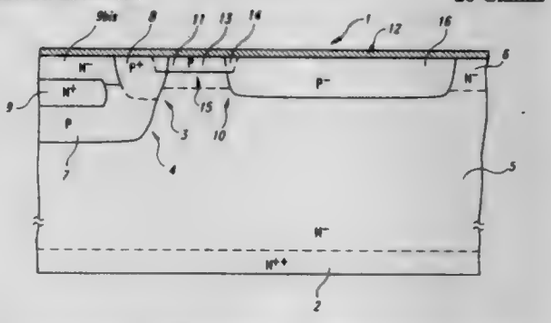
Salvatore Leonardi, Aci S. Antonio, and Davide Bolognesi, Argenta, both of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Jun. 28, 1996, Ser. No. 671,851

Claims priority, application European Pat. Off., Jul. 31, 1995, 95830343

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—494 **20 Claims**



9. A process for manufacturing a semiconductor device including:

a substrate having a first conductivity type;

a first epitaxial layer of the same conductivity type of the substrate formed over the substrate;

a second epitaxial layer of the same conductivity type of the substrate formed over the first epitaxial layer;

a first diffused region having a second conductivity type formed in a first portion of the first and second epitaxial layers, said first diffused region defining a first junction with said first and second epitaxial layers; and

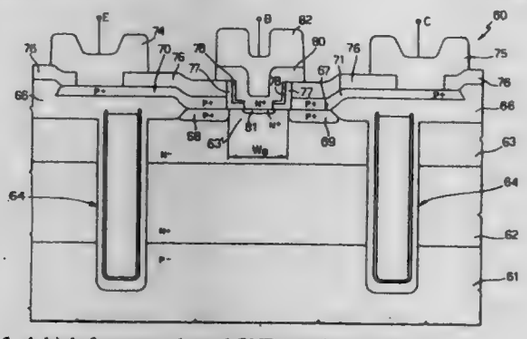
an edge structure having the second conductivity type formed in a second portion of the first and second epitaxial layers, wherein said edge structure includes a second diffused region having the second conductivity type formed in the first and second epitaxial layers, said second diffused region defining a second junction with said first and second epitaxial layers, and wherein the process includes the step of:

forming a third diffused region having the second conductivity type in the second epitaxial layer, said third diffused region being interposed between and adjoining the first and the second diffused regions and defining a third junction with said second epitaxial layer, said third junction being shallower than the first and the second junctions.

5,796,157
HIGH-FREQUENCY LATERAL PNP TRANSISTOR

Giuseppe Fallico, Aci Castello, and Raffaele Zambrano, Giovanni la Punta, both of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel mezzogiorno, Catania, Italy

Filed Oct. 25, 1995, Ser. No. 547,881
Claims priority, application European Pat. Off., Oct. 26, 1994, 94830500
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—557 **13 Claims**



1. A high-frequency lateral PNP transistor comprising:
a semiconductor body of a first conductivity type having a surface;
an emitter region of a second conductivity type in a first surface portion of said semiconductor body facing said surface;
a collector region of the second conductivity type in a second surface portion of said semiconductor body facing said surface, and the second portion being spaced apart from said first portion so that a third surface portion is between said first surface portion and said second surface portion;
thick insulation portions formed across portions of said surface and not formed across the first, second and third surface portions;
an emitter contact region of conductive material having a first contact portion contacting said emitter region and a second contact portion extending over one of said thick insulation portions;
an emitter contact in direct electrical contact with said second contact portion of said emitter contact region;
a collector contact region of conductive material having a first contact portion contacting said collector region and a second contact portion extending over one of said thick insulation portions; and
a collector contact in direct electrical contact with said second contact portion of said collector contact region;
at least two L-shaped spacer regions of insulating material arranged symmetrically with respect to each other and having horizontal portions in contact with said third surface portion, a vertical portion of one of the L-shaped spacer regions contacting the first contact portion of the emitter contact region, and a vertical portion of another one of the L-shaped spacer regions contacting the first contact portion of the collector contact region; and
a base region formed in the semiconductor body at the third surface portion.

5,796,158
LEAD FRAME COINING FOR SEMICONDUCTOR DEVICES

Jerrold L. King, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 31, 1995, Ser. No. 509,216
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—666 **27 Claims**

1. A semiconductor device comprising:
a wafer section; and

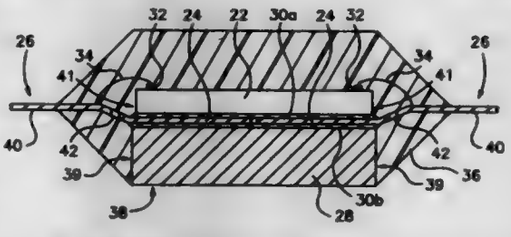


a wafer section support having at least one lead finger, said lead finger comprising a generally planar first side and a second side having a first surface and a second surface noncoplanar with said first surface, said wafer section being attached to said second surface,
wherein a first distance through said finger from said first side to said first surface is greater than a second distance through said finger from said first side to said second surface and said second surface overlies said die.

5,796,159
THERMALLY EFFICIENT INTEGRATED CIRCUIT PACKAGE

Oliver J. Kierse, Killaloe, Ireland, assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 565,146, Nov. 30, 1995, abandoned.
This application May 12, 1997, Ser. No. 854,724
Int. Cl.[6] H01L *23/495*
U.S. Cl. 257—668 **20 Claims**



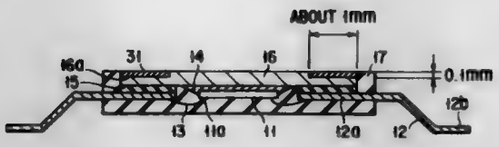
1. A thermally enhanced integrated circuit (IC) package, comprising:
an integrated circuit (IC) having active and non-active surfaces,
a plurality of electrically and thermally conductive leads, all of said IC's leads having inner portions that extend along a non-active surface of said IC, wherein at least one of said leads is a ground lead with an inner lead portion that extends along a substantially larger area of said non-active IC surface than any other individual inner lead portion,
a thermally conductive adhesive layer between said inner portions of said leads and said non-active IC surface which provides a direct thermal transfer path between said leads and said IC,
a plurality of electrical connectors which provide conductive paths between said leads and said active surface,
a heat sink attached to a side of said inner lead portions opposite said IC, said inner lead portions being in thermal contact with said heat sink such that heat is efficiently transferred from the IC through said leads to said heat sink, and
a moulding compound encapsulating said IC, inner lead portions, and at least a portion of said heat sink.

5,796,160
RESIN-SEALED SEMICONDUCTOR DEVICE

Hiroyuki Kozono, Omiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 10, 1997, Ser. No. 829,122
Claims priority, application Japan, Apr. 11, 1996, 8-089586
Int. Cl.[6] H01L *23/10;23/34*
U.S. Cl. 257—675 **4 Claims**

1. A resin-sealed semiconductor device comprising:
an integrated circuit having a plurality of terminals;
a lead frame having a plurality of leads electrically connected to the terminals of the integrated circuit;



a heat dissipation plate to which the integrated circuit is connected;

sealing resin for sealing the integrated circuit so as to expose a non-contact surface of the heat dissipation plate, wherein the non-contact surface of the heat dissipation plate does not contact the integrated circuit;

a concave portion formed in a periphery of the non-contact surface of the heat dissipation plate, wherein the concave portion prevents the sealing resin from extending toward the non-contact surface of the heat dissipation plate: and

a plating layer imbedded in the concave portion of the heat dissipation plate, wherein the plating layer is the same height as the non-contact surface of the heat dissipation plate, and further wherein the plating layer has poorer adhesion to the sealing resin than the heat dissipation plate has to the sealing resin.

5,796,161

WINDOW CLAMP AND METHOD OF ALIGNEMENT OF LEAD FRAME STRIP UTILIZING THE SAME

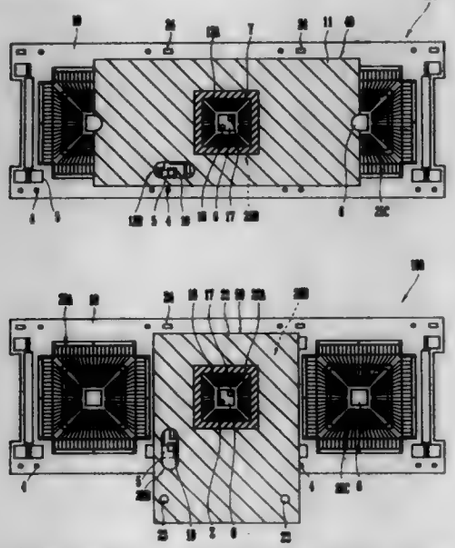
Young Kiu Moon, Kyungki-Do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Aug. 15, 1996, Ser. No. 698,391

Claims priority, application Rep. of Korea, Aug. 17, 1995, 1995-25229

Int. Cl.[6] H01L *23/495*

U.S. Cl. 257—676 **4 Claims**



1. A window clamp placed on a lead frame strip at a time of wire bonding, said lead frame strip having a plurality of lead frames, side rails, a plurality of circular and rectangular pin holes and plurality of gate holes, said each lead frame having a die attaching region and a plurality of leads, comprising:

a flat portion covering one of said lead frames of the lead frame strip and a portion of another of said lead frames, said flat portion placed at both sides of said lead frame;

a bonding window formed at a center of said flat portion to expose a portion of said lead frame to be bonded and said die attached on said die attaching region of said lead frame;

a lead sensing window formed on said flat portion for exposing a predetermined portion including said gate hole adjacent said lead frame when a loading direction of said lead frame strip has a predetermined orientation;

two fixing recesses, formed at respective sides of said flat portion to be fixed by one of bolts or pins; and

a protruding portion formed at bottom surface of said flat portion around said bonding window.

5,796,162

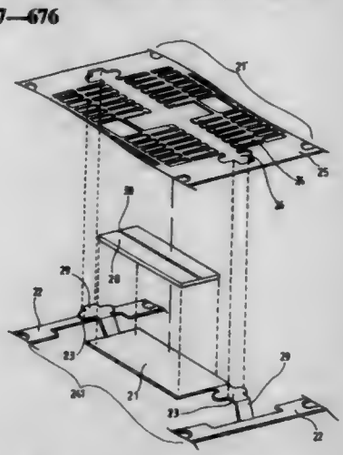
FRAMES LOCKING METHOD FOR PACKAGING SEMICONDUCTOR CHIP

Chien Ping Huang, Hsin-chu Hsien, Taiwan, assignor to Greatek Technology Co., Ltd., Hsin-Chu Hsien, Taiwan

Filed Sep. 17, 1996, Ser. No. 710,455

Int. Cl.[6] H01L *23/495;23/48;23/52*

U.S. Cl. 257—676 **1 Claim**



1. A packaging mechanism for a semiconductor chip comprising:

a die pad formed of metal sheet for supporting one of different types of semiconductor chips, the die pad being fixed by means of selvages at both sides of said die pad to form a die pad frame, said die pad being connected through positioning protrusions to said selvages, said positioning protrusions being higher than the plane of said die pad and said selvages by about the thickness of a semiconductor chip attached to said die pad;

a semiconductor chip having a major surface with bonding terminals thereon disposed within an encapsulating material;

a plurality of self supporting discrete and continuous lead conductors formed of metal sheet extending over said major surface of said semiconductor chip at spaced locations from said bonding terminals and extending from said semiconductor chip and cantilevered out of the encapsulating material;

a wafer coating on the major surface of said semiconductor chip for protecting said semiconductor chip from electrical contact to said lead conductors;

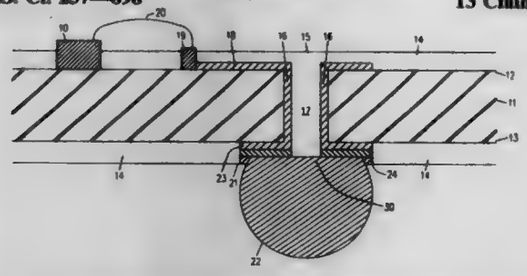
discrete electrical conducting wires bonded to said lead conductors and said bonding terminals and electrically connecting said lead conductors to said bonding terminals; and

the encapsulating material being disposed over and enclosing said bonding terminals, said conducting bond wires, and a portion of said lead conductors, the remainder of said lead conductors being cantilevered out of said encapsulating material.

5,796,163
SOLDER BALL JOINT

Thomas P. Glenn, Gilbert, Ariz.; Roy D. Hollaway, Paranaque, M.M., Philippines, and Anthony E. Panczak, Sunnyvale, Calif., assignors to Amkor Technology, Inc., Chandler, Ariz.

Filed May 23, 1997, Ser. No. 862,687
Int. Cl.[6] H01L *23/04*
U.S. Cl. 257—698 **13 Claims**



1. An interconnection ball joint in an integrated circuit package comprising:

a substrate having a first surface and an opposite second surface;

a metallized via extending through the substrate from the first surface to the second surface of the substrate, said via including a central hole which extends from the first surface to the second surface of the substrate;

a metallic interconnection ball land, on the second surface of the substrate, integral with the metallized via and adjacent to the hole;

the hole containing a nonconductive material plugging the hole adjacent to the land;

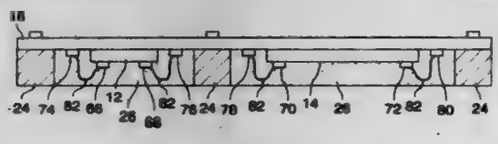
a metallic solder interconnection ball; and

wherein the interconnection ball is in a metal-to-metal annular bond with the land around the hole.

5,796,164
PACKAGING AND INTERCONNECT SYSTEM FOR INTEGRATED CIRCUITS

Mark T. McGraw, Saratoga; Bradley L. Griswold, San Jose; Chung W. Ho, Monte Sereno; Byoung-Youl Min, Cupertino; Michael I. Grove, Redwood City, and William C. Robinette, Jr., Los Altos, all of Calif., assignors to MicroModule Systems, Inc., Cupertino, Calif.

Continuation-in-part of Ser. No. 420,844, Apr. 10, 1995, which is a continuation of Ser. No. 60,406, May 11, 1993, Pat. No. 5,422,514. This application Mar. 25, 1996, Ser. No. 621,563
Int. Cl.[6] H01L *23/34;23/02;23/28*
U.S. Cl. 257—723 **36 Claims**



1. A multichip module packaging structure comprising:

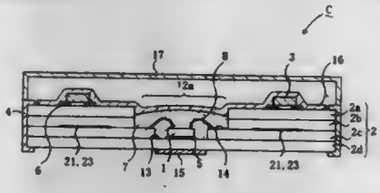
a thin film multilayer interconnect circuit disposed on a baseplate, said baseplate including at least one chip mounting cavity formed therein, said thin film multilayer interconnect circuit comprising a layer including a plurality of first bonding pads disposed on a first surface thereof, a layer including a plurality of second bonding pads disposed on a second surface thereof, and at least one routing layer including a plurality of routing conductors;

at least one integrated circuit die having first and second surfaces and disposed entirely within said at least one chip mounting cavity on said first surface of said thin film multilayer interconnect circuit, said at least one integrated circuit die including a plurality of I/O connection pads disposed on said first surface thereof in contact with said first surface of said thin film multilayer interconnect circuit, said at least one integrated circuit die aligned so as to mate said plurality of I/O connection pads with said plurality of first bonding pads, said I/O connection pads electrically connected to said first bonding pads.

5,796,165
HIGH-FREQUENCY INTEGRATED CIRCUIT DEVICE HAVING A MULTILAYER STRUCTURE

Noriyuki Yoshikawa, Osaka; Kunihiko Kanazawa, Kyoto; Satoshi Makioka, Shiga, and Kazuki Tateoka, Osaka, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Apr. 26, 1996, Ser. No. 638,264
Claims priority, application Japan, Mar. 19, 1996, 8-062368
Int. Cl.[6] H01L *27/01;23/14;23/50;23/12*
U.S. Cl. 257—728 **19 Claims**



1 SEMICONDUCTOR CHIP
2 MULTILAYER STRUCTURE
3 CHIP COMPONENT
4 VIA ELECTRODE
5 HIGH-MELTING-POINT SOLDERING MATERIAL
6 LOW-MELTING-POINT SOLDERING MATERIAL
7 POTTING RESIN
8 BONDING WIRE
12 CAVITY
13 BOTTOM FACE
14 MEZZANINE FACE
15 HEAT DISSIPATING ELECTRODE
16 PROJECTIVE COATING MATERIAL
17 METAL CASE

1. A high-frequency integrated circuit device having a plurality of circuit components including at least one active component for a high-frequency signal and a plurality of passive components, said high-frequency integrated circuit device comprising:

a multilayer structure comprising a plurality of substrates composed of a dielectric material, wherein said circuit components are disposed on an upper surface of an uppermost substrate, in at least one middle layer corresponding to a region lying between the substrates, on a lower surface of a lowermost substrate, and on a side layer formed by side surfaces of said respective substrates;

a cavity formed by removing a part of the substrate of said multilayer structure including said uppermost substrate; and

a semiconductor chip mounted on a bottom surface of said cavity, said semiconductor chip comprising said active component,

said passive components being distributed in said uppermost substrate and said middle layer of said multilayer structure, wherein

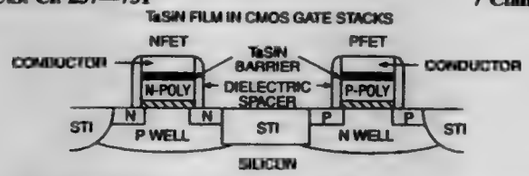
said semiconductor chip mounted in said cavity is sealed with a resin, and said upper surface of said uppermost substrate and an upper surface of the resin are substantially flush with one another.

5,796,166

TASIN OXYGEN DIFFUSION BARRIER IN MULTILAYER STRUCTURES

Paul David Agnello, Wappingers Falls; Cyril Cabral, Jr., Ossining; Alfred Grill, White Plains; Christopher Vincent Jahnes, Monsey; Thomas John Licata, Lagrangeville, and Ronnen Andrew Roy, Briarcliff Manor, all of N.Y., assignors to IBM Corporation, N.Y.

Division of Ser. No. 371,627, Jan. 12, 1995, Pat. No. 5,576,579.
This application Jun. 21, 1996, Ser. No. 668,241
Int. Cl.[6] H01L 21/8238;29/49
U.S. Cl. 257—751 7 Claims



1. A semiconductor structure comprising:

a silicon base layer having a top surface, and a refractory metal-silicon-nitrogen diffusion barrier layer adhered to the top surface of said silicon base layer, said diffusion barrier layer is deposited between a silicon base layer and a contact layer with a high permittivity oxide film deposited on top of said contact layer,

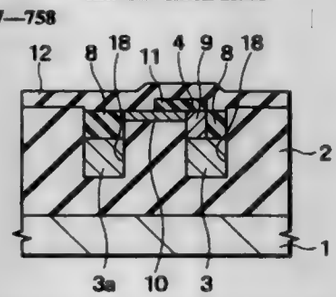
whereby said refractory metal-silicon-nitrogen layer protects said silicon base layer from oxidation upon contact with oxygen by the semiconductor structure.

5,796,167

SEMICONDUCTOR DEVICE WITH BURIED WIRING LAYER AND FABRICATION PROCESS THEREOF

Hiroki Koga, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 28, 1997, Ser. No. 901,134
Claims priority, application Japan, Jul. 30, 1996, 8-200651
Int. Cl.[6] H01L 23/48
U.S. Cl. 257—758 10 Claims



1. A semiconductor device with a buried wiring layer comprising:

a semiconductor substrate;

a first insulation layer formed on said semiconductor substrate;

a semiconductor layer selectively formed on said first insulation layer;

a groove formed in said first insulation layer in contact with said semiconductor layer, said groove having a depth smaller than a thickness of said first insulation layer;

a buried wiring layer buried within said groove;

a conductor portion electrically connecting said buried wiring layer and said semiconductor layer;

a second insulation layer buried within said groove above said buried wiring layer; and

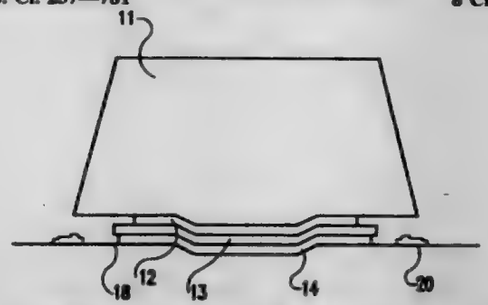
an upper wiring layer formed above said second insulation layer.

5,796,168

METALLIC INTERCONNECT PAD, AND INTEGRATED CIRCUIT STRUCTURE USING SAME, WITH REDUCED UNDERCUT

Madhav Datta, Westchester County; Thomas Safron Kanarsky; Michael Barry Pike, both of Dutchess County, and Ravindra Vaman Shenoy, Westchester County, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 659,459, Jun. 6, 1996, Pat. No. 5,620,611.
This application Sep. 6, 1996, Ser. No. 711,433
Int. Cl.[6] H01L 23/48;23/52;29/40
U.S. Cl. 257—781 8 Claims



1. A metallic interconnect pad for an integrated circuit chip comprising a patterned metallic seed layer deposited on a surface of said chip, said patterned metallic seed layer having at least a second patterned metal layer deposited thereon and a patterned solder deposited on said at least a second patterned metal layer, wherein said metallic interconnect pad is prepared by the process of:

sputter depositing a seed layer of a first metal;

depositing at least a second metal layer on said seed layer of metal;

depositing solder onto said at least a second metal layer through a photoresist;

electrochemical etching said at least a second metal layer;

removing with an acid solution a metal oxide film formed on surfaces of said seed layer of metal exposed during said electrochemical etching of the at least a second metal layer; and

etching said seed layer of a first metal with an etchant different than said acid solution, whereby undercut etching of said seed layer of a first metal relative to said at least a second metal layer is reduced.

5,796,169

STRUCTURALLY REINFORCED BALL GRID ARRAY SEMICONDUCTOR PACKAGE AND SYSTEMS

Robert Charles Dockerty, Austin; Ronald Maurice Fraga, Pflugerville; Ciro Neal Ramirez, Round Rock, all of Tex.; Sudipta Kumar Ray, Wappingers Falls; Charles Levern Reynolds, Jr., Red Hood, both of N.Y., and Gordon Jay Robbins, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 19, 1996, Ser. No. 752,418
Int. Cl.[6] H01L 23/48;23/52;29/40
U.S. Cl. 257—780 23 Claims

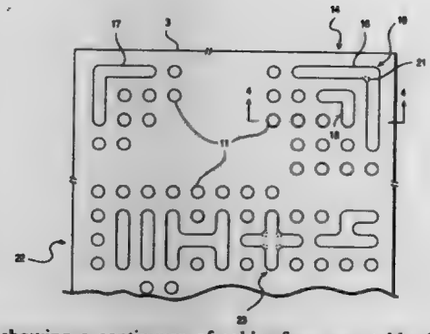
1. A surface mount substrate suitable to connect an integrated circuit to a pattern of contacts on a surface of a dielectric planar, comprising:

a matrix array of solder balls formed onto a first side of the substrate;

at least one pattern of support solder formed onto the first side of the substrate and characterized in that:

the support solder profile in a direction coincident with a first axis of the matrix array substantially matches a cross section of a formed solder ball; and

the support solder profile in a direction coincident with a second axis of the matrix array provides a cross section



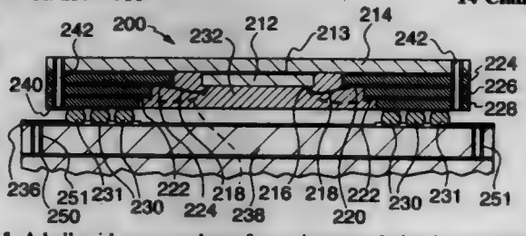
showing a continuum of solder from one solder ball to a succeedingly located solder ball.

5,796,170

BALL GRID ARRAY (BGA) INTEGRATED CIRCUIT PACKAGES

Gabriel Marcantonio, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Feb. 15, 1996, Ser. No. 601,667
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—786 **14 Claims**



1. A ball grid array package for an integrated circuit comprising a dielectric body, a heat spreader disposed on one side of the dielectric body comprising a layer of a thermally conductive material, the heat spreader also being electrically conductive,

the dielectric body surrounding a die attach area on the heatspreader, and providing a plurality of bond pads for wirebonding of the integrated circuit, and interconnection from the bond pads through the dielectric body to a plurality of solder balls of a ball arid array provided on the other side of the dielectric body, and

a conductive interconnection provided between the heat spreader and selected solder balls of the ball grid array, for providing a ground connection to the heatstreader through the solder balls.

5,796,171

PROGRESSIVE STAGGERED BONDING PADS

Aydin Koc, Millbrae; Michael J. Steidl, Fremont, and Sanjay Dandia, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 660,490, Jun. 7, 1996. This application Sep. 16, 1996, Ser. No. 712,981
Int. Cl.[6] H01L *23/48;23/52;29/40;27/10*
U.S. Cl. 257—786 **13 Claims**

1. An integrated circuit comprising:

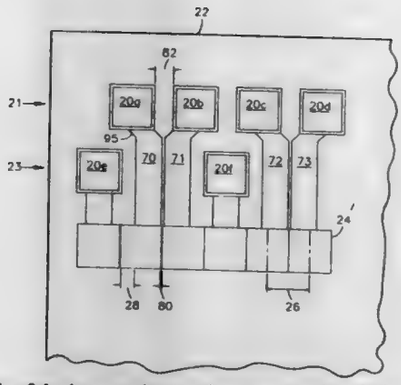
an outer ring of bonding pads adjacent to and concentric with the perimeter of the integrated circuit, and extending for at least a first portion of the perimeter,

an inner ring of bonding pads interior of, adjacent to, and concentric with the outer ring of bonding pads, and extending for at least a second portion of the perimeter,

the first portion being longer than the second portion,

the outer ring of bonding pads having a greater number of bonding pads than the inner ring of bonding pads,

traces electrically connected to the bonding pads of the inner and outer rings, each pad connected to a unique trace, and



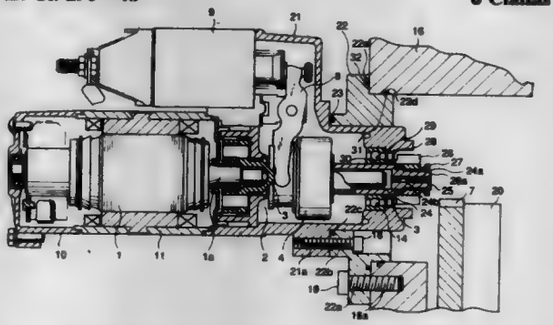
the pads of the inner and outer rings staggered such that adjacent pads of the inner ring are separated by at least two traces connected to pads of the outer ring.

5,796,172

STARTER APPARATUS WITH VARIABLE ANGLE MOUNTING

Akira Morisita; Keiichi Konishi, and Kyohei Yamamoto, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1996, Ser. No. 756,639
Claims priority, application Japan, Jan. 8, 1996, 8-000787
Int. Cl.[6] F02N *11/00*
U.S. Cl. 290—48 **6 Claims**



1. A starter apparatus, comprising:

a) a starter main body having a motor, an output shaft of said motor, a pinion reciprocable in an axial direction of said output shaft and selectively engaging with a ring gear of an engine, an overrunning clutch for transmitting rotation of said output shaft to said pinion, and an overhang type front housing (**21**) for housing at least said output shaft and said overrunning clutch;

b) a generally circular metal flange member (**22**) interposed between and rigidly mounted to both said engine and said front housing;

c) a continuous groove (**22***c*) defined in the flange member adjacent a mounting surface of the front housing, and

d) a sealing ring disposed in the groove and comprised against said mounting surface by the flange member,

e) wherein a plurality of selectively alignable screw holes (**21***a*, **22***b*, **16***a*) are defined in said front housing, said flange member and said engine such that the starter apparatus may be

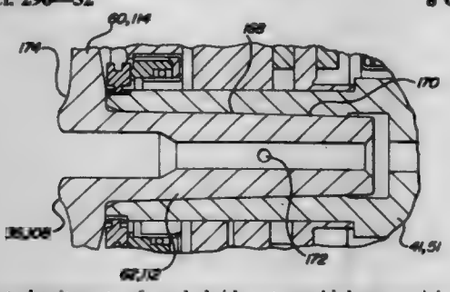
mounted to the engine via the flange member at a desired rotational angle consistent with structural parameters of the engine and ring gear.

5,796,173

HYDRAULIC FIT OF TURBOALTERNATOR FOR HYBRID MOTOR VEHICLE

Brian J. Selfors, Boston, and Arnold Heitmann, Swampscott, both of Mass., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed May 2, 1996, Ser. No. 642,166
Int. Cl.[6] F03B *13/00*
U.S. Cl. 290—52 **8 Claims**



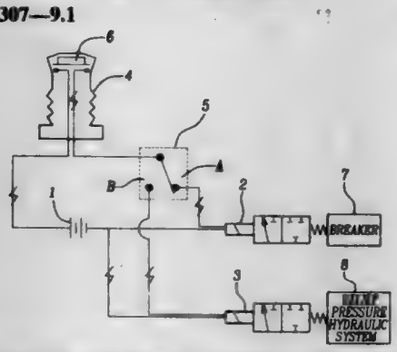
1. A turboalternator for a hybrid motor vehicle comprising:
at least one compressor;
at least one turbine;
at least one alternator disposed between said at least one compressor and at least one turbine; and
a common shaft interconnecting said at least one compressor and said at least one alternator and said at least one turbine, said at least one compressor and said at least one turbine being hydraulically fitted to said common shaft.

5,796,174

DEVICE FOR CONTROLLING BREAKER IN CONSTRUCTION VEHICLES

In Taek Nam, Namyangju, Rep. of Korea, assignor to Samsung Heavy Industries Co., Ltd., Rep. of Korea

Filed Dec. 10, 1996, Ser. No. 762,954
Claims priority, application Rep. of Korea, Jun. 26, 1996, 1996-24089
Int. Cl.[6] F02M *39/00*
U.S. Cl. 307—9.1 **2 Claims**



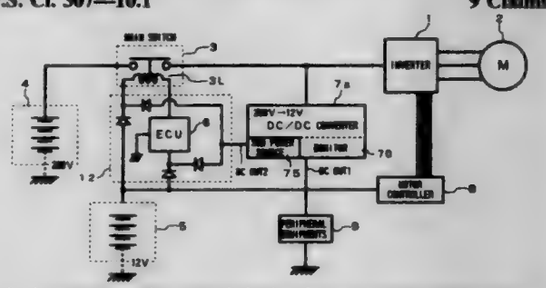
1. A device for controlling a breaker in construction vehicles, comprising a control circuit provided with a power supply, a first solenoid valve used for controlling the breaker, and a second solenoid valve used for boosting a relief pressure in a hydraulic system of the construction vehicle further comprising:
a control switch installed in a control lever and handled by an operator in order to selectively open or close said control circuit; and a select switch connected between said control switch, power supply and first and second solenoid valves, and adapted for selectively connecting said power supply to the first or second solenoid valve in order to select either of the breaker and pressure boosting operations commonly controlled by said control switch.

5,796,175

POWER SUPPLY CONTROL DEVICE FOR ELECTRIC VEHICLE

Hisahiro Itoh; Tomoyuki Itoh; Koji Furumoto, and Shinji Yoshikawa, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1996, Ser. No. 689,148
Claims priority, application Japan, Aug. 3, 1995, 7-216560
Int. Cl.[6] H02H *1/00*
U.S. Cl. 307—10.1 **9 Claims**



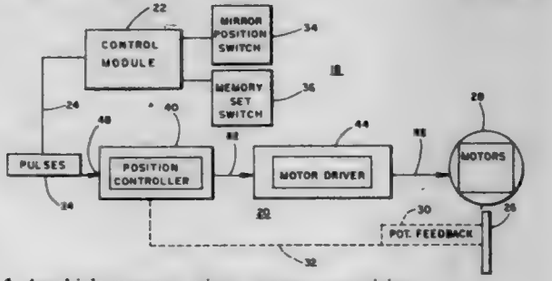
1. A power supply control device for an electric vehicle, comprising:
a voltage converter means connected through a main switch to a high-voltage battery;
a drive motor energized by the high-voltage battery;
a low-voltage battery and vehicle periphery equipment both connected to the voltage converter means for receiving a power supply;
a switch controlling means, connected to at least one of the voltage converter means and the low-voltage battery, for receiving a power supply and for controlling the opening and closing actions of the main switch; and
a means for supplementally supplying a backup power to the switch controlling means so that the switch controlling means is energized with enough power to ensure a normal operation of the switch controlling means,
wherein said switch controlling means receives a sum of voltage outputs of said voltage converter means, said low-voltage battery and said means for supplying said backup power.

5,796,176

MEMORY MIRROR SYSTEM FOR VEHICLES

Mark E. Kramer, Zeeland, and Roger L. Veldman, Holland, both of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 679,681, Jul. 11, 1996. This application Mar. 17, 1997, Ser. No. 818,918
Int. Cl.[6] H02P *1/54*
U.S. Cl. 307—10.1 **18 Claims**



1. A vehicle memory mirror system, comprising:
a vehicle mirror assembly including a reflective element, a motor for positioning said reflective element about an axis, a monitor for monitoring the position of said reflective element

with respect to said axis and a mirror-based control operatively connected with said motor and said monitor in order to position said reflective element at a particular position with respect to said axis;

a control module interconnected with said mirror-based control by an analog interface, said control module including a processor for providing analog signals on said analog interface indicative of a desired position of said reflective element with respect to said axis;

wherein said mirror-based control includes a position controller which compares analog signals on said analog interface with a signal produced by said monitor in order to operate said motor and thereby position said reflective element at said desired position; and

wherein said vehicle mirror assembly includes at least one accessory and wherein said mirror-based control performs at least one of decoding analog signals on said analog interface and encoding analog signals on said analog interface in order to selectively operate said at least one accessory.

5,796,177

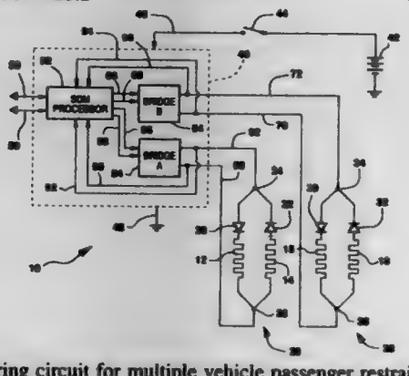
FIRING CIRCUIT FOR MULTIPLE VEHICLE PASSENGER RESTRAINT INITIATORS

Joel Martin Werbelow, Noblesville; John Byron Singer, Sheridan, and Kevin Dale Kincaid, Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed May 19, 1997, Ser. No. 858,618

Int. Cl.[6] B60R *21/00*

U.S. Cl. 307—10.1 **4 Claims**



1. A firing circuit for multiple vehicle passenger restraint initiators, comprising:

first and second electrically activated initiators for deploying first and second passenger restraint devices;

first and second firing loops connected in parallel between first and second firing circuit nodes, the first firing loop comprising said first electrically activated initiator and a first diode poled to conduct current from said first node to said second node, and the second firing loop comprising said second electrically activated initiator and a second diode poled to conduct current from said second node to said first node;

a source of direct voltage having first and second terminals of opposing polarity; and

a switching circuit connected between said source of direct voltage and said first and second firing loops, said switching circuit including a first pair of switches operative in response to a first deployment signal to connect said first and second terminals of said source to said first and second firing circuit nodes, respectively, to activate said first initiator for deploying the first restraint device, and a second pair of switches operative in response to a second deployment signal to connect said first and second terminals of said source to said second and first firing circuit nodes, respectively, to activate said second initiator for deploying the second restraint device.

5,796,178

ANTI-THEFT APPARATUS FOR A VEHICLE

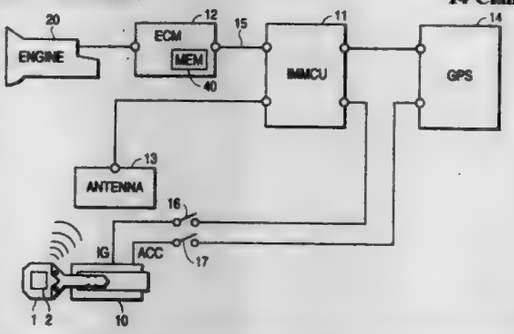
Yoshiki Onuma, Kanagawa-ken, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 28, 1997, Ser. No. 807,779

Claims priority, application Japan, Mar. 1, 1996, 8-45043

Int. Cl.[6] G08G *1/123*

U.S. Cl. 307—10.2 **14 Claims**



1. An anti-theft apparatus for a vehicle having an engine therein, comprising:

a detector to detect the location of said vehicle;

a memory to memorize the location of said vehicle where the engine of said vehicle stops; and

a controller to permit starting said engine when said location memorized by said memory and the location where said vehicle exists are within a predetermined range and to inhibit starting said engine when said location memorized by said memory and the location where said vehicle exists are not within said predetermined range.

5,796,179

VEHICLE ANTI-THEFT DEVICE WITH LOW VOLTAGE COMPENSATION AND A ROLLING CODE

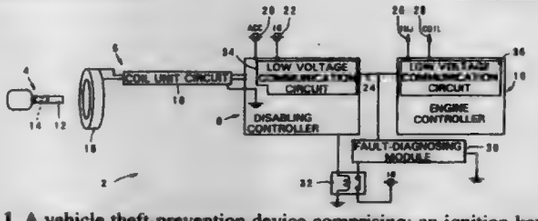
Kazuhiro Honaga, Shizuoka-ken, Japan, assignor to Suzuki Motor Corporation, Shizuoka-ken, Japan

Filed Sep. 20, 1996, Ser. No. 717,261

Claims priority, application Japan, Sep. 30, 1995, 7-277242; Sep. 30, 1995, 7-277243; Sep. 30, 1995, 7-277244; Sep. 30, 1995, 7-277246; Sep. 30, 1995, 7-277247

Int. Cl.[6] B60R *25/04*

U.S. Cl. 307—10.5 **13 Claims**



1. A vehicle theft-prevention device comprising: an ignition key having a transponder; a coil unit for supplying power to said transponder when said ignition key is inserted into said coil unit and then turned to a starting position thereby permitting said transponder to generate an identification code; said coil unit outputting said identification code to a disabling controller wherein said disabling controller outputs an engine drive signal when said identification code from said coil unit is valid and outputs an engine stop signal when said identification code is invalid; and an engine controller for permitting an engine starting operation to continue when said engine drive signal is input into said engine controller from said disabling controller within a predetermined communication time period from a moment said engine starting operation is initiated by turning said ignition key to said start position; wherein said disabling controller and said engine controller are provided with respective low-voltage communication circuits for communicating therebetween when a battery voltage is

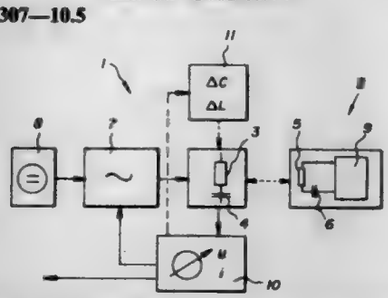
less than a predetermined low-voltage level after said engine starting operation is initiated.

5,796,180

DEVICE FOR TRANSMITTING DATA OR ENERGY

Manfred Glehr, Neutraubling, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 23, 1997, Ser. No. 787,649
Int. Cl.[6] G01S 13/74
U.S. Cl. 307—10.5 8 Claims



1. A device for transmitting data or energy supply from or to a transponder, comprising:

a stationary transceiver including a first oscillating circuit having an antenna in the form of a first coil, a first capacitor, and a resonant frequency determined by said antenna and said first capacitor;

a portable transponder including a second oscillating circuit having a second coil and a second capacitor;

an exciter unit oscillating at an oscillator frequency and supplying an output variable used as an exciter variable with an exciter frequency for compelling an oscillation of said first oscillating circuit; and

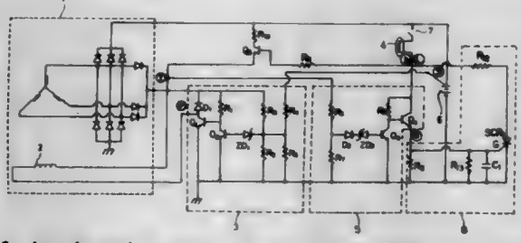
an evaluation unit for measuring at least one of current and voltage in said first oscillating circuit, said evaluation unit generating a correction value upon a deviation of the current or the voltage from a desired value and then correcting said first oscillating circuit upon all transmissions between said transceiver and said transponder for causing the most effective possible transmission between said transceiver and said transponder to take place.

5,796,181

ALTERNATING CURRENT GENERATOR CONTROL APPARATUS FOR VEHICLE

Yong-Chul Lee, Kyongju, Rep. of Korea, assignor to Mando Machinery Corporation, Kyunggi-do, Rep. of Korea

Filed Jan. 8, 1997, Ser. No. 780,383
Claims priority, application Rep. of Korea, Sep. 6, 1996, 1996-38610
Int. Cl.[6] H02P 9/00
U.S. Cl. 307—10.8 1 Claim



1. An alternating current generator control apparatus for a vehicle having a ground, comprising:

an alternating current generator having a field coil;

a voltage controller for maintaining the voltage generated by the alternating current generator to a predetermined level;

a charging lamp for indicating whether a voltage is generated;

a lamp driving unit for turning on and turning off the charging lamp, said lamp driving unit having a lamp driving transistor connected to an L-terminal;

a battery for providing an initial driving voltage to the alternating current generator, said battery having an S-terminal;

an ignition switch for driving an engine of a vehicle;

an initial excitation current supply transistor for supplying an initial excitation current; and

a lamp driving controller for controlling a current of the lamp driving transistor of the lamp driving unit,

wherein said lamp driving controller includes:

a current detection resistor connected to the emitter of the lamp driving transistor for detecting a lamp driving current of the transistor when said L-terminal and said S-terminal are reversely connected; and

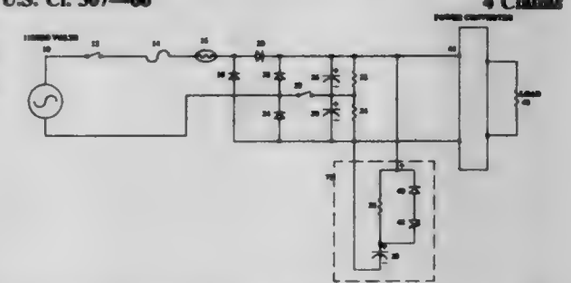
a thyristor having a gate to which a voltage is supplied for urging the voltage of the battery of the S-terminal to be supplied to the ground in accordance with the voltage supplied to the gate when an over-current is detected in the lamp driving transistor by the current detection resistor.

5,796,182

CAPACATOR STORAGE CIRCUIT FOR SUSTAINING A DC CONVERTER

Richard A. Martin, 14981 E. Elk Pl. 98-8, Denver, Colo. 80239

Filed Jun. 27, 1996, Ser. No. 671,141
Int. Cl.[6] H02J 7/00
U.S. Cl. 307—66 4 Claims



1. An anti-oscillation circuit to provide DC electrical energy from a DC storage means to a load comprising: a main power source means providing power to a DC converter means, a charging means for charging said DC storage means connected to a node disposed between said main power source means and said DC converter means, and a discharge means for discharging said DC storage means and connected in parallel with said charging means;

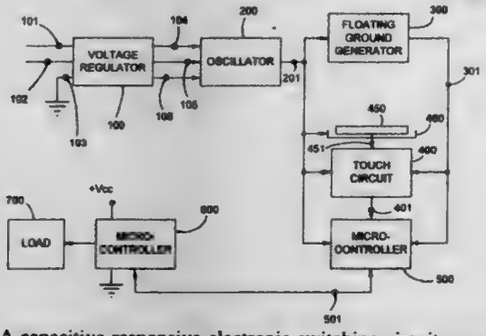
said DC storage means providing stored DC electrical energy to said DC converter means through said discharge means during momentary interruption of said main power source means, said DC charging means also providing a discharging path to allow residual energy of said DC storage means to dissipate through said DC charging means, after said power source means has been interrupted and said discharge means has disconnected said storage means from said DC converter means due to the depletion of electrical energy of the storage means,

said residual energy of the DC storage means being dissipated through the charging means prevents the DC power converter means from producing intermittent output power pulses and spikes.

5,796,183
CAPACITIVE RESPONSIVE ELECTRONIC SWITCHING CIRCUIT

Byron Hourmand, Hersey, Mich., assignor to Nartron Corporation, Reed City, Mich.

Filed Jan. 31, 1996, Ser. No. 601,268
Int. Cl.[6] H01H *35/00*
U.S. Cl. 307—116 **32 Claims**



1. A capacitive responsive electronic switching circuit comprising:

an oscillator providing a periodic output signal having a frequency of 50 kHz or greater;

an input touch terminal having a dielectric cover defining an area for an operator to provide an input by proximity and touch, an operator's body capacitance to ground as sensed through said input touch terminal varying as a function of the area of said input touch terminal that is proximate the operator's body; and

a detector circuit coupled to said oscillator for receiving said periodic output signal from said oscillator, and coupled to said input touch terminal, said detector circuit being responsive to signals from said oscillator and the presence of an operator's body capacitance to ground coupled to said touch terminal when proximal or touched by an operator to provide a control output signal, wherein said detector circuit includes means for generating said control signal when the sensed body capacitance to ground exceeds a threshold level in order to prevent unintended activation based upon an operator's inadvertent proximity and touch with said input touch terminal.

5,796,184
METHOD AND AN APPARATUS FOR STOPPING A MOTOR-DRIVEN PRESSURE GENERATING PUMP OF A SYSTEM FOR COATING WORKPIECES WITH ATOMIZED LIQUID COATING MATERIAL

Rudolf Kuhnl, Salem, and Gerhard Gebauer, Bermatingen, both of Germany, assignors to J. Wagner GmbH, Friedrichshafen, Germany

Filed Jul. 29, 1993, Ser. No. 98,827
Claims priority, application Germany, Jul. 29, 1992, 42 25 072.2
Int. Cl.[6] H01H *35/18*; **F04B** *49/00*
U.S. Cl. 307—118 **12 Claims**

1. A method for stopping a motor-driven pressure generating pump of a system for coating workpieces with atomized liquid coating material from a material supply within a material reservoir when the material reservoir is empty or during leakage, the method comprising the steps of:

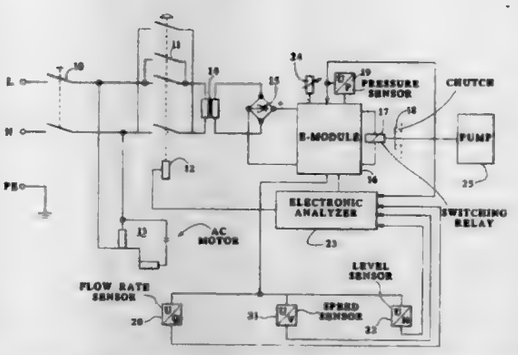
continuously measuring pressure at an outlet of the pump;

converting the measured pressure values to electric signals;

providing the electric signals to an electronic analyzer to be analyzed therein;

establishing a minimum pressure value and a maximum pressure value defining a desired operating pressure range and a third pressure value below the minimum pressure value;

adjusting pressure in the system upon manual start-up beyond at least the minimum pressure value up to the maximum pressure value;



causing the electronic analyzer to output a signal upon measuring the pressure below the third pressure value;

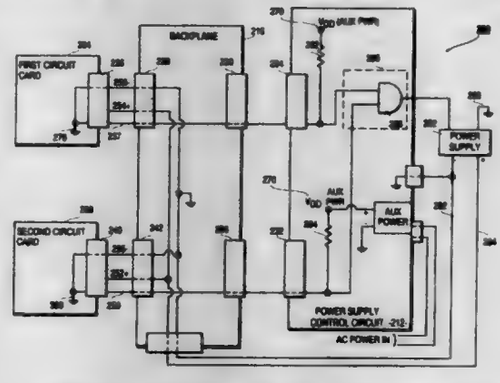
stopping the pump from providing the coating material in response to the signal from the electronic analyzer; and

providing cut-off signals from the electronic analyzer when the pressure falls below the third pressure value, the pump can only be restarted upon renewed manual start-up of the system.

5,796,185
CIRCUIT CARD PRESENT SENSE AND PROTECTIVE POWER SUPPLY INHIBIT FOR AIRBORNE APPLICATION OF ATM SWITCH UNIT

Kazuo Takata, Placentia; James Bruce Whitehouse, Brea, and Bruce Robert Ferguson, Anaheim, all of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Trans Com Inc., Irvine, Calif.

Filed Oct. 15, 1996, Ser. No. 732,526
Int. Cl.[6] G06F *13/00*
U.S. Cl. 307—140 **16 Claims**



1. A system for delivering power to a circuit card when the circuit card is coupled to a power control circuit, said system comprising:

a circuit card connector terminal mounted on said circuit card;

an opposite mating connector terminal located in an aircraft passenger in-flight entertainment system corresponding to said circuit card connector terminal, said opposite mating connector terminal coupled to said power control circuit, said power control circuit configured to detect whether said circuit card connector terminal is coupled to said opposite mating connector and to generate a first card present signal;

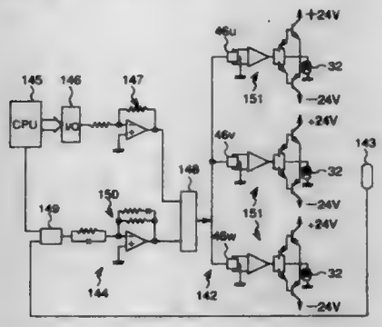
a logic circuit in said power control circuit which generates a power supply enable signal based on the first card present signal; and,

a main power supply which provides power to said circuit card, said main power supply configured to receive the power supply enable signal from said power control circuit and to provide power to said circuit card only when the power supply enable indicates that the circuit card connector terminal is coupled to said opposite mating connector.

5,796,186
LINEAR MOTOR

Katsuhiro Nanba, Okazaki; Mitsutoshi Yagoto; Masamitsu Ishiyama, both of Toyokawa; Makoto Izawa, Kariya; Toshio Kitaoka, and Yasuhiro Matsumoto, both of Toyokawa, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Mar. 29, 1996, Ser. No. 624,085
Int. Cl.[6] H02K *41/02*
U.S. Cl. 310—14 **26 Claims**



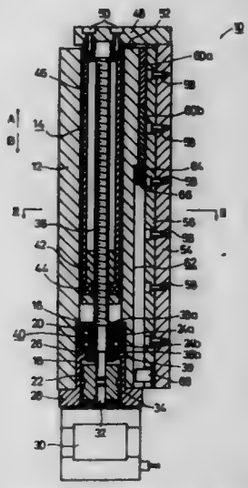
1. A linear motor comprising a first part including field magnets and a second part including armature coils, the first part being opposed to the second part, one of the field magnets and the armature coils circumferentially surrounds another of the field magnets and the armature coils;

wherein a first arrangement pattern of the field magnets has a non-zero tilt angle relative to a second arrangement pattern of the armature coils.

5,796,187
ELECTRIC ACTUATOR

Shigekazu Nagai; Shuuzou Sakurai, and Masayuki Nakamura, all of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1997, Ser. No. 855,448
Claims priority, application Japan, Jun. 7, 1996, 8-146266
Int. Cl.[6] H02K *7/06*
U.S. Cl. 310—20 **14 Claims**



1. An electric actuator for converting rotational motion of a motor into rectilinear motion, comprising:

a driving force-transmitting shaft having a straight configuration and extending in a vertical direction;

a displacement member displaceable in said vertical direction in accordance with an action of said rectilinear motion;

a slide table connected to said displacement member at one end of said slide table;

a rail member attached to said slide table and displaceable with said slide table, said rail member extending along said slide table substantially from said one end to another end thereof, said rail member being disposed in parallel to said driving force-transmitting shaft;

a main actuator body including a hole defined therein, said driving force-transmitting shaft accommodated inside said hole;

at least one guide member fixedly attached to an end of said main actuator body, said rail member being slidable along said at least one guide member;

a converting means for converting rotational motion of said driving force-transmitting shaft into said rectilinear motion;

a cylinder member provided on said converting means, for surrounding said driving force-transmitting shaft, said cylinder member being secured at its one end to said displacement member; and

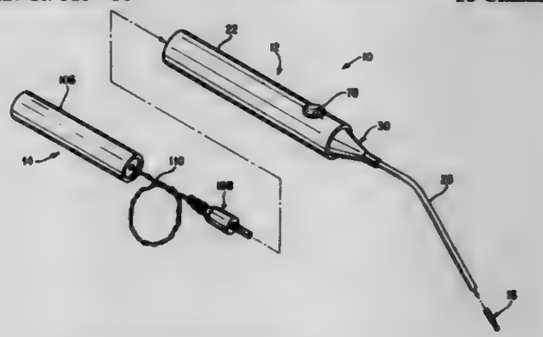
a bearing for supporting said driving force-transmitting shaft in its axial direction,

wherein said guide member and said rail member are configured to prevent rotation of said displacement member which would otherwise be caused by rotation of said motor.

5,796,188
BATTERY-POWERED MEDICAL INSTRUMENT WITH POWER BOOSTER

F. Barry Bays, Clearwater, Fla., assignor to Xomed Surgical Products, Inc., Jacksonville, Fla.

Filed Oct. 5, 1995, Ser. No. 539,459
Int. Cl.[6] H02K *7/14*; F02M *9/00*
U.S. Cl. 310—50 **16 Claims**



1. A medical instrument comprising

a handpiece including a body, an electrical device disposed within said body and having an operating characteristic responsive to DC voltage, and a first battery disposed within said body for applying a first DC voltage to said electrical device to cause said electrical device to operate in a first mode; and

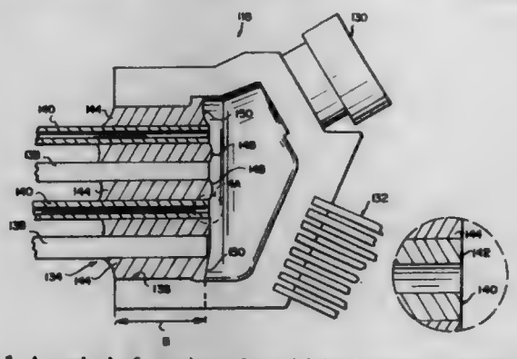
a booster disposed externally of said body, said booster including a DC power source and means for detachably connecting said DC power source with said first battery to apply a second DC voltage greater than said first DC voltage to said electrical device to cause said electrical device to operate in a second mode;

wherein said connecting means includes a power cord extending between said booster and said handpiece to permit said booster to be located remotely from said handpiece when said electrical device is operated in said second mode.

5,796,189
BRAZING PROCEDURE FOR GENERATOR LIQUID COOLED STATOR BARS

Michael Patrick Manning, Watervliet, and Robert Timothy Lembke, Amsterdam, both of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Jan. 23, 1996, Ser. No. 589,923
Int. Cl.[6] B23K *1/20;* **H02K** *15/00*
U.S. Cl. 310—54 **8 Claims**



1. A method of creating a brazed joint between a plurality of solid and hollow strands of a stator bar and a stator bar end fitting comprising the steps of:

a) inserting between free ends of the plurality of solid and hollow strands a preformed braze alloy such that said braze alloy is at least flush with the free ends of said solid and hollow strands;

b) applying stop off material to free end edges of at least said hollow strands;

c) inserting the solid and hollow strands and preformed braze alloy in an opening of a stator bar end fitting;

d) heating said braze alloy to cause said braze alloy to flow about said solid and hollow strands and between an interior wall of said fitting and said solid and hollow strands, and wherein said stop off material prevents flow of braze alloy onto said free end edges of said hollow strands.

5,796,190
ENGINE-DRIVEN PERMANENT MAGNETIC TYPE WELDING GENERATOR

Masanobu Takeda; Yasumasa Mizuno; Shunichi Tetsui, and Hirotaka Yamamoto, all of Kawagoe, Japan, assignors to Denyo Kabushiki Kaisha, Tokyo-To, Japan

Filed May 29, 1996, Ser. No. 655,026
Claims priority, application Japan, May 29, 1995, 7-130486; May 29, 1995, 7-130488; May 29, 1995, 7-130553
Int. Cl.[6] H02K *21/22;1/04;1/22*
U.S. Cl. 310—58 **3 Claims**

1. An engine-driven permanent magnet type welding generator, which comprises:

a stator including:

a laminated armature core; and

an armature winding wound around the armature core, a coil end of the armature winding from one side of the armature core being long enough to be cooled by ventilated cooling air;

a rotor including:

a field core fixed to an engine rotary shaft and supported by an engine in cantilever fashion so as to be located at a central position of the stator, a thickness of the field core being equivalent to that of the armature core, the field core being formed with a cross sectional area effective for field magnet flux in an outer circumferential portion thereof and with a plurality of axial fan-shaped air passages in an inner circumferential portion thereof;

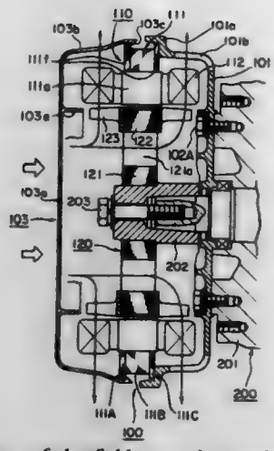
a plurality of magnet plates each formed into a substantially square shape and arranged in line on an outer circumferential surface of the field core, the number of the magnet plates being the same as a number of field poles of the field core; and

a plurality of centrifugal fan blades arranged in the vicinity of an outer circumference of and on both side surfaces of the field core, for ventilating cooling air in radial direction of the stator; and

an enclosure including:

a housing fixed to the engine, the housing having a faucet portion for supporting the stator, and air outlet holes; and

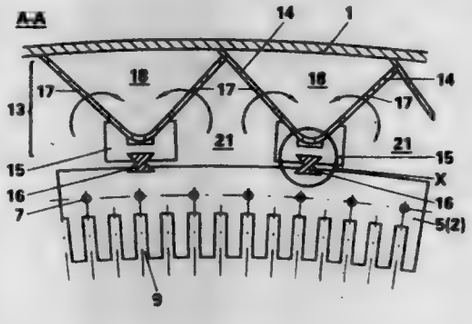
a top cover to be attached to the housing, the top cover having air inlet holes and being formed with a plurality of air passages for introducing cooling air from one side surface of the rotor remote from the engine through the air inlet holes and the fan-shaped air passages formed in the rotor core and the coil end of the armature winding in cooperation with the housing to the air outlet holes.



5,796,191
BULB-TYPE GENERATOR

Josef Schwanda, Lupfig, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland

Filed Jul. 22, 1996, Ser. No. 685,098
Claims priority, application Germany, Jul. 21, 1995, 195 26 689.7
Int. Cl.[6] H02K *1/12*
U.S. Cl. 310—58 **9 Claims**



1. A bulb type generator comprising:

a housing;

a stator laminated body positioned within said housing such that said housing forms therein a first space positioned radially between said stator laminated body and said housing, and an overhang space beyond at least one end of the stator laminated body and containing wiring overhangs of the stator, said stator laminated body comprising a plurality of spaced component laminated bodies, each formed of overlappingly laminated segmental stampings;

a plurality of spacer elements having wide ends at an inner wall of said housing said spacer elements supporting said stator laminated body and forming cavities extending over substantially the entire length of said stator laminated body;

a plurality of circumferentially extending mounting plates provided on narrow ends of said spacer elements;

a plurality of axially extending strips connecting said stator laminated body to said mounting plates with radial play so that said stator laminated body is mounted to said housing ring with radial play; and

openings in said spacer elements at locations corresponding to said first space and said overhang space, said openings forming a cooling fluid flow path from the spaces in said component laminated bodies, through said cavities, and to the overhang space.

5,796,192

ENERGY-SAVING ELECTRIC DRIVE FOR SMALL VEHICLES

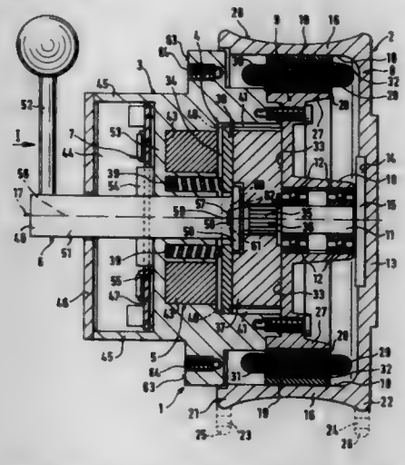
Gerhard Riepl, Mozartstrasse 1, 88605 Messkirch, Germany

Filed Aug. 28, 1995, Ser. No. 520,266

Claims priority, application Germany, Aug. 31, 1994, 9414054 U

Int. Cl.[6] H02K *7/106;* **B60K** *1/00;* **B60T** *13/04*

U.S. Cl. 310—67 R **11 Claims**



1. An electric drive for a running wheel of a small vehicles such as wheelchairs, comprising:

a small vehicle running wheel;

a d.c. motor arranged as a wheel hub motor in said running wheel, said d.c. motor including an external rotor forming one of a wheel hub or a wheel rim of said running wheel and a stator;

a brake housing, said stator being fixedly connected to said brake housing and said brake housing being fixedly connected to said small vehicle;

a central spring pressure brake disposed in said brake housing;

an electromagnetic spring brake release means for being powered to maintain said central spring pressure brake disengaged and for releasing said spring pressure brake in the case of a power failure for braking said external rotor; and

manual release means for manually releasing said spring pressure brake.

5,796,193

DISK DRIVING MOTOR

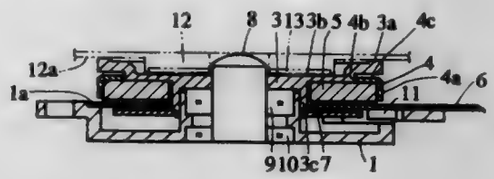
Hiromichi Sakano, and Shouichi Saito, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Feb. 2, 1996, Ser. No. 595,775

Claims priority, application Japan, Feb. 15, 1995, 7-026611

Int. Cl.[6] H02K *1/22;21/12*

U.S. Cl. 310—67 R **3 Claims**



1. A disk driving motor comprising:

a stator coil secured to a bracket,

a rotary shaft rotatably secured to the bracket, and

a rotor secured to the rotary shaft and adapted to rotate simultaneously with the rotary shaft,

said rotor comprising:

a rotary frame composed of a nonmagnetic material and adapted to detachably support a disk having a clamping yoke,

a field magnet having a diameter larger than that of the clamping yoke of the disk, said field magnet being arranged on the rotary frame to apply a clamping magnetic force to the clamping yoke of the disk and positioned opposite the stator coil to produce a rotating magnet field between the field magnet and the stator coil, and

a cup-shaped magnetic material yoke having an opening with a diameter larger than that of the clamping yoke of the disk, said cup-shaped magnetic material yoke having the rotary frame disposed at the opening thereof, and said cup-shaped magnetic material yoke integrally covering a surface of the field magnet opposite the disk, except a portion of said surface magnet opposite the disk, except a portion of said surface corresponding to the opening, and a circumferential surface of the field magnet, said circumferential surface being parallel to an axial direction of the rotary shaft.

5,796,194

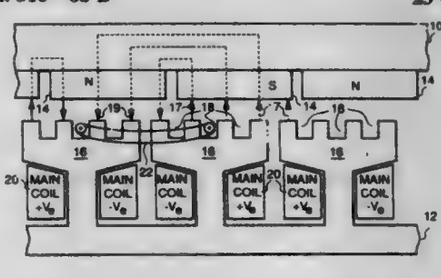
QUADRATURE AXIS WINDING FOR SENSORLESS ROTOR ANGULAR POSITION CONTROL OF SINGLE PHASE PERMANENT MAGNET MOTOR

William R. Archer; Roger C. Becerra; Brian L. Beifus; Mark A. Brattoli; David M. Erdman, all of Fort Wayne, Ind.; Thomas M. Jahns, Schenectady, N.Y.; Gerald B. Kliman, Niskayuna, N.Y.; Wen Liang Soong, Schenectady, N.Y.; Charles M. Stephens, Pattersonville, N.Y.; Eric R. Benedict, and Michael W. Degner, both of Madison, Wis., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jul. 15, 1996, Ser. No. 680,010

Int. Cl.[6] H02K *29/14*

U.S. Cl. 310—68 B **23 Claims**



1. A single phase permanent magnet motor comprising:

a rotor rotatable in a steady state forward direction of rotation;

a stator having a main winding, said main winding being in magnetic coupling relationship with the rotor, said stator and said rotor positioned radially with respect to each other and defining an air gap therebetween;

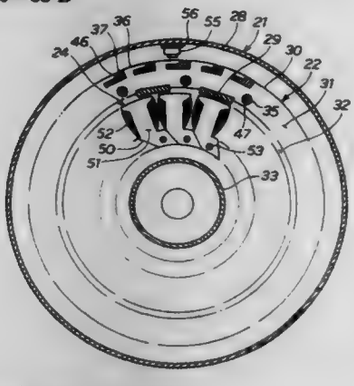
a quadrature axis winding in magnetic coupling relationship with the rotor and positioned for generating an output signal representative of rotor angular positions, said steady state forward direction of rotation being defined by the position of the quadrature axis winding.

5,796,195

ELECTRIC MOTOR

Taro Miyakawa, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1996, Ser. No. 734,692
Claims priority, application Japan, Mar. 1, 1996, 8-044851
Int. Cl.[6] H02K *11/00;1/22*
U.S. Cl. 310—68 B **5 Claims**



1. An electric motor comprising:

a rotor having a rotor yoke with first and second peripheries, said rotor yoke including a magnetic pole field portion and at least one rotation position indicator integral therewith, said at least one rotation position indicator being located adjacent the first periphery of said rotor yoke and said magnetic pole field portion being located adjacent the second periphery of said rotor yoke;

a stator disposed in proximity to said second periphery to magnetically interact with said magnetic pole field portion;

a sensor disposed in proximity to said first periphery for sensing said at least one rotation position indicator and for controlling rotation of the rotor; and

at least one notch formed in said rotor yoke between said magnetic pole field portion and said at least one rotation position indicator.

5,796,196

ADAPTABLE ROTATING RECTIFIER AND SUPPRESSION RESISTOR ASSEMBLY FOR TWO-POLE, WOUND ROTOR OF DYNAMOELECTRIC MACHINE

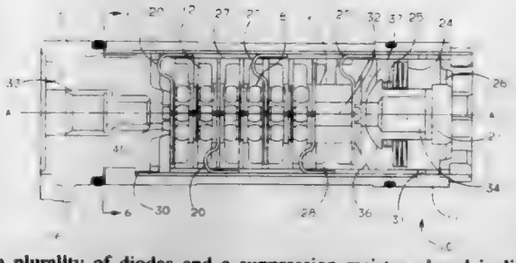
Tyrone Arthur Johnsen, Rockford; Todd Alan Spierling, Byron, and Harry Raymond Carter, Jr., Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 26, 1996, Ser. No. 703,748
Int. Cl.[6] H02K *11/00;* **F02N** *25/08*
U.S. Cl. 310—68 D **10 Claims**

1. An adaptable rotating rectifier and suppression resistor assembly for a rotor of a dynamoelectric machine, said assembly comprising:

a tubular housing having an axially extending internal cavity without an integrally formed end at its two opposite ends;

a plurality of bus bars arranged in fixed spaced relation in a radially outer portion of said internal cavity so as to extend axially along said internal cavity;



a plurality of diodes and a suppression resistor placed in line along said axis of said internal cavity with radially outwardly extending spring contact plates electrically connecting said diodes and suppression resistor with said bus bars;

an end cap at a first of said two opposite ends of said internal cavity of said tubular housing, said end cap being rotatably connected to said tubular housing and having electrical terminals extending therethrough, respective ones of said bus bars being connected to said terminals for making electrical connections with said assembly and for rotationally positioning and constraining said end cap with respect to said tubular housing, said end cap and said tubular housing being rotatably connected by a twist lock connection therebetween, said electrical connections of said bus bars and terminals of said end cap rotationally positioned with respect to said end cap so that said end cap is constrained in a locked position of said twist lock connection for securing said end cap on said tubular housing; and

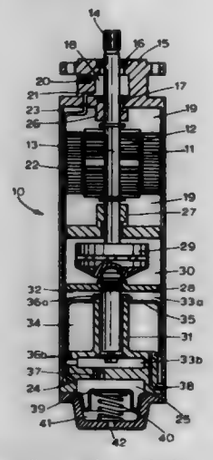
a retainer connected to said tubular housing at a second end thereof of said two opposite ends.

5,796,197

SUBMERSIBLE MOTOR SEALING SYSTEM

Russell Bookout, Fort Wayne, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Dec. 9, 1996, Ser. No. 762,135
Int. Cl.[6] H02K *5/10;5/12*
U.S. Cl. 310—85 **12 Claims**



1. An electric motor for use beneath the surface of a well fluid comprising:

(a) a tubular casing having a rotatable drive shaft along the vertical axis thereof, a coupling end of said drive shaft extending vertically upward from a closed end portion of said casing through a first shaft top seal;

(b) a top chamber in said tubular casing, beneath said casing end portion, a first dielectric liquid in said top chamber, and a fluid outlet at the base of said top chamber;

(c) a motor-lamination chamber in said tubular casing, said motor-lamination chamber containing a stator, a rotor which is operatively connected to said rotatable drive shaft, and a second dielectric liquid;

(d) a second shaft seal between said top and motor-lamination chambers for isolating dielectric liquid in said motor-lamination chamber from the dielectric liquid in said top chamber;

(e) a pressure-equalizing chamber within said tubular casing, beneath said motor-lamination chamber, said pressure-equalizing chamber containing a bladder which divides said chamber into a dielectric-fluid-containing portion and a well-fluid-containing portion;

(f) a pressure-relief chamber within said tubular casing, beneath said pressure-equalizing chamber, a wall of said relief chamber comprising the inner surface of a spring-loaded diaphragm, and a dielectric fluid inlet adjacent a bottom portion of said pressure-relief chamber for receiving fluid from said top chamber; and

(g) a vent tube in said tubular casing which interconnects said top chamber fluid outlet with said relief chamber fluid inlet.

5,796,198

ELECTRIC MOTOR FOR A POWER STEERING APPARATUS

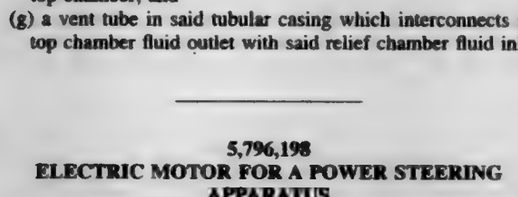
Mitsutaka Sugino, Wako; Tadao Kodaira, Maebashi, and Tugio Onodera, Sawa-gun, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, and Mitsuba Corporation, Gunma-ken, both of Japan

Filed Sep. 25, 1995, Ser. No. 533,201

Claims priority, application Japan, Sep. 27, 1994, 6-231906

Int. Cl.[6] H02K *5/00;5/24;7/06*

U.S. Cl. 310—89 **15 Claims**



1. An electric motor housing for a power steering apparatus which protects a magnetic field unit of an electric motor from injury, comprising:

a magnetic field unit outer casing encasing the magnetic field unit;

a power supply unit outer casing encasing at least part of a power supply unit and being located adjacent to one end of said magnetic field unit outer casing; and

an annular protruding portion radially protruding from a concentric outer peripheral surface of said magnetic field unit outer casing;

said annular protruding portion integrally formed with said power supply unit outer casing and said magnetic field unit outer casing;

said annular protruding portion protecting the magnetic field unit from injury.

5,796,199

PIVOTING VANE INTERNAL EXTREMITY BEARING

Jean-Louis Charbonnel, Boissise Le Roi, France, assignor to Societe Nationale D'Etude et de Construction De Moteurs D'Aviation "Snecma", Paris, France

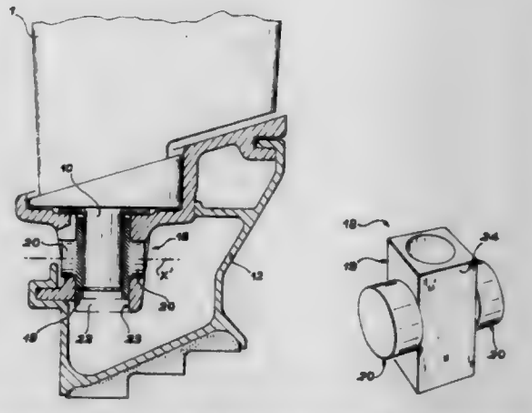
Filed Dec. 4, 1996, Ser. No. 759,927

Claims priority, application France, Dec. 20, 1995, 95 15120

Int. Cl.[6] H02K *5/16*

U.S. Cl. 310—90 **3 Claims**

1. A bearing for journalling a pivot at a radially internal extremity of a pivoting stator vane, the bearing being accommodated in a ring extending around a central axis linking a plurality of pivoting vanes together, wherein the bearing includes a bush surrounding the pivot and an axle integral with the bush, the axle being rotatable in a perforation in the ring which extends parallel to the central axis and the bush being free to rotate inside the ring.



5,796,200

BRUSHLESS MOTOR HAVING AN ANISOTROPIC DRIVING MAGNET AND AN ISOTROPIC FREQUENCY MAGNET

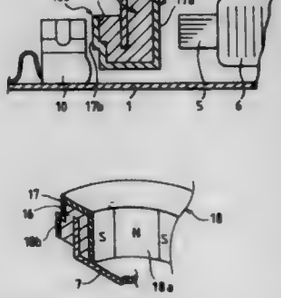
Hiroshi Sakashita, and Masayuki Katagiri, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

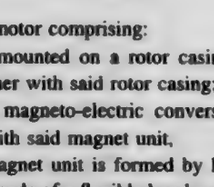
Filed Aug. 18, 1995, Ser. No. 516,938

Claims priority, application Japan, Aug. 22, 1994, 6-220933

Int. Cl.[6] H02K *21/12*

U.S. Cl. 310—156 **16 Claims**





1. A brushless motor comprising:

a magnet unit mounted on a rotor casing, said magnet being rotated together with said rotor casing; and

a stator and a magneto-electric conversion element arranged confronted with said magnet unit,

wherein said magnet unit is formed by laying on each other a first magnet made of a flexible bond magnet material which is anisotropic and a second magnet made of a flexible bond magnet material which is isotropic, and said second magnet has smaller wall thickness than said first magnet, and is confronted with said stator and said magneto-electric conversion element; and

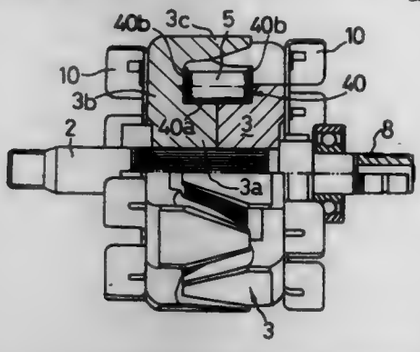
wherein said rotor casing includes a cylindrical wall, said first magnet is fixedly attached to said cylindrical wall of said rotor casing in such a manner that said first magnet is extended from the inner cylindrical surface thereof and folds over to the outer cylindrical surface thereof.

5,796,201

ROTOR OF AN AC GENERATOR FOR A VEHICLE

Kiyoaki Kamitani, Kasugai; Akiya Shichijyo, Ama-gun; Shin Kusase; Kenzo Mitani, both of Obu, and Hiroaki Ishikawa, Nagoya, all of Japan, assignors to Tokai Rubber Industries, Ltd., Komaki, and Nippondenso Co., Ltd., Kariya, both of Japan

Filed Jul. 25, 1996, Ser. No. 687,194
Claims priority, application Japan, Jul. 28, 1995, 7-193657
Int. Cl.[6] H02K *3/30;19/22*
U.S. Cl. 310—194 12 Claims



1. A rotor of an AC generator for a vehicle comprising:

a rotor core which is shaped in a claw-pole and having a boss portion which is forced to be fixed into a rotor axis and having a disk portion whose pole claws are formed at a tip portion arising in an outside diameter direction from both sides of said boss portion;

a coil bobbin body having a winding drum portion around which a rotor coil is wound and having flange portions formed at both sides of said winding drum portion; and

a rotor coil;

said winding drum portion being inserted to said boss portion of said rotor core; and said flange portions being inserted so as to face and connect an inner peripheral surface of said disc portion of said rotor core;

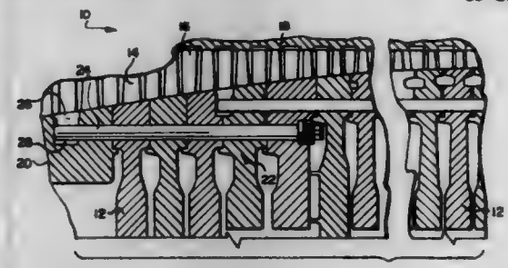
said coil bobbin body having a through hole at said winding drum portion and being made of hard resin; a hole member which is kept at said through hole and which is made of good thermal conductivity rubber; and an outer peripheral layer which is formed with said hole member integrally and which is made of good thermal conductivity rubber covering the outer peripheral surface of said winding drum portion.

5,796,202

TIE BOLT AND STACKED WHEEL ASSEMBLY FOR THE ROTOR OF A ROTARY MACHINE

William Lee Herron, Greer, S.C.; Frederick Martin Miller, Cincinnati, Ohio, and William Gary Klump, Simpsonville, S.C., assignors to General Electric Co., Schenectady, N.Y.

Filed Feb. 20, 1997, Ser. No. 803,485
Int. Cl.[6] H02K *1/28*
U.S. Cl. 310—217 15 Claims



1. A tie bolt and stacked wheel assembly for the rotor of a rotary machine, comprising:

a plurality of stacked wheels for rotation about a common axis and forming part of the rotor;

a plurality of elongated tie bolts passing through said stacked wheels for retaining the stacked wheels in assembled relation relative to one another and spaced from one another circumferentially about the rotor;

at least one of said tie bolts having external threads at one end;

a first nut threaded onto said externally threaded end of said one tie bolt and having a plurality of facets for tightening the nut about said one tie bolt end;

a cover having a central aperture for receiving the one end of the tie bolt and a recess on one side thereof defined by an axially extending member for receiving at least a portion of said nut;

an internal surface of said member about said nut portion having a plurality of facets in excess of the number of facets on said nut; and

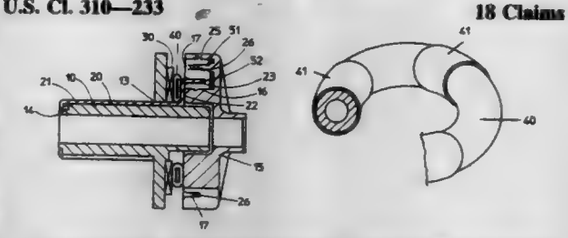
a radially outwardly projecting portion carried by said cover for engaging a portion of said rotor for preventing rotation of the one tie bolt within the stacked wheels of the rotor.

5,796,203

NOISE SUPPRESSED COMMUTATOR

Patrick Shui-Chung Wang, Repulse Bay, Hong Kong, assignor to Johnson Electric, S.A., La Chaux de Fonds, Switzerland

Continuation of Ser. No. 435,734, May 5, 1995, abandoned.
This application Apr. 18, 1997, Ser. No. 843,547
Claims priority, application United Kingdom, May 11, 1994, 9409375
Int. Cl.[6] H02K *13/04;39/04*
U.S. Cl. 310—233 18 Claims



1. A commutator for an electric motor, the commutator comprising:

a base;

a plurality of commutator segments mounted on the base, each commutator segment having a terminal portion;

an annular ceramic varistor;

an annular resiliently deformable ring electrically connecting the varistor to the terminals portions; and

a crown having a plurality of separate insulation displacing terminals, each of the insulation displacing terminals straddling and gripping a respective armature lead of the electric motor and electrically coupling the lead to a respective terminal portion, the crown mating with the base in such a manner that the resiliently deformable ring is clamped between the varistor and the insulation displacing terminals.

5,796,204

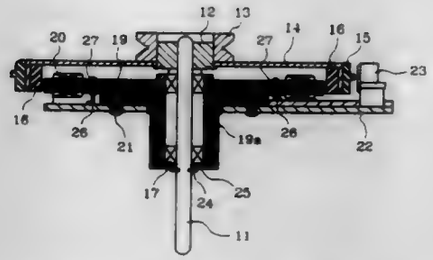
BRUSHLESS MOTOR WITH A STATOR CORE INTEGRAL WITH A HOLDER

Suk Ha Woo, Kyungki-do, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 2, 1996, Ser. No. 581,797
Claims priority, application Rep. of Korea, Dec. 30, 1994, 1994 38308
Int. Cl.[6] H02K *1/12*
U.S. Cl. 310—258 9 Claims

1. A brushless motor, comprising:

a motor shaft;



a rotor, including a supporter and a pulley located on the motor shaft, a rotor case having a main magnet mounted on an inner peripheral face of the rotor case, and a frequency generator magnet mounted on an outer peripheral face of the rotor case;

a stator, including a stator core, and at least one bearing supporting the motor shaft relative to the stator, and having at least one driving coil wound on said stator core;

a printed circuit board including a Hall sensor; and

a first supporting member integrated with said stator core to support said bearing.

5,796,205

SURFACE ACOUSTIC WAVE DEVICE AND METHOD OF PRODUCING THE SAME

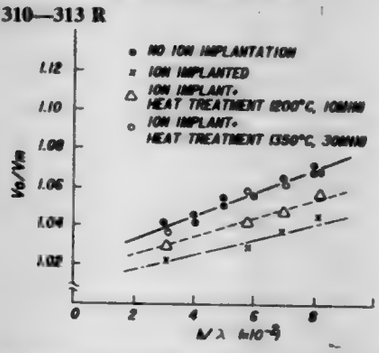
Tokihiro Nishihara; Takashi Matsuda; Hidema Uchishiba; Osamu Ikata; Yoshio Satoh, and Kazunari Komenou, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 290,639, Aug. 16, 1994, abandoned. This application Mar. 14, 1996, Ser. No. 615,798

Claims priority, application Japan, Nov. 25, 1993, 5-295202; Dec. 28, 1993, 5-320314; Jun. 30, 1994, 6-150228

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—313 R **9 Claims**



1. A SAW (Surface Acoustic Wave) device comprising:

a piezoelectric member;

a heat-treated ion implantation layer formed in a surface portion of the piezoelectric member; and

a comb type resonator comprising an interdigital electrode and reflectors formed on said heat-treated ion implantation layer, wherein the heat-treated ion implantation layer is formed in the entire surface portion on which the resonator is formed.

5,796,206

CONTROLLER AND CONTROLLING METHOD FOR PIEZOELECTRIC ACTUATOR

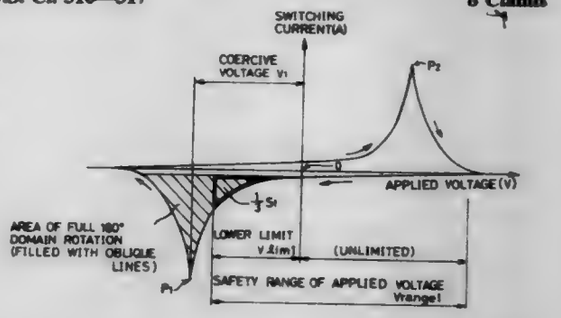
Mitsuru Asai, Aichi-ken; Nobuo Kamiya, Nisshin; Tomoji Ishikawa, Okazaki, and Chihiro Nishikawa, Toyota, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, and Toyota Jidosha Kabushiki Kaisha, Toyota, both of Japan

Filed Oct. 2, 1996, Ser. No. 725,679

Claims priority, application Japan, Oct. 5, 1995, 7-258636

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—317 **8 Claims**



1. A controller for a piezoelectric actuator made of a piezoelectric material, the controller driving the actuator by applying a voltage in a predetermined range, thereby producing a displacement or a force due to piezoelectric effect, said controller comprising:

applied voltage limiting means for setting one of an upper limit and a lower limit of the applied voltage so that an area of 180° domain rotation falls in a safety range being one third or less an area of full 180° domain rotation.

5,796,207

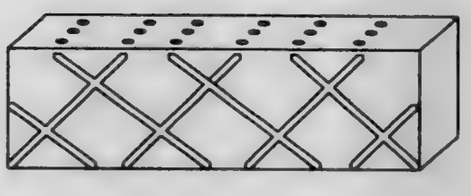
ORIENTED PIEZO ELECTRIC CERAMICS AND CERAMIC/POLYMER COMPOSITES

Ahmad Safari, Princeton Junction; Stephen C. Danforth, Belle Mead; Amit Bandyopadhyay, Edison; Victor F. Janas, Monroe Township, and Rajesh Kumar Panda, New Brunswick, all of N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.

Filed Apr. 28, 1997, Ser. No. 847,901

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—358 **21 Claims**



1. A piezoelectric composite comprising:

at least one piezoelectric phase and at least one non-piezoelectric phase wherein said piezoelectric phase is oriented at an angle with respect to the poling direction and wherein at least one said piezoelectric phase is continuously self-connected in three directions.

5,796,208

ELECTRODELESS FLUORESCENT LAMP WITH ONE-PIECE ELECTRICALLY INSULATIVE

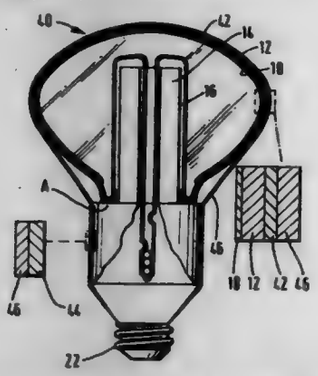
Mahomed Hanif Girach, Leicester, England, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 17, 1996, Ser. No. 730,800

Claims priority, application United Kingdom, Oct. 18, 1995, 9521374

Int. Cl.[6] H01J *1/62;63/04*

U.S. Cl. 313—493 15 Claims



1. An electrodeless fluorescent lamp including a discharge vessel, the outer surface of the vessel being coated with a light transmissive electrically conductive layer, and a housing of metal which makes electrical contact with the electrically conductive layer and which supports the discharge vessel, a one-piece electrically insulative layer covering substantially the entirety of the housing and at least partially covering the vessel, the one-piece layer serving to insulate both the electrically conductive layer and the housing.

5,796,209

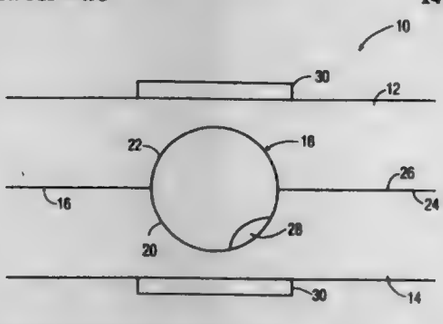
GAS DISCHARGE LAMPS AND LASERS FABRICATED BY MICHROMACHINING

Babar Ali Khan, Ossining; David Alan Cammack, Scarborough; Ronald D. Pinker, Peekskill, and Nikhil Ramesh Taskar, Ossining, all of N.Y., assignors to Philips Electronics North America, New York, N.Y.

Continuation of Ser. No. 922,707, Jul. 28, 1992, abandoned. This application Oct. 27, 1994, Ser. No. 484,256

Int. Cl.[6] H01J *1/62;17/16;9/12*

U.S. Cl. 313—493 14 Claims



1. A gas discharge light emitting device comprising:

a) first and second substrates of continuous material capable of withstanding heat and pressure;

b) at least one of said substrates light transmissive;

c) said substrates having confronting planar surfaces in contact with each other;

d) at least one of the substrates having at least one cavity disposed therein, the cavity having an opening at the planar surface of the substrate;

e) a bonded interface disposed substantially across said substrates at their confronting surfaces, except at said cavity;

f) luminescent gas discharge material disposed in said cavity; and

g) means for energizing said luminescent material.

5,796,210

CIRCULAR FLUORESCENT LAMP UNIT AND LIGHTING APPARATUS

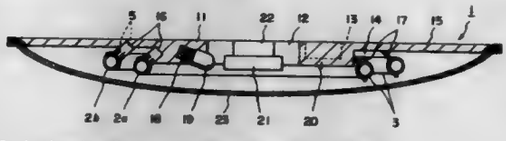
Yuichi Sakakibara, Kanuma; Toshiharu Yagi; Akinori Yasuhara, both of Yokosuka, and Ichiro Yamada, Yokohama, all of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Mar. 4, 1997, Ser. No. 811,538

Claims priority, application Japan, Mar. 5, 1996, 8-047825; Mar. 29, 1996, 8-075593; Jan. 23, 1997, 9-009943

Int. Cl.[6] H01J *61/32;61/72*

U.S. Cl. 313—493 19 Claims



1. A circular fluorescent lamp unit comprising:

a circular glass bulb having a circular outer diameter set within a range of 285 to 310 mm or thereabout, a tube outer diameter set within a range of 15 to 18 mm or thereabout, and an inner surface onto which a fluorescent substance is applied;

a discharge medium including a rare gas and a mercury sealed up in the circular glass bulb; and

a pair of electrode means fitted in both end portions of the circular glass bulb so as to be sealed therein whereby discharge occurs in the circular glass bulb by providing the pair of electrode means with a lamp power so that the circular glass bulb lights;

wherein said lamp power has a high frequency which is not less than 10 kHz and said lamp power is set within a range of 20 to 40 W or thereabout.

5,796,211

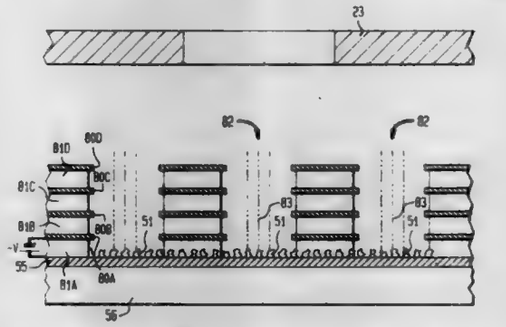
MICROWAVE VACUUM TUBE DEVICES EMPLOYING ELECTRON SOURCES COMPRISING ACTIVATED ULTRAFINE DIAMONDS

John Edwin Graebner, Short Hills; Sungho Jin, Millington; Gregory Peter Kochanski, Dunellen, and Wei Zhu, Middlesex, all of N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 381,375, Jan. 31, 1995, Pat. No. 5,616,368, and Ser. No. 361,616, Dec. 22, 1994, Pat. No. 5,709,577. This application May 1, 1996, Ser. No. 640,592

Int. Cl.[6] H01J *23/04*

U.S. Cl. 315—3.5 26 Claims



1. In a microwave vacuum tube device comprising an evacuated tube having an input window for the introduction of a microwave input signal, a source of electrons, an interaction structure for

enhancing interaction between said input signal and electrons from said source, and an output window for permitting the output of a microwave signal derived from said electrons, the improvement wherein:

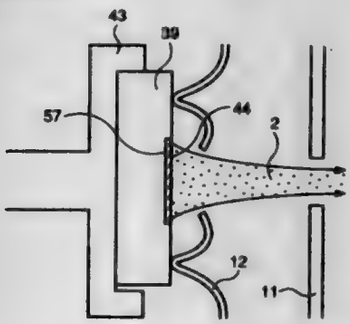
said electron source comprises a cathode comprising ultrafine diamond emitter particles predominantly in the range 10 nm to 1000 nm in diameter, said diamond particles being heat-treated in a plasma comprising hydrogen for producing, without heating, electron emission current density of 10 mA/cm^2 at electric fields of 10V/micrometer or less.

5,796,212

LINEAR BEAM MICROWAVE TUBE WITH PLANAR COLD CATHODE ELECTRODE AS ELECTRON BEAM SOURCE

Satoshi Tonegawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 30, 1996, Ser. No. 739,782
Claims priority, application Japan, Oct. 31, 1995, 7-282938
Int. Cl.[6] H01J *23/083*
U.S. Cl. 315—5.33 **5 Claims**



1. A linear beam microwave tube having an electron gun section serving as an electron beam source, a high frequency circuit section including a slow-wave circuit for causing interaction between an electron beam and a microwave, and a collector section for collecting the electron beam produced as a result of the interaction process in said high frequency circuit section, said linear beam microwave tube comprising:

a cathode chip having a planar cold cathode electrode disposed thereon and having no heater in said electron gun section and having an electron emission region; and

a beam focusing electrode being in direct contact with a surface of said cathode chip and disposed in front of said planar cold cathode electrode, said beam focusing electrode having a concave portion on a side opposite to said planar cold cathode electrode and having a hole whose diameter is smaller than said electron emission region of said planar cold cathode electrode.

5,796,213

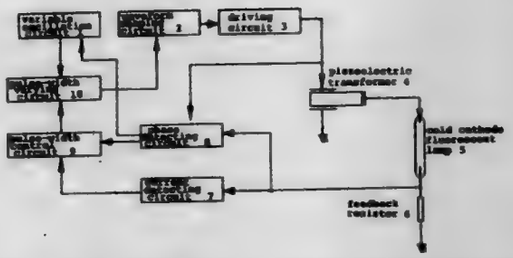
INVERTER POWER SOURCE APPARATUS USING A PIEZOELECTRIC TRANSFORMER

Osamu Kawasaki, Tsuzuki-gun, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 3, 1996, Ser. No. 706,906
Claims priority, application Japan, Aug. 31, 1995, 7-223285
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—209 R **12 Claims**

1. An inverter power source apparatus using a piezoelectric transformer, comprising:

variable oscillating means for oscillating a pulse signal which starts at a frequency which is higher than a preset frequency range above a resonance frequency of a piezoelectric transformer,



pulse-width changing means for changing a width of said pulse signal of said variable oscillating means;

driving means for generating a driving signal on the basis of an output of said pulse-width changing means;

said piezoelectric transformer which is driven by said driving signal, drives a predetermined load, and has input and output electrodes;

detecting means for detecting a relationship between said driving signal and a resonance frequency of said piezoelectric transformer, and for, on the basis of a result of the detection, controlling a frequency of said oscillation signal of said variable oscillating means so that a difference between said resonance frequency and a frequency of said driving signal is substantially within said preset frequency range; and

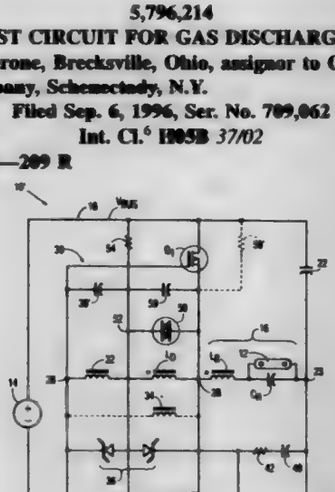
pulse-width controlling means for, when a detection results of said detecting means shows that said difference between said resonance frequency and said frequency of said driving signal is substantially within said preset frequency range, controlling said pulse-width changing means so that a current flowing through said load is substantially constant.

5,796,214

BALLAST CIRCUIT FOR GAS DISCHARGE LAMP

Louis R. Nerone, Brecksville, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 6, 1996, Ser. No. 709,062
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—209 R **12 Claims**



1. A ballast circuit for a gas discharge lamp, comprising:

(a) a resonant load circuit incorporating the gas discharge lamp and including a resonant inductance and a resonant capacitance;

(b) a d.c.-to-a.c. converter circuit coupled to said resonant load circuit for inducing an a.c. current in said resonant load circuit, said converter circuit comprising:

(i) first and second switches serially connected between a bus conductor at a d.c. voltage and a reference conductor, and being connected together at a common node through which said a.c. load current flows;

(ii) said first and second switches each comprising a control node and a reference node, the voltage between such nodes determining the conduction state of the associated switch;

(iii) the respective control nodes of said first and second switches being interconnected; and

(iv) the respective reference nodes of said first and second switches being connected together at said common node;

(c) a gate drive arrangement for regeneratively controlling said first and second switches; said arrangement comprising:

(i) a driving inductor mutually coupled to said resonant inductor in such manner that a voltage is induced therein which is proportional to the instantaneous rate of change of said a.c. load current; said driving inductor being connected between said common node and said control nodes;

(ii) a second inductor serially connected to said driving inductor, with the serially connected driving and second inductors being connected between said common node and said control nodes; and

(iii) a bidirectional voltage clamp connected between said common node and said control nodes for limiting positive and negative excursions of voltage of said control nodes with respect to said common node.

5,796,215

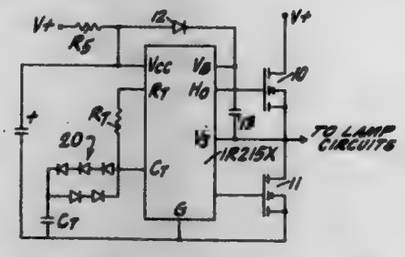
SOFT START CIRCUIT FOR SELF-OSCILLATING DRIVERS

John Edward Parry, Derby, England, and Peter N. Wood, Rolling Hills Estates, Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Filed Jun. 28, 1996, Ser. No. 671,655

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—224 **19 Claims**



1. A control circuit for a resonant load to impart soft start characteristics to the resonant load; said control circuit comprising a pair of power MOSFETs connected as a half bridge connected to said resonant load to drive said load at a frequency determined by the frequency at which said power MOSFETs are alternately turned on and off; a source of voltage V_{cc} connected to said pair of power MOSFETs; said control circuit including circuit means having input terminals connected to said source of voltage V_{cc} and output terminals whereby gate turn-on signals are produced at said output terminals and are connected to the gate terminals of said pair of power MOSFETs; the frequency of operation of said output terminals being controlled by an input to said input terminals; and constant voltage means connected to said input terminals for subtracting a constant voltage from the voltage applied to said input terminals, thereby to cause soft start of said circuit as the voltage V_{cc} increases toward its operating value.

5,796,216

ELECTRONIC IGNITION ENHANCING CIRCUIT HAVING BOTH FUNDAMENTAL AND HARMONIC RESONANT CIRCUITS AS WELL AS A DC OFFSET

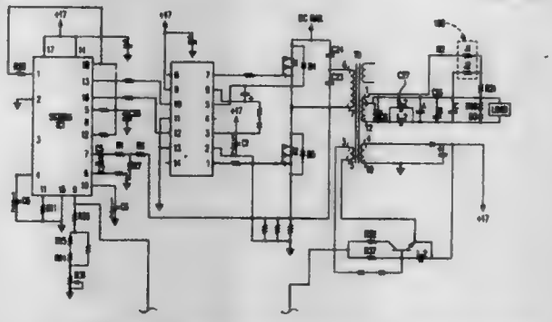
Denny Dee Beasley, Fairfield, Ohio, assignor to Delta Power Supply, Inc., Cincinnati, Ohio

PCT No. PCT/US93/06713, § 371 Date Mar. 31, 1995, § 102(e) Date Mar. 31, 1995, PCT Pub. No. WO94/03034, PCT Pub. Date Feb. 3, 1994

PCT Filed Jul. 16, 1993, Ser. No. 367,209

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—307 **25 Claims**



1. A ballast circuit for igniting and operating a discharge lamp, the circuit comprising:

a transformer having a primary winding and a variable flux linked secondary winding connected to a discharge lamp, said primary winding being connected to a driver circuit, said secondary winding being connected in series with said lamp through a capacitor having a capacitance such that a first resonant circuit having an essentially zero reactance with respect to said lamp results after ignition of said lamp;

a driver circuit connected to said primary winding for driving said transformer at a sufficiently high frequency to initiate and to maintain a stable arc in the operation of said lamp connection to said secondary winding;

an ignition circuit including a direct current offset circuit and a second resonant circuit, said ignition circuit being connected between said transformer and said lamp;

said second resonant circuit establishes a resonance at one of the harmonics of said second resonant circuit prior to ignition of said lamp; and

said direct current offset circuit applies a non-oscillatory voltage to said lamp in combination with an oscillatory voltage applied to said lamp by said second resonant circuit;

wherein said combination of oscillatory and non-oscillatory voltages applied to said lamp reduces the voltage otherwise required for ignition of said lamp.

5,796,217

PICTURE DISPLAY APPARATUS WITH A SOFT-START DEVICE

Pierre Vacher, Suresnes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 3, 1997, Ser. No. 792,047

Claims priority, application France, Feb. 7, 1996, 96 01479

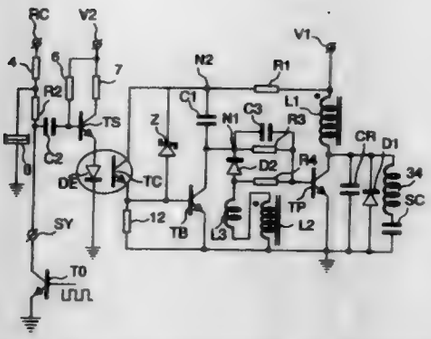
Int. Cl.[6] G09G *1/04*; **H01J** *29/70*

U.S. Cl. 315—408 **9 Claims**

1. A picture display apparatus provided with a cathode ray tube (32) and a device

for generating a sawtooth current in a beam deflection coil, and for producing,

by means of a transformer, different voltages required for the apparatus, said device comprising, for supplying the deflection coil current, a bipolar power transistor having a base current which is automatically maintained by a positive feedback provided by a winding of the transformer connected in such a sense that the winding supplies a voltage to the base of the power transistor which is suitable for increasing its con-



ductance when the power transistor is already conducting, and is diverted so as to render the power transistor non-conducting by means of an element, referred to as blocking element, which is alternately rendered conducting and non-conducting by a line frequency signal, characterized in that the apparatus comprises an integrator circuit having an input which is connected to a terminal which conveys a run/standby signal, and an output which conveys a voltage varying progressively during a transition of the value of the run/standby signal and is connected to an assembly which, as a function of said output voltage, varies the duty factor of the line frequency signal which controls the blocking elements.

5,796,218

HIGH VOLTAGE STABILIZING CIRCUIT

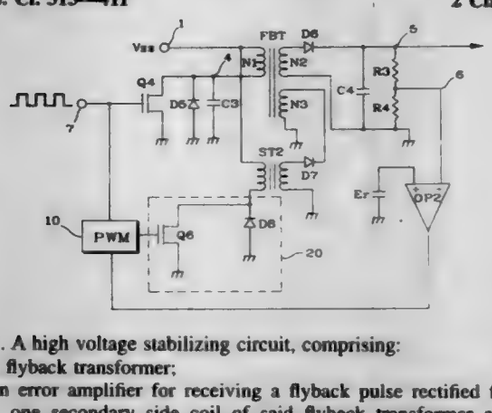
Joong-Yeol Kwon, and Hideki Kofune, both of Kyungki-do, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Mar. 28, 1997, Ser. No. 829,136

Claims priority, application Rep. of Korea, Mar. 28, 1996, 1996 8907

Int. Cl.[6] H01J *29/70*

U.S. Cl. 315—411 **2 Claims**



1. A high voltage stabilizing circuit, comprising:

a flyback transformer;

an error amplifier for receiving a flyback pulse rectified from one secondary side coil of said flyback transformer at an inverting terminal thereof and for receiving a reference voltage at a non-inverting terminal thereof, and for comparing the received inputs;

a pulse width modulator for implementing a modulating operation in response to an output signal from said error amplifier and for simultaneously generating an output signal which is synchronous with the flyback pulse;

a switching unit for performing a switching operation in accordance with the output signal of said pulse width modulator; and

an auxiliary transformer having a primary side coil to which an output signal of said switching unit is supplied and having a secondary side coil which is connected in parallel to another secondary side coil of said flyback transformer, for producing an output pulse corresponding to the flyback pulse outputted from said flyback transformer.

5,796,219

METHOD AND APPARATUS FOR CONTROLLING THE ACCELERATION ENERGY OF A RADIO-FREQUENCY MULTIPOLE LINEAR ACCELERATOR

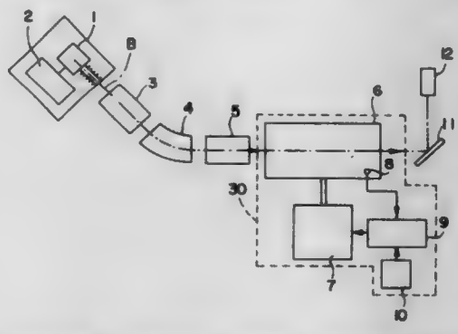
Akira Hirakimoto, 2-1-6-401 Nishisakaidani-cho, Ohharno Nishigyo-ku Kyoto 604, and Masatoshi Asari, 3-1-11 Shikanodai-Higashi, Ikoma Nara 630-01, both of Japan

Continuation-in-part of Ser. No. 14,793, Feb. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 713,037, Jun. 7, 1991, abandoned, which is a continuation of Ser. No. 379,337, Jul. 12, 1989. This application Sep. 22, 1995, Ser. No. 532,116

Claims priority, application Japan, Jul. 15, 1988, 63-176540

Int. Cl.[6] H05H *7/12*

U.S. Cl. 315—500 **3 Claims**



1. A method for controlling a particle acceleration energy in a radio-frequency quadrupole accelerator, using an RFQ accelerator including a cylindrical tank accommodating four electrodes extending axially of the tank, the electrodes defining a wavy acceleration cell around and along the axis of the cylindrical tank by the wavy edges of the electrodes, the tank being first supplied with a resonant frequency voltage having the same resonant frequency as that of the RFQ accelerator so as to put the tank into a resonant condition and then the wavy acceleration cell being supplied with charged particles at a predetermined incident energy, wherein the resonant frequency voltage is continuously shifted by a predetermined value below a voltage at which the resonant condition is effected.

5,796,220

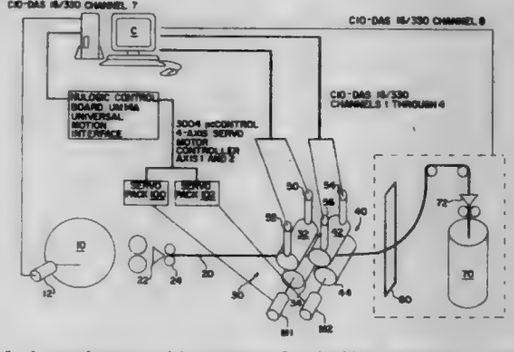
SYNCHRONOUS DRIVE SYSTEM FOR AUTOMATED TEXTILE DRAFTING SYSTEM

Timothy G. Clapp, New Hill; Jon P. Rust, Raleigh, both of N.C.; Carlos Farrington, Guatemala, Guatemala, and Dale Thomas Bowen, Timberlake, N.C., assignors to North Carolina State University, Raleigh, N.C.

Filed Jul. 19, 1996, Ser. No. 683,843

Int. Cl.[6] H02P *1/54*

U.S. Cl. 318—51 **5 Claims**



1. A synchronous drive system for drafting rollers of a textile drafting system comprising at least two (2) pairs of cooperating

tongue and groove drafting rollers for drafting a textile fiber strand of material therebetween, said drive system comprising:

(a) synchronous gear drive means mechanically connecting each pair of said at least two pairs of cooperating tongue and groove drafting rollers such that rotation of one of said rollers of each of said at least two pairs of rollers causes simultaneous rotation of the other roller of said at least two pairs of tongue and groove drafting rollers at the same surface speed;

(b) at least two independent motor means wherein each of said independent motor means is operatively connected to a corresponding one roller of each of said at least two pairs of cooperating drafting rollers; and

(c) control means electrically connected to each of said independent motor means for controlling the operating speed of each of said independent motor means for desired drafting of the textile fiber strand.

5,796,221

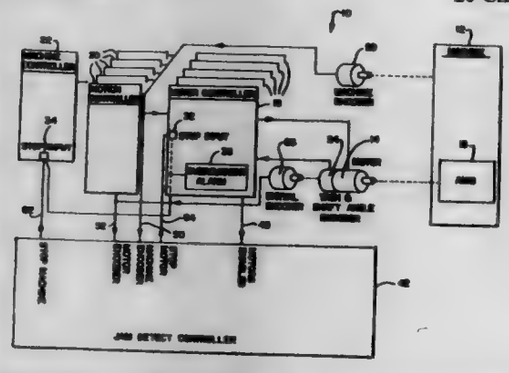
OVERLOAD DETECTOR FOR SERVO DRIVEN MACHINES

Charles C. Cramer, New Holstein, and Dale M. Cherney, Howards Grove, both of Wis., assignors to Paper Converting Machine Company, Green Bay, Wis.

Filed Jul. 14, 1994, Ser. No. 274,907

Int. Cl.[6] H02P *5/46*

U.S. Cl. 318—68 **20 Claims**



1. In an apparatus having at least two axes, each axis having a separate means for driving that axis, and one axis being designated as a master axis and all other axes being designated as secondary axes, the improvement comprising a controller for detecting abnormal operating conditions of an axis, comprising:

a. means for generating a first signal indicative of a velocity of the master axis,

b. means for generating a second signal for each secondary axis indicative of a velocity of each secondary axis,

c. means for periodically generating a ratio of each said second signal to said first signal, a most recently generated ratio being a last-determined ratio,

d. means during operation of said axes for creating an average ratio for each secondary axis from a series of said ratios for each secondary axis,

e. means for creating a ratio comparison by comparing each said last-determined ratio to a corresponding one of said average ratios,

f. means for generating a stop signal if any one of said ratio comparisons exceeds a predetermined minimum deviation from a corresponding average ratio, and

g. means responsive to said stop signal for stopping said apparatus.

5,796,222

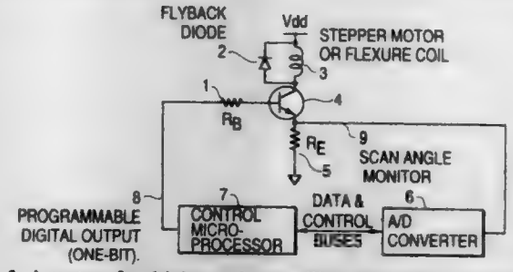
SYSTEM FOR DRIVING AND CONTROLLING THE MOTION OF AN OSCILLATORY ELECTROMECHANICAL SYSTEM ESPECIALLY SUITABLE FOR USE IN AN OPTICAL SCANNER

Scott R. Grodevant, Hilton, N.Y., assignor to PSC Inc., Webster, N.Y.

Continuation of Ser. No. 331,411, Oct. 31, 1994, abandoned. This application Aug. 9, 1996, Ser. No. 699,223

Int. Cl.[6] H02K *29/08;* **G06K** *7/10*

U.S. Cl. 318—119 **17 Claims**



1. A system for driving and controlling the motion of an oscillatory electromechanical system having an electromagnetic actuator including a single coil and magnetic field producing means which move with respect to each others, said system comprising:

means for applying device pulses to said coil and for monitoring a signal induced in said coil representing the position of said coil as said system oscillates;

means responsive to said position representing signal for computing the period of oscillation; and

means responsive to said computed period for generating driving pulses at a selected repetition rate for operating said applying means.

5,796,223

METHOD AND APPARATUS FOR HIGH-SPEED DRIVING OF ELECTROMAGNETIC LOAD

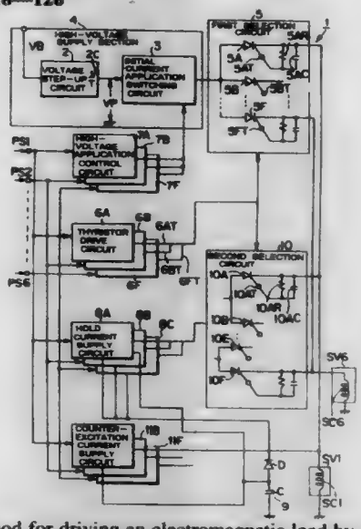
Masuhiro Ohtsuka; Hiromi Kono, and Tsuneo Adachi, all of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Jun. 27, 1997, Ser. No. 884,501

Claims priority, application Japan, Jul. 2, 1996, 8-189919; Jul. 2, 1996, 8-189920; Jul. 26, 1996, 8-214110

Int. Cl.[6] H01F *7/08;7/18*

U.S. Cl. 318—126 **20 Claims**



1. A method for driving an electromagnetic load by, in response to a given control pulse signal, applying high voltage to the electromagnetic load at an initial driving stage to quickly operate the electromagnetic load, thereafter shifting to a constant current

driving state, and applying counter-excitation to the electromagnetic load upon terminating driving thereof, the method comprising

in response to the control pulse signal, applying high voltage to the electromagnetic load for a prescribed time period starting from a leading edge time point of the control pulse signal,

in response to a back electromotive force produced in the electromagnetic load upon cut-off of the application of the high voltage to the electromagnetic load, supplying the electromagnetic load with a constant current required for holding operation of the electromagnetic load until a trailing edge time point of the control pulse signal,

using the back electromotive force produced in the electromagnetic load to store electrical energy in energy storage means, and

in response to the control pulse signal, starting to supply electrical energy stored in the energy storage means to the electromagnetic load as counter-excitation current at the trailing edge time point of the control pulse signal.

19. An apparatus for driving an electromagnetic load which applies a high voltage to the electromagnetic load at an initial driving stage to operate the electromagnetic load at high speed and thereafter applies a hold current of required constant level to the electromagnetic load to hold it in a steady operating state, the apparatus comprising

a high-voltage supply section including a capacitor for storing high-voltage energy for the high-speed operation of the electromagnetic load,

switching means provided between the capacitor and the electromagnetic load for supplying high-voltage energy from the capacitor to the electromagnetic load, and

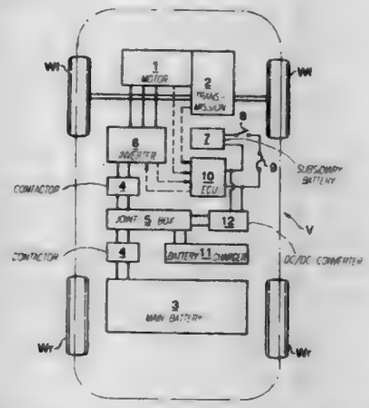
control circuit means responsive to an electric signal for starting electromagnetic load driving and the output voltage of the capacitor for controlling the switching means to turn on from application of the electric signal until the output voltage falls to a prescribed level.

5,796,224

CONTROL SYSTEM FOR ELECTRIC VEHICLE

Kiyotaka Hayashi; Hisahiro Ito; Tomoyuki Itoh, and Naofumi Hoshi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1996, Ser. No. 639,407
Claims priority, application Japan, Apr. 28, 1995, 7-105434
Int. Cl.[6] H02P *1/00*
U.S. Cl. 318—139 **5 Claims**



1. A control system for an electric vehicle, comprising:

an inverter which is disposed between a battery and a motor and which converts a DC electric power of said battery into an AC electric power to supply it to said motor during driving of said motor, and converts an AC electric power generated by said motor into a DC electric power to supply it to said battery during regenerative operation of said motor;

an electric current sensor for detecting an electric current in a DC section of said inverter;

a voltage sensor for detecting a voltage in the DC section of said inverter;

an actual electric power calculating means for calculating an actual electric power to be inputted to said inverter, based on an electric current detected by said electric current sensor and a voltage detected by said voltage sensor;

a target electric power calculating means for calculating a target electric power to be inputted to said inverter, based on at least an accelerator opening degree;

and a feed-back control means for controlling the operational state of said motor through said inverter to make the actual electric power calculated by said actual electric power calculating means coincide with the target electric power calculated by said target electric power calculating means; wherein

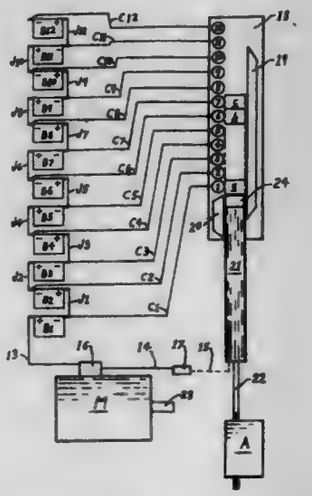
said control system further includes a regeneration prohibiting means for prohibiting the regenerative operation of said motor for protecting said inverter, said regeneration prohibiting means being operated when the voltage in the DC section of said inverter exceeds a predetermined value, and the operation of said regeneration prohibiting means being stopped when the electric current in the DC section of said inverter exceeds a predetermined value during operation of said regeneration prohibiting means.

5,796,225

ELECTRIC VEHICLE POWER CONTROL SYSTEM

Anthony W. Fini, Jr., 4273 Mundy St., Blasdell, N.Y. 14219

Filed Feb. 20, 1997, Ser. No. 802,915
Int. Cl.[6] H02M *1/08;* **H02P** *5/162*
U.S. Cl. 318—139 **13 Claims**



1. In a vehicle comprising an electric motor enabled by an electrical power storage means containing a plurality of storage battery units each having about equivalent rated voltage output and arranged in series electrical connection, the improvement comprising:

said plurality of battery units arranged in said series comprising an aggregate voltage output which exceeds voltage requirements of said electric motor;

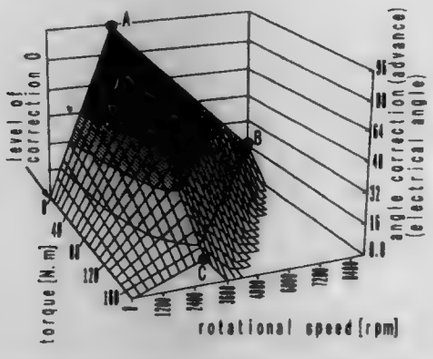
voltage controller means, arranged to enable variable voltage output from said storage means to said electric motor, by progressively increasing or decreasing the aggregate number of battery units participating in electrical series connection to enable said electric motors and means arranged to automatically increase aggregate battery power by adding a battery unit having an actual voltage output about equivalent to the rated voltage output of storage battery units to said participating electrical series connection and coincidentally removing a battery having an actual voltage output below about said rated voltage output from said participating series connection.

5,796,226

ENERGIZATION CONTROL SYSTEM FOR SWITCHED RELUCTANCE MOTOR

Akemi Ookawa, Chita-gun, and Chiaki Umemura, Toyohashi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 17, 1996, Ser. No. 714,995
Claims priority, application Japan, Sep. 29, 1995, 7-253240
Int. Cl.[6] H02P 7/00
U.S. Cl. 318—254 **8 Claims**



1. An energization control system for an electric motor comprising:

means for detecting an angle of rotation of a rotor of the motor;

a controller for generating a target current which includes means for determining an energization OFF angle, said energization OFF angle being advanced from a standard energization OFF angle in proportion to the rotational speed when the rotational speed is under or equal to a predetermined value, said predetermined value being equal to or near to an upper threshold value of a speed range at which a high level of acoustic noises is generated with the standard energization OFF angle; and

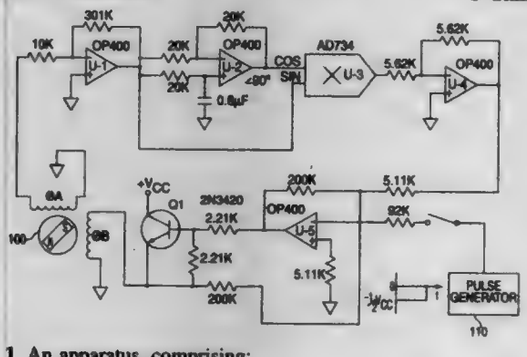
a motor driver for supplying a current responding to the target current for energizing the motor during a time interval from an energization ON angle to the energization OFF angle.

5,796,227

INITIALIZATION DAMPING FOR A PERMANENT MAGNET MOTOR

Jerome Sears, 428 Glendale Rd., Wyckoff, N.J. 07481; Walter Parfomak, 35 Orchard St., Wallington, N.J. 07057, and Walter Kluss, 363 Harding Ave., Clifton, N.J. 07011

Filed Feb. 18, 1997, Ser. No. 801,879
Int. Cl.[6] H02K 23/00
U.S. Cl. 318—254 **5 Claims**



1. An apparatus, comprising:

rotor for rotating about an axis, the rotor means having a permanent magnet;

at least a first and second winding, each of the windings positioned in magnetic proximity to the rotor means;

pulse generator means for providing an alignment pulse to the first winding, the pulse generator means having an input for modulating the amplitude of the alignment pulse;

means for sensing the back emf induced in the second winding; and

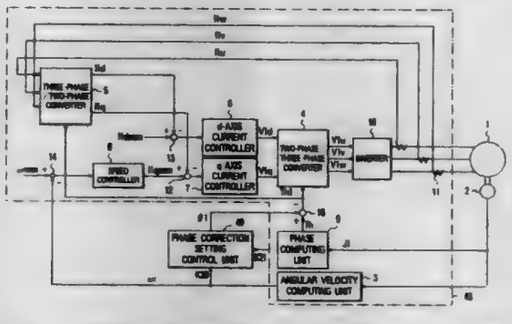
means for doubling the frequency of the sensed back emf to generate a double-frequency back emf feedback signal to modulate the pulse and minimize the back emf.

5,796,228

METHOD OF CONTROLLING ROTARY MAGNET MULTI-PHASE SYNCHRONOUS MOTOR AND CONTROL THEREFOR

Sadaaki Kojima; Hiroshi Araki, and Satoru Kato, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 25, 1997, Ser. No. 823,579
Claims priority, application Japan, Sep. 4, 1996, 8-234290
Int. Cl.[6] G05B 19/31
U.S. Cl. 318—605 **16 Claims**



1. A method of controlling a rotary magnet multi-phase synchronous motor using a position detector for detecting a magnet position of the synchronous motor, and a drive unit for driving the synchronous motor, the control method comprising:

driving a synchronous motor including a position detector using a drive unit to detect when said synchronous motor reaches a constant speed;

measuring a current and a drive voltage of said synchronous motor when said synchronous motor reaches a constant speed;

calculating a phase correction value between a biaxial coordinate axis used for control based on installation error of said position detector and a biaxial coordinate system due to conversion of a polyphase AC coordinate system based on measured current, measured drive voltage, a constant of said synchronous motor, and the constant speed; and

correcting rotor position of said synchronous motor based on the phase correction value.

5,796,229

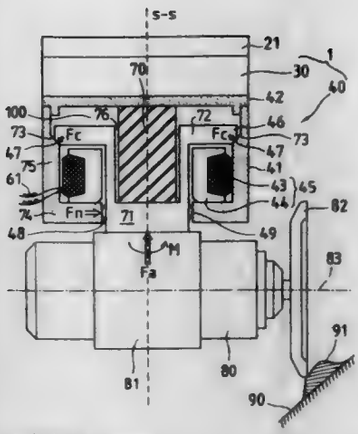
METHOD AND APPARATUS FOR ROBOTIC FORCE CONTROLLED MATERIAL REMOVAL WITH PROGRAMMABLE OVERLOAD RELEASE FUNCTION

Hadi A. Akeel, Rochester Hills, Mich., assignor to Fanuc Ltd., Yamanashi, Japan

Continuation of Ser. No. 301,779, Sep. 7, 1994, abandoned. This application Dec. 2, 1996, Ser. No. 758,877
Claims priority, application Japan, Sep. 10, 1993, 5-248492
Int. Cl.[6] G05B 9/02
U.S. Cl. 318—563 **7 Claims**

1. An apparatus for robotic force controlled material removal with a programmable electromechanical overload release mechanism, said electromechanical overload release mechanism comprising:

tool support means for supporting a material removal tool in contact with a workpiece;



a housing defining a space;

follower means disposed within the space of said housing and integrally moving with said tool support means, said follower means defining a cylindrical hollow;

electromagnet means disposed within the space of said housing for maintaining a constant relative position of said follower means with respect to said housing;

means for setting a magnitude of a force for maintaining a constant relative position of said follower means with respect to said housing;

programmable guide means for guiding said follower means in response to a program when a force exceeding said maintaining force is transmitted from the workpiece to said material removal tool, wherein said guide means controls said follower means to move both linearly and angularly;

elastic means disposed within the cylindrical hollow of said follower means and contacting the housing for elastically restricting displacement and damping vibrations of said follower means; and

means for sensing the force applied to said material removal tool from said workpiece;

wherein said guide means retreats said material removal tool from the workpiece when the sensed force exceeds a programmed threshold value.

5,796,230

METHOD FOR TRIGGERING A FINAL CONTROL ELEMENT

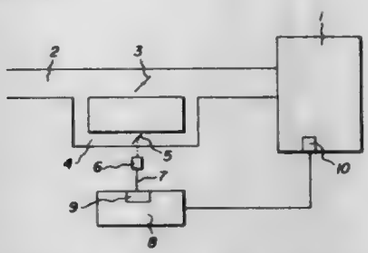
Joern Heining, Bensberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 18, 1996, Ser. No. 683,088

Claims priority, application Germany, Jul. 18, 1995, 195 26 218.2

Int. Cl.[6] G05B *11/28*

U.S. Cl. 318—599 **4 Claims**



1. In a method for controlling a final control element, which includes specifying a desired value for a position of the final control element, ascertaining a duty cycle of a pulse width modulated signal as a function of the desired value, and determining the position of the final control element on chronological average, the improvement which comprises:

fixedly specifying a period of the pulse width modulated signal;

emitting one standard pulse after a predetermined number of periods of the pulse width modulated signal with standard pulses of a standard duration, being specified with a ratio of the standard duration to the period being equivalent to the duty cycle; and

then following with one long pulse having a long pulse duration being greater than the standard duration, in following periods of the pulse width modulated signal.

5,796,231

ROTATION POSITION DETECTING DEVICE AND MOTOR DEVICE

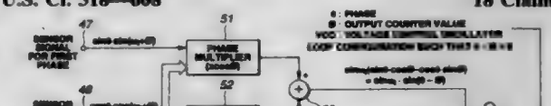
Yasumasa Kyodo, Tokyo, Japan, assignor to Sony Corporation, Japan

Filed Jun. 7, 1996, Ser. No. 660,105

Claims priority, application Japan, Jun. 8, 1995, 7-141926

Int. Cl.[6] G05B *1/02*

U.S. Cl. 318—608 **18 Claims**



1. A rotation position detecting device, characterized in that said rotation position detecting device comprises;

a periodic signal outputting means for outputting periodic signals which are out of phase by a predetermined angle from each other to respective phases of a motor having a plurality of phases;

a sensor signal outputting means for outputting a sensor signal having a higher frequency than that of said periodic signal;

an adding means for adding the sensor signal from said sensor signal outputting means to the periodic signal from said periodic signal outputting means and inputting the added signal to each of the phases of said motor as a motor drive signal;

a rotation position detecting means for detecting the motor drive signal input to each of said phases and extracting each of the sensor signals from each of the motor drive signals, and outputting each of the extracted sensor signals a rotation position detecting signal indicating a rotation position of said motor wherein said rotation position detecting means further includes a memory means for storing a value of the periodic signal when jitter component of a load of said motor or information corresponding to jitter component becomes minimum as an optimum drive pattern for said motor; and

a controlling means for rotating and driving said motor based on said optimum drive pattern stored in said memory means.

5,796,232

CIRCUIT CONFIGURATION FOR THE EVALUATION OF SENSOR SIGNALS OF INDUCTIVE SENSORS IN MOTOR VEHICLES

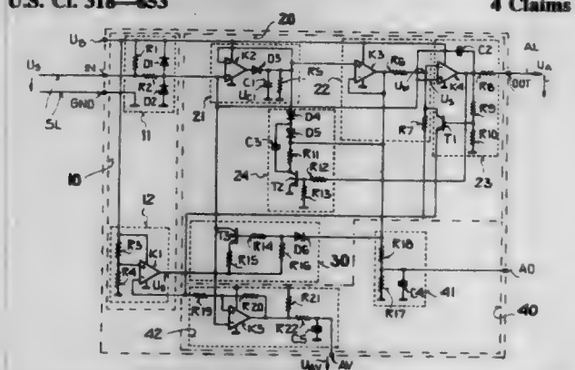
Gunther Alberter, Nürnberg; Jörg Baumann, Veitsbronn; Gunther Breu, Nürnberg, and Wolfgang Gutbrod, Möhrendorf, all of Germany, assignors to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Mar. 1, 1996, Ser. No. 609,810

Claims priority, application Germany, Mar. 7, 1995, 195 07 897.7

Int. Cl.[6] G05B 1/06

U.S. Cl. 318—653 4 Claims



1. A circuit configuration for the evaluation of an alternating voltage sensor signal of an inductive sensor in a motor vehicle comprising:

an input stage having an input circuit connected between a voltage source and the inductive sensor for applying a DC voltage to the inductive sensor and having a reference circuit connected to the voltage source for generating an internal reference voltage corresponding to said DC voltage applied to the inductive sensor;

a threshold value stage having a rectifying circuit connected to said input circuit for generating a sensor signal peak value, a converter circuit connected to said rectifying circuit for generating a reduced peak value, a comparator circuit connected to said converter circuit and connected to said input circuit for comparing the sensor signal with said reduced peak value to recognize a crossover of the sensor signal, and an adjustment circuit connected between said comparator circuit and said rectifying circuit for changing said sensor signal peak value following crossover recognition by said comparator circuit; and

an error stage having a diagnostic circuit connected to said converter circuit for recognizing defects in a sensor cable and for recognizing defects in the inductive sensor and having a polarity circuit connected to said input circuit and to said reference circuit for recognizing an improper inductive sensor polarity.

5,796,233

MULTIPLE-STATOR INDUCTION SYNCHRONOUS MOTOR

Toshihiko Satake, Higashihiroshima, and Yukio Onogi, Hiroshima, both of Japan, assignors to Satake Engineering Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/01366, § 371 Date Jun. 24, 1992, § 102(e) Date Jun. 24, 1992, PCT Pub. No. WO91/07005, PCT Pub. Date May 16, 1991

PCT Filed Oct. 24, 1990, Ser. No. 849,078

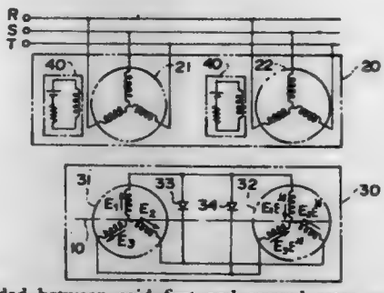
Claims priority, application Japan, Oct. 27, 1989, 1-281380; Jan. 9, 1990, 2-3082; Mar. 7, 1990, 2-57487

Int. Cl.[6] H02P 4/14

U.S. Cl. 318—705 6 Claims

1. An induction synchronous motor comprising:

a unitary rotor having a first and a second rotor core mounted on a common rotary axis with a predetermined space being



provided between said first and second rotor cores and a plurality of rotor conductive members provided on each of said first and second rotor cores;

a first and a second stator mounted surroundingly facing said first and the second rotor core, respectively;

a voltage phase shifting means for producing a second phase of 180° with respect to a first phase difference of 0° in an electric angle between a voltage induced in said rotor conductive member based on a rotating magnetic field produced around said first rotor core surroundingly faced by said first stator and a voltage induced in said rotor conductive member based on a rotating magnetic field produced around said second rotor core surroundingly faced by said second stator;

a static magnetic field producing means for producing a static magnetic field around each of said first and second rotor cores; and

a rotor magnetizing means formed in a unit with said rotor and having diodes for rectifying alternating voltages induced based on said static magnetic field produced by said static magnetic field producing means, the resultant direct current being caused to flow in each of said rotor conductive members to produce magnetic poles in said first and second rotor cores;

whereby the motor is caused to initiate its operation as an induction motor based on said first phase difference produced by said voltage phase shifting means, to have said first phase difference shifted to said second phase difference produced by said phase shifting means, to have said static magnetic field producing means operated, and to have said first and second rotor cores produce the magnetic poles attracted by the rotating magnetic fields produced by said first and second stators, resulting in the synchronous operation of the motor.

5,796,234

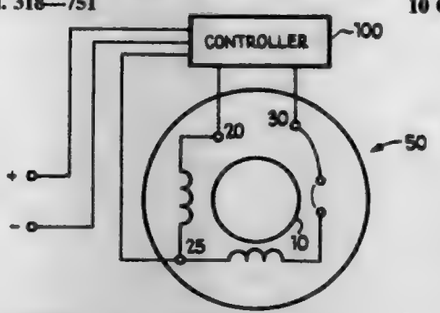
VARIABLE SPEED MOTOR APPARATUS AND METHOD FOR FORMING SAME FROM A SPLIT CAPACITOR MOTOR

Nick Vrionis, Los Altos, Calif., assignor to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 733,532, Oct. 18, 1996, and Ser. No. 733,533, Oct. 18, 1996. This application Jan. 17, 1997, Ser. No. 784,143

Int. Cl.[6] H02P 1/44

U.S. Cl. 318—751 10 Claims



1. A variable speed motor comprising:

a split capacitor motor having a first terminal, a second terminal and a third terminal, a primary winding between the first and

second terminals, an auxiliary winding between the second and third terminals, the split capacitor motor having its capacitor removed from between the first and third terminals; and

means for driving the split capacitor motor in place of the capacitor across the first and third terminals as well as through the second terminal, the driving means providing a first frequency signal to the first terminal and a second frequency signal to the third terminal wherein the first and second frequency signals are both one of at least two possible frequencies and 90 degrees out-of-phase relative to the second terminal.

5,796,235

PROCESS AND CIRCUITS FOR DETERMINING MACHINE-RELATED ELECTRO-MAGNETIC AND MECHANICAL STATE VARIABLES ON ELECTRODYNAMIC INDUCTION MACHINES SUPPLIED VIA CONVERTERS

Manfred Schrodl, Untere Hauptstrasse 76, A-7223 Sieggraben, Austria, and Richard Ensbacher, An den Eisteichen 24, A-1120 Vienna, Austria

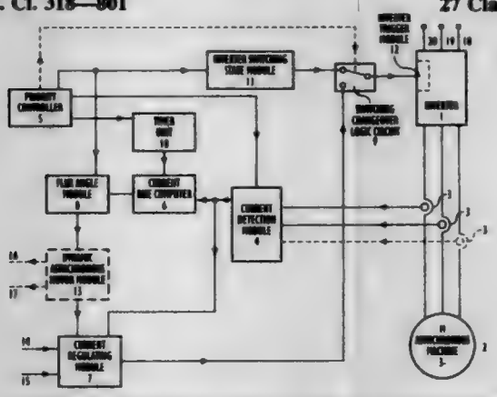
PCT No. PCT/AT92/00049, § 371 Date Nov. 2, 1993, § 102(e) Date Nov. 2, 1993, PCT Pub. No. WO92/19038, PCT Pub. Date Oct. 29, 1992

Continuation of Ser. No. 129,118, Nov. 2, 1993, abandoned. This PCT application Apr. 8, 1992, Ser. No. 456,849

Claims priority, application Austria, Apr. 11, 1991, 766/91; Apr. 19, 1991, 823/91; Oct. 11, 1991, 2027/91; Oct. 18, 1991, 2076/91; Apr. 7, 1992, 724/92

Int. Cl.[6] H02P 5/34

U.S. Cl. 318—801 **27 Claims**



1. A method for obtaining electromagnetic and mechanical status information pertaining to an operation of a machine comprising:

detecting an inductance difference in the machine;

when the inductance difference is not detected, magnetizing the machine to produce the inductance difference prior to obtaining the electromagnetic and mechanical status information;

producing a measurement signal representing voltage discontinuities generated by an inverter associated with the machine; and

measuring a current variation to ascertain a complex parameter proportional to a quotient of a stator voltage space vector and a variation over time of a stator current space vector, a direction of the stator voltage space vector being derived from a known inverter trigger state to calculate a magnetic flux of the machine, the complex parameter fluctuating in an approximate sinusoidal fashion in both a real component and an imaginary component with twice a value of a magnetic flux angle.

5,796,236

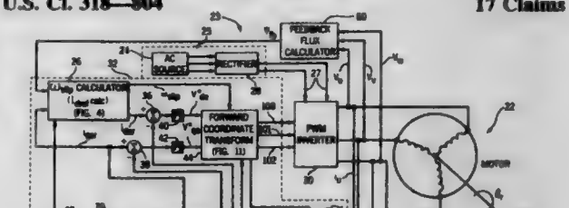
SLIP ADJUSTER FOR USE IN ELECTRICAL MOTOR CONTROLLERS

Semyon Royak, Solon, Ohio, assignor to Reliance Electric Industrial Company, Cleveland, Ohio

Filed Jun. 30, 1997, Ser. No. 885,067

Int. Cl.[6] H02P 5/415

U.S. Cl. 318—804 **17 Claims**



1. A slip frequency calculator for determining a slip frequency to be used with a field oriented motor control system, the control system altering motor operation in response to a current command vector having i_{qe} and i_{de} current components, the system including a speed calculator providing a motor rotor speed signal and provided with a name plate rotor resistance value, the slip calculator comprising:

(a) a flux current determiner receiving the speed signal and determining an ideal flux current;

(b) a flux determiner receiving the speed signal and determining an ideal rotor flux;

(c) an inductance calculator for mathematically combining the flux current and rotor flux to determine an actual rotor inductance;

(d) a multiplier calculator for mathematically combining the i_{de} current component and the flux current to generate an updated slip multiplier; and

(e) a slip frequency determiner mathematically combining the name plate resistance value, slip multiplier, actual rotor inductance and i_{qe} and i_{de} current components to provide the slip frequency.

5,796,237

EFFICIENCY CONTROL SYSTEM FOR AN INDUCTION MOTOR

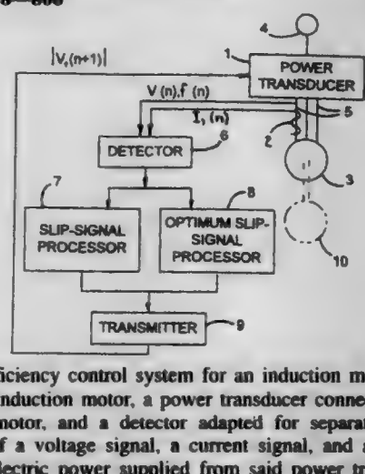
Katsumi Yamakawa, Kanagawa-ken, Japan, assignor to Tajima Engineering Kabushiki Kaishya, Japan

Filed Mar. 12, 1996, Ser. No. 615,014

Claims priority, application Japan, Mar. 13, 1995, 7-079383

Int. Cl.[6] H20P 5/34

U.S. Cl. 318—806 **10 Claims**



1. An efficiency control system for an induction motor system having an induction motor, a power transducer connected to said induction motor, and a detector adapted for separate real-time detection of a voltage signal, a current signal, and a frequency signal of electric power supplied from said power transducer to

said induction motor so that an output of said induction motor during operation may be controlled by these signals in response to a load torque, said efficiency control system comprising:

an actual slip signal processor for calculating an actual slip of said induction motor during operation on the basis of the voltage signal, current signal, and frequency signal of the electric power supplied from said power transducer to said induction motor and a motor constant;

an optimum slip signal processor for calculating an optimum slip desired to obtain the maximum efficiency of said induction motor; and

a voltage command signal transmitter for generating and transmitting a voltage command signal to said power transducer, wherein said voltage command signal includes a scalar value calculated by said voltage command signal transmitter,

wherein said power transducer adjusts the electrical power supplied to said induction motor in response to said scalar value of said voltage command signal such that the slip of said induction motor is maintained at the optimum value in order to operate said induction motor at the maximum efficiency for a given load torque.

5,796,238

BATTERY PACK

Masaru Hiratsuka, Kanagawa; Shigeki Murayama, Tokyo; Tamiji Nagai, and Yasuhito Eguchi, both of Kanagawa, all of Japan, assignors to Sony Corporation, Japan

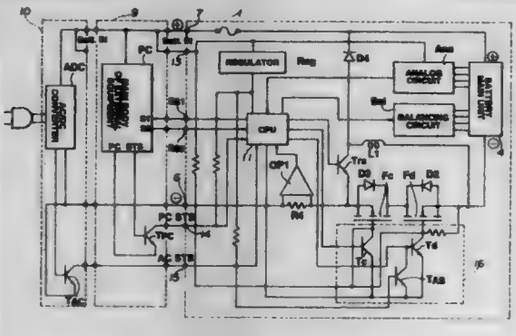
PCT No. PCT/JP93/01471, § 371 Date Aug. 1, 1994, § 102(e) Date Aug. 1, 1994, PCT Pub. No. WO94/09527, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 13, 1993, Ser. No. 244,781

Claims priority, application Japan, Oct. 13, 1992, 4-274237

Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—5 **48 Claims**



1. A battery pack connected to a power source circuit and to external equipment comprising:

a battery unit charged by the power source circuit;

detection means for detecting whether the external equipment is on or off and whether the power source circuit is on or off; and

control means for controlling charging and discharging of the battery unit in response to the on or off status of both the external equipment and the power source circuit.

5,796,239

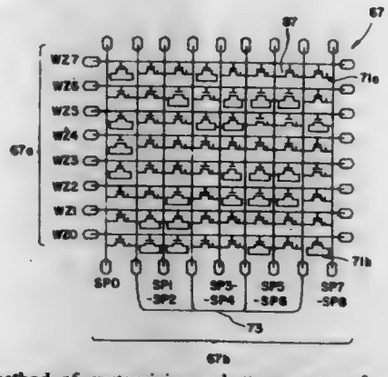
BATTERY PACK HAVING A PROCESSOR CONTROLLED BATTERY OPERATING SYSTEM

Duong van Phuoc, Lohweg 51, 85386 Eching; Rudi Wieczorek, Agnesstrasse 64, 80797 Munchen; Elmar Zeising, Freisinger Strasse 7, 85354 Haindlfing, all of Germany; Louis W. Hruska, 385 Davis St., Northboro, Mass. 01532; Alwyn H. Taylor, 25 Hawthorne Rd., Wellesley Hills, Mass. 02181; Daniel D. Friel, 4 Surrey Rd., Woburn, Mass. 01801, and Matthew P. Hull, 89 Cole St., Jamestown, R.I. 02835

Division of Ser. No. 473,339, Jun. 7, 1995, Pat. No. 5,710,501, which is a division of Ser. No. 336,945, Nov. 10, 1994, Pat. No. 5,633,573. This application Apr. 2, 1997, Ser. No. 832,578

Int. Cl.[6] H02J *7/04*

U.S. Cl. 320—107 **10 Claims**



1. A method of customizing a battery system for a specific application, the battery system comprising a rechargeable battery, means to sense and to generate signals representing a plurality of battery parameters, and an integrated circuit including a processor for performing predefined calculations using digital values representing battery voltage, battery temperature and battery current, the method comprising:

forming the integrated circuit from a multitude of layers, said multitude of layers including upper and lower layers;

forming a random access memory area from the lower layers of the integrated circuit, and storing a plurality of variable data values in said lower layers; and

forming a read only memory area from the upper layers of the integrated circuit, and storing a plurality of fixed data values in said upper layers.

5,796,240

POWER UNIT AND ELECTRONIC APPARATUS EQUIPPED WITH POWER UNIT

Yutaka Saito; Masataka Shinogi, and Kenji Kato, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Feb. 22, 1996, Ser. No. 605,735

Claims priority, application Japan, Feb. 22, 1995, 7-034121; Aug. 17, 1995, 7-209820; Oct. 4, 1995, 7-257765; Oct. 27, 1995, 7-280638

Int. Cl.[6] H02P *9/04*

U.S. Cl. 322—10 **103 Claims**

1. A power unit, comprising:

an input mechanism for inputting kinetic energy as a rotary motion;

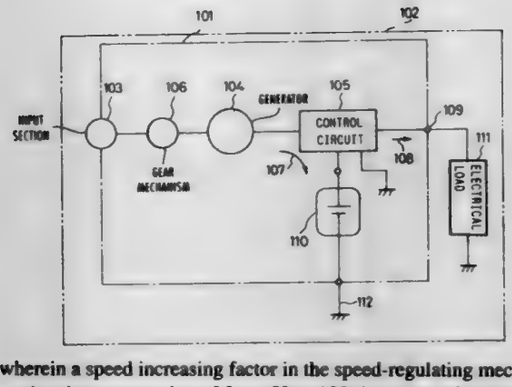
a speed-regulating mechanism connected to the input mechanism for increasing the speed of the rotary motion;

a converting mechanism connected to the speed-regulating mechanism for converting the rotary motion whose speed has been increased into electricity;

a control circuit connected to the converting mechanism for controlling the generated electricity;

a secondary cell connected to the control circuit; and

a positive electrode output terminal and a ground electrode terminal connected to the control circuit;



wherein a speed increasing factor in the speed-regulating mechanism is set at a value of from 50 to 100 times that of the input rotation;

wherein the electricity generated by the converting mechanism is a direct current;

wherein the control circuit comprises a series rectifier element having an anode terminal connected with an output of the converting mechanism and a cathode terminal connected with the positive electrode output terminal in series between the converting mechanism and the positive electrode output terminal, and a parallel rectifier element having a cathode terminal connected between the converting mechanism and the series rectifier element and an anode terminal connected to the ground electrode terminal; and

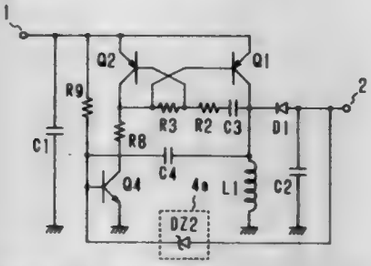
wherein a positive electrode of the secondary cell is connected with the cathode terminal of the series rectifier element, and a negative electrode of the secondary cell is connected with the ground electrode terminal.

5,796,241

SELF-EXCITED OSCILLATION TYPE POWER SUPPLY DEVICE

Tetushi Otake, Tsurugashima, Japan, assignor to Toko, Inc.

Filed May 29, 1997, Ser. No. 864,830
Int. Cl.[6] G05F *1/40*
U.S. Cl. 323—282 **7 Claims**



1. A self-excited oscillation type power supply device including a first and a second switching transistor connected to operate in complementary relationship to each other, wherein current flowing through an inductance component connected in series with said first switching transistor is turned on and off with the aid of said first switching transistor, and desired output voltage is derived from voltage which occurs at a given winding of said inductance component, the improvement comprising:

an auxiliary transistor connected between connection point between base of said first switching transistor and collector of said second switching transistor and reference potential point, wherein in addition to forward bias signal as applied when the device is started, at least one of voltage signal derived from alternating voltage produced in the inductance component and voltage signal corresponding to the output voltage is applied to the auxiliary transistor.

5,796,242

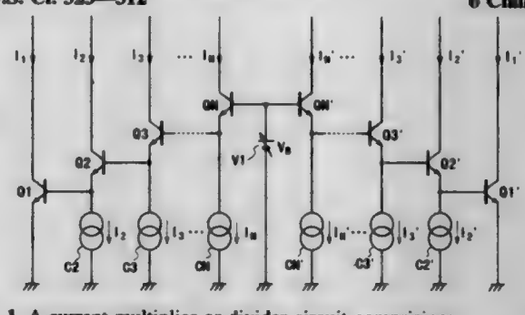
Patent Not Issued For This Number

5,796,243

CURRENT MULTIPLIER/DIVIDER CIRCUIT

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 21, 1997, Ser. No. 916,159
Claims priority, application Japan, Aug. 30, 1996, 8-248919
Int. Cl.[6] G05F *3/04*
U.S. Cl. 323—312 **6 Claims**



1. A current multiplier or divider circuit comprising:

a first set of first to m-th bipolar transistors, where m is an integer equal to or greater than 2;

a second set of first to n-th bipolar transistors, where n is an integer equal to or greater than 2;

a base of (j−1)-th transistor of said first set being connected to an emitter of j-th transistor of said first set, where j is an integer ranging from 2 to m;

a base of (k−1)-th transistor of said second set being connected to an emitter of k-th transistor of said second set, where k is an integer ranging from 2 to n;

a sum of base-to-emitter voltages of said first to m-th transistors of said first set with respect to a specific electric potential being generated at a base of said m-th transistor of said first set;

a sum of base-to-emitter voltages of said first to n-th transistors of said second set with respect to said specific electric potential being generated at a base of said n-th transistor of said second set;

the sum of said base-to-emitter voltages of said first to m-th transistors of said first set being equal to the sum of said base-to-emitter voltages of said first to n-th transistors of said second set;

at least one of collector currents of said first to m-th transistors of said first set and said first to n-th transistors of said second set being used as an input;

at least one of said collector currents of said first to m-th transistors of said first set and said first to n-th transistors of said second set other than said input being used as an output;

said collector currents of said first to m-th transistors of said first set and said first to n-th transistors of said second set other than said input and said output being set to be constant, respectively; and

said at least one of said collector currents serving as said output including the multiplication or division result of said at least one of said collector currents serving as said input.

5,796,244

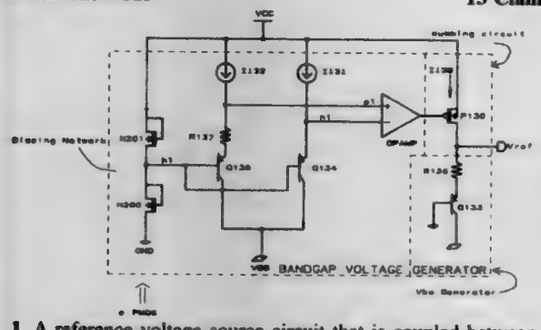
BANDGAP REFERENCE CIRCUIT

Yun Sheng Chen, Tainan Hsian, and Ming-Zen Lin, Hsinchu, both of Taiwan, assignors to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Filed Jul. 11, 1997, Ser. No. 893,641

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—313 **13 Claims**



1. A reference voltage source circuit that is coupled between a power supply voltage source, a ground reference point and a substrate biasing voltage source, is incorporated within an integrated circuit, and is correlated to the bandgap of silicon to provide a temperature independent voltage while minimizing currents flowing to said substrate biasing voltage source, comprising:

a) a bandgap voltage referenced generating means to generate a first referencing voltage having a first temperature coefficient;

b) a compensating voltage generating means to generate a second referencing voltage having a second temperature coefficient, wherein the second temperature coefficient is approximately equal and of opposite sign to said first temperature coefficient;

c) a voltage summing means coupled to the bandgap voltage referenced voltage generating means and the compensating voltage generating means to sum the first referencing voltage and the second referencing voltage to create the temperature independent voltage; and

d) a voltage biasing means to couple a bias voltage to the bandgap voltage referenced generating means to bias said bandgap voltage referenced generating means so as to generate the first referencing voltage.

5,796,245

PROCESS AND DEVICE FOR CONTROLLING THE POWER OF A LOAD VIA A PHASE ADJUSTMENT SYSTEM

Alain Bernard Marc Beaulieu, Alencon; Pierre Epinat, Ifs, and Laurent Chapellier, Caen, all of France, assignors to Moulinex S. A., Paris, France

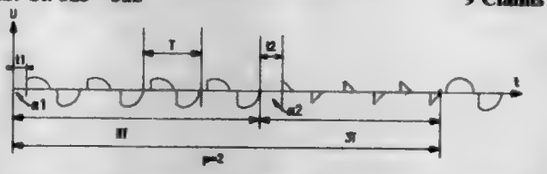
PCT No. PCT/FR95/01371, § 371 Date Apr. 28, 1997, § 102(e) Date Apr. 28, 1997, PCT Pub. No. WO96/13894, PCT Pub. Date May 9, 1996

PCT Filed Oct. 18, 1995, Ser. No. 817,948

Claims priority, application France, Oct. 26, 1994, 94 12833

Int. Cl.[6] G05F *1/455*

U.S. Cl. 323—322 **9 Claims**



1. Process for controlling the power supplied to a load (1) powered by AC voltage U of a period T via a system of generalized phase adjustment, comprising the step of:

for a set power, delivering successively to said load (1), periodically a sequence of a whole number p of elements, p being greater than one, each element, of number i, of the sequence being characterized by an integer n_i of periods T during which the AC voltage U is divided symmetrically according to a phase angle α_i corresponding to a duration t_i during which the load (1) is not powered, the consecutive phase angles α_i of the element i and α_{i+1} of the element i+1 being different and the combination of the angles $\alpha_1 \ldots \alpha_i \ldots \alpha_p$ being selected such that, while supplying to the load (1) the desired power, the combination of the angles satisfies a limitation of effective values of current harmonics and maintains in a permitted region the relative variations of voltage $\Delta U/U$ as a function of the number of variations per unit time on an impedance source.

5,796,246

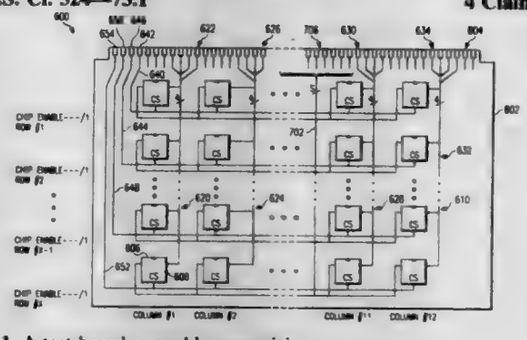
TEST BOARD AND PROCESS OF TESTING WIDE WORD MEMORY PARTS

Looi Choon Poh; Goh Meng Kiang; Chen Teck Liong; Thiang Nan Guan, and Abu Bakar, all of Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1996, Ser. No. 654,657

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—73.1 **4 Claims**



1. A test board assembly comprising:

a. a substrate;

b. plural sockets mounted on the substrate, the sockets being arranged on the substrate in an array of rows and columns, each socket having plural leads for carrying signals;

c. plural terminals formed on the substrate, the terminals carrying plural address signals, a row address strobe signal, at least one column address strobe signal, at least one write signal, plural chip enable signals and plural data I/O signals, the data I/O signals being arranged in groups, there being one group of data I/O signals for each column of sockets and there being the same number of data I/O terminals and signals in each group;

d. plural memory parts mounted in the sockets, one memory part in each socket, the memory parts being of like design and each memory part having leads carrying plural address signals, a lead carrying a row address strobe signal, at least one lead carrying a column address strobe signal, at least one lead carrying a write signal, one lead carrying C chip enable signal and plural leads carrying data I/O signals, each memory part having a normal operating mode in which all of the leads carrying data I/O signals are active and a design for test mode in which a set of data I/O leads less than all of the leads carrying data I/O signals are active, each lead of each memory part electrically connecting with a corresponding lead of its respective socket; and

e. substrate leads carried on the substrate connecting the sockets to the terminals, the substrate leads connecting the plural address signals, the row address strobe signal, the at least one column address strobe signal, and the at least one write signal from the terminals to the respective leads of every socket, the substrate leads connecting one of the plural chip enable signals from the terminals to the corresponding lead of each socket in a row and the substrate leads connecting the certain number of data I/O signals in each group to only the set of data I/O leads of each socket in a respective column of sockets, the data I/O leads of each socket corresponding to the rest of the data I/O leads of each memory part remaining unconnected to the terminals.

5,796,247

PROCESS AND DEVICE FOR DETERMINING THE ANGULAR POSITION OF A ROTATING SHAFT USING A PULSE WHEEL AND A HALL SENSOR

Peter Pape, Bergkamen, Germany, assignor to AB Electronik GmbH, Werne, Germany

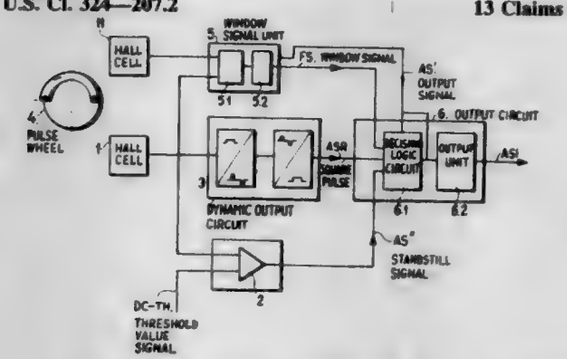
PCT No. PCT/EP95/05026, § 371 Date Nov. 5, 1996, § 102(e) Date Nov. 5, 1996, PCT Pub. No. WO96/19712, PCT Pub. Date Jun. 27, 1996

PCT Filed Dec. 19, 1995, Ser. No. 696,862

Claims priority, application Germany, Dec. 20, 1994, 44 45 378.7

Int. Cl.[6] G01B *7/30*; **G01D** *5/14*; **G01P** *13/00*; **F02D** *41/24*

U.S. Cl. 324—207.2 **13 Claims**



1. Process for determining the angular position of a rotating shaft, in which

a Hall sensor with a Hall cell (1; 11) is positioned in front of a pulse wheel (4; 4.1; 4.2) which is connected with the shaft,

the pulse wheel exhibits at least one tooth (Z1; Z11, . . . , Z14) which exhibits one rising and one falling tooth flank (ZFA, ZFF), and which is provided with at least one tooth gap (ZL1; ZL11, . . . , ZL14),

the Hall cell (1, 11) picks up, as a function of time, the curve of a magnetic flux density (B) which is generated by the pulse wheel (4; 4.1; 4.2), and conveys it as a Hall voltage signal (UH),

the Hall voltage signal (UH) is converted in an output circuit (3) into a differentiated signal (SMP), and a square pulse sequence (ASR) is generated from that,

with the following additional process steps:

comparison of the Hall voltage signal with a threshold value signal (DC-TH) and production of a standstill output signal (AS)

differentiation of the signal (UH) after the time t to a differentiating voltage (DF)

$$DF=dUH/dt$$

production of a window signal FS by means of the comparison signal DF in accordance with the following rule:

FS=1 if DF not equal to zero

FS=0 if DF equals zero

production of a position output signal (ASI) from the standstill signal (AS) at a number of revolutions n= 0 revolutions/min,

production of the position output signal (ASI) from the window signal FS and from the standstill signal (AS) at a rotational speed below a mode change rotational speed (n),

and at a rotational speed (n) above the mode change rotational speed (n), from the square pulse sequence (ASR),

whereby the mode change rotational speed (n) is greater than 1 revolution/min, and preferable amounts to 20 revolutions/min.

5,796,248

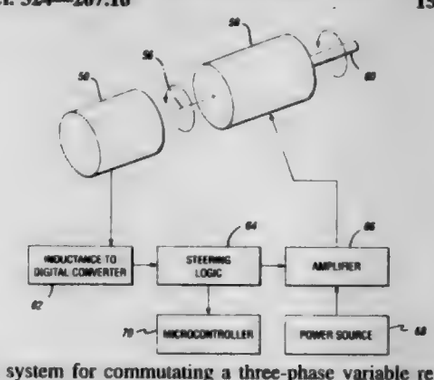
METHOD AND APPARATUS FOR COMMUTATING A THREE-PHASE VARIABLE RELUCTANCE MOTOR

Charles Francis Weber, South Lyon, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 523,316, Sep. 5, 1995, Pat. No. 5,642,044, which is a continuation-in-part of Ser. No. 308,790, Sep. 19, 1994, Pat. No. 5,489,845. This application Mar. 6, 1996, Ser. No. 611,898

Int. Cl.[6] G01B *7/14*; **G05B** *19/40*

U.S. Cl. 324—207.16 **15 Claims**



1. A system for commutating a three-phase variable reluctance motor comprising:

a power source;

a position sensor adapted to generate a plurality of variable inductance values corresponding to relative motor torque rankings at absolute angular positions of the motor;

an inductance to digital converter in electrical communication with said position sensor and said power source for generating a sequence of digital values from said inductance values, said sequence of digital values indicating which phase of the motor to apply electrical power to so as to commutate the motor to provide optimum torque; and

steering logic responsive to said sequence of digital values to generate output signals having values corresponding to the phase of the motor indicated, wherein said steering logic includes means responsive to an externally generated signal to commutate said motor, in the alternative, to produce a positive motor torque and a negative motor torque.

5,796,249

MAGNETORESISTIVE ANGULAN POSITION SENSOR AND ROTATION SPEED SENSOR

Wulf Andrä , and Roland Mattheis, both of Jena, Germany, assignors to Institut fuer Physikalische Hochtechnologie e.V., Jena, and HL Planartechnik GmbH, Dortmund, both of Germany

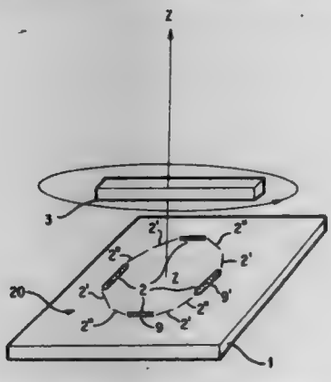
PCT No. PCT/EP96/01248, § 371 Date Oct. 30, 1996, § 102(e) Date Oct. 30, 1996, PCT Pub. No. WO96/29568, PCT Pub. Date Sep. 26, 1996

PCT Filed Mar. 21, 1996, Ser. No. 737,644

Claims priority, application Germany, Mar. 23, 1995, 195 10 579.6

Int. Cl.[6] G01B *7/30;* **G01P** *3/487;* **G01R** *33/09;* **G01D** *5/12*

U.S. Cl. 324—207.21 **19 Claims**



19. A sensor for sensing at least one of angular position and rotation speed, the sensor comprising:

a permanent magnet rotatable about an axis of rotation;

at least three Wheatstone bridges each having four bridge resistors formed of magnetoresistive strip lines extending in planes parallel to a rotation plane of said permanent magnet;

said bridge resistors of each of said at least three Wheatstone bridges being disposed on respective sides of quadrangles corresponding to respective ones of said at least three Wheatstone bridges;

each of said at least three Wheatstone bridges having two adjacently arranged ones of said bridge resistors connected to a half-bridge of respective ones of said at least three Wheatstone bridges;

said quadrangles being disposed relative to one another rotated by a preselectable angle α;

said at least three Wheatstone bridges each having an intersection point of virtual diagonals connecting corners of respective ones of said quadrangles, said intersection points being arranged substantially coaxially with said axis of rotation; and

said at least three Wheatstone bridges being disposed so as to be equally and evenly swept by a field of the permanent magnet during rotation thereof to saturate said bridge resistors.

5,796,250

PLURAL ROTARY MEMBER POSITION ENCODER HAVING ELECTROMAGNETICALLY COUPLED RESONANT FREQUENCY MULTIPLEXED OUTPUTS FOR RESPECTIVELY ASSOCIATED ROTATABLE MEMBERS

Andrew Nicholas Dames, Cambridge, United Kingdom, assignor to Scientific Generics Limited, Cambridge, England

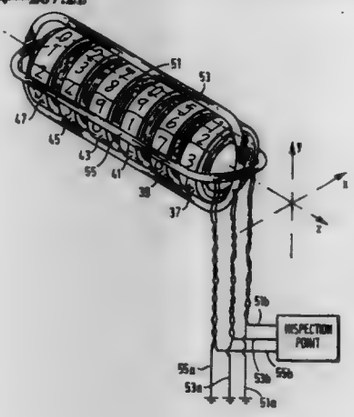
PCT No. PCT/GB94/00948, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO94/25829, PCT Pub. Date Nov. 10, 1994

PCT Filed May 3, 1994, Ser. No. 545,681

Claims priority, application United Kingdom, May 1, 1993, 9309073

Int. Cl.[6] G01D *5/20;* **G01B** *7/14;7/30;* **G08C** *15/02*

U.S. Cl. 324—207.22 **48 Claims**



1. A rotary position encoder, comprising:

a plurality of rotatable members;

a plurality of electrically resonant circuits mounted in respective rotatable members for rotation therewith, each electrically resonant circuit of said plurality being resonant at a frequency different to those of the other resonant circuits so as to be distinguishable therefrom;

an excitation circuit electromagnetically coupled in common to said plurality of resonant circuits for applying thereto excitation signals at the different respective resonant frequencies; and

a sensing circuit electromagnetically coupled in common to said resonant circuits for outputting signals which vary with the angular position of said rotatable members;

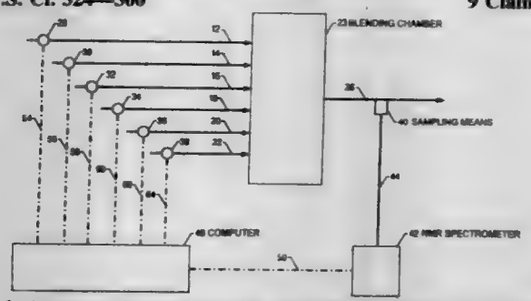
wherein said plurality of electrically resonant circuits, said excitation circuit and said sensing circuit are arranged such that the degree of electromagnetic coupling between each resonsant circuit and at least one of the excitation circuit and the sensing circuit varies as a function of the angular position of the corresponding rotational member, whereby, upon energization by said excitation circuit at its respective resonant frequency, each resonant circuit generates an alternating electromagnetic field at its resonant frequency dependent upon the degree of coupling between the energizing circuit and the resonant circuit, which alternating electromagnetic field induces an alternating output signal at the resonant frequency in said sensing circuit whose amplitude varies in dependence upon the angular position of the corresponding rotatable member whereby each rotatable member is identifiable by its resonant frequency and its angular position is measurable by said amplitude.

5,796,251

PROCESS FOR CONTROLLING BLENDING USING NUCLEAR MAGNETIC RESONANCE SPECTROSCOPY

David A. Le Febre, Camino, and Mark S. Zetter, El Dorado Hills, both of Calif., assignors to UOP, Des Plaines, Ill.

Filed Nov. 7, 1996, Ser. No. 745,141
Int. Cl.[6] G01N *24/08*
U.S. Cl. 324—300 9 Claims



1. A process for continuously controlling the value of at least one characteristic of a product composition resulting from the blending of N components, where the initial value of the characteristic in the product composition is V_I, where the final value of the characteristic in the product composition is to be within $\pm\delta$ of a target value V_T and where the value of said characteristic is determined by nuclear magnetic resonance spectroscopy, comprising:

a. varying, temporarily, the proportions of the components to afford a series of intermediate product compositions;

b. determining, by nuclear magnetic resonance the value of said characteristics in each of said intermediate product compositions using a first algorithm, and calculating therefrom the change in said value associated with the variation in each component proportion;

c. providing a second algorithm by relating the variation of each component proportion to the resulting change in the value of said characteristic in said intermediate composition;

d. adjusting the proportions of the components according to said second algorithm, to afford a new product composition whose new value of said characteristic is V_N and where $|V_T-V_N| \leqq |V_T-V_I|$; and

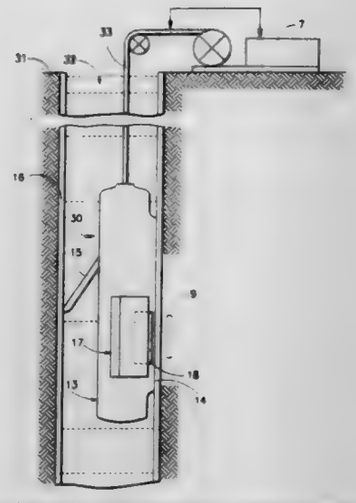
e. repeating steps a)–d) until $|V_T-V_N| \leqq \delta$.

5,796,252

NUCLEAR MAGNETIC RESONANCE BOREHOLE LOGGING APPARATUS AND METHOD FOR ASCERTAINING A VOLUME OF HYDROCARBONS INDEPENDENT OF A DIFFUSION COEFFICIENT

Robert L. Kleinberg, Ridgefield, Conn.; Lawrence L. Latour, Mattituck, N.Y., and Abdurrahman Sezginer, Brookfield, Conn., assignors to Schlumberger Technology Corporation, Ridgefield, Conn.

Continuation of Ser. No. 394,994, Mar. 23, 1995, abandoned.
This application Jan. 15, 1997, Ser. No. 783,778
Int. Cl.[6] G01V *3/32*
U.S. Cl. 324—303 34 Claims



1. A method for determining the volume of hydrocarbons in a region of investigation of earth formations surrounding a borehole, comprising the steps of:

a) providing a logging device that is moveable through the borehole;

b) generating, from said logging device, a static magnetic field in a volume of the formation directed to one side of the logging device;

c) generating, from said logging device, a sequence of magnetic field pulses in the region of investigation of the formations, and detecting the nuclear magnetic resonance spin echo strength from the formations;

d) varying a parameter of said sequence of magnetic field pulses that causes said echo strength to vary due to diffusion of fluid species in the formations, and repeating step (c) a plurality of times to detect the echo strength of further nuclear magnetic spin echoes from the formations; and

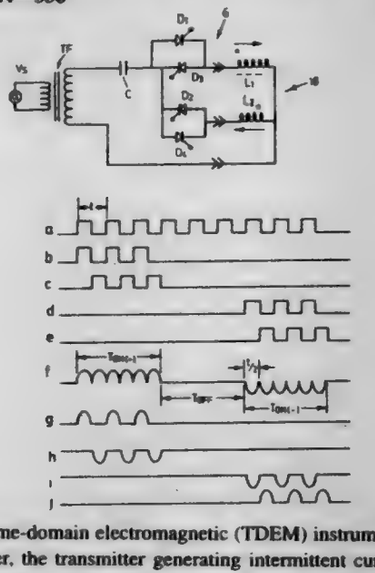
e) determining the volume of hydrocarbons, independent of a diffusion coefficient, in the region of investigation of the earth formations from the detected spin echo strengths.

5,796,253

TIME-DOMAIN ELECTROMAGNETIC GEOPHYSICAL MAPPING INSTRUMENTS

Miro Bosnar, 242 Burbank Drive, North York, Canada, M2K 1P8, and J. Duncan McNeill, P.O. Box 629, Chester, Nova Scotia, Canada

Filed May 29, 1996, Ser. No. 657,454
Int. Cl.[6] G01V *3/10;3/165;3/16*
U.S. Cl. 324—336 4 Claims



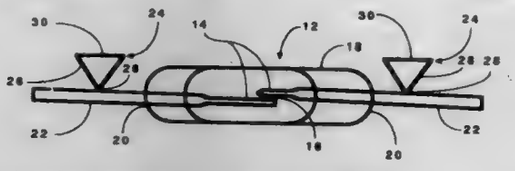
1. In a time-domain electromagnetic (TDEM) instrument having a transmitter, the transmitter generating intermittent current pulse waveforms, formed by half-sinusoidal output waveform segments of a waveform having a frequency equal to a resonant frequency of the transmitter coil when connected to the transmitter, and including a transmitter coil, and a receiver including a receiver coil, the improvement wherein the transmitter generates current pulses which each comprise a plurality of immediately successive half-sinusoidal waveforms of common polarity.

5,796,254

REED SWITCH HAVING TRITUBULAR BARS FOR SURFACE MOUNTING

Everett R. Andrus, Chikasha, Okla., assignor to Hermetic Switch, Inc., Chikasha, Okla.

Filed Nov. 20, 1995, Ser. No. 558,749
Int. Cl.[6] H05K 7/12
U.S. Cl. 324—419 17 Claims



1. A surface mountable reed switch comprising:

a pair of reed contacts sealed in a tubular envelop wherein said reed contacts extend through said envelop to provide external contacts; and

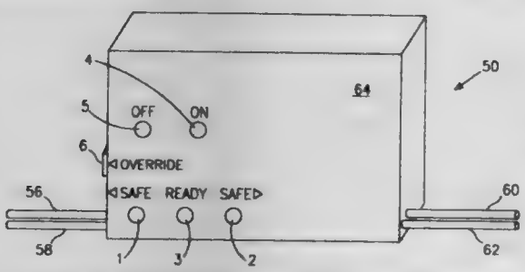
a surface mounting means attached to each of said external contacts, said surface mounting means diverges from each of said attached external contacts and has a generally flat surface distant therefrom.

5,796,255

ELECTRONIC CONTROLLED, SPARK FREE BOOSTER CABLE SYSTEM

Ricky Dean McGowan, 13827 Cane Dr., San Antonio, Tex. 78233

Filed Apr. 6, 1996, Ser. No. 633,852
Int. Cl.[6] H02J 7/00
U.S. Cl. 324—429 2 Claims



1. An electrical safety circuit for use in a battery booster system, comprising:

circuit terminals for connecting to positive and negative battery terminals of a first battery and a second battery;

means for detecting the polarity of a connection of said system to said first battery and providing sensory indications of said polarity;

means for detecting the polarity of a connection of said system to said second battery and providing sensory indications of said polarity;

switching means for completing an electrical path between said terminals of said first and second batteries;

means for automatically disabling said switching means when said connection to either said first or second battery is of reverse polarity or not present;

means for indicating when contacts of said switching means have closed said circuit;

an override switch for manually overriding said automatic switching means disabling means, said override switch permitting the operation of said switching means even though said second battery is completely discharged; and

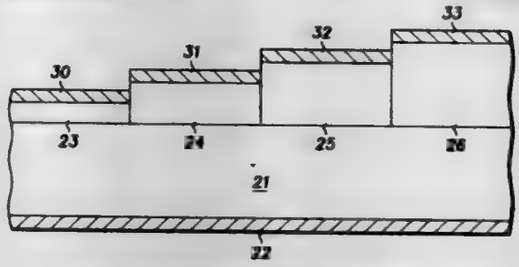
a disable switch for manually disabling said switching means.

5,796,256

ESD SENSOR AND METHOD OF USE

Clifford M. Fowler, Phoenix, and William V. Duncan, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 24, 1996, Ser. No. 634,600
Int. Cl.[6] G01N 27/60; G01R 31/26
U.S. Cl. 324—456 20 Claims



1. An electrostatic discharge sensor comprising:

a semiconductor substrate having first and second opposed major surfaces, and including an integrated circuit formed thereon, the integrated circuit including a signal input having an input capacitance;

a layer of dielectric material on the first major surface of the substrate;

a first electrical contact on the second major surface of the substrate;

a second electrical contact on the layer of dielectric material; and

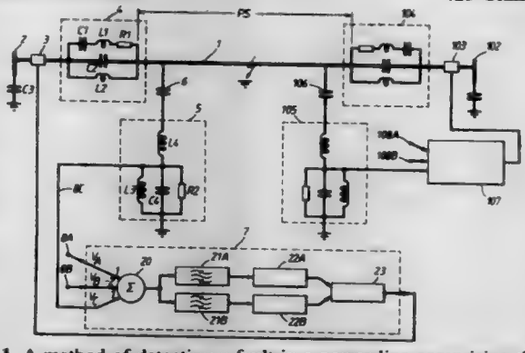
the layer of dielectric material having a thickness selected such that a specific electrostatic discharge voltage will produce an electrical short between the first and second electrical contacts and the layer of dielectric material and the second electrical contact being formed with an area such that a capacitance formed therebetween is approximately the same size as the input capacitance of the signal input of the integrated circuit.

5,796,257

DETECTING FAULTS IN POWER LINES

Allan Thomas Johns, Swindon, Great Britain, assignor to The University of Bath, Bath, United Kingdom

Continuation of Ser. No. 379,453, Jan. 26, 1995, abandoned. This application Jun. 10, 1997, Ser. No. 872,144
Claims priority, application United Kingdom, Aug. 27, 1992, 9218206
Int. Cl.[6] G01R 31/08
U.S. Cl. 324—520 23 Claims



1. A method of detecting a fault in a power line comprising the steps of:

providing, in the power line, a first circuit capable of attenuating signals within a first frequency band, which is centred on a first frequency, substantially more than it attenuates signals outside the first frequency band, said first circuit being connected to the power line at a first physical location on the power line,

providing a second circuit connected to the power line at a second physical location on the power line located exclusively either before or after the first physical location on the power line, the second circuit being capable of extracting signals within a second frequency band that includes the first frequency, and

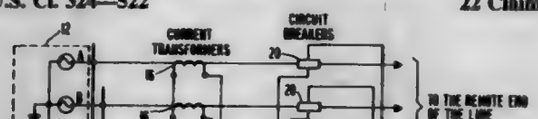
detecting and signalling the relative levels of two signals extracted by the second circuit, the two signals being extracted at respective different center frequencies which the first circuit is capable of attenuating by different relative amounts.

5,796,258

ADAPTIVE QUADRILATERAL CHARACTERISTIC DISTANCE RELAY

Lifeng Yang, Coral Springs, Fla., assignor to ABB Power T&D Company, Inc., Raleigh, N.C.

Filed Jan. 30, 1997, Ser. No. 790,553
Int. Cl.[6] H02H *3/38*; G01R *31/02*
U.S. Cl. 324—522 **22 Claims**



1. A system for monitoring at least one electric power transmission line for a fault condition within a predetermined distance from a measuring location, comprising:

measuring means coupled to said electric power transmission line at said measuring location for measuring at least one line voltage phasor and at least one line current phasor, said line voltage phasor being indicative of an amplitude and phase associated with a voltage waveform and said line current phasor being indicative of an amplitude and phase associated with a current waveform; and,

processing means for defining a quadrilateral trip region in a reference plane, said quadrilateral trip region being formed from at least four reference phasors each having a phase, and wherein the phase of at least one of said at least four reference phasors is periodically adapted based on a negative sequence current;

said processing means being coupled to said measuring means for deriving a line signal having a phase from at least one of said line voltage phasor and said line current phasor and comparing said line signal to the at least four reference phasors such that the fault condition is detected.

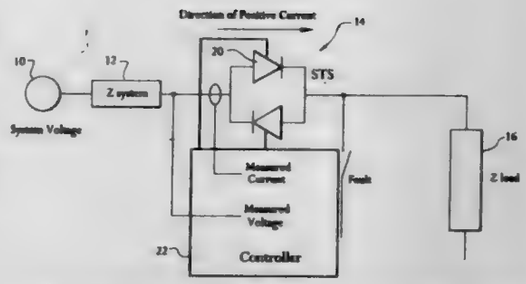
5,796,259

METHODS AND APPARATUS FOR DETECTION OF FAULT DIRECTION

David L. Dickmander, Cary, N.C., assignor to ABB Power T&D Company, Inc., Raleigh, N.C.

Filed Sep. 16, 1996, Ser. No. 710,315
Int. Cl.[6] G01R *31/08*
U.S. Cl. 324—524 **5 Claims**

1. Apparatus for detecting the direction of a fault in relation to a switch connected between a source and a load, wherein said source is generating alternating voltage and current at a cycle rate, said apparatus comprising:



a voltage sampler for generating samples of the voltage during a first cycle;

a current sampler for generating samples of the current during said first cycle and during a second cycle;

a first comparator for comparing the current samples from said first cycle to the current samples from said second cycle and for determining the polarity of the difference between said samples;

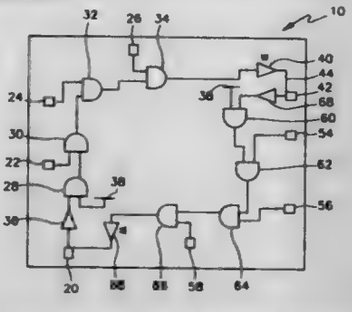
a second comparator for comparing the polarity of the voltage from said first cycle to the polarity of said difference determined by said first comparator and for providing an indication of fault direction in relation to such comparison.

5,796,260

PARAMETRIC TEST CIRCUIT

Tom A. Agan, Maple Grove, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 12, 1996, Ser. No. 614,426
Int. Cl.[6] G01R *31/02*; G06F *11/30*
U.S. Cl. 324—537 **6 Claims**



1. A test circuit for testing input threshold voltage levels of an IC, comprising:

a first plurality of input pins;

a second plurality of logic elements with each one of said second plurality having a first input, a second input, and an output;

a first one of said second plurality having said first input connected to a first voltage and said second input coupled to a first one of said first plurality of input pins;

each succeeding one of said second plurality of logic elements having said first input coupled to a succeeding one of said first plurality of input pins, and said second input connected to said output of an immediately preceding one of said second plurality;

a last one of said second plurality having said output coupled to a remaining one of said first plurality of input pins; and

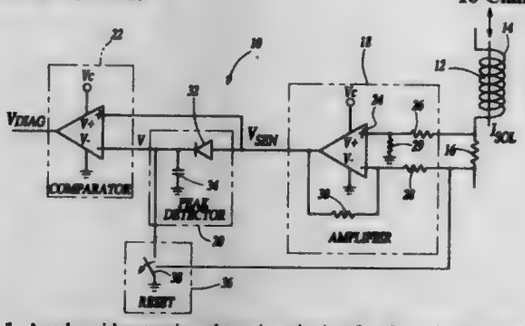
first means responsive to a logic level signal connected at said remaining one of said first plurality of input pins.

5,796,261

METHOD AND DEVICE FOR DETECTING SOLENOID ACTUATION

Pawel J. Golab, Birmingham, Mich., assignor to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 436,551, May 8, 1995, abandoned. This application Aug. 20, 1996, Ser. No. 697,113
Int. Cl.[6] G01R 31/60
U.S. Cl. 324—705 10 Claims



1. A solenoid actuation detection device for detecting actuation of an armature of a solenoid comprising:

a sensor for sensing an electric current flowing through a solenoid, said sensor creating a sensing signal based on the electric current;

a peak detector operatively connected to said sensor for receiving said sensing signal and for creating a peak signal from said sensing signal;

a comparator operatively connected to said sensor for receiving said sensing signal and said peak signal for comparing said sensing signal to said peak signal by subtracting said peak signal from said sensing signal to identify when said peak signal and said sensing signal intersect to determine when an armature of the solenoid was actuated; and

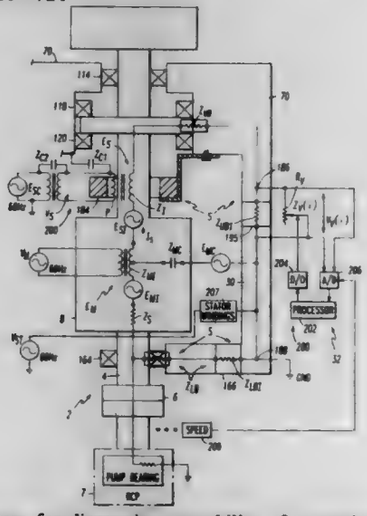
a reset circuit electrically connected to said sensor and said peak detector to reset said sensing signal and said peak signal.

5,796,262

METHOD AND APPARATUS FOR DIAGNOSING BEARING INSULATION IMPEDANCE OF A ROTATING ELECTRICAL APPARATUS

Charles D. Bice, Clinton Township, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 14, 1996, Ser. No. 601,260
Int. Cl.[6] G01R 27/08
U.S. Cl. 324—714 20 Claims



1. A system for diagnosing operability of a rotating electrical apparatus including a rotatable shaft having a voltage, a stator, bearing means and an insulator, with the bearing means electrically contacting the rotatable shaft and the insulator at least partially electrically insulating the rotatable shaft and the bearing means from the stator, said system comprising:

means for inducing an electrical signal, which is different than said voltage of said rotatable shaft, in said rotatable shaft;

variable impedance means in parallel with said insulator, said variable impedance means having a first impedance and a second impedance;

means for sensing a first electrical parameter associated with said first impedance and a second electrical parameter associated with said second impedance; and

means for determining the operability of said insulator from the first and second electrical parameters and the second impedance.

5,796,263

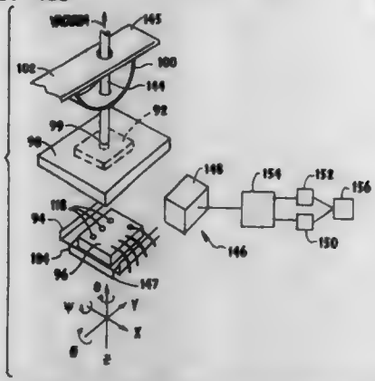
Patent Not Issued For This Number

5,796,264

APPARATUS FOR MANUFACTURING KNOWN GOOD SEMICONDUCTOR DICE

Warren Farnworth, Nampa, and Alan Wood, Boise, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 338,345, Nov. 14, 1994, Pat. No. 5,634,267, which is a continuation-in-part of Ser. No. 73,085, Jun. 7, 1993, Pat. No. 5,408,190, which is a continuation-in-part of Ser. No. 709,858, Jun. 4, 1991, abandoned, Ser. No. 788,965, Nov. 5, 1991, Pat. No. 5,440,240, and Ser. No. 981,956, Nov. 24, 1992, Pat. No. 5,539,324. This application Mar. 19, 1997, Ser. No. 823,468
Int. Cl.[6] G01R 31/02
U.S. Cl. 324—758 18 Claims



1. An apparatus for manufacturing a semiconductor die comprising:

a carrier for retaining the die for testing, the carrier including an interconnect comprising a contact member for establishing temporary electrical communication with a contact location on the die and a force distribution mechanism for biasing the die against the interconnect;

an optical probe for viewing the contact member on the interconnect and the contact location on the die;

a support member for supporting the carrier;

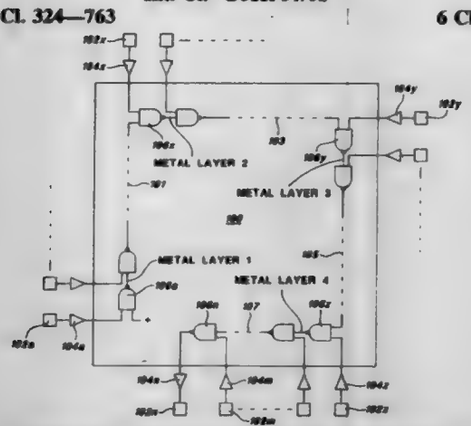
an assembly member for placing the die in contact with the interconnect and for attaching the force distribution mechanism to the carrier;

the support member, or the assembly member, configured to align the contact member and the contact location with input from the optical probe, and to maintain alignment as the force distribution mechanism is attached to the carrier.

5,796,265
METHOD FOR METAL DELAY TESTING IN SEMICONDUCTOR DEVICES

Nicholas Sporck, Saratoga, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Feb. 29, 1996, Ser. No. 608,609
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—763 **6 Claims**



1. A semiconductor device having a circuit for measuring propagation delay related to at least two metal layers on the device, the circuit comprising:

a first bond pad connected to an input of a first signal path, the first signal path comprising a first plurality of serially connected logic gates wherein the connection between each logic gate of the first plurality is formed on a first metal layer; and

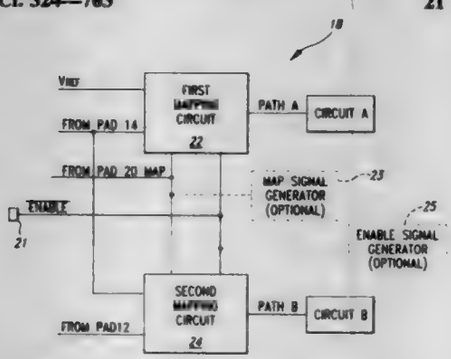
a second bond pad connected to an output of a second signal path, the second signal path comprising a second plurality of serially connected logic gates wherein the connection between each logic gate of the second plurality is formed on a second metal layer;

wherein the second signal path is in electrical communication with the first signal path such that the propagation delay attributable to the first metal layer is separately determinable from the propagation delay attributable to the second metal layer.

5,796,266
CIRCUIT AND A METHOD FOR CONFIGURING PAD CONNECTIONS IN AN INTEGRATED DEVICE

Jeffrey P. Wright, and Hua Zheng, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Mar. 18, 1996, Ser. No. 619,261
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—763 **21 Claims**



1. An integrated device, comprising:

a first pad;

a second pad;

a first circuit;

a second circuit;

a map signal generator operable to provide a map signal;

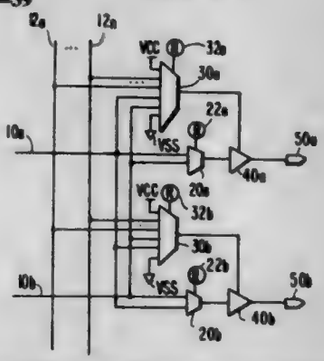
a first switch circuit having a first signal terminal coupled to said first pad, a first control terminal coupled to said map signal generator, and a second signal terminal coupled to said first circuit, said first switch circuit operable to directly couple said first pad to said first circuit when said map signal has a first signal level; and

a second switch circuit having a first signal terminal coupled to said first pad, a second signal terminal coupled to said second pad, a first control terminal coupled to said map signal generator, and a third signal terminal coupled to said second circuit, said second switch circuit operable to directly couple said second pad to said second circuit when said map signal has said first level signal said second switch circuit operable to directly couple said first pad to said second circuit and uncouple said second pad from said second circuit when said map signal has a second signal level.

5,796,267
TRI-STATABLE INPUT/OUTPUT CIRCUITRY FOR PROGRAMMABLE LOGIC

Bruce B. Pedersen, San Jose, Calif., assignor to Altera Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 442,795, May 17, 1995, Pat. No. 5,689,195. This application Feb. 27, 1996, Ser. No. 607,849
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—39 **15 Claims**



1. Tri-statable input/output terminal circuitry for programmable logic which has a plurality of output signal leads, a plurality of input/output terminals, and a plurality of tri-statable output drivers, each of which is associated with a respective one of said input/output terminals and each of which has an input terminal, an output terminal connected to the associated input/output terminal, and an output enable terminal, for applying to said output terminal and said input/output terminal a signal indicative of a signal applied to said input terminal when said output driver is enabled by an output enable signal applied to said output enable terminal, comprising:

first programmable logic connector circuitry for associating a respective first subplurality of said output signal leads with the input terminal of each of said output drivers and for programmably selectively connecting any of the output signal leads in the associated first subplurality to said input terminal, the output signal leads that are thus associated with each input terminal including at least one output signal lead that is thus associated with at least one other input terminal; and

second programmable logic connector circuitry for associating a respective second subplurality of said output signal leads with the output enable terminal of each of said output drivers and for programmably selectively connecting any one of the output signal leads in the associated second subplurality to said output enable terminal, the output signal leads that are thus associated with each output enable terminal including at least one output signal lead that is thus associated with at least one other output enable terminal, said first and second programmable logic connector circuitries being substantially independent of one another and non-blocking so that selection of any associated output signal lead by any of said first or second

programmable logic connector circuitries does not preclude selection of any associated output signal lead by any other of said first and second programmable logic connector circuitries; wherein the first subplurality associated with the input terminal of each output driver is the same as the second subplurality associated with the output enable terminal of that output driver, wherein each of said first and second subpluralities consists of two of said output signal leads, wherein said output drivers are grouped in a plurality of mutually exclusive pairs, and wherein the first and second pluralities associated with both of the output drivers of each pair are the same.

5,796,268

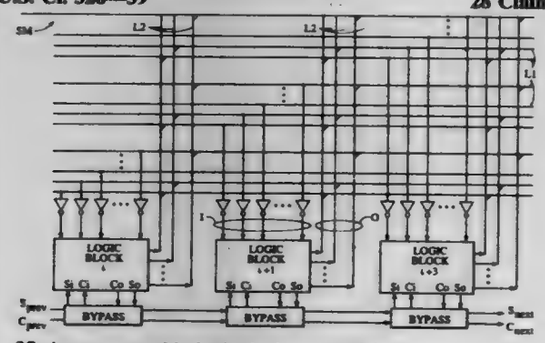
PROGRAMMABLE LOGIC DEVICE WITH PARTIAL SWITCH MATRIX AND BYPASS MECHANISM

Cecil H. Kaplinsky, 140 Melville Ave., Palo Alto, Calif. 94301

Filed Oct. 2, 1996, Ser. No. 723,615

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—39 **28 Claims**



25. A programmable logic device comprising:

a plurality of logic blocks, each logic block having inputs and outputs, said outputs carrying signals that are logical functions of said inputs; each logic block including a plurality of programmable logic cells, inputs to said logic cells being logical functions of inputs of said logic block, outputs of said logic block being outputs of said logic cells, each logic cell including a carry-in bit line, a carry-out bit line, and a corresponding programmable bypass means for transferring said carry-in bit line to said carry-out bit line so as to bypass said logic cell; and

a partially populated switch matrix having fewer than (B^2*P*R) programmable switches for interconnection said outputs of said logic blocks to said inputs of said logic blocks, B being the number of said logic blocks, P being the number of said inputs in each of said logic blocks, R being the number of said outputs in each of said logic blocks.

5,796,269

COMPOSABLE MEMORY ARRAY FOR A PROGRAMMABLE LOGIC DEVICE AND METHOD FOR IMPLEMENTING SAME

Bernard J. New, Los Gatos, Calif., assignor to Xilinx, Inc., San Jose, Calif.

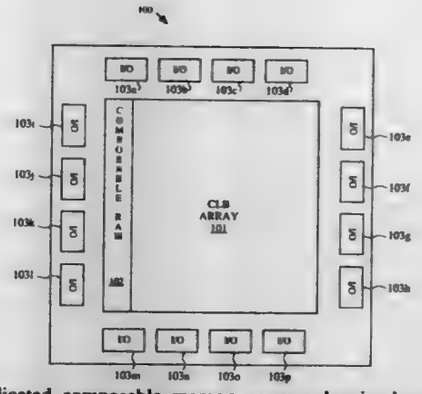
Filed Apr. 9, 1996, Ser. No. 631,298

Int. Cl.[6] H03K *7/38*

U.S. Cl. 326—40 **21 Claims**

9. A programmable logic device comprising:

an array of configurable logic blocks; and



a dedicated composable memory array, wherein the array of configurable logic blocks and the composable memory array are located on the same chip.

5,796,270

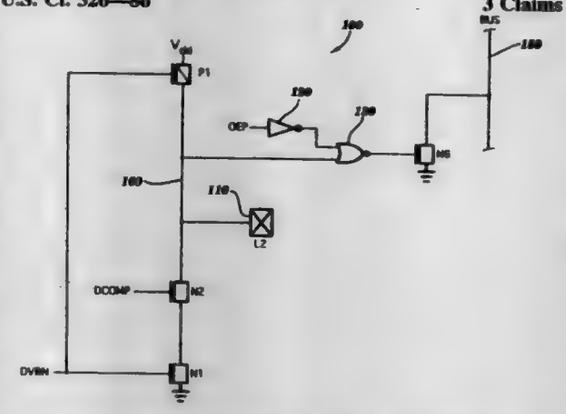
SELF-TIMED DRIVER CIRCUIT

John Atkinson Fifield, Underhill; Glenn Peter Giacalone, Shelburne, and Peter Joel Jenkins, S. Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 506,933, Jul. 26, 1995, Pat. No. 5,561,694. This application Aug. 22, 1996, Ser. No. 703,172

Int. Cl.[6] H03K *19/0175*

U.S. Cl. 326—86 **3 Claims**



1. A driver circuit with a self-timed output, comprising:

input means coupled to at least one data input, the data input driving the input means to one of two complementary logic states, the first of the two complementary logic states corresponding to valid data and the second of the two complementary logic states corresponding to invalid data;

output means for selectively driving the output;

data reset means for placing the output means in a first output state that does not drive the output in response to the data reset means receiving a data reset pulse; and

control means coupled to the input means, the output means, and the data reset means, for causing the output means to change from the first output state to a second output state that drives the output at a time determined by the data input driving the input means to the first of the two complementary logic states.

5,796,271

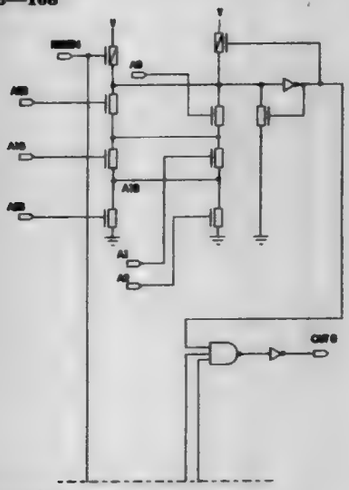
MEMORY ARRAY HAVING REDUNDANT WORD LINE

Manoj Kumar, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 672,525, Jul. 1, 1996, abandoned, which is a division of Ser. No. 491,661, Jun. 19, 1995, Pat. No. 5,568,433. This application Aug. 26, 1997, Ser. No. 929,347

Int. Cl.[6] H03K *19/003;* G11C *8/00*

U.S. Cl. 326—108 6 Claims



1. Address gating circuit, comprising:

a first precharge transistor, coupled to a voltage source and a precharge node, for precharging the node to a certain precharge voltage level in response to asserting a precharge signal; and

a first pair of address bit transistors, coupled to the node and to a voltage sink, for receiving true and complement signals for a first address bit and discharging the node;

wherein the first pair of address bit transistors is coupled to the voltage sink through a second pair of address bit transistors, the second pair being for receiving true and complement signals for a second address bit and discharging the node, such that once the precharge signal is deasserted the discharging of the precharge node is delayed until assertion of at least one of the signals for the first address bit and at least one of the signals for the second address bit, regardless of which one of the signals for the first address bit is asserted and which one of the signals for the second address bit is asserted.

5,796,272

FREQUENCY DEVIATION DETECTION CIRCUIT

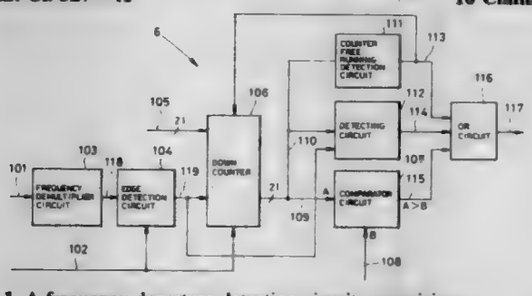
Masahiro Yazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1996, Ser. No. 657,596

Claims priority, application Japan, May 31, 1995, 7-132491

Int. Cl.[6] H03D *13/00*

U.S. Cl. 327—41 10 Claims



1. A frequency departure detection circuit comprising:

a counter for counting a number of cycles of a working reference clock for a given period;

a departure judgment means for determining whether a departure of a repeating frequency of said working reference clock from a desired fixed frequency of said working reference clock is within a certain level of tolerance, wherein said determination is based upon a uniformity of a given number of the most significant bits of an output of said counter.

5,796,273

SENSE AMPLIFIER FOR SEMICONDUCTOR MEMORY DEVICE

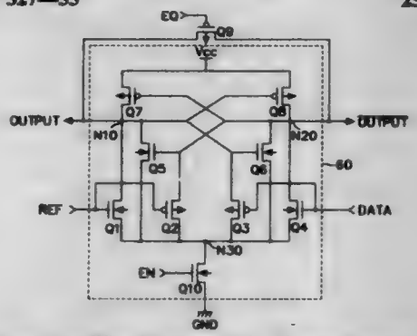
Tae-Sung Jung, Gunpo, and Jung-Hoon Park, Ahnyang, both of Rep. of Korea, assignors to Samsung Electronics, Co., Ltd., Suwon, Japan

Filed May 20, 1996, Ser. No. 650,399

Claims priority, application Rep. of Korea, May 20, 1995, 12691/1995

Int. Cl.[6] G01R *19/00*

U.S. Cl. 327—55 25 Claims



5. A sense amplifier having a pair of output terminals, said amplifier comprising:

a pull-down node;

a first pair of transistors connected between said output terminals and said pull-down node and having gate electrodes cross-coupled to said output terminals;

a second pair of transistors connected between said output terminals and said pull-down node and having gate electrodes coupled to input potentials; and

a third pair of transistors connected between said output terminals and said pull-down node and having gate electrodes coupled to said input potentials, wherein said second transistor pair is off and said third transistor pair is on when said input potentials are below a predetermined level.

5,796,274

FAULT TOLERANT MOSFET DRIVER

Scott C. Willis, Manassas, and Mark J. Jones, Centreville, both of Va., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Oct. 16, 1996, Ser. No. 733,080

Int. Cl.[6] H03K *5/22*

U.S. Cl. 327—63 14 Claims

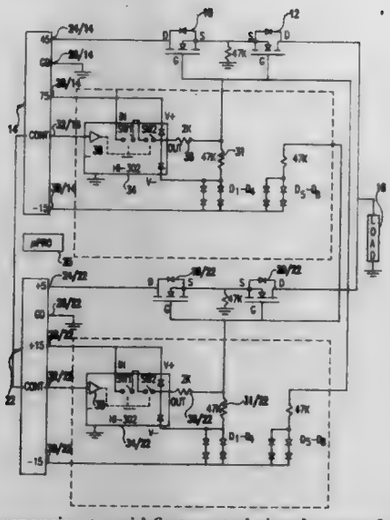
1. A fault tolerant MOSFET driver circuit for turning on and off MOSFET switches, which couple two or more redundant power sources to a load, comprising in combination:

a first power source including a positive bias means, a negative bias means, a load power means, and a first control signal source;

a second power source including a positive bias means, a negative bias means, a load power means, and a second control signal source;

a first MOSFET switch means having a source, a drain and a gate for connecting said load power means of said first power source to said load;

a second MOSFET switch means having a source, a drain and a gate for connecting said second power source to said load;



means responsive to said first control signal source for connecting said positive bias means of said first power source to said gate of said first MOSFET switch;

means for coupling said gate of said first MOSFET switch to said negative bias means of said first power source;

means for coupling said gate of said first MOSFET switch to said negative bias means of said second power source;

means responsive to said second control signal source for connecting said positive bias means of said second power source to said gate of said second MOSFET switch;

means for coupling said gate of said second MOSFET switch to said negative bias means of said second power source; and

means for coupling said gate of said second MOSFET switch to said negative bias means of said first power source.

5,796,275

HIGH VOLTAGES DETECTOR CIRCUIT AND INTEGRATED CIRCUIT USING SAME

Paolo Rolandi, Voghera, and Massimo Montanaro, Pavia, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jan. 30, 1997, Ser. No. 791,700

Claims priority, application European Pat. Off., Jan. 31, 1996, 96830043

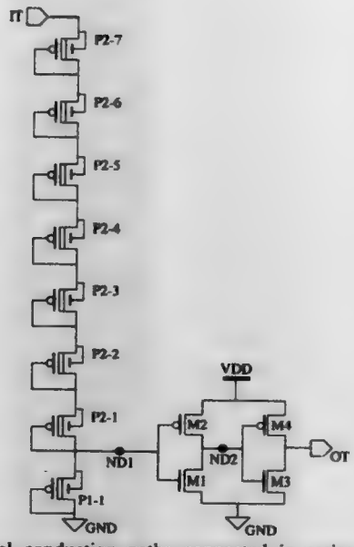
Int. Cl.[6] H03K *5/153*

U.S. Cl. 327—81 **14 Claims**

1. A circuit for detecting a high voltage higher than a predetermined value at a signal input, and signaling the detection to a signal output using a signal of a logical type, the circuit comprising:

one or more first natural transistors of MOS type and of a predetermined conductivity type, with each one being diode-connected and having a body terminal connected to a source terminal, the one or more first transistors having principal conduction paths connected in series for current conduction between a first node and a ground input;

two or more second natural transistors of MOS type and of the same predetermined conductivity type as the one or more first transistors, each of the two or more second transistors being diode-connected and having a body terminal connected to a source terminal, the two or more second transistors having



principal conduction paths connected in series for current conduction between the signal input and the first node; and

at least one first CMOS type logical inverter having an input connected to the first node and an output coupled to the signal output and being connected for power supply to a power supply input and to the ground input.

5,796,276

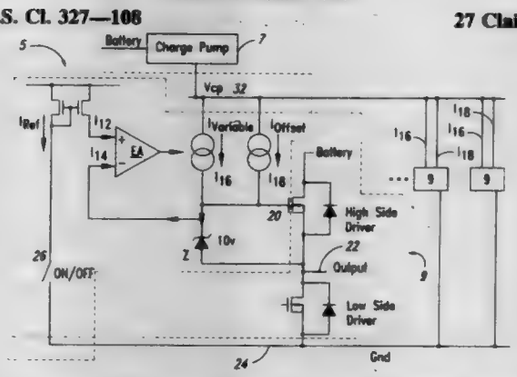
HIGH-SPEED-DRIVER GATE DRIVE CIRCUIT

William Phillips, Royal Oak, Mich., and Mario Paparo, Punta, Italy, assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Dec. 30, 1994, Ser. No. 366,781

Int. Cl.[6] H03K *3/00*

U.S. Cl. 327—108 **27 Claims**



1. A method for driving a gate terminal of a high side driver power switching device, comprising the steps of

(a.) operating a differential current-mode error amplifier which compares a reference current with a passing current passed from said gate terminal to a source terminal of said switching device;

(b.) providing a variable current to said gate terminal of said switching device, through a current source which is controlled by the output of said error amplifier; and

(c.) increasing said variable current when said passing current becomes less than said reference current.

5,796,277

POWER-TRANSISTOR DRIVING CIRCUIT FOR A SINGLE POWER SOURCE

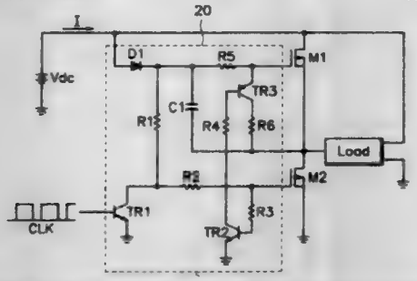
Yong-ho Kim, Seoul; Young-sik Lee, and Hyun-min Jo, both of Kyonggi-do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd, Kyonggi-do, Rep. of Korea

Filed Mar. 8, 1996, Ser. No. 612,728

Claims priority, application Rep. of Korea, Aug. 11, 1995, 95-24833

Int. Cl.[6] H03K *3/00*

U.S. Cl. 327—108 **11 Claims**



1. A power transistor driving circuit for use with a single power source and for driving a power transistor, comprising:

a diode having an anode connectable to receive a plus voltage from the single power source, and a cathode;

a first transistor having a base connectable to receive a control signal, an emitter terminal operatively connected to a ground terminal, and a collector;

a first resistor operatively connected between said cathode of said diode and said collector terminal of said first transistor;

a second resistor having a terminal operatively connected to said collector of said first transistor and having another terminal;

a third resistor having a terminal operatively connected to said other terminal of said second resistor and having another terminal;

a second transistor having a base operatively connected to said other terminal of said third resistor, an emitter operatively connected to a ground terminal and having a collector;

a fourth resistor having a terminal operatively connected to said collector of said second transistor and having another terminal;

a third transistor having a base operatively connected to said other terminal of said fourth resistor and having a collector;

a capacitor having a terminal operatively connected to said cathode of said diode, and having another terminal;

a fifth resistor operatively connected between said cathode of said diode and said emitter of said third transistor; and

a sixth resistor having a terminal operatively connected to said other terminal of said capacitor and to said collector terminal of said third transistor.

5,796,278

CIRCUITRY FOR CONTROLLING LOAD CURRENT

Douglas Bruce Osborn; Mark Wendell Gose, and John Mark Dikeman, all of Kokomo, Ind., assignors to Delco Electronics Corporaiton, Kokomo, Ind.

Filed Apr. 26, 1996, Ser. No. 637,984

Int. Cl.[6] H03B *1/00*

U.S. Cl. 327—108 **18 Claims**

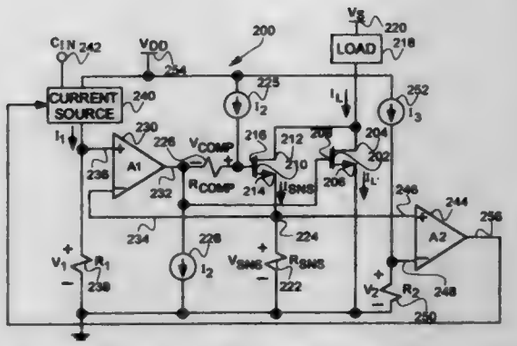
1. Circuitry for controlling load current through a load comprising:

means responsive to a load drive signal for permitting a first percentage of the load current to flow therethrough;

means responsive to a sense drive signal for permitting a second percentage of the load current to flow therethrough;

means responsive to said second percentage of the load current for providing a sense voltage corresponding thereto;

means responsive to a control signal and a predefined level of said sense voltage to provide said load drive signal at a



sufficient level thereof to maintain the load current at a predefined load current level; and

a compensation resistor having a first end connected to said means for permitting a first percentage of the load current to flow therethrough and a second end connected to said means for permitting a second percentage of the load current to flow therethrough, said compensation resistor receiving said load drive signal at said first end and providing said sense drive signal at said second end thereof, said compensation resistor operable to cancel debiasing effects of said sense resistor upon said second transistor.

5,796,279

DC APPLICATION CIRCUIT WITH SUPPRESSED DC MAGNETIZATION

Kazuhiro Umeda, and Syuzi Ichikawa, both of Tokyo, Japan, assignors to Tokyo Tsuki Co., Ltd., Tokyo, Japan

PCT No. PCT/JP94/01746, § 371 Date May 9, 1995, § 102(e) Date May 9, 1995, PCT Pub. No. WO95/11549, PCT Pub. Date Apr. 27, 1995

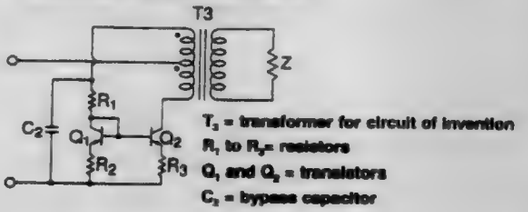
PCT Filed Oct. 18, 1994, Ser. No. 433,453

Claims priority, application Japan, Oct. 19, 1993, 5-260836; Mar. 11, 1994, 6-001985; May 10, 1994, 6-096780

Int. Cl.[6] H03K *3/35*

U.S. Cl. 327—110 **11 Claims**

Configuration of First Embodiment



1. A circuit comprising:

a winding having a magnetic member;

input means for conducting an electrical current having an AC component and a DC component, said input means being connected to said winding; and

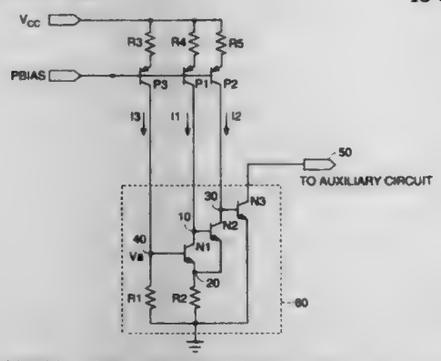
a DC magnetization prevention circuit unit connected to said winding and said input means for preventing DC magnetization of said magnetic member due to the DC component of the electrical current,

wherein: said winding has two winding halves and a center tap between said winding halves; said input means are connected for delivering the electrical current to said center tap; and said DC magnetization prevention circuit unit is operative for dividing the DC component into two equal portions which flow in opposite directions in the two winding halves.

5,796,280
THERMAL LIMIT CIRCUIT WITH BUILT-IN HYSTERESIS

Claudio Tuozzolo, Cranston, R.I., assignor to Cherry Semiconductor Corporation, East Greenwich, R.I.

Filed Feb. 5, 1997, Ser. No. 795,942
Int. Cl.[6] H03K *3/037*
U.S. Cl. 327—205 **18 Claims**



1. A bistable trigger circuit with temperature hysteresis, the bistable trigger circuit comprising:

a first current source to provide a first current to a first node;

a first transistor having a base, having an emitter connected to a second node, having a collector connected to the first node, and having a base-emitter junction temperature;

a second transistor having a base connected to the first node, an emitter connected to the second node, and having a collector connected to a third node;

a second current source to provide a second current to the third node, wherein the bistable trigger circuit has a first stable state characterized by the first transistor being ON and conducting a first emitter current, and the second transistor being OFF; and wherein the bistable trigger circuit has a second stable state characterized by the second transistor being ON and conducting a second emitter current, and the first transistor being OFF;

a reference voltage source, connected to the base of the first transistor, to provide a reference voltage at the base of the first transistor, so that the bistable trigger circuit changes state when the base-emitter junction temperature falls from above a first temperature to below a first temperature and when the base-emitter junction rises from below a second temperature to above the second temperature and wherein the first and second temperatures are distinct so that the bistable trigger circuit exhibits temperature hysteresis and

a first resistor connected to the second node to receive the first and second emitter currents, so that the second node has a voltage at a first threshold value when the bistable trigger circuit is in its first stable state and at a second threshold value when the bistable trigger circuit is in its second stable state, and the first threshold value is distinct from the second threshold value.

5,796,281
INPUT BUFFER CIRCUIT WITH HYSTERESIS FOR NOISE CONTROL

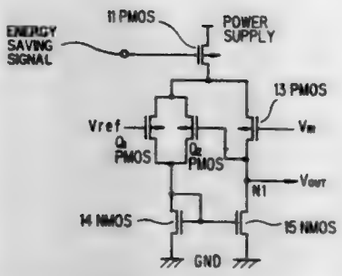
Takanori Saeki, and Yukio Fukuzo, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 23, 1996, Ser. No. 681,358
Claims priority, application Japan, Jul. 25, 1995, 7-209240
Int. Cl.[6] H03K *3/297;19/094;17/16*
U.S. Cl. 327—206 **7 Claims**

1. A complementary metal oxide semiconductor (CMOS) current mirror input buffer circuit, comprising:

a first transistor supplied with a reference voltage;

a second transistor connected in parallel with said first transistor, said second transistor having a gate connected to a current



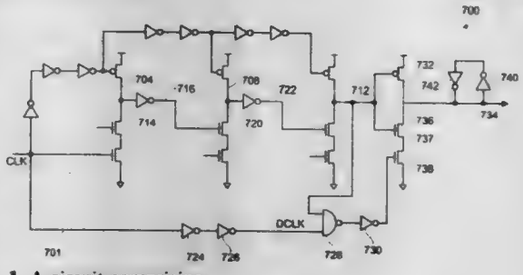
mirror output node of said input buffer circuit for endowing said input buffer circuit with a hysteresis characteristic,

wherein conductivity types of said first and second transistors are the same.

5,796,282
LATCHING MECHANISM FOR PULSED DOMINO LOGIC WITH INHERENT RACE MARGIN AND TIME BORROWING

Milo David Sprague, Aloha, and Robert J. Murray, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 12, 1996, Ser. No. 700,613
Int. Cl.[6] H03K *19/017*
U.S. Cl. 327—210 **13 Claims**



1. A circuit comprising:

a clock source;

a domino logic chain having an input and an output, the domino logic chain input being coupled to the clock source;

a delay circuit having an input and an output, the delay circuit input being coupled to the clock source; and

a latch with input pulse extender, comprising

an AND logic gate having at least a first input coupled to the delay circuit output, a second input coupled to the domino chain output, and an output;

a first PFET coupled between a power supply and the latch output;

a first NFET coupled between the latch output and an intermediate node; and

a second NFET coupled between the intermediate node and ground;

wherein the gates of the first PFET and first NFET are each coupled to the domino logic chain output, and the gate of the second NFET is coupled to the output of the AND logic gate.

5,796,283
BINMOS LATCH CIRCUIT WITH SYMMETRIC SET-UP TIMES

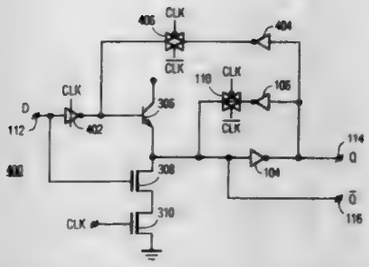
Brian Clark Martin, Encinitas, Calif., assignor to Philips Electronics North America Corporation, New York, N.Y.

Filed Oct. 15, 1996, Ser. No. 731,621
Int. Cl.[6] H03K *19/00;3/286*
U.S. Cl. 327—218 **3 Claims**

1. An electronic circuit comprising:

a data input and a data output;

a clock-controlled latch connected to the data output;



a clock-controlled three-state driver having a driver input connected to the data input, and a driver output;

a bipolar transistor having a base connected to the driver output, an emitter connected to the latch for driving the latch, and a collector connected to a first supply voltage node;

a clock controlled and data input controlled discharge path between the emitter and a second supply voltage node; and

a clock-controlled feedback path from the data output to the base of the bipolar transistor.

5,796,284

HIGH-PRECISION VOLTAGE DEPENDENT TIMING DELAY CIRCUIT

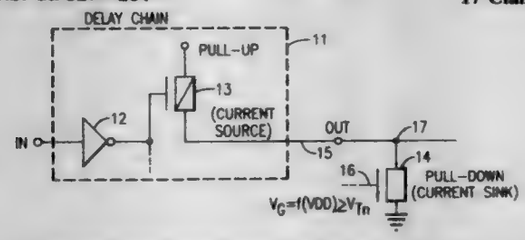
Rainer Clemen, Böblingen; Wolfdieter Loehlein, Herrenberg, and Harald Mielich, Stuttgart, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/EP95/03041, § 371 Date Dec. 16, 1996, § 102(e) Date Dec. 16, 1996, PCT Pub. No. WO97/05700, PCT Pub. Date Feb. 13, 1997

PCT Filed Jul. 31, 1995, Ser. No. 765,416

Int. Cl.[6] H03H *11/26*

U.S. Cl. 327—264 **17 Claims**



1. A timing delay circuit which comprises delay means (**1**) for providing an output signal (**3**) in response to an input signal (**2**), where said output signal is delayed with respect to said input signal, said delay varying with a supply voltage (Vdd) by which said circuit is powered; and circuit means (**78**) with a switching threshold (**21**) which are connected to said output of said delay means for receiving said output signal (**3**), said timing delay circuit characterized by switching means (**14**, **34**, **43**, **70**) for providing a current sink element (NFET **14**, **34**, or **70**) or a current source element (PFET **43**) coupled to the output of the delay means (**1**), said current sink element sinking current from said output signal (**3**) upon a rising edge of said output signal (**3**) of said delay means (**1**) and said current source element sourcing current to said output signal (**3**) of said delay means upon a falling edge of said output signal (**3**) of said delay means (**1**), said switching means being enabled by an adjustable control voltage (**71**) which varies in proportion to said supply voltage, said switching means being enabled if said supply voltage exceeds a minimum value and said switching means being disabled if said supply voltage is below said minimum value , said enabled switching means further delaying the output signal (**3**) of the delay means by increasing the time required for the rising or falling edge of said output signal to respectively rise or fall to the switching threshold of the circuit means.

5,796,285

VOLTAGE-LIMITING CIRCUIT WITH HYSTERESIS COMPARATOR

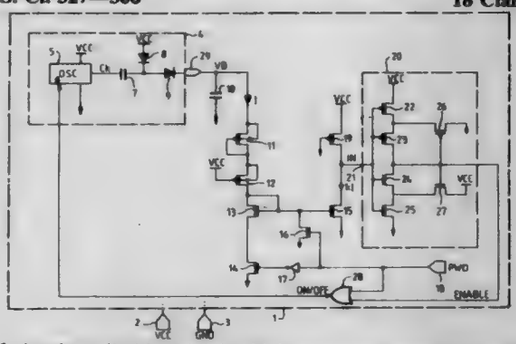
Sylvie Drouot, Luynes, France, assignor to SGS-Thompson Microelectronics S.A., St. Genis, France

Continuation of Ser. No. 424,783, Apr. 19, 1995, Pat. No. 5,640,118. This application Mar. 12, 1997, Ser. No. 815,581

Claims priority, application France, Apr. 21, 1994, 9404984

Int. Cl.[6] H03K *17/56*

U.S. Cl. 327—306 **18 Claims**



1. A voltage-limiting circuit which maintains a value of a supply voltage provided by a supply circuit, at an output of the voltage-limiting circuit, between a minimum value and a maximum value, the voltage-limiting circuit comprising:

resistive means, having an input coupled to the supply voltage and an output, for providing a current proportional to the supply voltage;

a current-controlled voltage source having an input coupled to the output of the resistive means, which provides a reference current proportional to the current and a reference voltage proportional to the reference current; and

a hysteresis comparator including at least one P-channel transistor and at least one N-channel transistor which receives the reference voltage at a first input and provides a binary signal at an output, such that the binary signal goes to a first state when the reference voltage reaches the maximum value and goes to a second state if the supply voltage reaches the minimum value.

5,796,286

ATTENUATION CIRCUITRY USING GATE CURRENT CONTROL OF FET CONDUCTION TO VARY ATTENUATION

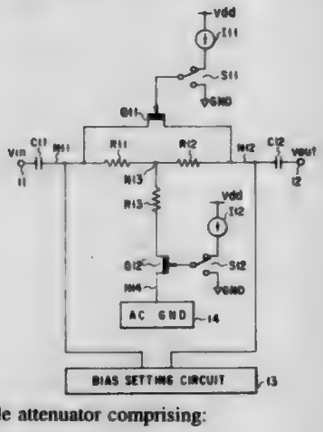
Shoji Otaka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 7, 1995, Ser. No. 524,526

Claims priority, application Japan, Sep. 13, 1994, 6-218972

Int. Cl.[6] H03K *5/08*

U.S. Cl. 327—308 **27 Claims**



1. A variable attenuator comprising:

an attenuation circuit including a plurality of resistors including first and second series connected resistors between an input terminal and an output terminal and having an intermediate junction and a third resistor having one terminal connected to said intermediate junction in a T-shaped configuration;

a first junction field effect transistor connected between the other terminal of said third resistor and a reference terminal and having a first gate;

a second junction field effect transistor which is connected in parallel with the series connected resistors;

a bias setting circuit for applying a bias voltage higher than a ground potential to a second drain and a second source of said second field effect transistor; and

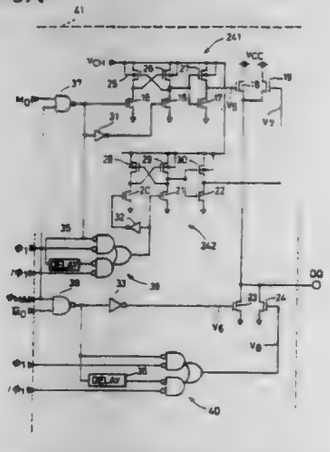
a current controller including a constant-current source applying a voltage higher than the bias voltage to a second gate of said second field effect transistor to inject a constant current into the second gate and render the second field effect transistor in a conductive condition while said first field effect transistors is held non-conductive, said current controller including means for connecting the second gate to a ground terminal to render said second field effect transistor in a non-conductive condition while said first field effect transistor is held conductive.

5,796,287

OUTPUT DRIVER CIRCUIT FOR SUPPRESSING NOISE GENERATION AND INTEGRATED CIRCUIT DEVICE FOR BURN-IN TEST

Kiyohiro Furutani, and Hideyuki Ozaki, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1993, Ser. No. 145,710
Claims priority, application Japan, Nov. 4, 1992, 4-294993
Int. Cl.[6] H03K *17/04*
U.S. Cl. 327—374 **11 Claims**



1. An output driver circuit including a data output terminal and for providing an output data via said data output terminal, comprising:

a semiconductor substrate,

a predetermined node formed in said substrate,

current providing means formed in said substrate and responsive to an applied data signal defining said output data for providing an output current via said data output terminal, and

current increasing rate control means formed in said substrate and responsive to a potential at said predetermined node for controlling an increasing rate of the output current by said current providing means,

wherein said current providing means comprises a first field effect transistor connected between a first power supply potential and said data output terminal, and said current increasing rate control means comprises conductance increasing timing control means responsive to the potential at said predetermined node for controlling an increasing rate of a conductance of said first field effect transistor, and

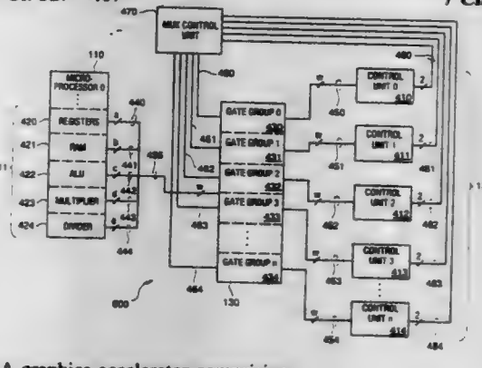
said current increasing rate control means controlling the output driver circuit to operate in at least a first state and a second state, said current providing means provides a first current increasing rate in the first state and said current providing means provides a second current increasing rate in the second state, said second current increasing rate being slower than said first current increasing rate.

5,796,288

GRAPHICS ACCELERATOR HAVING LOGIC MULTIPLEXER SYSTEM FOR SHARING A MICROPROCESSOR

Alan S. Krech, Jr., and Brian C. Miller, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 441,859, May 16, 1995, abandoned.
This application Oct. 15, 1996, Ser. No. 730,170
Int. Cl.[6] H03K *17/693*
U.S. Cl. 327—407 **7 Claims**



1. A graphics accelerator comprising:

a plurality of control units configured to generate a respective plurality of processor access signals, said control units configured to process graphics data via said processor access signals;

a processor element having a control line, said processor element configured to execute said processor access signals to process said graphics data;

a multiplexer control unit configured to generate a plurality of select signals;

a plurality of logic gates equal in number to said plurality of control units with each logic gate having an input connected to a respective control unit, an output connected to said control line, and a select terminal connected to said multiplexer control unit for receiving a respective select signal;

wherein said multiplexer control unit is configured to assert one of said select signals to said select terminal of one of said logic gates so as to enable said one logic gate and to permit one control unit, which is associated with said one logic gate, to gain control of said processor element by applying said one processor access signal from said one control unit to said control line;

wherein said multiplexer control unit is configured to deassert said select signal to the select terminals of all other logic gates so as to disable all of the other logic gates and to prevent all other control units associated with the other logic gates from accessing said processor element, while said one control unit controls said processor element;

wherein said multiplexer control unit is configured to produce start signals for selectively starting said control units and to produce stop signals for selectively stopping said control units;

a second processor element having a second control line;

a second plurality of logic gates equal in number to said plurality of control units with each logic gate in said second plurality having its input connected to its respective control

unit, its output connected to said second control line, and its select terminal connected to said multiplexer control unit; and

wherein said multiplexer control unit is configured to enable said one control unit to gain control of said second processor element by supplying another of said select signals to another logic gate in said second plurality which is associated with said one control unit,

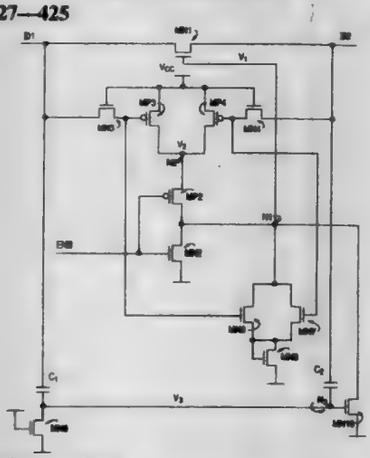
whereby said one control unit gains control of both said processor element and said second processor element when said one logic gate and said another logic gate receive said one select signal and said another select signal respectively from said multiplexer control unit.

5,796,289

PASS TRANSISTOR CAPACITIVE COUPLING CONTROL CIRCUIT

David Brian Rees, Basingstoke, United Kingdom, and Martin Jonathon Steadman, London, England, assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Jan. 30, 1996, Ser. No. 594,318
Int. Cl.[6] H03K *17/56*
U.S. Cl. 327—425 **16 Claims**



1. A circuit comprising:

a pass transistor having a source connected to a first node, a drain connected to a second node and a gate connected to a third node;

a first capacitor coupled to said first node and a second capacitor coupled to said second node, said first and second capacitors coupled in common to a fourth node; and

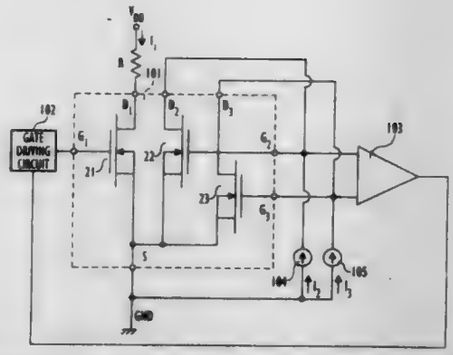
a second transistor having a gate connected to said fourth node and a source connected to said third node, wherein said second transistor is configured to turn off said pass transistor in response to a voltage higher than a design limit at either said first node or said second node.

5,796,290

TEMPERATURE DETECTION METHOD AND CIRCUIT USING MOSFET

Mitsuasa Takahashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 24, 1996, Ser. No. 736,504
Claims priority, application Japan, Oct. 26, 1995, 7-278754
Int. Cl.[6] H03K *5/22*
U.S. Cl. 327—512 **11 Claims**



5. A temperature detection circuit, comprising:

first and second lateral MOSFETs formed in a well region of one conductivity type which is formed on a surface of a semiconductor region of an opposite conductivity type to said conductivity type of said well region;

a first power source which drives said first lateral MOSFET at an operation point where a temperature has influence on a characteristic of one of a gate-source voltage and a drain current thereof;

a second power source which drives said second lateral MOSFET at an operation point where the temperature has no influence on a characteristic of one of a gate-source voltage and a drain current thereof;

a comparator which compares a difference between said influenced characteristic of said first MOSFET and said uninfluenced characteristic of said second lateral MOSFET with a predetermined set value to determine if a predetermined temperature has been exceeded; and

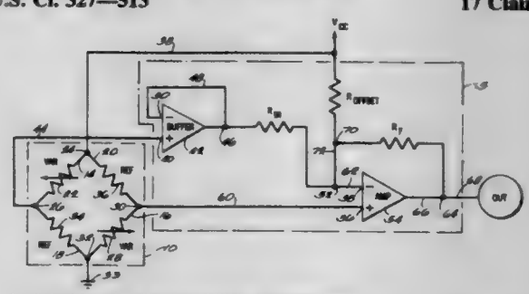
a driving circuit outputting a signal which controls operation of said semiconductor element in response to an output from said comparator.

5,796,291

METHOD AND APPARATUS FOR COMPENSATING FOR TEMPERATURE FLUCTUATIONS IN THE INPUT TO A GAIN CIRCUIT

Michael F. Mattes, Janesville, and James D. Seefeldt, DeForest, both of Wis., assignors to SSI Technologies, Inc., Janesville, Wis.

Continuation of Ser. No. 291,878, Aug. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 228,963, Apr. 15, 1994, abandoned. This application Mar. 21, 1996, Ser. No. 619,166
Int. Cl.[6] H01L *35/00*
U.S. Cl. 327—513 **17 Claims**



1. An electronic gain circuit comprising:

an amplifier having an input for receiving an input signal, having a gain independent of the input signal, having an output, such that the amplifier produces an output signal at the output, and having a closed loop feedback path between the input and the output; and

means for automatically adjusting the gain of the amplifier in response to ambient temperature fluctuations such that the gain of the amplifier responds to temperature fluctuations to produce the output signal so that the output signal responds in a predetermined way to temperature induced fluctuations of the input signal, the means for automatically adjusting the gain of the amplifier including first and second resistors operatively connected to the amplifier such that the gain is dependent upon the resistivity of the resistors, and wherein

each of the resistors have a resistivity functionally related to the ambient temperature.

5,796,292

CIRCUIT FOR BIASING EPITAXIAL REGIONS WITH A BIAS VOLTAGE THAT IS NOT LOWER THAN GROUND REFERENCE DESPITE POWER SUPPLY DISTURBATION

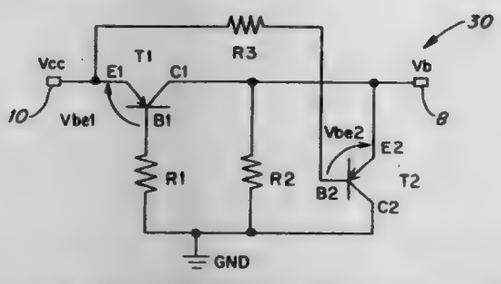
Natale Aiello, Catania, Italy, assignor to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Feb. 27, 1996, Ser. No. 607,611

Claims priority, application European Pat. Off., Feb. 28, 1995, 95830066

Int. Cl.[6] H03K 3/01

U.S. Cl. 327—534 11 Claims



1. A circuit for biasing epitaxial wells of a semiconductor integrated circuit of the type which includes at least one epitaxial well composed of semiconductor material of a first type and superposed on or adjacent to at least one region of semiconductor material of a second type, comprising at least one electronic switch having first and second terminals and a control terminal, said first terminal being connected to a first potential reference, said second terminal being connected to said epitaxial well and, via a first resistive element, to a second potential reference, and said control terminal being connected, via a second resistive element, to said second potential reference.

5,796,293

VOLTAGE BOOSTING CIRCUITS HAVING BACKUP VOLTAGE BOOSTING CAPABILITY

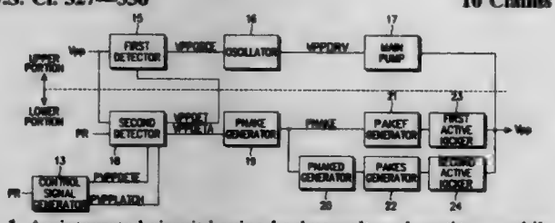
Sei-Seung Yoon, and Yong-Cheol Bae, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Nov. 12, 1996, Ser. No. 748,189

Claims priority, application Rep. of Korea, Nov. 13, 1995, 95-40993

Int. Cl.[6] G05F 1/10

U.S. Cl. 327—536 10 Claims



1. An integrated circuit having backup voltage boosting capability, comprising:

a main voltage boosting circuit powered at a first reference potential and containing a main level detector, a ring oscillator and a main pump coupled in series to drive a signal line to a boosted reference potential which is greater than the first reference potential, when a potential of the signal line drops below a second reference potential; and

a backup voltage boosting circuit containing an independent level detector and a first backup pump coupled in series to drive the signal line to the boosted reference potential when the potential of the signal line drops below a third reference potential.

5,796,294

CIRCUITS FOR GENERATING A CURRENT WHICH IS PROPORTIONAL TO ABSOLUTE TEMPERATURE

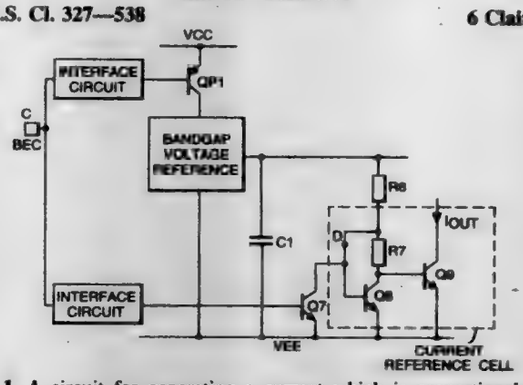
Colin L. Perry, Sindon, United Kingdom, assignor to Plessey Semiconductors Limited, Wiltshire, United Kingdom

Filed Jun. 19, 1996, Ser. No. 667,962

Claims priority, application United Kingdom, Oct. 31, 1995, 9522274

Int. Cl.[6] G05F 1/10

U.S. Cl. 327—538 6 Claims



1. A circuit for generating a current which is proportional to absolute temperature, comprising:

a) a current source having an input node coupled to a voltage reference source, and an output node;

b) a sub-circuit for generating an output current which passes through a peak value as a variable input current derived from the output node of the current source increases, said output current being relatively insensitive to changes in the variable input current in a region of the peak value thereby rendering the output current proportional to absolute temperature; and

c) a path, including a switch, for connecting the output node of the current source to ground when the current source is turned off, for diverting the variable input current to ground to promote rapid decay in the output current.

5,796,295

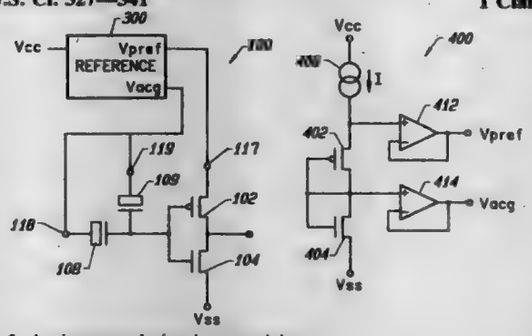
REFERENCE FOR CMOS MEMORY CELL HAVING PMOS AND NMOS TRANSISTORS WITH A COMMON FLOATING GATE

Bradley A. Sharpe-Geisler, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 426,741, Apr. 21, 1995, abandoned. This application Jun. 21, 1996, Ser. No. 668,141

Int. Cl.[6] G05F 3/20; G11C 7/00

U.S. Cl. 327—541 1 Claim



1. An integrated circuit comprising:

a voltage reference circuit having a PMOS transistor and an NMOS transistor having drains connected in common and having a common gate connected to the common drains;

a memory cell having a PMOS transistor and an NMOS transistor with a common floating gate, a source of the PMOS transistor of the memory cell being coupled to a source of the PMOS transistor of the reference circuit; and

a voltage boost pump for receiving a voltage (Vcc) from a voltage supply pin and providing a boosted voltage higher than the voltage (Vcc) to a source of the PMOS transistor of the reference circuit,

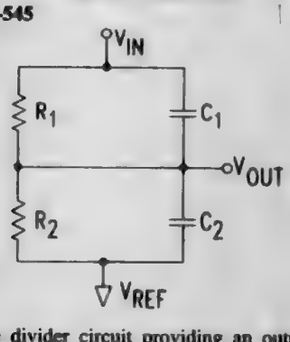
wherein the PMOS and NMOS transistors of the reference circuit include cell implants so that a sum of magnitudes of thresholds of the PMOS and NMOS transistors of the reference circuit are equal to or greater than the voltage (Vcc) from the voltage supply pin.

5,796,296

COMBINED RESISTANCE-CAPACITANCE LADDER VOLTAGE DIVIDER CIRCUIT

Steven V. Krzentz, Dallas, Tex., assignor to Texas Instruments Incorporated, Del.

Filed Oct. 7, 1996, Ser. No. 726,506
Int. Cl.[6] G05F *3/02*
U.S. Cl. 327—545 **14 Claims**



1. A voltage divider circuit providing an output voltage at a second terminal in response to a voltage applied between a first terminal and a third terminal, said circuit comprising:

a first resistor and a first capacitor, said first resistor having a first ohmic value and said first capacitor having a first farad value, each of said first resistor and said first capacitor coupled between said second terminal and said first terminal; and

a second resistor and a second capacitor, said second resistor having a second ohmic value and said second capacitor having a second farad value, each of said second resistor and said second capacitor coupled between said second terminal and said third terminal;

the ratio of second ohmic value to the sum of said first ohmic value and of said second ohmic value being substantially equal to the ratio of said first farad value to the sum of said first farad value and of said second farad value.

5,796,297

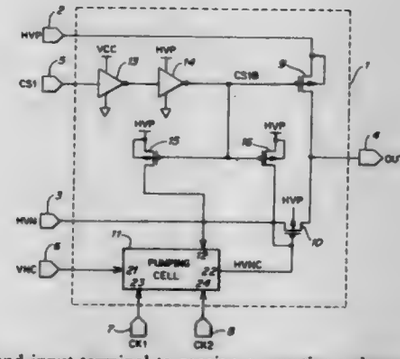
SELECTOR SWITCH CIRCUIT ENABLING THE SELECTIVE SUPPLY OF VOLTAGES WITH DIFFERENT SIGNS

Alessandro Brigati, Aix en Provence; Nicolas Demange, Lessy; Maxence Aulas, St Haon le Vieux, and Marc Guedj, Pont Saint Esprit, all of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Jun. 17, 1996, Ser. No. 666,733
Claims priority, application France, Jun. 21, 1995, 95 07620
Int. Cl.[6] H03K *17/693*
U.S. Cl. 327—546 **19 Claims**

1. A selector switch circuit comprising:

a first input terminal to receive a first positive voltage,



a second input terminal to receive a negative voltage,

a third input terminal to receive a second positive voltage,

command input terminals to receive command logic signals,

an output terminal to provide an output voltage by selectively connecting the output terminal to one of the first input terminal, the second input terminal and the third input terminal, the first input terminal being connected to the output terminal via a first transistor, the second input terminal being connected to the output terminal via a second transistor, and the third input terminal being connected to the output terminal via a third transistor,

control means for producing, as a function of the command logic signals, control voltages applied to the control electrodes of the first, second and third transistors to selectively connect the output terminal to one of the first, second and third input terminals, and

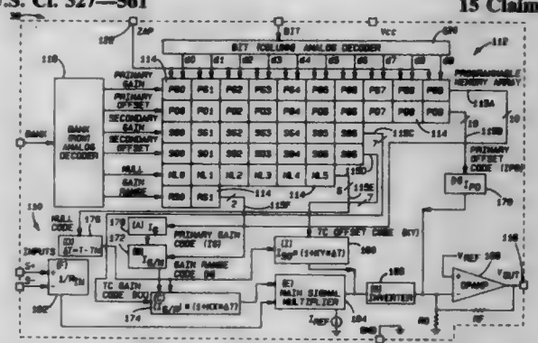
an insulation transistor to insulate one of the first and third transistors from the output terminal when the output terminal is connected to the second input terminal.

5,796,298

INTEGRATED TRANSDUCER AMPLIFIER WITH ZENER-ZAP PROGRAMMING

Mark Billings Kearney, Kokomo; Dennis Michael Koglin, Carmel, and Douglas Bruce Osborn, Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Apr. 14, 1995, Ser. No. 422,153
Int. Cl.[6] H01L *25/00*
U.S. Cl. 327—561 **15 Claims**



1. A programmable integrated amplifier circuit, said circuit comprising:

binary adjustable circuit means for adjusting the operating characteristics of said amplifier circuit;

an array of memory cells for storing binary information, said array of memory cells being operatively coupled to said binary adjustable circuit means, each of said memory cells including a memory element being selectively permanently programmed when coupled to a programming voltage so as to output a programmed binary signal to said binary adjustable circuit means for adjusting the operating characteristics of said binary adjustable circuit means; and

a programming input coupled to each of said memory cells for receiving said programming voltage.

5,796,299

INTEGRATED CIRCUIT ARRAY INCLUDING I/O CELLS AND POWER SUPPLY CELLS

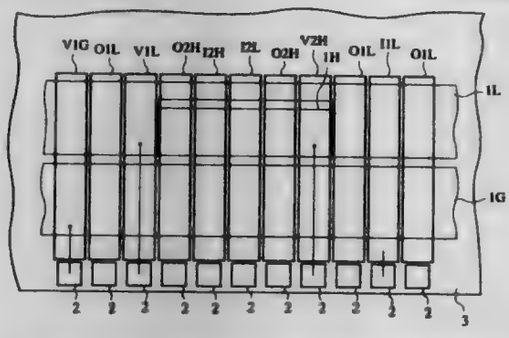
Toshikazu Sei, Kanagawa, and Tomohiro Fujisaki, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 6, 1996, Ser. No. 759,703

Claims priority, application Japan, Dec. 11, 1995, 7-321671

Int. Cl.[6] H01L *25/00*

U.S. Cl. 327—565 **19 Claims**



1. A semiconductor integrated circuit having a cell array including I/O cells and power supply cells, formed on a peripheral regions on a semiconductor chip, the cell array comprising:

(a) first type cells having, as a second level wiring layer, a reference power supply voltage wiring for supplying a reference voltage, and a first power supply wiring for supplying a first power supply voltage; and

(b) second type cells having, as the second level wiring layer, the reference power supply voltage wiring, the first power supply wiring, and a second power supply wiring for supplying a second power supply voltage;

wherein the second type cells are arranged in a predetermined area collectively.

5,796,300

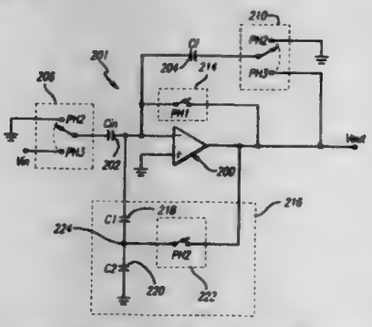
SWITCHED-CAPACITOR AMPLIFIER OFFSET VOLTAGE COMPENSATION CIRCUIT

Wayne A. Morgan, Northridge, Calif., assignor to Pacesetter, Inc., Sylmar, Calif.

Filed Feb. 14, 1996, Ser. No. 601,629

Int. Cl.[6] H03F *1/34*; **H03M** *1/34*

U.S. Cl. 330—9 **33 Claims**



17. In a switched-capacitor system including an amplifier and first switching means for selectively coupling an output of the amplifier to an inverting input of the amplifier, a method for reducing charge injection signals comprising the steps of:

(a) generating a first and second phase signal of a clock signal, wherein the second phase signal begins with the first phase signal and ends after the first phase signal ends;

(b) coupling the amplifier output to the inverting input during the first phase signal;

(c) uncoupling the amplifier output from the inverting input at the end of the first phase signal, thereby causing a first charge injection signal;

(d) coupling the inverting input to the amplifier output through a feedback attenuation circuit during the second phase signal to restore the first charge injection signal of step (c);

(e) uncoupling the feedback attenuation circuit from the amplifier output at the end of the second phase signal, thereby causing a second charge injection signal; and

(f) attenuating the second charge injection signal of step (e) at the inverting input.

5,796,301

OFFSET CANCELLATION CIRCUIT

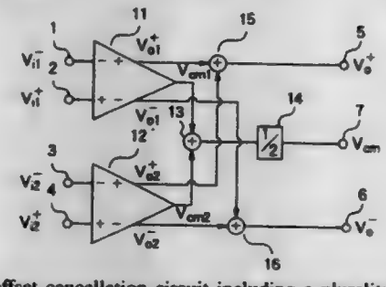
Ken Tanabe, and Tadashi Nukui, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1996, Ser. No. 739,951

Claims priority, application Japan, Oct. 30, 1995, 7-282205

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—9 **8 Claims**



1. An offset cancellation circuit including a plurality of operational amplifiers each having first and second fully-differential outputs and a common mode output, the circuit comprising:

a first operational element connected to the first fully-differential output of each operational amplifier to perform a predetermined operation to output a first operation result;

a second operation element connected to the second fully-differential output of each operational amplifier to perform a predetermined operation to output a second operation result; and

a third operation element connected to the common mode ouput of each operational amplifier to output an average value of the common mode outputs.

5,796,302

SINGLE POLE NEGATIVE FEEDBACK FOR CLASS-D AMPLIFIER

Marco Masini, Milan; Stefania Boiocchi, Certosa, and Edoardo Botti, Vigevano, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Feb. 27, 1996, Ser. No. 607,601

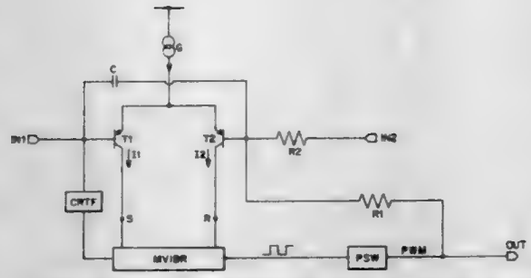
Claims priority, application European Pat. Off., Feb. 28, 1995, 95830063

Int. Cl.[6] H03F *3/38*

U.S. Cl. 330—10 **13 Claims**

1. A power amplifier of the two-state type having first and second inputs for receiving an input signal from a signal source and an output for providing an output signal, comprising:

a modulation circuit that converts the input signal to a pulse signal having a pulse duration proportional to an amplitude of the input signal, the modulation circuit having an output, coupled to the output of the amplifier, and first and second inputs coupled respectively to first and second input circuit



nodes, the first input circuit node being coupled to the first input of the power amplifier;

a first circuit element, having a predetermined impedance, connected between the output of the and the second input of the modulation circuit;

a second circuit element, having a predetermined impedance, connected between the second input circuit node and the second input; and

a capacitive element connected between the first input circuit node and the second input circuit node.

5,796,303

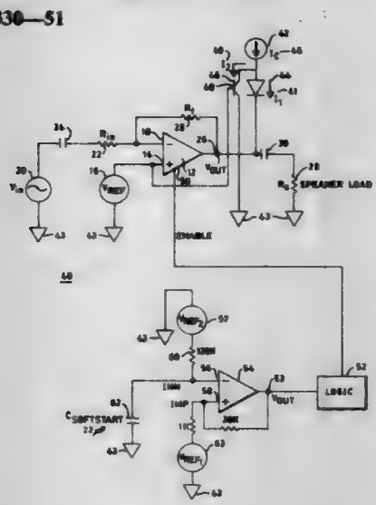
POPLESS AMPLIFIER

Charles L. Vinn, 827 Russell La., Milpitas, Calif. 95035, and Bruce G. Armstrong, 1822 Randall Dr., San Mateo, Calif. 94402

Filed Jun. 26, 1996, Ser. No. 672,488

Int. Cl.[6] H03G *3/34*

U.S. Cl. 330—51 **25 Claims**



17. A method to prevent a pop in the output of an audio system during a change of state of the system, wherein said system comprises an operational amplifier and a speaker, said method comprising the steps of:

preventing the application of an output voltage from the operational amplifier to the speaker for a first selectable period of time during a change of state of the system; and

applying a voltage to the output of the operational amplifier during the first selectable period of time.

5,796,304

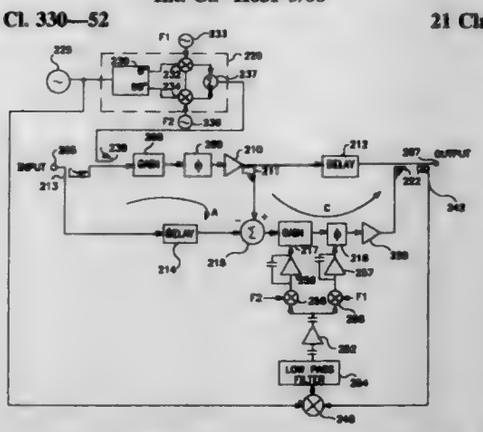
BROADBAND AMPLIFIER WITH QUADRATURE PILOT SIGNAL

Charles R. Gentzler, Thousand Oaks, Calif., assignor to Powerwave Technologies, Inc., Irvine, Calif.

Filed Apr. 24, 1996, Ser. No. 639,264

Int. Cl.[6] H03F *3/66*

U.S. Cl. 330—52 **21 Claims**



1. An amplifier arrangement including a main amplifier to which feed-forward cancellation is applied, said amplifier arrangement comprising:

a comparison loop including a comparator which compares a signal input to said main amplifier with a signal output from said main amplifier to provide an error signal;

a cancellation loop including correction circuitry which adjusts said error signal;

a pilot signal modulation circuit which quadrature modulates an oscillation signal to generate a quadrature modulated pilot signal,

a coupler for adding the quadrature modulated pilot signal to said amplifier input; and

a detector circuit connected to the output of the amplifier arrangement, which provides control signals to the correction circuitry, said detector circuit extracting information from said modulated pilot signal in said amplifier arrangement output to provide said control signals.

5,796,305

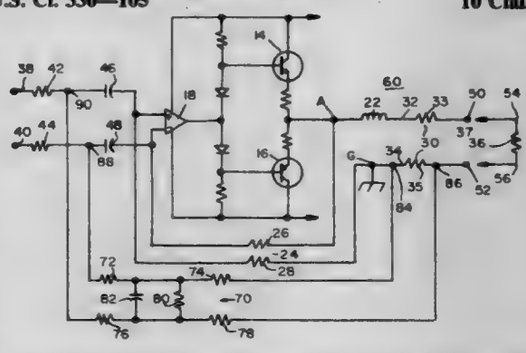
AMPLIFIER ARRANGEMENTS WITH HIGH DAMPING FACTOR

Jack C. Sondermeyer, Meridian, Miss., assignor to Peavey Electronics Corporation, Meridian, Mich.

Filed Jun. 14, 1996, Ser. No. 663,691

Int. Cl.[6] H03F *1/34*

U.S. Cl. 330—105 **10 Claims**



1. A circuit for increasing damping factor in an audio amplifier comprising:

an amplifier having inverting and non-inverting inputs, and adapted to be coupled to a load by internal output feed and

return leads coupled to corresponding output terminals and components having an impedance causing a reduction in the damping factor;

a balanced feedback network having first and second feedback inputs and first and second feedback outputs, the first feedback input being coupled to a selected one of the output feed lead and return lead near the corresponding output terminal thereof and the second feedback input being coupled to the same selected internal output lead remote from said terminal to thereby establish a series impedance between said first and second feedback inputs representative of impedance of the selected internal output; and

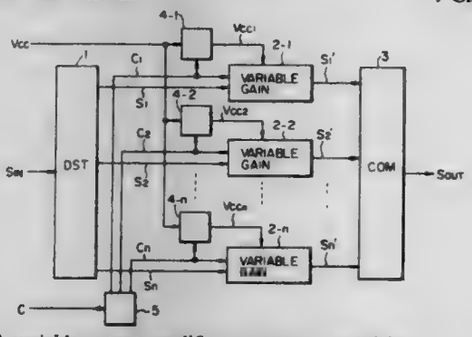
the first feedback output being coupled to the non-inverting input of the amplifier and the second feedback output being coupled to the inverting input of the amplifier, said balanced feedback network positively feeding back a representation of the impedance to compensate therefor and thereby raise the damping factor of the amplifier.

5,796,306

WIDE RANGE VARIABLE OUTPUT AMPLIFIER APPARATUS WITH HIGH EFFICIENCY

Soichi Tsumura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 27, 1996, Ser. No. 703,775
Claims priority, application Japan, Aug. 28, 1995, 7-219232
Int. Cl.[6] H03F *3/68;* **H03G** *3/30*
U.S. Cl. 330—124 R **7 Claims**



1. A variable output amplifier apparatus, comprising:

a distributing unit for receiving an input signal to generate a plurality of first signals;

a plurality of variable gain units connected to said distributing unit, each of said variable gain units having a gain for amplifying said first signals and outputting second signals;

a combining unit, connected to said variable gain units, for combining said second signals into an output signal;

a plurality of power supply control units, each connected to one of said variable gain units, for applying power supplies to said variable gain units; and

a control unit, connected to said variable gain units and said power supply control units, for controlling said variable gain units and said power supply control units,

a first one of said variable gain units and a first one of said power supply control units connected to said first variable gain unit being activated by said control unit, so that said first power supply control unit promptly turns ON the power supply applied to said first variable gain unit before the gain of said first variable gain unit is gradually increased from a first minimum value to a first maximum value,

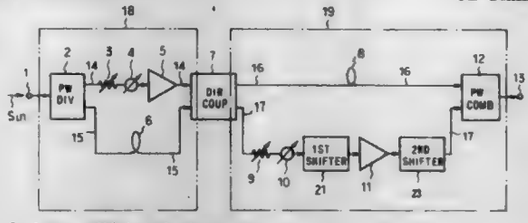
a second one of said variable gain units and a second one of said power supply control units connected to said second variable gain unit being deactivated by said control unit, so that said second power supply control unit turns OFF the power supply applied to said second variable gain unit after a time period has passed and the gain of said second variable gain unit is gradually decreased from a second maximum value to a second minimum value.

5,796,307

AMPLIFYING DEVICE HAVING INPUT AND OUTPUT NONLINEAR PHASE SHIFTERS OF OPPOSITE PHASE-FREQUENCY CHARACTERISTICS

Ken Kumagai, Yokohama; Toshio Nojima, and Shoichi Narahashi, both of Yokusuka, all of Japan, assignors to NTT Mobile Communications Network Inc., Tokyo, Japan

Filed Nov. 14, 1996, Ser. No. 749,240
Claims priority, application Japan, Nov. 16, 1995, 7-298684; Dec. 12, 1995, 7-323364; Dec. 12, 1995, 7-323365
Int. Cl.[6] H03F *1/26*
U.S. Cl. 330—149 **32 Claims**



1. An amplifying device comprising:

first phase shifter means connected at its input end to an input terminal and having a nonlinear phase amount-vs.-frequency characteristic;

signal separator means for separating an input signal fed to said input terminal into a main signal and a difference signal and for applying said difference signal to said first phase shifter means and said main signal to a first signal path;

an amplifier having its input end connected to the output end of said first phase shifter means;

second phase shifter means having its input end connected to the output end of said amplifier and having an output end providing an output signal, said second phase shifter means having a phase shift amount-vs.-frequency characteristic substantially opposite to that of said first phase shifter means;

an output terminal; and

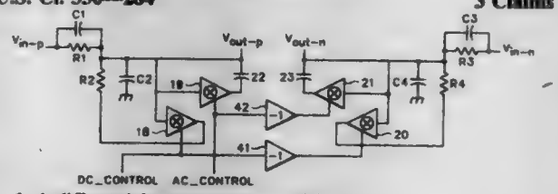
first power combining means which combines said main signal from said first signal path and said output signal from said second phase shifter means and provides the combined output to said output terminal.

5,796,308

DIFFERENTIAL ATTENUATOR COMMON MODE REJECTION CORRECTION CIRCUIT

Garry N. Link, Aloha, and Roland E. Andrews, Portland, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jun. 28, 1996, Ser. No. 672,818
Int. Cl.[6] H03G *3/30*
U.S. Cl. 330—284 **3 Claims**



1. A differential attentuator comprising:

a positive input node;

a negative input node;

a positive output node;

a negative output node;

a positive side series resistor coupled between the positive input node and the positive output node;

a positive side series capacitor coupled in parallel with the positive side series resistor;

a negative side series resistor coupled between the negative input node and the negative output node;

a negative side series capacitor coupled in parallel with the negative side series resistor;

positive side shunt resistance means, the positive side shunt resistance means including a positive side shunt resistor coupled to the positive output node, and further including multiplier means, the multiplier means having an input coupled to the positive output node and an output coupled to another end of the positive side shunt resistor, and the multiplier means also having a multiplication coefficient control input coupled to receive a dc_control signal;

negative side shunt impedance means, the negative side shunt resistance means including a negative side shunt resistor coupled to the negative output node, and further including multiplier means, the multiplier means having an input coupled to the negative output node and an output coupled to another end of the negative side shunt resistor, and the multiplier means also having a multiplication coefficient control input coupled to receive a dc_control signal;

positive side shunt capacitance means, the positive side shunt capacitance means including a positive side shunt capacitor coupled to the positive output node, and further comprising multiplier means, the multiplier means having an input coupled to the positive output node and an output capacitively coupled to the positive output node, and the multiplier means also having a multiplication coefficient control input coupled to receive an ac_control signal; and

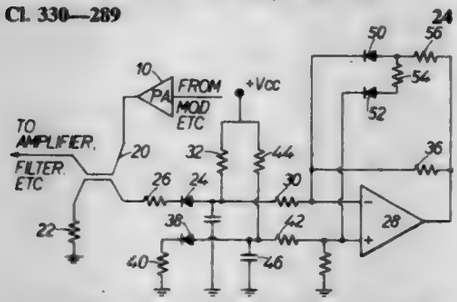
negative side shunt capacitance means, the negative side shunt capacitance means including a negative side shunt capacitor coupled to the negative output node, and further comprising multiplier means, the multiplier means having an input coupled to the negative output node and an output capacitively coupled to the positive output node, and the multiplier means also having a multiplication coefficient control input coupled to receive an ac_control signal.

5,796,309

TEMPERATURE COMPENSATED WIDE DYNAMIC RANGE POWER DETECTION CIRCUITRY FOR PORTABLE RF TRANSMISSION TERMINALS

Dien M. Nguyen, Carlsbad, Calif., assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 2, 1996, Ser. No. 677,333
Int. Cl.[6] H03F *1/30*; H03G *3/20*
U.S. Cl. 330—289 **24 Claims**



1. A temperature compensated logarithmic amplifier comprising:

an amplifier, having an output and a plurality of inputs, for generating a logarithmically amplified output signal corresponding to signals at said plurality of inputs; and

a feedback circuit connecting said amplifier output to said plurality of amplifier inputs, said feedback circuit including

a first nonlinear element, having a first temperature characteristic, connecting said amplifier output to a first one of said plurality of amplifier inputs for applying a nonlinear function to said logarithmically amplified output signal, and

a second nonlinear element, having a second temperature characteristic substantially identical to said characteristic of said first nonlinear element, connecting said amplifier output to a second one of said plurality of amplifier inputs for applying a nonlinear function to said logarithmically amplified output signal;

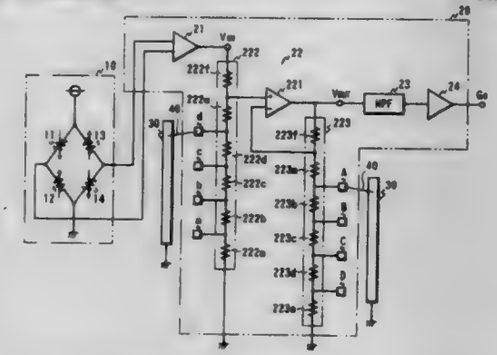
wherein a component of a signal provided to said first one of said plurality of amplifier inputs by said first nonlinear element due to said first temperature characteristic is accompanied by a corresponding component of a signal provided to said second one of said plurality of amplifier inputs by said second nonlinear element due to said second temperature characteristic.

5,796,310

AMPLIFICATION CIRCUIT USING WIRE-BONDING FOR ADJUSTING AMPLIFICATION FACTOR

Hiromi Ariyosi, Kariya, and Tameharu Ohta, Nishio, both of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Dec. 6, 1996, Ser. No. 761,819
Claims priority, application Japan, Dec. 6, 1995, 7-318306
Int. Cl.[6] H03G *3/18*
U.S. Cl. 330—307 **9 Claims**



4. An amplification circuit comprising:

an operational amplifier;

at least one resistance unit used for determining an amplification factor of said operational amplifier, said resistance unit consisting of a plurality of resistances connected in series;

a plurality of adjusting pads provided at respective connecting points of said resistances connected in series;

a common pad having an electrical potential fixed at a reference voltage; and

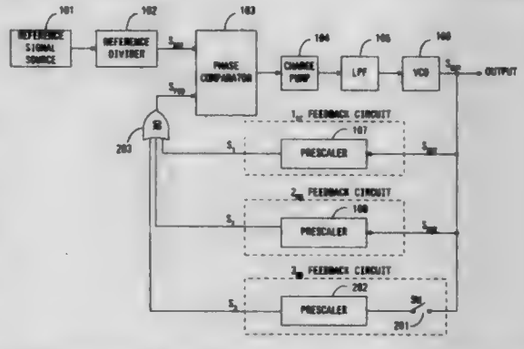
a wire for selectively bonding one of adjusting pads corresponding to said resistances with said common pad to set a resistance value of said resistance unit.

5,796,311

PHASE-LOCKED LOOP CIRCUIT

Katsuhiro Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 24, 1997, Ser. No. 788,653
Claims priority, application Japan, Jan. 26, 1996, 8-011577
Int. Cl.[6] H03L *7/00*
U.S. Cl. 331—1 R **16 Claims**



1. A phase-locked loop circuit receiving a reference signal and generating an output signal based on a phase difference between the reference signal and a feedback signal, comprising:

a plurality of first feedback circuits in parallel for receiving the output signal and producing a plurality of first output signals;

a second feedback circuit selectively connectable to said output signal for producing a second feedback output signal. and

a combining circuit receiving the first and second feedback output signals from the first and second feedback circuits, for combining the first and second feedback output signals to produce the feedback signal.

5,796,312

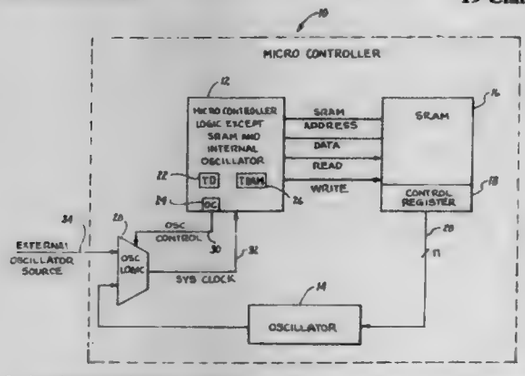
MICROCONTROLLER WITH FIRMWARE SELECTABLE OSCILLATOR TRIMMING

Richard L. Hull, Chandler, and Gregory C. Bingham, Gilbert, both of Ariz., assignors to Microchip Technology Incorporated, Chandler, Ariz.

Filed May 24, 1996, Ser. No. 644,914

Int. Cl.[6] H03K *3/0231;* **H03L** *1/00*

U.S. Cl. 331—44 **19 Claims**



1. A microcontroller circuit having firmware selectable oscillator trimming comprising, in combination:

a microcontroller;

oscillator means located within said microcontroller for providing a system clock signal for said microcontroller wherein said oscillator means generating an oscillatory signal of a predetermined frequency across a series resistor-capacitor (RC) network by ensuring that the oscillatory signal accurately oscillates between first and second voltages generated from a supply voltage source where the frequency of oscillation is determined by both the time constant of the RC network and the difference between the first and second voltages, said oscillator means comprising, in combination:

charging-discharging means for discharging a voltage across the capacitor commencing when voltage of the oscillatory signal exceeds a first threshold voltage and for charging said voltage across the capacitor commencing when voltage of the oscillatory signal falls below a second threshold voltage;

first sampling means coupled to said charging-discharging means for obtaining a first sampled voltage of the oscillatory signal upon commencement of discharging of said voltage across the capacitor;

first compensation means coupled to said first sampling means for adjusting said first threshold voltage to be the first voltage modified by a voltage difference between the first voltage and said first sampled voltage;

second sampling means coupled to said charging-discharging means for obtaining a second sampled voltage of the oscillatory signal upon commencement of charging of said voltage across the capacitor;

second compensation means coupled to said second sampling means for adjusting said second threshold voltage to be the second voltage modified by a voltage difference between the second voltage and said second sampled voltage; and

differential voltage setting means coupled to said second compensation means for selecting the second voltage from a plurality of different possible voltages and thereby selecting a voltage difference between the first and second voltages; and

memory means coupled to said oscillator means for providing signals to said oscillator means for trimming frequency of said system clock.

5,796,313

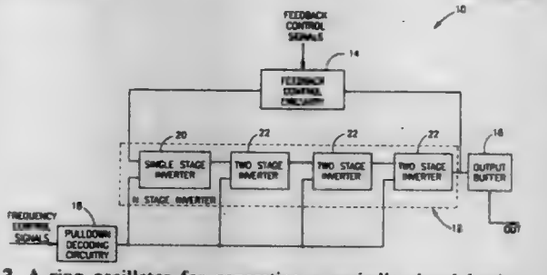
LOW POWER PROGRAMMABLE RING OSCILLATOR

Boaz Eitan, Ra'anana, Israel, assignor to Waferscale Integration Inc., Fremont, Calif.

Filed Apr. 25, 1996, Ser. No. 639,281

Int. Cl.[6] H03B *5/04;* **H03L** *1/00;5/00*

U.S. Cl. 331—57 **12 Claims**



2. A ring oscillator for generating a periodic signal having a predetermined frequency, said periodic signal stable against variations in supply voltage, temperature and process technology, said ring oscillator comprising:

N inverter stages cascaded together, each inverter stage having an input and an output, said output of the Nth inverter stage coupled to said input of the first inverter stage, said output of said N^{th} inverter stage forming an output of said ring oscillator; and

each said inverter stage comprising:

a p-channel transistor having a gate, source and drain, said gate coupled to said input of said inverter stage, said source coupled to a supply voltage, said drain coupled to said output of said inverter stage said p-channel transistor turning on when the voltage on said gate of said p-channel transistor falls approximately the p-channel threshold voltage plus a delta ($V_{TP}+\Delta$) below said supply voltage;

impedance means coupled between said drain, of said p-channel transistor and a ground, wherein the impedance level of said impedance means is much greater than the impedance level of said p-channel transistor when said p-channel transistor is turned on, said impedance means comprising a plurality of n-channel transistors, each having a gate, source and drain, each drain coupled to the drain of said p-channel transistor, each source coupled to ground, each gate coupled to a separate gate control signal;

decoding circuitry for generating a plurality of separate gate control signals, said decoding circuitry comprising a plurality of inverters each having an input and an output, said input of each inverter coupled to an impedance control signal, said decoding circuitry also comprising a plurality of switches each having an input and an output, said input of each switch coupled to a bandgap reference voltage, said output of each switch forming one of said separate gate control signals;

capacitance means coupled between said drain of said p-chapel transistor and said ground; and

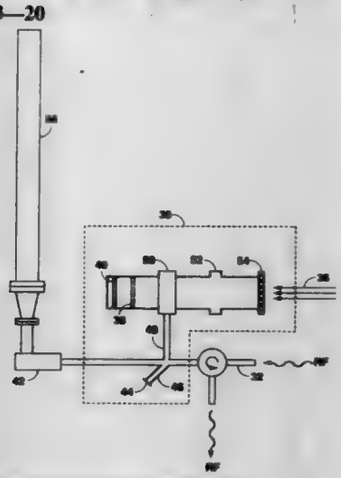
wherein the oscillation frequency of said ring oscillator varies in accordance with a time constant τ which depends on the p-channel threshold voltage V_{TP} and the parallel combination of said impedance means and said capacitance means.

5,796,314

ACTIVE HIGH-POWER RF SWITCH AND PULSE COMPRESSION SYSTEM

Sami G. Tantawi, San Mateo; Ronald D. Ruth, Woodside, and Max Zolotorev, Mountain View, all of Calif., assignors to Stanford University, Stanford, Calif.

Filed May 1, 1997, Ser. No. 847,058
Int. Cl.[6] H01P 1/22;5/04
U.S. Cl. 333—20 9 Claims



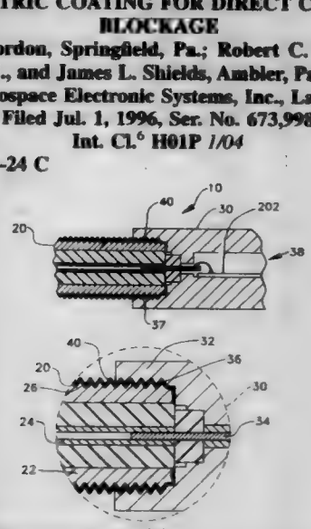
1. A high-power RF device comprising:
a first port for carrying high-power RF energy;
a second port for carrying high-power RF energy and coupled to the first port at a junction;
a third port for carrying high-power RF energy and coupled to the first and second ports at the junction; and
an E-arm coupled to the second port, wherein the E-arm acts to minimize the electric field at the third port;
wherein the third port is terminated by a short circuit plate and comprises a semiconductor wafer capable of changing the phase of RF signals reflected in the third port when the wafer is excited by a directed energy beam.

5,796,315

RADIO FREQUENCY CONNECTOR WITH INTEGRAL DIELECTRIC COATING FOR DIRECT CURRENT BLOCKAGE

Robert B. Gordon, Springfield, Pa.; Robert C. Doak, Mount Laurel, N.J., and James L. Shields, Ambler, Pa., assignors to Tracor Aerospace Electronic Systems, Inc., Lansdale, Pa.

Filed Jul. 1, 1996, Ser. No. 673,998
Int. Cl.[6] H01P 1/04
U.S. Cl. 333—24 C 7 Claims



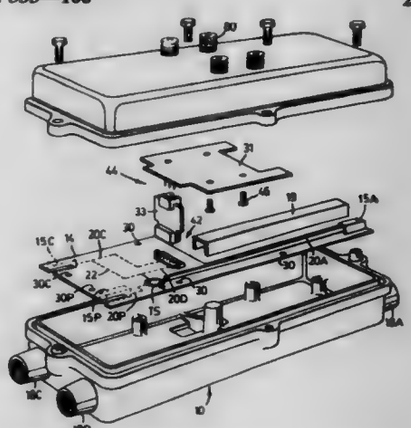
1. A coaxial connector comprising
a first connector member having a center conductor and an outer conductor concentrically surrounding and spaced apart from the center conductor,
a second connector member for matingly receiving the first connector member and having a center conductor for mating directly with the center conductor of the first connector member and having an outer conductor concentrically surrounding and spaced apart from the center conductor for receiving therein the outer conductor of the first connector member,
an integral dielectric coating material separating the outer conductor of the first connector member from the outer conductor of the second connector member, and
said dielectric coating being applied by as method selected from a group consisting of electrolytic growth, vacuum deposition, vapor deposition, sputtered coating, spray coating, machined fitted coating, and dip coating.

5,796,316

TOP EXIT COUPLER

Robert L. Romerein, Lindsay, Canada, assignor to J.E. Thomas-Specialties Limited, Lindsay, Canada

Continuation of Ser. No. 633,527, Apr. 17, 1996, Pat. No. 5,675,300. This application May 29, 1997, Ser. No. 864,961
Claims priority, application Canada, Oct. 18, 1995, 2160854
Int. Cl.[6] H03H 7/48
U.S. Cl. 333—100 20 Claims



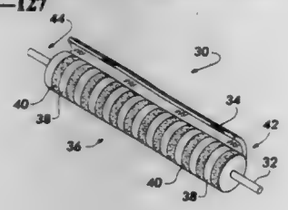
1. In a coaxial cable distribution system; a conducting housing and a lid therefor,
a platform circuit board attached to said housing,
said housing defining at least two ports for connection of a coaxial cable at each port,
said platform board supporting a first extent of a radio frequency ('RF') path, between one of said ports and a first port terminal,
and supporting a second extent of said RF path extending from a second path terminal to another of said ports,
a coupler circuit board located between said platform board and a splitter board,
a coupler circuit mounted on said coupler circuit board,
said coupler circuit including, coupler main input and main output terminals,
means for mechanically and electrically connecting each of said path terminals to a different one of said coupler main terminals,
said coupler circuit including, a coupler output terminal,
a splitter circuit board located adjacent said lid,
a splitter circuit thereon including a splitter input and splitter output,
an electrical connection between said coupler main output terminals and splitter input, said connection being spaced from said platform circuit board.

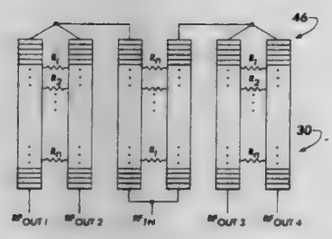
5,796,317

VARIABLE IMPEDANCE TRANSMISSION LINE AND HIGH-POWER BROADBAND REDUCED-SIZE POWER DIVIDER/COMBINER EMPLOYING SAME

Walter Bohlman, Line Lexington, and John Greeley, Ambler, both of Pa., assignors to Tracor Aerospace Electronic Systems, Inc., Lansdale, Pa.

Filed Feb. 3, 1997, Ser. No. 794,128
Int. Cl.[6] H01P *5/12;3/06*
U.S. Cl. 333—127 **9 Claims**





1. A variable impedance coaxial transmission line, comprising

a center conductor of constant cross-section,

an outer conductor surrounding and coaxial with the center conductor and spaced radially therefrom, and

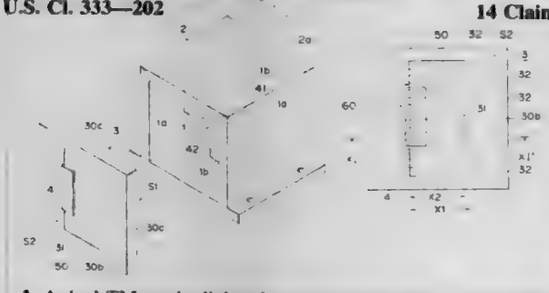
a variable dielectric constant material between the center conductor and the outer conductor, comprising a plurality of alternating elements of high dielectric constant material and low dielectric constant material arranged along the center conductor from a first end to a second end thereof, the ratio of dielectric constants of said alternating elements at said first end being different from the ratio of dielectric constants of said alternating elements at said second end.

5,796,318

DUAL TM-MODE DIELECTRIC RESONATOR APPARATUS EQUIPPED WITH WINDOW FOR ELECTROMAGNETIC FIELD COUPLING, AND BAND-PASS FILTER APPARATUS EQUIPPED WITH THE DIELECTRIC RESONATOR APPARATUS

Masamichi Ando, Kyoto, and Shuichi Abe, Toyama, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

PCT No. PCT/JP95/00067, § 371 Date Sep. 23, 1996, § 102(e) Date Sep. 23, 1996, PCT Pub. No. WO95/20248, PCT Pub. Date Jul. 27, 1995
PCT Filed Jan. 24, 1995, Ser. No. 676,385
Claims priority, application Japan, Jan. 24, 1994, 6-005603
Int. Cl.[6] H01P *1/20;7/10*
U.S. Cl. 333—202 **14 Claims**



1. A dual TM-mode dielectric resonator apparatus comprising:

a dual TM-mode dielectric resonator comprising two columnar-shaped TM-mode dielectric resonators placed in a cavity and crossing each other perpendicularly; and

a window for electromagnetic field coupling, provided on a side face of said cavity opposite to an external apparatus, for forming an electromagnetic coupling between said external apparatus and said dielectric resonator;

wherein said window for electromagnetic field coupling comprises a first shield conductor on a first main surface of a dielectric plate and a second shield conductor on a second main surface of said dielectric plate,

wherein said first shield conductor has an array of a plurality of slitted first conductor openings parallel to one another such that longitudinal directions of said first conductor openings are parallel to a longitudinal direction of one predetermined TM-mode dielectric resonator out of said two TM-mode dielectric resonators; and

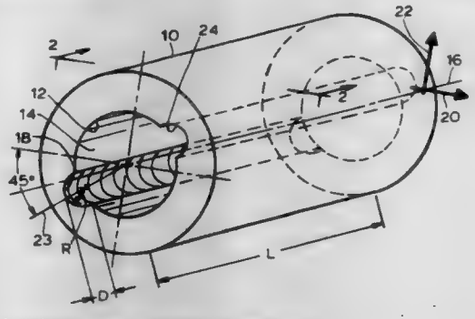
wherein a second conductor opening is formed in said second shield conductor in an area generally opposite to the plurality of first conductor openings.

5,796,319

DUAL MODE CAVITY RESONATOR WITH COUPLING GROOVES

Rolf Kich, Redondo Beach, Calif., assignor to Hughes Electronics Corporation, Los Angeles, Calif.

Filed Aug. 26, 1997, Ser. No. 920,103
Int. Cl.[6] H01P *1/207*
U.S. Cl. 333—208 **8 Claims**



1. An electromagnetic filter comprising:

a resonator having an interior wall defining a substantially cylindrical cavity having a major axis; and

means for introducing electromagnetic energy into the cavity;

wherein the interior wall includes a first coupling groove therein, substantially parallel to the major axis, for coupling the electromagnetic energy from a first mode to a second mode.

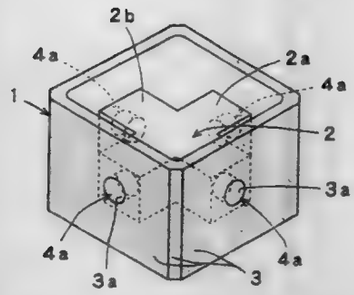
5,796,320

DIELECTRIC RESONATOR

Jun Hattori, Takatsuki; Toru Kurisu, Kyoto, and Shin Abe, Muko, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 6, 1997, Ser. No. 796,254
Claims priority, application Japan, Feb. 7, 1996, 8-021394
Int. Cl.[6] H01P *7/10*
U.S. Cl. 333—219.1 **45 Claims**

1. A dielectric resonator including two dielectric resonator elements arranged perpendicular to each other and disposed in a cavity so as to form a TM dual-mode dielectric resonator element, the TM dual-mode dielectric resonator element having a TM 110-mode resonance frequency and a TM 111-mode resonance frequency, said dielectric resonator having:



at least one hole formed in said TM dual-mode dielectric resonator element, said hole extending from an outer surface of a wall of the cavity toward an inner portion of said TM dual-mode dielectric resonator element along an axis of a corresponding one of the resonator elements,

the hole having an inner wall, the cavity having a conductor disposed on walls of the cavity, the inner wall of said hole being covered with a conductor electrically connected to the cavity conductor, and

said hole being formed so that the TM 110-mode resonance frequency of said TM dual-mode dielectric resonator element is substantially equal to the TM 111-mode resonance frequency.

5,796,321

SELF-SUPPORTED APPARATUS FOR THE PROPAGATION OF ULTRAHIGH FREQUENCY WAVES

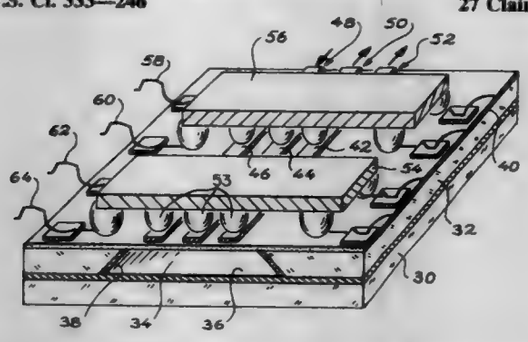
Patrice Caillat, Echirolles, and Claude Massit, Saint-Ismier, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Jul. 30, 1996, Ser. No. 689,044

Claims priority, application France, Aug. 31, 1995, 95 10261

Int. Cl.[6] H01P *5/00*

U.S. Cl. 333—246 **27 Claims**



1. Apparatus for the propagation of ultrahigh frequency microwaves, comprising a substrate in which is formed a cavity open on one of the sides of the substrate, an insulating membrane deposited on the substrate and above the cavity, at least one transmission line located on the membrane above the cavity for propagating said ultrahigh frequency microwaves, and means for rigidifying the membrane, said means being fixed to the membrane on a lateral side from where the transmission line is located and fixed to at least that part of the membrane situated above the cavity.

5,796,322

APPARATUS TO SEAL AGAINST LEAKAGE OF HIGH FREQUENCY RADIATION THROUGH A SLOT

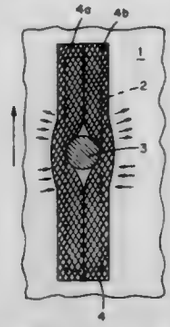
Mark Bridges, Leigh-on-Sea; Graham Michael Hood, and Philip William Laurence Gandy, both of Chelmsford, all of Great Britain, assignors to EEV Limited, Chelmsford, England

Filed Nov. 22, 1996, Ser. No. 755,087

Claims priority, application United Kingdom, Dec. 12, 1995, 9525344.9

Int. Cl.[6] H01P *1/00*

U.S. Cl. 333—248 **21 Claims**



1. High frequency apparatus comprising:

a component having a wall defining a region which in use contains high frequency radiation; a slot through said wall; a member extensive through said slot and moveable along said slot; and sealing means fixed relative to said wall and arranged at said slot to seal against leakage of high frequency radiation through said slot, said sealing means being such as to allow movement of said member along said slot.

5,796,323

CONNECTOR USING A MATERIAL WITH MICROWAVE ABSORBING PROPERTIES

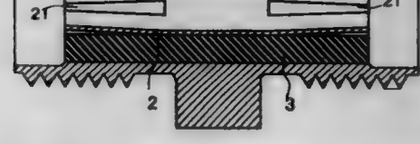
Fumio Uchikoba; Shigeyuki Nakajima; Takashi Ito; Taro Miura; Makoto Kobayashi; Takahide Kurahashi, and Yasushi Iijima, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation of Ser. No. 645,717, May 14, 1996, abandoned, which is a continuation of Ser. No. 409,682, Mar. 23, 1995, Pat. No. 5,594,397. This application Jun. 12, 1997, Ser. No. 873,458

Claims priority, application Japan, Sep. 2, 1994, 6-209586; Sep. 2, 1994, 6-209587; Oct. 5, 1994, 6-241640; Jan. 24, 1995, 7-9333

Int. Cl.[6] H01P *1/04;1/202;1/215*

U.S. Cl. 333—260 **7 Claims**



1. A connector for suppressing signal noise components above 1 GHz, comprising:

an insulating magnetic body having an insulating resistance of 10^9 ohms or more and including a compound member in which ferromagnetic metal particles and an insulating resin are mixed;

a cylindrically shaped signal conductor having a tensile property and penetrating and being in contact with said insulating magnetic body;

a cylindrically shaped ground conductor mounted on and being in contact with said insulating magnetic body and having each of two ends formed as one of a cable connector and a circuit system connector wherein said ground conductor covers said insulating magnetic body.

5,796,324

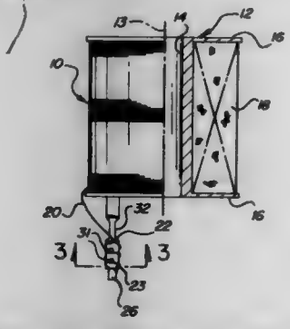
SURFACE MOUNT COIL ASSEMBLY

David Alan Ross, Columbiaville; Ronald Kenneth Selby, Burton; Gail Monica Sylvester, Frankenmuth, and Victor David Kruppa, Flint, all of Mich., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Nov. 12, 1996, Ser. No. 747,530

Int. Cl.[6] H01F 27/29;27/04; H01R 4/00;4/24

U.S. Cl. 336—192 9 Claims



1. A coil adapted for mounting on a circuit board having solder pads comprising:

a plastic bobbin having a body and a plurality of extensions protruding from the body;

each extension having a periphery adapted for contact with a solder pad of the circuit board;

a winding on the bobbin having wire terminations wrapped around the peripheries of the extensions for connection to the solder pads; and

the periphery of each extension has a recess bridged by the wire termination to facilitate solder flow around the wire.

5,796,325

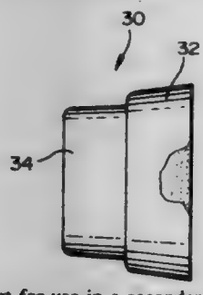
CHARGING COIL CORE INSERT FOR ELECTRIC TOOTHBRUSHES

William G. Lundell, and Gerald K. Brewer, both of Redmond, Wash., assignors to Optiva Corporation, Bellevue, Wash.

Filed Aug. 30, 1996, Ser. No. 706,439

Int. Cl.[6] H01F 27/02;27/24

U.S. Cl. 336—233 6 Claims



1. A coil core insert for use in a secondary charging coil in an electric toothbrush for a high frequency charging system therefor, comprising:

a core insert for the secondary charging coil, comprising a solid mixture of 1) steel shot, the shot being small enough in size so as to absorb substantially no current from the charging coil and 2) a binder material for binding the shot together in a solid mass.

5,796,326

FUSE ASSEMBLY WITH A ROTATABLE CARRIER FOR HOLDING A PLURALITY OF FUSES

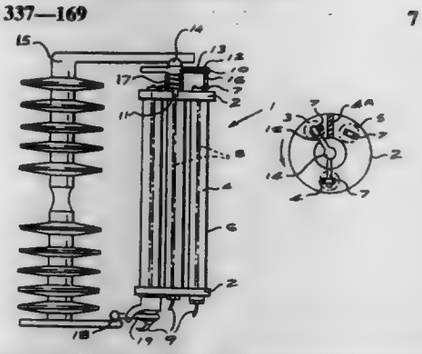
Derick V.J. Benito, 4 Voegelsang Road, Bonnie Doon, East London, Cape Province, South Africa

Filed Apr. 2, 1996, Ser. No. 630,038

Claims priority, application South Africa, Apr. 2, 1995, 95/1764

Int. Cl.[6] H01H 71/10

U.S. Cl. 337—169 7 Claims



1. A fuse assembly comprising a fuse carrier biased for relative rotation with respect to contacts to be connected in an electrical supply, said carrier comprising a plurality of fuses, each said fuse having first and second ends and comprising a fuse element and a biased contact latching mechanism, wherein said contact latching mechanism is at said first end and is held in an operative position by said fuse element and said second end of said fuse is arranged for direct connection into the electrical supply.

5,796,327

THERMALLY RESPONSIVE ELECTRICAL SWITCHES

David Andrew Smith, Buxton, England, assignor to Otter Controls Limited, Derbeyshire, England

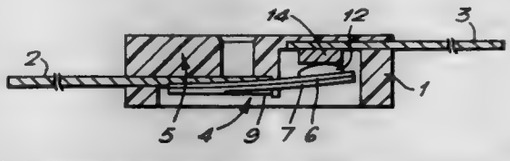
PCT No. PCT/GB94/01709, § 371 Date Aug. 19, 1996, § 102(e) Date Aug. 19, 1996, PCT Pub. No. WO95/04364, PCT Pub. Date Feb. 9, 1995

PCT Filed Aug. 3, 1994, Ser. No. 596,085

Claims priority, application United Kingdom, Aug. 3, 1993, 9316103; Nov. 26, 1993, 9324380

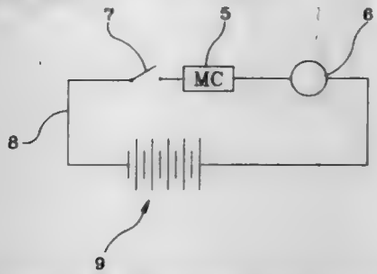
Int. Cl.[6] H01H 37/52;5/00

U.S. Cl. 337—342 18 Claims



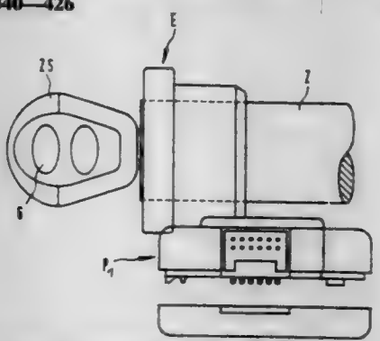
1. A thermally-responsive switch comprising a molded plastic body portion capturing therein first and second spaced-apart terminal conductors, a leaf spring cantilevered from one of said conductors and extending toward the other of said conductors, said leaf spring having a free end carrying a contact which constitutes a moving contact of the switch and is adapted to cooperate in switching operations with said other of the two conductors, and a snap-acting bimetallic actuator cantilevered from said one of said conductors and extending towards said other of said conductors, said bimetallic actuator cooperating with said leaf spring such that thermally induced movements of said bimetallic actuator transfer to the leaf spring to determine a condition of the switch, the bimetallic actuator being electrically shunted by the leaf spring which makes electrical contact with both a fixed end and said free end of the cantilevered bimetallic actuator.

5,796,328
CONSUMER PRODUCT
Victor Golant, 114 E. 72 St., New York, N.Y. 10021
Filed Jun. 28, 1996, Ser. No. 672,236
Int. Cl.[6] G08B *3/00*
U.S. Cl. 340—384.1 **21 Claims**



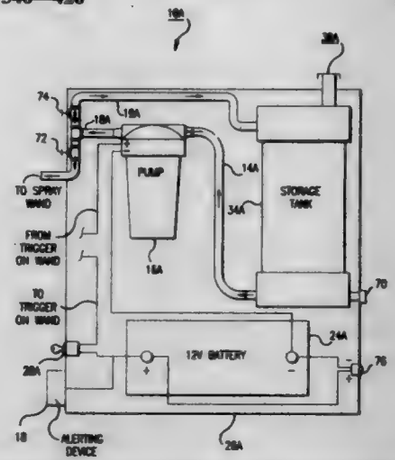
1. A consumer product, comprising a main product part; means for producing an audio message and attached to said main product part: an activating means for activating said audio message producing means and operable by a consumer, so that when the consumer operates said activating means, said activating means activate said audio message producing means to produce an audio message related to the consumer product and corresponding to written text on the product in response to a change in interaction of said main product part as a whole with a support on which said main product part is supported as a whole.

5,796,329
IMMOBILIZER AND METHOD FOR INITIALIZING THE IMMOBILIZER
Anton Bachhuber, Langquaid, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Jul. 22, 1996, Ser. No. 681,177
Claims priority, application Germany, Jul. 20, 1996, 195 26 530.0
Int. Cl.[6] B60R *25/10*
U.S. Cl. 340—426 **8 Claims**



1. A method for initializing an immobilizer, which comprises:
transmitting respective key code words from two key encoders to a testing unit upon actuation of each key encoder;
transmitting a request signal from the testing unit through a data lead to at least some control devices, causing the control devices to transmit identification code words in return, the identification code words containing the key code words stored in the control devices;
comparing the identification code words delivered in return in the testing unit with desired code words stored in the testing unit and with the key code words received from the two key encoders;
entering indispensable data for operation of the immobilizer into exchanged control devices or into a further testing unit by the testing unit, if the testing unit receives a starting signal for that purpose, when more than a preset number of control devices reply correctly using their identification code word and the received key code words are recognized as authorized; and
preventing the entering of the indispensable data for operation of the immobilizer into the exchanged control devices and the testing unit if the key code words are not received from the two key encoders.

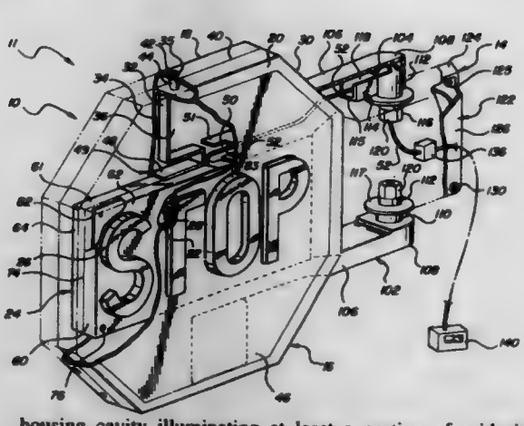
5,796,330
SECURITY SYSTEM
Richard H. Vinette, P.O. Box 191, Lanesboro, Mass. 01237
Continuation-in-part of Ser. No. 317,557, Oct. 4, 1994, abandoned. This application Feb. 18, 1997, Ser. No. 800,806
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—426 **13 Claims**



1. A security system for protecting property or people, comprising:
a storage tank containing a deterrent fluid, wherein the deterrent fluid includes a deterrent particulate;
at least one spray nozzle coupling assembly;
a pump for pumping said deterrent fluid from said storage tank to said spray nozzle coupling assembly;
first flow means providing flow of said deterrent fluid from said storage tank to said pump;
second flow means constituting a first flow path from said pump to said spray nozzle coupling assembly, said second flow means including means for activating said spray nozzle coupling assembly;
third flow means constituting a second flow path directly from said second flow means back to said storage tank for mixing, said third flow means being connected to said first flow path between said pump and said activating means;
first switch means for activating said pump to operate the security system; and
second switch means for controlling said activating means to switch between a mixing state and an alarm state, wherein in the mixing state said activating means directs said fluid through said second flow path to storage tank to mix the deterrent particulate in the deterrent fluid, and wherein in the alarm state said activating means directs said fluid from said storage tank through said first and second flow paths to said spray nozzle coupling assembly.

5,796,331
ILLUMINATED PIVOTAL SIGN ASSEMBLY
Ronald C. Lamparter, Grosse Pointe Shores, Mich., assignor to Transpec Inc., Troy, Mich.
Filed Sep. 8, 1995, Ser. No. 525,115
Int. Cl.[6] B60Q *1/26*
U.S. Cl. 340—433 **20 Claims**

1. A sign display system comprising:
a sign assembly including a sign housing with an internal housing cavity, a light element connected in said internal



housing cavity illuminating at least a portion of said sign assembly and including a power conductor, and at least one arm connected to and extending outwardly from said sign housing with an internal arm channel in communication with said internal housing cavity, said power conductor extending through said internal housing cavity and said internal arm channel; and

a mounting assembly including a mounting housing having an aperture therein extending to a mounting cavity receiving said arm and said power conductor, and including an actuator for pivoting said arm and said sign housing between retracted and extended position.

5,796,332

DIAGNOSTIC SYSTEM FOR SENSING AND DISPLAYING FUNCTIONS OF A MOTOR VEHICLE HEATING APPARATUS

Edwin Steiert, Wolfschlugen, Germany, assignor to J. Eberspächer GmbH & Co., Esslingen, Germany

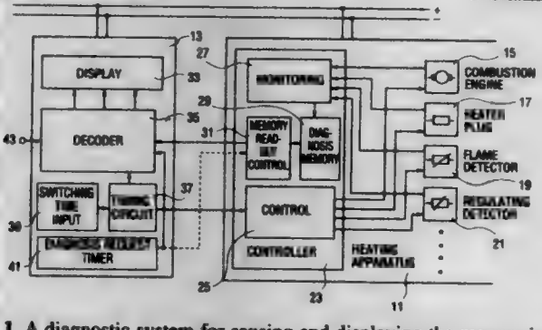
PCT No. PCT/EP95/03891, § 371 Date Apr. 24, 1997, § 102(e) Date Apr. 24, 1997, PCT Pub. No. WO96/13397, PCT Pub. Date May 9, 1996

PCT Filed Oct. 2, 1995, Ser. No. 836,684

Claims priority, application Germany, Oct. 26, 1994, 44 38 277.4

Int. Cl.[6] G60Q *1/00*

U.S. Cl. 340—438 **8 Claims**



1. A diagnostic system for sensing and displaying the manner in which functions are performed for sensing and displaying malfunctions of a heating apparatus installed in a vehicle, said system comprising:

a controller for controlling the functions of the heating apparatus;

a monitoring device for monitoring the correctness of the functions and for issuing malfunction signals in case of functions not performed properly;

a diagnosis memory for storing at least the occurrence of malfunction signals;

a timer provided in the vehicle for timing the heating apparatus, said timer having a switching time input device for input of functions of the heating apparatus to be controlled by said timer and for input of a switching time at which said functions are to be carried out, error code decoder means for decoding error codes, which are read out from said diagnosis memory in accordance with various detectable malfunctions, into display signals and timing signal decoder means for decoding a function input and a switching time input into display signals, said timing signal decoder means and said error code decoder means being provided in a single common decoder, said timer including a display device for displaying said display signals.

5,796,333

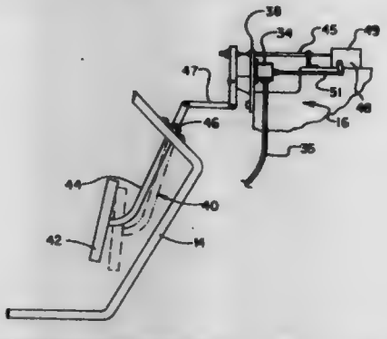
EARLY WARNING SIGNAL SYSTEM

Ralph E. Niemann, 7419 Richardson Rd., Groveport, Ohio 43125

Filed May 8, 1997, Ser. No. 853,361

Int. Cl.[6] B60Q *1/50*

U.S. Cl. 340—467 **4 Claims**



1. A deceleration signal system for a vehicle having an accelerator pedal, and a vehicle power supply, comprising:

an accelerator linkage coupled at one end to the accelerator pedal by an L-shaped linkage and connected at another end to an inlet valve of a carburetor;

at least one warning light unit installed at the rear of the vehicle, said warning light unit being powered by the vehicle power supply;

a control circuit between the warning light unit and the power supply for controlling supply of power to, and operation of, the warning light unit;

an actuating arm fastened at one end to an end of an actuating linkage and fastened at another end to the inlet valve to engage and move the actuating linkage; wherein another end of the actuating linkage connected to an accelerator switch;

said control circuit including the accelerator switch having opened and closed states;

said switch being opened and closed by movement of the actuating linkage and the actuating arm;

said actuating arm being connected to the inlet valve of the carburetor, such that when the accelerator pedal is depressed, the accelerator linkage opens the inlet valve, which actuates the actuating arm moving the actuating linkage to a first direction, and the switch is opened, and when the accelerator pedal is released, the accelerator linkage closes the inlet valve, which actuates the actuating arm moving the actuating linkage to the opposite direction of said first direction, and the switch is closed; and

a flasher device in the circuit between the switch and the warning light unit to cause periodic interruptions in the cur-

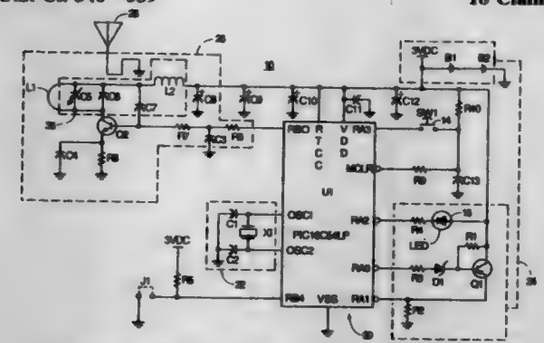
rent in the circuit therefore causing the warning light unit to flash when the switch is closed.

5,796,334

VOLTAGE MONITORING CIRCUIT

Sidney Yiu Kwok Chen, Houston; Patricia Elaine Bibb; Ben Lee Bibb, both of Cedar Park, all of Tex., and Phillipe Sebrechts, San Diego, Calif., assignors to Schoepferisch Aeusserung Anstalt, Vaduz, Liechtenstein

Division of Ser. No. 351,014, Dec. 7, 1994, Pat. No. 5,686,887.
This application Sep. 19, 1996, Ser. No. 716,479
Int. Cl.[6] G08B *1/08*; H02J *7/04*
U.S. Cl. 340—539 **18 Claims**



1. A circuit for testing the voltage of a battery source comprising:

a microprocessor device having at least an output line and an input line;

a transistor operatively coupled to the microprocessor;

a voltage regulating device operatively coupled to the battery source and operatively coupled between the transistor and the output line of the microprocessor;

the voltage regulating device configured to conduct when a voltage drop present across the voltage regulating device is greater than a predetermined voltage drop;

the conducting of the voltage regulating device causing the transistor to conduct so as to indicate to the input line of the microprocessor that the voltage drop present across the voltage regulating device is greater than the predetermined voltage drop.

5,796,335

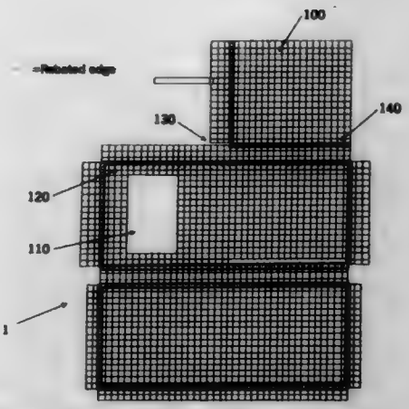
SECURITY FOIL WITH SHIELDING FROM ELECTROMAGNETIC RADIATION

Hartmut Droege, Stuttgart; Ludwig Fischer, Herrenberg; Markus Scheibel, Blaufelden, and Dieter Sonnentag, Schoenaich, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1997, Ser. No. 782,475
Claims priority, application Germany, Jan. 11, 1996, 196 00 770.4
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—550 **7 Claims**

1. A security foil for electronic detection of mechanical penetration and for electromagnetic radiation shielding of a security module which is covered by said security foil, said security foil comprising:

a flexible circuit board intrusion detection screen for covering the security module;



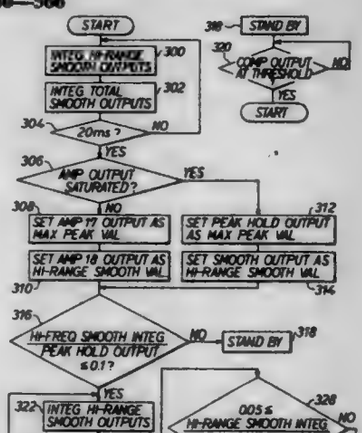
a metal lattice of wires with defined distances between the wires of the lattice, attached to the intrusion detection screen.

5,796,336

GLASS BREAKAGE DETECTING DEVICE

Hirotugu Ishino, Toyohashi, and Akira Kurahashi, Nukata, both of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Mar. 7, 1997, Ser. No. 813,659
Claims priority, application Japan, Mar. 8, 1996, 8-080843; Mar. 8, 1996, 8-080844; Dec. 20, 1996, 8-355074
Int. Cl.[6] G08B *13/00*
U.S. Cl. 340—566 **26 Claims**



1. A glass breakage detecting device for determining occurrence of glass breakage based on detection of at least a first acoustic wave produced at an instance of glass breakage among acoustic waves resulting from glass breakage that include a second acoustic wave produced by scattering of glass pieces after the first wave, the device comprising:

detecting means for converting an acoustic wave into an electrical signal and outputting the electrical signal;

first calculating means for calculating a ratio a plurality of high frequency components to all frequency components of the electrical signal from the detecting means over a first predetermined time period beginning at a time point at which the electrical signal reaches a predetermined value;

first wave determining means for determining that the first wave has occurred when the ratio a plurality of the high frequency components to all components calculated by the calculating means is within a predetermined range; and

outputting means for outputting a glass breakage determination signal based on the determination of occurrence of the first wave made by the first wave determining means.

5,796,337

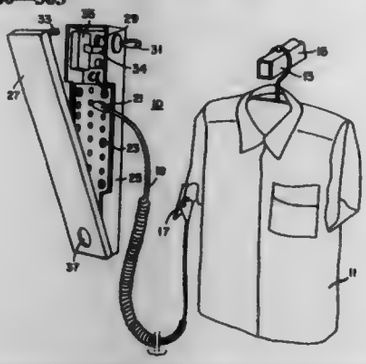
ELECTRONIC SECURITY CLIP DEVICE

David R. Wachsman, Dix Hills, N.Y., assignor to Protex International Corp., Bohemia, N.Y.

Continuation of Ser. No. 281,459, Jul. 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 897,707, Jun. 12, 1992, Pat. No. 5,345,220. This application Jun. 28, 1996, Ser. No. 673,373

Int. Cl.[6] G08B 70/59

U.S. Cl. 340—563 5 Claims



1. An electronic security clip device for use with electronic security systems, comprising:

cable and alarm means for transmitting an alarm signal to an electronic security system; and

clip means including a pair of opposing jaws pivotally mounted so as to normally be in a closed position; said clip means positioning said cable and alarm means in operable relationship to said jaws;

said cable and alarm means including switch means for activating said alarm means upon placement of an object between said jaws, whereby removal of said object causes said switch to trigger said cable and alarm means to transmit said alarm signal;

wherein said clip means comprises a clip base having an upwardly facing cam surface and a support ridge, a lower jaw mounted on said clip base and having a support-ridge-engaging shoulder for positioning said lower jaw in said clip base, said lower jaw including a lower jaw face and a chamber means for positioning said cable and alarm means in operable relationship to said lower jaw face, a upper jaw pivotally mounted on said clip base and having a downwardly facing cam surface for mutual engagement with said clip base, said upper jaw having an upper jaw face aligned to engage said lower jaw face, and biasing means for positioning said upper and lower jaws in a normally closed position wherein said upper jaw face engages said lower jaw face, said upwardly facing cam surface and said downwardly facing cam surface being aligned to permit separation of said upper jaw and lower jaw upon pressure to overcome said biasing means;

locking means for said jaws movable between a first position for preventing movement of said jaws relative to one another and a second position for permitting said movement; and

said locking means comprising a rotatable bolt operable to rotate in one of said distal ends for contact with the other of said distal ends whereby when said bolt is fully threaded into said one distal end, the jaws are in a locked position.

5,796,338

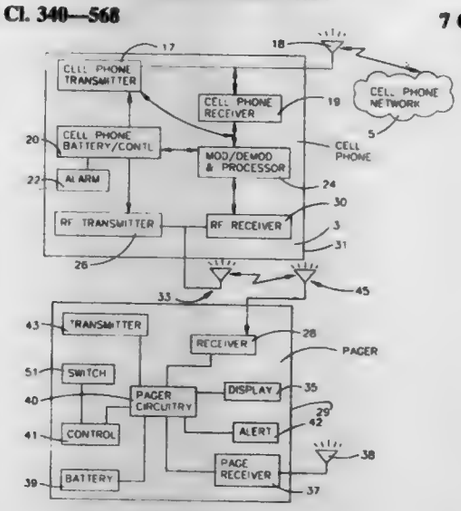
SYSTEM FOR PREVENTING LOSS OF CELLULAR PHONE OR THE LIKE

Aris Mardirossian, Germantown, Md., assignor to Aris Mardirossian, Inc., Gaithersburg, Md.

Filed Feb. 3, 1997, Ser. No. 794,636

Int. Cl.[6] G08B 13/14

U.S. Cl. 340—568 7 Claims



1. A system for reducing the risk of loss or theft of a cellular telephone, the system comprising:

a cellular telephone including: (a) a cell phone battery, (b) a wireless cell phone transmitter for voice and DTMF communication with distant phones, pagers, and/or computers via a cellular telephone network, (c) a demodulator for demodulating incoming voice signals; and (d) a security wireless transmitter for sending wireless security signals to a device to be worn or carried by the user, said cell phone battery supplying power to each of said cell phone transmitter, said demodulator, and said security transmitter;

said device to be worn or carried by the user including (i) a battery, (ii) an alarm, (iii) a security controller, and (iv) a first wireless receiver for receiving said wireless security signals sent from said security transmitter of said cellular phone, said battery in said device to be worn or carried by the user supplying power to said security controller, said alarm, and said first receiver;

wherein said security controller in said device to be worn or carried by the user includes means for actuating said alarm in response to one of: (i) the wireless security signal received by said first receiver from said cell phone being of a strength or amplitude below or equal to a predetermined threshold; and (ii) no wireless security signal above the predetermined threshold being received by said first receiver from said cell phone for a predetermined period of time, whereby the user is alerted to cell phone misplacement, loss, or theft by actuation of said alarm;

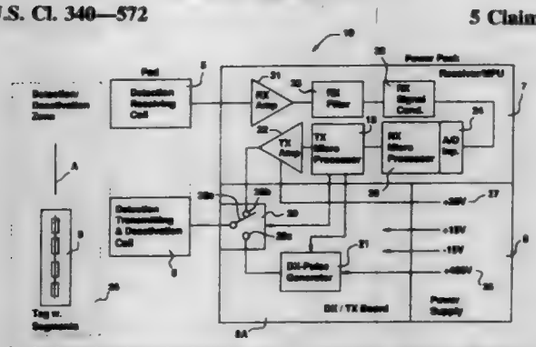
wherein said device to be worn or carried by the user includes a pager for receiving wireless paging message signals from a telephone system indicative of a calling party's number, said pager further including (v) a second wireless paging receiver for receiving said paging message signals, said second receiver being powered by said battery in said device and being separate and distinct from said first receiver; and (vi) a display for displaying data relating to received paging messages, said display also being powered by said battery in said device.

5,796,339

SHOPLIFTING DETECTION LABEL DEACTIVATOR WITH COMBINED EXCITATION-DEACTIVATION COIL

Douglas A. Drew, and Joerg W. Zschirnt, both of Boca Raton, Fla., assignors to Sensormatic Electronics Corporation, Boca Raton, Fla.

Filed Dec. 2, 1996, Ser. No. 758,957
Int. Cl.[6] G08B 13/14
U.S. Cl. 340—572 5 Claims



1. A deactivation device for use in an EAS system utilizing a deactivatable type EAS tag, for sensing and deactivating the EAS tag positioned in a detection/deactivation area, said deactivation device comprising:

a detection transmit means for transmitting a detection field into said detection/deactivating area;

a detection receive means for sensing a signal from said EAS tag responsive to said detection field;

a deactivating means for transmitting a deactivating field into the detection/deactivation area to deactivate said EAS tag, and wherein said detection transmit means and said deactivating means use a common coil to transmit the respective fields;

said detection transmit means including an amplifier adapted to be responsive to a power supply for supplying power to said amplifier, and a switch, said switch being connected between said amplifier and said common coil;

said deactivating means including a pulse generator adapted to be responsive to a high power supply for supplying power to said pulse generator, said pulse generator being connected to said switch;

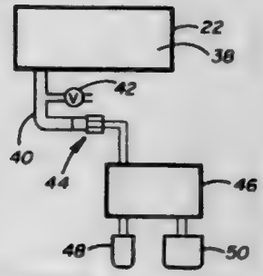
and control means for controlling said amplifier, said switch and said pulse generator.

5,796,340

MOTION MONITOR USEFUL FOR SLEEPING HUMANS

William Miller, 1735 Caminito Ardiente, La Jolla, Calif. 92037

Filed Aug. 12, 1996, Ser. No. 698,038
Int. Cl.[6] G08B 23/00
U.S. Cl. 340—573 4 Claims



1. A monitor, comprising:

a mattress for supporting a human, said mattress having an interior cavity isolated from and at a pressure equal to or greater than ambient atmospheric pressure;

an electret condenser microphone in communication with said interior cavity to generate a signal representative of the pressure in said interior cavity, said electret condenser microphone having a frequency response extending below 20 Hz and a substantially unaltered frequency response at and above 20 Hz; and

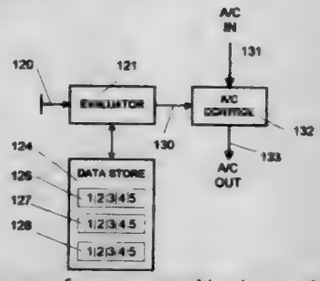
an indication unit, electronically interconnected to said pressure transducer, which displays the signal generated by the pressure transducer.

5,796,341

SAFETY AND SECURITY SYSTEM FOR WORK AREA

Gus Stratiotis, 923 Palmito Dr., Millbrae, Calif. 94030

Continuation-in-part of Ser. No. 520,916, Aug. 30, 1995, Pat. No. 5,666,010. This application Mar. 25, 1997, Ser. No. 824,006
Int. Cl.[6] G08B 23/00
U.S. Cl. 340—573 9 Claims



1. A safety system for persons working in a work area comprising:

an alarm system for providing an alarm signal;

at least one safety device for each of said persons;

each of said at least one safety device including detecting means for determining use of said safety device and providing a status either of a safe operating condition or an unsafe operating condition of said safety device, and signalling means sensing said status and generating a status signal;

said alarm system including

interrogating means for determining said status of said detecting means;

said interrogating means generating an interrogating signal;

said signalling means receiving said interrogating signal and generating said status signal in response to said interrogating signal;

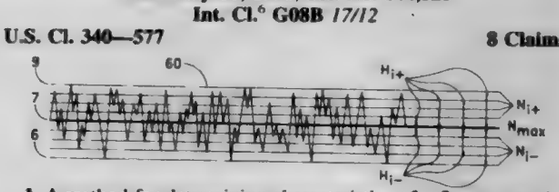
said interrogating means generating said alarm signal upon not receiving said status signal indicating a safe operating condition in response to said interrogating signal.

5,796,342

DIAGNOSING FLAME CHARACTERISTICS IN THE TIME DOMAIN

Yuri S. Panov, 1964D Village Green South, Riverside, R.I. 02915

Filed May 10, 1996, Ser. No. 644,820
Int. Cl.[6] G08B 17/12
U.S. Cl. 340—577 8 Claims



1. A method for determining characteristics of a flame comprising the steps of:

providing a time-domain signal indicative of instantaneous flame condition;

determining a mean level of said time-domain signal during a selected time interval;

counting how often said time-domain signal crosses said mean level during said time interval;

determining an extreme amplitude of said time-domain signal during said time interval, said extreme amplitude being determined relative to said mean level for both polarities relative to said mean level;

designating at least one intermediate level between said extreme amplitude and said mean level; said designating at least one intermediate level between said extreme amplitude and said mean level includes designating at least one intermediate level between each of said extreme amplitudes and said mean level; and

counting how often said time-domain signal crosses said intermediate level during said time interval.

5,796,343

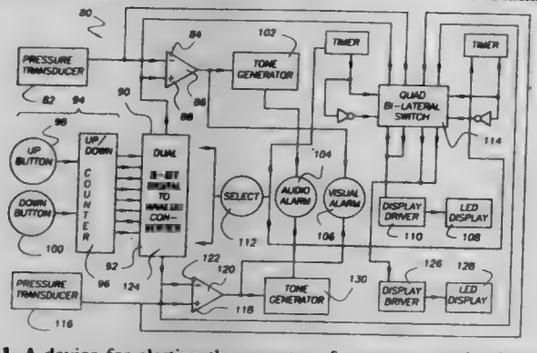
DEVICE AND METHOD FOR PREVENTING DAMAGE TO GOODS DURING HANDLING BY MATERIAL HANDLING EQUIPMENT

Gary D. Stauder, 1705 N. Hullen, Metairie, La. 70001

Continuation-in-part of Ser. No. 303,447, Sep. 9, 1994, abandoned. This application Aug. 12, 1996, Ser. No. 695,528

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—626 **3 Claims**



1. A device for alerting the operator of a squeeze truck when a predetermined hydraulic pressure is reached within a squeeze-pad hydraulic system of said squeeze truck, said device comprising:

a first pressure transducer means, installable in connection with said squeeze pad hydraulic system, for generating a first electrical output signal on a first electrical output that is proportional to the pressure sensed by said first pressure transducer means when said first pressure transducer means is installed in connection with said squeeze-pad hydraulic system;

a squeeze-pad pressure comparator having first and second squeeze-pad comparator inputs and a first squeeze pad comparator output;

a squeeze-pad reference signal generating means for generating a reference signal to said squeeze-pad pressure comparator, said squeeze-pad reference signal generating means including a dual digital to analog converter having a first dual digital to analog output thereof in connection with said second squeeze-pad comparator input, and an alarm set point select circuit including an UP/DOWN counter, an UP button connected to an UP count control line of said UP/DOWN counter that causes said UP/DOWN counter to supply an increased digital value to an input buss of said dual digital to analog converter when depressed by a user; and a DOWN button connected to a DOWN count control line of said UP/DOWN counter that causes said UP/DOWN counter to supply a decreased digital value to said input buss of said dual digital to analog converter when depressed by a user;

a tone generator for an audible alarm device having an activation input in connection with said squeeze-pad comparator output and a tone generator output in connection with a said audible alarm device;

a visual alarm device having a visual alarm activation input in connection with said squeeze-pad comparator output;

a first digital display driver having a first display driver analog input in connection with said first electrical output of said first pressure transducer means and a first digital output buss having a digital output value that is proportional to an analog value placed on said first display driver analog input;

a first display unit having a display digital input buss in connection with said first digital output buss of said first display driver, said first display unit providing a human readable display corresponding to a signal value placed on said display digital input buss.

5,796,344

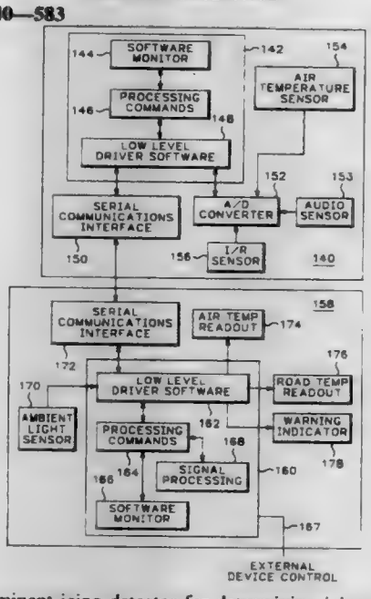
IMMINENT ICING CONDITION ENUNCIATOR

Wayne L. Mann, Tualatin, and Norman J. Petersen, Portland, both of Oreg., assignors to Sprague Controls, Inc., Canby, Oreg.

Continuation-in-part of Ser. No. 408,694, Mar. 21, 1995, abandoned. This application Feb. 2, 1996, Ser. No. 596,451

Int. Cl.[6] G08B *19/02*

U.S. Cl. 340—583 **5 Claims**



1. An imminent icing detector for determining icing conditions of a surface comprising:

infrared sensing means for detecting ambient infrared emissions from the surface and determining the likelihood of icing conditions of the surface based on the received detected ambient infrared emissions;

means for detecting obstruction of the infrared sensing means by contamination; and

amplification means for providing increased amplification of a signal from said sensing means in response to detection of an increase in obstruction by said detecting means.

5,796,345

APPARATUS FOR DETECTING MOISTURE IN GARMENTS

Nicholas Leventis, 1604 McCutchen Dr., Rolla, Mo. 65401, and William A. Galison, 210 Thompson St., New York, N.Y. 10012

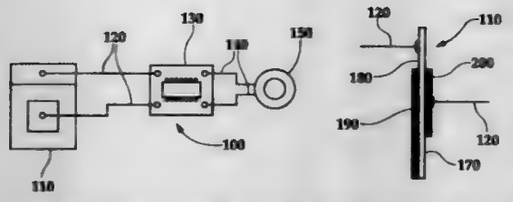
Filed Jan. 13, 1997, Ser. No. 783,584

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—604 **28 Claims**

1. A moisture detector for garments comprising:

a moisture-activated electrochemical cell including the pre-reaction members:



a porous separator having a first side and a second side, said separator having a conductive coating on at least one of the sides,

a substantially oxidized chemical compound attached to the first side of the separator, and

a metal coating attached to the second side of the separator; and

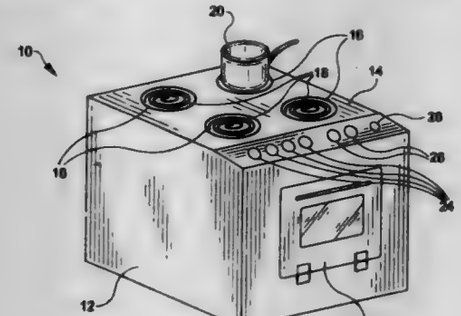
an informing means for indicating when the electrochemical cell is activated, said informing means electrically connected to and solely powered by the electrochemical cell.

5,796,346

STOVE HAVING GREASE FIRE AVOIDANCE CIRCUITRY

Richard L. Wash, 310 G Calhoun Ave., Greenwood, S.C. 29649, and James S. McClary, 312 Hunting Rd., Greenwood, S.C. 29646

Filed Nov. 4, 1993, Ser. No. 147,979
Int. Cl.[6] H05B *1/02*
U.S. Cl. 340—635 **17 Claims**



1. An improved stove for heating a cooking utensil adapted to prevent grease fires, said stove comprising:

a stove body having a stovetop surface, said stovetop surface defining at least one burner opening therein;

a heating assembly mounted in said opening and adapted to support the utensil during heating thereof;

variable control means for permitting a user to adjust the heating temperature of said heating assembly;

supply means for connecting said heating assembly to an external supply source; and

circuit means for detecting an undesirable condition in which said heating assembly has been set by said variable control means to greater than a predetermined level for a selected duration such that said heating assembly will exceed a grease ignition temperature and responsibly disengaging said heating assembly from said supply means, said circuit means including:

a. timer means operatively connected to said control means for producing an output only when said predetermined level has been exceeded for said selected duration; and

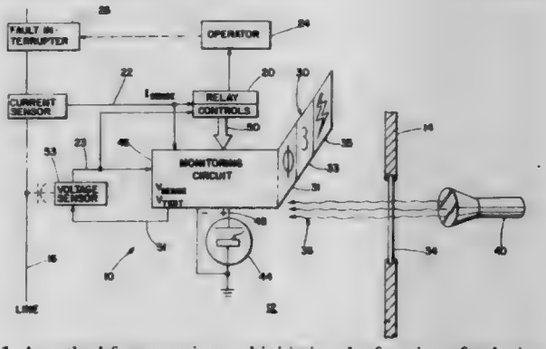
b. switching means electrically connected to receive an output of said timer means for responsively disengaging said heating assembly from said supply means such that said heating assembly will not exceed the ignition temperature.

5,796,347

CONTROL OF A DEVICE IN AN INACCESSIBLE LOCATION

John A. Zulaski, Mt. Prospect, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Sep. 3, 1996, Ser. No. 706,870
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—635 **11 Claims**



1. A method for powering and initiating the function of a device in an inaccessible location comprising:

storing information in response to status inputs representing the current status of operating parameters within the inaccessible location;

activating the device via a light input;

converting the light input into electrical operating power for the device:

initiating a predetermined output of information by the device in response to the activating of the device that represents the current status of operating parameters of said storing step; and

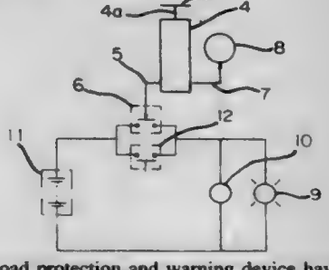
displaying predetermined indicia in response to and representative of the predetermined output of information.

5,796,348

OVERLOAD PROTECTION DEVICE

Toshihiro Tanaka, 8-4, Umezu Fushihara-cho, Ukyo-ku, Kyoto-Shi, Kyoto-Fu, Japan, assignor to Toshihiro Tanaka, Kyoto, Japan

Filed Dec. 5, 1996, Ser. No. 759,621
Claims priority, application Japan, Dec. 18, 1995, 7-014290
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—666 **8 Claims**



1. An overload protection and warning device having two pedestals on its ends equipped with a detecting and overload informing or warning means for a load value exceeding a predetermined amount on a temporary column to be used in architectural construction, comprising:

a load pedestal formed above and a base pedestal formed below said overload protection device;

a load detector coupled to the load pedestal for changing column load value into a pressure value;

a pressure detector responsive to a preset value of the pressure value which is in advance set in the pressure detector; and

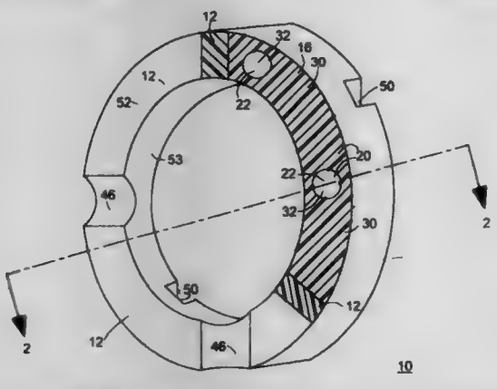
a means for informing or warning that imposed load value on the temporary column has reached to a preset value through movement of the pressure detecting equipment which closes an electric circuit.

5,796,349

SYSTEM AND METHOD FOR MONITORING WEAR OF AN AXIAL BEARING

Manfred P. Klein, Highland Park, Ill., assignor to Ansimag Inc., Elk Grove Village, Ill.

Division of Ser. No. 405,728, Mar. 17, 1995, Pat. No. 5,599,112. This application Sep. 18, 1996, Ser. No. 717,196
Int. Cl.[6] G08B 21/00
U.S. Cl. 340—682 26 Claims



1. A system for monitoring the wear of an axial bearing, the system comprising:

a pump incorporating the axial bearing, the pump having a shaft, the axial bearing having frictional means for changing the coefficient of friction of said axial bearing over its lifetime, said frictional means including a wearing layer covering a frictional layer, the wearing layer eventually being depleted during extended operation of the pump to partially or completely expose the frictional layer;

a drive motor coupled to said shaft; and

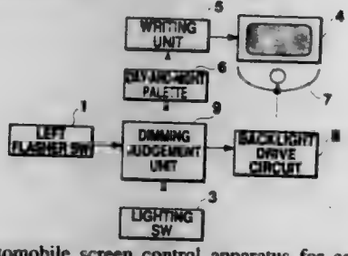
load detection means for detecting load changes in a load placed upon the drive motor; said load detection means comprising an energy monitor; said energy monitor measuring a first electrical energy consumption of the drive motor if the wearing layer is exposed; said energy monitor measuring a second electrical energy consumption of the drive motor if the frictional layer is exposed; the energy monitor being responsive to a differential increase in the energy consumption of the drive motor from the first electrical energy consumption to the second electrical energy consumption.

5,796,350

AUTOMOBILE SCREEN CONTROL APPARATUS

Hidefumi Fuse, Nishikamo-gun, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Mar. 4, 1997, Ser. No. 810,471
Claims priority, application Japan, Mar. 13, 1996, 8-056201
Int. Cl.[6] G08B 1/00
U.S. Cl. 340—815.75 14 Claims



1. An automobile screen control apparatus for controlling the screen of a display which is mounted on an automobile to show various types of information, the apparatus comprising:

means for predicting directional motion of a driver's sight;

means for judging whether or not the display comes within the driver's line of sight in response to the predicted directional motion of the driver's sight; and

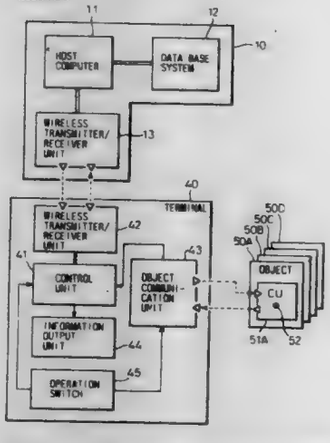
means for making the screen of the display inconspicuous when it is judged that the display comes within the driver's line of sight.

5,796,351

SYSTEM FOR PROVIDING INFORMATION ABOUT EXHIBITION OBJECTS

Tsutomu Yabuki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 2, 1996, Ser. No. 626,517
Claims priority, application Japan, Apr. 4, 1995, 7-078848
Int. Cl.[6] G06F 19/00
U.S. Cl. 340—625.69 10 Claims



1. A system for providing information about exhibition objects in exhibition facilities, comprising:

a database system storing the information about the exhibition objects;

a host computer, having a host transmitter/receiver, the host computer retrieving the information from the database system based on an identification code of a target exhibition object from the exhibition objects, each of the exhibition objects having communication means that returns the identification code in response to a request signal; and

at least one terminal having:

a terminal transmitter/receiver transmiting the identification code to the host computer and receiving target information about the target exhibition object from the host computer through the host transmitter/receiver;

an operator switch generating the request signal;

object communication means directed at the target exhibition object for selecting the target exhibition object by transmitting the request signal to the target exhibition object and receiving the identification code from the target exhibition object;

information output means for outputting the target information about the target exhibition exhibition object when the host computer retrieves the target information from the information stored in the database system based on the identification code of the target exhibition object transmitted from the terminal and transmits the target information to the terminal through the host transmitter/receiver means.

5,796,352

AUDIO VIDEO EQUIPMENT SYSTEM WITH BUS LINE AND METHOD OF ESTABLISHING A CONNECTION SETTING FOR THE AUDIO VIDEO EQUIPMENT SYSTEM

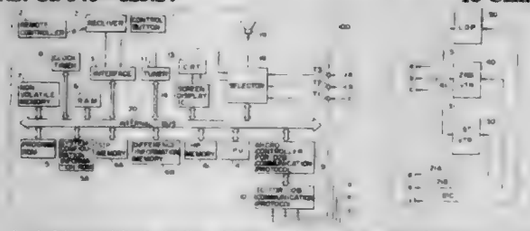
Shigeo Tanaka, Tokyo; Hiroshi Yamazaki; Koichi Sugiyama, both of Kanagawa; Makoto Sato, Kanagwa; Noriko Kotabe, Chiba; Akira Katsuyama; Yoshio Osakabe, both of Kanagawa, and Yasuo Kusagaya, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 165,166, Dec. 10, 1993, abandoned. This application Aug. 17, 1995, Ser. No. 516,121

Claims priority, application Japan, Dec. 28, 1992, 4-361413

Int. Cl.[6] **G06F** *13/00;* **G05B** *23/02;19/04;* **H04Q** *9/00*

U.S. Cl. 340—825.24 **18 Claims**



1. A hierarchical audio video equipment system having at least two control levels and an external bus line, comprising:

main control means connected to an internal bus for controlling an operation of a first level of the audio video equipment system;

auxiliary control means connected to the internal bus for controlling an operation of a second level of an external system through the external bus line controlled by said main control means;

memory means connected to the internal bus for storing a program to control said main control means and/or said auxiliary control means;

display means connected to the internal bus for displaying a status of the audio video equipment system and/or command applied by a user;

selector means connected to the internal bus for selecting an audio signal and/or a video signal supplied from a device of said external system;

clock means connected to the internal bus for generating a clock signal to synchronize the operation of said main control means and/or said auxiliary control means;

system configuration memory means connected to the internal bus for storing a plurality of predetermined system configurations of the audio video equipment system and;

difference information memory means connected to the internal bus for storing difference information indicative of a difference from the plurality of predetermined system configurations stored in said system configuration memory means

whereby a user can select any system configuration supported by information stored in either said system configuration memory means or said difference information memory means.

5,796,353

FAULT MONITORING EVENT DETECTION DEVICE

Matthew Whitehead, Sheffield, United Kingdom, assignor to Pyronix Limited, South Yorkshire, United Kingdom

PCT No. PCT/EP95/01331, § 371 Date Mar. 13, 1997, § 102(e) Date Mar. 13, 1997, PCT Pub. No. WO95/28692, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 11, 1995, Ser. No. 727,436

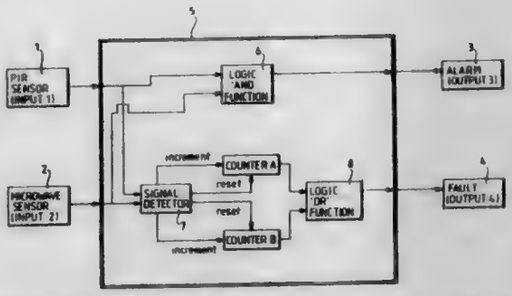
Claims priority, application United Kingdom, Apr. 14, 1994, 9407426

Int. Cl.[6] **G08C** *19/16*

U.S. Cl. 340—870.01 **15 Claims**

1. A combined technology event detection device which comprises:

a first sensing means for generating a first output signal in response to an event;



a second sensing means for generating a second output signal in response to an event;

logic means for receiving the first and second output signals and for generating an alarm in response thereto; and

a fault monitoring system comprising:

a first means for storing a number of first output signals received from the first sensing means,

a second means for storing a number of second output signals received from the second sensing means,

means for detecting an output signal from either the first or the second sensing means and for incrementing the number of output signals stored in the storing means associated with the sensing means generating the output signal in response thereto,

means for re-setting the number of output signals stored in the storing means not associated with the sensing means generating the output signal to a base level; and

means for generating an output signal indicative of a fault condition in the device when the number of output signals stored in a storing means exceeds a pre-determined threshold level.

5,796,354

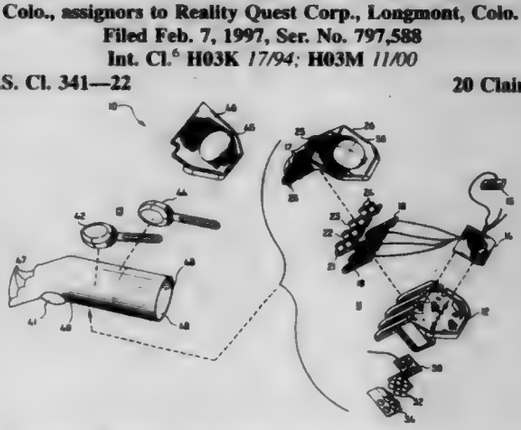
HAND-ATTACHABLE CONTROLLER WITH DIRECTION SENSING

Michael C. Cartabiano, Hermosa Beach; Kenneth J. Curran, Thousand Oaks, both of Calif.; David J. Dick; Douglas R. Gibbs, both of Longmont, Colo.; Morgan H. Kirby, Arvada, Colo.; Richard L. May, Manhattan Beach, Calif.; William J. A. Storer, Loveland, Colo., and Adam N. Ullman, Boulder, Colo., assignors to Reality Quest Corp., Longmont, Colo.

Filed Feb. 7, 1997, Ser. No. 797,588

Int. Cl.[6] **H03K** *17/94;* **H03M** *11/00*

U.S. Cl. 341—22 **20 Claims**



1. A hand attachment for providing command signals to control movement of at least one object responsive to hand movement, comprising:

a glove base assembly having an upper surface including a palm surface and a finger surface, said finger surface including a plurality of finger pads for depression by a finger of a user wearing the hand attachment to cause a specific movement of said at least one object;

a glove attached to said glove base assembly, wherein at least a portion of said glove overlays said palm surface;

at least one sensing device for detecting directional movement of the user's hand relative to the user's arm; and

circuit means for converting the detected directional movement to command signals for controlling the movement of said at least one object in directions corresponding to the hand movement.

5,796,355

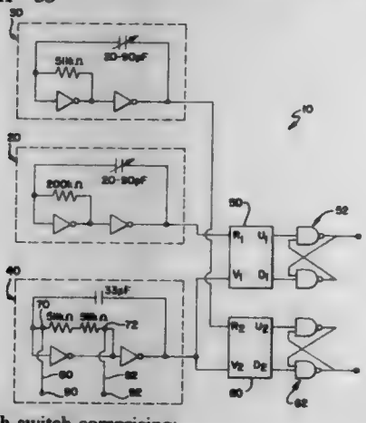
TOUCH SWITCH

Thomas Smigelski, Lake Zurich, Ill., assignor to Zurich Design Laboratories, Inc., Hoffman Estates, Ill.

Continuation-in-part of Ser. No. 645,228, May 13, 1996. This application Aug. 30, 1996, Ser. No. 699,045

Int. Cl.[6] H03M *11/00*

U.S. Cl. 311—33 **13 Claims**



1. A touch switch comprising:

a first oscillator for generating a high frequency reference signal having a first frequency;

a second oscillator for generating a low frequency reference signal having a second frequency;

a sensor oscillator for generating a reference signal having a reference signal frequency, the reference signal frequency initially having a value between the first frequency and the second frequency, the sensor oscillator further including means for varying the reference signal frequency;

a first frequency detector, coupled to the first oscillator and the sensor oscillator, to detect when the reference signal frequency has been varied such that it is greater than the first frequency; and,

a second frequency detector, coupled to the second oscillator and the sensor oscillator, to detect when the reference signal frequency has been varied such that it is less than the second frequency.

5,796,356

DATA COMPRESSING APPARATUS, DATA RESTORING APPARATUS AND DATA COMPRESSING/RESTORING SYSTEM

Yoshiyuki Okada, and Noriko Satoh, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 2, 1995, Ser. No. 556,772

Claims priority, application Japan, Mar. 14, 1995, 7-054520

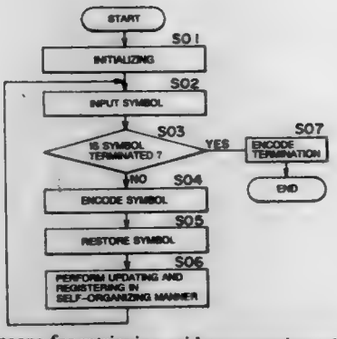
Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—51 **27 Claims**

1. A data compressing apparatus for dynamically coding inputted unit data in accordance with a prior occurrence situation of the unit data, said apparatus comprising:

a compression table defining an order of each unit data and a code corresponding to each order such that as the order of each unit data becomes higher the corresponding code becomes shorter;

data inputting means for inputting the unit data to be compressed;



retrieving means for retrieving said compression table, to obtain the order corresponding to the unit data inputted by said data inputting means;

outputting means for outputting a code corresponding to the obtained order; and

compression table updating means for updating the compression table so that the order of the unit data, inputted by said inputting means, increases, in a self-organizing manner, based on the current order thereof after said outputting means outputs the code corresponding to the unit data.

5,796,357

DIGITAL ANGLE DETECTING METHOD

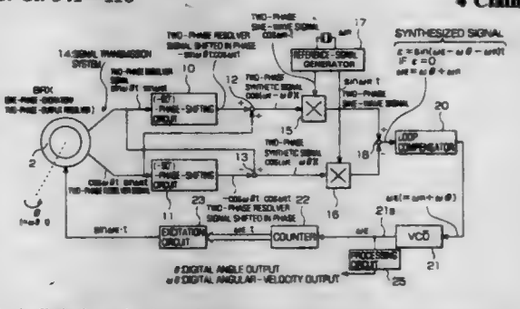
Hiroshi Kushihara, Iida, Japan, assignor to Tamagawa Seiki Kabushiki Kaisha, Nagano-Ken, Japan

Filed Feb. 6, 1996, Ser. No. 597,181

Claims priority, application Japan, Jun. 7, 1995, 7-140707

Int. Cl.[6] H03M *1/48*

U.S. Cl. 341—116 **4 Claims**



1. A digital angle detecting method, comprising the steps of:

a) shifting the phases of original two-phase resolver signals (sin $\omega_0 t \cdot \sin \omega_E t$ and cos $\omega_0 t \cdot \sin \omega_E t$, wherein ω_E denotes an exciting angular frequency) obtained from a resolver of the one-phase-excitation/two-phase-output type, which is supplied with an exciting source signal (sin $\omega_E t$) and serves as an angle detecting device of the amplitude modulation type, by −90° in phase shifting circuits (**10**, **11**), respectively;

b) obtaining two-phase synthetic signals (sin $(\omega_E - \omega_0)t$, cos $(\omega_E - \omega_0)t$) by respectively adding and subtracting said shifted two-phase resolver signals ($-\sin \omega_0 \cdot \cos \omega_E t$, $-\cos \omega_0 \cdot \cos \omega_E t$) and the original two-phase resolver signals;

c) obtaining a synthesized signal (sin $(\omega_E - \omega_0 - \omega_R)t$) by multiplying the two-phase synthetic signals by two-phase sine-wave signals (sin $\omega_R t$, cos $\omega_R t$); and

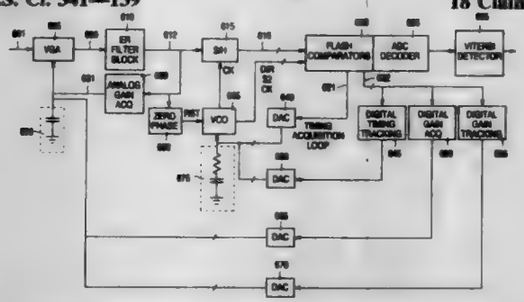
d) obtaining an angle output (θ) and an angular velocity output (ω_0) by processing said synthesized signal (sin $(\omega_E - \omega_0 - \omega_R)t$).

5,796,358

METHODS AND STRUCTURE FOR COMBINED ANALOG AND DIGITAL AUTOMATIC GAIN CONTROL IN SAMPLED-DATA RECEIVERS

Shih-Ming Shih; James Wilson Rae, both of San Jose; Richard A. Contreras, Los Altos, and Jenn-Gang Chern, Sunnyvale, all of Calif., assignors to NEC Electronics, Inc., Santa Clara, Calif.

Filed Aug. 1, 1996, Ser. No. 693,587
Int. Cl.[6] H03M *1/00*
U.S. Cl. 341—139 **18 Claims**



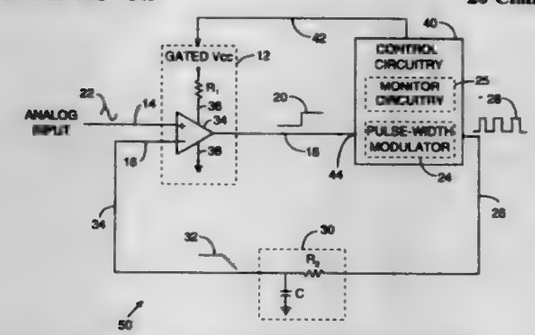
1. A circuit for digital gain acquisition comprising:
an analog-to-digital converter, said analog-to-digital converter comprising:
a first plurality of bit slices;
an encoder coupled to a subset of said first plurality of bit slices, said subset comprising a second plurality of bit slices;
a digital-to-analog converter, said digital-to-analog converter being coupled to said encoder; and
a gain control circuit coupled to said digital-to-analog converter;
wherein when said encoder receives a sampled reference input signal from said second plurality of bit slices, said sampled reference input signal is encoded into an ideal sample value closest to said sampled reference input signal and a decision error, said ideal sample value and said decision error being used to generate a first control signal passed to said digital-to-analog converter, said digital-to-analog converter generating a second control signal passed to said gain control circuit.

5,796,359

DATA CONVERSION AND PROCESSING SYSTEM

Paul Beard, Milpitas, Calif., assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Oct. 25, 1996, Ser. No. 760,085
Int. Cl.[6] H03M *3/02*
U.S. Cl. 341—143 **20 Claims**



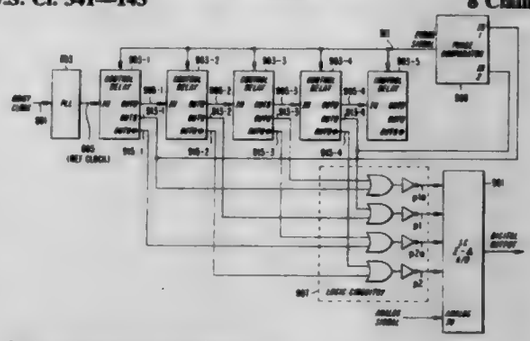
1. A data conversion and processing system comprising:
a comparator having an first input that receives an analog input signal, a second input that receives an analog feedback signal and an output that produces a comparator output based upon the analog input signal and the feedback signal;
modulation circuitry that receives the comparator output and produces a digital feedback signal based upon the comparator output;
monitoring circuitry coupled to the modulation circuitry that produces a digital representation of the analog input signal; and
feedback filter that receives the digital feedback signal and produces the analog feedback signal.

5,796,360

FAST SIGMA-DELTA MODULATOR HAVING A CONTROLLED CLOCK GENERATOR

Heino Wendelrup, Malmö, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 389,406, Feb. 16, 1995, abandoned. This application Apr. 14, 1997, Ser. No. 840,172
Int. Cl.[6] H03M *3/00*
U.S. Cl. 341—143 **8 Claims**



1. An apparatus, comprising:
input means for receiving a reference clock signal;
controllable delay means, coupled to the input means, for generating from the received reference clock signal a plurality of delayed reference clock signals, wherein for each of the plurality of delayed reference clock signals, a corresponding amount of delay is controllable by a control signal;
phase comparator means, coupled to the input means and to the controllable delay means, for generating an error signal whose magnitude is proportional to an amount by which a measured phase relation between the received reference clock signal and a preselected one of the plurality of delayed reference clock signals differs from a predetermined phase relation, wherein the error signal is supplied to the controllable delay means for use as the control signal for controlling the amount of delay of each of the plurality of delayed reference clock signals;
logic means for generating nonoverlapping first and second phase clock signals from the plurality of delayed reference clock signals; and
switched capacitor sigma-delta modulator means, comprising:
clock input means, coupled to receive the nonoverlapping first and second phase clock signals;
signal input means for receiving a signal to be modulated; and
means, including switched capacitor circuitry, for modulating the signal to be modulated under control of the nonoverlapping first and second phase clock signals.

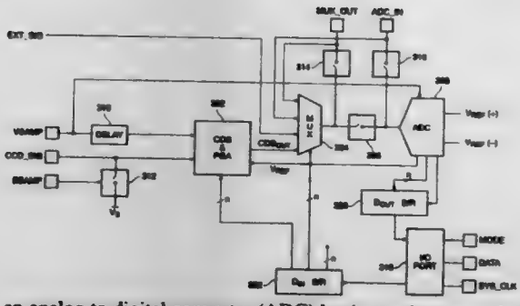
5,796,361

CCD SIGNAL DIGITIZING INTEGRATED CIRCUIT

Roger Levinson, Sunnyvale, Calif., assignor to Exar Corporation, Fremont, Calif.

Filed Sep. 25, 1996, Ser. No. 719,939
Int. Cl.[6] H03M *1/12*
U.S. Cl. 341—172 **14 Claims**

1. A charge coupled device (CCD) signal digitizing circuit comprising:
a CCD analog signal processing circuit including a sampling unit coupled to an amplifier, said CCD analog processing circuit having an input coupled to receive a CCD input signal, and an output;



an analog to digital converter (ADC) having an input coupled to said output of said CCD analog signal processing circuit, and a plurality of digital outputs; and

a CCD signal reference level sampling circuit coupled to said input of said CCD analog signal processing circuit, said CCD signal reference level sampling circuit receiving a third clock signal from a second clock source that is separate and independent of said first clock source

wherein, said CCD analog signal processing circuit and said ADC are integrated on a single chip, and wherein a first clock signal for said CCD analog signal processing circuit and a second clock signal for said ADC are of substantially the same frequency and are generated by a first clock source.

5,796,362

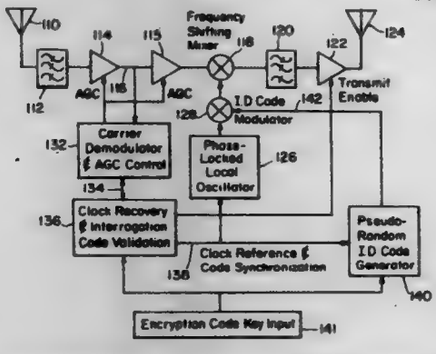
POST LAUNCH ON-BOARD IDENTIFICATION FRIEND OR FOE SYSTEM

Yalcin Ayasli, Lexington, and Peter Katzin, Arlington, both of Mass., assignors to Hittite Microwave Corporation, Woburn, Mass.

Filed Jun. 13, 1994, Ser. No. 258,966

Int. Cl.[6] H01Q *15/00;* G01S *13/78*

U.S. Cl. 342—6 **16 Claims**



1. A post launch, identification friend or foe (IFF) fire control system for a munition comprising: an identification and ranging interrogation circuit for mounting on a munition including means for transmitting an interrogation code on an rf carrier signal; means for detecting and verifying, in reply to said interrogation code, an incoming identification code from a remote transponder unit, means for determining the range and velocity with respect to the remote transponder unit, and means for providing a decision signal to the fire control circuit of the munition to enable friendly target protection.

5,796,363

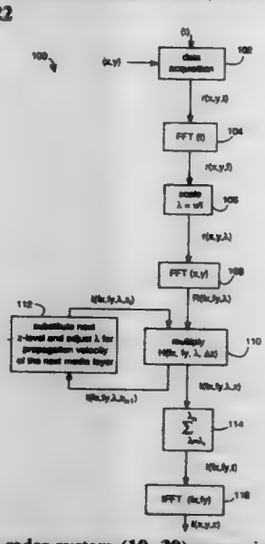
AUTOMATIC POSITION CALCULATING IMAGING RADAR WITH LOW-COST SYNTHETIC APERTURE SENSOR FOR IMAGING LAYERED MEDIA

Jeffrey E. Mast, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Mar. 1, 1996, Ser. No. 609,812

Int. Cl.[6] G01S *13/89;13/90*

U.S. Cl. 342—22 **8 Claims**



1. An imaging radar system (**10**, **30**), comprising:

a radar transmitter (**20**, **42**) and receiver (**22**, **44**) connected to a timing mechanism (**14**, **36**) that provides for a radar echo sample to be taken at a variety of delay times for each of a series of radar pulse transmission;

a position determining system (**16**, **17**, **18**, **24**, **32**, **36**) connected to the radar transmitter and receiver that provides an x,y position on a surface for each group of samples measured for a volume from said surface, wherein the radar transmitter and receiver are moved about said surface to collect such groups of measurements from a variety of x,y positions, and wherein a plurality of return signal amplitudes represent the relative reflectivity of objects within said volume and the delay in receiving each signal echo represents the depth at which an object lays in said volume and the propagation speeds of the intervening material layers; and

means (**14**, **34**, **100**) for successively backward propagating deeper z-planes from one layer to the next with an adjustment for variations in the expected propagation velocities of a variety of material layers that lie between adjacent said z-planes, wherein each said z-plane contributes to a tomographic series of slices through said volume that contribute to the visualization of said objects in said volume in three dimensions.

5,796,364

METHOD OF DETERMINING THE VELOCITY OF A RADAR TARGET

Norbert Füchter, Aspenweg 10, 89155 Erbach, and Franz-Xaver Hofele, Heckenhofergasse 13, 73072 Donzdorf, both of Germany

Filed Feb. 18, 1997, Ser. No. 802,428

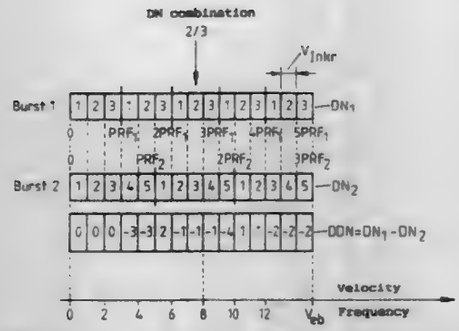
Claims priority, application Germany, Feb. 15, 1996, 196 05 568.7

Int. Cl.[6] G01S *7/295;13/53*

U.S. Cl. 342—99 **9 Claims**

1. In a method of determining the nonambiguous velocity of a radar target by use of a pulse-Doppler radar, including

emitting a transmit signal comprising at least two pulse trains having different pulse repetition frequencies,



evaluating the echo signals, which are associated with each pulse train and are reflected at a radar target, using a Doppler filter bank comprising a predetermined number of Doppler filters, with a predetermined velocity range corresponding to each Doppler filter, and

determining a nonambiguous velocity of the target from the combination of the signals of the Doppler filters associated with each pulse repetition frequency; the improvement comprising:

as a function of a predetermined velocity non ambiguous range (V_{eb}) and of a predetermined velocity increment (V_{Inkr}), subdividing the velocity nonambiguity range (V_{eb}) into an integral number of nonambiguous Doppler numbers ($DN_{n/m}$; n,m=1,2, . . .) whose width corresponds to that of the velocity increment (V_{Inkr});

emitting the two pulse trains (bursts) having different pulse repetition frequencies (PRF_1, PRF_2, . . .) which are used so as to be alternating in time, with the respective pulse repetition frequencies being selected to be at a fixed, predetermined, integral ratio (SV) relative to one another, and with each pulse repetition frequency (PRF_1, PRF_2, . . .) comprising an integral multiple (N_1, N_2, . . .) of the velocity increment (V_{Inkr}), with the velocity increments being numbered consecutively within each pulse repetition frequency (PRF_1, PRF_2, . . .) and being identified as Doppler numbers (DN_1, DN_2, . . .), and with the velocity nonambiguity range (V_{eb}) including integral multiples of the respective pulse repetition frequencies (PRF_1, PRF_2, . . .);

for each echo signal and each pulse repetition frequency in (PRF_1, PRF_2, . . .) the Doppler filter bank, determining at least one first filter number (FI_1) of that Doppler filter which comprises the maximum (largest) amplitude value (A_k);

determining a Doppler number (DN_1, DN_2, . . .) which is associated with the number (FI_1) of the respective Doppler filter and the respective pulse repetition frequency using at least two tables, with each table being associated with a respective transmitter pulse repetition frequency;

for each combination of the determined Doppler numbers (DN_1, DN_2, . . .), determining an associated nonambiguous Doppler number ($DN_{n/m}$; n,m=1,2, . . .) within the velocity nonambiguity range (V_{eb}); and

multiplying the nonambiguous Doppler number ($DN_{n/m}$; n,m=1,2, . . .) and the velocity increment (V_{Inkr}) to determine the nonambiguous velocity of the radar target.

5,796,365

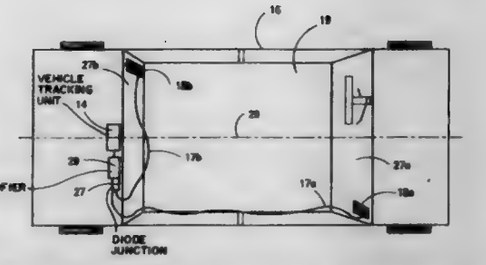
METHOD AND APPARATUS FOR TRACKING A MOVING OBJECT

Peter T. Lewis, 2301 Connecticut Ave., NW., Apartment 3B, Washington, D.C. 20008

Continuation of Ser. No. 36,533, Mar. 19, 1993, Pat. No. 5,587,715. This application Dec. 23, 1996, Ser. No. 772,509

Int. Cl.[6] H04B *7/185;* **G01S** *5/02*

U.S. Cl. 342—357 **22 Claims**



1. In an antenna system for use with a plurality of satellite sources, each transmitting at least one positioning signal to at least one object moving about an environment for determining the relative position of the object within the environment, the environment from time-to-time blocking to some degree the transmission of at least one of the positioning signals to the object dependent on the relative position of the object within the environment, said antenna system comprising:

a) a plurality of antenna mounted on the object in a spaced relationship with each other, each of said plurality of antennae capable of receiving a positioning signal to provide a corresponding electrical output signal;

b) a receiver for processing said output signals to facilitate at least in part a determination of the position of the object; and

c) means coupled to each of said plurality of antenna for summing and applying each of said electrical output signals to said receiver and for preventing one of said electrical output signals provided by any one of said plurality of antennae from being applied to any other of said plurality of antennae, whereby said receiver will continue to determine the position of the object when at least one of the positioning signals is at least partially blocked by the environment from at least one of said plurality of antennae.

5,796,366

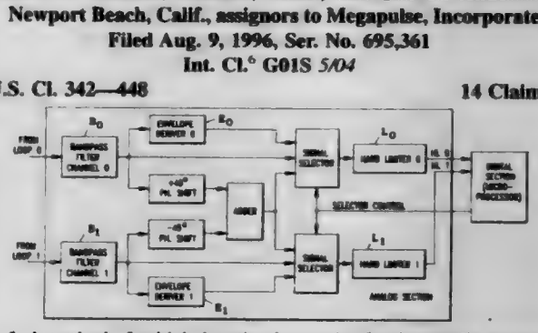
METHOD OF AND APPARATUS FOR POSITION LOCATION AND TRACKING OF A VEHICLE OF THE LIKE BY THE RECEPTION AT THE VEHICLE OF PULSED RADIO NAVIGATION SIGNALS AS OF THE LORAN-OC TYPE AND THE LIKE, WITH AN AUTONOMOUS LOOP ANTENNA-RECEIVER

Andre V. Grebnev, Bedford, Mass., and Jan H. Anderson, Newport Beach, Calif., assignors to Megapulse, Incorporated

Filed Aug. 9, 1996, Ser. No. 695,361

Int. Cl.[6] G01S *5/04*

U.S. Cl. 342—448 **14 Claims**



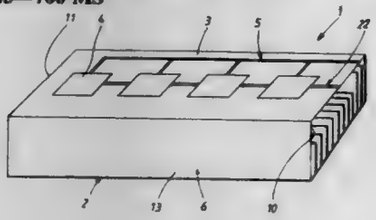
1. A method of vehicle location by a pair of orthogonally crossed loop antennas for receiving radio-frequency navigation signals from navigation transmitters, that comprises, acquiring the signals in the individual loop antennas of the pair of loop antennas; along separate channels, separately phase-shifting the acquired signals respectively + and −45° and then adding together the signals acquired by the individual loop antennas of the pair to render the loop antenna pattern omnidirectional; selecting the stronger of the transmitted channel signals and using its polarity as the received signal reference; determining from signal time delays a rough estimate of relative bearing angles to the transmitters; and using said relative bearing angles together with measured bearing angle to determine the orientation of the loop antenna with respect to the transmitter.

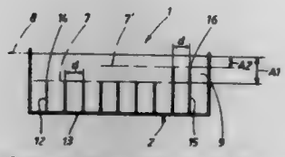
5,796,367

DEVICE FOR ANTENNA UNITS

Christer Andersson, Mölndal, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Sweden

Filed Sep. 26, 1996, Ser. No. 722,879
Claims priority, application Sweden, Sep. 29, 1995, 9503391
Int. Cl.[6] H01Q 1/38; 1/48
U.S. Cl. 343—700 MS 3 Claims





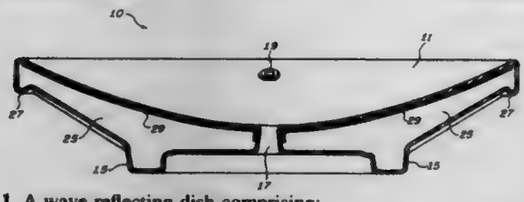
1. Device for an antenna unit comprising one or more radiation elements for transmission and reception, respectively, of electromagnetic signals and a ground plane arranged at a distance from said one or more radiation elements, wherein the antenna unit presents at least two ground planes arranged at distinct, predetermined ground plane distances in which the antenna unit presents at least one feeding network having feeding connectors for feeding the radiation elements, and a first ground plane is positioned at a predetermined, first ground plane distance behind the radiation elements, and that a second ground plane is positioned at a predetermined, second ground plane distance behind at least a part of said feeding network.

5,796,368

RUGGED, WEATHER RESISTANT PARABOLIC DISH

John E. Arthur, III, Island Park, N.Y., assignor to Lockheed Martin Corporation, Bethesda, Md.

Filed Apr. 23, 1996, Ser. No. 639,914
Int. Cl.[6] H01Q 1/02
U.S. Cl. 343—704 10 Claims



1. A wave reflecting dish comprising:

a seamless one piece unit with a hollow, watertight region between first and second external surfaces, said first external surface having a paraboloidal contour, thereby providing a paraboloidal surface, said second external surface seamlessly extending from said first external surface, said second external surface including a base for said seamless one piece unit,

said one piece unit having a first internal surface adjacent said first external surface and said hollow, watertight region and a second internal surface seamlessly extending from said first internal surface, said second internal surface being adjacent said second external surface and said hollow, watertight region;

drainage means within said seamless one piece unit for removing environmental matter from said first external surface;

mounting means coupled to said first external surface for attaching supports for wave radiation and receiving apparatus; and

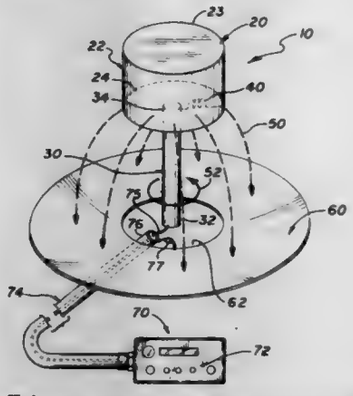
external structure attachment means coupled to said base for attaching said one piece unit to an external support structure.

5,796,369

HIGH EFFICIENCY COMPACT ANTENNA ASSEMBLY

George Henf, 174 Chaloupe Terrace, Sebastian, Fla. 32958

Filed Feb. 5, 1997, Ser. No. 795,509
Int. Cl.[6] H01Q 9/00
U.S. Cl. 343—752 20 Claims



1. A high efficiency compact antenna assembly comprising:

(a) an electric field generator comprising a lower member and an upper member,

(b) said lower member including a mast having an elongated configuration terminating at an upper end and a lower end and said upper member of said generator being mounted on said upper end of said mast,

(c) said upper member of said generator including a housing having a substantially cylindrical configuration including a first end and a second end and a substantially surrounding side wall spaced outwardly from said mast,

(d) a collector disposed in spaced apart electrical communication with said generator and including a substantially circular and substantially flat conductive plate having a centrally, substantially concentrically disposed opening formed therein,

(e) said mast being substantially axially aligned with said opening and extending perpendicularly outward therefrom, said side wall of said housing disposed in outwardly spaced perpendicular relation to said plate, and

(f) said side wall of said housing structured and maintained a sufficient spaced distance from said plate and said opening therein to direct an electric field from said sidewall of said housing outwardly from said mast in a generally semicircular path to said plate.

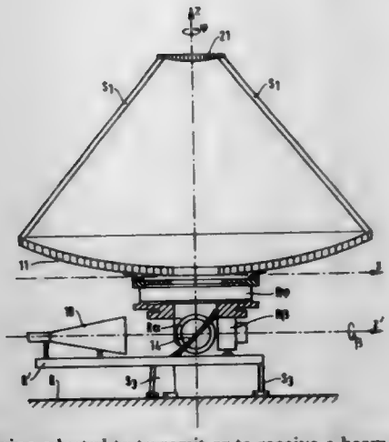
5,796,370

ORIENTABLE ANTENNA WITH CONSERVATION OF POLARIZATION AXES

Véronique Courtonne, Toulouse; Dominique Morin, Muret; Jean-Claude Lacombe, Tournefeuille; Jean-Pierre Carbonell, Cugnaux, and Didier Rene, Toulouse, all of France, assignors to Alcatel Espace, Courbevoie, France

Continuation of Ser. No. 353,218, Dec. 1, 1994, abandoned.
This application Jul. 16, 1996, Ser. No. 683,779
Claims priority, application France, Dec. 2, 1993, 93 14452
Int. Cl.[6] H01Q 13/00
U.S. Cl. 343—781 21 Claims

1. Antenna including at least one reflector and at least one source of electromagnetic radiation, each said at least one source being capable of transmitting and/or receiving radiation in a primary direction which links said at least one source to at least one reflector; each said at least one source including at least one radiating element and means for exciting said element, said



antenna being adapted to transmit or to receive a beam of electromagnetic radiation of arbitrary cross-section and in a preferred radiation direction determined by a disposition and an orientation of said reflector and said at least one source, said beam having polarization axes conferred on said beam by the excitation applied to said at least one source, said beam being orientable by movement of one of said antenna and component parts of said antenna, and said antenna further including mechanical means for defining a relative disposition of said reflector and said at least one source and for rotating said reflector about an electromagnetic radiation propagation axis while holding said at least one source in a position such that the polarization axes remain fixed during said reflector rotation, wherein

said mechanical means comprises depointing means for rotating said reflector about first and second orthogonal axes, said depointing means driving a support which supports an axial rotation motor for rotating said reflector about the electromagnetic radiation propagation axis without also rotating said at least one source.

5,796,371

OUTDOOR CONVERTER FOR RECEIVING SATELLITE BROADCAST

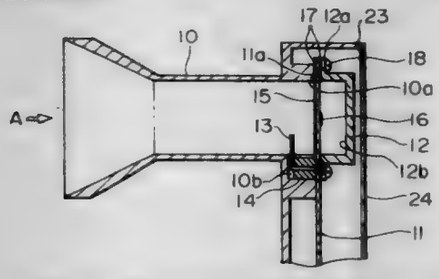
Makoto Sato; Shigetaka Suzuki, both of Fukushima-ken; Shuji Saito, Iwate-ken, and Makoto Shigihara, Fukushima-ken, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 10, 1996, Ser. No. 679,639

Claims priority, application Japan, Jul. 19, 1995, 7-182876; Jul. 19, 1995, 7-182880

Int. Cl.[6] H01Q *13/00*

U.S. Cl. 343—786 **34 Claims**



I. An outdoor satellite broadcast receiving converter, comprising:

a waveguide which a broadcast electric wave enters and in which the broadcast electric wave travels as a first linearly polarized wave and a second linearly polarized wave orthogonal to each other;

a first probe for detecting the first linearly polarized wave, said first probe being disposed at a predetermined position in said waveguide;

a first shorting terminal for reflecting the first linearly polarized wave, said first shorting terminal being disposed about ¼ wavelength apart from said first probe in the electric wave travel direction;

a second probe for detecting the second linearly polarized wave, said second probe being disposed in the waveguide adjacent to said first shorting terminal; and

a second shorting terminal for reflecting the second linearly polarized wave, said second shorting terminal being disposed about ¼ wavelength apart from said second probe in the electric wave travel direction;

wherein a substrate is disposed at a position about ¼ wavelength apart from said first probe in the electric wave travel direction, said first shorting terminal being disposed on one of obverse and reverse surfaces of said substrate facing said first probe, said second probe being disposed on the other surface of said substrate.

5,796,372

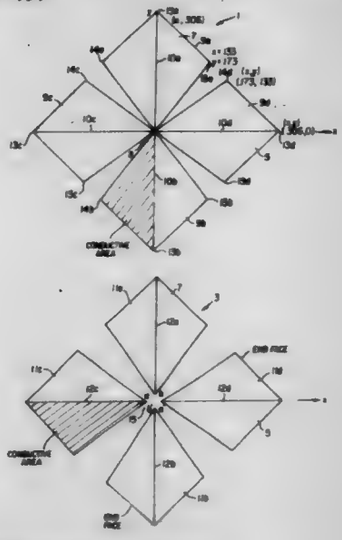
FOLDED CROSS GRID DIPOLE ANTENNA

Paul G. Elliot, Vienna, Va., assignor to APTI Inc., Washington, D.C.

Filed Jul. 18, 1996, Ser. No. 683,238

Int. Cl.[6] H01Q *21/26*

U.S. Cl. 343—797 **18 Claims**



1. An antenna element comprising:

a ground plane;

a first crossed grid dipole including a plurality of perimeter conductors, said first crossed grid dipole being arranged in an X-Y plane corresponding to a first tier and including an interconnected plurality of arms; and

a second crossed grid dipole including a plurality of perimeter conductors, said second crossed grid dipole being arranged in an X-Y plane corresponding to a second tier and including a plurality of non-interconnected arms, each of said non-interconnected arms including a feed input;

wherein said first tier is vertically separated from said second tier and said ground plane, and said second tier is located between said ground plane and said first tier;

wherein said first crossed grid dipole is connected to said second crossed grid dipole by vertical conductors; and

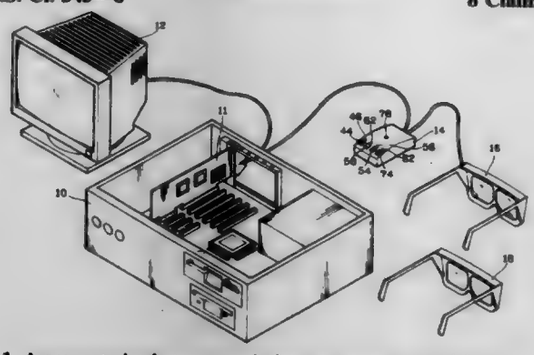
wherein an area defined by at least one of a group of the perimeter conductors of the first crossed grid dipole, a group of the perimeter conductors of the second crossed grid dipole, and a group of the perimeter conductors of the first and second crossed gird dipoles and the vertical conductors, is at least partially conductive.

5,796,373

COMPUTERIZED STEREOSCOPIC IMAGE SYSTEM AND METHOD OF USING TWO-DIMENSIONAL IMAGE FOR PROVIDING A VIEW HAVING VISUAL DEPTH

Lin Ming-Yen, Taipei, Taiwan, assignor to Artificial Parallax Electronics Corp., Taipei, Taiwan

Filed Oct. 10, 1996, Ser. No. 729,247
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—6 8 Claims



1. A computerized stereoscopic image system comprising:

a main memory unit for executing various three-dimensional softwares, sending out a seperated left and right image data of a stereoscopic image, or for sending out an interleaved left and right image data;

a VGA drawing card for receiving an image data from said main memory unit, and after said image data being processed, said seperated left and right images being sent out a RGB analog image signal by using non-interlaced displaying method, or sent out a RGB analog image signal by using an interleave left and right images by means of an interlaced displaying method;

a monitor for receiving a RGB analog image signal out of said VGA drawing card, and displaying said image signal on a screen;

an external shutter synchronizer connected with a computer, and receiving an electrical signal out of said VGA drawing card, and then sending out a signal;

a wired LCD shutter eye-glasses for receiving, through wire, a signal out of said external shutter synchronizer, and furnishing a stereo-image for watching, or a wireless LCD shutter synchronizer for receiving, through wireless method, a signal out of said external shutter synchronizer, and furnishing a stereo-image for watching;

further wherein:

said external shutter synchronizer is a separated unit, or said synchronizer able to be installed in a main frame as well as a peripheral equipment, such as a drawing card, a mouse, a joy stick or a keyboard;

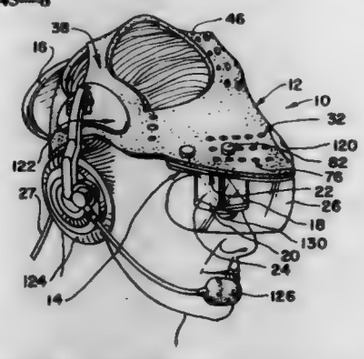
said synchronizer including: a power supply unit for providing said external shutter synchronizer with a D.C. power supply; a VGA interface buffer for isolating said VGA drawing card from said external shutter synchronizer in terms of electrical characteristics so as to prevent an output signal from said VGA drawing card from being interfered by said external shutter synchronizer to result in distortion; and said buffer able to receive a synchronous signal from said VGA drawing card and to amplify the same before being sent out; a shutter switch unit for receiving a signal out of said VGA interface buffer; said unit being classified into an automatic type and a manual type; a shutter controller for receiving output signals from said VGA interface buffer and said shutter switch unit, and by using said two signals to trigger said left and said right LCD shutters; a shutter-driving signal output unit for receiving an output signal from said shutter controller, and sending said signal to said wired LCD shutter eye-glasses or said wireless LCD shutter eye-glasses.

5,796,374

SUPPORT FOR A HEAD MOUNTED DISPLAY SYSTEM

George Cone, Redmond, Wash.; Stephen Peart, Los Satos, Calif.; Joel Robinson, Seattle, and Wes Williams, Arlington, both of Wash., assignors to Virtual Vision, Inc., Redmond, Wash.

Filed Mar. 8, 1996, Ser. No. 613,132
Int. Cl.[6] G09G 5/00
U.S. Cl. 345—8 20 Claims



1. A support for an image display system to be worn on a user's head, said image display system including an image generating module with at least one optic into which a user looks to view a generated image, said support comprising:

a head hugging member having a front portion, a pair of side portions, a top portion and a back portion integrally formed from a material with multidirectional elasticity so that said side, top and back portions conform to and hug the user's head; and

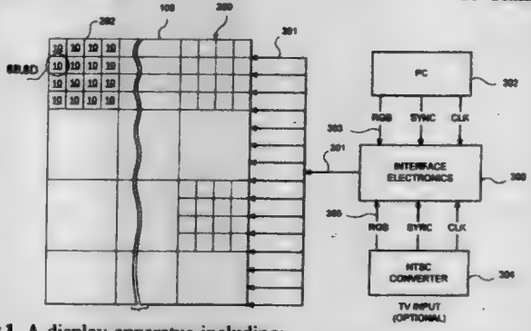
a rigid bill secured to the front portion of said head hugging member and extending outwardly from a user's forehead when said support is worn for removably mounting said image generating module, said rigid bill having an aperture therein through which a portion of said image generating module extends when said module is mounted on said bill.

5,796,375

VIDEO DISPLAY USING FIELD EMISSION TECHNOLOGY

Charles J. Holloman, Fairfield, Conn., assignor to Trans-Lux Corporation, Norwalk, Conn.

Filed Aug. 2, 1996, Ser. No. 691,866
Int. Cl.[6] G09G 3/22
U.S. Cl. 345—74 10 Claims



1. A display apparatus including:

a transparent planar sheet with a plurality of discrete pixels, said pixels formed of phosphorescent material;

a planar metallic anode sheet adjacent and parallel to said transparent planar sheet;

planar electrode means parallel to said planar metallic anode sheet and spaced therefrom, said planar electrode means including at least one aperture aligned with each of said pixels;

a plurality of column cathode means extending perpendicular to said planar electrode means and directed toward each said at least one aperture;

means for maintaining said planar metallic anode sheet at a first positive potential, and means for selectively maintaining said planar electrode means at a second positive potential with respect to said column cathode means, whereby electrons from said column cathode are directed to said pixels thereby illuminating said phosphorescent material;

output means for controlling said discrete pixels;

memory means in communication with said output means, said memory means including a first buffer and a second buffer for receiving digital video data;

logic means for inputting said video data to said memory means in random access order so that a frame includes M groups of m consecutive lines, wherein like order data from each of said M groups is stored in M consecutive bytes in said memory means and further so that data is stored in an order which the data is to be output from said memory means, thereby implementing direct memory access of said memory means, said logic means further including means for outputting data from said memory means in parallel through a plurality of paths to output means, wherein like order data from each of said M groups is directed to said output means substantially simultaneously.

5,796,376

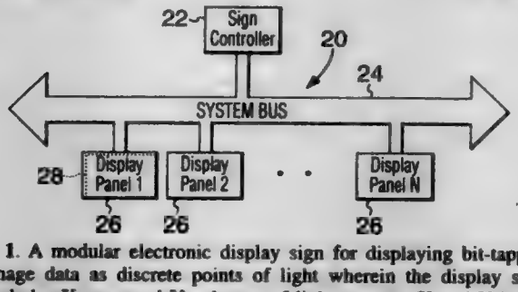
ELECTRONIC DISPLAY SIGN

Archie A. Banks, Prince Edward Island, Canada, assignor to CIE Research, Inc., Prince Edward Island, Canada

Continuation of Ser. No. 406,660, Mar. 20, 1995, abandoned, which is a continuation of Ser. No. 149,714, Nov. 9, 1993, abandoned, which is a continuation of Ser. No. 809,670, Dec. 18, 1991, abandoned. This application Apr. 14, 1995, Ser. No. 422,701

Int. Cl.[6] B41J *2/105;2/01;3/00;29/38*

U.S. Cl. 345—82 **30 Claims**



1. A modular electronic display sign for displaying bit-tapped image data as discrete points of light wherein the display sign includes X rows and Y columns of light sources, X and Y being integers greater than 1, arranged in at least two modular display panels of X/n rows and Y/n columns per display panel wherein n represents the number of display panels, each light source being individually controllable to display a bit-mapped image of b bits wherein b equals the X times the Y, said electronic display sign, comprising;

a sign controller which includes at least a means for receiving from an external source bit-mapped data signals representative of an image to be displayed on the display sign and control commands that determine a command definable frame display rate for the image independently of the display data and permitting display of images at different frame rates, a memory for storing the bit-mapped data and the control commands, a data transmission means for transmitting the bit-mapped data as addressed bit-mapped data, and a processor for operating the sign controller in accordance with a predefined program of instructions and the control commands that determine the command definable frame display rate for the image,

at least one sign system bus connected to the data transmission means;

at least two display panels having respective display surfaces which support an array of electrically powered light sources and an electronic circuit in connection with the light sources so that any one of the light sources may be selectively powered on; and

a panel control card associated with each display panel, each panel control card generating timing signals for powering on the light sources, and each panel control card being connected with a one of the at least one sign system bus and an electric power source, said panel control card being adapted to receive said addressed bit-mapped data signals from the system bus, which addressed bit-mapped data signals are representative of an image to be displayed by the light sources on the panel and to drive each light source using electric current from the power source in accordance with the signals in order to continuously display the image at a predefined refresh rate in accordance with timing signals generated by the panel control card until a new bit-mapped data signal addressed to the panel is received by the panel or a system reset signal is received by the panel.

5,796,377

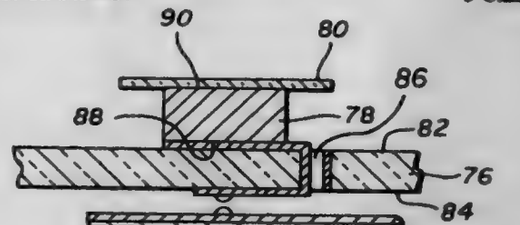
VIDEO DISPLAY SYSTEM HAVING AN ELECTRONIC SWITCH MATRIX FOR CONTROLLING AN M×N ARRAY OF PIEZOELECTRIC MEMBERS

Walter Gonzalez, and Andrei Szilagyi, both of Rancho Palos Verdes, Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Continuation of Ser. No. 173,670, Dec. 22, 1993, abandoned, which is a continuation of Ser. No. 791,499, Nov. 12, 1991, abandoned, which is a division of Ser. No. 504,124, Apr. 3, 1990, Pat. No. 5,052,216. This application Sep. 20, 1996, Ser. No. 717,141

Int. Cl.[6] G09G *3/34*

U.S. Cl. 345—84 **5 Claims**



1. A video display system comprising:

an electrically insulative substrate having a top surface, a bottom surface, and an M×N array of holes between said top surface and said bottom surface, said M×N array of holes corresponding to an M×N array of pixels;

a plurality of piezoelectric members, each of said members being disposed on said top surface adjacent to a respective one of said holes, each of said piezoelectric members having a first metallized face and a second metallized face;

a plurality of mirrors, each of said mirrors being mounted to a respective one of said piezoelectric members;

an integrated circuit electronic switch matrix mounted to said bottom surface said switch matrix comprising an M×N array of switch cells and a metallization disposed on said matrix adjacent said bottom surface of said substrate;

means for electrically connecting said first metallized face of each of said piezoelectric members to said switch matrix through said holes; and

a metal plating disposed in each of said holes in intimate electrical contact with said metallization on said switch matrix and said first face of each said piezoelectric members;

said switch matrix developing a plurality of electrical signals, each of said signals corresponding to an intensity of a respective one of said pixels, each of said electrical signals being applied to said first face of a respective one of said piezoelectric members, each of said piezoelectric members in response

thereto changing an orientation of one of said mirrors mounted thereto, each of said mirrors thereby effecting modulation of light intensity reflected therefrom wherein the modulated light intensity from each of said mirrors corresponds to one of said pixels.

5,796,378

BIRIFRINGENCE CONTROL TYPE LIQUID CRYSTAL DISPLAY DEVICE AND APPARATUS AND METHOD OF DRIVING THE SAME

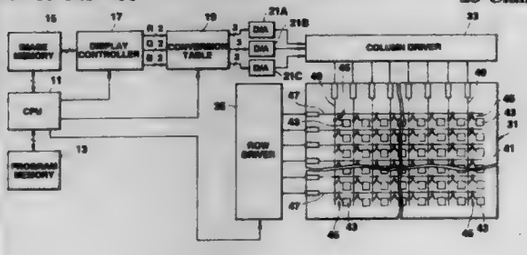
Tetsushi Yoshida, Kanagawa-ken; Soichi Sato, Fussa, and Zenta Kikuchi, Hamura, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

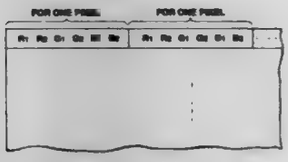
Filed Mar. 21, 1995, Ser. No. 408,811

Claims priority, application Japan, Mar. 29, 1994, 6-058558; Jun. 10, 1994, 6-151788; Jun. 10, 1994, 6-151792

Int. Cl.[6] G09G *3/36;5/02;* **G02F** *1/1347;1/1335*

U.S. Cl. 345—88 **23 Claims**





1. A liquid crystal display apparatus comprising:

a liquid crystal display device having a plurality of dots arranged in a matrix form, each dot being capable of displaying any one from among a plurality of different colors in accordance with applied voltages, dot by dot;

reception means for receiving data defining a display color of each pixel including a plurality of dots;

conversion means for converting said received data to data defining voltages, corresponding to said plurality of different colors respectively, to be applied to said plurality of dots constituting each pixel in order to display a display color of each pixel defined by said received data by a combined display of said dots constituting that pixel; and

drive means for applying a voltage corresponding to data from said conversion means to said plurality of dots to display said display color of each pixel by a combined display of said plurality of dots.

5,796,379

DIGITAL DATA LINE DRIVER ADAPTED TO REALIZE MULTIGRAY-SCALE DISPLAY OF HIGH QUALITY

Hiromi Enomoto; Hirokazu Miwa, and Hiroyuki Isogai, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 10, 1996, Ser. No. 631,615

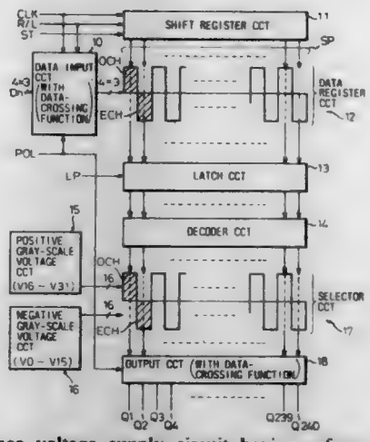
Claims priority, application Japan, Oct. 18, 1995, 7-270228

Int. Cl.[6] G09G *3/00*

U.S. Cl. 345—89 **10 Claims**

1. A digital data line driver for driving data lines arranged on a liquid-crystal panel, said data line driver comprising:

a data input circuit for fetching data in response to an external clock;



a reference voltage supply circuit having reference voltages corresponding to a plurality of gray-scale levels;

a selector circuit for selecting a specified reference voltage representing said data from among those of said reference voltage supply circuit; and

an output circuit for outputting said reference voltage selected by said selector circuit as display data onto said data lines;

said data input circuit and said output circuit having a data-crossing function for switching data between different channels of said data lines according to an external data switching control signal.

5,796,380

LIQUID CRYSTAL APPARATUS AND METHOD OF DRIVING SAME

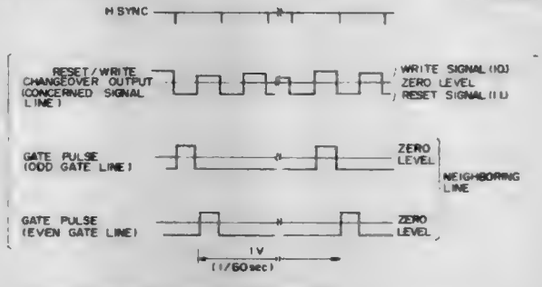
Katsumi Kurematsu, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 795,804, Nov. 21, 1991. This application Feb. 28, 1994, Ser. No. 203,484

Claims priority, application Japan, Nov. 21, 1990, 2-314242

Int. Cl.[6] G09G *3/18*

U.S. Cl. 345—96 **4 Claims**



1. A liquid crystal apparatus comprising:

a liquid crystal panel in which pixels, each comprising a pair of opposite electrodes and a ferroelectric liquid crystal, including an impurity ion which migrates within the liquid crystal according to an applied voltage, provided between said opposite electrodes, are arranged along a plurality of rows and columns and a thin-film transistor is connected to each pixel,

wherein, during a first field scanning period, a reset pulse of a single first polarity is supplied to the pixels to non-selectively erase the pixels along odd rows, and a write pulse of a polarity opposite to that of the reset pulse is supplied selectively to the pixels for writing on the pixels along even rows, the pixels supplied with the reset pulse being maintained at a voltage based on the reset pulse throughout the first field scanning period; and

during a second field scanning period subsequent to the first field scanning period, the write pulse is supplied selectively to the pixels for writing on the pixels along the odd rows, and the reset pulse is supplied to the pixels for non-selectively erasing

the pixels along the even rows, the pixels supplied with the reset pulse being maintained at a voltage based on the reset pulse throughout the second field scanning period,

wherein a period of time from application of the reset pulse to a pixel to application of the write pulse to the same pixel is equal to a period of time from application of the write pulse to a pixel to application of the reset pulse to the same pixel.

5,796,381

DRIVING METHODS FOR LIQUID CRYSTAL DEVICES AND LIQUID CRYSTAL APPARATUS

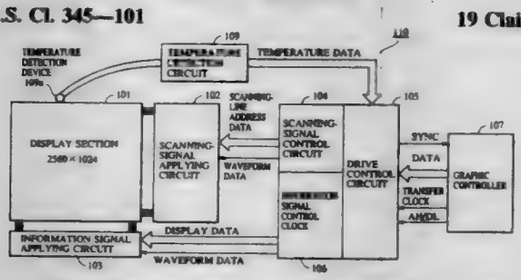
Manabu Iwasaki, Yokohama; Akira Tsuboyama; Kazunori Katakura, both of Atsugi, and Hidemasa Mizutani, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,385

Claims priority, application Japan, Sep. 28, 1994, 6-259392; Feb. 27, 1995, 7-061501; Jun. 19, 1995, 7-152046; Sep. 20, 1995, 7-241853

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—101 **19 Claims**



1. A driving method for a liquid crystal device in which a smectic liquid crystal and matrix electrodes comprising scanning electrode groups and information electrode groups are disposed,

wherein the waveforms of driving signals applied to the matrix electrodes are changed according to the temperature of the device, and

wherein an electric field is always applied to the liquid crystal when the temperature of the liquid crystal device falls within a high temperature range, and a period in which an electric field is not applied to the liquid crystal is provided when the temperature of the liquid crystal device falls within a lower temperature range than the high temperature range, and the period in which an electric field is not applied is selectively provided when the temperature of the liquid crystal falls outside of either the high temperature range or the lower temperature range.

5,796,382

LIQUID CRYSTAL DISPLAY WITH INDEPENDENTLY ACTIVATED BACKLIGHT SOURCES

John S. Beeteson, Skelmolie, Scotland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1996, Ser. No. 594,188

Claims priority, application United Kingdom, Feb. 18, 1995, 9503227

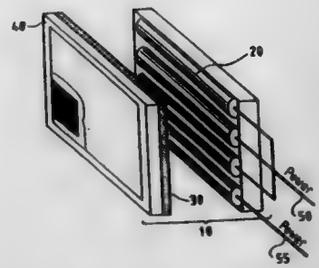
Int. Cl.[6] G09G *3/36;* **G06F** *1/32*

U.S. Cl. 345—102 **9 Claims**

1. A display unit comprising:

a liquid crystal display panel;

at least two light sources for backlighting the liquid crystal display panel;



at least one of the light sources being activated independently of the other light source to constantly illuminate selected portions of liquid crystal material in the display panel.

5,796,383

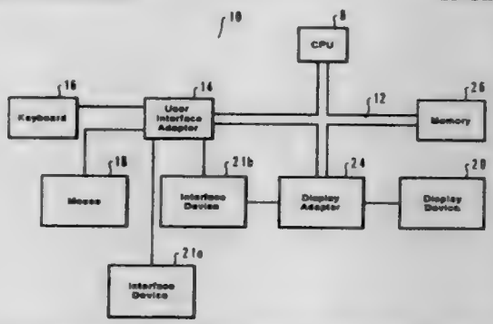
METHOD AND SYSTEM FOR PRESENTING CONTENTS OF A CONTAINER OBJECT WITHIN A GRAPHICAL USER INTERFACE IN A DATA PROCESSING SYSTEM

Susan F. Henshaw, and Sarah D. Redpath, both of Cary, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 113,557, Aug. 27, 1993, abandoned. This application Aug. 7, 1995, Ser. No. 654,350

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—112 **18 Claims**



1. Computer readable code for presenting contents of a container object within a graphical user interface without creating a window, comprising:

first subprocesses for permitting a user to specify a container object for which the user desires contents to be displayed;

second subprocesses for specifying an organized format in which the contents are to be displayed;

third subprocesses for determining a display space size for displaying the contents of the container object;

fourth subprocesses for determining whether the graphical user interface has a blank area large enough to display an element having the display space size; and

fifth subprocesses for displaying only the container object and the contents in the organized format in the blank area if said fourth subprocesses determine that the graphical user interface has a blank area large enough.

5,796,384

GAMMA CORRECTION CIRCUIT OF A LIQUID CRYSTAL DISPLAY USING A MEMORY DEVICE

Tae-Sung Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

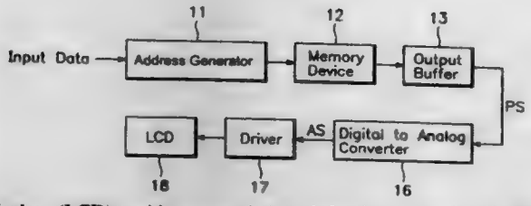
Filed Dec. 21, 1995, Ser. No. 575,878

Claims priority, application Rep. of Korea, Dec. 21, 1994, 94-35628

Int. Cl.[6] H04N *5/202*

U.S. Cl. 345—147 **21 Claims**

1. An apparatus which compensates for non-linear characteristics of gamma for at least one liquid crystal of a liquid crystal



display (LCD), said gamma being defined as a ratio of light transmissivity of said at least one liquid crystal to an input value, said apparatus comprising:

a gamma correction circuit which makes gamma substantially constant and makes said light transmissivity of said at least one liquid crystal vary substantially linearly with said input value, said gamma correction circuit receiving an applied input value for causing said at least one liquid crystal to respond with a desired light transmissivity, said gamma correction circuit further including a memory device for storing data programmed to produce an output value, in response to said applied input value only, for driving said at least one liquid crystal in place of said applied input value so that said at least one liquid crystal responds with said desired light transmissivity rather than an actual light transmissivity of said at least one liquid crystal corresponding to said applied input value.

5,796,385

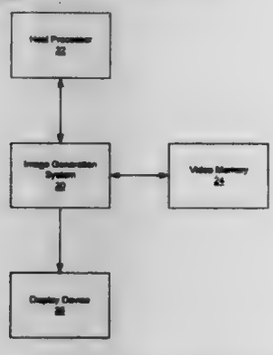
LUMINANCE CONTROLLED COLOR RESOLUTION REDUCTION

Henry H. Rich, Raleigh, N.C., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Jan. 28, 1997, Ser. No. 790,150

Int. Cl.[6] G09G *5/04*

U.S. Cl. 345—155 **48 Claims**



1. A method of reducing the resolution of high-resolution values of color components of a picture element comprising the steps of:

reducing the resolution of the high-resolution values of the color components to provide reduced-resolution values of the high-resolution values of the color components based upon the difference in luminance between the high-resolution values of the color components and the reduced-resolution values of the color components.

5,796,386

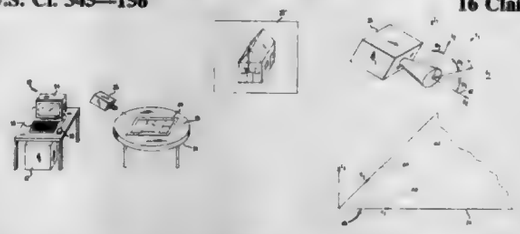
PRECISE CALIBRATION PROCEDURE FOR SENSOR-BASED VIEW POINT CONTROL SYSTEM

James Sargent Lipscomb, Yorktown Heights; Jai Prakash Menon, Peekskill; Jaroslaw Roman Rossignac, Ossining, and Robert Howard Wolfe, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 376,264, Jan. 23, 1995, abandoned. This application Jun. 19, 1996, Ser. No. 691,694

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—156 **16 Claims**



1. In a system for processing and displaying graphics data representing at least one three-dimensional object according to a view point, wherein said view point is controlled according to position and orientation of a view point reference with respect to a source determined by a view point reference coordinate sensing system, said view point reference coordinate sensing system comprising said source and a sensor having a fixed position and orientation with respect to said view point reference, a method of determining said fixed position and orientation of said sensor with respect to said view point reference comprising the steps of:

storing a first position and orientation of said sensor with respect to a coordinate system of said source;

rotating said sensor from said first position and orientation around a first rotational axis such that said sensor has a second position and orientation with respect to said coordinate system of said source, and storing said second position and orientation of said sensor with respect to said coordinate system of said source;

storing a third position and orientation of said sensor with respect to said coordinate system of said source;

rotating said sensor from said third position and orientation around a second rotational axis substantially orthogonal to said first axis such that said sensor has a fourth position and orientation with respect to said coordinate system of said source, and storing said fourth position and orientation of said sensor with respect to said coordinate system of said source; and

determining said fixed position and orientation of said sensor with respect to said view point reference according to the stored first, second, third and fourth positions and orientations of said sensor with respect to said coordinate system of said source,

wherein said first rotational axis passes through a pivot point having a known position relative to the position of said view point reference.

5,796,387

POSITIONING SYSTEM USING INFRARED RADIATION

Kenneth J. Curran, Thousand Oaks, and Jay Smith, III, Los Angeles, both of Calif., assignors to Smith Engineering, Los Angeles, Calif.

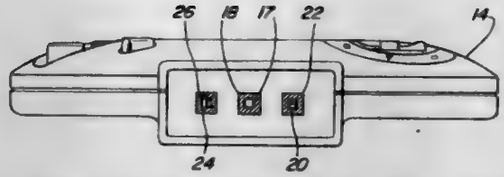
Filed Aug. 16, 1994, Ser. No. 291,196

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—158 **10 Claims**

1. An apparatus for monitoring an orientation of a positioning controller relative to an external infrared light source, comprising:

a first photodiode for receiving a first portion of infrared light from the external infrared light source, wherein the first photodiode has a portion thereof masked to limit detection of light beyond a certain angle of orientation of the positioning controller measured from a perpendicular axis;



a second photodiode for receiving a second portion of infrared light from the external infrared light source, wherein the upper half of the second photodiode is masked so that reception of light into the second photodiode is limited when the second photodiode is pointed below the infrared light source and the reception of light into the second photodiode is promoted when the second photodiode is pointed above the infrared light source;

a third photodiode for receiving a third portion of infrared light from the external infrared source, wherein the third photodiode has a portion thereof masked to limit reception of light on a first side of a second plane bisecting the third photodiode, and to promote reception of light on a second side of the second plane; and

circuitry for determining an orientation of the positioning controller, specifically, the pitch and yaw of the controller, using the first, second and third portions of received infrared light and for thereby determining the orientation of the positioning controller relative to the external infrared light source.

5,796,388

GRAPHIC IMAGE PROCESSING APPARATUS

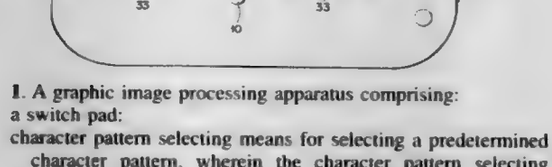
Nae Yasuhara, Tokyo; Miyuki Marusawa, Kanagawa; Hiroshi Yasuhara, Tokyo, and Hiroko Kusano, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 731,449, Jul. 17, 1991, abandoned. This application Mar. 11, 1993, Ser. No. 31,036

Claims priority, application Japan, Aug. 31, 1990, 2-231883; Sep. 12, 1990, 2-242030

Int. Cl.[6] G09G 5/00

U.S. Cl. 345—168 **6 Claims**



1. A graphic image processing apparatus comprising:

a switch pad:

character pattern selecting means for selecting a predetermined character pattern, wherein the character pattern selecting means comprises a plurality of selecting keys mounted to a top surface of the switch pad, where each of the selecting keys of the character pattern selecting means has a mark thereon indicative of a different one of a set of character patterns;

color selecting means for selecting predetermined color data corresponding to said character pattern, wherein said color selecting means comprises a plurality of selecting keys mounted to the top surface of the switch pad, where each of the selecting keys of the color selecting means has a color thereon indicative of a different one of a set of colors;

display means for displaying said character pattern;

operating means for moving a cursor displayed on said display means;

first memory means for storing data corresponding to said character pattern and color data and reading out said data corresponding to said character pattern and color data in response to actuation of the selecting keys;

second memory means for storing display data indicative of data displayed on said display means;

control means for changing said cursor to said character pattern in response to actuation of at least one of the selecting keys of said character pattern selecting means; and

executing means for storing said character pattern in said second memory means, wherein the executing means includes an executing key mounted to the top surface of the switch pad, and wherein in response to actuation of the executing key, the executing means stores said character pattern in said second memory means so as to display said character pattern in a desired position on the display means, wherein the desired position is determined by operation of said operating means.

5,796,389

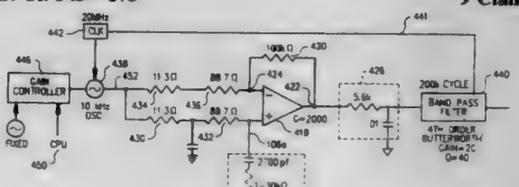
REDUCED NOISE TOUCH SCREEN APPARATUS AND METHOD

William K. Bertram, and Logan L. Pease, both of Reno, Nev., assignors to International Game Technology, Reno, Nev.

Division of Ser. No. 294,227, Aug. 22, 1994. This application May 2, 1995, Ser. No. 432,785

Int. Cl.[6] G09G 5/00

U.S. Cl. 345—173 **9 Claims**



1. A touch screen apparatus for sensing contact of a human finger or passive probe at a preselected location on a touch screen surface comprising:

a cathode ray tube (CRT) screen having an exterior surface and an interior surface, said exterior surface having an exterior edge at the periphery of the screen;

a plurality of bar electrodes positioned on said exterior surface substantially near the exterior edge of the screen in the absence of electrodes being placed on said interior surface;

a driver having a plurality of channels, each channel connected to one of the bar electrodes, for providing voltages to the bar electrodes, and for providing signals indicating contact of said human finger or passive probe on the surface, the signal resulting from a current flow through said human finger or passive probe contacting the surface, the signals being a function of a difference in voltage level at a first time, t_1, when there is no contact and at a second time t_2, coincident with the time of contact such that the potential at one of said plurality of electrodes changes from a first value to a second value when said touch screen is touched; and

position determining means for receiving the signals from the channels and evaluating the signals to identify the position of the touch relative to the plurality of bar electrodes

wherein the driver further comprises an oscillator connected to each of the channels for setting up timing intervals for digitizing analog signals generated by each of the channels;

amplifier means in each of the channels having a first input, a second input, and an output, the first input being connected to the oscillator, the second input being connected to the oscillator and to a corresponding bar electrode, such that when no touch is present, the amplifier means is at equilibrium with a substantially constant amplifier output signal, and when a touch occurs on the surface, a current flows from the screen

through the touching apparatus, causing a voltage drop across the inputs on the amplifier means and a resulting amplifier output signal;

a filter in each of the channels for receiving the resulting amplifier output signal from the amplifier means and substantially passing signals greater than a predetermined frequency.

5,796,390

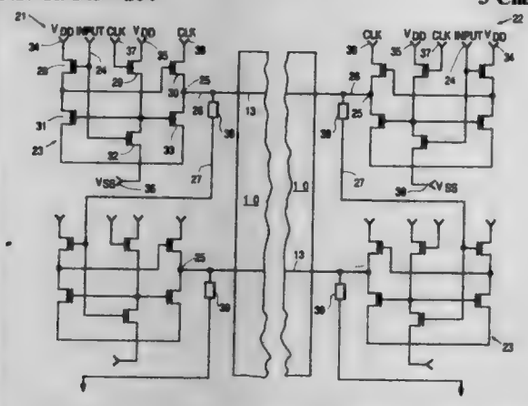
REDUNDANT SHIFT REGISTERS FOR SCANNING CIRCUITS IN LIQUID CRYSTAL DISPLAY DEVICES

Antoine Pierre DuPont, VS-Villingen, Germany, and Dora Plus, South Bound Brook, N.J., assignors to Thomson, S.A., Courbevoie, France

Continuation of Ser. No. 660,274, Feb. 28, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,175

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—204 **5 Claims**



1. A display device having an array of display elements arranged in rows and columns, means for applying data signals to said columns of elements, and a plurality of select lines for voltage biasing said rows of elements, said display device comprising:

redundant select line scanners for sequentially selecting said select lines, each of said scanners including a plurality of ordinally numbered stages having an input terminal and an output terminal, the input terminal of each stage being connected to the output terminal of the immediately preceding stage;

separate line segments directly connecting the output terminals of correspondingly numbered stages of said scanners to opposite ends of correspondingly numbered select lines and connected to the input terminals of the immediately succeeding stages whereby a failed stage of one scanner can be replaced by the correspondingly numbered stage of the other scanner by opening the separate line segment associated with the failed stage.

5,796,391

SCALEABLE REFRESH DISPLAY CONTROLLER

Scott Chiu, and Scott R. Novis, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 24, 1996, Ser. No. 740,050

Int. Cl.[6] G09G *5/00*

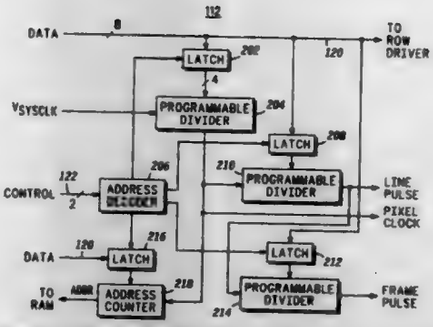
U.S. Cl. 345—204 **14 Claims**

1. A wireless communications device for viewing an image on a display, comprising:

a radio frequency (RF) circuit having an input coupled for receiving a RF input signal and an output;

a demodulator having an input coupled to the output of the RF circuit and having an output for providing a baseband data signal;

a decoder circuit having an input for receiving the baseband data signal for providing image data, where the decoder circuit



counts a number of pixels within a line of the image data to produce a pixel count and divides a number of pixels within a line of the display by the pixel count to compute a pixel rate divisor;

a circuit for clocking the display, including

(1) a first divider having a clock input for receiving a clock signal, a data input for receiving the pixel rate divisor, and an output for providing a pixel clock for transferring the image data to the display; and

(2) a second divider having a clock input for receiving the pixel clock, a data input for receiving the pixel count, and an output for providing a line clock having a substantially constant period as a period of the pixel clock varies.

5,796,392

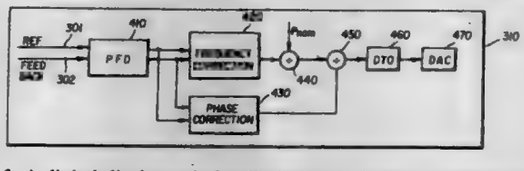
METHOD AND APPARATUS FOR CLOCK RECOVERY IN A DIGITAL DISPLAY UNIT

Alexander J. Eglit, Half Moon Bay, Calif., assignor to Paradise Electronics, Inc., San Jose, Calif.

Filed Feb. 24, 1997, Ser. No. 803,824

Int. Cl.[6] G09G *5/12*

U.S. Cl. 345—213 **36 Claims**



1. A digital display unit for displaying an image represented by an analog image data and a corresponding time reference signal, said analog image data being generated using a clock at a high frequency much greater than 15 Mega Hertz, said digital display unit comprising:

a display screen having a plurality of pixels for displaying said image;

an analog-to-digital converter (ADC) for receiving said analog image data, said ADC sampling said analog image data using a sampling clock to generate a plurality of pixel data elements corresponding to said plurality of pixels, wherein said sampling clock has a sampling frequency equal to said high frequency;

a clock generator circuit comprising a phase-locked loop (PLL) circuit for generating said sampling clock, wherein said sampling clock is synchronized with said time reference signal with a jitter of less than a few nano-seconds, said PLL comprising:

a discrete time oscillator (DTO) for receiving a digital input and generating a signal representative of said sampling clock with a frequency determined by said digital input; and

a digital circuit for receiving said time reference signal and a feedback signal, wherein said feedback signal is generated

by dividing said sampling clock, said digital circuit generating said digital input according to the difference of the phases of said time reference signal and said feedback signal, said digital input causing said DTO to generate said signal synchronized with said time reference signal, said digital circuit comprising:

a frequency correction logic for adjusting the phase of said sampling clock according to the long-term drifts in the frequency of said time reference signal; and

a phase correction logic for adjusting the phase of said sampling clock according to the phase difference in said feedback signal and said time reference signal,

wherein said frequency correction logic and said phase correction logic are implemented as two separate control loops; and

a panel interface for generating display signals for said display screen based on said plurality of pixel data elements.

5,796,393

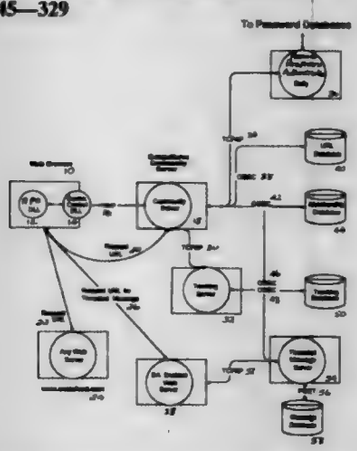
SYSTEM FOR INTERGRATING AN ON-LINE SERVICE COMMUNITY WITH A FOREIGN SERVICE

Bruce A. MacNaughton, Columbus, and Leigh R. Turner, Upper Arlington, both of Ohio, assignors to CompuServe Incorporated, Columbus, Ohio

Filed Nov. 8, 1996, Ser. No. 745,294

Int. Cl.[6] G06F *3/00;15/163*

U.S. Cl. 345—329 **51 Claims**



1. A system for integrating on-line service content and interaction methods with foreign service content and interaction methods comprising:

a browser for establishing a connection to and interacting with a foreign service via a plurality of foreign servers;

an identifier for locating content from one of said foreign servers, said identifier processed by said browser;

a plurality of on-line service subscribers who are members of a community associated with said identifier;

on-line service content associated with said identifier; and

a client in communication with said browser for transmitting said identifier to an on-line service server, said on-line service server adapted to retrieve on-line service content associated with said identifier and facilitate interactions with said on-line service subscribers belonging to said community associated with said identifier.

5,796,394

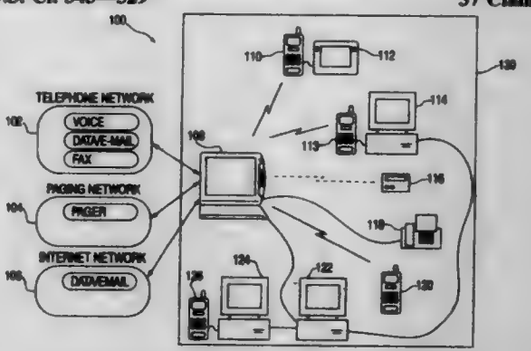
USER INTERFACE AND RULE PROCESSING FOR A PERSONAL COMMUNICATIONS ROUTING SYSTEM

James E. Wicks, Tarrytown, N.Y.; Kazuto Mugura, Cupertino, and Toshiya Fujii, Menlo Park, both of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Corp. of America, New York, N.Y.

Continuation of Ser. No. 538,330, Oct. 3, 1995, abandoned. This application Sep. 23, 1997, Ser. No. 935,925

Int. Cl.[6] H04N *3/00*

U.S. Cl. 345—329 **37 Claims**



1. A method for accessing information in an electronic communications system, the system including a processor coupled to a display screen, memory, and first and second electronic communication networks, the system further comprising a mobile telephone handset including a telephone keypad wherein the mobile telephone handset is remote from the processor, wherein first and second users of the system each have a unique user identifier, the method comprising the following steps:

having areas on the display screen visually analogous to, and associated with, areas on the telephone keypad;

using the processor to display the first user's identifier on the display screen in a first area of the display screen;

using the processor to display the second user's identifier on the display screen in a second area of the display screen;

using the processor to receive first information for the first user from the first network, store the first information into the memory, and display a first icon within the first area in response to the receipt of the first information;

using the processor to receive second information for the first user from the second network, store the second information into the memory, and display a second icon within the first area in response to the receipt of the second information;

accepting signals from the user input device to specify a user; and

if the specified user is the first user then performing the step of displaying at least a portion of the information for the first user on the display screen.

5,796,395

SYSTEM FOR PUBLISHING AND SEARCHING INTERESTS OF INDIVIDUALS

Maurice de Hond, Amsterdam, Netherlands, assignor to Wegener Internet Projects BV, Apeldoorn, Netherlands

Filed Mar. 11, 1997, Ser. No. 815,461

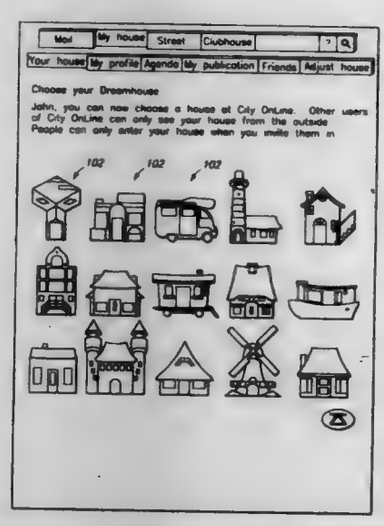
Int. Cl.[6] G06F *3/00;15/163*

U.S. Cl. 345—331 **20 Claims**

1. A system comprising:

a server having a memory, and a database defined in the memory; and

a client in communication with the server, the server in operation communicating to the client a plurality of selectable graphics respectively having the appearance of a house, requesting a selection by a user of the client, receiving a selection from the client, and adding the selection to the database, the server in operation further communicating to the client a request for information identifying the user, receiving



the information from the client adding the information to the database, and associating in the database the user with the house selected by the user.

5,796,396

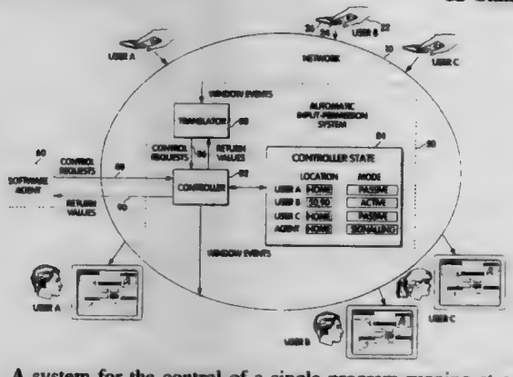
MULTIPLE USER/AGENT WINDOW CONTROL

Charles Rich, Newton, Mass., assignor to Mitsubishi Electric Information Technology Center America, Inc., Cambridge, Mass.

Continuation of Ser. No. 414,282, Mar. 31, 1995, abandoned. This application Jun. 5, 1997, Ser. No. 869,468

Int. Cl.[6] G06F 9/22

U.S. Cl. 345—332 **12 Claims**



1. A system for the control of a single program running at one location, said program shared by users of a network of associated terminals, each terminal having a display screen, a dedicated window at said display screen and window input event generating means, the results of running said shared program being displayed at each terminal through the use of the window thereat, comprising:

means coupled to said network at said one location for both storing and executing said single program and for storing data associated therewith such that said single program and associated data storage are co-located and such that said storing and executing means provides a single running program shared by said users;

means including a software agent and coupled to said network for automatically permitting a window input event from one user to control said shared program such that said program is under the control of said one user; and, means for indicating to all of said users which of said users has been granted permission to control said shared program.

5,796,397

INFORMATION PROCESSING DEVICE WITH INPUT DATA SHARING AMONG SEVERAL APPLICATIONS

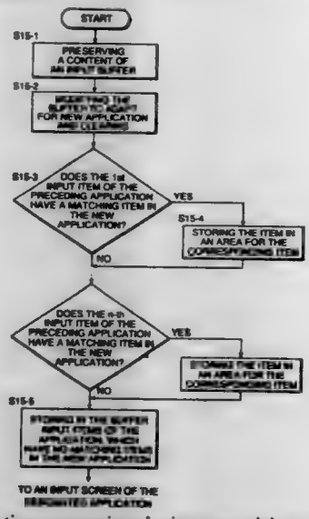
Fumio Kusano, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1995, Ser. No. 551,066

Claims priority, application Japan, Nov. 4, 1994, 6-271235

Int. Cl.[6] G06F 3/00

U.S. Cl. 345—339 **3 Claims**



1. A information processing device comprising a data inputting means, a first store means for storing data inputted from the data inputting means, a second store means for storing a plurality of programs, a reading means for reading the data stored in the first store means, a correcting means for correcting the data read by the reading means, a display means for indicating on its screen the read data being corrected or inputted and a control means for controlling the above-mentioned means, characterized in that the data inputting means is capable of inputting data in any of at least two application modes according to the programs stored in the second store means, each application mode has a plurality of input items, said input items are stored in the first store means in a record structure adapted to said application mode, a mode switch means is provided for changing an initial application mode to another during inputting or correcting data in the initial application mode and the data inputted and corrected in the initial application mode can be used in a new application mode immediately after changing the initial application mode to the new application mode.

5,796,398

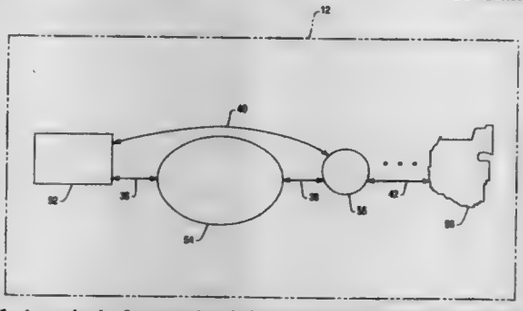
INFORMATION VISUALIZATION ICONS

Harry Zimmer, Thornhill, Canada, assignor to NCR Corporation, Dayton, Ohio

Filed Mar. 8, 1996, Ser. No. 612,991

Int. Cl.[6] G06F 3/00

U.S. Cl. 345—339 **18 Claims**



1. A method of conveying information on a computer having a memory and a monitor attached thereto, comprising the steps of:

(a) retrieving information stored in a database into the memory of the computer;

(b) generating a storyboard in the memory of the computer, wherein the storyboard comprises a plurality of icons representative of the retrieved information from the database;

(c) generating a border around each of the icons in the memory of the computer that is thematically linked to a graphical content of the icon, wherein the border comprises a color, a width, and a style representative of information retrieved from the database;

(d) arranging the icons within the storyboard so that an icon is thematically linked to at least one other icon and at least one border using visual cues, wherein the visual cues are selected from a group comprising a relationship between the generated borders, a second relationship between the generated icons, and a third relationship between the generated borders and the generated icons; and

(e) displaying the storyboard on the monitor attached to the computer.

5,796,399

METHOD AND APPARATUS FOR PRESENTING A DATA RANGE FOR USER SELECTION OF A VALUE WITHIN THE RANGE VIA A GRAPHICAL USER INTERFACE

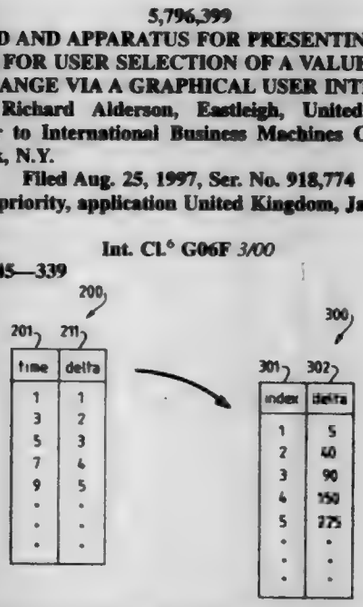
Graham Richard Alderson, Eastleigh, United Kingdom, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1997, Ser. No. 918,774

Claims priority, application United Kingdom, Jan. 21, 1997, 9701176

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—339 **9 Claims**



1. A method of permitting user-selection of a data value within a range of data values via a graphical user interface of a computer, said method having steps of:

receiving a user command to move a presently displayed value forward or backward within said range;

accessing an acceleration table based on the length of time the user has issued the command to obtain an index value;

using the index value to access a second table to obtain a delta value corresponding to said index value;

changing the presently displayed value based on this delta value.

5,796,400

VOLUME-BASED FREE FORM DEFORMATION WEIGHTING

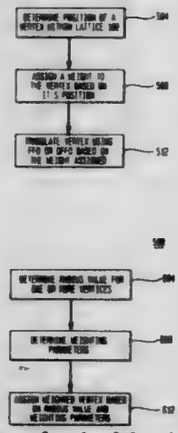
James R. Atkinson, Santa Barbara, and Barbara M. Balents, Goleta, both of Calif., assignors to Silicon Graphics, Incorporated, Mountain View, Calif.

Filed Aug. 7, 1995, Ser. No. 511,660

Int. Cl.[6] G06T *17/40*

U.S. Cl. 345—420 **27 Claims**

1. A method for using a free form deformation technique to deform a region of an object, the region of the object defined by a plurality of vertices, the free form deformation technique employing a control grid, the method comprising the steps of:



determining a position of each of the plurality of vertices with respect to a predetermined reference;

assigning a weight to each of the plurality of vertices based on said position of each of the plurality of vertices;

deforming the plurality of vertices using the free form deformation technique and the control grid resulting in a plurality of deformed vertices, wherein said deforming step includes the step of controlling an amount of influence said free form deformation has on each of the plurality of vertices based on said weight assigned to each of the plurality of vertices; and

displaying the plurality of deformed vertices, thereby displaying the deformed region of the object.

5,796,401

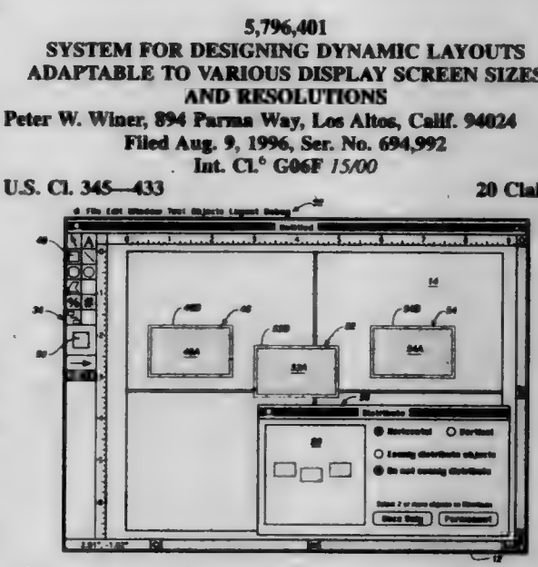
SYSTEM FOR DESIGNING DYNAMIC LAYOUTS ADAPTABLE TO VARIOUS DISPLAY SCREEN SIZES AND RESOLUTIONS

Peter W. Winer, 894 Parma Way, Los Altos, Calif. 94024

Filed Aug. 9, 1996, Ser. No. 694,992

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—433 **20 Claims**



1. A layout system for drawing objects and organizing the drawn objects to facilitate creation of objects, such as boxes that can contain text, graphics, outlines, titles, headlines, animation, video, and other information and data, to provide a custom layout as well as to serve as a layout manager for organization of the objects, comprising:

a processor for executing a program;

a program executable in the processor, the program comprising subroutines for designing a graphical user interface, the subroutines for enabling objects to be created and manipulated both individually and as a group and to be arranged permanently in various relationships, in which components of the objects are interrelated;

a display screen connected to the processor for displaying the graphical user interface comprising the objects; and

user input means connected to the processor and able to be manipulated by a user to interrelate objects in one or more

permanent relationships by selectively distributing, aligning, sizing, or spacing components of the objects.

5,796,402

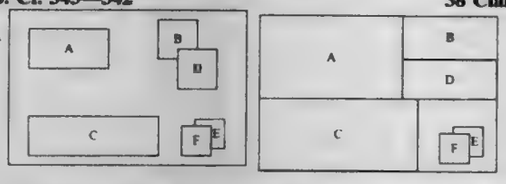
METHOD AND SYSTEM FOR ALIGNING WINDOWS ON A COMPUTER SCREEN

Ian Ellison-Taylor, Mercer Island, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 161,788, Dec. 3, 1993, abandoned. This application Mar. 8, 1996, Ser. No. 620,748

Int. Cl.[6] G06F *3/14*

U.S. Cl. 345—342 **38 Claims**



1. A method, performed by a computer, of automatically aligning windows on a computer screen, the windows being currently displayed in a way that the windows are not aligned with each other, the method comprising the steps of:

determining a position on the computer screen of a first side of a first window;

determining a position on the computer screen of a first side of a second window, the first side of the second window not being aligned with the first side of the first window;

moving at least one of the first sides of the first and second windows to a new position different from the determined position of the first side being moved, the new position being sufficient to align the first side of the first window with the first side of the second window, and the new position being selected based on the positions determined for the first sides of the first and second windows before being moved to produce aligned first and second windows; and

displaying the aligned first and second windows on the computer screen.

5,796,403

METHOD OF DISPLAY CATEGORIZATION IN A MULTI-WINDOW DISPLAY

James S. Adams, 509 E. Utopia Rd., Phoenix, Maricopa County, Ariz. 85024; Donald W. Moore, 2901 E. Friess Dr., Phoenix, Maricopa County, Ariz. 85032; James C. Huntington, 6141 N. 16th Dr., Phoenix, Maricopa County, Ariz. 85015, and Richard C. Holland, 4425 E. Monte Cristo Ave., Phoenix, Maricopa County, Ariz. 85032

Filed Sep. 27, 1996, Ser. No. 720,347

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—343 **4 Claims**



1. A method of controlling a computer window display of a display system having a display surface of one or more physical screens, the method providing an integrated workspace wherein multiple applications are displayed in a specific coordinated and predetermined area of the display surface in accordance to the category of display, comprising the steps of:

a) creating an application display in response to a request inputted to the display system;

b) determining the category of the requested display;

c) finding a match between the category of the requested display and an entry in a configuration file, the configuration file defining display characteristic, including position and size, by category, of predetermined display windows specified for the category of the requested display;

d) when a match is determined, selecting an available display window of predetermined display windows, from the configuration file, and creating data to position the requested display window within the specific area of display surface associated with the category of display.

5,796,404

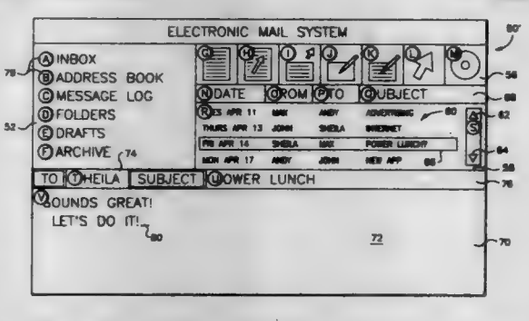
COMPUTER SYSTEM HAVING ALPHANUMERIC KEYBOARD ACCESS TO OBJECTS IN GRAPHICAL USER INTERFACE

Donald R. Gentner, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 676,087

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—352 **30 Claims**



1. A computer graphical user interface configured to display and select graphical objects using a keyboard that has at least one label key and a plurality of character keys, comprising:

a display controller configured to superimpose and display characters corresponding to the character keys on the objects respectively in response to depression of said at least one label key; and

a selection controller configured to select objects in response to depression of character keys corresponding to the characters superimposed on the objects respectively.

5,796,405

Patent Not Issued For This Number

5,796,406

GESTURE-BASED INPUT INFORMATION PROCESSING APPARATUS

Hiroyuki Shigematsu, Yamatokoriyama; Yutaka Nakamura, Soraku-gun; Munenori Sakamoto, Yamatokoriyama; Hiroyuki Nagasawa; Hiroshi Nakao, both of Shiki-gun; Yasuhiro Nakajima, Yao, and Masaaki Kurata, Nabari, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 136,209, Oct. 15, 1993, Pat. No. 5,481,278.
This application Jun. 1, 1995, Ser. No. 457,458
Claims priority, application Japan, Oct. 21, 1992, 4-283273; Oct. 21, 1992, 4-283276
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—358 **10 Claims**

COMMAND	STATUS OF GESTURE COMMANDS
DELETE ONE CHARACTER	○EFFECTIVE ●INEFFECTIVE
SCROLL	●EFFECTIVE ○INEFFECTIVE

1. An information processing apparatus comprising:

a screen;

an input pen for inputting coordinates and drawing a line on said screen;

position detecting means for detecting coordinates of a position on said screen where a pen point of said input pen makes contact with said screen;

reference-stroke storing means for storing a plurality of predetermined reference strokes;

reference-stroke selecting means for comparing a pen stroke made on a text on said screen by said input pen with the reference strokes according to coordinates detected by said position detecting means and selecting a reference stroke which is closest to the pen stroke;

processing means for editing the text according to an edit instruction corresponding to the reference stroke selected by said reference-stroke selecting means and inputting coordinates of a position on said screen pointed by said input pen; and

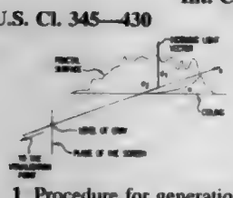
means for storing for each reference stroke either an enabled state or a disable state, said reference-stroke selecting means checking the enabled/disabled state of each reference stroke before comparing and selecting the reference stroke which is closest to the pen stroke.

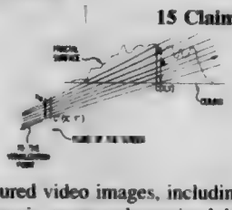
5,796,407

PROCEDURE FOR GENERATION OF TEXTURE VIDEO IMAGES AND SPECIAL VIDEO EFFECTS AND DEVICE FOR IMPLEMENTATION OF THE PROCEDURE

Mohammed Rebiai, Cormielles-en-Parisis, and Hugues Pavie, Beaufort-en-Vallee, both of France, assignors to Thomson Broadcast, Cergy-Pontoise Cedex, France

Filed Feb. 3, 1995, Ser. No. 383,316
Claims priority, application France, Feb. 4, 1994, 94 01269
Int. Cl.[6] G06T *11/00*
U.S. Cl. 345—430 **15 Claims**





1. Procedure for generation of textured video images, including a stage for generation of a microscopic texture determined by user-defined parameters and based on a fractal interpolation function generating a fractional Brownian motion signal, wherein the fractal function is defined by:

$$F(x,y) = \sum_{K=0}^{N} r^{-kH}\, Spln(r^k x, r^k y)$$

where r is the lacunarity or irregularity factor (r>1);

H=(3−D), where D is the required fractal dimension;

N is a parameter fixed so as to obtain a definition to within one pixel or image element;

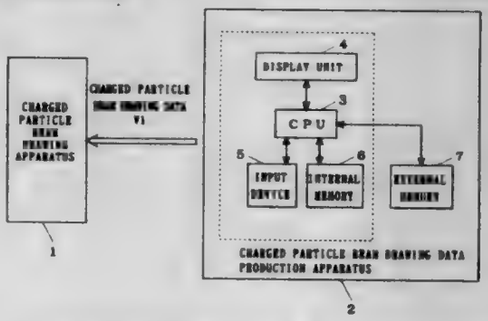
Spln(x,y) is the B-spline interpolation at a real point (x,y) in a grid of points generated with integer coordinates.

5,796,408

CHARGED PARTICLE BEAM DRAWING DATA PRODUCTION APPARATUS AND CHARGED PARTICLE BEAM DRAWING SYSTEM

Kinya Kamiyama; Koichi Morizumi; Makoto Kanno, and Hironobu Taoka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1995, Ser. No. 555,074
Claims priority, application Japan, Jun. 2, 1995, 7-136583
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—441 **12 Claims**



1. A charged particle beam drawing data production apparatus comprising:

a design layout data source providing a design layout data signal indicating the dimensions of an area of a design layout and design layout element data for input to the charged particle beam drawing data production apparatus;

an input unit supplying a signal specifying dimensions defining a graphic data processing area; and

a graphic data processing area determining portion receiving the design layout data signal indicating the dimensions of the area of the design layout from the design layout data source and the signal specifying the dimensions of the graphic data processing area from the input unit and dividing the area of the design layout indicated by said design layout data signal into a plurality of graphic data processing areas.

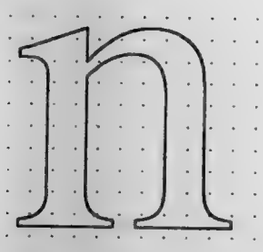
5,796,409

METHOD FOR PRODUCING CONTRAST-CONTROLLED GRAYSCALE CHARACTERS

Roger D. Hersch, Epalinges; Claude Betrisey, Lausanne, both of Switzerland, and Justin Bur, Laurent, Canada, assignors to Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland

Filed Apr. 6, 1993, Ser. No. 43,180
Int. Cl.[6] G06F *3/14*
U.S. Cl. 345—468 **4 Claims**

1. A method for producing from character outline descriptions improved grayscale pixmap characters with strengthened thin character parts, with bars having at least one high-contrast edge, and with a bar intensity profile and a stem intensity profile preserved across the characters of a given character set, such a method comprising the steps of:



a) modifying the heights of characters by placing their horizontal reference lines on pixel boundaries of the target pixmap, thereby producing high-contrast transitions between background colour and character colour at edges of horizontal bars adjacent to horizontal reference lines, and obtaining horizontal bars adjacent to horizontal reference lines with at least one high-contrast edge;

b) verifying if character strokes are thinner than ¾ of a pixel width and if this is the case computing a new stroke width by enlarging their width to the mean value between the measured stroke width and 1.5 pixel width, thereby obtaining characters with strengthened thin character parts;

c) modifying the placement of vertical bars by placing their left boundary on a pixel boundary thereby obtaining bars having at their left boundary a high-contrast transition between background colour and character colour and therefore at least one high-contrast edge;

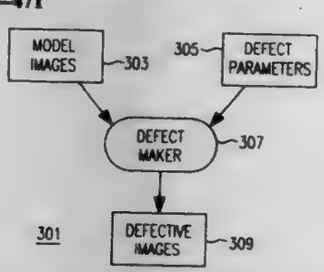
d) modifying the placement of vertical and horizontal curved stems by placing the curved stem on the grid in such a way that the phase of the extremum of the external contour of the curved stem with respect to the grid is the same as the phase of the contour extremum at the optical correction point of character "O" for capital letters respectively of character "o" for lower-case letters, thereby ensuring that the same curved character parts have the same intensity profile.

5,796,410

GENERATION AND USE OF DEFECTIVE IMAGES IN IMAGE ANALYSIS

Henry Spalding Baird, Maplewood, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 12, 1990, Ser. No. 536,910
Int. Cl.[6] G06T *1/00*
U.S. Cl. 345—471 **34 Claims**



1. A method of generating examples of defective pixel representations of symbols comprising the steps of:

receiving one or more defect class parameters selected by a user from a plurality thereof, each defect class parameter specifying a class of pixel representation defects;

receiving a set of one or more model symbols; and

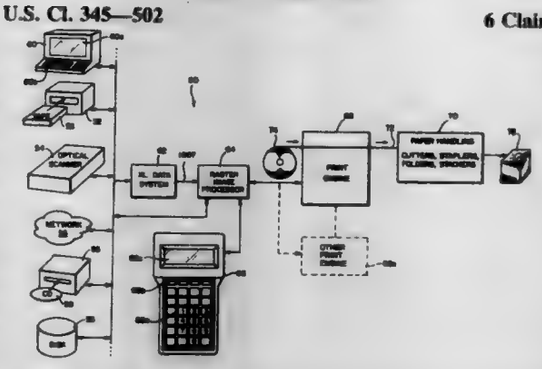
generating a set of defective pixel representations of the symbols from the set of model symbols in response to the defect class parameters, the defective pixel representations including pixel representation defects belonging to the defect classes specified by the defect class parameters.

5,796,411

HIGH RESOLUTION REAL TIME RASTER IMAGE PROCESSING SYSTEM AND METHOD

Theodore F. Cyman, Grand Island; Edward W. Schimminger, Tonawanda; Frank J. Rocco, Lockport; Carl F. Armstrong, Buffalo, and Frank J. Mariani, Grand Island, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jul. 10, 1995, Ser. No. 500,011
Int. Cl.[6] G06F *15/16*
U.S. Cl. 345—502 **6 Claims**



1. A raster image processor operable with any particular one of plural different incompatible print engines, said raster image processor comprising:

a processor portion of said raster image processor that receives a display list and performs image generation functions based thereon;

a processor bus connected to said processor portion;

a font image memory connected to said processor bus, said font image memory storing fonts for imaging; and

a bit image generator connected to said processor bus, said bit image generator forming a digital representation of an image based on said stored fonts and said display list and outputting said formed digital representation; and

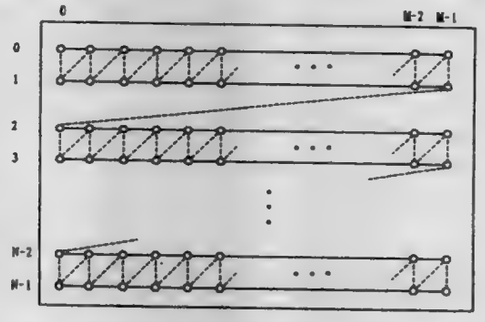
a replaceable plug-in engine control module for providing said formed digital representation to said particular print engine at a timing and in a format required by at least one of said particular print engines.

5,796,412

IMAGE DATA STORING METHOD AND PROCESSING APPARATUS THEREOF

Jae-Min Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Sep. 6, 1996, Ser. No. 709,567
Int. Cl.[6] G06F *12/06*
U.S. Cl. 345—517 **6 Claims**



1. A method of storing an image data of M pixels×N lines in a field memory for use in an image data processing apparatus for processing said image data in the unit of a block of P pixels×P lines

(where, P<M,N), the method comprising the step of storing said image data in said field memory in a Q-row zig-zag scan order in such a manner that Q pixel data of the same column of successive Q lines,(where, $1 \leqq Q \leqq P$) are stored in corresponding successive Q addresses of said field memory.

5,796,413

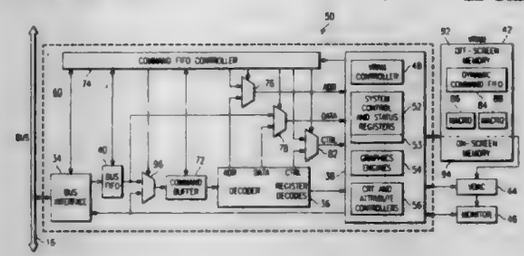
GRAPHICS CONTROLLER UTILIZING VIDEO MEMORY TO PROVIDE MACRO COMMAND CAPABILITY AND ENHANCHED COMMAND BUFFERING

Ronald Anthony Shipp; Stuart Hecht, both of Houston, and Patrick Allen Harkin, Austin, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 6, 1995, Ser. No. 568,167

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—522 **22 Claims**



1. For use in a computer graphics system comprising a bus interface; a video memory; a video memory controller circuitry having a memory controller address input for receiving addresses corresponding to locations within said video memory, a memory controller data input for receiving data to be written to said video memory, and a memory controller data output for outputting data read from said video memory; a decoder circuitry having a decoder input, a decoder address output and a decoder data output, said decoder address output and said decoder data output responsive to graphics commands presented to said decoder input; a first command path over which commands are transferrable from said bus interface to said decoder input; a first address path over which addresses are transferrable from said decoder address output to said memory controller address input; and a data path over which data are transferrable from said decoder data output to said memory controller data input; the improvement comprising circuitry for implementing a graphics command buffer using a portion of said video memory, said circuitry for implementing a graphics command buffer comprising:

FIFO address generation circuitry for generating read and write addresses corresponding to locations within said video memory that will be used for implementing the graphics command buffer, said FIFO address generation circuitry having a FIFO address output;

a second address path over which addresses are transferrable from said FIFO address output to said memory controller address input;

a second command path over which commands are transferrable from said memory controller output to said decoder input;

a node dividing said first command path into first and second portions, said first portion being between said bus interface and said node, and said second portion being between said node and said decoder input; and

a third command path over which commands are transferrable from said node to said memory controller data input.

5,796,414

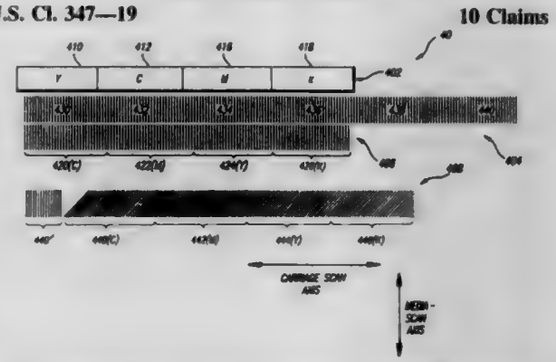
SYSTEMS AND METHOD FOR ESTABLISHING POSITIONAL ACCURACY IN TWO DIMENSIONS BASED ON A SENSOR SCAN IN ONE DIMENSION

Otto K. Sievert, Encinitas, and Gregory D. Nelson, Escondido, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 25, 1996, Ser. No. 625,422

Int. Cl.[6] B41J *29/393*

U.S. Cl. 347—19 **10 Claims**



1. A system, for use with a plurality of automatic marking implements that scan transversely, and for determining positional deviations, as between the implements, from a nominal position; said system comprising:

a printing medium; and

a positional-deviation calibration pattern comprising an array of substantially diagonal indicia formed on the printing medium by the automatic marking implements;

said array comprising a plurality of subarrays each formed by one of such plurality of implements respectively, each subarray being an assemblage of substantially diagonal indicia; and

each subarray comprising a multiplicity of substantially parallel lines;

wherein the indicia are all formed in a single scan.

5,796,415

MANUFACTURING METHOD FOR INK JET RECORDING HEAD AND INK JET RECORDING HEAD

Makoto Inoue, deceased, late of Kawasaki; Tsuneo Inoue, executor, Yokosuka; Kazuaki Masuda, Kawasaki; Shigeo Toganoh, Tokyo; Manabu Sueoka, Kawasaki; Keiichi Murai, Kashiwa; Takashi Watanabe; Akira Goto, both of Yokohama, and Motoaki Sato, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 151,778, Nov. 15, 1993, Pat. No. 5,594,479, which is a continuation of Ser. No. 733,155, Jul. 19, 1991, abandoned. This application Aug. 8, 1996, Ser. No. 694,249

Claims priority, application Japan, Jul. 21, 1990, 2-193686; Mar. 8, 1991, 3-43658; Mar. 8, 1991, 3-43671; Mar. 8, 1991, 3-43672

Int. Cl.[6] B41J *2/16*

U.S. Cl. 347—45 **2 Claims**

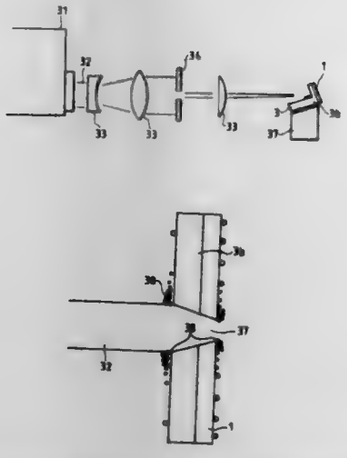
1. A method for producing an ink jet recording head, comprising the steps of:

providing a substrate having an energy generating element for ejecting an ink;

providing a cover plate having a groove for forming a flow path when the cover plate is bonded with the substrate, the cover plate having an orifice plate,

applying to a surface of the orifice plate a water repellent to form a water repellent layer;

irradiating a laser beam from a groove side to the orifice plate provided with the water repellent layer to form in the orifice plate an ejection outlet for ejecting the ink, communicating with the groove;



heating the orifice plate having the water repellent layer and a decomposition product produced by the laser irradiation and fixed at a periphery of the ejection outlet; and

bonding the substrate with the cover plate to form the flow path after said heating step.

5,796,416

NOZZLE PLACEMENT IN MONOLITHIC DROP-ON-DEMAND PRINT HEADS

Kia Silverbrook, Leichhardt NSW, Australia, assignor to Eastman Kodak Company, Rochester, N.Y.

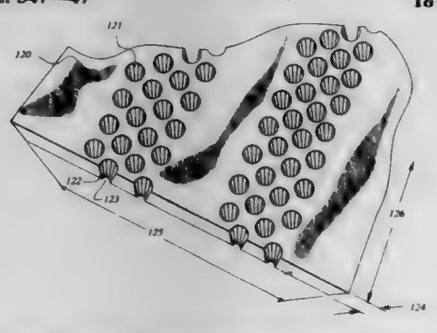
PCT No. PCT/US96/04857, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO96/32281, PCT Pub. Date Oct. 17, 1996

PCT Filed Apr. 9, 1996, Ser. No. 753,718

Claims priority, application Australia, Apr. 12, 1995, PN2307

Int. Cl.[6] B41J *2/14*

U.S. Cl. 347—47 **18 Claims**



1. A drop on demand printing head comprising:

substrate having front and back surfaces;

a plurality of nozzles formed as holes communicating between the back surface of said substrate and the front surface of said substrate, said nozzles being formed in one or more row regions which are generally perpendicular to a print direction, each of said regions being divided into a plurality of multi-nozzle groups at least some of said groups within the regions being displaced in the print direction from other of said groups in the same row region;

a body of ink associated with said nozzles;

a pressurizing device adapted to subject ink in said body of ink to a pressure of at least 2% above ambient pressure, at least during drop selection and separation to form a meniscus with an air/ink interface;

drop selection apparatus operable upon the air/ink interface to select predetermined nozzles and to generate a difference in meniscus position between ink in selected and non-selected nozzles; and

drop separation apparatus adapted to cause ink from selected nozzles to separate as drops from the body of ink, while allowing ink to be retained in non-selected nozzles.

5,796,417

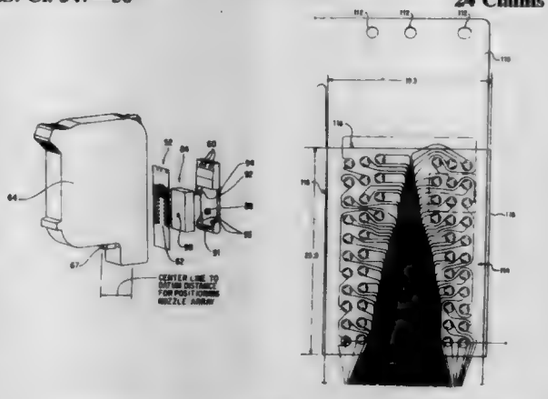
COMPLIANT INTERCONNECT ASSEMBLY FOR MOUNTING REMOVABLE PRINT CARTRIDGES IN A CARRIAGE

Gary M. Nobel, San Diego, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 145,367, Oct. 29, 1993, Pat. No. 5,684,518. This application Mar. 6, 1995, Ser. No. 398,721

Int. Cl.[6] B41J *2/01*

U.S. Cl. 347—50 **24 Claims**



1. A printer/plotter with a carriage for removably mounting at least one inkjet print cartridge, comprising:

a frame for holding media in a print zone;

a carriage supported on said frame to be positioned adjacent to said print zone;

a first compartment on said carriage for receiving a first print cartridge, said compartment having a compartment width dimension at least as large as a corresponding cartridge width dimension, said compartment having a flexible circuit with a plurality of interconnect pads on one surface of said flexible circuit for contacting matching printhead pads to transmit signals to said first print cartridge when said first print cartridge is mounted in said first compartment, said flexible circuit having a lateral extent which extends entirely across said compartment width dimension;

a force applying assembly in said first compartment including a compliant foam member underlying said lateral extent of said flexible circuit and having a relatively flat upper surface to push against an underside of said flexible circuit to assure satisfactory operative engagement between said printhead pads and said interconnect pads when said first print cartridge is mounted in said first compartment; and

wherein said compartment further including a cavity into which said compliant foam member is seated, said cavity defined by a plurality of upstanding walls for holding the compliant foam member in proper position to assure operative engagement of said interconnect pads with said printhead pads, said foam member having side edges engaged by said upstanding walls.

5,796,418
PAGE IMAGE AND FAULT TOLERANCE CONTROL APPARATUS FOR PRINTING SYSTEMS

Kia Silverbrook, Leichhardt NSW, Australia, assignor to Eastman Kodak Company, Rochester, N.Y.

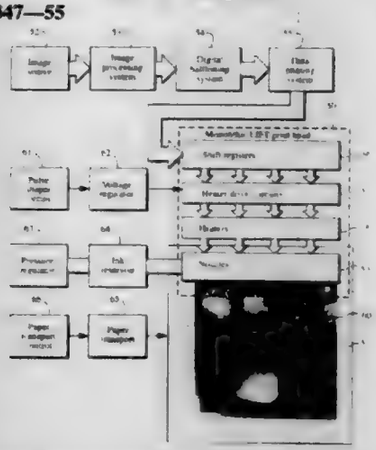
PCT No. PCT/US96/04962, § 371 Date Dec. 9, 1996, § 102(e) Date Dec. 9, 1996, PCT Pub. No. WO96/32272, PCT Pub. Date Oct. 17, 1996

PCT Filed Apr. 9, 1996, Ser. No. 765,037

Claims priority, application Australia, Apr. 12, 1995, PN 2319

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—55 **15 Claims**



1. A printing system comprising:

print heads containing main actuators and redundant actuators, wherein said print heads further comprise:

(a) a plurality of drop-emitter nozzles,

(b) a body of ink associated with said nozzles,

(c) a pressurizing device adapted to subject ink in said body of ink to a pressure of at least 2% above ambient pressure, at least during drop selection and separation to form a meniscus with an air/ink interface,

(d) drop selection apparatus operable upon the air/ink interface to select predetermined nozzles and to generate a difference in meniscus position between ink in selected and non-selected nozzles, and

(e) drop separation apparatus adapted to cause ink from selected nozzles to separate as drops from the body of ink, while allowing ink to be retained in non-selected nozzles;

a memory which records the logical location of faulty portions of said print heads;

an image data source adapted (1) to provide image data to said main actuators at a time which causes an output related to the provided image data to be printed at a corresponding position on a print medium and (2) to provide image data to said redundant actuators at a time which causes an output related to the image data to be printed at a corresponding position on a print medium; and

a data selector adapted to select between the provision of image data to the main actuators or the redundant actuators, said data selector being controlled by the contents of said memory.

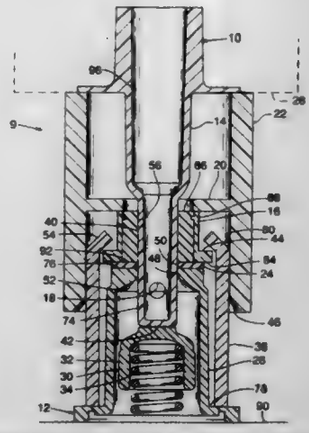
5,796,419
SELF-SEALING FLUID INTERCONNECT

James E. Clark, Albany, and David O. Merrill, Corvallis, both of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 4, 1995, Ser. No. 566,986

Int. Cl.[6] B41J *2/175;* **F16K** *51/00*

U.S. Cl. 347—85 **20 Claims**



1. A fluid interconnect for connecting an ink supply to an ink-jet printer, the fluid interconnect comprising:

an outlet assembly including a sealing member movable between a first position for occluding fluid flow through the outlet assembly and a second position for allowing fluid flow through the outlet assembly, a primary catch fixed to the sealing member, an actuator associated with the sealing member, and a guide member adjacent to at least a portion of the sealing member; and

an inlet assembly for coupling with the outlet assembly, the inlet assembly including a fitment having an inlet aperture a seat movable within the fitment from a closed position in which the seat occludes fluid flow through the inlet aperture to an open position in which the seat does not occlude fluid flow through the inlet aperture, the seat being biased toward the closed position and movable into the open position by the actuator when the outlet assembly is coupled to the inlet assembly to allow fluid flow from the outlet assembly into the inlet assembly, and a compliant finger movable between an engaged position in which the compliant finger engages the primary catch and a disengaged position, the compliant finger positioned such that the guide member deflects the compliant finger from the disengaged position to the engaged position when the outlet assembly is coupled to the inlet assembly and such that the compliant finger moves the sealing member from the second position to the first position as the inlet assembly is uncoupled from the outlet assembly.

5,796,420
METHOD FOR CORRECTING ACROSS-THE-HEAD UNEVENESS IN A THERMAL PRINTING SYSTEM

Eric Kaerts, Melsele, and Paul Verzele, Beveren, both of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed May 24, 1994, Ser. No. 248,336

Claims priority, application European Pat. Off., May 28, 1993, 93201534

Int. Cl.[6] B41J *2/36;2/37;2/365*

U.S. Cl. 347—188 **18 Claims**

1. Method for correcting across-the-head uneveness in a thermal printing system, comprising the steps of:

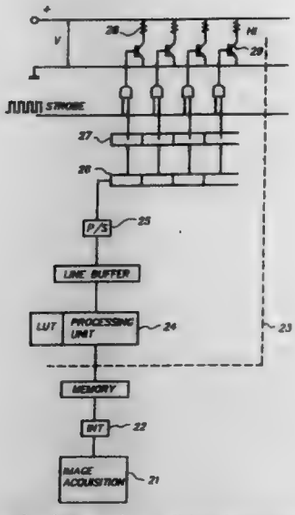
1) supplying a stream of uncorrected input data $I_{i,p}$ to a processing unit of a thermal printer having a line type thermal head with a plurality of heating elements H_i each having a determined value of electrical resistance;

2) obtaining density correction means $M_{i,d}$ for improving across-the-head uneveness in printing density according to the following steps:

a) duty cycled pulsewise activating each heating element with image input data, further indicated as "power compensated input data" $I_{i,p}$ so that a same time-averaged power is generated in each heating element irrespective of individual differences in electrical characteristics of heating elements to obtain a flat field print; comprising the substeps of:

(i) retrieving, from a memory MEM_0 in the printer, a predetermined power value;

(ii) adjusting the power available for each heating element to said predetermined power value by commonly adjust-



ing a strobe duty cycle to all heating elements so that the available printing power of each heating element does not surpass the power that can be dissipated in the heating element with the highest value of resistance of all heating elements;

(iii) equalizing the available printing power of each heating element by equidistant skipping to each heating element an individual number of strobe pulses;

b) measuring in said flat field print printing densities ($D_{i,p}$) of pixels (or "picture elements") corresponding to heating elements;

c) estimating the individual differences in non-electrical characteristics of the heating elements by estimating for each heating element a deviation (δ_i) of the printing density from a desired printing density produced by said power applied to each heating element;

d) calculating for each heating element a density correction means $M_{i,d}$ taking into account said deviation (δ_i) in printing density; and

e) storing each of said density correction means $M_{i,d}$ individually to each heating element into a memory (MEM_C);

3) combining for each individual heating element the respective uncorrected input data $I_{i,u}$ with the respective density correction means $M_{i,d}$; and,

4) providing the thus corrected data $I_{i,c}$ to the thermal head for reproducing the image.

5,796,421

POSITIONING APPARATUS FOR AN OPTICAL ELEMENT IN THE FORM OF A THIN FILM AND A SCANNING APPARATUS

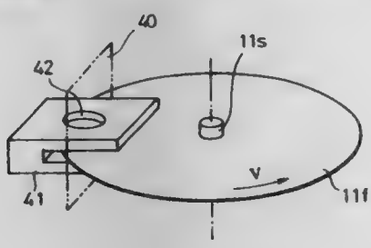
Masao Jyojiki, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 288,798, Aug. 12, 1994, abandoned. This application Jun. 7, 1996, Ser. No. 659,958

Claims priority, application Japan, Aug. 13, 1993, 5-201574; Aug. 23, 1993, 5-207492

Int. Cl.[6] **B41J** *2/47;* **G01D** *15/34;* **G02B** *26/00;27/00*

U.S. Cl. 347—257 **37 Claims**



1. An optical scanner, comprising:

a thin film light deflecting disc, said light deflecting disc having annular track surfaces provided on a front of said light deflecting disc and on a back of said light deflecting disc, said light deflecting disc being rotatable about an axis and concentric to said axis; and

a pair of position elements opposed to said track surfaces to produce a first fluid force and an opposing second fluid force between said pair of positioning elements and said track surfaces without contacting said light deflecting disc when said light deflecting disc is rotated so that said light deflecting disc is position within a predetermined plane at a position where said first fluid force is balanced by said second fluid force and a gravitation force exerted on a corresponding portion of said light deflecting disc.

5,796,422

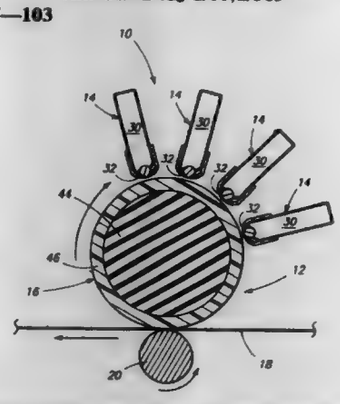
DIRECT TONER PROJECTION PRINTING USING AN INTERMEDIATE TRANSFER MEDIUM

Gary Hanson, Meridian, and C. S. Chan, Boise, both of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 17, 1995, Ser. No. 544,050

Int. Cl.[6] **B41J** *2/01;2/385*

U.S. Cl. 347—103 **9 Claims**



1. A method of electrostatic printing comprising the following steps:

forming a transfer medium with a conductive base material in combination with an overlying surface material, the overlying surface material having electrical conductivity and toner release properties that facilitate toner transfer to and from the transfer medium;

positioning a plurality of toner modulators, the toner modulator having apertures that define toner projection paths from toner supply reservoirs to the transfer medium; spacing the toner modulator apertures from each other to result in an inter-unit transit time, the inter-unit transit time being the time required for a point on the transfer medium to travel from one of the toner modulator apertures to a next one of the toner modulator apertures;

applying an electric potential between the toner supply reservoirs and the transfer medium through the conductive base material to attract toner to the transfer medium through the toner modulator apertures;

moving the transfer medium and the toner modulator apertures relative to each other;

modulating an electric potential at the toner modulator apertures to selectively block and unblock the toner projection paths and to thereby apply toner patterns corresponding to different colors onto the transfer medium, wherein toner applied to the transfer medium has an electrical charge;

transferring the toner pattern from the transfer medium to a print medium;

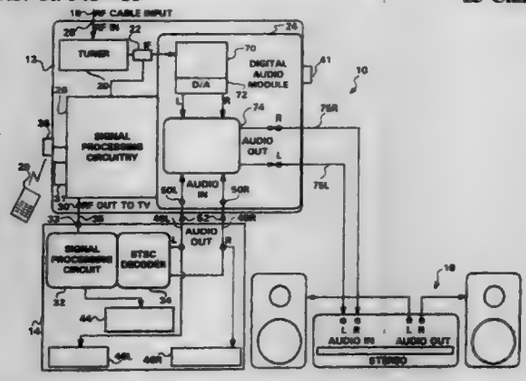
fixing the toner pattern on the print medium;

wherein the overlying surface material has an electrical relaxation time constant that is within an order of magnitude of the inter-unit transit time.

5,796,423
SYSTEM FOR INTEGRATING DIGITAL AUDIO AND ANALOG VIDEO TO PROVIDE SEAMLESS USER TRANSPARENT FEATURES

Clyde Robbins, Maple Glen; John F. Maraska, Abington; John Kamieniecki, Lafayette Hill; Douglas W. Palmer, W. Norriton, and Tony Nasuti, Norristown, all of Pa., assignors to General Instrument Corporation, Horsham, Pa.

Filed Jul. 14, 1995, Ser. No. 502,517
Int. Cl.[6] H04N 7/16
U.S. Cl. 348—10 **25 Claims**



1. An apparatus for a cable or wireless television digital information system providing seamless reception and integration of digital audio broadcasts along with analog video broadcasts comprising:

a tuner for selectively receiving a radio frequency transmission on a channel which may include digital audio, analog video with analog audio, or analog video with digital audio information;

said tuner converting said radio frequency transmission into digital audio and analog information signals received on said selected channel;

an analog audio and video processor coupled to said tuner for outputting said analog information signal to a television monitor receiver via an analog information signal output;

a digital audio module having a digital audio module processor coupled to said tuner for receiving said digital audio signal from said tuner;

said digital audio module processor processing said digital audio signal into digital audio program signals and digital program content information signals;

means for combining said digital program content information signals with the analog information signal output; and

an output for said digital program signals.

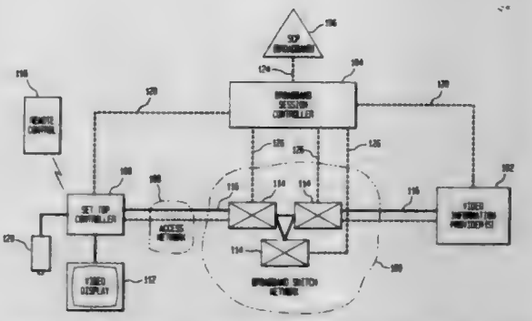
5,796,424
SYSTEM AND METHOD FOR PROVIDING VIDEOCONFERENCING SERVICES

Thomas Chambers Ely, Bridgewater, and Darek Andrew Smyk, Piscataway, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Continuation of Ser. No. 431,989, May 1, 1995, abandoned. This application Nov. 1, 1996, Ser. No. 741,584
Int. Cl.[6] H04M 11/00
U.S. Cl. 348—15 **2 Claims**

2. In a videoconferencing network including a plurality of videoconferencing user stations, a plurality of videoconferencing user station controllers having control applications for controlling signaling and broadband contents information flow to and from the videoconferencing user station, and a broadband switching network including a broadband session controller and a broadband service control point having a database of broadband processing records having information specific to each user station, a method for providing videoconferencing comprising the steps of:

requesting, at a calling party's user station controller, a videoconference with a called party;



requesting processing information from the broadband service control point in response to said videoconference request;

executing a broadband processing record at the broadband service control point in response to said processing information request;

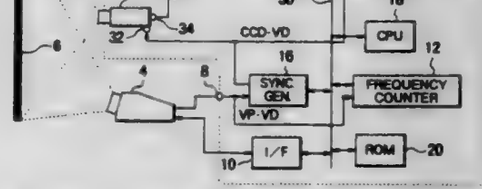
sending a videoconference session request signal to a called party's user station controller in response to the broadband processing record execution request; and

establishing a videoconference connection between said calling party's user station controller and said called party's user station controller in response to an accept signal from said called party's user station controller.

5,796,425
ELIMINATION OF THE EFFECT OF DIFFERENCE IN VERTICAL SCANNING FREQUENCY BETWEEN A DISPLAY AND A CAMERA IMAGING THE DISPLAY

Kouji Minami, and Akira Hitotsumatsu, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1996, Ser. No. 646,401
Claims priority, application Japan, May 16, 1995, 7-117287; Jun. 1, 1995, 7-135078
Int. Cl.[6] H04N 17/00
U.S. Cl. 348—181 **18 Claims**



1. An imaging system for imaging a raster-scanned display having a first vertical scanning frequency, said raster-scanned display being produced by a display system that also produces a first vertical synchronizing signal having said first vertical scanning frequency, comprising:

an imaging device operating at a second vertical scanning frequency, for converting an optical image, in which at least part of said raster-scanned display appears, to a video signal;

a synchronizing signal generator coupled to said imaging device, for receiving said first vertical synchronizing signal, generating a second vertical synchronizing signal with said second vertical scanning frequency, resetting said second vertical synchronizing signal so that said second vertical synchronizing signal is synchronized with said first vertical synchronizing signal at a designated time, and supplying said second vertical synchronizing signal to said imaging device;

a central processing unit for calculating, from said first vertical scanning frequency and said second vertical scanning fre-

quency, data defining a two-valued compensation function, and for notifying said synchronizing signal generator of said designated time;

a compensation signal generator coupled to said central processing unit, for generating a compensation signal responsive to said data defining a two-valued compensation function; and

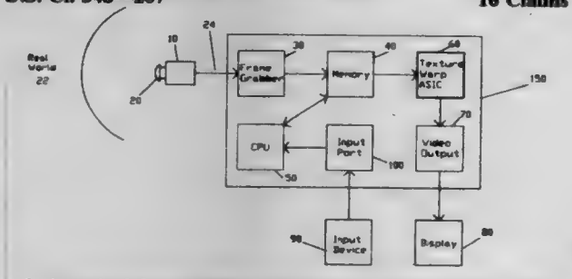
a multiplier coupled to said imaging device and said compensation signal generator, for multiplying said video signal by said compensation signal, thereby generating a compensated video signal free of brightness differences due to a difference between said first vertical scanning frequency and said second vertical scanning frequency.

5,796,426

WIDE-ANGLE IMAGE DEWARPING METHOD AND APPARATUS

Eric Gullichsen, and Susan Wyshynski, both of Sausalito, Calif., assignors to Warp, Ltd.

Filed May 27, 1994, Ser. No. 250,594
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—207 **16 Claims**



1. A method for providing perspective corrected views of live, prerecorded or simulated environments from wide angle video signals, the method comprising:

capturing a wide angle video input;

storing the captured video input;

transforming a plurality of viewing vectors to a plurality of control points on a portion of the video input;

transforming an area between the plurality of control points to a perspective corrected field of view;

displaying the perspective corrected field of view;

sensing inputted information; and

controlling the transformation and display of the perspective corrected field of view through the inputted information.

5,796,427

IMAGE FLUCTUATION CORRECTION

Fuminori Suzuki, Sagamihara, Japan, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 19, 1995, Ser. No. 574,798
Claims priority, application Japan, Dec. 28, 1994, 6-339309
Int. Cl.[6] H04N *5/232*
U.S. Cl. 348—208 **3 Claims**

1. An apparatus for correcting image fluctuation for stopping a fluctuation of an image represented by an image signal output from an image pickup device, the image fluctuation corresponding to the fluctuation of said image pickup device, characterized by comprising:

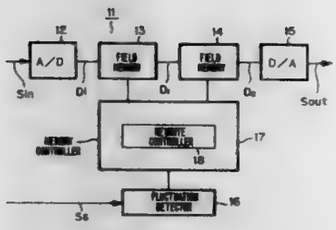
a first memory for storing image information representing an image and generated on the basis of said image signal;

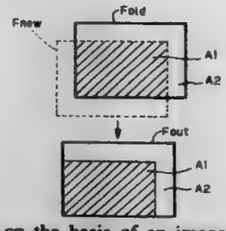
a second memory for storing said image information read from said first memory;

a fluctuation detector for detecting a fluctuation of said image pickup device;

a memory controller for controlling writing and reading of said first and second memories; and

a rewrite control means for identifying a common area contained in an image represented by said image information of said





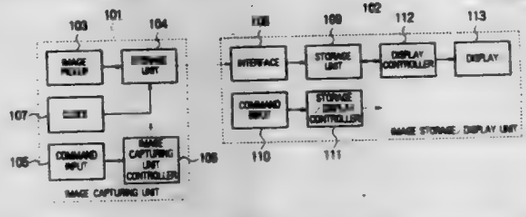
first memory on the basis of an image represented by said image information of said second memory, and rewriting the image information of said second memory corresponding to said common area with the image information of said first memory corresponding to said common area, in case that said fluctuation detector has detected a fluctuation.

5,796,428

ELECTRONIC PHOTOGRAPHY SYSTEM

Kiyoshi Matsumoto, Kokubunji; Yuichi Yagawa, Chigasaki, and Kazuto Senda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 17, 1994, Ser. No. 325,095
Claims priority, application Japan, Oct. 21, 1993, 5-263354
Int. Cl.[6] H04N *5/222*
U.S. Cl. 348—231 **19 Claims**



1. An image display method for displaying an image shot by an electronic image capturing means, said image capturing means comprising an optical imaging system, image pickup means for converting a focused image to electronic image data, data application means for applying attribute data to said image data, and storage means for storing therein said image data and attribute data in a mutually associated relationship, said method comprising the steps of:

classifying said image data on the basis of said attribute data for album grouping;

grouping said classified image data into at least one of pages of said albums;

selecting, in an image display mode, the image data of one album from said album grouping, to arrange and display a plurality of said classified image data included in one of pages included in the selected album on a screen;

collectively transferring said image and attribute data from said storage means of said electronic image capturing means to a second storage means;

grouping a plurality of said image and attribute data collectively transferred into a single file list; and

applying a file number for file distinction to said file list for storage.

5,796,429

APPARATUS FOR RECORDING A VIDEO SIGNAL TOGETHER WITH INFORMATION FROM AN EXTERNAL STORAGE DEVICE

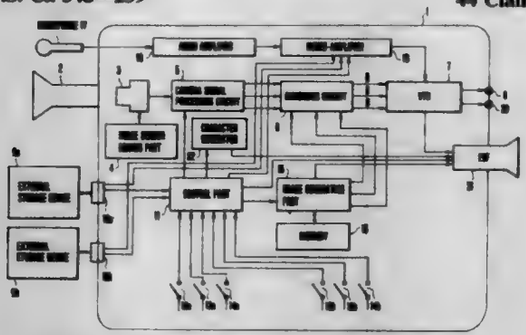
Koichiro Suzuki; Teruo Hieda, and Koji Takahashi, all of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 135,951, Oct. 13, 1993, abandoned, which is a continuation of Ser. No. 757,244, Sep. 10, 1991, abandoned. This application May 24, 1995, Ser. No. 449,567

Claims priority, application Japan, Sep. 18, 1990, 2-249630

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—239 **44 Claims**



1. A video signal recording apparatus, comprising:

(a) connecting means to which an external storage device is attachable and detachable, said external storage device storing a plurality of image information and control information representing literal information, said control information relating to the plurality of image information;

(b) reading means for reading the image information and the control information stored in the external storage device through said connecting means;

(c) generation means for generating a first video signal representing the literal information according to the control information read by said reading means;

(d) selecting means for selecting image information among the plurality of image information read by said reading means by using the first video signal generated by said generation means and forming a second video signal representing the selected image information; and

(e) recording means for recording the second video signal generated by said selecting means together with a video signal on a recording medium.

5,796,430

VIDEO CAMERA WITH A FUNCTION TO CORRECT DEFECTIVE PIXELS OF SOLID STATE IMAGE PICKUP DEVICE AND METHOD OF CORRECTING DEFECTIVE PIXELS OF SOLID STATE IMAGE PICKUP DEVICE

Minoru Katoh; Kenji Itoh, both of Katsuta, and Hiroyasu Ohtsubo, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 470,010, Jun. 6, 1995, Pat. No. 5,625,413, which is a continuation of Ser. No. 249,286, May 25, 1994, abandoned. This application Jan. 27, 1997, Ser. No. 786,733

Claims priority, application Japan, Jun. 2, 1993, 5-132169

Int. Cl.[6] H04N *9/64*

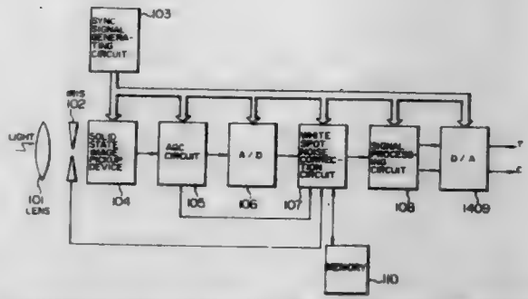
U.S. Cl. 348—246 **10 Claims**

1. An electric camera comprising:

a lens system for forming an image from an incident light;

a solid state image pickup device for converting the image of an object formed by said lens system into an electric signal corresponding to a plurality of pixels;

a light shielding means for shielding the incident light to said solid state image pickup device;



a detecting means for comparing an output signal of each pixel of the solid state image pickup device and a predetermined level, thereby detecting defective pixels of the solid state image pickup device;

a means for controlling said light shielding means so as to shield the incident light to said solid state image pickup device when said detecting means detects defective pixels;

an automatic gain control circuit amplifying an output of said solid state image pickup device with an object imaging gain within an object imaging gain range for keeping a brightness of the image constant during times when the image of said object is formed, and with a defective pixel detecting gain during times when said detecting means detects said defective pixels, wherein said defective pixel detecting gain has a relative high gain level in said object imaging gain range;

a means for raising a gain of said automatic gain control circuit to said defective pixel detecting gain during times when said detecting means detects said defective pixels;

a memory for storing position information on said defective pixels detected by said detecting means; and

a replacing means for replacing a signal of a defective pixel of said defective pixels, which is specified by said position information in said memory by a signal formed based on a signal of a peripheral pixel of said defective pixel,

wherein said detecting means detects said defective pixel in a state in which the incident light is shielded by said light shielding means.

5,796,431

SOLID-STATE IMAGE PICKUP DEVICE AND DRIVING METHOD THEREOF

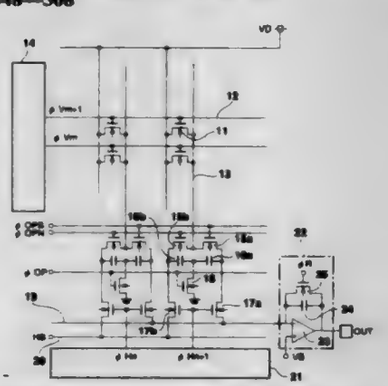
Kazuya Yonemoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 29, 1996, Ser. No. 687,998

Claims priority, application Japan, Jul. 31, 1995, 7-194420

Int. Cl.[6] H04N *3/14*

U.S. Cl. 348—308 **8 Claims**



1. A solid-state image pickup device comprising:

a plurality of pixels arrayed in a matrix, each pixel having a main electrode and a control electrode;

a vertical selection line commonly connecting said control electrodes of said pixels in each row;

a vertical scanning circuit connected to said vertical selection line;

a plurality of vertical signal lines commonly connecting said main electrodes of said pixels in each column;

a horizontal scanning circuit for outputting signals to a horizontal signal line through said vertical signal lines;

first and second capacitors having the same capacitance connected to each of said vertical signal lines;

first and second operating switches respectively connected between said vertical signal line and first ends of said first and second capacitors;

a common operating switch connected between second ends of said first and second capacitors and a reference potential node; and

first and second horizontal switches respectively connected between said first ends of said first and second capacitors and said horizontal signal line or a bias line at a predetermined potential.

5,796,432

METHOD OF AND APPARATUS FOR SOLID STATE IMAGING DEVICE

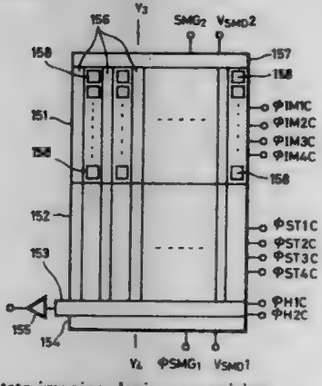
Mamoru Iesaka, and Tetsuro Kumesawa, both of Kanagawa, Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 229,801, Apr. 19, 1994, abandoned. This application Jan. 23, 1996, Ser. No. 591,948

Claims priority, application Japan, Apr. 20, 1993, 5-116375; Jun. 1, 1993, 5-130749

Int. Cl.[6] H04N *5/335*

U.S. Cl. 348—311 **17 Claims**



1. A solid state imaging device comprising:

an imaging section comprising a plurality of sensor sections arrayed in horizontal and vertical directions, and a first vertical transfer section disposed between each vertical array of sensor sections for sequentially transferring, in the vertical direction, signal charges read out from each said sensor sections by movement of potential wells;

a storage section for temporarily storing said signal charges, said storage section comprising second vertical transfer sections disposed to receive signal charges transferred from said first vertical transfer sections by movement of said potential wells;

a horizontal transfer section for reading signal charges transferred thereto from said second vertical transfer sections at a predetermined timing and for transferring said signal charges in the horizontal direction;

a signal read-out section for reading signal charges sequentially transferred from said horizontal transfer section;

a smear drain section for discharging excess electric charges from said first and second vertical transfer sections; and

means for applying clock pulses to said first and second vertical transfer sections, said clock pulses including a coarse discharge period followed by an excess charge discharge transfer period;

wherein a potential level of at least one of said first and second vertical transfer sections is held at a constant level in the transfer direction by the application of a vertical gate clock pulse during said coarse discharge period; and

wherein during said coarse discharge period the potential level of said first vertical transfer sections are fixed at a low level and during said excess charge discharge transfer period the potential level of said second vertical transfer sections are fixed at a high level.

5,796,433

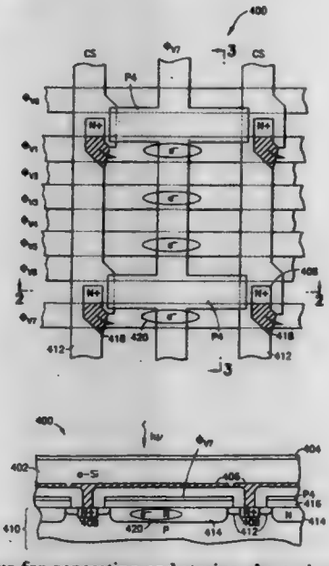
MULTIPLE-FRAME CCD IMAGE SENSOR WITH OVERLYING PHOTOSENSITIVE LAYER

Rudolph H. Dyck, Palo Alto, Calif., assignor to Loral Fairchild Corp., Milpitas, Calif.

Filed Mar. 20, 1996, Ser. No. 619,891

Int. Cl.[6] H04N *3/14*

U.S. Cl. 348—311 **24 Claims**



1. Apparatus for generating and storing charge in response to an incidence of electromagnetic energy, comprising:

a photosensitive region for generating electrical charge in response to the incidence of electromagnetic energy;

a transparent electrode layer overlying the photosensitive region;

a charge-carrying region, disposed beneath and along said photosensitive region and arranged in columns and rows, with said columns separated by channel stop columns, said charge-carrying region comprising:

a plurality of first storage regions, disposed in spaced rows in said columns, for storing respective charge packets corresponding to the charge generated in adjacent portions of said photosensitive region;

a plurality of second storage regions, disposed in rows between said spaced rows in said columns, for receiving charge packets stored in said first storage regions;

a plurality of source regions, respectively disposed in said channel stop columns in rows next to the rows containing said first storage regions;

a plurality of barrier regions, respectively disposed between said plurality of source regions and said plurality of first storage regions in the next rows, for forming diodes including a source region and a first storage region;

a plurality of pixel electrodes, disposed between said photosensitive region and said charge-carrying region and each contacting said photosensitive region and connected to one of said plurality of source regions, for respectively coupling each first storage region to the corresponding adjacent portion of said photosensitive region to produce a charge packet in each first storage region corresponding to the charge in said corresponding adjacent portion of said photosensitive region;

a plurality of sets of gate electrodes, disposed between said plurality of pixel electrodes and said charge-carrying region, with each electrode set having one electrode with a portion in a row containing a source region and a portion in a column adjacent said second storage regions, and having the other electrodes respectively in rows adjacent the rows of second storage regions, for coupling a phased voltage to said first and second storage regions; and

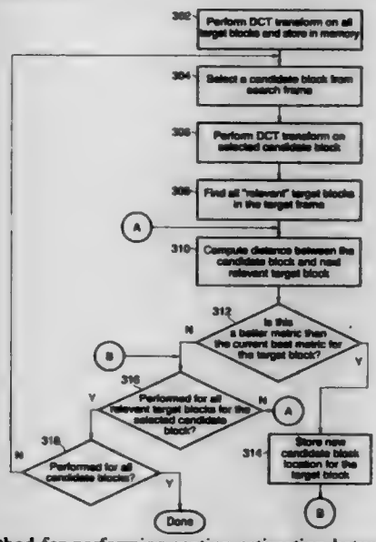
a source of a plurality of independently controllable clock voltage phases coupled to said gate electrodes for controlling the potential profiles of said first and second storage regions to move a number of charge packets successively formed in said first storage regions along the columns of rows of said second storage regions for storage therein until read-out of said number of charge packets.

5,796,434

SYSTEM AND METHOD FOR PERFORMING MOTION ESTIMATION IN THE DCT DOMAIN WITH IMPROVED EFFICIENCY

Mody Lempel, Sunnyvale, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 7, 1996, Ser. No. 660,423
Int. Cl.[6] H04N *7/30;7/32*
U.S. Cl. 348—403 **29 Claims**



1. A method for performing motion estimation between a target frame and a search frame, wherein the target frame includes a plurality of target blocks, the method comprising:

performing a frequency domain transform on the plurality of target blocks in the target frame;

selecting a candidate block from the search frame;

performing a frequency domain transform on the selected candidate block from the search frame;

determining one or more target blocks in the target frame in response to said selected candidate block;

computing a distance between the transformed values of the selected candidate block and the transformed values of each of said one or more determined target blocks, wherein said computing produces a distance for each of said one or more determined target blocks;

determining if said computed distance is a better metric than a currently stored computed distance for each of said one or more determined target blocks;

storing a location of said selected candidate block for a respective target block if said computed distance for said respective target block is a better metric than the current best computed distance for said respective target block;

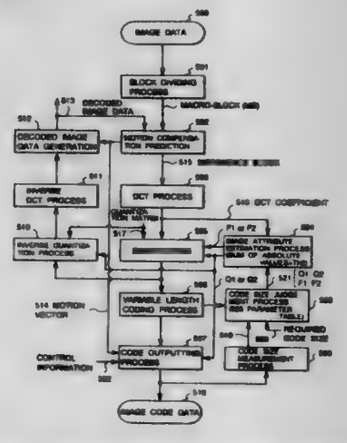
wherein said selecting a candidate block from the search frame, performing a frequency domain transform on the selected candidate block from the search frame, determining one or more target blocks in the target frame, computing a distance, determining if said computed distance is a better metric, and storing a location of said selected candidate block, are performed for a plurality of candidate blocks in said search frame, wherein said performing for said plurality of candidate blocks in said search frame produces motion vectors for a plurality of said target blocks in said target frame.

5,796,435

IMAGE CODING SYSTEM WITH ADAPTIVE SPATIAL FREQUENCY AND QUANTIZATION STEP AND METHOD THEREOF

Itaru Nonomura, Nerima-ku; Shinichi Hashimoto, Hadano; Yuuji Kimura, Yokohama; Takahiro Yamada, Yokohama, and Kazuaki Tanaka, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 26, 1996, Ser. No. 607,156
Claims priority, application Japan, Mar. 1, 1995, 7-041592
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—405 **21 Claims**



1. An image coding system in a system including an image inputting means, an image coding means for calculating orthogonal transform coefficients of the inputted image, and an image code transmitting means, comprising:

previously defined parameter information, arranged in a table, having a plurality of combinations of quantizing step values and upper limit values of image space frequencies in correspondence with an image code size;

means for deciding one combination from said parameter information on the basis of a size of an image code of the inputted image coded by said image coding means; and

quantizing means for quantizing the orthogonal transform coefficients for space frequencies below said upper limit values of image space frequencies of the decided combination, on the basis of the quantizing step value of said decided combination, while executing no quantization for space frequencies higher than said upper limit values of image space frequencies of said decided combination.

5,796,436

VIDEO DATA STORING DEVICE AND METHOD FOR CODING VIDEO DATA BASED UPON DETERMINING WHETHER OR NOT VIDEO DATA CONFORMS TO A PREDETERMINED STANDARD

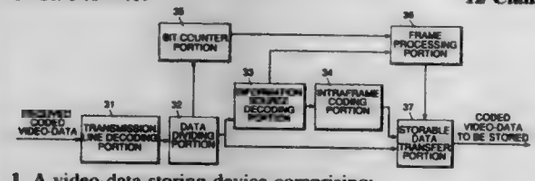
Masahiro Shioi, Chiba; Takeshi Makiyama, Kashiwa; Keiichi Hibi, Matsudo; Jiro Nakabayashi, Urawa; Tsuneaki Iwano, Tokyo; Osamu Nakamura, Han-no; Youji Kanada, Tokyo; Tsuneko Kura, Sagamihara, and Takashi Oshima, Tokyo, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, and Nippon Telegraph & Telephone Corporation, Tokyo, both of Japan

Filed Sep. 13, 1996, Ser. No. 713,639

Claims priority, application Japan, Sep. 14, 1995, 7-236759

Int. Cl.[6] H04N *5/917;7/26*

U.S. Cl. 348—409 **12 Claims**



1. A video-data storing device comprising:

data dividing means for receiving interframe coded video-data and providing a frame of interframe coded video-data;

information source decoding means for restoring video-information by decoding the frame of interframe coded video-data;

intraframe coding means for encoding the restored frame of video-information in an intraframe coding mode;

video-data transferring means for transferring one of the frame of interframe coded video-data and the encoded restored frame of video-information for data storage;

control-signal deciding means for determining whether or not the frame of interframe coded video-data conforms to a predetermined standard and for issuing a control signal indicative of such a determination; and

frame-processing control means for receiving the control signal from the control-signal deciding means, wherein the video-data transferring means is controlled, in response to said frame-processing control means receiving the control signal indicating that the frame of interframe coded video-data fails to conform to the predetermined standard, to store the encoded restored frame of video information outputted from the intraframe coding means in place of the frame of interframe coded video-data.

5,796,437

PROGRESSIVE SCANNING CONVERSION APPARATUS

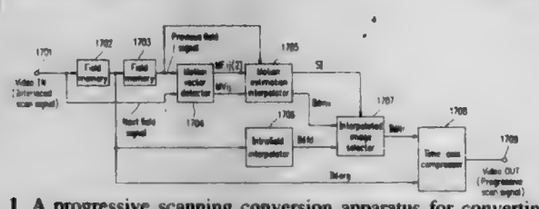
Tsutomu Muraji, Ikoma; Keiichi Kuzumoto, Neyagawa; Satoshi Hirotsune, Settsu, and Mitsuru Kotaka, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Division of Ser. No. 568,477, Dec. 7, 1995. This application Dec. 6, 1996, Ser. No. 761,431

Claims priority, application Japan, Dec. 9, 1994, 6-305785; Dec. 9, 1994, 6-305786; Dec. 28, 1994, 6-326696; Jul. 14, 1995, 7-178482

Int. Cl.[6] H04N *7/01;11/20*

U.S. Cl. 348—452 **17 Claims**



1. A progressive scanning conversion apparatus for converting an interlaced scan video signal into a progressive scan video signal by performing interpolation based on original pixels which are obtained in a matrix by sampling the interlaced scan video signal in a current field, original pixels which are obtained in a matrix by sampling the interlaced scan video signal in a previous field which is immediately prior to the current field, and original pixels which are obtained in a matrix by sampling the interlaced scan video signal in a next field which is immediately following the current field, the apparatus comprising:

motion vector detection means for detecting a motion vector between two of the current field, the previous field, and the next field;

motion estimation means for estimating a pixel value in the current field, from one of a pixel in the previous field and a pixel in the next field using the motion vector detected by the vector detection means; and

interpolated pixel generation means for generating an interpolated pixel used for conversion by multiplying the pixel value obtained by the motion estimation means and the corresponding pixel value in the current field by a weighting factor and summating the multiplication results.

5,796,438

METHODS AND APPARATUS FOR INTERPOLATING PICTURE INFORMATION

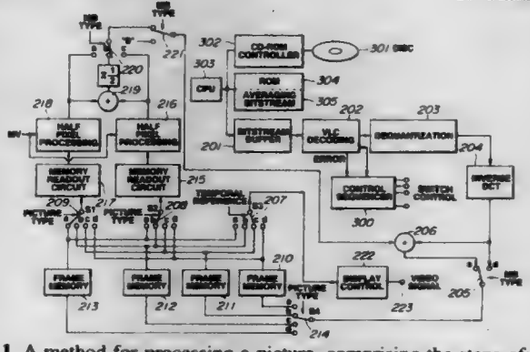
Yoshimasa Hosono, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 23, 1995, Ser. No. 494,103

Claims priority, application Japan, Jul. 5, 1994, 6-153979

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—458 **15 Claims**



1. A method for processing a picture, comprising the steps of:

receiving picture information encoded by a pre-set encoding method;

generating averaging information which specifies an interpolation method to be performed on the received picture information;

decoding said picture information by a decoding method corresponding to said encoding method;

storing the decoded picture information;

reading out the stored decoded picture information stored for processing the decoded picture information with said interpolation method;

outputting the interpolated decoded picture information as a picture for display; and

thinning out the interpolated picture information for generating a reduced-size picture,

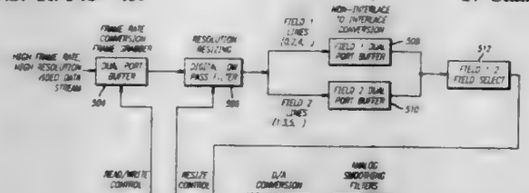
outputting the reduced-size picture as a picture for display,

wherein said decoded picture information is stored in a memory having a display region for storing a pre-set number of reduced-size pictures, and all of the reduced-size pictures stored therein are output as pictures for display each time said reduced-size picture is stored.

5,796,439
VIDEO FORMAT CONVERSION PROCESS AND APPARATUS

Douglas E. Hewett, Kent; Richard M. Pier, Bellevue; Thomas A. Gould, and Robert Nolen Phelps, both of Issaquah, all of Wash., assignors to Siemens Medical Systems, Inc., Iselin, N.J.

Filed Dec. 21, 1995, Ser. No. 576,627
Int. Cl.[6] H04N 7/01
U.S. Cl. 348—459 **17 Claims**



1. A frame rate conversion apparatus comprising:

receiving means for receiving a digital video data stream at a first frame rate, said digital video data stream comprising a sequence of frames wherein a first integer number of said frames comprises a single frame cycle of said digital video data stream;

selecting means for selecting a second integer number of whole frames from each one of said frame cycles received by said receiving means in a predetermined pattern of said whole frames, said second integer being less than said first integer such that plural, non-contiguous ones of said whole frames are excluded from each said frame cycle;

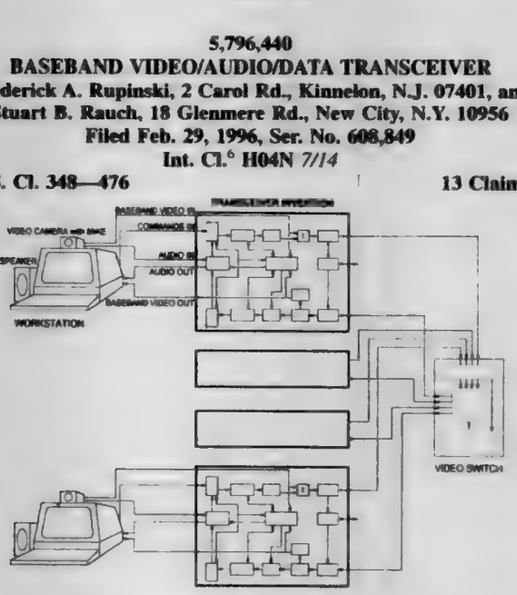
outputting means for outputting at a second frame rate said whole frames selected by said selecting means; and

locking means for locking said first frame rate to said second frame rate.

5,796,440
BASEBAND VIDEO/AUDIO/DATA TRANSCEIVER

Frederick A. Rupinski, 2 Carol Rd., Kinnelon, N.J. 07401, and Stuart B. Rauch, 18 Glenmere Rd., New City, N.Y. 10956

Filed Feb. 29, 1996, Ser. No. 608,849
Int. Cl.[6] H04N 7/14
U.S. Cl. 348—476 **13 Claims**

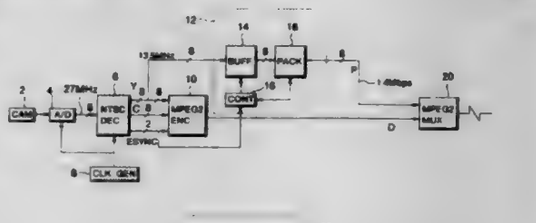


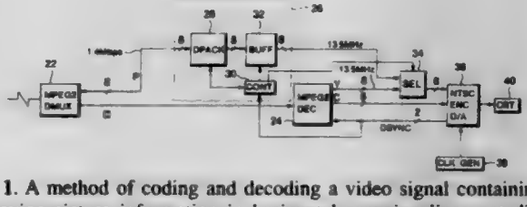
1. A transceiver circuit module comprising a transmitter, a receiver, a data conversion means, an embedment means, a culling means, a reconstruction means, a control means and an interfacing means which provides for the transmission and reception of television or video signals with information signals embedded in opportune regions of said television or video signals which are any regions where video signals do not exist, in a manner which results in a single composite signal such that the greatest spectral component of said composite signal does not exceed 4.5 megahertz, said information signals being selected from a group consisting of analog audio signals which are locally acquired and held as analog samples, and analog audio signal samples converted to modulated pulse positions, and analog audio signal samples converted to modulated pulse widths, and analog audio signals which have been previously converted to serialized digital samples, and digital serial data streams, and digital serial command streams, said opportune regions being selected from a group consisting of synchronization pulses, front porch regions, back porch regions, blanking regions, and discarded video line regions, said transceiver circuit module providing inherent synchronization of said audio signal with said video signal when deployed either as a pair of said transceiver circuit modules across a single transmission line or when deployed as a multiplicity of said transceiver circuit modules across any number of switched analog video transmission lines.

5,796,441
VIDEO CODING AND DECODING SYSTEM WITH TELETEXT CAPABILITY

Shun Oshita, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 623,710
Claims priority, application Japan, Apr. 27, 1995, 7-103392
Int. Cl.[6] H04N 7/08
U.S. Cl. 348—476 **24 Claims**





1. A method of coding and decoding a video signal containing moving-picture information in horizontal scanning lines not disposed in vertical blanking intervals, and containing other information in certain first horizontal scanning lines disposed in said vertical blanking intervals, comprising the steps of:

converting said video signal into a digital video signal in which at least a digitized luminance signal and a digitized chrominance signal are separately present;

compressively coding the moving-picture information in said digital video signal to generate a compressed digital video data stream;

assembling said other information from said digitized luminance signal into packets;

multiplexing said packets with said compressed digital video data stream to generate a data signal;

demultiplexing said data signal to separate said packets from said compressed digital video data stream;

generating a display synchronizing signal indicating timings of horizontal scanning lines and vertical blanking intervals;

disassembling said packets to generate a first video signal having said other information in certain second horizontal scanning lines disposed in the vertical blanking intervals indicated by said display synchronizing signal;

decoding said compressed digital video data to generate a second video signal having moving-picture information in horizontal scanning lines not disposed in the vertical blanking intervals indicated by said display synchronizing signal;

selecting said first video signal during said second horizontal scanning lines;

selecting said second video signal during horizontal scanning lines other than said second horizontal scanning lines; and

combining the first video signal when thus selected and the second video signal when thus selected to produce an output video signal.

5,796,442

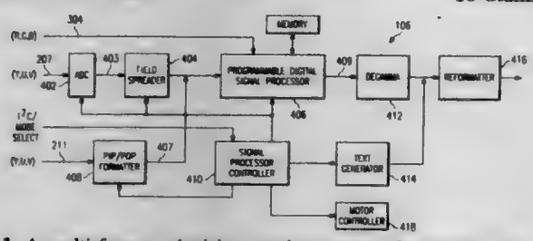
MULTI-FORMAT TELEVISION RECIEVER

Robert J. Gove, Los Gatos, Calif.; John R. Reder, Richardson, Tex.; Scott D. Heimbuch; Vishal Markandey, both of Dallas, Tex., and Stephen W. Marshall, Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 2, 1994, Ser. No. 333,200

Int. Cl.[6] H04N *5/46;5/445*

U.S. Cl. 348—556 **16 Claims**



1. A multi-format television receiver system for receiving and displaying television signals broadcast in multiple formats, the receiver system comprising:

a tuner circuit for receiving a television broadcast signal and outputting a first video signal having a broadcast format;

at least one digital programmable signal processor circuit for receiving and processing the first video signal from the tuner circuit and for producing a second video signal, the digital programmable signal processor circuit for processing video signals having multiple broadcast formats, wherein the processing performed is dependent on the broadcast format of the received television broadcast signal;

at least one field spreader for receiving bursts of the first video signal from said tuner circuit, and for outputting the first video signal at a constant rate to the digital programmable signal processor circuit; and

at least one display device for receiving the second video signal from the digital programmable signal processor circuit and for producing a visual representation of the second video signal.

5,796,443

REAR PROJECTION TELEVISION UTILIZING TWO SEPARATE HOUSINGS FOR EASY TRANSPORTATION

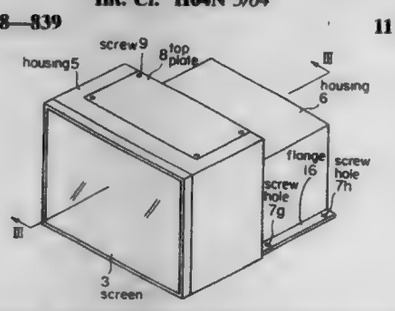
Shinobu Kawajiri; Shinji Koubara, and Kouhei Sunaga, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1996, Ser. No. 732,882

Claims priority, application Japan, Oct. 16, 1995, 7-266560

Int. Cl.[6] H04N *5/64*

U.S. Cl. 348—839 **11 Claims**



1. A projection television having a video projector for projecting a video image, electrical circuit for supplying a video signal to the video projector, and screen on which the video image projected from the video projector is formed, comprising:

a first housing in which at least the screen is arranged; and

a second housing in which at least the video projector is arranged; wherein said projection television is adapted to be disassembled, when transporting, either into said first housing and said second housing, or collapsed into one overall assembly where a smaller volume of said first and second housings is completely accommodated within a larger volume of said first and second housings,

the smaller volume being introduced into the larger volume from a back side of the larger volume, and said projection television is adapted to be assembled, such that when viewing, the smaller volume of said first and second housings is substantially out of the larger volume of said first and second housings and the video projector projects the video image onto the screen from behind.

5,796,444

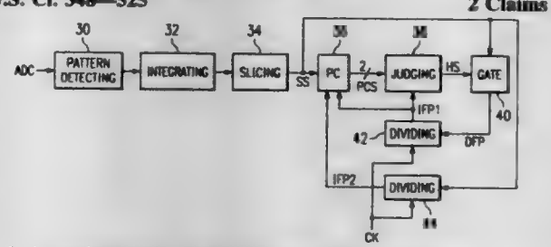
SYNCHRONIZATION DETECTION CIRCUIT

Shinri Inamori, Yokohama, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 29, 1995, Ser. No. 536,887

Int. Cl.[6] H04N *5/08*

U.S. Cl. 348—525 **2 Claims**



1. A synchronization detection circuit which contains

a synchronization pattern formation means which forms a synchronization pattern by detecting the signal pattern contained in the input signal at a prescribed cycle,

a first synchronizing signal formation means which forms the first synchronizing signal of the cycle as the synchronization pattern,

a second synchronizing signal formation means which forms a second synchronizing signal of same cycle as the synchronization pattern by being initialized by the synchronization pattern,

a first phase difference detection means which detects the first phase difference between the synchronization pattern and the first synchronizing signal,

a second phase difference detection means which detects the second phase difference between the synchronization pattern and the second synchronizing signal,

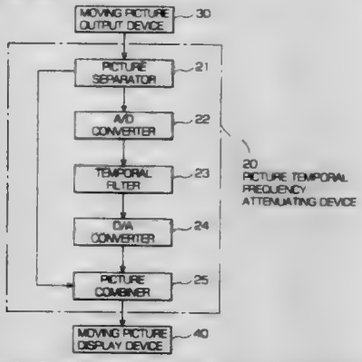
a nonsynchronization judging means which detects a state in which the cycle at which the first phase difference becomes greater than the processing value continuously by more than a first numerical value or a state in which in addition to the first phase difference becoming greater than the prescribed value, the cycle at which the second phase difference becomes less than the prescribed value continuously by more than a second numerical value, which is smaller than the first numerical value, as the measure of nonsynchronization, and

an initializing means which initializes the first synchronizing signal formation means according to the synchronization pattern when the nonsynchronization judging means detects nonsynchronization and matches the phase of the synchronizing signal to the phase of the synchronization pattern.

5,796,445
STRESS MITIGATING METHOD FOR VIDEO DISPLAY TERMINAL

Masahide Nomura, and Hitoshi Igarashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Oct. 12, 1995, Ser. No. 541,275
Claims priority, application Japan, Oct. 12, 1994, 6-246455; Feb. 14, 1995, 7-024872; Apr. 26, 1995, 7-101977
Int. Cl.[6] H04N *5/21;* **G06K** *9/40*
U.S. Cl. 348—607 **16 Claims**



1. A method of mitigating stress disease of a user that is caused by continuously viewing, on a video display terminal, moving pictures having brightness which changes drastically, said method comprising the steps of:

receiving an input moving picture signal containing said input moving pictures which have said brightness which changes drastically;

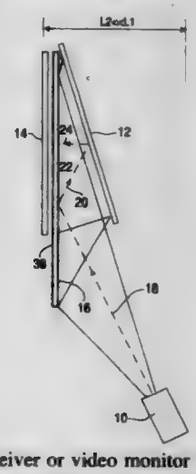
generating output moving pictures by attenuating a particular frequency band of said input moving picture signal, said attenuation accomplished by temporal filtering processing successive input moving pictures, said particular frequency band including human sensitive frequency components;

generating an output video signal containing the output moving pictures.

5,796,446
TELEVISION RECEIVER OR VIDEO MONITOR OF THE BACK-PROJECTION TYPE

Eric Marcellin-Dibon, Strasboung, France, assignor to Thomson multimedia S.A., Courbevoie, France

Filed Mar. 27, 1996, Ser. No. 624,696
Claims priority, application France, Apr. 13, 1995, 95 04479
Int. Cl.[6] H04N *5/74*
U.S. Cl. 348—744 **6 Claims**

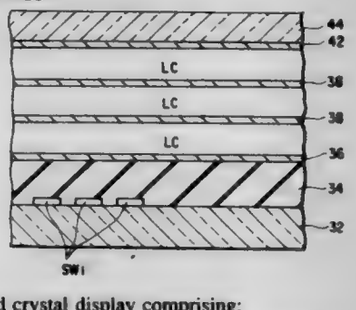


1. A television receiver or video monitor of the back-projection type, in which a projector forms an image which can be observed on a visual display screen by rear illumination after reflection on a deflecting mirror, including, in immediate proximity to the visual display screen and parallel to the screen, a reflection-transmission screen comprising a Fresnel surface, the projector, the reflection-transmission screen and the deflecting mirror being configured together in such a manner as to form an optical system such that the reflection-transmission screen reflects the rays directly emanating from the projector in the direction of the deflecting mirror and transmits these rays after their reflection on this deflecting mirror, characterized in that the Fresnel surface includes striations of triangular cross-section, these striations locally forming prisms and being capable of reflecting the rays which strike them when the angle of incidence of the rays is greater than a predetermined value and of transmitting the rays in an opposite case.

5,796,447
LIQUID CRYSTAL DISPLAY HAVING MULTIPLE LIQUID CRYSTAL LAYERS PER PIXEL IN WHICH ELECTRODE PAIRS ARE DRIVEN AT DIFFERENT PHASES OR FLOAT

Haruhiko Okumura, Fujisawa; Hisao Fujiwara, Yokohama; Goh Itoh, Tokyo, and Akira Kinno, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1996, Ser. No. 712,666
Claims priority, application Japan, Sep. 13, 1995, 7-235357
Int. Cl.[6] G02F *1/133;1/1347*
U.S. Cl. 349—33 **20 Claims**



1. A liquid crystal display comprising:

a plurality of pixels arranged in a matrix format, each pixel having a plurality of liquid crystal layers and a plurality of transparent electrodes which are alternately stacked on a first electrode functioning as a reflecting plate to display a plurality of different colors, and switching means connected to said first electrode and said transparent electrodes to control potential information supplied to said liquid crystal layers;

a plurality of signal lines connected to said switching means of said pixels to supply an image signal to said pixels;

a plurality of scanning lines connected to said switching means of said pixels to supply a scanning signal for selecting said pixels; and

control means for driving said signal lines and said scanning lines, said control means causing, in each pixel, at least one of each pair of electrodes interposing remaining liquid crystal layers to be a floating state by said switching means, while controlling potential information of one liquid crystal layer by said switching means, said pair of electrodes being included in said first electrode and said transparent electrodes.

5,796,448

STRUCTURE FOR A PARASITIC CAPACITOR AND A STORAGE CAPACITOR IN A THIN FILM TRANSISTOR-LIQUID CRYSTAL DISPLAY AND A METHOD FOR MAKING THE SAME

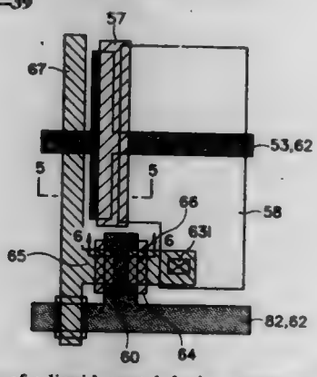
Dong-Gyu Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyonggi-Do, Rep. of Korea

Filed Jan. 29, 1996, Ser. No. 593,244

Claims priority, application Rep. of Korea, Jan. 27, 1995, 95-1528

Int. Cl.[6] G02F *1/1343;1/136*

U.S. Cl. 349—39 **11 Claims**



5. A portion of a liquid crystal device structure comprising:

a substrate;

a gate electrode disposed on said substrate, said gate electrode also being a lower parasitic capacitor electrode;

a lower storage electrode of a storage capacitor;

a first insulating layer which covers said gate electrode and said lower electrode;

a source and drain spaced from each other and formed on said first insulating layer so that said gate electrode is disposed below and between said source and drain so that said source and drain overlap edges of said gate electrode in a direction, said drain also being an upper parasitic capacitor electrode;

an amorphous silicon layer disposed above said first insulating layer and below said source and drain, said amorphous silicon layer used to establish a current path between said source and drain;

an upper storage electrode formed on said first insulating layer and disposed over said lower storage electrode, said upper storage electrode overlapping an edge of said lower storage electrode in said direction;

a second insulating layer disposed over said drain and said upper storage electrode; and

a pixel electrode disposed on said second insulating layer and electrically connected to said upper parasitic electrode.

5,796,449

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY WITH ONE REPAIR LINE ABOVE PROTECTIVE LAYER AND ONE BELOW

In Duk Song, Kyungsangbuk-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jul. 11, 1996, Ser. No. 662,168

Claims priority, application Rep. of Korea, Jul. 11, 1995, 20380/1995

Int. Cl.[6] G02F *1/1343*

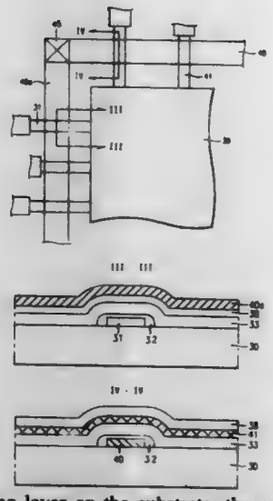
U.S. Cl. 349—54 **18 Claims**

1. A liquid crystal display having a cell array, the liquid crystal display comprising:

a substrate;

a plurality of gate lines in one direction on the substrate, the gate lines having gate electrodes;

first repair lines on peripheral sides of the cell array, the first repair lines disposed parallel to the gate lines;



a gate insulating layer on the substrate, the gate lines and the first repair line, the gate insulating layer having a first contact hole at end portions of the first repair line;

a plurality of data lines on the gate insulating layer, the data lines being substantially perpendicular to the gate lines;

a protective layer on the gate insulating layer and the data lines, the protective layer having a second contact hole over the first contact hole; and

second repair lines on peripheral sides of the cell array and connected to the first repair line through the first and second contact holes, the second repair line being perpendicular to the data lines.

5,796,450

ILLUMINATION DEVICE AND LIQUID CRYSTAL DISPLAY APPARATUS INCLUDING SAME

Toshiyuki Kanda, Chigasaki; Hiroshi Takabayashi, Atsugi, and Yoshihiro Onitsuka, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

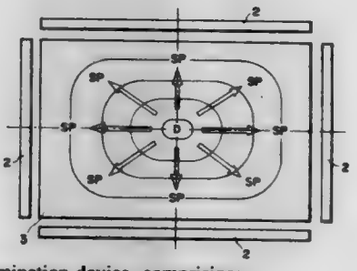
Filed Dec. 13, 1995, Ser. No. 571,545

Claims priority, application Japan, Dec. 16, 1994, 6-313693

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—64 **17 Claims**





1. An illumination device, comprising:

a rectangular light guide means,

four linear light sources disposed along four sides of the rectangular light guide means so as to surround the light guide means,

a reflection means disposed behind the light guide means so that light issued from the linear light sources is transmitted

through the light guide means and reflected by the reflection means to be emitted from the light guide means in a forward direction, and

a luminance distribution-adjusting means for reflecting light transmitted through the light guide means and disposed along the light guide means with a distribution density which varies continuously at a changing rate free from discontinuity so as to adjust the luminance distribution of the light emitted from the light guide means in a forward direction and so as to emit a substantially uniform distribution of light from the light guide means,

wherein said luminance distribution-adjusting means is disposed between the light guide means and the reflection means with a distribution density that is highest in the vicinity of a central portion of the light guide means and decreases as a position approaches the edges of the light guide means to provide an iso-distribution density curve forming a closed loop with no angles.

5,796,451

LIQUID CRYSTAL CELL WITH AN EXTERNAL COLOR FILTER

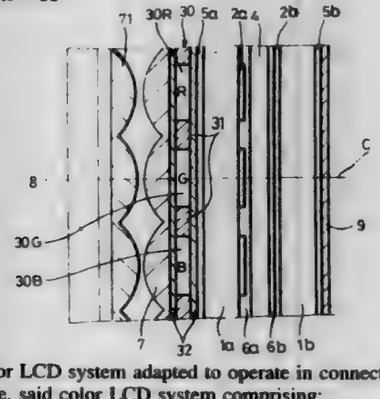
Si-hwan Kim, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 541,422, Oct. 10, 1995, abandoned. This application May 29, 1997, Ser. No. 865,294

Claims priority, application Rep. of Korea, Oct. 23, 1993, 93-22117

Int. Cl.[6] G02F *1/1335*

U.S. Cl. 349—66 **9 Claims**



1. A color LCD system adapted to operate in connection with a light source, said color LCD system comprising:

an LCD cell including:

a first panel and a second panel spaced apart from each other and extending generally parallel to each other,

a first set of transparent electrodes and a second set of transparent electrodes disposed between said first panel and said second panel,

a first orientation layer substantially covering at least one surface of said first set of transparent electrodes and a second orientation layer substantially covering at least one surface of said second set of transparent electrodes, and

a liquid crystal material disposed between said first set of transparent electrodes and said second set of transparent electrodes;

a color filter attached to an outer face of the LCD cell comprising red, green, and blue filter layer segment, each of with is aligned with a corresponding electrode of said first set of transparent electrodes;

light collecting means for directing light through said filter layer segments of said color filter means, wherein said light collecting means comprises a plurality of convex micro lenses, each of which is aligned with a corresponding filter layer segment of said color filter;

light diverging means, disposed between said light collecting means and said light source, for converting light from said light source into collimated light and directing the collimated light to the light collecting means, thereby enhancing light collecting efficiency of the light collecting means; and

a diffuser attached to an outer face of the LCD cell opposite to said light source.

5,796,452

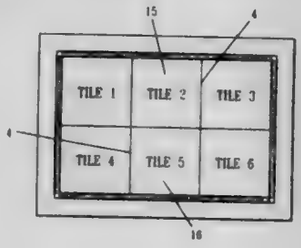
SIMPLIFIED WIRING ESCAPE TECHNIQUE FOR TILED DISPLAY

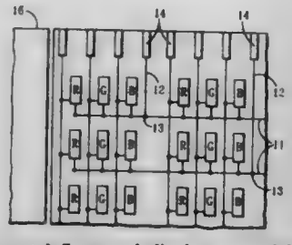
Mark Vincent Pierson, Binghamton, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1997, Ser. No. 828,215

Int. Cl.[6] G02F *1/1345; 1/1343*

U.S. Cl. 349—73 **4 Claims**





1. A liquid crystal flat panel display comprising a plurality of liquid crystal display tile arranged in a matrix of at least 2×3 tiles and electrically interconnected to a tile carrier wherein at least one of the individual display tiles has both the X and Y address wiring routed to a single tile edge for providing said electrical interconnection to said tile carrier.

5,796,453

LIQUID CRYSTAL DISPLAY DEVICE, METHOD FOR PRODUCING THE SAME, AND PROJECTION-TYPE DISPLAY APPARATUS INCLUDING THE LIQUID CRYSTAL DISPLAY DEVICE

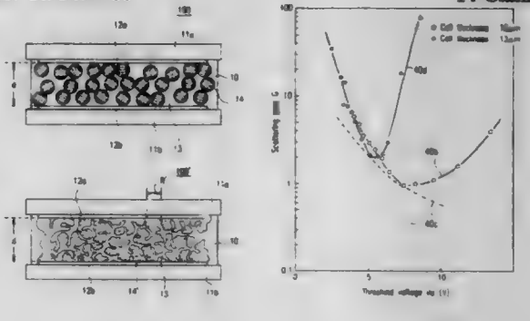
Kenji Nakao, Osaka; Masao Yamamoto, Kishiwada, and Tsuyoshi Uemura, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 31, 1996, Ser. No. 690,569

Claims priority, application Japan, Jul. 31, 1995, 7-194510; Nov. 30, 1995, 7-312013

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 349—86 **14 Claims**



1. A liquid crystal display device, comprising:
a pair of substrates;
a liquid crystal layer interposed between the pair of substrates; and
an electrode for applying a voltage to the liquid crystal layer,
wherein the liquid crystal layer includes a polymer dispersed liquid crystal material having a polymer phase and a liquid crystal phase, and fulfills the conditions represented by:

$$2.585 \cdot d^{(-1/3)} - 0.3 < R < 2.585 \cdot d^{(-1/3)} + 0.3$$

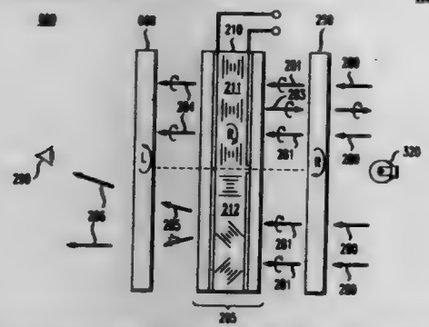
where d represents the thickness of the liquid crystal layer in the unit of micrometers and R represents the characteristic length of the liquid crystal phase in the unit of micrometers.

5,796,454

CHOLESTERIC LIQUID CRYSTAL DISPLAY EMPLOYING CIRCULAR POLARIZER AND METHODS OF OPERATION AND MANUFACTURE THEREFOR

Yao-Dong Ma, Richardson, Tex., assignor to Advanced Display Systems, Inc., Amarillo, Tex.

Filed Dec. 4, 1996, Ser. No. 767,111
Int. Cl.[6] G02F 1/1335;1/13
U.S. Cl. 349—98 **60 Claims**



1. A cholesteric liquid crystal display (LCD), comprising:
a controllable cholesteric liquid crystal (CLC) located between first and second substrates, said controllable CLC selectively exhibiting an "on" state and an "off" state and having a circular polarity of a predetermined handedness when said controllable CLC is in said "on" state; and
a circular polarizer, located proximate said first substrate and having a circular polarity of a particular handedness, that cooperates with said controllable CLC to increase the difference between the relative brightness of said "on" state and said "off" state, whereby a contrast ratio of said cholesteric LCD is increased.

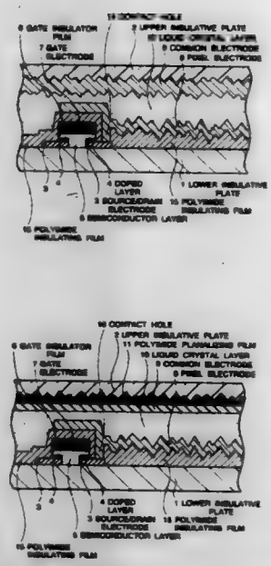
5,796,455

REFLECTIVE LCD HAVING A LIGHT SCATTERING MEANS FORMED ON AN ELECTRODE SIDE SURFACE OF A COUNTER SUBSTRATE

Eishi Mizobata; Hidenori Ikeno, and Hiroshi Kanoh, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 661,898, Jun. 12, 1996. This application May 7, 1997, Ser. No. 852,521
Claims priority, application Japan, Jun. 13, 1995, 7-146189
Int. Cl.[6] G02F 1/1335;1/1333;1/1343
U.S. Cl. 349—116 **4 Claims**

1. A reflective liquid crystal display comprising a first insulative plate having a reflector, a second insulative plate having a transparent electrode, said first and second insulative plates being assembled in such a manner that said reflector opposes to said transparent electrode, separately from each other, and a liquid crystal layer sandwiched between said reflector and said transparent electrode, wherein said reflector has a convex-concave reflecting surface, and a light scattering means is provided at said second insulative plate, wherein said light scattering means comprises a convex-concave surface formed on a transparent electrode side surface of said second insulative plate.

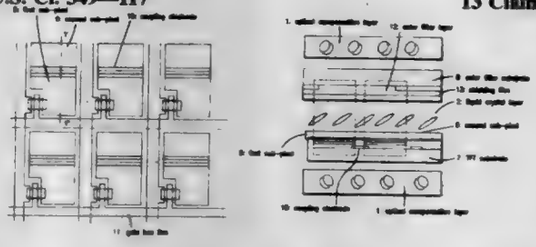


5,796,456

LIQUID CRYSTAL DISPLAY WITH OPTICAL NEGATIVE UNI-AXIAL COMPENSATION LAYER

Ken-ichi Takatori; Masayoshi Suzuki; Ken Sumiyoshi, and Hideya Murai, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 12, 1996, Ser. No. 679,676
Claims priority, application Japan, Jul. 14, 1995, 7-201685; May 15, 1996, 8-120085
Int. Cl.[6] G02F 1/1335;1/1337
U.S. Cl. 349—117 **13 Claims**



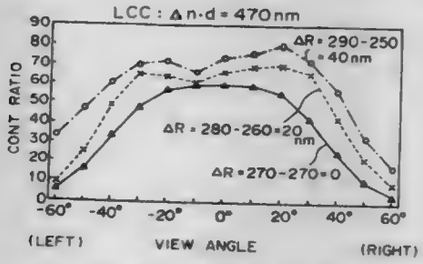
1. A liquid crystal display having a plurality of pairs of top and bottom pixel electrodes, each of which has a plurality of sub-areas to which different voltages are applied,
at least one of the top and bottom pixel electrodes having an optical compensation layer which has an optical negative uni-axial structure, and
wherein each of the pixel electrodes is divided into sub-areas having different capacitances from each other and without any orientation division depending upon the sub-areas in each of the pixel electrodes.

5,796,457

TN LIQUID CRYSTAL DISPLAY PANEL WITH THE DIFFERENCE BETWEEN THE PRODUCE OF THE FIRST RETARDATION FILM, WHICH IS NOT ADJACENT TO THE LC CELL, AND HAS LARGER VALUE THAN THE SECOND RETARDATION FILM, AND THE SECOND RETARDATION IS IN THE RANGE OF $0<\Delta R$

Yasuhiro Ukai, Kobe; Takao Unate, Sakai, and Mitsuru Takigawa, Kobe, all of Japan, assignors to Hosiden Corporation, Osaka, Japan

Filed Oct. 12, 1995, Ser. No. 542,184
Claims priority, application Japan, Oct. 19, 1994, 6-253365
Int. Cl.[6] G02F 1/1335
U.S. Cl. 349—119 2 Claims



1. In a liquid crystal display panel of the type having a Twisted Nematic type liquid crystal cell interposed between a pair of polarization plates and first and second retardation films each having slow axes nearly orthogonal to each other interposed between one of the polarization plates and said liquid crystal cell such that said first and second retardation films face said one of the polarization plates and said liquid crystal cell, respectively, the improvement wherein:

the product $\Delta n_1 d_1$ of the refractive index anisotropy Δn_1 and the thickness d_1 of said first retardation film which faces said one of said polarization plates is set to a value greater than the product $\Delta n_2 d_2$ of the refractive index anisotropy Δn_2 and the thickness d_2 of said second retardation film which faces said liquid crystal cell;

the product Δnd of the refractive index anistopy Δn and the thickness d of said TN type liquid crystal cell is set in the range of 470±200 nm; and

the difference between the products of the respective refractive index and thicknesses of said first and second retardation films, $\Delta_R=\Delta n_1 d_1-\Delta n_2 d_2$, is set in the range of $0<\Delta_R\leqq 50$ nm.

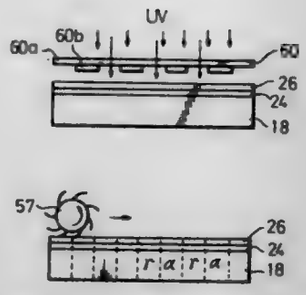
5,796,458

ELEMENT DIVISION LIQUID CRYSTAL DISPLAY DEVICE AND ITS MANUFACTURING METHOD

Yoshio Koike; Tsuyoshi Kamada; Syun Tsuyuki; Noriaki Furukawa; Shigeru Masuda; Satoshi Murata; Tadashi Hasegawa; Takashi Sasabayashi; Seiji Tanuma; Takatoshi Mayama, and Katufumi Ohmuro, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 115,129, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 993,390, Dec. 18, 1992, Pat. No. 5,473,455. This application Jan. 29, 1996, Ser. No. 593,380
Claims priority, application Japan, Sep. 1, 1992, 4-233689; Sep. 2, 1992, 4-234798; Dec. 4, 1992, 4-324559; Aug. 27, 1993, 5-212722
Int. Cl.[6] G02F 1/1337
U.S. Cl. 349—126 38 Claims

1. In a method for manufacturing a liquid crystal display device comprising a first plate having a first alignment film thereon formed of a single layer of an alignment material including first and second adjacent minute alignment film domains, a second plate arranged to face the first plate and having a second alignment film thereon, and a liquid crystal material inserted between the first and second alignment films and in contact therewith, said method comprising:



rubbing the first alignment film to align said liquid crystal material at said domains; and

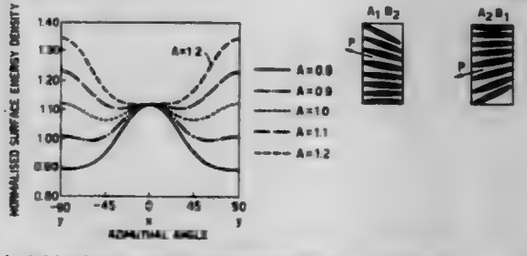
selectively applying a surface modifying energy to the first alignment film at said first domain thereof to thereby change a pretilt angle of the liquid crystal material contacting said first alignment film at said first domain to be different than a pretilt angle of the liquid crystal material contacting said first alignment film at said second domain thereof.

5,796,459

BISTABLE NEMATIC LIQUID CRYSTAL DEVICE WITH BIGRATING ALIGNMENT LAYERS AND TWIST

Guy P. Bryan-Brown; Damien G. McDonnell, both of Malvern; Michael J. Towler, Oxford, all of United Kingdom, and Martin S. Bancroft, Columbus, Ohio, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain an Northern Ireland, Hants, United Kingdom

PCT No. PCT/GB95/00179, § 371 Date Sep. 20, 1996, § 102(e) Date Sep. 20, 1996, PCT Pub. No. WO95/22077, PCT Pub. Date Aug. 17, 1995
PCT Filed Jan. 30, 1995, Ser. No. 693,089
Claims priority, application United Kingdom, Feb. 9, 1994, 9402513
Int. Cl.[6] G02F 1/1337;1/13
U.S. Cl. 349—132 14 Claims



1. A bistable nematic liquid crystal device comprising

two cell walls enclosing a layer of liquid crystal material, said liquid crystal material having elastic and twist constants;

electrode structures on both walls;

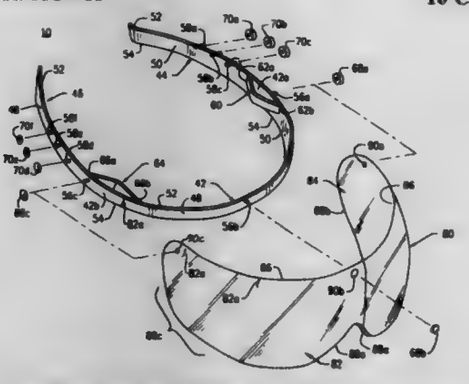
a surface alignment on both cell walls providing alignment direction to said liquid crystal material; and

means for distinguishing between switched states of the liquid crystal material, wherein said surface alignment comprises a bigrating on at least one cell wall, said bigrating having at least two gratings, said at least two gratings having a grating dimension, the grating dimensions of said at least two gratings, in combination with said elastic and twist constants, permitting said liquid crystal material to adopt two different angular aligned directions when suitable electrical signals are applied to the electrodes.

5,796,460
EYEGLASS PROTECTOR

Thawatchai Maturaporn, Bangkok Thailand, assignor to Thai Hospital Products Co. Ltd., Bangkok Thailand

Filed Jul. 28, 1997, Ser. No. 901,625
Int. Cl.[6] G02C *1/00*
U.S. Cl. 351—86 **10 Claims**



1. An eyeglass protector for protecting the eyeglasses worn by a wearer, comprising:

a) one-piece flexible band member made of a durable plastic and including a center section and two temple sections;

b) a bendable, transparent plastic visor shield for covering both lenses of a pair of eyeglasses;

c) means for detachably connecting said visor shield to said band member; and

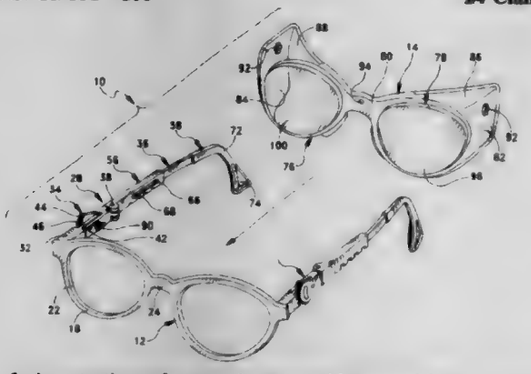
d) means for retaining said band member in a curved configuration.

10. An eyeglass protector in accordance with claim 1, wherein said visor shield is an integral member for covering both lenses of a pair of eyeglasses.

5,796,461
PROTECTIVE EYEGLASS ASSEMBLY

Walter Stepan, Lincoln, R.I., assignor to Uvex Safety, Inc., Smithfield, R.I.

Filed Nov. 22, 1995, Ser. No. 635,204
Int. Cl.[6] G02C *1/04;1/00;5/20;5/14*
U.S. Cl. 351—106 **24 Claims**



1. A protective safety eyeglass assembly comprising:

a frame including left and right lens frame portions connected by a central bridge portion, said left and right lens frame portions each including a lens receiving aperture, said frame further including left and right temple bar portions;

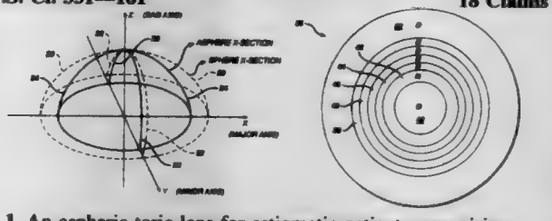
a protective lens piece integrally molded from a shatter resistant, transparent plastic material and including left and right lens panels connected by a central bridge portion, said lens piece being received in assembled relation with said frame with said left and right lens panels aligned in registry with said left and right lens frame portions, said left and right lens panels and said bridge portion of said lens piece having an outer peripheral margin which is generally similar to an outer peripheral margin of said left and right frame portion and said bridge portion of said frame such that said lens piece is substantially hidden from view when viewing said eyeglass assembly from a frontal viewing position; and

means for detachably securing said lens piece to said frame when said lens piece is received in assembled relation with said frame.

5,796,462
ASPHERIC TORIC LENS DESIGNS

Jeffrey H. Roffman, and Edgar V. Menezes, both of Jacksonville, Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation of Ser. No. 433,742, May 4, 1995, abandoned. This application Sep. 4, 1996, Ser. No. 708,362
Int. Cl.[6] G02C *7/04;7/02;* A61F *2/16*
U.S. Cl. 351—161 **18 Claims**



1. An aspheric toric lens for astigmatic patients comprising:

a. said lens having a front surface and an opposite back surface:

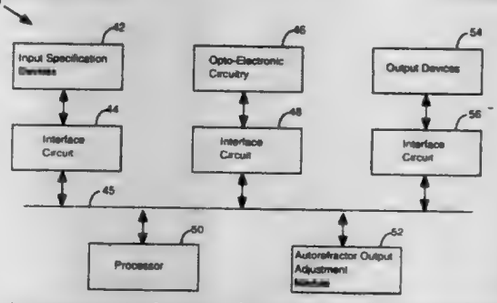
b. one of the front and back surfaces defines a spherical surface:

c. the other of the front and back surfaces defines an aspheric toric surface comprising an aspheric toric curve constructed with aspheric radii, wherein the aspheric radii desensitize axial misalignment by providing an enhanced depth of focus, and wherein the spherical surface of the lens comprises a multifocus concentric annular ring spherical design having a central circular spherical disc corresponding to the patient's basic spherical distance prescription, and at least one annular spherical ring corresponding to the patient's basic spherical distance prescription, and at least one annular spherical ring corresponding to the patient's spherical near prescription, wherein the multifocus concentric annular ring design corrects for presbyopia and also enhances the depth-of-focus of the aspheric toric curve.

5,796,463
APPARATUS AND METHOD FOR IMPROVING THE OPERATION OF AN AUTOREFRACTOR

Mark A. Bullimore, Columbus, Ohio, assignor to The Regents of the University of California, Oakland, Calif.

Filed Nov. 27, 1996, Ser. No. 753,640
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—205 **26 Claims**



1. An apparatus to improve the operation of an autorefractor, comprising:

a first circuit to obtain objective refraction data;

a second circuit to receive patient age data; and

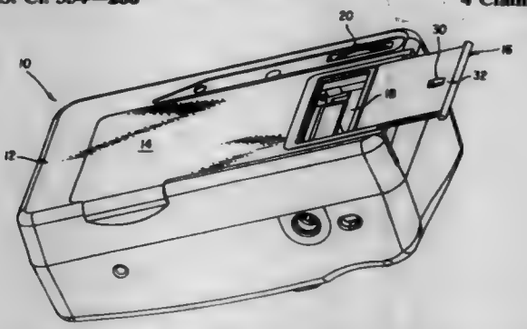
an autorefractor output adjustment device connected to said first circuit and said second circuit to combine said objective refraction data with a weight factor, which is assigned as a function of said patient age data and optometric clinical judgment, to obtain an eyeglass lens specification.

5,796,464

CAMERA WITH SLIDE-OPEN CLOSURE FLEXED TO RELEASE FOR OPENING

Dennis Roland Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 7, 1996, Ser. No. 597,720
Int. Cl.[6] G03B *17/02*
U.S. Cl. 354—288 **4 Claims**



1. A photographic camera comprising a camera body, a chamber within said body, and a door for closing said chamber which is slidable open to uncover the chamber, is characterized in that:

said door is flexible away from said body;

mutually engaging means are located on said body and said door for preventing the door from being slid open, but which are disengaged to permit the door to be slid open when the door is flexed away from said body; and

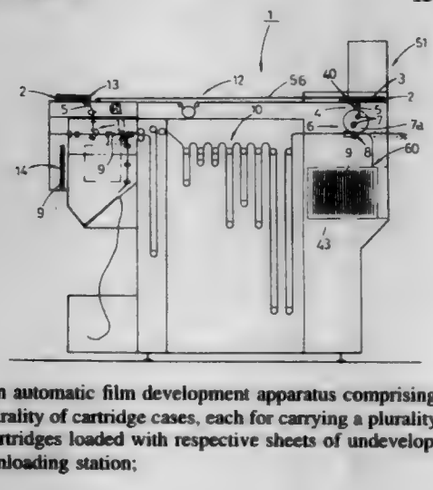
cam follower means is located on said door to be cammed to flex the door away from said body to disengage said mutually engaging means.

5,796,465

AUTOMATIC FILM DEVELOPMENT APPARATUS

Keigo Arimoto; Masayuki Kojima; Takuya Yamamoto, and Hisashi Negoro, all of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 24, 1996, Ser. No. 718,948
Claims priority, application Japan, Oct. 5, 1995, 7-258766
Int. Cl.[6] G03B *27/32;27/52;29/00*
U.S. Cl. 355—27 **15 Claims**



1. An automatic film development apparatus comprising:

a plurality of cartridge cases, each for carrying a plurality of film cartridges loaded with respective sheets of undeveloped film;

an unloading station;

a feeder unit for storing said plurality of cartridge cases and for delivering them one by one to said unloading station, at which undeveloped film sheets may be unwound from respective cartridges carried in a respective said cartridge case at said unloading station;

a rewinding station for rewinding a thus unwound undeveloped film sheet into a takeup cartridge;

a development unit;

a film leader supply unit;

a splicer unit for joining an end of the undeveloped film sheet from said takeup cartridge to a film leader supplied from said film leader supply unit, whereby the undeveloped film sheet joined to the film leader may be developed in the development unit to form a developed film sheet;

a separator unit for separating the developed film sheet from the film leader;

a leader receiving unit for collecting film leaders separated from respective developed film sheets;

a loading station; and

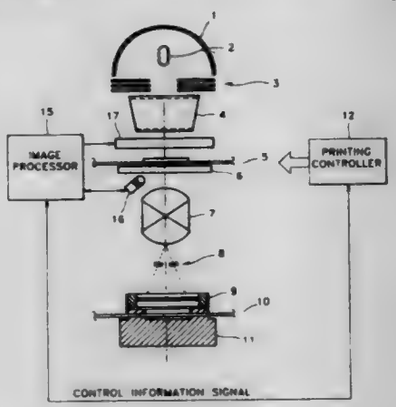
conveying means, extending from said unloading station to said loading station, for conveying said respective cartridge case containing cartridges emptied of undeveloped film sheets from said unloading station to said loading station, whereat the developed film sheets may be loaded back into respective cartridges contained in said cartridge case at said loading station.

5,796,466

PHOTOGRAPHIC PRINTER

Yong-hag Choi, Masan, Rep. of Korea, assignor to Samsung Aerospace Industries, LTD., Kyongsangnam-do, Rep. of Korea

Filed Oct. 25, 1996, Ser. No. 736,750
Claims priority, application Rep. of Korea, Oct. 27, 1995, 1995-37622
Int. Cl.[6] G03B *27/72;27/80*
U.S. Cl. 355—35 **34 Claims**



1. A photographic printer comprising:

a light source for radiating light rays for photographic printing to a film;

means for fixing said film;

means for providing a film information signal by detecting the light filtered through said film;

image processing means for processing said film information signal and generating a corresponding control signal;

image display means located between said light source and said film for displaying an image corresponding to said control signal;

means for forming an image on a printing paper according to the light filtered through said image display means and said film; and

printing control means that communicates with said image processing means via a control information signal for controlling said film fixing means, said light source, and/or said forming means.

5,796,467

SCANNING PROJECTION EXPOSURE METHOD AND APPARATUS USING SUBSTRATE POSITION ADJUSTMENT BASED ON MASK PATTERN POSITIOIN DURING SCANNING EXPOSURE

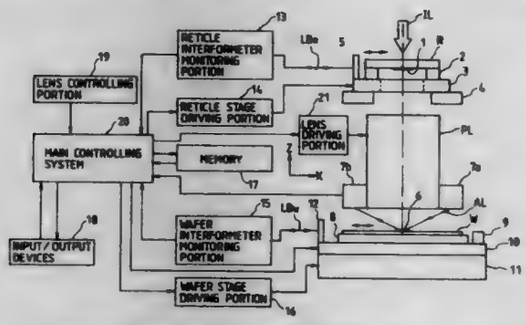
Kazuaki Suzuki, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 21, 1994, Ser. No. 309,745

Claims priority, application Japan, Sep. 21, 1993, 5-234609

Int. Cl.[6] G03B *27/42*

U.S. Cl. 355—53 **14 Claims**



1. A projection exposure apparatus comprising:

a projection optical system, disposed between a mask and a photosensitive substrate, which projects an image of a pattern formed on said mask onto said photosensitive substrate;

a driving device, which moves said mask and said photosensitive substrate relative to exposure light in synchronism with each other, each in a respective predetermined direction perpendicular to an optical axis of said projection optical system, in order to transfer the pattern of said mask onto said photosensitive substrate, wherein during the movement of said mask and said photosensitive substrate in synchronism with each other, a position of a pattern surface of said mask in an illuminated area of said exposure light varies along said optical axis; and

an adjusting device which adjusts a relative position between said photosensitive substrate and an image plane of said projection optical system relative to each other along said optical axis of said projection optical system in accordance with the variation in position of said pattern surface of said mask along said optical axis while said mask and said photosensitive substrate are moved in synchronism as aforesaid by said driving device.

5,796,468

APPARATUS USED TO ALIGN AND MARK WAFERS

Kwang Chul Kim, Kyungsangbook-Do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Continuation-in-part of Ser. No. 581,354, Dec. 28, 1995, abandoned. This application Mar. 24, 1997, Ser. No. 822,472

Claims priority, application Rep. of Korea, Nov. 2, 1995, 39347/1995

Int. Cl.[6] G03B *27/42*

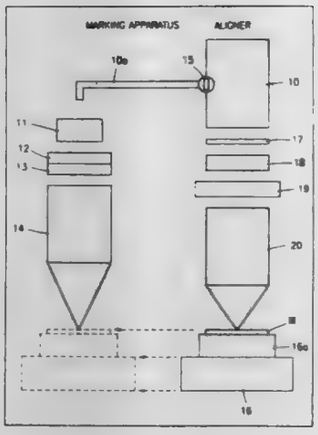
U.S. Cl. 355—53 **7 Claims**

1. An apparatus comprising:

a stage for moving a wafer in a first prescribed direction;

an aligner for aligning patterns exposed by a light onto the wafer; and

a marking apparatus coupled to the aligner and using the light from the aligner for forming identification markings onto the wafer, wherein consecutive alignment and marking are performed in the apparatus.



5,796,469

EXPOSURE APPARATUS AND DEVICE MANUFACTURING METHOD USING THE SAME

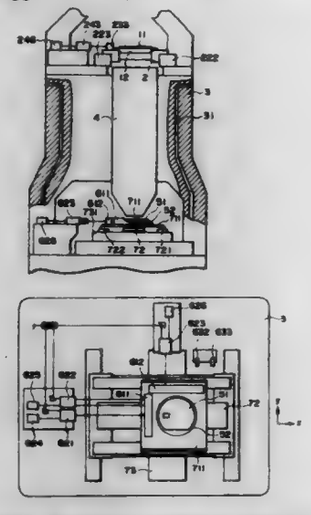
Ryuichi Ebinuma, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 491,800, Jun. 19, 1995, abandoned, which is a continuation of Ser. No. 266,513, Jun. 27, 1994, abandoned. This application Jul. 14, 1997, Ser. No. 891,803

Claims priority, application Japan, Jun. 30, 1993, 5-161961; Jun. 30, 1993, 5-162253

Int. Cl.[6] G03B *27/42;27/52*

U.S. Cl. 355—53 **38 Claims**



1. An exposure apparatus in which a portion of a pattern of an original is projected onto a substrate and in which the original and the substrate are scanned synchronously such that the pattern of the original is transferred to the substrate, said apparatus comprising:

first and second stages, one of which is for scanningly moving the original and the other of which is for scanningly moving the substrate;

measuring means for measuring a deviation of said first stage relative to said second stage in a predetermined direction other than the direction of scanning movement; and

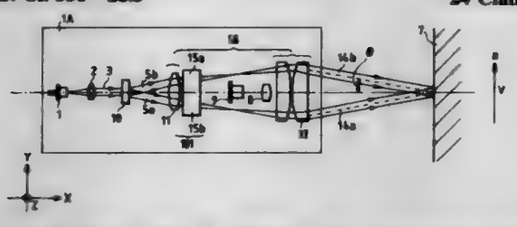
adjusting means for adjusting the second stage on the basis of the measurement by said measuring means.

5,796,470

FREQUENCY SHIFTER AND OPTICAL DISPLACEMENT MEASURING APPARATUS USING THE FREQUENCY SHIFTER

Shinji Ueda, Utsunomiya; Hidejiro Kadowaki, Yokohama; Makoto Takamiya, Tokyo, and Shigeki Kato, Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1996, Ser. No. 607,115
Claims priority, application Japan, Feb. 28, 1995, 7-066993; May 12, 1995, 7-114563
Int. Cl.[6] G01P *03/36*; G02F *01/35*
U.S. Cl. 356—28.5 24 Claims



1. A frequency shifter for shifting a frequency of an incident light beam, comprising:

an electro-optic element for making incident the light beam whose frequency is to be shifted;

an electrode unit disposed on said electro-optic element;

an electric charge imparting circuit for imparting an electric charge to said electrode unit; and

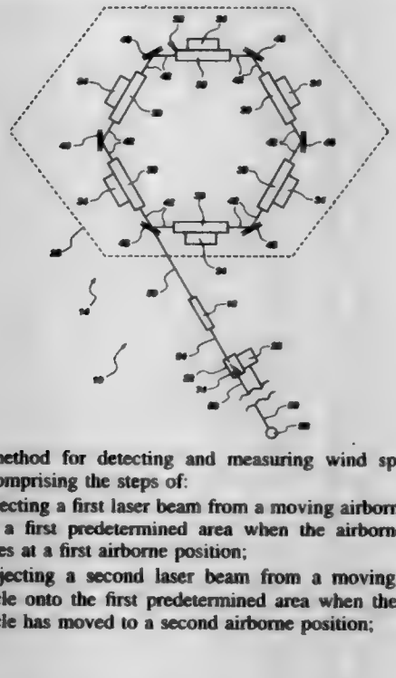
a discharging circuit for discharging the electric charges accumulated in said electrode unit, said discharging circuit instantaneously performing the electrical discharging to restart electric charging of said electrode unit by said electric charge imparting circuit.

5,796,471

LIDAR ATMOSPHERIC WIND DETECTOR

Thomas D. Wilkerson, Hyde Park, Utah, and Jack A. McKay, Washington, D.C., assignors to Utah State University, Logan, Utah

Filed Sep. 18, 1996, Ser. No. 718,150
Int. Cl.[6] G01P *3/36*
U.S. Cl. 356—28.5 25 Claims



1. A method for detecting and measuring wind speed, said method comprising the steps of:

(a) projecting a first laser beam from a moving airborne vehicle onto a first predetermined area when the airborne vehicle resides at a first airborne position;

(b) projecting a second laser beam from a moving airborne vehicle onto the first predetermined area when the airborne vehicle has moved to a second airborne position;

(c) receiving first and second backscattered laser light originating from the first and second laser beams, respectively, which light has been backscattered from at least one object moving within the first predetermined area;

(d) calculating Doppler shifts in the first and second backscattered light and producing Doppler shift data therefrom representing components of Doppler shifting caused only by movement effects of the at least one object, and thus without movement effects of the airborne vehicle; and

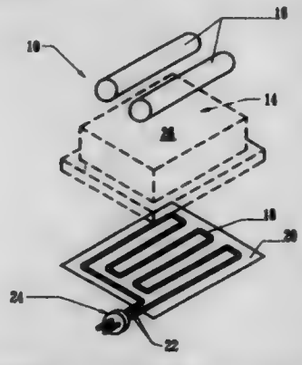
(e) calculating from the Doppler shift data a movement speed of the at least one object, and thus wind speed of wind carrying the at least one object.

5,796,472

OPTICAL TRANSLUCENCY INDICATOR FOR MEASUREMENT OF AIR FILTER DIRTINESS, LIQUID LEVEL, THICKNESS, AND OTHER PARAMETERS

Alvin R. Wirthlin, 3101 Jeanlin Dr., SE., Grand Rapids, Mich. 49546

Filed Feb. 18, 1997, Ser. No. 802,453
Int. Cl.[6] G01N *21/00*; G01B *9/10*; G02B *6/00*
U.S. Cl. 356—72 22 Claims



1. An apparatus for detecting the degree of translucency of a medium, the apparatus comprising:

an elongate collector adapted for placement at least in proximity to the medium to extend across a predefined area of the medium, the collector having opposite ends and being formed such that radiant energy can be gathered along its length and transmitted to its ends;

an emitter spaced from the collector and positioned to project radiant energy at least partially through the medium within the predefined area and onto the collector; and

a sensor positioned in proximity to at least one of the collector ends for detecting the amount of radiant energy transmitted to the at least one collector end;

wherein the amount of radiant energy received by the collector within said predefined area and transmitted to the sensor is proportional to the degree of translucency of the medium.

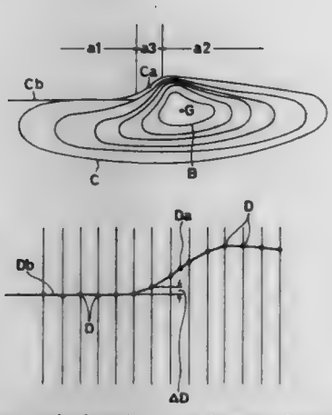
5,796,473

METHOD OF ADJUSTING OPTICAL AXIS OF HEADLIGHT OF VEHICLE

Nagatoshi Murata, and Takeshi Masaki, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 614,173, Mar. 8, 1996, abandoned. This application Oct. 30, 1996, Ser. No. 741,003
Claims priority, application Japan, Mar. 20, 1995, 7-61173
Int. Cl.[6] G01J *1/00*
U.S. Cl. 356—121 15 Claims

1. A method of adjusting an optical axis of a headlight of a vehicle by picturing an illuminating pattern of the headlight to appear on a screen which is disposed in front of the vehicle, said



adjusting being made based on an image of the illuminating pattern, said method comprising the steps of:

obtaining an iso-illuminance curve in the illuminating pattern, an illuminance of each point on the iso-illuminance curve being substantially equal to a first value;

obtaining a position of a stepped region of the iso-illuminance curve including two portions of different levels and a rising portion between the two portions of different levels extending in a direction different than directions in which the two portions of different levels extend;

measuring a position of a point of inflection in the stepped region; and

adjusting the optical axis based on the point of inflection.

5,796,474

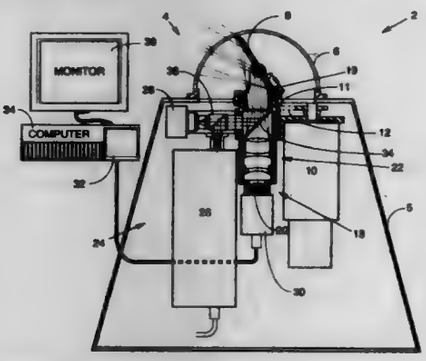
PROJECTILE TRACKING SYSTEM

Mark Squire; Howard Hyman, both of San Diego; Richard Trissel, Cardiff; George Houghton, San Diego; Daniel Leslie, and Murray Dunn, both of Encinitas, all of Calif., assignors to ThermoTrex Corporation, San Diego, Calif.

Filed Jun. 21, 1996, Ser. No. 667,401

Int. Cl.[6] G01B *11/26;* **G01J** *5/02*

U.S. Cl. 356—152.1 **31 Claims**



1. A system for tracking projectiles, comprising:

(a) a steerable optical system including:

(1) an infrared detector for detecting existence of an infrared emitting projectile;

(2) a laser range finder for providing range data about a detected projectile;

(b) a steering control system, coupled to the steerable optical system, for:

(1) steering the optical system in a detection mode until detection by the infrared detector of a projectile;

(2) steering the optical system in a tracking mode to generate range and position data about the detected projectile;

(c) an analysis system, coupled to the steerable optical system and the steering control system, for determining the trajectory of the detected projectile based upon the range and position data generated by the steering control system.

5,796,475

SIGNAL PROCESS METHOD AND APPARATUS FOR DEFECT INSPECTION

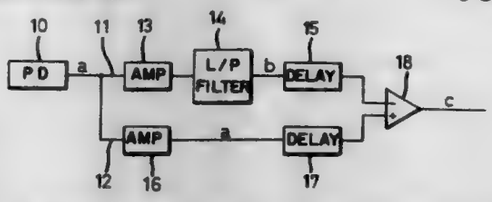
Toyoki Kanzaki, and Dainichiro Kinoshita, both of Miyanohigashi-machi, Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Feb. 12, 1997, Ser. No. 798,068

Claims priority, application Japan, Feb. 13, 1996, 8-051024

Int. Cl.[6] G01N *21/88*

U.S. Cl. 356—237 **5 Claims**



1. A signal processing method for a defect inspecting apparatus in which a laser beam is irradiated on the surface of the inspection subject while scanning, and the scattered light from the surface of the inspection subject is caused to be incident on the photodetector, so that the foreign matter can be inspected on the basis of the detection result of the scattered light with the photodetector outputting a detection signal, comprising the steps of:

dividing the detection signal into parallel arrangements of a first signal processing path with a low-pass filter characteristic and a second signal processing path without a low-pass filter characteristic; and

comparing an output of the first signal processing path with an output of the second processing path to determine the existence of foreign matter.

5,796,476

METHOD OF OPTICALLY MEASURING COMPONENT IN SOLUTION

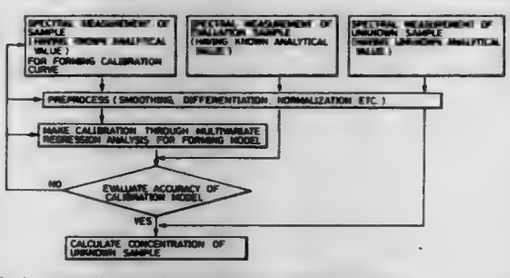
Yung Xiang Wang, and Xiaoming Dou, both of Kyoto, Japan, assignors to Kyoto Dai-Ichi Kagaku Co., Ltd., Kyoto, Japan

Filed Jun. 26, 1996, Ser. No. 672,026

Claims priority, application Japan, Jun. 28, 1995, 7-186341; Sep. 13, 1995, 7-262338

Int. Cl.[6] G01J *3/44*

U.S. Cl. 356—301 **8 Claims**



1. A measuring method comprising the steps of:

for a plurality of components of a body fluid to be measured, previously selecting a wavenumber having an excellent correlation between the concentration of a component and light scattering spectral intensity as a measuring wavenumber which is specific to said component;

irradiating a body fluid sample with excitation light for measuring light scattering spectral intensity at each said measuring wavenumber as to said each component to be measured or light scattering spectral cumulative intensity in each measuring wavenumber range; and

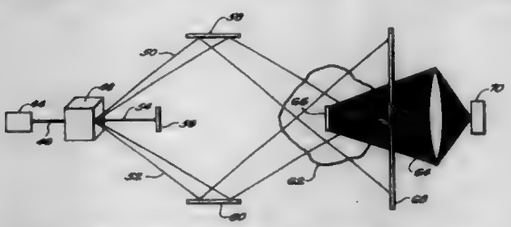
simultaneously qualitatively/quantitatively analyzing respective said components in said body fluid through a calibration curve being previously prepared as to said light scattering spectral intensity at each said measuring wavenumber or said light scattering spectral cumulative intensity in said each measuring wavenumber range and the concentration of said component.

5,796,477

ENTANGLED-PHOTON MICROSCOPY, SPECTROSCOPY, AND DISPLAY

Malvin Carl Teich, Boston, and Bahaa E. A. Saleh, Lexington, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Filed Feb. 27, 1997, Ser. No. 807,395
Int. Cl.[6] G01N *21/63*
U.S. Cl. 356—318 **40 Claims**



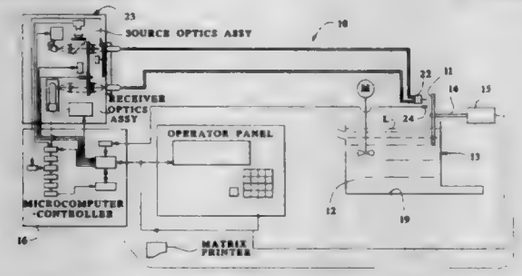
1. An entangled-photon microscopy system, comprising:
a source of light, said source of light providing a pump beam of photons;
a nonlinear optical medium, said nonlinear optical medium receiving said pump beam and splitting a portion of said pump beam into a first twin beam and a second twin beam, wherein daughter entangled photons are contributed to said first twin beam and corresponding daughter entangled photons are contributed to said second twin beam; and
a plurality of moveable beam-directing components for directing each of said twin beams towards a target material, wherein said target material includes emission means responsive to target excitation.

5,796,478

MONITORING OF FILM FORMING LIVING DESPOSITS

Robert L. Wetegrove, Winfield, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Jul. 25, 1997, Ser. No. 900,546
Int. Cl.[6] G01N *21/64*
U.S. Cl. 356—318 **21 Claims**



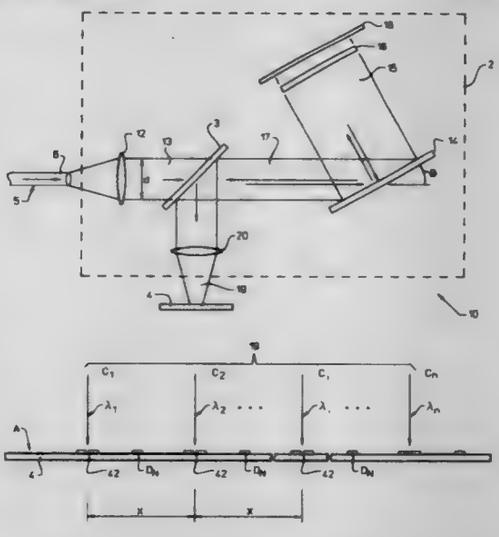
1. An apparatus for detecting and monitoring an amount of film forming living organisms in a system that have a tendency to produce films on equipment surfaces of the system, the apparatus comprising:
a first test surface that is exposed to the fluid of the system,
a first fluorometer for irradiating the first test surface with light of a wavelength and intensity sufficient to cause film forming living organisms that have accumulated on the first test surface to emit fluorescent emissions, the first fluorometer further detecting and measuring the fluorescent emissions emitted by the film forming living organisms that have accumulated on the first test surface.

5,796,479

SIGNAL MONITORING APPARATUS FOR WAVELENGTH DIVISION MULTIPLEXED OPTICAL TELECOMMUNICATION NETWORKS

Dennis Derickson, Windsor, and Roger Lee Jungerman, Petaluma, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 27, 1997, Ser. No. 824,978
Int. Cl.[6] G01J *3/28*
U.S. Cl. 356—326 **13 Claims**



1. A signal monitoring apparatus, comprising:
a spectrometer for receiving an applied optical signal having a plurality of component signals at predefined wavelengths, the spectrometer spatially separating the component signals according to the predefined wavelengths; and
a detector array having a plurality of spatially separated split-detectors, each positioned to receive a corresponding one of the spatially separated component signals and each split-detector having two halves, each half providing an output signal in response to illumination by the received component signal whereby the difference between the output signals of each half indicates deviation from the predefined wavelength of the received component signal and the sum of the output signals from each half indicates power in the received component signal; and
a plurality of noise detectors, each noise detector of the plurality interspaced between the split-detectors for receiving optical noise signals in spectral segments between the predefined wavelengths, each noise detector producing a noise signal output in response to the optical noise signal.

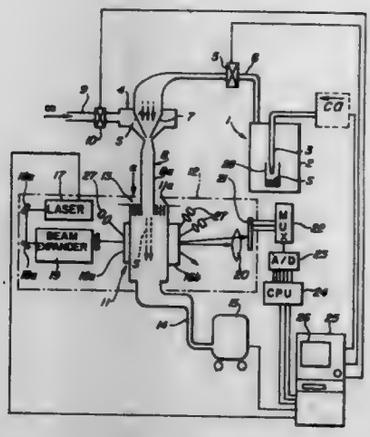
5,796,480

PARTICLE SIZE DISTRIBUTION ANALYZER WITH FRACTIONATOR PRETREATMENT

Tatsuo Igushi, Miyanohigashi-machi, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Nov. 22, 1996, Ser. No. 755,311
Claims priority, application Japan, Nov. 24, 1995, 7-329830
Int. Cl.[6] G01N *15/02*
U.S. Cl. 356—336 **10 Claims**

1. Particle size distribution measuring equipment comprising;
a source of compressed gas;



a fractionator unit having a sealed chamber with a support surface for supporting a sample, a nozzle member connected to the source of compressed gas and directed at the sample support surface to emit compressed gas, the volume of the sealed chamber being larger than the samples, the compressed gas can dilute the sample in the chamber to a predetermined concentration with the gas;

a conduit connected to the sealed chamber;

a disperser unit connected to the conduit;

a flow cell connected to the disperser;

a source of light for illuminating the flow cell;

a detector unit positioned adjacent the flow cell for measuring the light scattered by the particles in the sample; and

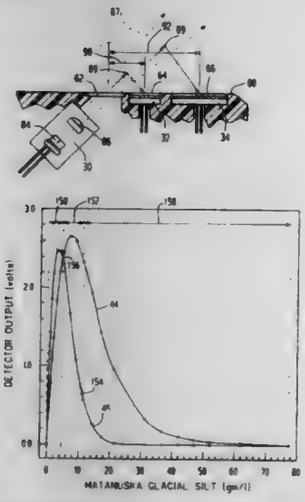
means connected to the detector unit to calculate the particle size distribution.

5,796,481

SUSPENDED PARTICLE CONCENTRATION MONITOR

John P. Downing, Jr., 260 Kala Heights Dr., Port Townsend, Wash. 98368

Filed Jul. 23, 1997, Ser. No. 899,273
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—343 **20 Claims**



1. A suspended particle concentration monitor comprising:

a light source for directing radiation into clear fluid containing a volume of suspended particles;

a near detector circuit including a near light , sensitive element for generating a near detector signal proportional to radiation scattered by the suspended particles onto the near light sensitive element;

a far detector circuit including a far light sensitive element for generating a far detector signal proportional to radiation scattered by the suspended particles onto the far light sensitive element;

said near detector circuit and said far detector circuit being such that for a first concentration of particles the far detector signal is greater than the near detector signal and for a second concentration of particles the near detector signal is greater than the far detector signal; and

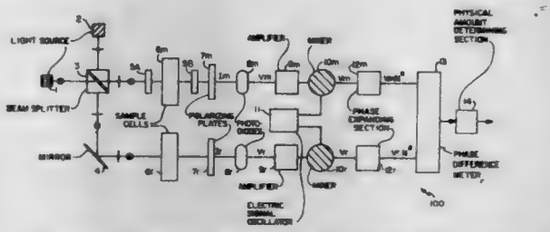
means for analyzing said far and near detector signals to determine particle concentration in a range of concentrations including both said first concentration and said second concentration.

5,796,482

APPARATUS/METHOD FOR OPTICAL MEASURING A PHYSICAL AMOUNT OF A SPECIFIC COMPONENT CONTAINED IN A SUBSTANCE

Kexin Xu; Michio Naka, and Norihito Suzuki, all of Kyoto, Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto-fu, Japan

Filed Oct. 30, 1996, Ser. No. 741,261
Claims priority, application Japan, Oct. 31, 1995, 7-319442
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—349 **4 Claims**



1. An optical measuring apparatus for measuring a physical amount of a specific component contained in a substance to be measured by the use of measurement light which passes through the substance to be measured and the use of predetermined reference light, the optical measuring apparatus comprising:

a first interfering means for obtaining a first light interference signal by interfering the measurement light;

a second interfering means for obtaining a second light interference signal by interfering the reference light;

a first photoelectric converting section for converting the first light interference signal into a first electric signal;

a second photoelectric converting section for converting the second light interference signal into a second electric signal;

a first phase expanding section for expanding a phase of the first electric signal, the first phase expanding section including at least one first multiplying circuit for multiplying the first electric signal, the first multiplying circuit including a first multiplier for expanding a frequency and a phase of the first electric signal, a first amplifier for amplifying an output of the first multiplier, and a first waveform processor for extracting a signal having a predetermined frequency from an output of the first amplifier to remove noise;

a second phase expanding section for expanding a phase of the second electric signal, the second phase expanding section including at least one second multiplying circuit for multiplying the second electric signal, the second multiplying circuit including a second multiplier for expanding a frequency and a phase of the second electric signal, a second amplifier for amplifying an output of the second multiplier, and a second waveform processor for extracting a signal having a predetermined frequency from an output of the second amplifier to remove noise;

a phase difference measuring section for measuring a phase difference between a phase expanded by the first phase expanding section and a phase expanded by the second phase expanding section; and

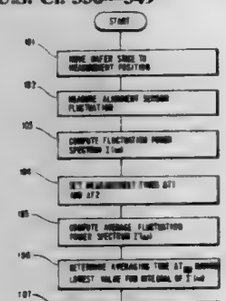
a physical amount determining section for determining the physical amount of the specific component contained in the substance to be measured depending on the phase difference measured by the phase difference measuring section.

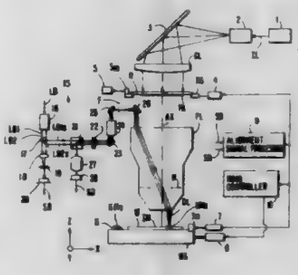
5,796,483

METHOD AND APPARATUS FOR POSITION SENSING

Shigeru Nakayama, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 6, 1996, Ser. No. 761,115
Claims priority, application Japan, Dec. 7, 1995, 7-318727
Int. Cl.[6] G01B 9/02
U.S. Cl. 356—349 8 Claims





1. A method for establishing the desired measurement time for sensing the position of a diffraction-grating-type mark using a beat signal developed from at least two laser beams impinging on said mark comprising the steps of:

sequentially reading the position of said mark during two different measurement time periods based on the phase of said beat signal;

computing the power spectrum of the averaged fluctuations in said readings for an averaging time between said two different time periods; and

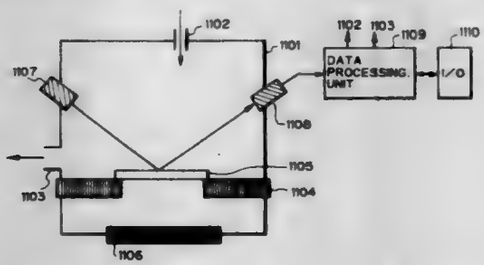
computing the integral of said power spectrum whereby the averaging time during which said integral is at its lowest value equals said desired measuring time.

5,796,484

SYSTEM FOR DETECTING UNEVENNESS DEGREE OF SURFACE OF SEMICONDUCTOR DEVICE

Ichirou Honma, and Fumiki Aisou, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Mar. 14, 1996, Ser. No. 615,875
Claims priority, application Japan, Mar. 16, 1995, 7-083482
Int. Cl.[6] G01B 11/30
U.S. Cl. 356—371 13 Claims



1. A system for detecting a degree of unevenness of a surface of a semiconductor device having a hemispherical-grain polycrystalline silicon formed on a surface thereof, comprising:

means for measuring an intensity of reflected light from said surface of said hemispherical-grain polycrystalline silicon; and

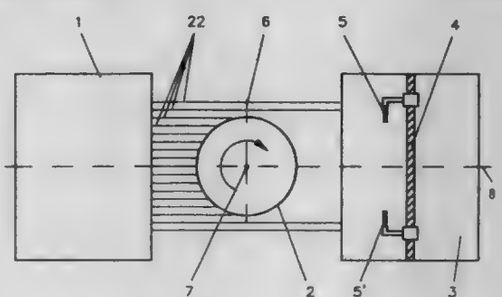
means for determining the degree of unevenness of said surface of said hemispherical-grain polycrystalline silicon in accordance with a stored relationship between the intensity of reflected light and the unevenness degree of said surface of said hemispherical-grain polycrystalline silicon, using only the measured intensity of reflected light from the surface of said semiconductor device.

5,796,485

METHOD AND DEVICE FOR THE MEASUREMENT OF OFF-CENTER ROTATING COMPONENTS

Hans-Ulrich Dassler, Oberschleissheim; Rüdiger Haas, Faistenhaar, and Johann Lang, Schierling, all of Germany, assignors to Steinheil Industrielle Messtechnik GMBH, Ismaning, Germany

PCT No. PCT/DE95/00036, § 371 Date Jul. 17, 1996, § 102(e) Date Jul. 17, 1996, PCT Pub. No. WO95/19542, PCT Pub. Date Jul. 20, 1995
PCT Filed Jan. 12, 1995, Ser. No. 676,206
Claims priority, application Germany, Jan. 18, 1994, 44 01 238.1
Int. Cl.[6] G01B 11/14
U.S. Cl. 356—373 8 Claims



1. A method for measurement of an off-center rotating component of a measured object comprising:

supporting the measured object for rotation about a rotation axis;

illuminating the measured object with a parallel beam from a radiation source within a measurement plane perpendicular to said rotation axis;

detecting, using detecting means, a silhouette of a cross section through the measured object;

determining a position of said rotation axis relative to said detecting means;

adjusting said measurement plane to intersect the off-center rotating component;

measuring, with stationary detecting means, a maximum excursion of a diameter of the off-center rotating component;

observing an angle of rotation of the off-center rotating component; and

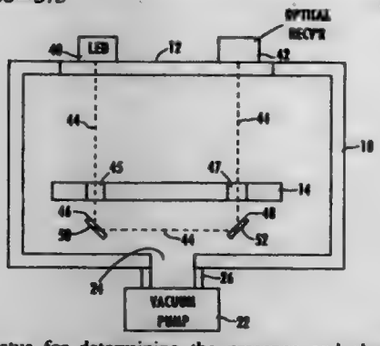
moving said detecting means parallel to said beam to keep a constant separation, parallel to said beam, between said detecting means and said off-center rotating component.

5,796,486

APPARATUS METHOD FOR DETERMINING THE PRESENCE OR ABSENCE OF A WAFER ON A WAFER HOLDER

David E. Jacob, Fremont, Calif., assignor to LAM Research Corporation, Fremont, Calif.

Filed Mar. 31, 1997, Ser. No. 832,621
Int. Cl.[6] G01B 11/14; B05C 11/00; B65G 49/07; H01J 40/14
U.S. Cl. 356—375 15 Claims



1. Apparatus for determining the presence and absence of a semiconductor wafer on a wafer holder in a vacuum chamber having a sealed optically transparent window comprising a source of optical energy positioned outside the chamber, a receiver for the optical energy positioned outside the chamber, a light path extending from the source through the window and through the wafer holder when no wafer is on the wafer holder, the optical path extending to the receiver through the window and being bent downstream of the wafer holder, the optical receiver being positioned and arranged so optical energy from the source reflected from a wafer in situ on the wafer holder is not incident on the optical receiver, the optical receiver thereby having optical energy from the source incident on it when no wafer is present in the wafer holder, and optical energy from the source not being incident on the receiver when a wafer is on the wafer holder.

5,796,487

DARK FIELD, PHOTON TUNNELING IMAGING SYSTEMS AND METHODS FOR OPTICAL RECORDING AND RETRIEVAL

John M. Guerra, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 28, 1996, Ser. No. 671,708
Int. Cl.[6] G01B 11/24
U.S. Cl. 356—376 28 Claims

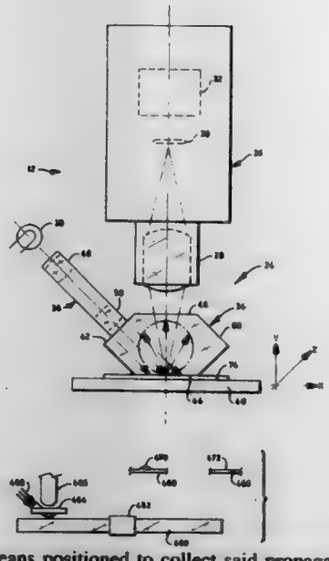
1. A dark field, photon tunneling imaging system for optical storage and retrieval, said system comprising:

a light transmissive recording medium comprising a surface having formed therein a plurality of local optical scattering sites by which information has been encoded proximate said surface;

a flying total internal reflection head comprising a total internal reflection surface, said total internal reflection surface positioned proximate said recording medium surface;

lighting means for illuminating said total internal reflection head such that an evanescent field is produced at said total internal reflection surface, said evanescent field extending to said recording medium surface;

means for mounting said light transmissive recording media so that said scattering sites are brought into contact with said evanescent field so that light initially bound within said wavelength evanescent field is converted at least in part into propagating light through the process of back scattering from said scattering sites such that, in the absence of a scattering site or where a scattering site is distant, no evanescent light energy is converted into propagating light, said propagating light varying in correspondence with the scattering properties of said scattering sites and the local distance of said scattering sites from said evanescent field;



imaging means positioned to collect said propagating light and form an image with it in which the scattering sites are present as imagewise variations in image intensity; and

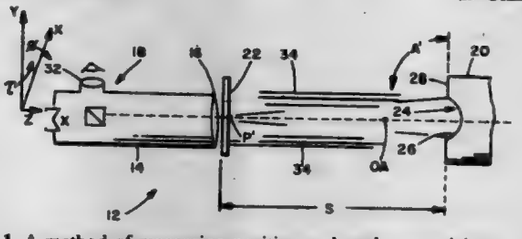
photodetector means for generating an image signal having an amplitude that varies in accordance with the presence or absence of a scattering site.

5,796,488

OPTICAL TARGET ALIGNMENT AND TECHNIQUE

Conrad Stenton, Midland, Canada, and Melvin Francis, Tigard, Oreg., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 29, 1996, Ser. No. 608,907
Int. Cl.[6] G01B 11/00
U.S. Cl. 356—399 19 Claims



1. A method of measuring position and angle comprising:

providing a tooling telescope having an optical axis extending generally along its longitudinal extent and having a first end associated with an ocular means and a second end associated with a light collecting opening for permitting light passage through said telescope;

providing a transparent target surface and disposing said transparent target surface at said second end of said telescope and securing it against movement relative to said telescope second end;

providing an alignment target having a light reflecting face confronting said second end of said telescope, said light reflecting face being defined by a recess having a parabolic surface and a flat surface surrounding said parabolic recess; and

using light reflected off said flat surface to create collimated light passing through said target surface to define an angle of measurement of said tooling telescope and using light reflected off said parabolic surface to focus a point on said transparent target surface to measure position.

5,796,489

HOLLOW VACUUM-TIGHT CERAMIC SHAPED BODY

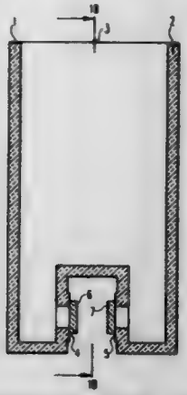
Roland Emmrich, Gillestrasse 8, 07743 Jena, and Gerhardt Krippl, August-Bebel-Strasse 19, D-07646 Stadtroda, both of Germany

PCT No. PCT/DE93/01000, § 371 Date Jul. 29, 1996, § 102(e) Date Jul. 29, 1996, PCT Pub. No. WO95/11444, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 20, 1993, Ser. No. 635,885

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—440 4 Claims



1. A hollow vacuum-tight shaped body made of ceramic material for measuring transmission and absorption of electromagnetic radiation in liquids and gases, wherein the ceramic material mainly consists of Al_2O_3 ceramic having at least one aperture each with a sapphire window permeable to electromagnetic radiation of a wavelength range from 180 nm to 5.5 μm, and wherein for the sealing between the sapphire window and the aperture wall a green ceramic film corresponding to the surfaces to be joined is arranged, forming an integral, permanent, vacuum-tight seal by a sintering process with a surface pressure of 0.2 to 4 MPa.

5,796,490

DOCUMENT READER SYSTEM

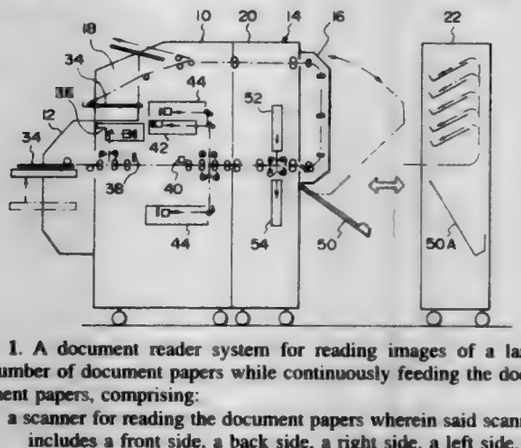
Shinichi Shidara; Yutaka Takahashi; Hajime Tachibana, all of Tokyo; Kiyoji Nakamura, Kanagawa; Ushio Anayama, Kanagawa, and Noriyasu Ishiwata, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 10, 1996, Ser. No. 677,972

Claims priority, application Japan, Jul. 10, 1995, 7-195728

Int. Cl.[6] H04N *1/21;* G03G *15/00*

U.S. Cl. 358—296 9 Claims



1. A document reader system for reading images of a large number of document papers while continuously feeding the document papers, comprising:

a scanner for reading the document papers wherein said scanner includes a front side, a back side, a right side, a left side, an inner portion, and first and second paper feeding paths;

an auto-feeder for continuously feeding the document papers to said scanner;

a stacker provided in said scanner for receiving the document papers read by said scanner; and

a turn unit removably attached to said scanner for turning the document papers from said first paper feeding oath to said second paper feeding path and into said stacker.

5,796,491

COLOR IMAGE-FORMING MACHINE WHICH SELECTS DIFFERENT MASKING OPERATIONS BASED UPON DIFFERENT COLOR REGIONS

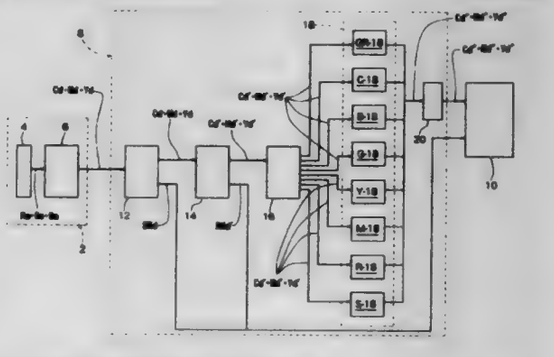
Syuji Hayashi, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Sep. 17, 1996, Ser. No. 715,000

Claims priority, application Japan, Oct. 18, 1995, 7-269618

Int. Cl.[6] H04N *1/40;1/46;* G06K *9/36;9/80*

U.S. Cl. 358—298 3 Claims



1. A color image-forming comprising:

a color image signal-forming means for outputting digital signals Cd, Md, and Yd expressing, on tone levels, three primary colors C, M, and Y for a number of pixels,

a masking means for correcting said digital signals Cd, Md, and Yd in compliance with masking operation expressions; and

a color region discrimination means which discriminates, based on said digital signals Cd, Md, and Yd, to which one of a plurality of predetermined color regions said each of a number of pixels belongs; and wherein

said masking means corrects said digital signals Cd, Md, and Yd by selecting different masking operation expressions depending upon said Plurality of color regions, and said plurality of color regions are determined based on a relative ratio of said digital signals Cd, Md, and Yd.

5,796,492

ROTATABLE CONTROL PANEL FOR A SCANNER

Edward C. Reifenstein, III, Cambridge, Mass., assignor to Agfa Division, Bayer Corporation, Wilmington, Mass.

Filed Mar. 20, 1996, Ser. No. 619,784

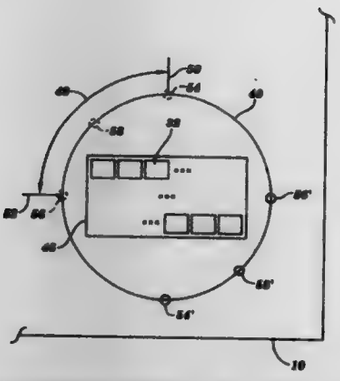
Int. Cl.[6] H04N *1/00;* G09G *5/00*

U.S. Cl. 358—400 17 Claims

1. An apparatus comprising:

a scanning system for producing a digital representation of an original;

a control panel for controlling said scanning system; and



a system for rotatably mounting said control panel on said scanning system according to an operational position of the scanning system on a support surface.

5,796,493

FACSIMILE MACHINE

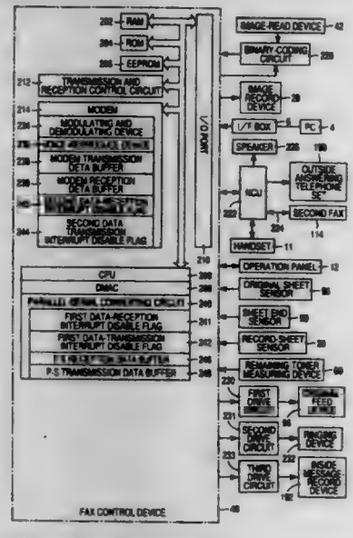
Suzuyo Murai, and Yuji Asano, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 25, 1995, Ser. No. 451,116

Claims priority, application Japan, May 30, 1994, 6-116451; Jul. 22, 1994, 6-171113

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—442 **21 Claims**



1. A facsimile machine comprising:

at least one of a first facsimile-data transmitter and a first facsimile-data receiver;

a first telephone set;

a data receiver including a connector connectable via a private communication computer for receiving, from the personal computer, designating data designating a second telephone set other than said first telephone set;

a calling device which calls said second telephone set designated by said designating data, so as to connect said first telephone set to the second telephone set via a public communication line:

a judging means for judging a condition of a facsimile transmission; and

informing means for informing said external personal computer of said Judged condition, wherein said judging means and said informing means are, housed in said facsimile machine.

5,796,494

FACSIMILE MACHINE CONNECTABLE TO AN EXTERNAL COMPUTER

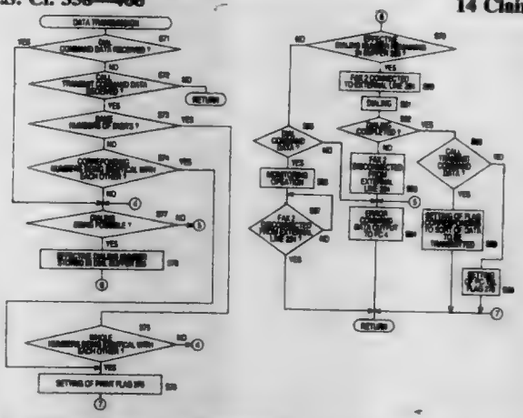
Yuji Asano, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi-Ken, Japan

Filed May 25, 1995, Ser. No. 452,564

Claims priority, application Japan, May 30, 1994, 6-116326

Int. Cl.[6] H04N *1/32;1/00;1/40;* **H01J** *13/00*

U.S. Cl. 358—468 **14 Claims**



1. A facsimile machine comprising:

a first facsimile-data receiver including a connector connectable to an external computer for receiving, from the computer, facsimile data including image data representing an image, and receiver-designating data designating a second facsimile-data receiver to which said facsimile data are transmitted, the second facsimile-data receiver being different from the computer;

a facsimile-data transmitter which transmits said facsimile data to the second facsimile-data receiver designated by said receiver-designating data;

a recorder which records, on a recording medium, said image represented by said image data of said facsimile data;

a memory which stores self-designating data designating said first facsimile-data receiver, said receiver-designating data and said self-designating data being of same kind of data as each other, so that the receiver-designating data are comparable with the self-designating data; and

a control device which controls said recorder to record said image represented by said image data of said facsimile data when said receiver-designating data are identical with said self-designating data, and does not control said recorder to record said image when said receiver-designating data are not identical with said self-designating data, wherein said control device controls said facsimile-data transmitter to transmit said facsimile data to the second facsimile-data receiver designated by said receiver-designating data, when said receiver-designating data are not identical with said self-designating data.

5,796,495

IMAGE INPUT EQUIPMENT

Masami Miyata, and Yoshikazu Ohara, both of Nagoya, Japan, assignors to Elmo Co., Ltd., Aichi, Japan

Filed Aug. 29, 1994, Ser. No. 297,590

Claims priority, application Japan, Aug. 31, 1993, 5-240389

Int. Cl.[6] H04N *1/40;1/04*

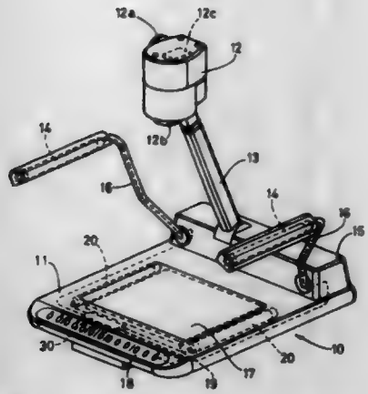
U.S. Cl. 358—471 **1 Claim**

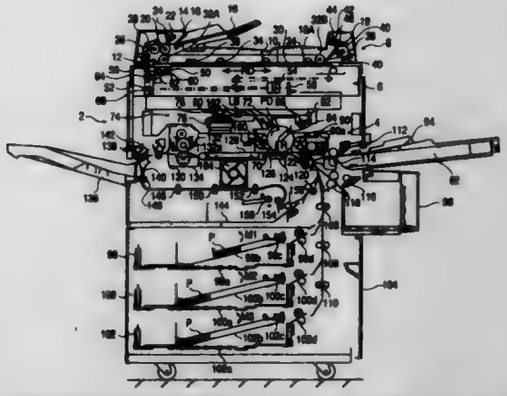
1. An image input equipment comprising:

a stage for holding an object placed thereon, the stage having a diffusion board provided on an upper surface thereof,

an image input head for inputting an image of the object and photoelectrically converting the image into an electric signal,

a supporting pillar for supporting the image input head and positioning the image input head over the stage,





exterior illumination lamps for illuminating the object placed on the stage from above the stage,

interior illumination lamps for illuminating the object placed on the stage through the diffusion board from inside the stage each interior illumination lamp having the same rated voltage as each exterior illumination lamp,

exterior illumination switch operable for activating or deactivating the exterior illumination lamps,

an interior illumination switch operable for activating or deactivating the interior illumination lamps,

lighting circuits selectively outputting the rated voltage or a low voltage lower than the rated voltage,

first changeover means for selectively connecting the lighting circuits to either the exterior illumination lamps or the interior illumination lamps,

second changeover means for switching the voltage output from the lighting circuits between the rated voltage and the low voltage, and

control means for controlling the first and second changeover means in accordance with operation of the exterior or interior illumination switches so that when the exterior illumination switch is operated while the exterior illumination lamps are in an activated state, the low voltage is output from the lighting circuits, so that when the exterior illumination switch is operated while the exterior illumination lamps are in a deactivated state, the lighting circuits are connected to the exterior illumination lamps respectively subsequently to output of the low voltage from the lighting circuits, and thereafter, the rated voltage is output from the lighting circuits, so that when the interior illumination switch is operated while the interior illumination lamps are in an activated state, the low voltage is output from the lighting circuits, and so that when the interior illumination switch is operated while the interior illumination lamps are in a deactivated state, the lighting circuits are connected to the interior illumination lamps respectively subsequently to output of the low voltage from the lighting circuits, and thereafter, the rated voltage is output from the lighting circuits.

5,796,496

IMAGE-DATA PROCESSING APPARATUS WHICH AUTOMATICALLY SELECTS ONE OF A COPYING FUNCTION AND A FACSIMILE FUNCTION BASED ON AN ORIENTATION OF AN ORIGINAL

Kenichi Ono, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 22, 1994, Ser. No. 310,388

Claims priority, application Japan, Sep. 22, 1993, 5-259249

Int. Cl.[6] H04N *1/00;1/04;* **G03G** *15/00*

U.S. Cl. 358—498 **21 Claims**

1. An image-data processing apparatus, comprising:

an image-scanning portion, which converts an original image on an image-reading area to image data;

an automatic-document feeder, the automatic-document feeder having a tray on which originals having the original image are placed, the automatic-document feeder being configured to transport the originals from the tray to the image-reading area one by one;

an image-forming portion, which, in a first mode, forms an image on an image bearing member on the basis of the image data;

a data transmission interface device configured to transmit the image data in a second mode; and

a control system configured to automatically set the first mode when the originals are placed on the tray so that the automatic-document feeder transports the originals from a last sheet of the originals, and to automatically set the second mode when the originals are placed on the tray so that the automatic-document feeder transports the originals from a first sheet of the originals.

5,796,497

Patent Not Issued For This Number

5,796,498

HOLOGRAPHIC IMAGING

Paul Michael French, London, Great Britain, assignor to Imperial College of Science, Technology and Medicine, London, United Kingdom

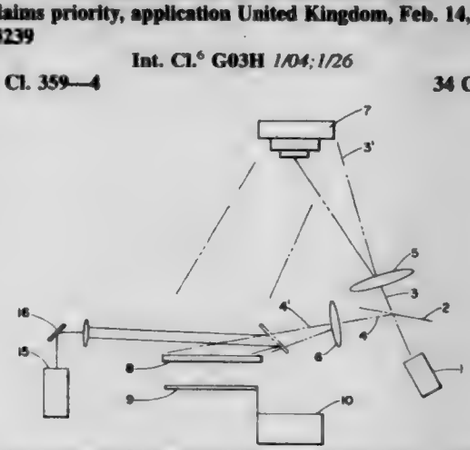
PCT No. PCT/GB93/00316, § 371 Date Sep. 6, 1994, § 102(e) Date Sep. 6, 1994, PCT Pub. No. WO93/16419, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 15, 1993, Ser. No. 284,616

Claims priority, application United Kingdom, Feb. 14, 1992, 9203239

Int. Cl.[6] G03H *1/04;1/26*

U.S. Cl. 359—4 **34 Claims**



1. An apparatus for imaging an object obscured by a diffusing medium, comprising:

a pulsed laser light source to generate an object beam (3') and a reference beam (4') whereby the object (7) obscured by the diffusing medium can be illuminated with the object beam (3');

a real time interferogram recording medium (8), comprising a photorefractive medium, arranged to be exposed to, and to record an interferogram formed by the coincidence of light from the object (7) and the reference beam (4');

a means for reconstructing an image from the interferogram; and

a means for recording the image;

said apparatus including a reference beam path means for guiding the reference beam so that a pulse of the reference beam arrives at the real time interferogram recording medium so as to be coincident with at least one of unscattered light and least scattered light from the object, thereby causing the interferogram recorded to represent the information content contained within the unscattered light or the least scattered light from the object (7).

5,796,499

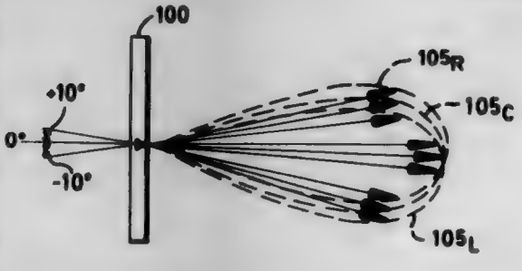
TRANSMISSION HOLOGRAPHIC DIFFUSER MADE AND USED TO EFFECT LATERAL COLOR CONSTANCY IN REAR SCREEN PROJECTION DISPLAY SYSTEMS

Michael M. Wenyon, Boston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 28, 1997, Ser. No. 808,319

Int. Cl.[6] G02B *5/32;5/02;* **G03B** *21/56*

U.S. Cl. 359—15 **12 Claims**



1. A projection screen for the viewing from the front side thereof of a multicolor image projected rearwardly to said projection screen, said projection screen comprising in order:

(a) a rigid light-transmissive faceplate transmissive of color separation images in overlapping registration for combination into said multicolor image;

(b) a holographic transmission diffuser element proximate said faceplate, said holographic transmission diffuser element comprising a light-transmissive substrate transmissive of said color separation images and having deposited thereon a holographic transmission diffuser element, said diffuser element, upon impingement with a light beam of 400 nm to 700 nm wavelength and an incident input angle of approximately ±0° to 10° relative to normal incidence, producing a single elliptical output lobe of diffuse light, the output lobe produced in each area of said holographic transmission diffuser element having a relative angular intensity distribution and aspect ratio substantially identical to the relative angular intensity distribution and aspect ratio of output lobes produced in each other area of said holographic transmission diffuser element; and

(c) a light collimating element proximate said holographic transmission diffuser element.

5,796,500

METHODS AND APPARATUS FOR MAKING HOLOGRAMS

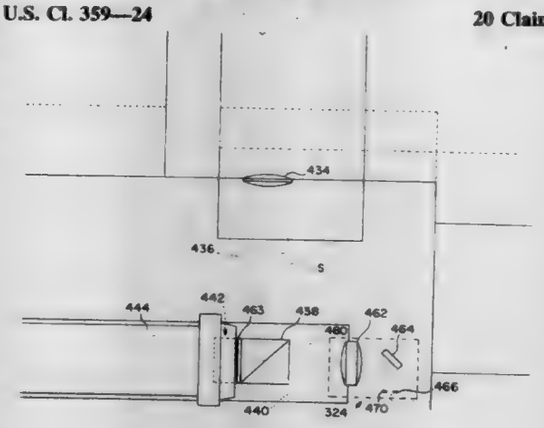
Stephen J. Hart, San Juan Capistrano, Calif., assignor to VOXEL, Laguna Hills, Calif.

PCT No. PCT/US93/11501, § 371 Date Sep. 11, 1995, § 102(e) Date Sep. 11, 1995, PCT Pub. No. WO94/12913, PCT Pub. Date Jun. 9, 1994

Continuation-in-part of Ser. No. 982,316, Nov. 27, 1992, abandoned. This PCT application Nov. 26, 1993, Ser. No. 454,381

Int. Cl.[6] G03H *1/26*

U.S. Cl. 359—24 **20 Claims**



1. A method for making a composite transmission hologram of a data set, the data set comprising about 100 two-dimensional, spaced apart data slices together representative of a three-dimensional physical system, comprising the steps of:

providing a thin, substantially planar, photosensitive substrate having a first surface;

determining a photosensitive exposure characteristic of said substrate;

applying a reference beam characterized by a first wavelength to a substantially planar single substrate at a first incident angle with respect to said first surface, said single substrate comprising a photosensitive emulsion overlaying a thin film support;

applying an object beam, characterized by said first wavelength, to said single substrate at a second incident angle substantially orthogonally thereto;

consecutively interposing said plurality of data slices into said object beam to thereby record respective holograms within said emulsion corresponding to said data slices, while maintaining said first and said second angle constant;

controlling, in accordance with said predetermined photosensitive exposure characteristics of said substrate, the effective exposure energy of each of said data slices during said recording step such that each of said recorded holograms are substantially equally bright;

photochemically processing said single substrate to generate said composite hologram;

applying a replay beam, characterized by said first wavelength, to said composite hologram at said first incident angle to thereby replay said composite hologram while maintaining a constant angular relationship between said replay beam and said single substrate, such that each of said holograms corresponding to said data slices exhibit substantially the same diffraction efficiency when simultaneously viewed, resulting in a bright, diffuse composite hologram suitable for detailed visual analysis.

5,796,501
WAVELENGTH DIVISION MULTIPLEXING OPTICAL COMMUNICATION NETWORK

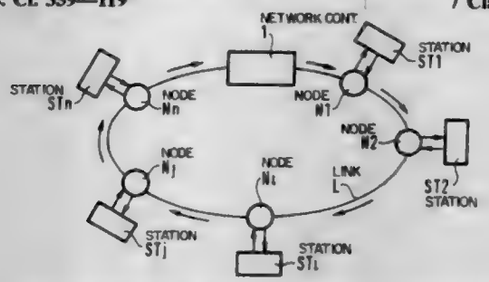
Michel Sotom; Francesco Masetti, both of Paris; Dominique De Bouard, Ste Genevieve Des Bois; Jean-Michel Gabriagues, Asnieres, and Dominique Chiaroni, Antony, all of France, assignors to Alcatel N.V., Rijswij, Netherlands

Filed Jul. 11, 1996, Ser. No. 678,266

Claims priority, application France, Jul. 12, 1995, 95 08437

Int. Cl.[6] H04B *10/20;* **H04J** *14/00;14/02*

U.S. Cl. 359—119 **7 Claims**



1. A data communication network using optical links and wavelength multiplexing to exchange messages between nodes constituting at least one subset of said network, wherein:

said messages are contained in time intervals defined by a clock signal;

each node has an input connected to one of said links to receive messages by detecting at least one specific receive wavelength;

each node has an output connected to said link enabling it to send messages by modulation of an optical wave;

each node is adapted to have messages to be sent conveyed by an optical wave of a specific send wavelength unique to said each node, and to associate therewith respective destination labels containing addresses identifying destination nodes of the messages, each message and its associated destination label being sent in a same one of said time intervals, each specific send wavelength being independent of the addressed destination;

a network controller connected to said link is adapted to receive said messages and said associated labels sent by each of said nodes and to forward said messages received to the inputs of said nodes;

said forwarded messages are conveyed by wavelengths respectively corresponding to the receive wavelengths of the destination nodes identified by the labels respectively associated with said messages; and

said unique send wavelength of each node is different from said receive wavelengths of the other nodes.

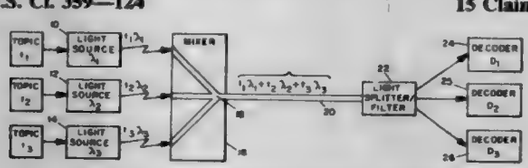
5,796,502
MULTIPLE INDEPENDENT/DEPENDENT MONOCHROMATIC LIGHT FREQUENCY FIBER OPTIC COMMUNICATION SYSTEM AND METHOD

John L. Haller, Jr., 7249 Carrizo Dr., La Jolla, Calif. 92037

Filed Jan. 6, 1997, Ser. No. 778,846

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—124 **15 Claims**



1. An optical fiber communication system, comprising:

at least one optical fiber extending over a desired communication path;

a plurality of remote stations each linked to the optical fiber for communicating information, the remote stations including a plurality of transmitter stations and a plurality of receiver stations;

each transmitter station including an information unit for producing an output information signal including data on at least one topic, at least one signal path connected to the output of the information unit, a single light source in said signal path coupled to the information unit for producing an output light signal of predetermined frequency carrying the information signal, and a coupler for coupling the light signal into the optical fiber, each of the signal paths and light sources being separate from any other signal paths and light sources in the transmitter station;

each receiver unit including a filter for filtering light signals of at least one predetermined frequency from the light signals traveling along the fiber, and a decoder unit coupled to the filter for producing the information signal from the modulated light signal;

at least some of the light sources having different frequencies; and

each topic of information to be carried by the optical fiber being assigned to one of said frequencies, whereby the combined optical signal carried by the fiber can be filtered according to topic.

5,796,503
OPTICAL COMMUNICATION SYSTEM WHEREIN OPTICAL BEAT INTERFERENCE AT THE CENTER IS REDUCED

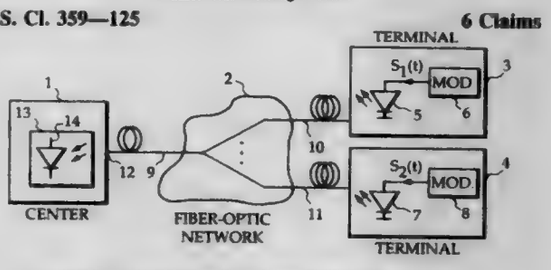
Bernhard Junginger, Leonberg, and Joachim Selinger, Stuttgart, both of Germany, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris, France

Filed Jan. 24, 1997, Ser. No. 791,416

Claims priority, application Germany, Jan. 31, 1996, 196 03 403.5

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—125 **6 Claims**



1. An optical communication system wherein

a center (1) is connected to a number of terminals (3, 4) by a fiber-optic network (2),

wherein each of the terminals (3, 4) has a light source (5, 7) and a modulator (6, 8) for transmitting optical signals to the center (1), wherein each of the modulators (6, 8) controls the respective light source (5, 7) connected thereto by a modulating subcarrier signal ($(S_1(t), S_2(t))$, and wherein the center (1) has a device (13) for receiving the optical signals,

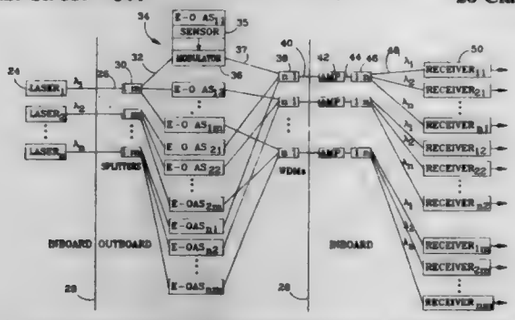
characterized in that

each of the modulators (6, 8) controls the respective light source (5, 7) in such a way that the light source (5, 7) emits light only within successive first time intervals (T_{1L}, T_{2L}) which are separated by second time intervals (T_{1D}, T_{2D}) , and that the first time intervals (T_{1L}, T_{2L}) are shorter than the second time intervals (T_{1D}, T_{2D}).

5,796,504
FIBER-OPTIC TELEMETRY SYSTEM AND METHOD FOR LARGE ARRAYS OF SENSORS

James F. Sonderegger, San Clemente, and Robert H. Buckley, Santa Ana Heights, both of Calif., assignors to Hughes Electronics, Los Angeles, Calif.

Filed Mar. 13, 1996, Ser. No. 596,898
Int. Cl.[6] H04B *10/12;* **H04J** *14/02*
U.S. Cl. 359—144 **26 Claims**



1. An electro-optic data transmission and reception system, comprising:

at least one light source, located in a protected environment,

an optical splitter, located outside of said protected environment, said splitter receiving light from a respective light source and splitting said light into a plurality of output signals,

a plurality of electro-optical modulators, located outside of said protected environment, each modulator arranged to receive a respective output signal from said splitter and modulating said output signal in accordance with an external stimulus,

a multiplexer, located outside of said protected environment, said multiplexer receiving modulated output signals from a plurality of said modulators and combining them into a multiplexed output signal,

a demultiplexer, located in a protected environment, demultiplexing said multiplexed output signal into a plurality of demultiplexed signals, and

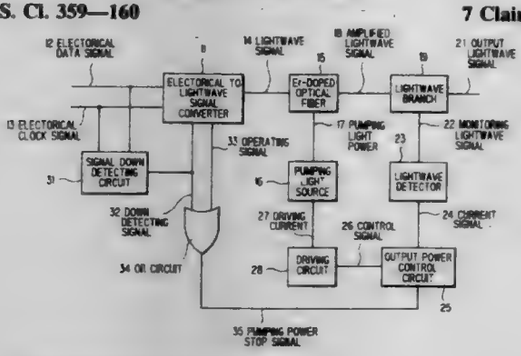
a receiver, located in a protected environment, coupled to receive one of said demultiplexed signals from said demultiplexer and convert it to an electrical signal,

the number of said modulators being greater than the number of said light sources and the number of optical signals passing from the unprotected to the protected environments being less than the number of said modulated output signals received by said multiplexer.

5,796,505
LIGHTWAVE TRANSMITTER

Mizuyuki Ushirozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 4, 1995, Ser. No. 566,946
Claims priority, application Japan, Dec. 2, 1994, 6-299311
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—160 **7 Claims**



1. A lightwave transmitter comprising:

an electrical to lightwave signal converter which converts a supplied electrical signal into a lightwave signal,

a rare-earth element doped optical fiber which amplifies said lightwave signal,

a pumping light source which supplies a pumping light power to said rare-earth element doped optical fiber,

interruption detecting means which detects an interruption condition of said lightwave signal,

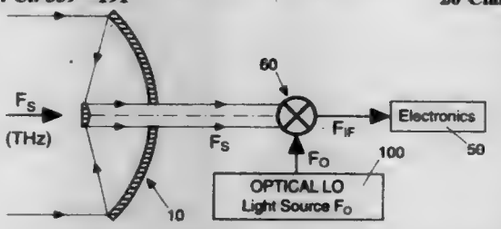
means for temporarily stopping a generation of said lightwave signal by said electrical to lightwave signal converter for a predetermined period of time beginning from detection of said interruption condition until said predetermined period of time has passed, and

means for temporarily stopping said pumping light power for said predetermined period of time beginning from said detection of said interruption condition until said predetermined period of time has passed.

5,796,506
SUBMILLIMETER INDIRECT HETERODYNE RECEIVER AND MIXER ELEMENT

Charles Su-Chang Tsai, 2653 S. Daytona Ave., Hacienda Hts., Calif. 91745

Filed Nov. 21, 1995, Ser. No. 560,793
Int. Cl.[6] H04B *10/148;10/06*
U.S. Cl. 359—191 **20 Claims**



1. A coherent receiver for electromagnetic radiation comprising:

an input optics means for collecting an input signal of electromagnetic radiation at a frequency F_S lower than approximately 10^{13} Hz,

an optical local oscillator means for generating an optical signal at a frequency F_O higher than approximately 3×10^{13} Hz, said optical signal is amplitude-modulated at a frequency F_{LO} lower than approximately 10^{13} Hz,

a mixer element means responsive simultaneously to said frequencies F_S, F_O, and F_{LO}, wherein said input signal is injected electrically into said mixer element means and said optical signal is injected optically into said mixer element means to produce an output signal at a frequency F_{IF} substantially equal to the difference between said frequencies F_S and F_{LO},

and an electronics means connected to said mixer element means for processing said output signal.

5,796,507

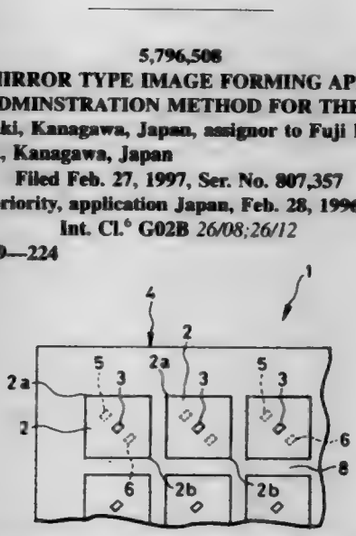
Patent Not Issued For This Number

5,796,508

MICROMIRROR TYPE IMAGE FORMING APPARATUS AND ADMINSTRATION METHOD FOR THE SAME

Kenji Suzuki, Kanagawa, Japan, assignor to Fuji Photo Film, Co., Ltd., Kanagawa, Japan

Filed Feb. 27, 1997, Ser. No. 807,357
Claims priority, application Japan, Feb. 28, 1996, 8-041266
Int. Cl.[6] G02B *26/08;26/12*
U.S. Cl. 359—224 17 Claims



1. A micromirror type image forming apparatus including a micromirror device having at least one micromirror array in which a plurality of micromirrors are disposed and a light source for illuminating said micromirror device, each of said micromirrors is changeable between a valid reflection state and an invalid reflection state, in said valid reflection state, light from said light source being reflected toward an image forming optical path and in said invalid reflection state, said light being reflected toward an eliminating optical path, said micromirror type image forming apparatus comprising:

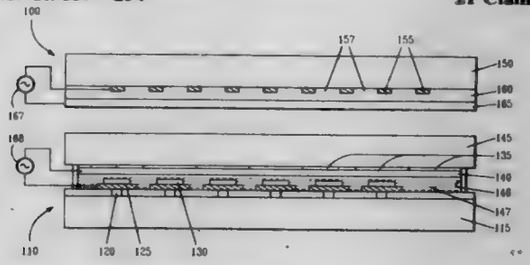
a photometry unit for measuring photometric values of said light reflected by said micromirror in said invalid reflection state, said photometry unit being disposed at said eliminating optical path.

5,796,509

THIN FILM FRONTLIGHTING AND BACKLIGHTING FOR SPATIAL LIGHT MODULATORS

Fuad Elias Doany, Katonah, N.Y., and Ronald Roy Troutman, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1996, Ser. No. 700,912
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—254 21 Claims



1. A thin film light comprising:

a pair of electrodes including a substantially transparent electrode and an opposing patterned reflective electrode; and

a light generating thin film located between said pair of electrodes, wherein said light generating thin film generates light in response to an electrical signal applied across said pair of electrodes;

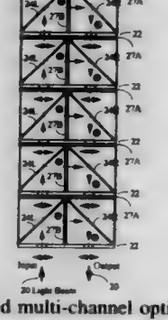
said light passing through said substantially transparent electrode to illuminate a display, and reflecting from said patterned reflective electrode toward said display.

5,796,510

LADDER-STRUCTURED PHOTONIC VARIABLE DELAY DEVICE

X. Steve Yao, 22520 Mountain Laurel Way, Diamond Bar, Calif. 91765

Division of Ser. No. 564,920, Nov. 30, 1995. This application Apr. 7, 1997, Ser. No. 835,352
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—256 20 Claims



1. A ladder-structured multi-channel optical device for independently varying a path length of an optical beam of each channel, comprising:

A first polarization beamsplitter and a second polarization beamsplitter being arranged as a polarization sensitive corner reflector operable to pass the optical beam of a first polarization state and reflect the optical beam of an orthogonal polarization state;

a polarization rotator array containing multiple polarization rotators each independently operable to rotate the first polarization state to the orthogonal polarization state when being activated and leave the first polarization state unaffected when being de-activated;

said polarization rotator array being placed parallel to a hypotenuse of the polarization sensitive corner reflector to form a basic unit with the corner reflector;

multiple basic units being stacked on top of each other with all the polarization rotator arrays being parallel to one another and aligned;

each polarization rotator in a basic unit being controlled either for the optical beam to pass to an upper level unit or to be reflected towards a lower level unit, thereby altering the path length of the optical beam exiting the device.

5,796,511

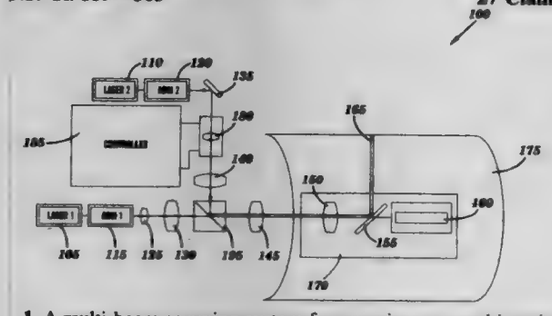
MULTI-BEAM SCANNER WITH ACOUSTO-OPTIC ELEMENT FOR SCANNING IMAGING SURFACES

Roy D. Allen, Burlington, Mass., and Frank Scholten, Livingston, N.J., assignors to Agfa Division, Bayer Corporation, Wilmington, Mass.

Filed Aug. 30, 1996, Ser. No. 706,338

Int. Cl.[6] G02F *1/33*

U.S. Cl. 359—305 **27 Claims**



1. A multi-beam scanning system for scanning a curved imaging surface, comprising:

at least one radiation emitter configured to emit a first beam of radiation and a second beam of radiation;

a spin deflector, rotatable about a spin axis, configured to direct the first beam to form a first scan line and the second beam to form a second scan line on said imaging surface; and

at least one acousto-optic element, disposed in the path of at least one of the first and the second beams and upstream of said spin deflector, operable to deflect said at least one of the first and the second beams with respect to the spin axis of the spin deflector.

5,796,512

SUBICRON IMAGING SYSTEM HAVING AN ACOUSTO-OPTIC TUNABLE FILTER

Elliot S. Wachman; Daniel L. Farkas, and Wen-Hua Niu, all of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Feb. 16, 1996, Ser. No. 603,035

Int. Cl.[6] G02F *1/33*

U.S. Cl. 359—308 **24 Claims**

9. A system comprising:

an acousto-optic tunable filter for receiving light at an input end thereof and outputting light at an output end thereof;

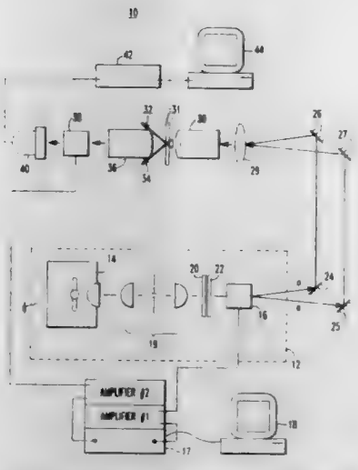
an amplifier for applying a tuning signal to said filter;

means for holding a sample;

a dark-field condenser positioned to illuminate the sample;

an objective lens to collect fluorescence from the sample for input to said input end of said acousto-optic filter; and

a prism for receiving the light output at said output end of said filter, said prism being oriented at an angle with respect to



said filter to compensate for dispersion of said output light caused by said tunable filter.

5,796,513

LASER ARRANGEMENT FOR GENERATING NARROW-BAND, TUNABLE COHERENT RADIATION

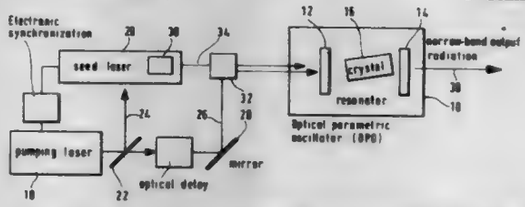
Uwe Stamm, Göttingen; Peter Lokai, Bovenden; Peter Genter, and Ingo Klaft, both of Göttingen, all of Germany, assignors to Lambda Physik Gesellschaft zur Herstellung von Lasern MgH, Germany

Filed Aug. 22, 1996, Ser. No. 701,715

Claims priority, application Germany, Aug. 30, 1995, 195 31 958.3; Jun. 21, 1996, 196 24 865.5

Int. Cl.[6] H01S *3/109*

U.S. Cl. 359—330 **9 Claims**



1. A laser arrangement for generating narrow-band, tunable and coherent radiation, having

- at least one optically nonlinear crystal (**16**) which is arranged in an optical resonator (**12, 14**) for the purpose of forming an optical parametric oscillator (**10**),
- a tunable seed oscillator (**20**) which emits seed radiation (**34**) whose wavelength can be set in a narrow-band fashion by means of at least one wavelength-selective element (**30**), and having
- a device (**32**) for coupling the seed radiation into the optical parametric oscillator (**10**),

wherein the lineshape $I_{seed}(\lambda)$ of the seed radiation which is set using the wavelength-selective element (**30**),

and the intensity transmission function $T_{opo}(\lambda)$ of the non-pumped resonator (**12, 14**) of the optical parametric oscillator (**10**) are such that, given tuning of the center wavelength $\lambda_{max\ seed}$ of the seed oscillator in the center between two neighboring transmission maxima of the intensity transmission function $T_{opo}(\lambda)$, it holds for all wavelengths λ not equal to $\lambda_{max\ seed}$ that:

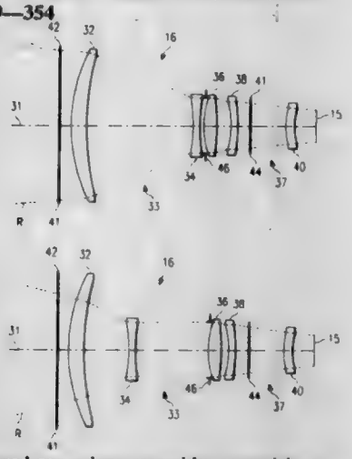
$$I_{seed}(\lambda_{max\ seed})\cdot T_{opo}(\lambda_{max\ seed}) > I_{seed}(\lambda)\cdot T_{opo}(\lambda).$$

5,796,514

INFRARED ZOOM LENS ASSEMBLY HAVING A VARIABLE F/NUMBER

Robert B. Chipper, Allen, Tex., assignor to Raytheon TI Systems, Inc., Lewisville, Tex.

Filed Jan. 23, 1997, Ser. No. 786,951
Int. Cl.[6] G02B 15/14;13/14;27/44
U.S. Cl. 359—354 22 Claims



1. An infrared zoom lens assembly, comprising:

a focusing component located along an optical axis to receive infrared radiation, the focusing component comprising a first and a second focusing zoom lens formed from a high dispersion, low index material;

a collecting component located along the optical axis in optical communication with the focusing component, the collecting component comprising at least one collecting lens formed from the high dispersion, low index material;

an aperture stop movably mounted along the optical axis;

a diffracting component located along the optical axis and in optical communication with the focusing and collecting components, the diffracting component comprising at least one diffractive surface to correct color aberrations associated with an infrared waveband; and

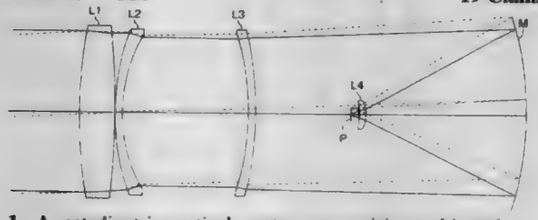
the focusing and collecting components cooperating with the diffracting component to focus infrared radiation at an image plane of an infrared detector.

5,796,515

CATADIOPTRIC OPTICAL SYSTEM

Atsushi Katsunuma, Saitama-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 8, 1997, Ser. No. 889,748
Claims priority, application Japan, Jul. 9, 1996, 8-198308
Int. Cl.[6] G02B 17/00
U.S. Cl. 359—364 19 Claims



1. A catadioptric optical system comprising, objectwise to imagewise:

(a) a first lens having positive refractive power;

(b) a second lens comprising a meniscus lens having a convex face oriented objectwise;

(c) a third lens comprising a meniscus lens having a concave face oriented objectwise, the first, second, and third lenses having an aggregate focal length f_{123}; and

(d) a concave mirror having a concave face oriented objectwise, the optical system having an overall focal length f and being arranged such that light from an object passes through the first lens, the second lens, and the third lens, and is reflected from the concave mirror to form an image of the object between the third lens and the concave mirror, and such that

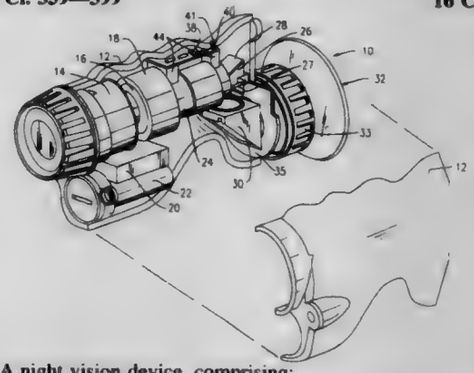
$$|f_{123}/f|>10$$

5,796,516

COLLIMATOR/DIOPTER ASSEMBLY WITH FOLDER OPTICS FOR A NIGHT VISION MONOCULAR DEVICE

Gary L. Palmer, Bellevue, Wash., assignor to ITT Corporation, New York, N.Y.

Continuation of Ser. No. 315,339, Sep. 30, 1994, abandoned.
This application Mar. 1, 1996, Ser. No. 609,216
Int. Cl.[6] G02B 23/00;7/02
U.S. Cl. 359—399 16 Claims



1. A night vision device, comprising:

a primary housing;

an image intensifier tube disposed in said housing, wherein said image intensifier tube produces a visible image;

a collimator lens arrangement having a first plurality of lenses, for collimating said image;

an eyepiece lens arrangement for viewing said image, wherein said eyepiece lens arrangement includes a second plurality of lenses for focusing the image collimated by said collimator lens arrangement;

a subassembly housing for retaining at least one of said first plurality of lenses and at least one of said second plurality of lenses, whereby said subassembly housing is contained within said primary housing at a predetermined orientation; and

means coupled to said subassembly housing for retaining at least one circuit board in a predetermined relationship with said subassembly housing, said at least one circuit board having edges associated therewith.

5,796,517

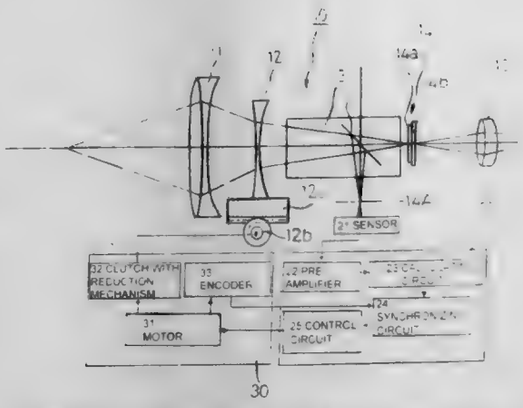
INNER FOCUS TYPE TELESCOPE

Takayuki Sensui; Takayuki Ito; Hirofumi Matsuo; Satoru Nakamura; Tatsuo Goto, and Yasuo Nakamura, all of Tokyo, Japan, assignors to Asahi Seimitsu Kabushiki Kaisha, and Asahi Kogaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 579,240, Dec. 12, 1995, abandoned.
This application Jun. 20, 1997, Ser. No. 878,671
Claims priority, application Japan, Dec. 28, 1994, 6-328786; Jul. 25, 1995, 7-189506
Int. Cl.[6] G02B 23/04; G01B 9/06;11/14
U.S. Cl. 359—426 25 Claims

1. A telescope comprising:

a sighting objective lens, a focusing lens, a horizon compensating optical system, and a focal plane on which an object image is formed by said sighting objective lens and said



focusing lens, arranged in this order from an object side, said horizon compensating optical system comprises a first compensating prism, a compensating mirror, and a second compensating prism;

a position of said focusing lens being adjustable to form the object image on the focal plane in accordance with a distance of an object to be sighted;

a beam splitting optical system provided in an optical path between said horizon compensating optical system and the focal plane to split the optical path of light incident on the beam splitting optical system, said beam splitting optical system comprises a beam splitting element which is adhered to the light emission surface of the second compensating prism;

a surface optically equivalent to the focal plane, provided in said beam splitting optical path;

a correcting system that corrects an optical positional deviation between the focal plane and the optically equivalent surface; and

a focus detecting system which detects the state of focus at the optically equivalent surface, said focus detecting system comprising a pair of reimaging lenses spaced at a base length distance, and a pair of line sensors in which object images are formed by said reimaging lenses, one of said line sensors being provided with a first reference area to obtain a first reference output, and the other line sensor being provided with a second reference area to obtain a second reference output, so that a deviation of the light conversion point of the sighting optical system, comprising said sighting objective lens and said focusing lens, from the optically equivalent surface, can be detected by a phase difference detection method, based upon said reference outputs.

5,796,518

REAL IMAGE MODE VARIABLE MAGNIFICATION FINDER OPTICAL SYSTEM

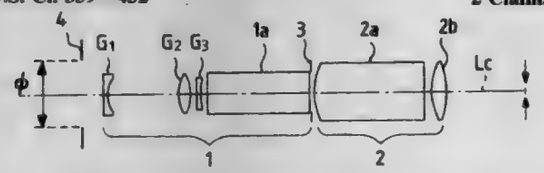
Shigeru Kato, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 1, 1995, Ser. No. 523,504

Claims priority, application Japan, Sep. 5, 1994, 6-210992

Int. Cl.[6] G03B *13/06*

U.S. Cl. 359—432 **2 Claims**



1. A real image mode variable magnification finder optical system comprising:

an objective system having a positive refracting power, said objective system including, in order from the object side,

a first lens unit,

a second lens unit having a negative refracting power,

a third lens unit having a positive refracting power, and

a fourth lens unit having a negative refracting power,

said second, third and fourth lens units being individually movable along an optic axis for varying magnification of the finder optical system, said first lens unit being fixedly positioned during a magnification varying operation;

a correctly erect image forming system having a plurality of reflecting members for converting an intermediate image formed by said objective system into a correctly erect image, at least one of said reflecting members being arranged between said fourth lens unit and a position of said intermediate image; and

an eyepiece system having a positive refracting power,

wherein said real image mode variable magnification finder optical system satisfies a condition:

$$0.2<f_{G_2}/f_T<0.41$$

where f_{G_2} is a focal length of said third lens unit and f_T is a focal length of said objective system when the finder optical system is adjusted to a telephoto position.

5,796,519

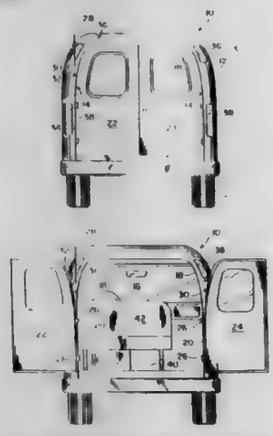
VAN REAR LIGHT-REFLECTING DISPLAY MEANS

Peter Gold, 1630-4 Ocean Ave., Bohemia, N.Y. 11716

Filed Jun. 17, 1996, Ser. No. 664,591

Int. Cl.[6] G02B *5/12*

U.S. Cl. 359—549 **2 Claims**



1. A van rear light-reflecting display comprising:

a van rear wall having at least one side edge bounding a rear opening characterized by an upper length portion of an angular orientation and a lower length portion of a vertical orientation;

at least one door for opening and closing said rear opening having a side edge, when in a closed position, of upper and lower length portions of a contiguous relation to said wall one said side edge;

hinge means for interconnecting said one door to said wall one said side edge along confronting lower length portions thereof, effective to establish a rotational axis of a vertical orientation which is displaced laterally of both said wall upper length portion edge and said upper length portion of said door in said closed door position and, in an open condition of said door, effective to displace said upper length portion of said door on an opposite side of said rotation axis for bounding a clearance between said upper length portion of said door and said rotation axis; and

a rear light-reflecting display located on said rear wall so as to be visible through said clearance to an approaching motorist,

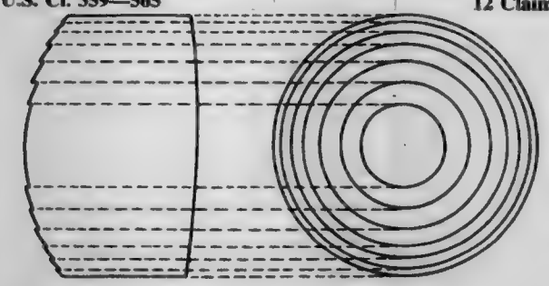
whereby during use of said van rear opening, as occurs when said door is in an opened condition, there is light reflected rearwardly through said clearance, signaling the presence of said van to an approaching motorist.

5,796,520

CHROMATIC ABERRATION CORRECTING ELEMENT AND ITS APPLICATION

Koichi Maruyama, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 91,983, Jul. 16, 1993, Pat. No. 5,629,799.
This application Apr. 10, 1996, Ser. No. 630,597
Claims priority, application Japan, Jul. 16, 1992, 4-189474; Dec. 21, 1992, 4-340562; Dec. 28, 1992, 4-348593; Jan. 14, 1993, 5-004958; Mar. 25, 1993, 5-066504; Jun. 10, 1993, 5-138300; Jun. 10, 1993, 5-138301; Jun. 10, 1993, 5-138302; Jun. 25, 1993, 5-155074
Int. Cl.[6] G02B *5/18;3/08;5/32;13/18*
U.S. Cl. 359—565 12 Claims



1. A lens comprising:

a first surface having a diffractive element formed thereon to correct chromatic aberration, said diffractive element comprising annular steps, each of said annular steps having an aspheric annular surface, said first surface with said diffractive element defining a convex aspheric shape macroscopically, said convex aspheric shape having a radius of curvature that increases with distance from an optical axis; and

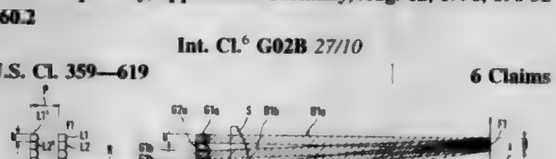
a second surface, said second surface being convex.

5,796,521

OPTICAL APPARATUS FOR THE HOMOGENISATION OF LASER RADIATION AND THE GENERATION OF SEVERAL LIGHTING FIELDS

Hans-Jürgen Kahlert, Göttingen, and Berthold Burghardt, Waake, both of Germany, assignors to Microlas Lasersystm GmbH, Gottingen, Germany

Filed Jul. 17, 1997, Ser. No. 895,755
Claims priority, application Germany, Aug. 12, 1996, 196 32 460.2
Int. Cl.[6] G02B *27/10*
U.S. Cl. 359—619 6 Claims



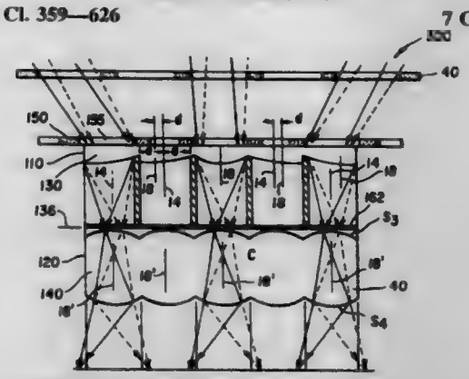
1. An optical apparatus for the homogenization of a beam of radiation and the generation of several lighting fields (F1, F2), comprising a plurality of lenses (G1*a*, G1*b*, G1*c*, G1*d*; G2*a*, G2*b*, G2*c*, G2*d*) which are arranged in a row perpendicular to the beam axis (A) and a collecting lens (S) which is arranged downstream in the direction of radiation (R), characterized in that the lens row comprises several different groups (G1, G2) of acentric lens segments (G1*a*, . . . , G1*d*; G2*a*, . . . , G2*d*).

5,796,522

LENSLET ARRAY SYSTEM WITH A BAFFLE STRUCTURE AND A SHUTTER

Mark M. Meyers, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 20, 1996, Ser. No. 771,123
Int. Cl.[6] G02B *27/10*
U.S. Cl. 359—626 7 Claims



1. A lenslet array system for imaging an extended associated object onto a final image surface, said lenslet array system comprising:

(i) a first assembly including (a) a baffle structure and (b) a first lenslet array having an associated focal plane, said lenslet array accepting a full non-zero degree field of view subtended by the associated object and forming a plurality of image sections of the associated object at an intermediate image plane,

said first lenslet array including a plurality of positive power lenslets, each of said plurality of lenslets having a focal length f_1 and is adapted to accept a unique segment of the full field of view subtended by the associated object, where these segments of the full field of view together comprise the full field of view, and each of said lenslets forming one image section corresponding to its segment of the full field of view,

said baffle structure including (1) a baffle plate having multiple openings, said openings each being aligned with a respective said lenslet of said first lenslet array, (2) a field limiting plate having opaque areas and a plurality of apertures, said field limiting plate being located at the intermediate image plane, and (3) a plurality of baffle walls extending between said lenslets and said field limiting plate;

(ii) a second assembly including a second lenslet array, said second lenslet array having a plurality of positive power lenslets, each of said positive power lenslets of said second lenslet array (a) reimaging one of said image sections located at said intermediate image plane and creating an inverted image of said image section on the final image surface, and (c) together with other said lenslets of said second lenslet array creating a single continuous image of the associated object.

5,796,523

LASER DAMAGE CONTROL FOR OPTICAL ASSEMBLY

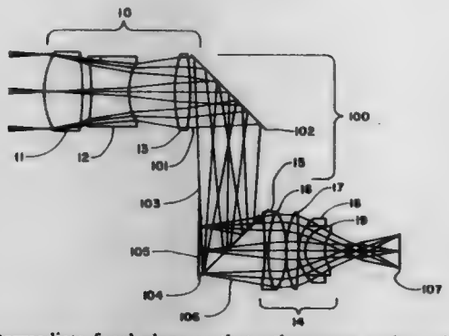
John M. Hall, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 23, 1997, Ser. No. 898,088
Int. Cl.[6] G02B *27/14*
U.S. Cl. 359—629 5 Claims

1. An optical assembly for providing magnified viewing and internal, multi-spectral, damaging laser energy protection including:

a means, positioned on the focal axis, for focusing and correcting incoming light energy;

a means, positioned after the means for focusing and correcting, for accepting and reorienting the focused light energy onto an



intermediate focal plane so that only energy under a damage threshold is allowed to pass therethrough as non-damaging energy;

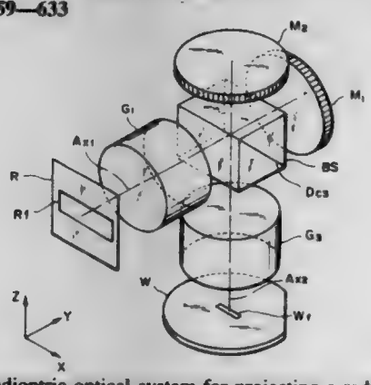
a means, positioned after the means for accepting and reorienting, on the focal axis, for accepting and collimating the non-damaging energy, the means for accepting and collimating the non-damaging energy includes a sufficient back focal length to accommodate the means for accepting and reorienting, whereby 4× to a 10× power magnification with up to a 60 millimeter entrance pupil diameter is achieved with internal, multi-spectral damaging laser energy protection.

5,796,524

CATADIOPTRIC OPTICAL SYSTEM AND EXPOSURE APPARATUS USING THE SAME

Yasuhiro Oomura, Oota-ku, Japan, assignor to Nikon Corporation, Japan

Filed Nov. 30, 1995, Ser. No. 566,419
Claims priority, application Japan, Dec. 27, 1994, 6-324433
Int. Cl.[6] G02B *27/14*
U.S. Cl. 359—633 **15 Claims**



1. A catadioptric optical system for projecting a reduced image of a pattern on a first plane onto a second plane, comprising:

a beam splitter;

an input lens group arranged in an optical path between the first plane and said beam splitter, said input lens group guiding a light beam from said first plane to said beam splitter;

a first concave mirror having an enlargement imaging magnification, said first concave mirror causing the light beam incident from said input lens groups on said beam splitter and passing through said beam splitter to be incident on said beam splitter again;

a second concave mirror having a reduction imaging magnification, said second concave mirror causing the light beam incident from said first concave mirror on said beam splitter and passing through said beam splitter to be incident on said beam splitter again; and

an output lens group arranged in an optical path between said beam splitter and the second plane, said output lens group guiding the light beam incident from said second concave mirror on said beam splitter and passing through said beam splitter to said second plane, wherein said catadioptric optical system satisfies the following conditions:

$$-0.9<1/\beta_{M1}<0.8$$

$$-0.07<\beta_{M2}<0.06$$

where

β_{M1}: the imaging magnification of said first concave mirror;

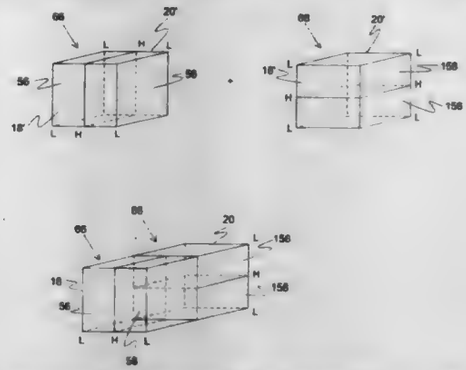
β_{M2}: the imaging magnification of said second concave mirror.

5,796,525

QUADAXIAL GRADIENT INDEX LENS

Joseph R. Dempewolf, Taos, and Robert K. Wade, Albuquerque, both of N. Mex., assignors to LightPath Technologies, Inc., Albuquerque, N. Mex.

Filed Oct. 31, 1996, Ser. No. 739,859
Int. Cl.[6] G02B *3/00;13/08*
U.S. Cl. 359—653 **8 Claims**



1. A quadaxial lens comprising a first biaxial element and second biaxial element joined together, each biaxial element comprising two axially graded index of refraction sub-elements each sub-element having a gradient in index of refraction that begins at a lower value on one surface and ends at a higher value on an opposite surface, with both said subelement joined together at said surfaces having said higher value of index of refraction to form a high index interface, each biaxial element having entrance and exit surface which are perpendicular to an optic axis and to said high index interface, said exit surface of said first biaxial element being joined to said entrance surface of said second biaxial element, with one of said biaxial element rotated with respect to the other about said optic axis and with said first biaxial element configured to generate a line focus at its exit surface and second biaxial element configured to generate a spot focus at its exit surface, such that said quadaxial lens gather and focuses light to said spot with a substantially uniform distribution of light intensity from center to periphery of said spot.

5,796,526

ILLUMINATION OPTICS FOR SPATIAL LIGHT MODULATOR

Charles H. Anderson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

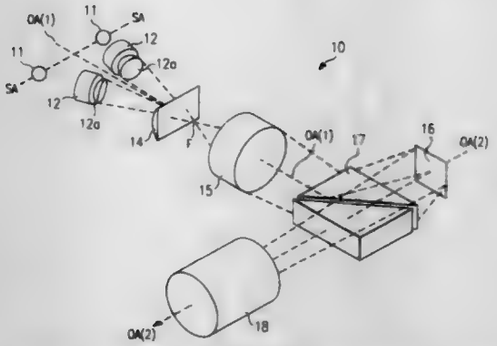
Continuation of Ser. No. 429,367, Apr. 26, 1995, abandoned. This application Oct. 21, 1996, Ser. No. 735,277
Int. Cl.[6] G02B *13/08*
U.S. Cl. 359—671 **11 Claims**

1. An anamorphic illumination system for generating images, comprising:

two or more light sources providing light toward a first optical axis;

an entry condenser lens associated with each said light source collecting said light from its associated light source and directing said light along said first optical axis;

a cylindrical lens oriented on said first optical axis so as to receive said light from each said entry condenser lens, said cylindrical lens having a convexity with respect to said light



sources, such that said cylindrical lens provides a beam of compressed light, said beam comprised of light from said light sources combined into said beam;

an exit condenser lens receiving said compressed light from said cylindrical lens;

an SLM with an array of pixel-generating elements modulating said compressed light from the exit condenser lens, such that said SLM forms an image on said array; and

a projection lens on a second optical axis receiving said image from said SLM and directing said image to an image plane.

5,796,527

SMALL ZOOM OPTICAL SYSTEM

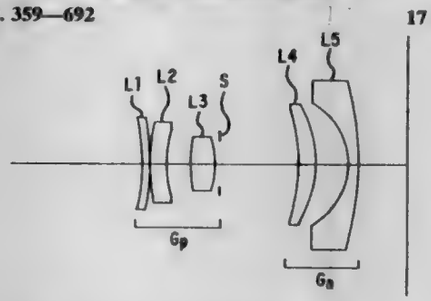
Motoyuki Ohtake, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 3, 1996, Ser. No. 660,197

Claims priority, application Japan, Jun. 19, 1995, 7-175530

Int. Cl.[6] G02B *15/14;3/02*

U.S. Cl. 359—692 **17 Claims**



1. A zoom optical system comprising:

a positive lens group having a positive refractive power, the positive lens group comprising, in order from an object side toward an image side, a first lens component having a negative refractive power, a plastic second lens component having a negative refractive power, and a glass third lens component having a positive refractive power, the first lens component including a meniscus-shaped lens having a concave surface facing the object side; and

a negative lens group having a negative refractive power and that is arranged on the image side of the positive lens group, the negative lens group comprising, in order from the object side, a plastic fourth lens component having a positive refractive power and a fifth lens component having a negative refractive power;

the focal length of the zoom optical system is changed by changing the distance between the positive lens group and the negative lens group.

5,796,528

WIDE-ANGLE LENS SYSTEM

Shinichi Mihara, Tama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1997, Ser. No. 800,668

Claims priority, application Japan, Feb. 15, 1996, 8-027756; Jul. 29, 1996, 8-214952

Int. Cl.[6] G02B *13/04*

U.S. Cl. 359—753 **6 Claims**



1. A wide-angle lens system comprising two lens groups, in order from an object side of said system:

a negative lens group; and

a positive lens group with an aperture stop midway therebetween,

wherein a lens nearest to the object side of said negative lens group is made up of a positive lens that is followed by only a negative meniscus lens having a strong concave surface directed to an image side of said negative lens group, and which, in terms of power and shape of said positive lens located nearest to the object side of said negative lens group, satisfies the following conditions:

$$2.5<f_1/f<10 \quad \text{(I-1)}$$

$$<2.5<(r_1+r_2)/(r_1-r_2)<-0.7 \quad \text{(I-2)}$$

$$0.25<d_1/f<0.8 \quad \text{(I-3)}$$

where f is a focal length of the overall lens system, f is a focal length of said positive lens located nearest to the object side of said system, r_1 is a radius of curvature of an object-side surface of said positive lens located nearest to the object side of said system, r_2 is a radius of curvature of an image-side surface of said positive lens located nearest to the object side of said system, and d_1 is an optical axis thickness of said positive lens located nearest to the object side of said system.

5,796,529

FAST PHOTOGRAPHIC LENS SYSTEM

Cheon-ho Park, Kyungki-do, Rep. of Korea, assignor to Samsung Aerospace Industries, Ltd., Kyungsangnam-Do, Rep. of Korea

Filed Sep. 27, 1996, Ser. No. 720,135

Claims priority, application Rep. of Korea, Sep. 29, 1995, 1995-33026

Int. Cl.[6] G02B *9/62;13/04*

U.S. Cl. 359—756 **3 Claims**

1. A fast photographic lens system comprising, from an object side to an image side:

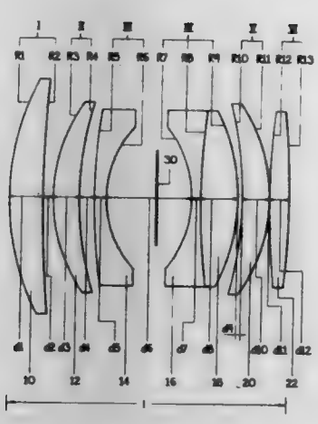
a first lens having a positive refractive power and a face convex to the object side;

a second lens having a positive refractive power and a face convex to the object side;

a third lens having a negative refractive power and a face concave to the image. side;

a fourth lens having a negative refractive power and a face concave to the object side;

a fifth lens joined with said fourth lens and having a positive refractive power and a face convex to the image side;



a sixth lens having a positive refractive power and a face convex to the image side; and

a seventh lens having a face convex to the object side and a face convex to the image side, wherein said photographic lens system satisfies the following conditions:

$$0.29\times f<R6<0.35\times f, \quad (1)$$

$$0.30\times f<R7<0.35\times f,\ R7<0, \quad (2)$$

$$0.78\times f<R4<0.82\times f, \quad (3)$$

$$0.75\times f<R1<0.80\times f, \quad (4)$$

$$0.50\times f<|R9|<0.60\times f,\ R9<0, \quad (5)$$

$$0.78\times f<L<0.82\times f, \quad (6)$$

and

$$0.25\times f<d6<0.30, \quad (7)$$

where f is a focal point distance of said lens system, R6 is the curvature radius of the concave face of said third lens, R7 is the curvature radius of the concave face of said fourth lens, R4 is the curvature radius of a face of said second lens facing the image side, R1 is the curvature radius of the convex face of said first lens, R9 is the curvature radius of the convex face of said fifth lens, L is the thickness of said lens system, and d6 is the length from the concave face of said third lens to the concave face of said fourth lens.

5,796,530

LENS SYSTEM WITH SWITCHABLE SOFT FOCUS

Koichi Oshita, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

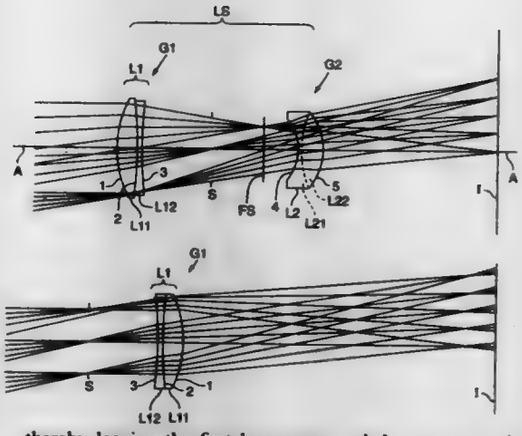
Filed Aug. 12, 1996, Ser. No. 694,403
Claims priority, application Japan, Aug. 17, 1995, 7-231948
Int. Cl.[6] G02B *9/18*
U.S. Cl. 359—795 **24 Claims**

1. A lens system, comprising:

(a) a first lens group having positive refractive power, an aperture stop, and a second lens group having negative refractive power;

(b) the lens system being operable in a first configuration with sufficient aberration correction to form a sharp-focus image of an object on an image plane of the lens system, in which first configuration the first lens group is situated axially objectwise, the second lens group is situated axially imagewise, and the aperture stop is axially situated between the first and second lens groups; and

(c) the lens system being operable in a second configuration that exhibits sufficient spherical aberration to form a soft-focus image on the image plane of the object, in which second configuration the second lens group is axially retracted,



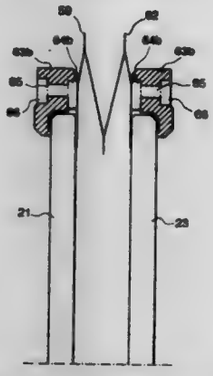
thereby leaving the first lens group and the aperture axially situated to form the image.

5,796,531

LIGHT BEAM DEFLECTION UNIT

Naoya Kaneda, Chigasaki, and Harunobu Ichinose, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 277,634, Jul. 20, 1994, abandoned. This application Jun. 24, 1996, Ser. No. 669,131
Claims priority, application Japan, Jul. 22, 1993, 5-201244
Int. Cl.[6] G02B *5/06;27/64*
U.S. Cl. 359—832 **18 Claims**



1. A light beam deflection unit comprising:

an optical member;

a displacing member movable to displace said optical member; and

a connection unit that connects said optical member and said displacing member, said connection unit comprising:

a holding member contacting said optical member to hold said optical member, said holding member having a through hole from a contact side of the holding member to a noncontact side of the holding member remote from the displacing member; and

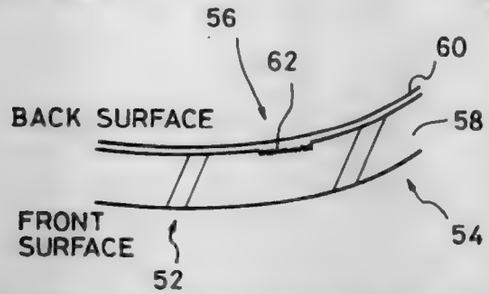
a connecting member including a first connecting portion contacting said displacing member and fixed thereto, a second connecting portion located on the noncontact side of the holding member and engaging said holding member, and a projecting portion projecting through said through hole from the first connecting portion to the second connecting portion so as to engage said first connecting portion and said second connecting portion to prevent separation of said connecting member from said holding member, thereby to prevent separation of said displacing member from said optical member, said first connecting portion and said projecting portion being formed of substantially the same material.

5,796,532

BACK MIRROR AND METHOD FOR MANUFACTURING THE SAME

Toru Kanazawa, Shida-gun, Japan, assignor to Murakami Kaimeido Co., Ltd., Japan

Continuation-in-part of Ser. No. 495,854, Jun. 28, 1995. This application Nov. 21, 1996, Ser. No. 752,581
Claims priority, application Japan, Jul. 13, 1994, 6-183867
Int. Cl.[6] G02B 5/10;5/08;5/02;7/182
U.S. Cl. 359—858 5 Claims



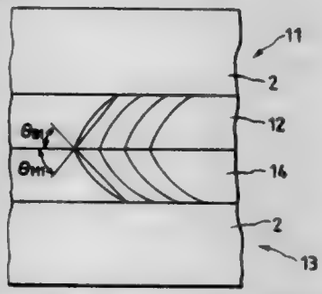
1. A back mirror having plural mirror surface areas of different curvatures disposed side by side to form discontinuous planes, said back mirror having a dividing line formed along a border portion between the plural mirror surface areas, wherein said back mirror has a transparent glass substrate having a front surface and a back surface, and a reflecting film on said back surface of the transparent glass substrate, said dividing line comprising fine projections and depressions formed on the back surface of the transparent glass substrate, whereby the fine projections and depressions constituting the dividing line diffuse and reflect incident light entering from the front surface of the transparent glass substrate thereby to cause the diffused and reflected light to pass through the front surface of the transparent glass substrate to an eyepoint of a driver and cause the driver to recognize the dividing line.

5,796,533

SYSTEM FOR MAGNETIC CONTACT DUPLICATION

Noriyuki Kitaori; Osamu Yoshida; Hirohide Mizunoya; Shigemi Wakabayashi, and Akira Shiga, all of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Mar. 15, 1995, Ser. No. 404,444
Claims priority, application Japan, Mar. 15, 1994, 6-044376; Mar. 15, 1994, 6-044378
Int. Cl.[6] G11B 5/86
U.S. Cl. 360—17 20 Claims



1. In a system for magnetic contact duplication by transferring an information signal recorded on a mother tape onto a blank tape, the improvement comprising:

said mother tape and said blank tape each comprising a substrate on which is formed at least one magnetic thin film having columns of magnetic grains grown obliquely, an uppermost magnetic thin film being defined as a magnetic thin film of said at least one magnetic thin film which is farthest from the substrate, and a lowermost magnetic thin film being defined as a magnetic thin film of said at least one magnetic thin film which is closest to the substrate;

the uppermost magnetic thin film of the blank tape having a column gradient θ_{B1} of the magnetic grains which is smaller than a column gradient θ_{M1} of the magnetic grains in the uppermost magnetic thin film of the mother tape, θ_{B1} and θ_{M1} being defined as angles formed by an intersection of a chord which intersects a column grain at the top and bottom surfaces of said uppermost magnetic thin film and a top surface of said uppermost magnetic thin film of said blank tape and said mother tape;

said mother tape and blank tape superposed such that the column gradient θ_{M1} of the magnetic grains in the uppermost magnetic thin film of the mother tape and a column gradient θ_{B1} of the magnetic grains in the uppermost magnetic thin film of the blank tape intersect and said uppermost magnetic thin films of said mother tape and said blank tape face each other; and

means for applying a bias magnetic field from a substrate side of said blank tape;

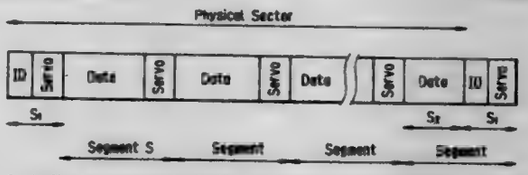
wherein when said at least one magnetic thin film of said mother tape or said blank tape comprises a single magnetic thin film the uppermost and lowermost magnetic thin films are one and the same.

5,796,534

APPARATUS WHICH PERFORMS AN ID OPERATION SIMULTANEOUSLY WITH A SERVO OPERATION USING A DATA RECORDING MEDIUM WITH THE ID AREA RECORDED IMMEDIATELY BEFORE THE SERVO AREA

Noriyuki Yamamoto, Tokyo; Hiroaki Yada, Kanagawa; Nobuhiro Hayashi, Kanagawa, and Takamichi Yamakoshi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 144,970, Oct. 28, 1993, abandoned. This application Oct. 16, 1995, Ser. No. 543,498
Claims priority, application Japan, Oct. 30, 1992, 4-316636
Int. Cl.[6] G11B 5/02
U.S. Cl. 360—48 3 Claims



1. A disc apparatus including a data recording medium with one or more data recording tracks divided into a plurality of sectors, each sector including a servo control signal necessary during recording and playing back data, said disc apparatus comprising:

recording/playback means for recording data to and playing back data from said data recording medium;

identification determining means for determining the identification information in data played back and outputted from said data recording medium by said recording/playack means;

position control means for reading out said servo control signal necessary during recording and playing back data;

said data recording medium comprising:

an identification recording region, arranged at the beginning of each individual sector, for recording a sector identification;

a servo control signal recording region, arranged next to and downstream from said identification recording region, for recording said servo control signal necessary during recording and playing back data, wherein said identification recording region and said servo control signal recording region form a second length;

a data region arranged next to and downstream from said servo control signal recording region for recording data wherein said data recording medium is disc shaped with said data region and said servo control signal recording region making up a first segment having a first length and;

a final data region having a third length equal to said second length subtracted from said first length, wherein said final

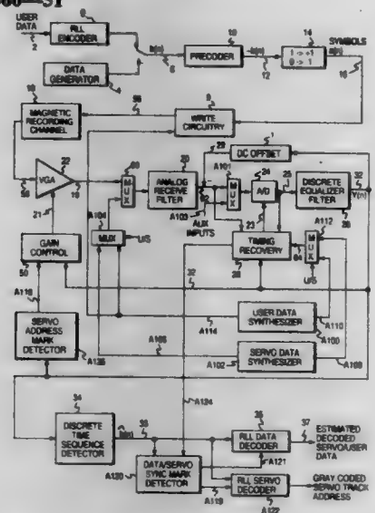
data region is arranged next to and downstream from said data region and wherein the arrangement of said identification recording region, said servo control signal recording region, said data region and said final data region enables an identification operation to be performed by said identification determining means simultaneously with a servo operation performed by said position control means.

5,796,535

SAMPLED AMPLITUDE READ CHANNEL EMPLOYING A USER DATA FREQUENCY SYNTHESIZER AND A SERVO DATA FREQUENCY SYNTHESIZER

Tyson Tuttle; Diwakar Vishakhadatta, both of Austin; Jerrel P. Hein, Driftwood; David R. Welland, Austin, all of Tex.; David E. Reed, Westminster, Colo.; Richard T. Behrens, Louisville, Colo.; William G. Bliss, Thornton, Colo.; Paul M. Romano, Boulder, Colo.; Trent O. Dudley, Littleton, Colo., and Christopher P. Zook, Longmont, Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed May 12, 1995, Ser. No. 440,515
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—51 **22 Claims**



1. A sampled amplitude read channel for reading data from a magnetic medium by detecting digital data from a sequence of discrete time sample values generated by sampling pulses in an analog read signal from a magnetic read head positioned over the magnetic medium, the digital data comprising user data and embedded servo data, the sampled amplitude read channel transitions between a user data and servo data mode, the sampled amplitude read channel comprising:

(a) a user data frequency synthesizer for generating a first frequency control signal;

(b) a servo data frequency synthesizer for generating a second frequency control signal; and

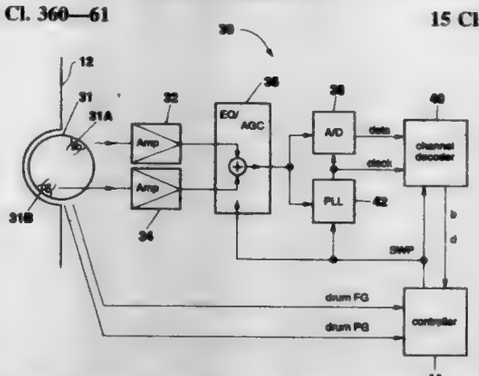
(c) a frequency control signal selector for selectively applying the first frequency control signal to a timing recovery circuit when the read channel is in user data mode and the second frequency control signal to the timing recovery circuit when the read channel is in servo data mode.

5,796,536

AUTOMATIC CALIBRATION OF A ROTARY HEAD SWITCHING SIGNAL

Naoyuki Sato; Masahiko Nagumo, both of Tokyo, and Ryuji Abe, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 23, 1996, Ser. No. 702,174
Claims priority, application Japan, Aug. 28, 1995, 7-242568
Int. Cl.[6] G11B *15/12*
U.S. Cl. 360—61 **15 Claims**



1. A head switching signal calibrating apparatus comprising:

rotating reproduction means for reproducing a datum stored on a magnetic tape and for supplying a rotation information signal; and

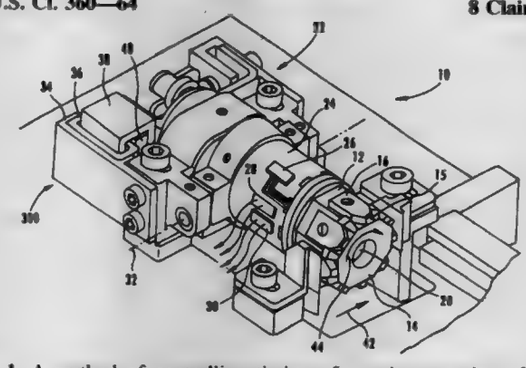
controller means for calibrating a head switching signal as a function of the reproduced datum, said rotation information signal, and a reference datum.

5,796,537

METHOD AND ARRANGEMENT FOR SERVOING AND FORMATTING MAGNETIC RECORDING TAPE

Turguy Goker, Solana Beach, and William Buchan, Corona Del Mar, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 13, 1995, Ser. No. 557,772
Int. Cl.[6] G11B *15/14*
U.S. Cl. 360—64 **8 Claims**



1. A method of controlling timing of a write operation of a multiple head arcuate scanner:

rotating a drum of an arcuate scanner head assembly about an assembly axis, said arcuate scanner head assembly comprising a read head and a write head radially mounted on the drum with a predetermined angle between the read head and the write head;

moving a recording tape longitudinally and across the assembly axis, the recording tape having a readable stripe extending along the length of the recording tape at a predetermined lateral position on the recording tape;

determining an annular relationship of the read head with respect to a rotational index when the read head passes across the readable stripe;

adjusting a directional alignment of the arcuate scanner head assembly with regard to an information recording region on the recording tape to maintain a predetermined directional alignment, in response to the determined angular relationship of the read head with respect to the rotational index; and

in response to a signal from the read head, detecting passage of the read head across the readable stripe,

calculating a transit delay time of the write head from its angular position when the read head crosses the readable stripe to a predetermined position in relation to the recording tape; and

activating the write head after expiration of the transit delay time.

5,796,538

MULTI-DECK VIDEO CASSETTE RECORDER SYSTEM

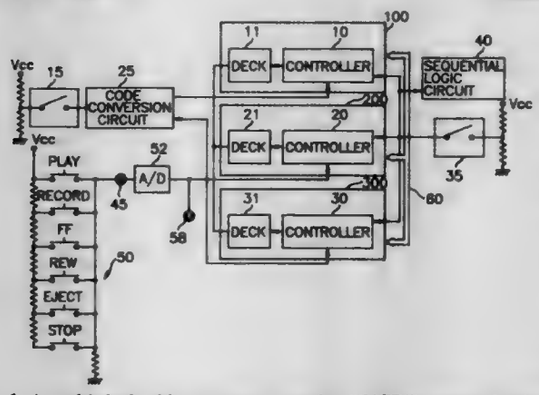
Byung-Lee Ji; Ki-Ha Kwon, and Yong-Won Sim, all of Seoul, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 175,301, Dec. 29, 1993, abandoned, which is a continuation-in-part of Ser. No. 743,896, Aug. 12, 1991, abandoned. This application Dec. 28, 1995, Ser. No. 580,236

Claims priority, application Rep. of Korea, Nov. 12, 1990, 90-18258; Jan. 18, 1991, 91-717; Jun. 25, 1991, 91-10554

Int. Cl.[6] G11B *15/16*

U.S. Cl. 360—71 **8 Claims**



1. A multi-deck video cassette recorder ("VCR") system having at least three VCR units and a corresponding number of controllers, each controller driving a corresponding VCR unit in a selected one of a plurality of operation modes including at least a recording mode and a playback mode, said system comprising:

a remote control unit for selecting one of said recording mode and playback mode and then generating a recording mode voltage signal if the recording mode is selected and a playback mode voltage signal if the playback mode is selected;

an analog-to-digital ("A/D") converter for providing either one of a recording mode signal and a playback mode signal by converting said recording mode voltage signal into the recording mode signal if the recording mode voltage signal is inputted thereto from the remote control unit, and converting the playback mode voltage signal into the playback mode signal if the playback mode voltage signal is inputted thereto from the remote control unit;

a first user-controlled switch for generating a combination operation selection signal in response to the recording mode signal from the A/D converter;

means, in response to the combination operation selection signal, for changing the code arrangement of the recording mode signal to thereby provide a quasi playback mode signal having a set of binary codes with a predetermined code arrangement identical to that of the playback mode signal, wherein the playback mode signal causes a predetermined one of the VCR units to be driven in the playback mode and the recording mode signal causes the remaining VCR units to be driven in the recording mode simultaneously;

a second user-controlled switch for generating a series playback operation selection signal in response to the playback mode signal from the A/D converter; and

means, in response to the series playback operation selection signal, for sequentially and repeatedly providing a playback start signal to the controllers in a predetermined order such that a series playback operation of the VCR units is effected, each controller driving a corresponding VCR unit in the playback mode when the playback start signal is transmitted thereto, wherein

said means for sequentially and repeatedly providing the playback start signal includes:

sensing means for detecting the completion of the playback operation of a VCR unit to produce a playback completion detection signal;

means for generating the playback start signal in response to the playback completion detection signal;

detecting means for detecting and generating a detection signal in case there is no tape cassette is loaded in the corresponding VCR unit; and

means for relaying the playback start signal to a control means of a next VCR unit in the predetermined order in response to the detection signal.

5,796,539

MAGNETIC DISK APPARATUS FOR A MAGNETIC DISK HAVING PROJECTIONS PROVIDED THEREON

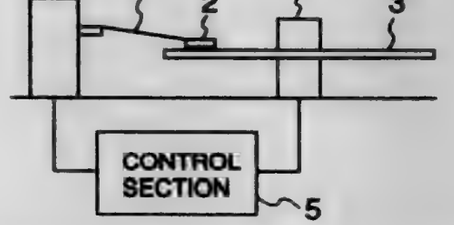
Noriyoshi Goda; Fuminobu Maruyama, and Masayuki Suzuki, all of Odawara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1996, Ser. No. 678,068

Claims priority, application Japan, Jul. 20, 1995, 7-183830

Int. Cl.[6] G11B *27/24;15/46*

U.S. Cl. 360—73.03 **19 Claims**



1. A magnetic disk apparatus comprising:

a magnetic disk medium having projections provided with a constant regularity on a surface thereof;

a rotating portion for driving the rotation of said magnetic disk medium;

a magnetic head for performing the magnetic recording and reproduction for said magnetic disk medium;

an actuator for moving said magnetic head to a desired position on said magnetic disk medium; and

a controller for controlling said rotating portion in accordance with the regularity of said projections provided on said magnetic disk medium, a resonance frequency of said magnetic

head and a relative speed of said magnetic disk medium to said magnetic head.

5,796,540

METHOD AND APPARATUS FOR SYNCHRONIZING THE ROTATIONS OF DATA STORAGE DISKS IN A PLURALITY OF DISK STORAGE DEVICES

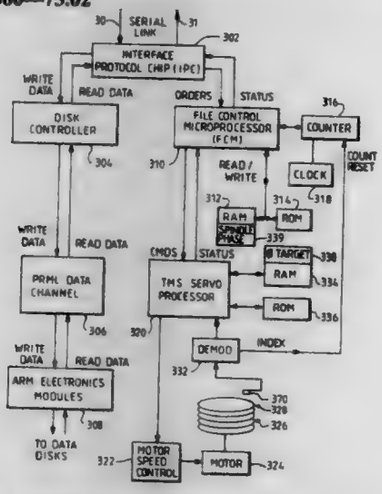
J. Wyn Jones, Winchester; Stephen Peter Legg, Southampton, and Eric Lewis Newman, Eastleigh, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 608,992, Mar. 6, 1996, Pat. No. 5,598,303, which is a continuation of Ser. No. 122,272, Sep. 17, 1993, abandoned. This application Aug. 9, 1996, Ser. No. 694,589

Claims priority, application United Kingdom, Sep. 18, 1992, 9219762

Int. Cl.[6] G11B *27/19*

U.S. Cl. 360—73.02 **4 Claims**



1. A data storage system comprising:

a plurality of disk storage devices, each device having at least one rotatable data storage disk;

a controller in communication with the plurality of storage devices, said controller comprising:

(a) calculating means, responsive to a position-indicating signal, from each of two or more of the plurality of storage devices, indicative of the rotational angular position of the disk in each device at a particular time, for calculating the relative angular displacements of the disks in said two or more devices, and

(b) means, responsive to the calculated relative angular displacements of the disks in said two or more devices, for issuing a correction signal to each of the devices indicating a change in angular position of the disk required to synchronize the rotations of the disks in said two or more devices; each of the disk devices including means, responsive to the correction signal, for effecting a temporary change in rotational velocity of the disk to cause the required change in angular position; and

wherein the controller is connected to each of the plurality of data storage devices respectively by a dedicated point to point serial link over which disk data is transferred between the controller and the device in a first frame, and wherein the position-indicating signal and the correction signal are transferred over the same dedicated serial link as the disk data in a second frame.

5,796,541

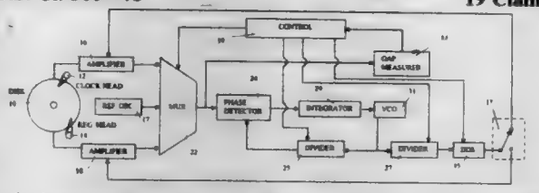
SERVO TRACK WRITING MEASUREMENT OF GAPPED INITIAL CLOCK TRACK TO WRITE FULL CLOCK TRACK

Anatoly Stein, Los Altos; Alexander Tesler, and Dimitry Varsanofiev, both of Palo Alto, all of Calif., assignors to Guzik Technical Enterprises, Inc., San Jose, Calif.

Filed Nov. 21, 1995, Ser. No. 561,468

Int. Cl.[6] G11B *20/14;5/012*

U.S. Cl. 360—75 **19 Claims**



1. A method of writing a reference clock track on a rotating magnetic medium having tracks for reading and writing information, comprising the steps of:

providing a servo track writer having at least a first read-write head and a second read-write head for reading and writing information on said medium;

selecting a track on said medium, said track having a write starting point and writ ending point;

writing clock information on said selected track by said first read-write head during a first revolution of said medium at a predetermined initial frequency of said clock information so that an unwritten portion is left between said starting point and said write ending point on said track;

measuring the length of said unwritten portion on a second revolution of said medium to obtain measurement data;

converting said measurement data into a frequency correction coefficient;

reading during a third revolution said clock information written on said first revolution of said medium by said first read-write head, said clock information having a current frequency; and

using the information read by said first read-write head and said frequency correction coefficient for writing new clock information by said second read-write head on a given track of said medium simultaneously with said reading step performed by said first read-write head so that a new reference clock track may be accomplished within as low as three revolutions of said rotating magnetic medium and independent of a motor speed.

5,796,542

SERVO-TRACK WRITER SYSTEM HAVING A PLURALITY OF ENGAGING PINS COAXIALLY ROTATED WITH HEAD ACTUATOR PIVOT AXES

Wally Szeremeta, Mission Viejo, Calif., assignor to Western Digital Corporation, Irvine, Calif.

Filed Feb. 28, 1996, Ser. No. 608,391

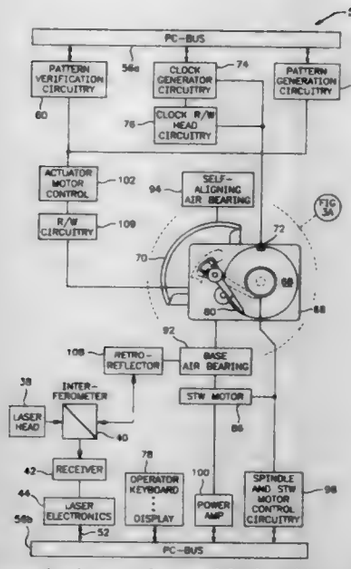
Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—77.02 **13 Claims**

1. In a servo-track writer (STW) system for simultaneously writing servo information on each of a plurality of tracks on each of a plurality of rotatable disk surfaces in a plurality of head-disk assemblies (HDAs) each having at least one rotatable disk surface and a corresponding read/write head fixed to a head actuator arm that is rotatably coupled to an actuator arm pivot bearing defining a HDA pivot axis about which the read/write head is disposed to move along a first arcuate path, a combination for positioning the read/write head relative to the rotatable disk surface, the combination comprising:

an STW motor assembly having a motor and a drive shaft;

a base bearing coupled to the STW drive shaft and have a STW bearing axis;



a push-tower having an elongated body with one of two ends rotatably coupled to the base bearing and disposed to turn about the STW bearing axis in response to rotation of the drive shaft;

a plurality of aligned HDA receiving stations each disposed with respect to the push-tower to receive a HDA such that each received HDA pivot axis is disposed coaxially with the STW bearing axis;

a plurality of engaging pins each fixed to the push-tower and disposed with respect to a respective HDA receiving station to move along a second arcuate path about the STW bearing axis in response to push-tower rotation and thereby to engage and push against the head actuator arm within the respective received HDA;

a displacement sensor coupled to the push-tower and disposed to move along a third arcuate path about the STW bearing axis;

a self-aligning distal gas bearing coupled to the push-tower for rotationally supporting the push-tower end distal to the base bearing; and

means coupled to the STW drive shaft for detecting displacement sensor position and for generating a control signal for turning the STW motor to position the read/write head within at least one received HDA.

5,796,543

DATA TRACK PATTERN INCLUDING EMBEDDED SERVO SECTORS FOR MAGNETO-RESISTIVE READ/INDUCTIVE WRITE HEAD STRUCTURE FOR A DISK DRIVE

Luan Ton-That, San Jose, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Division of Ser. No. 296,643, Aug. 26, 1994, Pat. No. 5,587,850. This application Aug. 27, 1996, Ser. No. 703,561

Int. Cl.[6] G11B *5/09; 5/596*

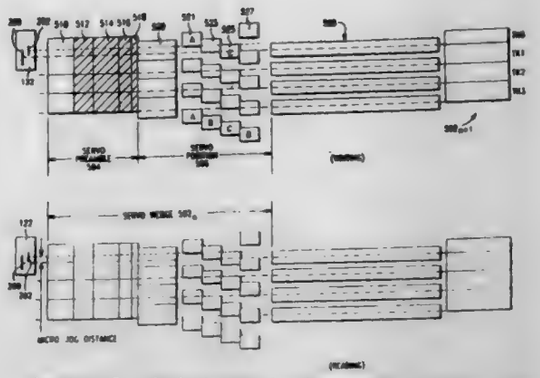
U.S. Cl. 360—77.08 **13 Claims**

1. A track pattern for storing data and servo information in a plurality of concentric tracks on a surface of a magnetic storage disk in a disk storage system, said track pattern comprising

a plurality of circumferentially spaced apart embedded servo wedges, each servo wedge including a servo preamble portion and a servo position portion, the servo position portion including a single servo identification field and a plurality of servo bursts; and

a user data sector in which user data is written,

wherein the servo position portion is radially offset between said servo preamble portion and said user data sector by an amount of offset related to a micro-jog distance representing electrical offset between a magnetic write element and a magnetic read



element of a dual element head transducer structure positioned to write to and/or read from the user data sector.

5,796,544

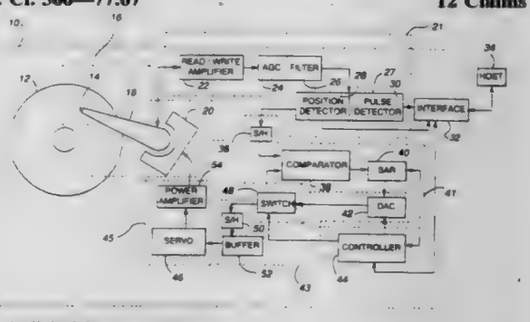
DISK DRIVE SYSTEM WHICH USES A COMMON DAC FOR DIGITAL POSITIONING CONTROL AND ANALOG POSITIONING CONTROL

David S. McMurtrey, Loveland, Colo., assignor to Maxtor Corporation, Longmont, Colo.

Filed Nov. 19, 1996, Ser. No. 752,335

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—77.07 **12 Claims**



1. A disk drive comprising:

a data storage disk for storing data;

a communication device for communicating with said disk to read data from said disk, said data including position data stored on said disk identifying locations on said disk;

a channel, electrically connected with said communication device, for electrically receiving said position data read by said communication device and generating an electrical analog position error signal corresponding to a position of said communication device relative to a preselected location on said disk;

a first signal converter, electrically connected with said channel, for converting said analog position error signal to a digital position error signal, wherein said first signal converter includes a digital-to-analog converter for converting a digital approximation of said analog position error signal to an analog approximation for comparison with said analog position error signal to determine when said digital approximation has sufficient accuracy for use as said digital position error signal;

a controller, in electrical connection with said first signal converter, for processing said digital position error signal to determine whether repositioning of said communication device is required relative to said disk and for generating a digital position control signal for controlling repositioning of said communication device when said controller determines that repositioning of said communication device is required;

a second signal converter, in electrical connection with said controller, for converting said digital position control signal to an analog position control signal, wherein said second signal converter includes said digital-to-analog converter, said digi-

tal to analog converter operating as part of said first signal converter and as part of said second signal converter;

a servo system, in electrical connection with said second signal converter, for directing repositioning of said communication device based on said analog position control signal when said controller determines that repositioning of said communication device is required;

a driver, in electrical connection with said servo system, for driving repositioning of said communication device relative to said disk in response to a direction electrically received from said servo system; and

a switch to switch electrical connection of said digital-to-analog converter between operable connection as part of said first signal converter for generating said digital position error signal and operable connection as part of said second signal converter for generating said analog position control signal.

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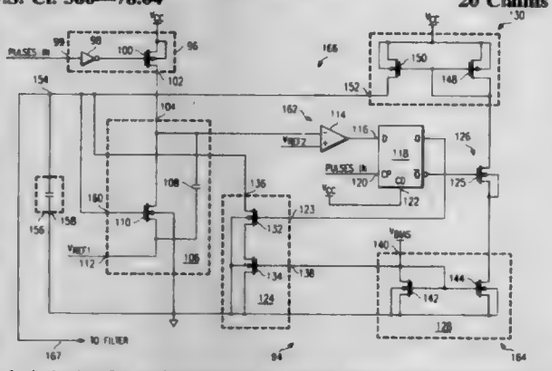
DEVICES AND METHOD FOR CALIBRATING A TIME CONSTANT OF ONE OR MORE FILTER CIRCUITS

Athos Canclini, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 7, 1995, Ser. No. 484,495

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—78.04 **20 Claims**



1. A device for maintaining at a desired value a time constant of a circuit having a calibration terminal, comprising:

a reference cell having a reference time constant, a charge terminal, and a reference control terminal;

a charging circuit coupled to receive a calibration signal and coupled to said charge terminal;

a calibration circuit having an input terminal coupled to said charge terminal, a clock terminal coupled to receive said calibration signal, and a calibration terminal that carries a time-constant calibration signal and is coupled to said control terminal;

a comparator having a first input terminal coupled to said charge terminal, a second input terminal coupled to a reference voltage, and a comparator output terminal;

a bistable circuit having an input terminal coupled to said comparator output terminal, a clock terminal coupled to receive said calibration signal, and first and second complementary output terminals;

a signal storage circuit having an output terminal coupled to said control terminal;

a current sourcing circuit coupled between said first output terminal and said storage-circuit output terminal; and

a current sinking circuit coupled between said second output terminal and said storage-circuit output terminal.

5,796,546

DISK APPARATUS FOR CONTROLLING A SEEK OPERATION OF A READ/WRITE HEAD TO A TARGET LOCATION OF A RECORDING DISK

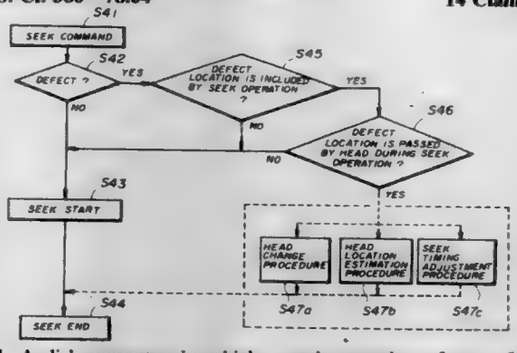
Tatsuro Sasamoto, and Hideyuki Watanabe, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 11, 1996, Ser. No. 661,592

Claims priority, application Japan, Nov. 13, 1995, 7-294429

Int. Cl.[6] G11B *5/516*

U.S. Cl. 360—78.04 **14 Claims**



1. A disk apparatus in which a seek operation of one of a plurality of heads to a target position on one of a plurality of recording disks is performed by using location data on the one of the recording disks, said disk apparatus comprising:

a memory unit in which at least defect location data is stored, said defect location data indicating a location of a defect on the recording disks;

a defect location determining unit determining a seek path of the one of the heads from a present position to the target position prior to performing the seek operation, and detecting whether said defect location, indicated by said defect location data read from aid memory unit, is included in said seek path; and

a seek control unit performing the seek operation of the one of the heads by using the location data on the one of the recording disks, except when said defect location determining unit detects that said defect location is included in said seek path.

5,796,547

DISK CARTRIDGE AND DRIVE MECHANISM THEREOF

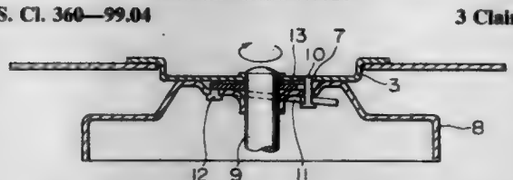
Masao Ohkita, Miyagi-ken, and Harutaka Sekiya, Fukushima-ken, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Oct. 1, 1996, Ser. No. 722,411

Claims priority, application Japan, Oct. 26, 1995, 7-279205

Int. Cl.[6] G11B *17/028*

U.S. Cl. 360—99.04 **3 Claims**



2. A disk cartridge for use with a disk cartridge drive mechanism, the disk cartridge drive mechanism including a drive section having a spindle shaft and a drive pin, the disk cartridge comprising:

a cartridge case defining an opening;

a flexible recording disk rotatably received in the cartridge case, the flexible recording disk including a central hub which is exposed through the opening of the cartridge case, the hub including a chucking hole located at a center of the hub, and a positioning hole;

wherein when the disk cartridge is mounted in the disk cartridge drive mechanism, the spindle shaft is received in the chucking hole and the drive pin is received in the positioning hole, the

positioning hole being configured such that the drive pin only contacts an edge of the positioning hole in a rotating direction of the recording disk; and

wherein the chucking hole includes two straight edges meeting at a corner, the two straight edges defining an angle in a range of 30 to 90 degrees and having a bisector which is aligned in a direction opposed to the rotating direction of the recording disk such that the corner of the chucking hole is forced toward the spindle shaft when the drive pin presses against the edge of the positioning hole.

5,796,548

DISK STORAGE DEVICE HAVING SPINDLE ASSEMBLY WITH RING ENCLOSURE

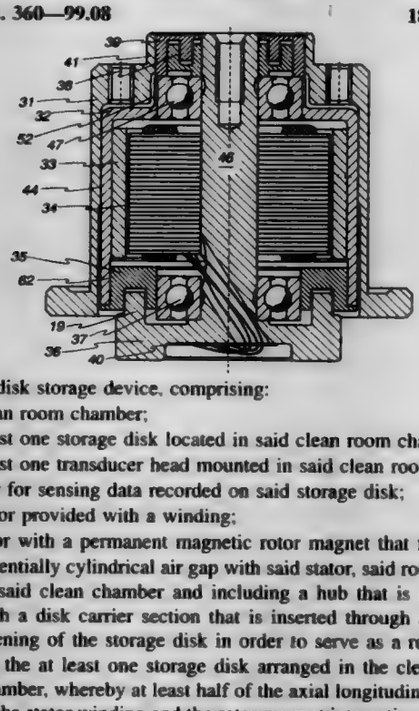
Helmut Hans, and Jürgen Oelsch, both of St. Georgen, Germany, assignors to Papst Licensing GmbH, Germany

Continuation of Ser. No. 390,936, Feb. 17, 1995, Pat. No. 5,594,606, which is a continuation of Ser. No. 883,029, May 14, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 476,085

Claims priority, application Germany, Jun. 29, 1991, 41 21 425.0

Int. Cl.[6] **G11B** *17/02;* **H02K** *5/16*

U.S. Cl. 360—99.08 **18 Claims**



1. A disk storage device, comprising:

a clean room chamber;

at least one storage disk located in said clean room chamber;

at least one transducer head mounted in said clean room chamber for sensing data recorded on said storage disk;

a stator provided with a winding;

a rotor with a permanent magnetic rotor magnet that forms an essentially cylindrical air gap with said stator, said rotor being in said clean chamber and including a hub that is provided with a disk carrier section that is inserted through a central opening of the storage disk in order to serve as a receptacle for the at least one storage disk arranged in the clean room chamber, whereby at least half of the axial longitudinal extent of the stator winding and the rotor magnet interacting with the stator winding are held within the space enclosed by the disk carrier section of the hub portion, a stationary shaft and a bearing arrangement, including first and second bearings supporting said rotor for rotation;

a first seal sealing the first bearing;

a second seal sealing the second bearing;

wherein the rotor includes a keeper part, between the rotor magnet and the hub portion, constructed at one axial end to engage the outer race of the second bearing; and

a ring element fitted in a highly precise and concentric manner between the inner periphery of a rotor part and the outer race of said first bearing, the ring element, the keeper part and the bearings essentially enclosing the stator and the winding and being made of a common material different from the material of the hub.

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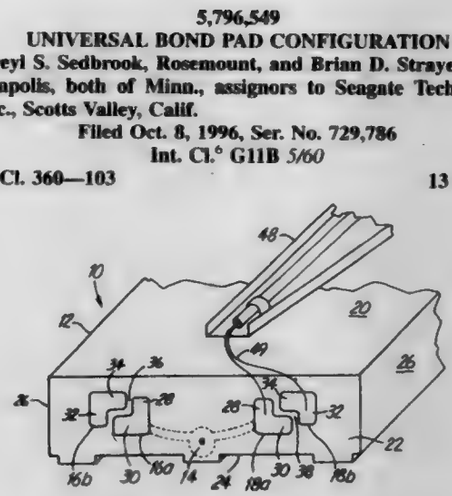
UNIVERSAL BOND PAD CONFIGURATION

Darreyl S. Sedbrook, Rosemount, and Brian D. Strayer, Minneapolis, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Oct. 8, 1996, Ser. No. 729,786

Int. Cl.[6] **G11B** *5/60*

U.S. Cl. 360—103 **13 Claims**



1. A thin film magnetic head comprising:

a slider having an air bearing surface and an end surface;

a transducer disposed within the slider; and

a plurality of L-shaped bond pads mounted on the end surface of the slider and being electrically connected to the transducer, each bond pad having a first portion and a second portion, wherein a longitudinal axis of the first portion of each bond pad is substantially perpendicular to a longitudinal axis of the second portion of the respective bond pad and wherein the first portion has a width normal to its longitudinal axis and the second portion has a width normal to its longitudinal axis the width of the first portion being substantially equal to the width of the second portion a pair of the bond pads being nested in a generally rectangular region so that an end of the first portion of each bond pad of the pair that is normal to the longitudinal axis of the first portion of the respective bond pad confronts a side of the second portion of the other bond pad of the pair that is parallel to the longitudinal axis of the second portion of the other bond pad.

5,796,550

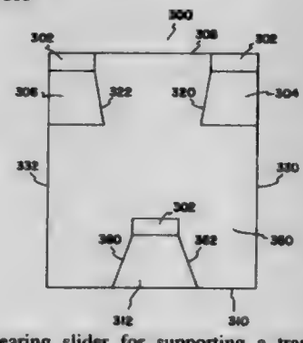
METHOD AND APPARATUS FOR PROVIDING DIVERGING RAIL EDGE GEOMETRY FOR AIR BEARING SLIDER

Timothy C. O'Sullivan; Laurence S. Samuelson, both of San Jose, and Howell B. Schwartz, San Diego, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1996, Ser. No. 731,606

Int. Cl.[6] **G11B** *5/60*

U.S. Cl. 360—103 **42 Claims**



1. An air bearing slider for supporting a transducer over a moving recording medium, the slider having side edges, a leading and a trailing edge relative to the motion of the recording medium, and a longitudinal axis disposed along the length of the slider from the leading edge to the trailing edge, the slider further comprising

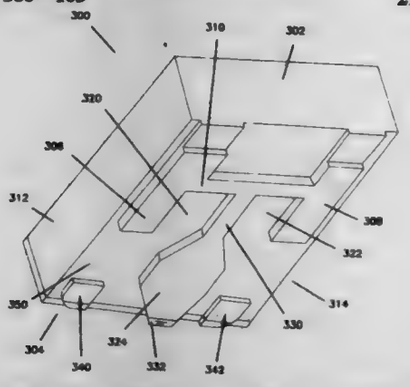
at least one air bearing surface pad, wherein each air bearing surface pad includes a step compression zone portion and a flared rail portion, and wherein the flared rail portion comprises at least one side rail having a proximal end at the step compression zone portion and a distal end opposite thereto, the at least one side rail diverging form the longitudinal axis of the slider continually from the proximal end to the distal end.

5,796,551

LANDING PADS FOR AIR BEARING SLIDERS AND METHOD FOR MAKING THE SAME

Laurence S. Samuelson, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 16, 1996, Ser. No. 732,201
Int. Cl.[6] G11B *5/60*
U.S. Cl. 360—103 **29 Claims**



1. An air bearing slider for supporting a transducer over a moving recording medium, comprising:

a slider body having side edges, a leading and a trailing edge relative to the motion of the recording medium, the slider body including an air bearing side having a recessed portion, the air bearing side also including structure forming an air bearing surface aligned along a pressurization plane for providing lift to the slider; and

a landing pad, provided on the air bearing side such that contact between the medium and the slider body occurs with the landing pad rather than the recessed portion, the landing pad being non-contiguous with respect to the structure forming the air bearing surface and being laterally offset from a longitudinal centerline of the slider body.

5,796,552

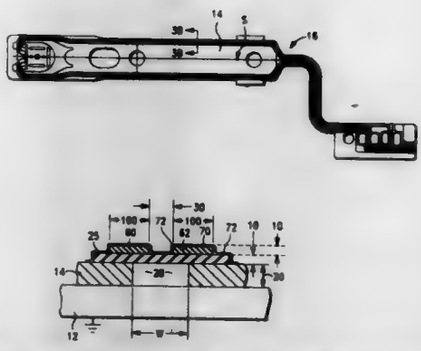
SUSPENSION WITH BIAXIALLY SHIELDED CONDUCTOR TRACE ARRAY

William R. Akin, Jr., Morgan Hill; Arun Balakrishnan, Fremont; Stephen P. Williams, Morgan Hill, and Christopher M. Carpenter, Sunnyvale, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 720,833, Oct. 3, 1996, Pat. No. 5,737,152. This application Jan. 21, 1997, Ser. No. 785,570
Int. Cl.[6] G11B *5/48*
U.S. Cl. 360—104 **14 Claims**

1. An integrated load beam assembly including a load beam for supporting a read/write head/slider assembly adjacent to a storage medium and for electrically interconnecting the head to read/write circuitry, the load beam assembly comprising:

a generally planar conductive member, disposed on the load beam, extending to proximity of the read/write head/slider assembly;



a first electrical insulation layer formed on the conductive member;

a first electrical signal trace path formed on the first electrical insulation layer;

a second electrical insulation layer formed on the first electrical trace path;

a conductive shield layer formed on the second electrical insulation layer for shielding the first electrical signal path from electrical interference; and

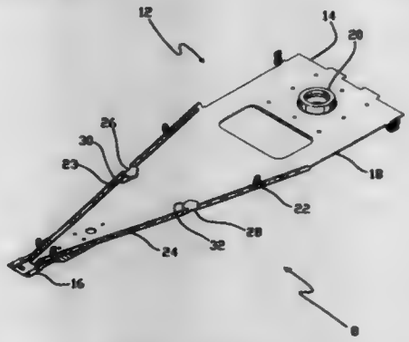
a longitudinal window defined by the conductive member directly beneath the first electrical signal trace path, the longitudinal window having a width selected to control electrical impedance of the assembly.

5,796,553

DISK DRIVE HEAD SUSPENSION HAVING GAPS IN THE LOAD BEAM WHICH ARE AT LEAST PARTIALLY FILLED WITH OR COVERED BY DAMPING MATERIAL

John H. Tangren, St. Paul, Minn., assignor to Hutchinson Technology Incorporated, Hutchinson, Minn.

Filed Mar. 31, 1997, Ser. No. 829,222
Int. Cl.[6] G11B *5/48*
U.S. Cl. 360—104 **19 Claims**



1. A disk drive suspension comprising:

a load beam having a proximal end, a distal end, a mounting region on the proximal end, and a rigid region;

a flexure at the distal end of the load beam, the flexure configured for receiving and supporting a read/write head;

at least one gap in the load beam and extending entirely through the load beam in a portion of the load beam; and

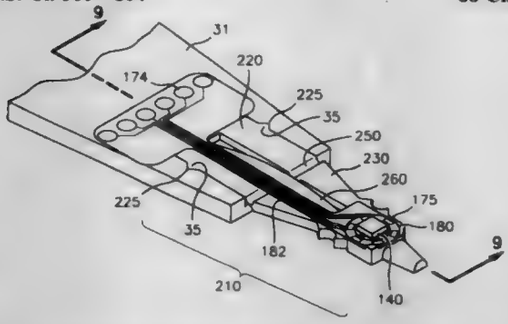
unconstrained damping material extending at least partially over the area of the gap having a higher damping coefficient than material of the load beam surrounding the gap and for damping vibration in the suspension.

5,796,554

LOAD BEAM ASSEMBLY WITH SEPARATE SPRING AND HINGE FUNCTIONS

Keith R. Berding, and Shawn Casey, both of San Jose, Calif., assignors to Western Digital Corporation, Irvine, Calif.

Filed Apr. 1, 1997, Ser. No. 831,991
Int. Cl.[6] G11B *21/08;5/54*
U.S. Cl. 360—104 **66 Claims**



1. A load beam assembly for attachment to an actuator arm in a disk drive, the disk drive having a disk, and the actuator arm for carrying a transducer head, the load beam assembly comprising:

a base portion having a base actuator end and a base hinge end;

an elongated load beam having a load beam hinge end, a load beam gimbal end, a first surface facing towards the disk and a second surface facing away from the disk, and a bearing surface;

hinge means joining the base hinge end to the load beam hinge end, the hinge means defining a transverse axis;

the base portion, the load beam, and the hinge means being positioned to define a longitudinal axis extending from the base portion to the load beam gimbal end;

gimbal means for supporting the transducer head, the gimbal means being attached to the load beam gimbal end; and

a spring member having opposite ends, a near end fixed relative to the base portion, and a far end for slidably contacting the bearing surface;

the far end of the spring member positioned between the second surface and the transducer head;

whereby the spring member applies a gram load to the gimbal means via the bearing surface as the load beam pivots about the transverse axis, thereby allowing a narrow range of gram load variation over a wide range of manufactured load beam assemblies.

5,796,555

TRANSDUCER SUSPENSION SYSTEM HAVING BOSSES WITH DIFFERENT INNER DIAMETERS, AND EQUAL OUTER DIAMETERS

Akihiko Aoyagi, Fujisawa; Mutsuro Ohta, Ebina; Nobuyuki Hashi, and Hitoshi Tsujino, both of Fujisawa, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 575,765, Dec. 20, 1995, abandoned. This application Jul. 9, 1997, Ser. No. 890,175
Claims priority, application Japan, Jan. 11, 1995, 7-002765
Int. Cl.[6] G11B *21/16*
U.S. Cl. 360—104 **8 Claims**

1. A transducer suspension system comprising:

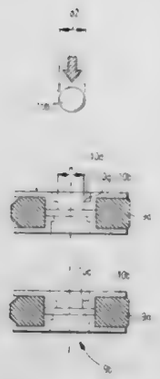
an actuator arm member having a through-hole formed therein extending along an axis to define first and second opposite openings;

a first boss having a first outer diameter sized to fit within the through-hole, the first boss having a first inner diameter m, the first boss being swage attached within the first opening of the through-hole by a swage tool of a diameter d1;

a first transducer suspension in connection with the first boss;

a second boss having an outer diameter substantially equal to the first outer diameter, the second boss having a second inner diameter n which is less than the first inner diameter m, the second boss being swage attached within the second opening of the through-hole by a swage tool of diameter d2, wherein d2<m, the first and second bosses being located such that neither boss overlaps the other along any plane perpendicular to the axis located at any point along the axis; and

a second transducer suspension in connection with the second boss.

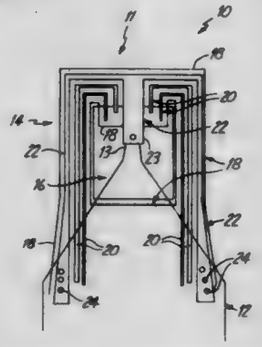


5,796,556

FLEX ON SUSPENSION DESIGN MINIMIZING SENSITIVITIES TO ENVIRONMENTAL STRESSES

Zine-Eddine Boutaghou, St. Paul, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 712,276, Sep. 11, 1996, Pat. No. 5,701,218. This application Sep. 4, 1997, Ser. No. 926,579
Int. Cl.[6] G11B *5/60;21/21*
U.S. Cl. 360—104 **7 Claims**



1. A flexure for supporting a magnetic head carrying slider, the flexure comprising:

flexible circuit means for electrically coupling the magnetic head, and supporting the slider; and

load bearing means for supporting the flexible circuit means.

5,796,557

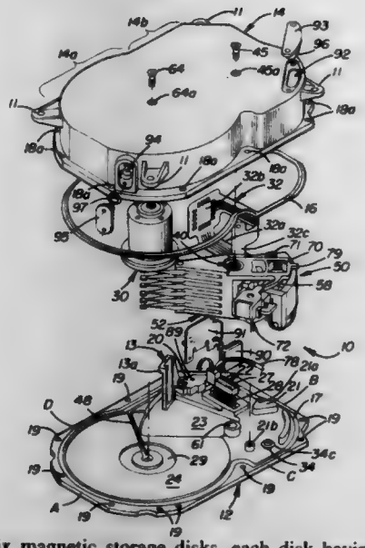
DISK DRIVE ARCHITECTURE INCLUDING A CURRENT-INDUCED LATCHING DEVICE

Glade N. Bagnell, Longmont, and William F. Repphun, Boulder, both of Colo., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 77,708, Jun. 15, 1993, abandoned, which is a continuation of Ser. No. 612,427, Nov. 9, 1990, abandoned. This application Dec. 6, 1995, Ser. No. 567,859
Int. Cl.[6] G11B *5/54;21/22*
U.S. Cl. 360—105 **23 Claims**

1. A high performance disk drive, comprising:

a base having a top and a bottom;



at least six magnetic storage disks, each disk having first and second opposing side surfaces, said disks supported on said top of said base;

a plurality of read/write heads, each of said heads being associated with a respective one of said opposing side surfaces of said disks;

an actuator supported on said base for rotation about an axis, the actuator supporting each of said plurality of read/write heads so that each of said plurality of heads faces each respective one of said opposing side surfaces of said disks and said plurality of heads are aligned such that all of said heads define a single line, the line being oriented perpendicular to a plane defined by one of said six magnetic storage disks, the actuator responsive to control signals for selectively positioning said heads with respect to said disks, the actuator further including a tab positioned opposite said heads with respect to the axis;

a cover sealably attached to said base to enclose said disks, said heads, and said actuator for providing a controlled environment therebetween and for providing structural rigidity in the drive, the cover including a first port oriented adjacent to said disks to allow a head to be inserted through said first port to access one of said side surfaces, a first port cover to cover said first port, a second port oriented adjacent to said tab on said actuator, and a second port cover to cover said second port;

latching means for selectively latching the actuator, comprising:

a latch arm mounted at an end of said actuator in a plane parallel to said base;

a latch member mounted adjacent to said latch arm and movable between an actuator unlatching position in which said latch member lies in a plane parallel to and below said latch arm, and an actuator latching position wherein said latch member enters the plane of said latch arm and is adjacent thereto; and

solenoid means for moving a central solenoid magnet thereof in an unlatching direction to move said latch member into said unlatching position when current is supplied to said solenoid means, said solenoid magnet being biased in a latching direction to force said latch member into said latching position, said solenoid means being mounted adjacent said actuator; and

control means, mounted adjacent to said bottom of said base, for generating said control signals to control said actuator, for controlling said current in said solenoid means, and for providing information signals to and receiving information signals from said heads,

wherein said base, said cover, and said control means have a total assembled length of about 5.75", width of about 4.00", and height of about 1.62".

5,796,558

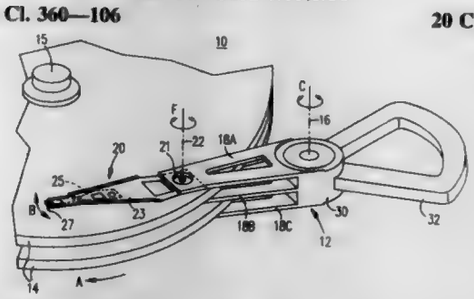
ADAPTIVE MICRO-ACTUATED HEAD GIMBAL ASSEMBLY

Kevin P. Hanrahan, Santa Barbara, and Amanullah Khan, Temecula, both of Calif., assignors to Read-Rite Corporation, Milpitas, Calif.

Filed May 15, 1997, Ser. No. 857,136

Int. Cl.[6] G11B *5/55;5/56*

U.S. Cl. 360—106 **20 Claims**



1. A drive comprising:

a head gimbal assembly including a head;

an actuator arm pivotally movable about a first actuator axis of rotation, for providing said head gimbal assembly with a macro-actuation movement relative to a destination track, and for positioning said head in an initial position relative to said destination track;

said head gimbal assembly being pivotally secured to said actuator arm about a second actuator axis of rotation, for moving said head in a micro-actuation movement relative to said destination track, when said head reaches said initial position, in order to minimize a skew angle formed between said head and said destination track, at said initial position.

5,796,559

SIGNAL TRANSMITTING DEVICE WITH AN OPTICAL COUPLER FOR USE IN A HEAD DRUM ASSEMBLY

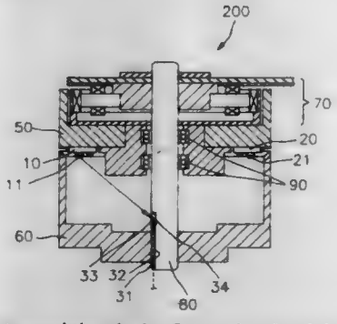
Yeo-Uk Joe, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Sep. 26, 1996, Ser. No. 721,516

Claims priority, application Rep. of Korea, Sep. 30, 1995, 1995 27405

Int. Cl.[6] G11B *5/52;5/027*

U.S. Cl. 360—108 **3 Claims**



1. A signal transmitting device for use in a head drum assembly, the device comprising:

a fixed shaft;

a rotary drum rotatably mounted around the fixed shaft;

at least two magnetic heads for reading data from a magnetic tape, arranged on and attached to the rotary drum with a same angular separation therebetween;

a same number of electro-optic means as that of the magnetic heads, each of the electro-optic means capable of converting an electrical signal produced in the magnetic heads into an optical signal and emitting the optical signal toward a center of the fixed shaft, each of the electro-optic means being

separated from each other by the same angular separation as the magnetic heads; and

an arcuated opto-electric means attached to a lateral external surface of said fixed shaft, having a circumferential dimension enabling to continuously receive the optical signal from one of the electro-optic means while its corresponding magnetic head reads the data from said magnetic tape and being capable of converting the optical signal into a corresponding electrical signal.

5,796,560

MAGNETORESISTIVE HEAD

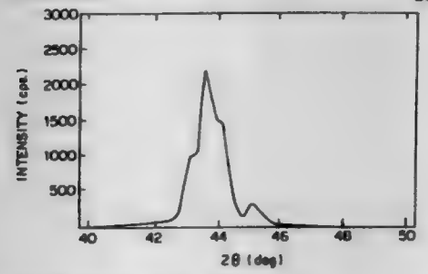
Kazuhiro Saito; Yuzo Kamiguchi, both of Yokohama; Hitoshi Iwasaki, Yokosuka; Susumu Hashimoto, Ebina; Hiromi Fuke, Kawasaki, and Tomomi Funayama, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 12, 1996, Ser. No. 614,146

Claims priority, application Japan, Mar. 13, 1995, 7-052617

Int. Cl.[6] G11B 5/39

U.S. Cl. 360—113 **31 Claims**



1. A magnetoresistive head comprising:

a giant magnetoresistive film having at least a pair of ferromagnetic layers opposed to each other and a nonmagnetic intermediate layer disposed between said pair of ferromagnetic layers, and

a crystalline soft magnetic film disposed as an undercoat in contact with at least one of said pair of ferromagnetic layers,

wherein said crystalline soft magnetic film comprises at least one element selected from the group consisting of Ni, Fe, and Co as a main component, and as minor components, at least one element M for substantially forming a grain boundary said M element selected from the group consisting of Nb, Mo, V, W, Ti, Zr, Hf and Ta, and at least one element M' for substantially forming a solid solution with said main component, said M' element selected from the group consisting of Cr, Rh, Os, Re, Si, Al, Be, Ga, and Ge.

5,796,561

SELF-BIASED SPIN VALVE SENSOR

Danielle Mauri, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1996, Ser. No. 757,416

Int. Cl.[6] G11B 5/39

U.S. Cl. 360—113 **20 Claims**

1. A self-biased spin valve (SV) sensor, comprising:

an SV element, said SV element including:

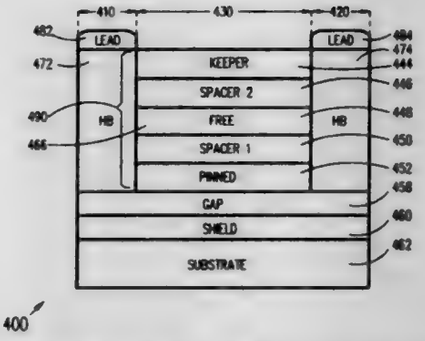
a free layer;

a soft ferromagnetic pinned layer;

a keeper layer;

a spacer1 layer disposed between said free and pinned layers; and

a spacer2 layer disposed between said free and keeper layers, said free layer being disposed between said spacer1 and spacer2 layers;



first and second longitudinal bias layers separated from each other by said SV element, each of said first and second longitudinal bias layers forming a contiguous junction with said SV element, said first and second longitudinal bias layers longitudinally bias said free layer; and

first and second SV leads disposed over said first and second bias layers for applying sense current to said SV element, said keeper layer in combination with said sense current pinning the magnetization of said pinned layer.

5,796,562

MAGNETIC HEAD COMPRISING A MULTILAYER STRUCTURE WITH ELECTRICALLY CONDUCTING HEAD ELEMENTS

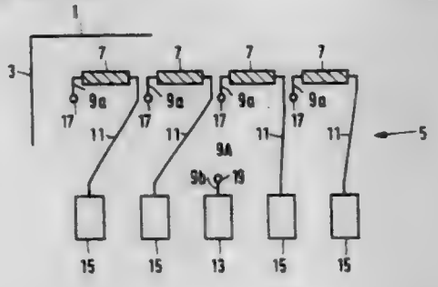
Eeltje A. Draaisma, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1996, Ser. No. 768,490

Claims priority, application European Pat. Off., Dec. 27, 1995, 95203639

Int. Cl.[6] G11B 5/29;5/127

U.S. Cl. 360—121 **8 Claims**



1. A magnetic head having a head face and comprising a multilayer structure on a substrate the multilayer structure provided with a plurality of electrically conducting head elements, the head elements each connected to a pair of connection faces by electrically conducting connecting tracks, characterized in that the pair of connection faces for each head element consists of a first separate connection face connected to the head element by a separate connection track, and a second common connection face connected to the head element by a common conductor.

5,796,563

TAPE CASSETTE HAVING LOCKING FRONT COVER WITH RIBS OR PROJECTION

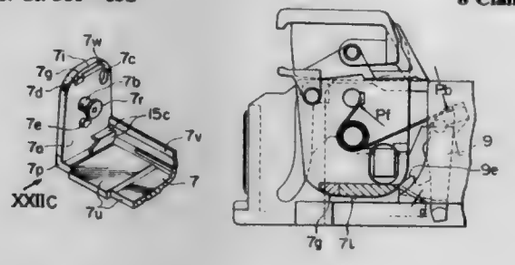
Kenji Iwano, and Yoshinori Shiomi, both of Tsuyama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 235,234, Apr. 29, 1994, Pat. No. 5,475,555, which is a continuation of Ser. No. 795,965, Nov. 21, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 466,982

Claims priority, application Japan, Nov. 30, 1990, 2-338081; Nov. 30, 1990, 2-338083; Mar. 14, 1991, 3-049514

Int. Cl.[6] G11B 23/04

U.S. Cl. 360—132 8 Claims



1. A tape cassette comprising:

a cassette casing having a front opening and side walls;

a front cover pivotally mounted on said side walls of said cassette casing so as to pivot between (i) a closed position and (ii) a fully open position in which a tape inside the tape cassette is accessible by a tape drive, thereby to open and close said front opening, said front cover comprising a front plate with ends and a pair of lugs, each of said pair of lugs having an inside surface and extending from each corresponding one of said ends of said front plate;

means for locking said front cover in a closed position when said front cove closes said front opening, said means for locking comprising a protrusion provided on said inside surface of one of said pair of lugs of said front cover and a locking member pivotally mounted on one of said side walls of said cassette casing for engaging with said protrusion when said front cover is in said closed position; and

means for preventing said locking member from rotating inside said one of said pair of lugs when said front cover is in the fully opened position, said means for preventing comprising a projection provided along an outer periphery of said one of said pair of lugs to abut against said locking member.

3. A tape cassette comprising:

a cassette casing having a front opening and side walls;

a front cover pivotally mounted on said side walls of said cassette casing so as to open and close said front opening, said front cover comprising a front plate with ends and a lower edge, a pair of lugs extending from said ends of said front plate to define inside corners, a top plate connected to said front plate and said pair of lugs and at least one rib provided at each of said inside corners, the at least one rib being spaced from the lower edge of the front cover, each said at least one rib extends from the front plate to each corresponding one of said pair of lugs to define a hollow portion extending in a widthwise direction of said front plate; and

means for locking said front cover when said front cover closes said front opening.

5,796,564

MAGNETIC HEAD HAVING A RECESSED PORTION CORRESPONDING TO A MAGNETIC PATH AND METHOD OF MANUFACTURING THE SAME

Mitsuharu Shouji; Hiroyuki Ohmori, both of Kanagawa; Yasunari Sugiyama, Tokyo, and Tetsuya Yamamoto, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

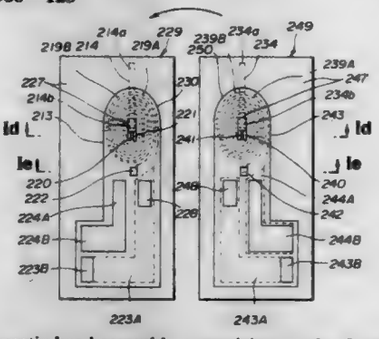
PCT No. PCT/JP95/00884, § 371 Date Jan. 5, 1996, § 102(e) Date Jan. 5, 1996, PCT Pub. No. WO95/30984, PCT Pub. Date Nov. 16, 1995

PCT Filed May 9, 1995, Ser. No. 578,630

Claims priority, application Japan, May 9, 1994, 6-094769; Jun. 13, 1994, 6-154278; Jun. 30, 1994, 6-201272

Int. Cl.[6] G11B 5/17

U.S. Cl. 360—123 16 Claims



1. A magnetic head assembly comprising a pair of magnetic core half bodies secured together with abutting faces facing each other; wherein:

the magnetic head has a magnetic gap,

each core half body has a base on which is formed a magnetic film,

at least one base having a recessed portion in which one or more coils is formed, said recessed portion shaped to correspond to a magnetic path of the respective core half body.

5,796,565

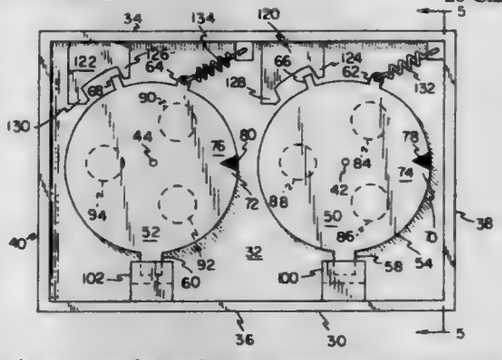
APPARATUS AND METHOD FOR STARTING AND PROTECTING A THREE-PHASE MOTOR

Yan Verkhovskiy, 1717 E. Eighth St., Apt. 1R, Brooklyn, N.Y. 11223

Continuation-in-part of Ser. No. 756,885, Dec. 2, 1996, abandoned. This application Oct. 14, 1997, Ser. No. 949,421

Int. Cl.[6] H02H 5/04

U.S. Cl. 361—29 20 Claims



1. An apparatus for starting and protecting a three-phase motor, said motor having three motor input lines each having a motor line current therein when said motor is operating, said motor coupled to a three-phase power supply having three power supply output voltages having a spaced phase relationship, comprising:

a positive phase sequence starter and current phase monitor coupled between said motor and said power supply for detecting phase energization and phase rotation of said power supply output voltages and for providing electrical connection

of said motor to said power supply only if said phase energization of said power supply output voltages is normal and said phase rotation of said power supply output voltages is in a predetermined direction, and for monitoring phase energization and phase rotation of said motor line currents and maintaining said electrical connection only if said phase energization of said motor line currents is normal and said phase rotation of said motor line currents is in the predetermined direction;

said positive phase sequence starter and current phase monitor including at least one means for producing a mechanical indication of said power supply output voltages phase energization and phase rotation and said motor phase line currents energization and phase rotation, said means for producing connected to said motor and to said power supply; and

at least one means for sensing said mechanical indication;

wherein said connection of said motor to said power supply is responsive to said means for sensing.

5,796,566

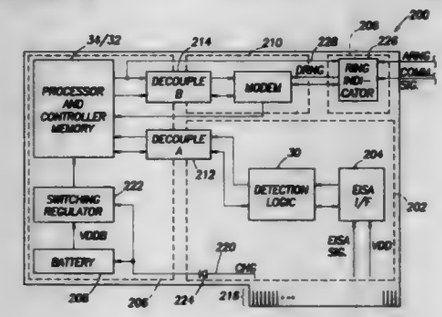
PRINTED CIRCUIT BOARD HAVING CONDUCTORS WHICH CAN BE DECOUPLED FOR ISOLATING INACTIVE INTEGRATED CIRCUITS CONNECTED THERETO

Dinesh Sharma, Tomball; Gordon R. Clark, and Lawrence E. Alton, both of The Woodlands, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Aug. 16, 1996, Ser. No. 695,829

Int. Cl.[6] H02H *3/24*

U.S. Cl. 361—86 **22 Claims**



1. A printed circuit board, comprising:

a first power conductor extending across a first portion of said printed circuit board;

a second power conductor extending across a second portion of said printed circuit board;

a decoupling unit connected between said first power conductor and said second power conductor, wherein said decoupling unit causes disconnect of said first power conductor from said second power conductor during times in which voltage within said first power conductor is less than voltage within said second power conductor, and wherein said second portion comprises a switching regulator, a battery, and a processor arranged thereon, and wherein said switching regulator causes coupling of said battery to said processor during times in which voltage within said first power conductor is less than voltage within said second power conductor.

5,796,567

ELECTRONIC CIRCUIT WITH PROTECTION AGAINST SUPPLY VOLTAGE OVERLOAD

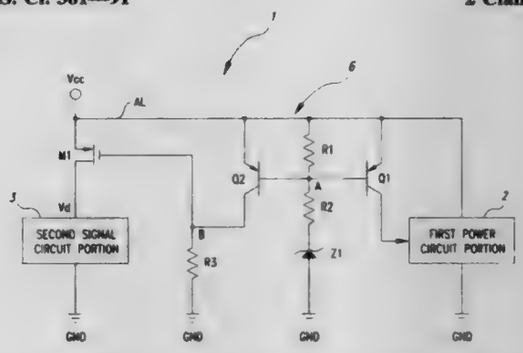
Edoardo Botti, and Tiziana Mandrini, both of Pavia, Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate-Brianza, Italy

Filed Dec. 29, 1995, Ser. No. 581,445

Claims priority, application European Pat. Off., Dec. 30, 1994, 94830596

Int. Cl.[6] H02H *3/20*

U.S. Cl. 361—91 **2 Claims**



1. A semiconductor circuit with a protection device for protecting against a supply voltage overload, comprising:

a voltage sensing circuit including a first resistor having a first terminal coupled to a supply voltage and a second terminal coupled to an output, a second resistor having a first terminal coupled to the output and a second terminal coupled to a first terminal of a zener diode, and a second terminal of the zener diode coupled to a reference voltage, the voltage sensing circuit operable to sense an overload of the supply voltage and develop an overload signal on the output in response to an overload of the supply voltage;

an electronic circuit including

a power circuit having a protection circuit coupled to the output of the voltage sensing circuit operable to protect the power circuit in response to the overload signal being active, and

a signal circuit which is structurally independent from the power circuit; and

a switch circuit including,

a bipolar transistor having an emitter coupled to the supply voltage, a collector, and a base coupled to the output of the voltage sensing circuit,

a MOS transistor having a source coupled to the supply voltage, a drain coupled to the signal circuit, and a gate coupled to the collector of the bipolar transistor, and

a resistor coupled between the collector of the bipolar transistor and the reference voltage,

the switch circuit operable to couple the supply voltage to the signal circuit when the overload signal is inactive and to isolate the supply voltage from the signal circuit when the overload signal is active.

5,796,568

CURRENT LIMITER DEVICE

Tudor Baiatu, Brugg, Switzerland, assignor to Asea Brown Boveri AG, Baden, Switzerland

Continuation of Ser. No. 553,031, Nov. 3, 1995. This application Mar. 20, 1997, Ser. No. 822,208

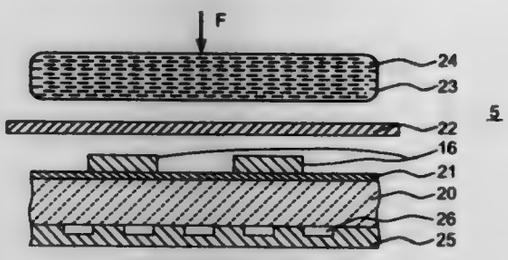
Claims priority, application Germany, Nov. 19, 1994, 44 41 279.7

Int. Cl.[6] H02H *5/04*

U.S. Cl. 361—106 **15 Claims**

1. A current limiter device, comprising:.

at least one PTC thermistor in a first circuit branch;



at least one varistor in a second circuit branch electrically connected in parallel with the first circuit branch; and

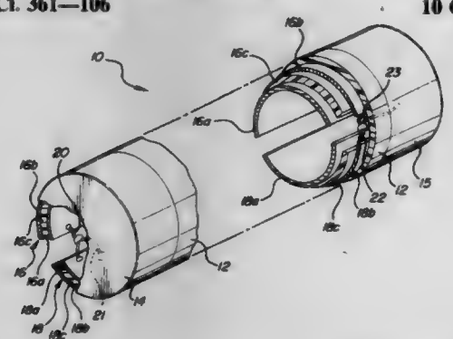
at least one electrical impedance connected in the second circuit branch in series with the at least one varistor, wherein the at least one PTC thermistor has at least one resistive track of a material with a positive temperature coefficient, which is thermally conductively connected to at least one cooling element, the at least one resistive track having a first surface thermally connected by an electrically insulating, thermally conductive insulation layer to the at least one cooling element, and a second surface connected to a flexible high-temperature stable polymer film.

5,796,569

CYLINDRICAL PTC CIRCUIT OVERCURRENT PROTECTION DEVICE

William Gronowicz, Jr., Westland, Mich., assignor to Yazaki Corporation, Tokyo, Japan

Filed Jun. 19, 1997, Ser. No. 878,649
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—106 **10 Claims**



1. A cylindrical self-resetting circuit overcurrent protection device comprising:

at least two semi-tubular, positive temperature coefficient elements having opposite first and second ends and each element comprising first and second semi-tubular, electrically conductive plates disposed in nested, concentric relationship to one other and separated by a layer of material having a positive temperature coefficient of resistivity; and

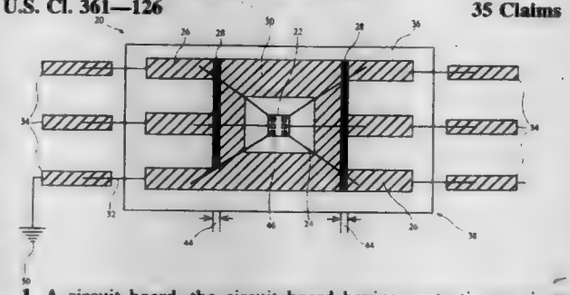
first and second cylindrical, electrically conductive terminal caps surrounding respective first and second ends of the at least two positive temperature coefficient elements, the first terminal cap being in electrical connection with the first plates and electrically insulated from the second plates and the second terminal cap being in electrical connection with the second plate and electrically insulated from the first terminal cap.

5,796,570

ELECTROSTATIC DISCHARGE PROTECTION PACKAGE

Boonmi Mekdhanasarn, Sunnyvale; Randy Hsiao-Yu Lo, Campbell; Steve M. Ichikawa, Fremont, and Abdul Rahim Ahmed, Morgan Hill, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 19, 1996, Ser. No. 724,305
Int. Cl.[6] H02H *1/00*
U.S. Cl. 361—126 **35 Claims**



1. A circuit board, the circuit board having protection against electrostatic discharge (ESD), comprising:

a substrate suitable for supporting a die;

a plurality of interconnect traces formed on the substrate;

an electrically conductive ground plane formed on said substrate such that the ground plane is substantially co-planer with the interconnect traces, the ground plane being arranged such that a gap is created between the interconnect traces and the ground plane; and

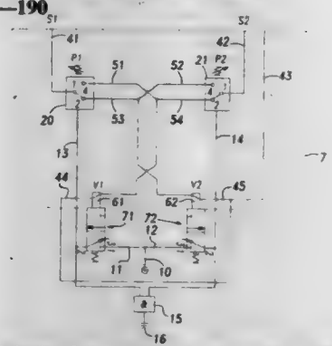
a resistive electrostatic discharge (ESD) protection material positioned to bridge the gap between the ground plane and the interconnect traces in a substantially co-planer manner, without substantially covering the interconnect traces or the electrically conductive ground plane, wherein said ESD protection material is arranged to electrically insulate the interconnect traces from the ground plane at voltages below a predefined threshold voltage and to establish an electrical connection between said interconnect traces and said conductive plane at voltages above the threshold voltage.

5,796,571

CONTROL DEVICE FOR A TWO-HAND CONTROL MEANS FOR CONTROLLING PRESSES FOR INSTANCE

Uwe Wetzel, Stockholm, and Nils Svensson, Vagnhärad, both of Sweden, assignors to Ross Operating Valve Company, Troy, Mich.

Filed Dec. 3, 1996, Ser. No. 759,893
Claims priority, application Sweden, Dec. 19, 1995, 9504535
Int. Cl.[6] H01H *9/00*
U.S. Cl. 361—190 **8 Claims**



1. A control device for controlling and monitoring the essentially simultaneous energization of two electromagnets (**61**, **62**) in response to a respective electric signal (**S1**, **S2**) applied to said electromagnets essentially simultaneously, wherein each electromagnet includes an element (**71**, **72**) which in a non-energized state of the electromagnet takes a first inactive, normal position and which upon activation of the electromagnet is displaceable to a

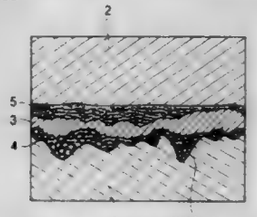
second active terminal position, wherein the control device is constructed to ensure that the displaceable elements (71, 72) of both electromagnets (61, 62) will be moved to their respective active end positions essentially simultaneously and then remain in said end positions provided that both signals (S1, S2) are applied essentially simultaneously and then both maintained, characterized in that a first control signal line (41, 51) leading to the first electromagnet (61) includes a first electric switch (20) which is controlled by the displaceable element (71) of the first magnet (61), wherein the first switch has an input terminal (1) connected to the signal source (S1) and a first and a second output terminal (2, 4), wherein when moved to its active position the displaceable element (71) of the first electromagnet (61) functions to switch the first switch from its normal position in which the input terminal (1) is connected to the first output terminal (2) to the active position of said switch in which the input terminal (1) is connected to the other output terminal (4); in that a second control signal line (42, 52) leading to the other electromagnet (62) includes a second electric switch (21) which is controlled by the displaceable element (72) of the second electromagnet (62), wherein the second switch (21) has an input terminal (1) which is connected to its associated signal source (S2) and a first and a second output terminal (2, 4), wherein when the displaceable element (72) of the second electromagnet moves to its active position said element functions to switch the second switch (21) from its normal position in which the input terminal (1) is connected to the first output terminal (2) to its active position in which the input terminal (1) is connected to the other output terminal (4); in that the first output terminal (2) of the first switch (20) is connected to the second output terminal (4) of the second switch; in that the first output terminal (2) of the second switch (21) is connected (54) to the second output terminal (4) of the first switch (20); and in that the inertia of the displaceable elements (71, 72) of said electromagnets is such that the displaceable elements have insufficient time to leave their active positions under the influence of means which act to restore said elements to their normal positions within a time period defined essentially as the maximum permitted time difference between the control signals (S1, S2) for activation of the two electromagnets (61, 62).

5,796,572

THIN FILM CAPACITOR AND HYBRID CIRCUIT BOARD AND METHODS OF PRODUCING SAME

Wakahiro Kawai, Kouga-gun, Japan, assignor to Omron Corporation, Naquakakyo, Japan

Filed Mar. 15, 1996, Ser. No. 616,723
Claims priority, application Japan, Mar. 15, 1995, 7-084694
Int. Cl.[6] H01G *4/10;4/06*
U.S. Cl. 361—313 **7 Claims**



1. FIRST ELECTRODE LAYER
1A. UNEVEN SURFACE
2. SECOND ELECTRODE LAYER
3. DIELECTRIC LAYER
4. FIRST LAYER OF CONDUCTIVE PARTICLES
5. SECOND LAYER OF CONDUCTIVE PARTICLES

1. A thin film capacitor, comprising

a pair of electrode layers;

a dielectric layer sandwiched between said pair of electrode layers;

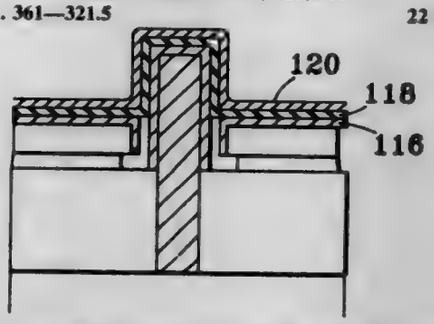
a first layer of conductive particles interposed between one of said pair of electrode layers and said dielectric layer.

5,796,573

OVERHANGING SEPARATOR FOR SELF-DEFINING STACKED CAPACITOR

David E. Kotecki, Hopewell Junction, and William H. Ma, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1997, Ser. No. 865,533
Int. Cl.[6] H01G *4/06;4/20;4/10*
U.S. Cl. 361—321.5 **22 Claims**



1. An overhanging separator structure useful for creating a self-formed discontinuous film, comprising:

a post projecting from a surface;

an underlying layer on the surface, the underlying layer having a first opening formed therein such that the post is within the first opening and at least a first distance from the underlying layer; and

a separator layer on the underlying layer, the separator layer having a second opening formed therein such that the post is within the second opening and at least a second distance from the separator layer, the second distance greater than zero, and the underlying layer recessed with respect to the separator layer.

5,796,574

VITREOUS CARBON-ACTIVE CARBON COMPOSITE MATERIAL, PROCESS FOR PRODUCING SAID COMPOSITE MATERIAL, AND POLARIZABLE ELECTRODE USING SAID COMPOSITE MATERIAL FOR USE IN ELECTRIC DOUBLE LAYER CAPACITOR

Kazuo Saito, and Atsushi Hagiwara, both of Tokyo, Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 245,897, May 19, 1994, abandoned.
This application Jan. 16, 1996, Ser. No. 587,137
Claims priority, application Japan, May 24, 1993, 5-145710
Int. Cl.[6] H01B *1/04*
U.S. Cl. 361—502 **7 Claims**

1. A vitreous carbon-active carbon composite material consisting of active carbon dispersed in a binder of vitreous carbon, said composite material being obtained by firing a mixture of a polycarbodiimide resin and an active carbon in a non-oxidizing atmosphere at a temperature of 700°–1500° C., whereby said polycarbodiimide resin is converted to said vitreous carbon.

5,796,575

PORTABLE COMPUTER WITH HINGED COVER HAVING A WINDOW

Sergey Gary Podwalny; Michael D. Derocher; Scott N. Hickman, all of Corvallis, and Jan Hippen, Portland, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

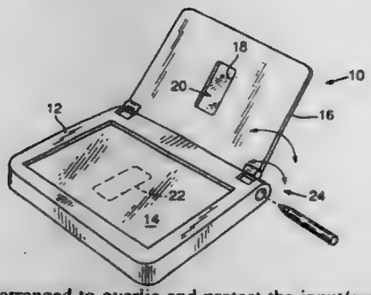
Filed Dec. 21, 1992, Ser. No. 994,035
Int. Cl.[6] G06F *1/16*
U.S. Cl. 361—681 **13 Claims**

1. A computer comprising:

a housing;

an input/output screen mounted in the housing; and

a cover movable between first and second positions and secured in each position to the housing, in the first position the cover



being arranged to overlie and protect the input/output screen, in the second position the cover exposing the input/output screen for use, the cover defining a window permitting a portion of the input/output screen to be viewed even when the cover is in the first position.

5,796,576

NOTEBOOK COMPUTER HAVING A HINGE DEVICE ENABLING A DISPLAY UNIT TO BE SEPARABLE FROM A MAIN BODY

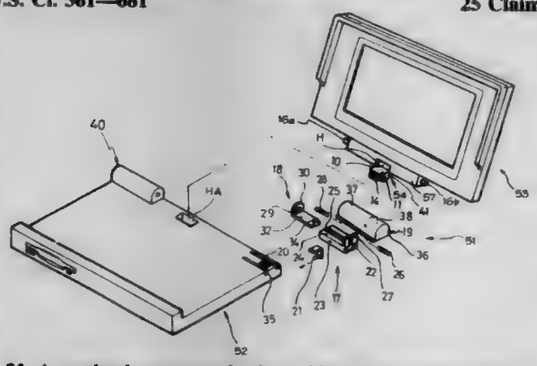
Tae-Yong Kim, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 24, 1996, Ser. No. 718,909

Claims priority, application Rep. of Korea, Oct. 4, 1995, 1995 33889

Int. Cl.[6] G06F *1/16*; H05K *7/10*

U.S. Cl. 361—681 **25 Claims**



21. A notebook computer having a hinge system, comprising:

a main body;

a display unit;

a hinge member, extending from a lower end of said display unit;

a connector assembly, pivotally fixed to said hinge member, transmitting an electrical signal from said main body to said display unit; and

a connector socket, formed in said main body in which said connector assembly is tightly inserted when providing electrical connection between said main body and said display unit; and enabling said display unit to be completely separated from said main body when said connector assembly is not inserted in said connector socket, wherein the connector assembly comprises a T-shaped outer tube having a horizontal portion pivotally fixed to said hinge member and a vertical portion inserted in said connector socket, and a printed circuit plate board integrally inserted into the tube, wherein the horizontal portion is provided with leading holes on its opposite ends such that cables connected with the printed circuit plate board contained in said outer tube connector can be led outwardly therethrough.

5,796,577

NOTEBOOK COMPUTER WITH TWO DISPLAYS

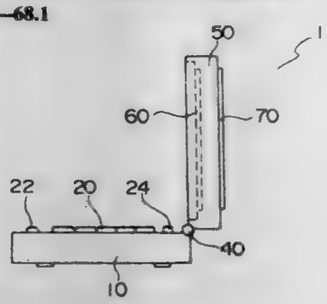
Genjiro Ouchi; Nobuhiko Akinaga, and Kazuyuki Ogata, all of Yokohama, Japan, assignors to Hitachi Electronics Services Co., Ltd., Yokohama, Japan

Filed Jul. 16, 1997, Ser. No. 895,220

Claims priority, application Japan, Jan. 21, 1997, 9-8363

Int. Cl.[6] G06F *1/16*; H05K *5/03*

U.S. Cl. 361—68.1 **2 Claims**



1. A notebook computer comprising:

a notebook computer body having a keyboard;

a cover member fixed to the notebook computer body by a hinge so as to open and close against said notebook computer body;

a first display device formed on the inner surface of the cover member; and

a second display device formed on the outer surface of the cover member.

5,796,578

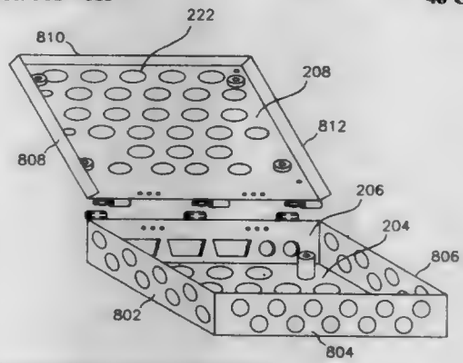
RF GROUNDING AND HEAT DISTRIBUTION SYSTEM FOR A PORTABLE COMPUTER INCLUDING A SLIP JOINT HINGE WITH A BANANA PLUG TYPE MALE INTRUSION MEMBER

Leroy Jones, Austin, Tex., assignor to Dell USA, L.P., Round Rock, Tex.

Filed Nov. 6, 1996, Ser. No. 744,489

Int. Cl.[6] G06F *1/16*; H05K *9/00*

U.S. Cl. 361—683 **46 Claims**



1. A grounding system comprising:

a top panel constructed of an electrically conductive material;

a bottom panel constructed of a electrically conductive material;

a back panel physically and electrically connected to the bottom panel, where the back panel is constructed of an electrically conductive material;

a low impedance hinge constructed of an electrically conductive material, the low impedance hinge electrically connecting the top panel with the back panel;

wherein to low impedeance hinge is a slip joint hinge with a banana plug type male intrusion member.

5,796,579

PORTABLE ELECTRONIC APPARATUS HAVING EXPANSION CONNECTOR COVERED BY PIVOTALLY MOUNTED UPPER AND LOWER COVERS HAVING LATERALLY EXTENDING GUIDE PORTIONS

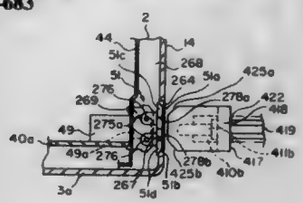
Yuji Nakajima; Masaru Seto, and Yoshinori Kamikawa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

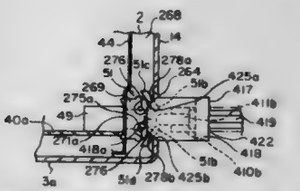
Division of Ser. No. 434,668, May 4, 1995, Pat. No. 5,689,400. This application Feb. 7, 1997, Ser. No. 798,300

Claims priority, application Japan, May 31, 1994, 6-118005; May 31, 1994, 6-118006

Int. Cl.[6] G06F *1/16*; H05K *7/10*

U.S. Cl. 361—683 **3 Claims**





1. An electronic system comprising:

a portable electronic apparatus having a connector panel mounting a first expansion connector;

a cover unit for covering the first expansion connector, and mounted to the portable electronic apparatus, the cover unit having an upper cover pivotably supported on the cover unit for movement between a closed position covering an upper half portion of the first expansion connector and an opened position exposing the upper half portion of the first expansion connector and a lower cover pivotably supported on the cover unit for movement between a closed position covering a lower half portion of the first expansion connector and an opened position exposing the lower half portion of the first expansion connector, the upper cover having a laterally extending first guide portion, and the lower cover having a laterally extending second guide portion cooperating with the first guide portion to form a guide opening therebetween;

an external expansion unit having a connector mounting surface and a second expansion connector mounted on the connector mounting surface, and the external expansion unit detachably electrically connected to the portable electronic apparatus through connection of the first and second expansion connectors; and

a cover opening member projecting from the connector mounting surface in laterally spaced relation to the second expansion connector, the cover opening member having an upper portion for pushing the first guide portion and a lower portion for pushing the second guide portion, the first and second covers being pivoted from their closed positions to their opened positions upon the first and second guide portions being pushed by engagement with the cover opening member during insertion through the guide opening to enable connection between the first and second expansion connectors.

5,796,580

AIR-COOLED INFORMATION PROCESSING APPARATUS HAVING COOLING AIR FAN, SUB-FAN, AND PLURAL SEPARATED COOLING AIR FLOW CHANNELS

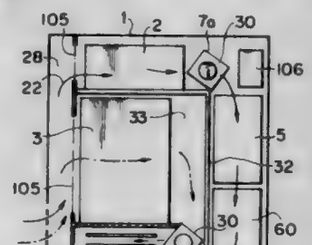
Toshihiro Komatsu, Ibaraki-ken; Hitoshi Matsushima, Ryugasaki; Toshio Hatada, Tsuchiura; Susumu Iwai, Hadano; Tetsuro Homma, Hadano; Yoshihiro Kondo, Hadano; Shouhei Fuse, Hadano; Hiroshi Yamada, Kanagawa-ken; Kazuo Morita; Hiroshi Ito, both of Hadano; Akiyoshi Iida, Mitsukaido; Kenta Kumagai, Tokyo, and Shinichi Shimode, Ibaraki-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1994, Ser. No. 226,824

Claims priority, application Japan, Apr. 13, 1993, 5-085868; Apr. 16, 1993, 5-089695; Jul. 30, 1993, 5-189920

Int. Cl.[6] G06F *1/20*; *1/16*; H05K *7/20*

U.S. Cl. 361—687 **19 Claims**



1. An air-cooled information processing apparatus comprising:

a plurality of cooling air flow channels separated from one another by at least one partition;

a plurality of heat-generating units disposed in each of said cooling air flow channels;

a cooling air fan disposed with respect to each of said cooling air flow channels for supplying cooling air flow in a respective cooling air flow channel to said plurality of heat-generating units disposed therein; and

a sub-fan disposed at an upstream side of one of said cooling air flow channels for at least providing localized cooling for a main processing unit of said information processing apparatus as one of said Plurality of heat-generating units disposed in each of said cooling air flow channels, said main processing unit being disposed between said sub-fan and said cooling air fan of said one of said cooling air flow channels;

wherein said sub-fan supplies cooling air to said main processing unit at a flow rate less than a flow rate of said cooling air fan.

5,796,581

ROTATIONAL JOINT FOR HINGED HEAT PIPE COOLING OF A COMPUTER

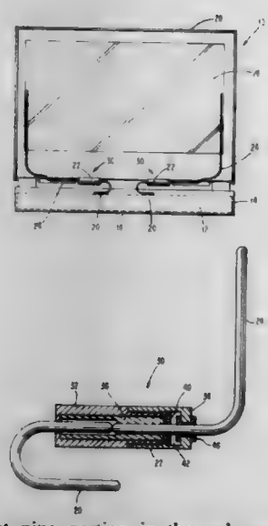
Lawrence Shungwei Mok, Brewster, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1997, Ser. No. 902,704

Int. Cl.[6] G06F *1/20*; H05K *7/20*

U.S. Cl. 361—687 **20 Claims**

1. An arrangement for enhancing the cooling capacity of a computer having a bottom housing mounting a keyboard and containing at least one electronic component in said housing generating heat during operation of the computer; and a display panel hingedly connected with said housing proximate a rear edge thereof; said arrangement comprising at least one heat pipe structure extending between said at least one electronic component and heat dissipating means in said display panel, said at least one heat pipe structure including a first heat pipe portion having an end connected with said heat-generating electronic component and a second heat pipe portion having an end connected with said heat dissipating means; a first metal canister receiving an opposite end



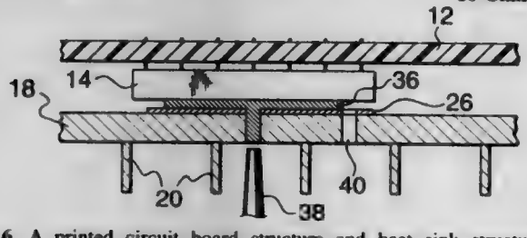
of said first heat pipe portion in thermal contact therewith; a second metal canister being screwed to said first metal canister to form a closed container construction; a third canister having a smaller outer diameter than the inner diameters of said first and second canisters said third canister receiving an opposite end of said second heat pipe, said third canister being arranged within said first and second canisters so as to be rotatable relative to said first and second canisters.

5,796,582

PRINTED CIRCUIT BOARD AND HEAT SINK ARRANGEMENT

Roman Katchmar, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 21, 1996, Ser. No. 755,429
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—704 **10 Claims**



6. A printed circuit board structure and heat sink structure assembly comprising:

a structure of printed circuit board and an electronic component detachably mounted upon the printed circuit board;

a heat sink structure with a hole defined through the heat sink structure for injection purposes;

the two structures disposed with first sides of the structures face-to-face and spaced-apart with the hole extending in a direction generally towards the electronic component;

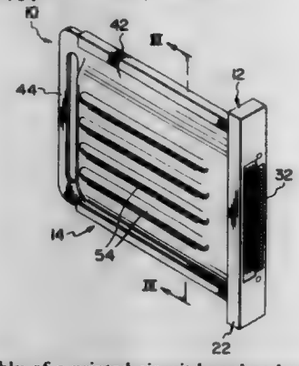
and thermally conductive material that has flowed through the hole to be disposed between the two structures and occupy a spatial region extending across the hole to provide a heat conductive bridge between the two structures and in alignment with the electronic component, the thermally conductive material held away from a first side of a selected one of the structures by a thermally conductive surface release agent which is disposed in thermal conductive engagement both with the first side of the selected structure and with the thermally conductive material while being capable of being physically separated from the thermally conductive material by the application of a separating force.

5,796,583

CIRCUIT PACK AND ENVIRONMENTAL PROTECTION ASSEMBLY

Geoffrey N. Gale, Neapean; Richard J. Glover, and Steve J. Lischynsky, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 7, 1997, Ser. No. 827,884
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—704 **6 Claims**



1. An assembly of a printed circuit board and an environmental protection for the pack wherein:

the printed circuit board is provided for insertion into an electronic shelf, the printed circuit board having a front end region, a rear end region, the printed circuit board also having at least one circuit layer, a substrate of electrically insulating material supporting the circuit layer and a heat conductive layer also supported by the substrate and having remote marginal edge regions extending outwards beyond the substrate along the side edge regions to expose the marginal edge regions, the printed circuit board also carrying and side edge regions extending between the front and rear end region, an electrical connector mounted along the rear end region, the connector extending outwardly beyond each side edge region and having electrical conductors fluid-tightly sealed in a body of the connector, the conductors having terminals facing rearwardly from printed circuit board,

and the environmental protection comprising a heat conductive and fluid-tight cover surrounding the printed circuit board from the front end region to the rear end region and being fluid-tightly sealed around the electrical connector with the rearwardly facing terminals extending beyond the confines of the and the cover having remote edge regions which closely contact the marginal edge regions of the heat conductive layer to be in heat conductive contact with the heat conductive layer, the assembly also comprising a resilient clip at each remote edge region, each clip being held in resiliently flexed condition around each remote edge region to cause the remote edge region to grip with thermally conductive contact around the associated marginal edge region of the heat conductive layer, and a guide being provided to enable the assembly to be guided into the shelf, a buckling strength sufficient to withstand front end pressure to overcome insertion resistance of the assembly into the shelf, and accessible handling means at a front end region of the cover to enable removal of the assembly from the shelf.

5,796,584

BRIDGE FOR POWER TRANSISTORS WITH IMPROVED COOLING

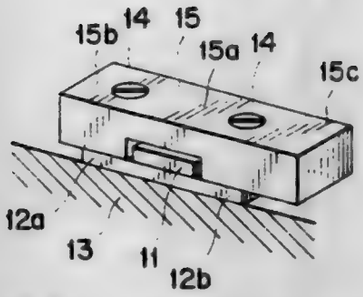
Jan Myrberg, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 30, 1996, Ser. No. 640,256
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—707 **11 Claims**

1. A circuit module comprising:

an underlying material onto which circuit elements are mounted;

a top plate; and



partitions located in a space between said underlying material and said top plate separating said space into compartments with said underlying material and said top plate operatively connected together, wherein said partitions include

at least one electronic device including a heat generating part and a heat conducting plate, said heat conducting plate having first and second mounting flanges extending out from said heat generating part; and

at least one bridge securing an electronic device to an underlying material, said bridge comprising:

a central part;

a first side extension extending out from a first side of said central part and including a contour configured to permit a fastener to secure said first side extension and said first mounting flange to said underlying material; and

a second side extension extending out from a second side of said central part and including a contour configured to permit a fastener to secure said second side extension and said second mounting flange to said underlying material,

wherein a major surface of each of said first and second side extensions are in physical contact with said first and second mounting flanges and said top plate and said central part is adjacent said heat generating part when said bridge secures said electronic device to said underlying material.

5,796,585

ELECTRONIC EQUIPMENT MOUNTING DEVICE

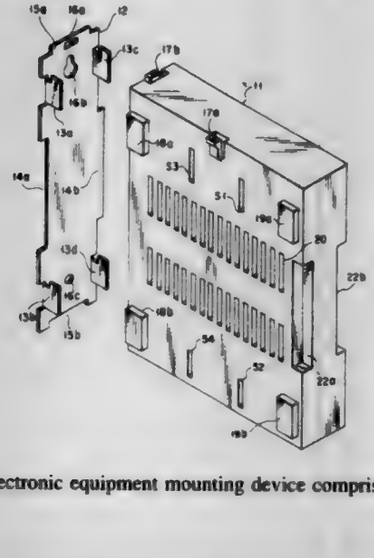
Akira Sugiyama, Tokyo, and Tsutomu Hoshino, Otsuki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 9, 1995, Ser. No. 555,401

Claims priority, application Japan, Nov. 11, 1994, 6-277405

Int. Cl.[6] H05K *5/00;* **H04M** *1/00*

U.S. Cl. 361—735 **17 Claims**



2. An electronic equipment mounting device comprising:

a rectangular parallelepipedic housing that contains electronic circuit units of electronic equipment and has at least a first side face and a second side face adjoining each other and differing in area; and

a flat-plate mounting jig that is selectively coupled in a detachable manner to either the first side face or the second side face of said housing and mounts said housing in any place, wherein said mounting jig has a width larger than that of a side face having a smaller area of said housing and has its right end and left end formed into a projecting shape and a recessed shape that fit to each other.

5,796,586

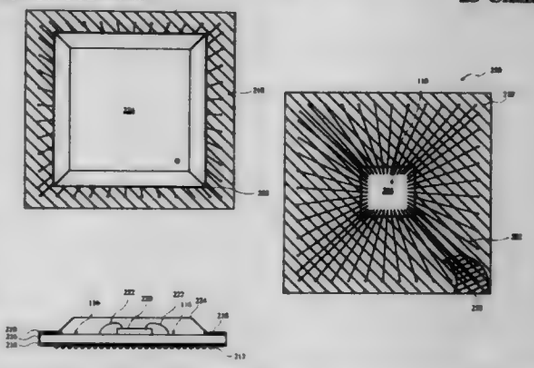
SUBSTRATE BOARD HAVING AN ANTI-ADHESIVE SOLDER MASK

Shaw Wei Lee, Cupertino, Calif.; Poh Ling Lee, Singapore, Singapore, and Anthony E. Panczak, Sunnyvale, Calif., assignors to National Semiconductor, Inc., Santa Clara, Calif.

Filed Aug. 26, 1996, Ser. No. 703,410

Int. Cl.[6] H05K *1/03*

U.S. Cl. 361—748 **23 Claims**



16. A circuit board for use in a packaged semiconductor device, the circuit board comprising:

a substrate having first and second surfaces wherein the first surface includes a gate area;

a plurality of conductive traces positioned on the substrate;

an adhesive solder mask positioned on the first surface and second surfaces; and

a patterned anti-adhesive solder mask positioned on the gate area of the first surface of the substrate.

5,796,587

PRINTED CIRCUT BOARD WITH EMBEDDED DECOUPLING CAPACITANCE AND METHOD FOR PRODUCING SAME

John M. Lauffer, Waverly, and Konstantinos Papathomas, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1996, Ser. No. 662,164

Int. Cl.[6] H05K *1/16*

U.S. Cl. 361—763 **10 Claims**

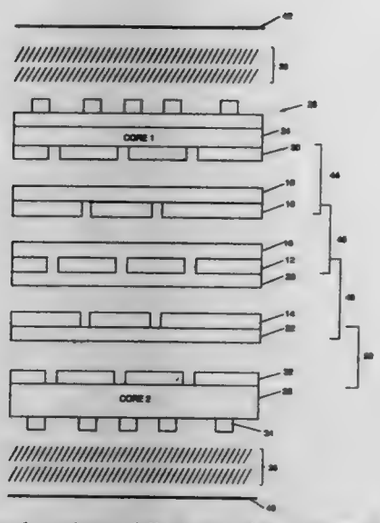
1. An electronic circuit package comprising:

a first core and a second core, each fabricated by lamination and circuitization; and

one or more embedded capacitors interleaved between the first core and the second core;

each embedded capacitor comprising

a first conductor foil coated on at least one side with a dielectric material; and



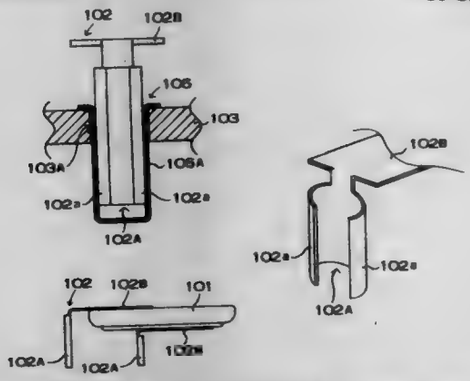
a second conductor foil on top of the coating of dielectric material on the first conductor foil.

5,796,588

ELECTRICAL APPARATUS CONTAINING BATTERIES

Toyoji Machida, and Mitsuya Hara, both of Tsuna-gun, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Aug. 15, 1995, Ser. No. 515,198
Claims priority, application Japan, Sep. 29, 1994, 6-234835
Int. Cl.[6] H01M *2/20;2/26*
U.S. Cl. 361—773 **16 Claims**



1. An electrical apparatus for attaching a battery to a printed circuit board in a removable fashion, comprising:

a sheet metal socket connector which has a cylindrical connecting section to connect in a removable fashion a sheet metal conducting tab fixed to a battery electrode, and which itself is secured to the printed circuit board to attach the battery to the printed circuit board in a removable fashion;

a conducting tab provided with a cylindrical insertion section which inserts into the cylindrical connecting section of the socket connector and has a pressure contact section which is slit vertically with opposing sides that open flexibly outward in the radial direction, and wherein the pressure contact section is curved to almost conform to the inner surface of the cylindrical connecting section to make surface-to-surface electrical contact with an inner surface of the cylindrical connecting section;

wherein the cylindrical connecting section of the socket connector is formed as a metal pipe; and

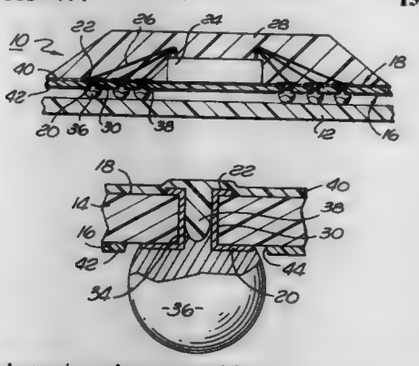
wherein the socket connector is secured by solder to a conducting run on the upper surface of the printed circuit board.

5,796,589

BALL GRID ARRAY INTEGRATED CIRCUIT PACKAGE THAT HAS VIAS LOCATED WITHIN THE SOLDER PADS OF A PACKAGE

Michael Barrow, El Dorado Hills, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 20, 1995, Ser. No. 575,917
Int. Cl.[6] H01R *9/09;* **H01L** *23/48;* **H05K** *7/02*
U.S. Cl. 361—774 **15 Claims**



1. An electronic package, comprising:

a substrate that has a first surface and a second opposite surface;

a solder pad located on said first surface of said substrate;

a via which has a longitudinal channel that extends into said substrate and terminates within and extends through said solder pad;

a first layer of solder mask that is located on said second surface of said substrate and extends into said longitudinal channel of said via; and,

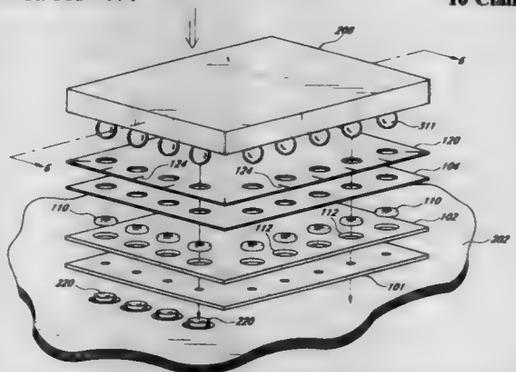
a solder ball that is attached to said solder pad and is located over said via wherein said solder ball is blocked from extending through said longitudinal channel of said via by said first layer of solder mask.

5,796,590

ASSEMBLY AID FOR MOUNTING PACKAGED INTEGRATED CIRCUIT DEVICES TO PRINTED CIRCUIT BOARDS

Dean A. Klein, Eagle, Id., assignor to Micron Electronics, Inc., Nampa, Id.

Filed Nov. 5, 1996, Ser. No. 743,186
Int. Cl.[6] H01R *9/09*
U.S. Cl. 361—774 **10 Claims**



1. An assembly aid for mounting an integrated circuit device having connecting leads to a circuit board, comprising:

a plurality of solidified eutectic solder elements, said elements being shaped to receive respective ones of said connecting leads;

a mounting substrate having a first surface, a second surface, and a plurality of apertures corresponding to the location of said connecting leads, said apertures having recesses on said first

surface sized to receive and retain said solidified eutectic solder elements within said mounting substrate; and

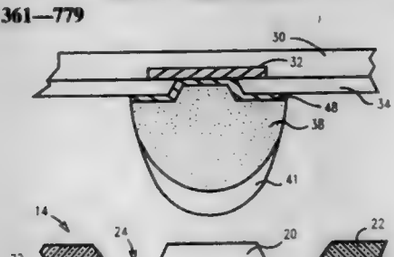
an adhesive layer having a plurality of apertures corresponding to the location of said connecting leads, said adhesive layer further retaining said solder elements within said mounting substrate recesses, said apertures in said adhesive layer communicating with said solidified solder elements.

5,796,591

DIRECT CHIP ATTACH CIRCUIT CARD

Hormazdyar Minocher Dalal, Milton, and Kenneth Michael Fallon, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1995, Ser. No. 476,472
Int. Cl.[6] H01L *23/532*
U.S. Cl. 361—779 **27 Claims**



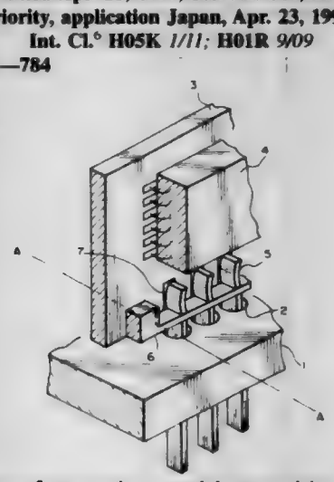
1. An electronic card structure comprising a device carrier and at least one device electrically connected thereto by at least one solder ball, wherein said solder ball has a cap of at least one low melting point metal forming in combination with said solder ball a eutectic in assembly of said device carrier and said device, and wherein said low melting point metal caps between about 10 percent to about 90 percent of the exposed surface of said solder ball.

5,796,592

MODULE MOUNTING STRUCTURE

Shinji Tanaka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 21, 1997, Ser. No. 844,659
Claims priority, application Japan, Apr. 23, 1996, 8-101077
Int. Cl.[6] H05K *1/11*; **H01R** *9/09*
U.S. Cl. 361—784 **6 Claims**



1. A structure for mounting a module, comprising:

a daughter board carrying electronic parts on both sides thereof;

a plurality of input/output pads provided on one side of said daughter board;

a plurality of lead frames;

an affixing member for affixing said plurality of lead frames; and

a mother board formed with a plurality of through holes;

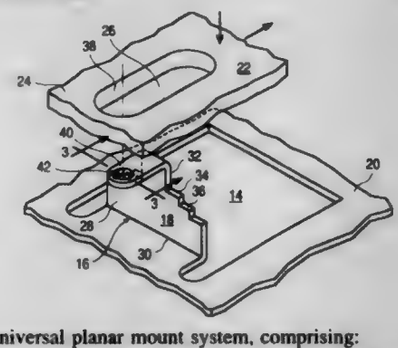
wherein said plurality of lead frames are affixed to said affixing member, then soldered to said plurality of input/output pads, then inserted in said plurality of through holes, and then soldered to said mother board.

5,796,593

PLANAR MOUNTS CAPABLE OF MOUNTING PLANARS OF VARYING THICKNESS

R. Steven Mills, Austin, and Randall T. Smith, Georgetown, both of Tex., assignors to Dell USA, L.P., Round Rock, Tex.

Filed Jan. 25, 1996, Ser. No. 591,098
Int. Cl.[6] H05K *7/14*
U.S. Cl. 361—801 **42 Claims**



1. A universal planar mount system, comprising:

a computer chassis configured to alternatively house first or second planar boards having different thicknesses and daughter board side surfaces, said computer chassis having a wall for mounting a planar board thereto;

a planar support coupled to said wall of said chassis and having first and second shoulders associated therewith, said planar support further having a first end coupled to said wall and a second end extending inwardly from said wall, said first shoulder engagable with a surface of said first planar board to mount said daughter board side surface of said first planar board a predetermined distance from said wall and said second shoulder engagable with a surface of said second planar board to mount said daughter board side surface of said second planar board said predetermined distance from said wall, said planar mount accommodating said first or second planar boards of different thickness while maintaining said daughter board side surface of said first or second planar boards at said predetermined distance; and

a hook member coupled to said second end of said planar support and extending outwardly from and transverse to said planar support, said hook member configured to be received through a retaining slot formed in said first and second planar boards;

wherein said shoulders are stair-stepped.

5,796,594

INTERLOCKING CIRCUIT CARD FACEPLATE FOR REDUCED EMI EMISSIONS

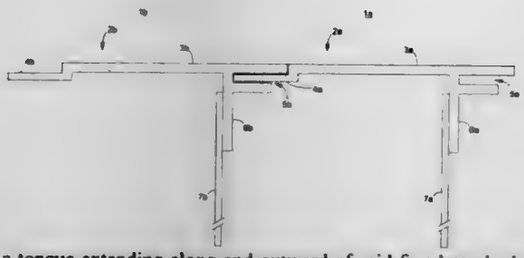
Zbigniew Kabat, Schaumburg, and Richard A. Walton, Carol Stream, both of Ill., assignors to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Apr. 1, 1997, Ser. No. 831,120
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—818 **2 Claims**

1. A circuit card assembly comprising:

a printed wiring circuit board;

a faceplate connected to said circuit board, and having a first lateral edge and a second opposing lateral edge, said faceplate being opaque to EMI emissions of a predetermined spectral range;



a tongue extending along and outward of said first lateral edge;

a groove extending along and inward of said second lateral edge; and

said groove arranged to receive and interlockingly engage a corresponding tongue on a lateral edge of an adjacent faceplate;

whereby said tongue and groove engagement form a seam that is opaque to EMI emissions of said predetermined spectral range.

5,796,595

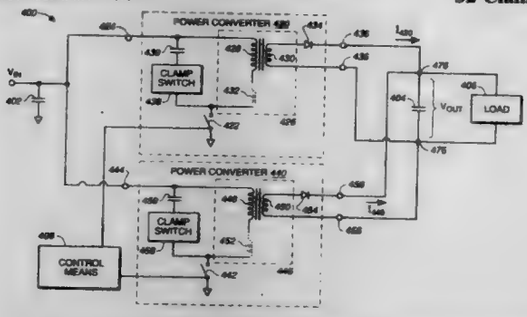
INTERLEAVED CONTINUOUS FLYBACK POWER CONVERTER SYSTEM

David A. Cross, Wrestlingworth, England, assignor to Astec International Limited, Hong Kong

Continuation of Ser. No. 698,566, Aug. 14, 1996, abandoned, which is a continuation-in-part of Ser. No. 201,653, Feb. 25, 1994, Pat. No. 5,570,278. This application Sep. 5, 1997, Ser. No. 932,792

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—16 **32 Claims**



1. An interleaved continuous flyback power converter system for providing power to a load, said system comprising:

an output port for coupling said system to said load; and

first and second flyback power converters, wherein said converters are coupled in parallel to said output port and operate in continuous mode, and further wherein each said power converter comprises:

an input port for receiving an input voltage;

a transformer having a primary winding and a secondary winding, wherein a first terminal of said primary winding is coupled to a first terminal of said input port and further wherein a second terminal of said secondary winding is coupled to a second terminal of said output port;

a power switch, said power switch having first and second conduction terminals, wherein voltage across said first and second conduction terminals defines a switch voltage, and further wherein said first conduction terminal of said power switch is coupled to a second terminal of said primary winding and said second conduction terminal of said power switch is coupled to a second terminal of said input port, said power switch being switched to alternating ON and OFF states, wherein power is coupled from said input port to said primary winding during said ON states and wherein substantially no power is coupled from said input port to said primary winding during said OFF states, said transformer storing energy during said ON states and releasing energy to the output port during said OFF states, further wherein said switch voltage is substantially zero volts when said power switch is switched to said ON state from said OFF state;

a series combination of a clamp capacitor and a clamp switch, said series combination having one terminal coupled to the first terminal of said input port and the first terminal of said primary winding, said series combination having a second terminal coupled to said second terminal of said primary winding, said clamp switch having an auxiliary ON state and an auxiliary OFF state; and

a rectifier, wherein a first terminal of said rectifier is coupled to a first terminal of said secondary winding and a second terminal of said rectifier is coupled to a first terminal of said output port such that current is substantially blocked from flowing from said output port to said secondary winding during said ON states of the power switch and is enabled to flow to said output port during said OFF states;

said system further comprising:

an output capacitor coupled to said output port; and

control means coupled to each of said clamp switches and each of said power switches for switching said power and clamp switches between said ON and OFF states and said auxiliary ON and OFF states, respectively.

5,796,596

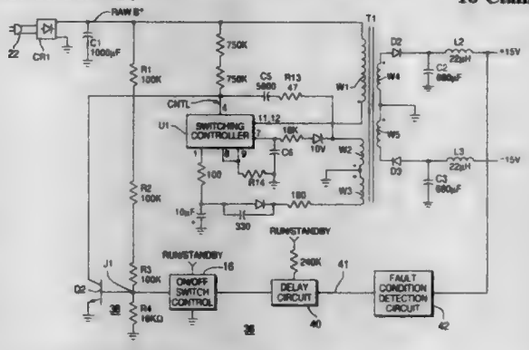
FAULT CONTROL CIRCUIT FOR SWITCHED POWER SUPPLY

Kevin Michael Williams, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Nov. 15, 1996, Ser. No. 749,749

Int. Cl.[6] H02M *3/335;* **H02H** *7/122*

U.S. Cl. 363—21 **16 Claims**



1. A switched power supply, comprising:

a voltage source, a transformer and a switching controller coupled for switched mode generation of an output supply voltage;

a feedback circuit for regulating said switched mode operation responsive to loading on said output supply voltage;

a switching circuit responsive to an on/off signal for turning said power supply on and off by controlling conduction in a conduction path, said power supply being turned on by a conductive condition in said conduction path;

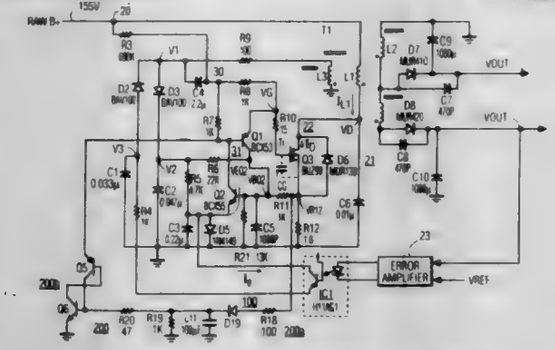
a fault detector for controlling conduction in a part of said conduction path and establishing a non-conductive condition in said part of said conduction path responsive to an overload condition of said output supply voltage; and,

a delay circuit for controlling an auxiliary conduction path bypassing said part of said conduction path controlled by said fault detector and establishing a conductive condition in said auxiliary conduction path for a period of time after said power supply is turned on.

5,796,597
SWITCH-MODE POWER SUPPLY WITH OVER-CURRENT PROTECTION

William Vincent Fitzgerald, Zionsville, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Apr. 16, 1997, Ser. No. 838,301
Int. Cl.[6] H02M *3/335;* **H02H** *7/122*
U.S. Cl. 363—21 **11 Claims**



1. A switch mode power supply apparatus, comprising:

a source of an input supply voltage;

an inductance coupled to said source of said input supply voltage;

a first transistor switch coupled to said inductance and responsive to a periodic, switch control signal for generating current pulses in said inductance that are coupled to a load circuit for generating an output of said power supply;

a modulator responsive to a signal indicative of a given current pulse for generating said switch control signal to control said power supply output in a current mode control, on a current-pulse-by-current-pulse basis;

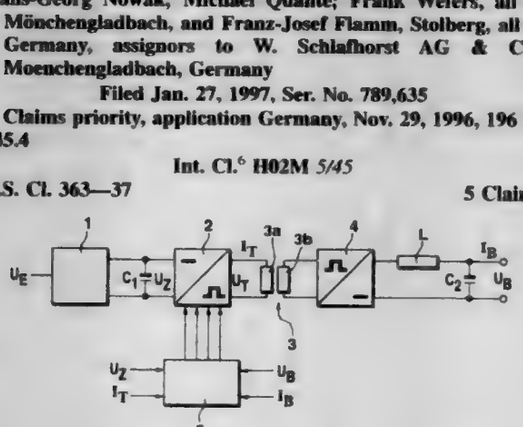
an over-current protection circuit responsive to said current pulse indicative signal for disabling said power supply output when an over-current condition occurs; and

a current sensor responsive to said given current pulse for generating said current pulse indicative signal that is coupled to each of said over-current protection circuit and said modulator via corresponding signal paths.

5,796,598
VOLTAGE-CONVERTING CIRCUIT FOR THE POWER SUPPLY OF AN ELECTRICAL CONSUMER OF HIGH OUTPUT, PARTICULARLY A BOBBIN WINDING MACHINE

Hans-Georg Nowak; Michael Quante; Frank Wefers, all of Mönchengladbach, and Franz-Josef Flamm, Stolberg, all of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Jan. 27, 1997, Ser. No. 789,635
Claims priority, application Germany, Nov. 29, 1996, 196 02 745.4
Int. Cl.[6] H02M *5/45*
U.S. Cl. 363—37 **5 Claims**



1. An electrical circuit for the conversion of a multiplicity of commercial power voltages into a supply voltage for use with a device with high electrical power requirements, such as a textile bobbin winding machine, said supply voltage being independent of the respective commercial power voltage, said electrical circuit comprising:

a rectifier assembly for generating a primary intermediate circuit DC voltage in a range of approximately 300 V to approximately 1000 V by rectifying and filtering the commercial power voltage having a range of values between approximately 180 V and approximately 600 V;

a converter assembly having a plurality of triggerable power switches for converting said primary intermediate circuit DC voltage into an AC voltage having a rectangular waveform;

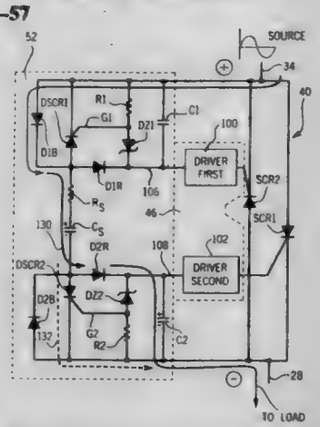
a high-power transformer having an intermediate circuit connected thereto for transforming said AC voltage having a rectangular waveform into said supply voltage; and

a control assembly for switching said power switches at zero voltage responsive to the primary intermediate circuit DC voltage, the current in the primary winding of said high-power transformer, and the voltage and the current in the secondary intermediate circuit, said control assembly switching said power switches using a variable pulse width of the AC voltage having a rectangular waveform required for achieving a predetermined supply voltage.

5,796,599
SELF-POWERED GATE DRIVER BOARD

Dusan Raonic, Brampton; David S. MacLennan, Ayr, both of Canada, and Didier G. Rouaud, Twinsburg, Ohio, assignors to Reliance Electric Industrial Company, Cleveland, Ohio

Filed Mar. 12, 1997, Ser. No. 816,445
Int. Cl.[6] H02M *7/122*
U.S. Cl. 363—57 **11 Claims**



1. A circuit for turning on at least first and second thyristors, each thyristor having an anode, a cathode and a gate electrode, the anode and cathode of the first thyristor connected to the cathode and anode of the second thyristor, respectively, the first thyristor anode connected to a voltage source providing a substantially sinusoidal voltage and the first thyristor cathode connected to a load terminal, the circuit comprising:

a driver linked to the thyristor gate electrodes for turning on the thyristors, the driver including a power lead for receiving power required to drive the driver;

a snubber voltage storer linked between the anode and the cathode of the first thyristor which charges when either of the thyristors is turned off and discharges when either of the thyristors is turned on; and

a rechargeable voltage storer linked to and chargeable by the snubber storer when either of the thyristors is turned on and chargeable by the voltage source when both of the thyristors are off or either of the thyristors is turned off, the rechargeable voltage storer linked to the driver to supply power thereto.

5,796,600

CHARGE PUMP CIRCUIT FOR IMPROVING A CHARGING SPEED

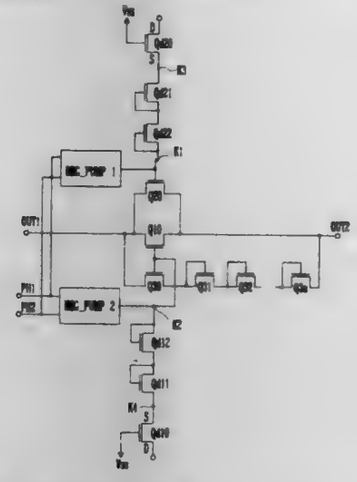
Jung Hee Yun, Kuri-Shi, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jan. 27, 1997, Ser. No. 789,088

Claims priority, application Rep. of Korea, Jan. 26, 1996, 96-01663

Int. Cl.[6] H02M *3/07*

U.S. Cl. 363—60 **5 Claims**



1. A charge pump circuit comprising:

a pump circuit section comprising a first and second positive charge pumps which take as inputs a first and second clock signals, respectively, which are connected in parallel and which each outputs the charge pumping voltage to a first output stage according to said first and second clock signals;

a rectifier circuit section which takes as an input said charge pumping voltage outputted from said first output stage of said pump circuit section, and which outputs said charge pumping voltage to a second output stage according to said first and second clock signals; and

a load section which takes as an input said charge pumping voltage outputted form said second output stage of said rectifier circuit section.

5,796,601

RECTIFIER CONTROL SYSTEM

Yuushin Yamamoto, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1996, Ser. No. 639,888

Claims priority, application Japan, Jun. 9, 1995, 7-143516; Jan. 9, 1996, 8-001722

Int. Cl.[6] H02M *5/42*

U.S. Cl. 363—84 **19 Claims**

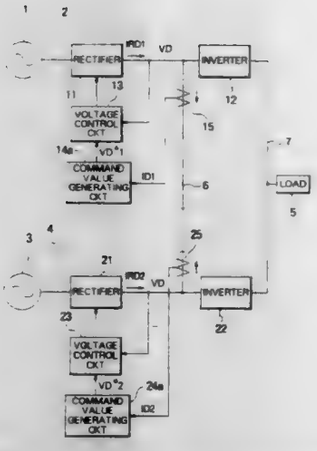
1. A rectifier control system comprising:

a plurality of rectifiers connected in parallel for applying a DC voltage to a single direct current bus;

a plurality of current detectors, each of said current detectors being coupled with a respective one of said rectifiers for detecting a bus current flowing through the direct current bus;

a plurality of voltage control circuits, each of said voltage control circuits being coupled with a respective one of said rectifiers for controlling the DC voltage to coincide with a voltage command value; and

a plurality of command value generating circuits, each including an amplifier having a first-order lag characteristic, each of said command value generating circuits being coupled with a respective one of said rectifiers for correcting the voltage command value using a signal indicative of the bus current



and amplified by a respective one of said amplifiers having a first-order lag characteristic.

5,796,602

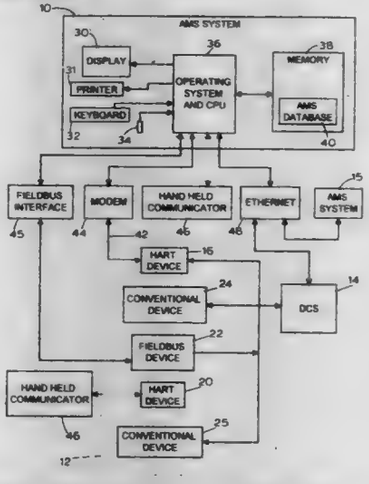
METHOD AND APPARATUS USING A DEVICE DESCRIPTION FOR A CONVENTIONAL DEVICE

Jeffrey W. Wellan; Richard R. Sharpe, Jr., both of Lakeville, and Jon D. Westbrock, Richfield, all of Minn., assignors to Fisher-Rosemount Systems, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 599,371, Feb. 6, 1996. This application Jul. 12, 1996, Ser. No. 682,833

Int. Cl.[6] G05B *9/00*

U.S. Cl. 364—130 **22 Claims**



1. A method of supporting a conventional device for use with a system that is capable of interacting with a smart device, said smart device having an associated device description written in accordance with a device communication protocol, the method comprising the steps of:

providing a device description for the conventional device which is written in accordance with the device communication protocol and which specifies information pertaining to the conventional device;

using the device description for the conventional device to ascertain data pertaining to a portion of the specified information;

storing the ascertained data; and

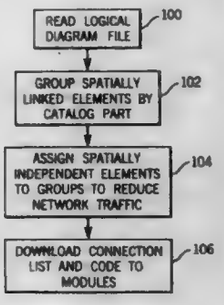
accessing the stored data using the device description for the conventional device.

5,796,603

PARTITIONING PROGRAM FOR HIGHLY DISTRIBUTED CONTROL SYSTEM TO REDUCE NETWORK TRAFFIC

John Hodorowski, Monroeville, Pa., assignor to Allen Bradley Company, Inc., Milwaukee, Wis.

Filed Oct. 17, 1996, Ser. No. 733,378
Int. Cl.[6] G05B *15/00; 19/18*
U.S. Cl. 364—131 **11 Claims**



1. A partitioning program for dividing a control program into portions to be executed by spatially separated devices communicating via messages on a communications link, the control program reading inputs from physical devices and writing outputs to physical devices, the control program composed of spatially linked elements representing inputs and outputs of physical devices, which are logically connected to spatially independent elements not representing inputs and outputs to physical devices, the program executing on an electronic computer and comprising:

a grouping routine assigning spatially linked elements of the control program to groups based on spatial proximity of the corresponding physical devices whose input and output are represented by the spatially linked elements;

a first allocation routine allocating the spatially linked elements of the control program to the devices according to their grouping; and

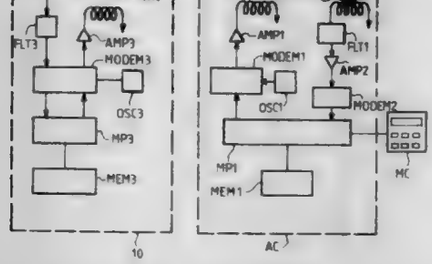
a second allocation routine allocating the spatially independent elements to ones of the groups.

5,796,604

SYSTEM COMPRISING A MACHINE FOR THE COMMUNICATION OF PRICING CHANGES

Maurice Gilbert Le Van Suu, Romainville, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Filed Apr. 24, 1995, Ser. No. 427,033
Claims priority, application France, Apr. 22, 1994, 94 05060
Int. Cl.[6] G05B *15/00;* **H02J** *15/00*
U.S. Cl. 364—132 **26 Claims**



1. A home automation system comprising:

at least one slave unit connected to receive and decode commands and to correspondingly control a local device;

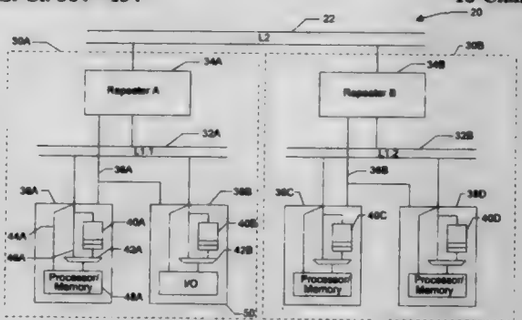
a master unit in communication with the at least one slave unit to receive and decode externally generated power-line data signals in a first modulation standard sent by a utility company to indicate power pricing changes, to responsively translate said data signals according to an exchange protocol to produce said commands and to send said commands in a second modulation standard, and to responsively command the at least one slave unit to responsively change power consumption when said externally generated power-line data signals indicate that pricing has been changed.

5,796,605

EXTENDED SYMMETRICAL MULTIPROCESSOR ADDRESS MAPPING

Erik E. Hagersten, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 2, 1996, Ser. No. 675,361
Int. Cl.[6] G06F *12/08*
U.S. Cl. 364—134 **18 Claims**



1. A memory mapping method for the system memory address space of a multiprocessor computer system having a plurality of processing nodes, each processing node having a plurality of bus devices, the method comprising:

dividing the system memory address space into multiple regions, wherein the number of regions equals the number of processing nodes in said microprocessor computer system, and wherein the amount of system memory address space encompassed by each one of said regions is inversely proportional to the number of said processing nodes;

assigning a different one of said regions to each one of said processing nodes, wherein each processing node has a local address space corresponding its assigned one of said regions;

attempting a local address space transaction in the processing node to which the corresponding one of said regions is assigned, wherein said local address space transaction is broadcast to each bus device in the corresponding node without broadcasting said local address space transaction to the other processing nodes in said multiprocessor computer system;

checking memory access rights for said local address space transaction; and

reissuing said local address space transaction to all of said processing nodes in said multiprocessor computer system if said checking determines improper access rights.

5,796,606

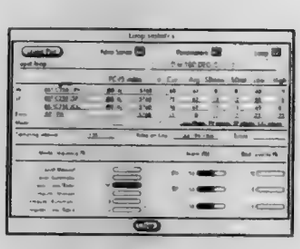
PROCESS INFORMATION AND MAINTENANCE SYSTEM FOR DISTRIBUTED CONTROL SYSTEMS

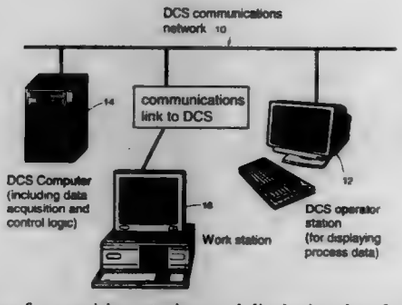
Robert A. Spring, Pointe-Claire, Canada, assignor to Noranda Inc., Toronto, Canada

Filed Feb. 7, 1996, Ser. No. 598,021
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—138 **7 Claims**

1. A process information and maintenance system for continuously monitoring, visualizing, triaging and maintaining all control loops of a distributed control system, comprising:

a distributed control system comprising at least one computer with data acquisition means, storing means and displaying





means for acquiring, storing, and displaying data from at least one sensor and at least one actuator connected thereto; and further comprising automatic control logic means for automatically regulating at least one sensed process value by modifying settings of the at least one actuator, said distributed control system monitoring process functions;

a work station comprising a work station computer connected to the at least one computer in the distributed control system for monitoring control system functions of said distributed control system, the work station computer comprising:

a) means for monitoring and acquiring the data and settings of each control loop of the distributed control system from the at least one computer;

b) means for processing the information acquired in step a);

c) means for storing the processed information of step b);

d) means for triaging the control loops monitored through the stored processed information; and

e) means for displaying the triaged control loops so that a user is informed of a loop's unusual behavior;

said work station computer monitoring, visualizing, triaging, and maintaining the distributed control system.

5,796,607

PROCESSORS, SYSTEMS, AND METHODS FOR IMPROVED NETWORK COMMUNICATIONS PROTOCOL MANAGEMENT

Maurice Gilbert Le Van Suu, Romainville, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Continuation of Ser. No. 431,152, Apr. 28, 1995, abandoned. This application Jul. 21, 1997, Ser. No. 897,395

Claims priority, application France, Apr. 28, 1994, 94 05354

Int. Cl.[6] G05B *11/01*

U.S. Cl. 364—140.01 **28 Claims**

1. A home automation system comprising:

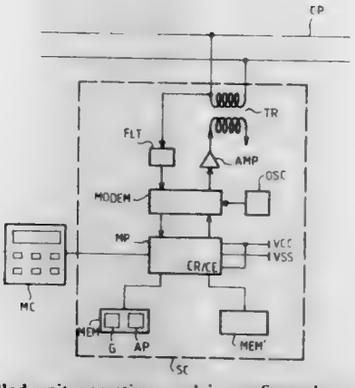
a communications channel providing data communication between multiple units;

at least one controlled unit connected to receive commands received through said communications channel and to correspondingly control a local device but programmed to be unable to transmit commands through said communications channel;

at least one controller unit, which is connected to receive external control inputs, and to accordingly send commands through said communications channel to said at least one controlled unit;

wherein said at least one controlled unit includes a programmable processor and stored programs for both controller and controlled unit operation, and is configured to activate controlled unit operation rather than controller unit operation; and

wherein said stored programs for controller and controlled unit operation define network management programs which are recorded indelibly in a read-only memory, and wherein applications programs of said at least one controlled unit for controlling a local device are recorded in a separable, writable memory that is accessible in a writing mode.



5,796,608

SELF CONTROLLABLE REGULATOR DEVICE

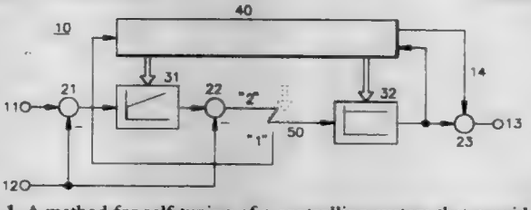
Andreas Bunzemeier, Hahler Strasse, Germany, assignor to Hartmann & Braun A.G., Frankfurt, Germany

Filed Jul. 5, 1996, Ser. No. 676,051

Claims priority, application Germany, Jul. 6, 1995, 195 25 907.6

Int. Cl.[6] G05B *13/02;11/42*

U.S. Cl. 364—157 **9 Claims**



1. A method for self-tuning of a controlling system that provides at its output a manipulated variable, said system comprising a first controller having a selectably closeable control loop and a first mixing point upstream from said first controller whereat a reference input variable and an absolute reference value are joined, said first controller comprising a second controller, a proportional control unit and a second mixing point between said second controller and said proportional control unit to which said absolute reference value is connected, said second controller having at least an integral action time and a proportional action coefficient, said proportional control unit having a proportional component, said method comprising the steps of:

in a first cycle,

closing said control loop by only said proportional control unit,

adjusting said proportional component stepwise from a presettable starting value until the overshoot of said manipulated variable falls just below a preset limit, and

holding said proportional component at said value whereat said manipulated variable overshoot falls just below said preset limit; and

in a second cycle,

closing said control loop by said second controller and said proportional control unit,

adjusting said integral action time and said proportional action coefficient stepwise until the overshoot amplitude and the transient recovery time of said manipulated variable both meet predetermined specifications, and

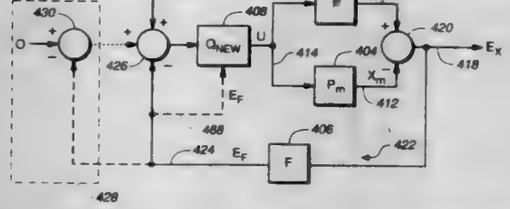
holding said integral action time at said time and said proportional action coefficient at said coefficient whereat said manipulated variable overshoot amplitude and transient recovery time both meet said predetermined specifications.

5,796,609

METHOD AND APPARATUS FOR INTERNAL MODEL CONTROL USING A STATE VARIABLE FEEDBACK SIGNAL

Kuoting Mike Tao, Campbell, and Xiaohua George He, Menlo Park, both of Calif., assignors to Honeywell-Measurex Corporation, Cupertino, Calif.

Filed Sep. 13, 1996, Ser. No. 713,462
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—164 **9 Claims**



9. A method for controlling a process having an order greater than one, comprising the steps of:

receiving at least one setpoint reference signal;

modeling a process to be controlled;

producing a predicted process output signal in response to said at least one setpoint signal;

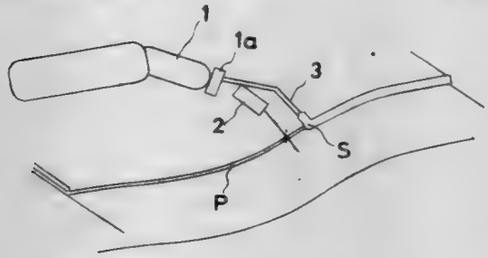
producing an error signal between a process output signal and said predicted process output signal, said error signal being a state feedback vector of said process.

5,796,610

METHOD OF DETECTING SEAM CHARACTERISTIC POINTS

Kenichi Arakawa, Tokorozawa; Takao Kakizaki, Kodaira, and Shinji Omyo, Sayama, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Oct. 24, 1996, Ser. No. 736,540
Claims priority, application Japan, Oct. 30, 1995, 7-281629
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—167.01 **16 Claims**



1. A method of detecting seam characteristic points of an object while sealing is performed by a robot equipped with a sensor, the method being characterized by comprising the steps of:

measuring a distance to an arbitrary cross section of an object with the sensor;

converting data obtained through the measurement into coordinate data of a series of distance points arranged in a predetermined order;

calculating a statistic value regarding the distance between paired adjacent distance points among the series of distant points;

obtaining a threshold level for judging discontinuity, based on the statistic value;

comparing the distance between paired adjacent distance points with said discontinuity threshold level so as to detect a pair of adjacent distance points which are separated from each other by a distance equal to or greater than said threshold level; and

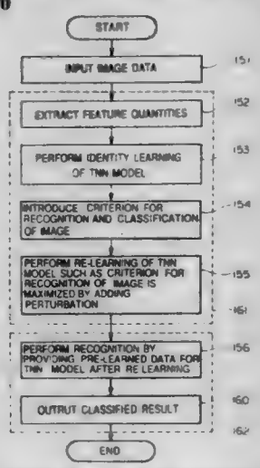
performing calculation processing corresponding to the number of detected pairs, each pair including two adjacent distance points which are separated from each other by a distance equal to or greater than said threshold level, so as to obtain a seam characteristic point.

5,796,611

WEATHER FORECAST APPARATUS AND METHOD BASED ON RECOGNITION OF ECHO PATTERNS OF RADAR IMAGES

Keihiro Ochiai, Yokohama; Hideto Suzuki, Yokosuka, and Noboru Sonehara, Zushi, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Oct. 3, 1995, Ser. No. 538,723
Claims priority, application Japan, Oct. 4, 1994, 6-239791; May 1, 1995, 7-107334; May 1, 1995, 7-107335
Int. Cl.[6] G06F *17/10*; G01S *13/95*; G01W *01/10*
U.S. Cl. 364—420 **12 Claims**



1. A weather forecast apparatus that provides a weather radar image to an FNN model, which is a neural network model for learning and forecasting, so that the FNN model learns weather dynamics and forecasts weather after the learning, comprising:

pattern recognition means, including a PNN model, which is a neural network model for pattern classification, and is prepared based on classification criteria according to past radar images, for pattern-recognizing a measured radar image by providing the radar image to the PNN model to pattern-classify the radar image;

memory means for storing plural weights for the FNN model, which are determined based on past plural radar images, the memory means having clusters corresponding to each past radar image;

learning means, including the FNN model, for selecting a weight that corresponds to a pattern resembling the pattern of the measured radar image from among those stored in the memory means in accordance with the pattern-recognized result obtained by the pattern recognition means; setting the selected weight as an initial value of the FNN model; and making the FNN model re-learn; and

forecast means for fixing the weights of the FNN model after the re-learning, and for forecasting and outputting a future radar image,

wherein the learning means includes means for causing the FNN model to re-learn by providing the radar image, which was

pattern-classified by the pattern recognition means, to the FNN model when the radar image belongs to an existing cluster, while generating a new cluster and weights which are most suitable for forecasting a weather pattern belonging to the new cluster when the radar image does not belong to an existing cluster.

5,796,612

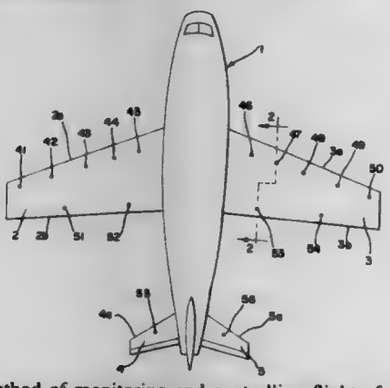
METHOD FOR FLIGHT PARAMETER MONITORING AND CONTROL

Steven D. Palmer, Burlington, Iowa, assignor to AERS/ Midwest, Inc., Burlington, Iowa

Continuation-in-part of Ser. No. 978,347, Nov. 18, 1992, Pat. No. 5,457,630. This application Mar. 9, 1994, Ser. No. 208,455

Int. Cl.[6] G06F *7/70;* **B64C** *15/00*

U.S. Cl. 364—424.013 **2 Claims**



1. A method of monitoring and controlling flight of an aircraft comprising measuring an actual air pressure differential between an air pressure within an unpressurized enclosed area of the aircraft and an air pressure acting proximate a stagnation point of leading edge of a surface of the aircraft, during operation of the aircraft.

5,796,613

NAVIGATION SYSTEM FOR VEHICLES INCLUDING PRESENT POSITION CALCULATING MEANS

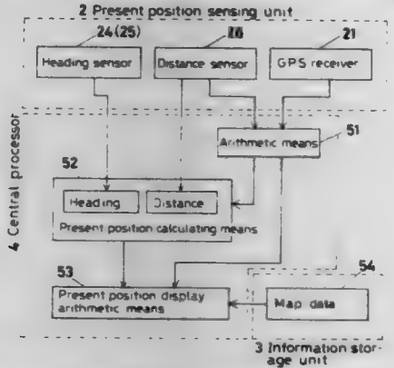
Shinichi Kato; Mitsuhiro Nimura; Masaharu Hanasaki, and Akimasa Nanba, all of Anjo, Japan, assignors to Aisin AW Co., Ltd., Anjo, Japan

Filed Aug. 1, 1995, Ser. No. 510,088

Claims priority, application Japan, Sep. 1, 1994, 6-208415; Sep. 23, 1994, 6-254416

Int. Cl.[6] G01C *21/00;22/00*

U.S. Cl. 364—449.8 **16 Claims**



1. A navigation system for a vehicle, comprising:

distance sensor for outputting pulses the number of which is proportional to rotation of a wheel;

a GPS receiving unit for calculating vehicle speed by GPS reception;

acquisition means for acquiring the number of pulses from the distance sensor at the same time as GPS reception;

distance correction coefficient calculating means for calculating GPS traveling distance from vehicle speed, based upon GPS reception, at each of two arbitrary points, and a time difference between these two points, and calculating a distance correction coefficient from the GPS traveling distance and a difference in the number of pulses between the two points; and

present position calculating means for calculating present position based upon a corrected distance correction coefficient.

5,796,614

LEVEL-BY-LEVEL EXPLOSION METHOD FOR MATERIAL REQUIREMENTS PLANNING

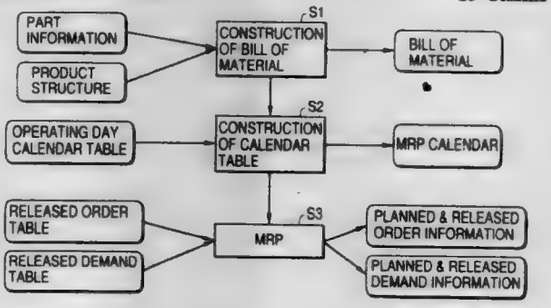
Miho Yamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 17, 1995, Ser. No. 422,851

Claims priority, application Japan, Apr. 21, 1994, 6-082913; Sep. 20, 1994, 6-225132; Sep. 28, 1994, 6-233347

Int. Cl.[6] G06F *19/00;* **G09G** *7/66*

U.S. Cl. 364—468.13 **13 Claims**



1. A level-by-level explosion method for managing the processing and timing of an order of required materials, said level-by-level explosion method comprising the steps of:

(a) inputting the order of required materials, wherein the required materials comprise parent parts and component parts;

(b) constructing a material information table and a product structure table, wherein the material information table and the product structure table relate the parent parts to the component parts;

(c) constructing a bill of material using the material information table and the product structure table;

(d) constructing a composite calendar table from a calendar day table and an operating day table;

(e) calculating a plurality of order dates using calculation conditions and the composite calendar;

(f) setting up a management table facilitating registration and extraction of order information using the bill of material and the plurality of order dates; and

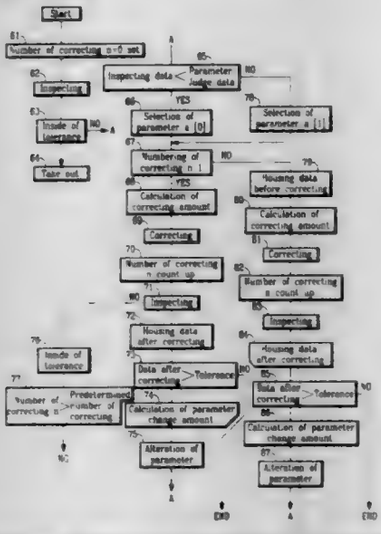
(g) outputting the order information, wherein the order information includes timing of the order.

5,796,615

CORRECTING METHOD OF AUTOMOBILE'S DOOR FRAME AND MEANS THEREOF

Takashi Madaraishi; Tomoaki Nakao, and Ryoji Tanaka, all of Hiroshima, Japan, assignors to Hirotec Corporation, Hiroshima, Japan

Filed May 8, 1996, Ser. No. 643,289
Int. Cl.[6] G06F *19/00;* B23Q *17/22*
U.S. Cl. 364—468.16 6 Claims



1. A correcting method of an automobile's door frame applying a correcting unit comprising a correcting unit main body provided approachably and retreatably with respect to a door frame, a pair of correcting heads provided to place a top edge portion of the door frame between the correcting heads, a driving means to move the correcting heads toward the top edge portion of the door frame, a detective sensor of inspecting position to detect original inspecting position of the correcting heads fixed to the correcting unit, a sensor of inspecting fitting position of the door frame, a means to control the driving means to stop correcting heads to a predetermined position, a function to calculate fitting accuracy of the door frame, a function to calculate bending amount based on the correcting amount when the calculated fitting accuracy goes over beyond a tolerance, the correcting method comprising:

a step to securely fix a door hinge to a predetermined position of a jig with respect to the door frame,

a step to integrally secure the door hinge to the jig placed on a predetermined position by means of an automatic tightening device provided with bolts and nuts,

a step to inspect fitting accuracy of the door frame integrally held with the door hinges to compare said inspected fitting accuracy with separately measured standard fitting dimension and calculate correcting amount and changing amount,

a step to correct the door frame to place inspecting data of the corrected door frame within a tolerance of standard fitting dimension,

all aforementioned steps are combined in one consecutive process.

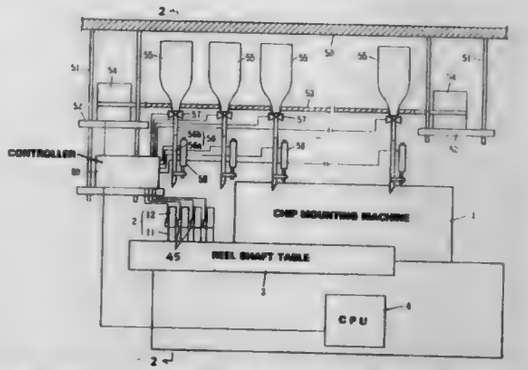
5,796,616

APPARATUS FOR AUTOMATICALLY REPLENISHING CHIPS

Mitsuro Hamuro, Otsu, and Keiichi Shimamaki, Shiga-ken, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jan. 23, 1996, Ser. No. 590,126
Claims priority, application Japan, Jan. 23, 1995, 7-027428
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.28 11 Claims

1. An apparatus for automatically replenishing chips, the apparatus comprising;



an alignment/feed mechanism having a container for storing a plurality of chips and an outlet port for discharging the chips one by one from the container in an aligned manner, and a sensor for detecting whether the number of the chips within the container is below a reference level;

a chip tank designed to store more chips than the container; the chip tank being located above the alignment/feed mechanism;

structure for moving the chip tank and the alignment/feed mechanism relative to one another so as to bring the chip tank and the alignment/feed mechanism into operational alignment with one another;

the container having an inlet port for receiving additional chips;

a replenishment line through which the chips are fed from the chip tank to the container, the replenishment line including a pipe capable of vertical expansion and contraction and adapted to allow the chips to pass therethrough;

an on-off device disposed in the replenishment line, the on-off device being operable to open the replenishment line in response to the sensor indicating that the number of chips in the container is below the reference level and to close the replenishment line when a predetermined number of chips have been fed to the container; and

a mechanism for vertically moving the lower end of the pipe so as to insert the lower end of the pipe into the inlet port.

5,796,617

METHOD AND APPARATUS FOR MANUFACTURING A PROSTHESIS HAVING OPTIMIZED RESPONSE CHARACTERISTICS

James A. St. Ville, 2500 N. 24th St., Suite 200, Phoenix, Ariz. 85008

Continuation of Ser. No. 388,580, Feb. 14, 1995, Pat. No. 5,594,651. This application Jan. 2, 1997, Ser. No. 778,270
Int. Cl.[6] G06F *19/00;17/50*
U.S. Cl. 364—468.04 24 Claims

1. A method for manufacturing a prosthesis for replacing a body part, said prosthesis having a displacement {x} which is generated in response to a force {f} applied thereto, the method comprising the steps of:

designing a geometric model of said prosthesis based on the geometry of the body part to be replaced;

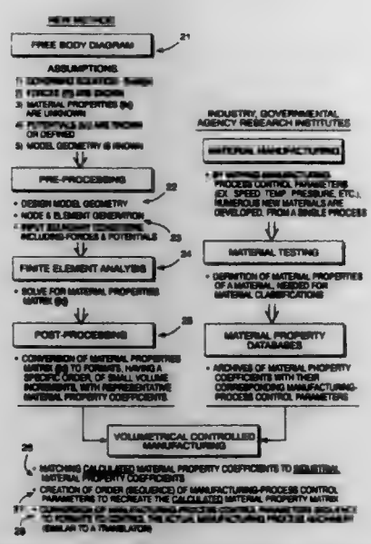
generating a computerized mathematical model of said prosthesis by discretizing said geometric model of said prosthesis into a plurality of finite elements and specifying values for the force {f} and displacement {x} relative to the finite elements;

calculating a material property matrix [k] based on the relationship {f}=[k] {x};

extracting material property coefficients from said material property matrix [k] for each finite element in said computerized mathematical model;

comparing the extracted material property coefficients to material property coefficients for known materials to match the extracted material property coefficients to the material property coefficients for known materials;

determining manufacturing parameters corresponding to the matched material property coefficients; and



manufacturing said prosthesis in accordance with the determined manufacturing parameters.

5,796,618

CAD SYSTEM, METHOD AND MEDIUM FOR CREATING AND ENCODING NC DATA BASED BEFORE AND AFTER WORK PIECE MODELS

Tadasu Maeda; Koji Ota; Masaki Arao; Taiji Sogou; Hiroshi Nakajima; Norichika Miyamoto; Susumu Ishiguro, and Motoji Hayashi, all of Kyoto, Japan, assignors to OMRON Corporation, Kyoto, Japan

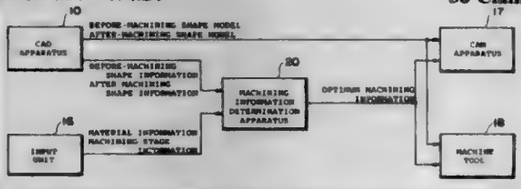
PCT No. PCT/JP93/01461, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO94/08751, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 12, 1993, Ser. No. 416,683

Claims priority, application Japan, Oct. 9, 1992, 4-272057; Jan. 19, 1993, 5-7013

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.24 **56 Claims**



1. A machining information determination system comprising:

a CAD apparatus which, on the basis of a before-machining shape model representing the shape of a workpiece before machining is applied thereto and an after-machining shape model representing the shape of said workpiece after machining is applied thereto, creates before-machining shape information relating to the shape of said workpiece before machining and after-machining shape information relating to the shape of said workpiece after machining;

an input unit for entering material information representing material of said workpiece and machining-stage information representing stage of machining applied to said workpiece;

a machining information determination apparatus which, on the basis of the before-machining shape information and after-machining shape information created by said CAD apparatus and the material information and machining-stage information entered from said input unit, decides optimum machining information for machining the workpiece, before machining has been applied thereto, to the shape after machining and up to the machining stage entered; and

a control-data creation unit which, on the basis of the optimum machining information decided by said machining information determination apparatus, said before-machining shape model and said after-machining shape model, generates control data according to which a machine tool applies machining to said workpiece;

said machining information determination apparatus having at least:

machine-tool determination means which, on the basis of the before-machining shape information and after-machining shape information created by said CAD apparatus and the material information and machining-stage information entered from said input unit, and in accordance with machine-tool knowledge data established in advance, decides an optimum machine tool for machining said workpiece.

5,796,619

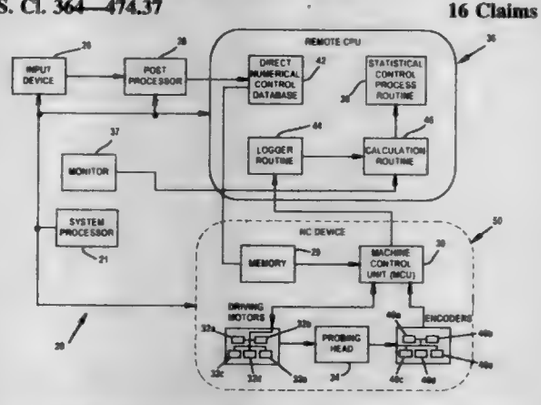
METHOD AND APPARATUS FOR NUMERICALLY CONTROLLED PROBING

Robert R. Wampler, Augusta, Kans., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 15, 1996, Ser. No. 602,257

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.37 **16 Claims**



1. A probing system for determining a measured set of dimensions of at least one feature of an object, said system comprising:

an input device that receives an ideal set of dimension of the at least one feature, said input device generating a first signal indicative of an amount of samples and a location of each of the samples of the at least one feature;

a probe device, electrically connected to said input device, said probe device receiving the first signal from said input device, and in response directing a probe to the location of each of the samples, said probe device outputting a second signal indicative of measured three-dimensional locations of the samples; and

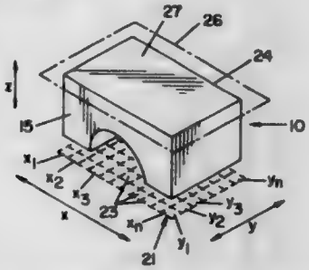
a processor electrically connected to said probe device, said processor receiving the second signal indicative of the measured three-dimensional locations of the samples, said processor operating upon said second signal to numerically rotate the three-dimensional measured locations about a single one of the samples until each of the samples is numerically represented as a point lying on a single two dimensional plane, said processor using the numerically rotated samples to calculate a set of rotated dimensions, said processor then operating on said rotated dimensions to numerically counter-rotate said rotated dimensions about the single one of the samples to determine the measured set of dimensions.

5,796,620

COMPUTERIZED SYSTEM FOR LOST FOAM CASTING PROCESS USING RAPID TOOLING SET-UP

John S. Laskowski, Auburn, and Adam Pintz, Strongsville, both of Ohio, assignors to Cleveland Advanced Manufacturing Program, Cleveland, Ohio

Filed Feb. 3, 1995, Ser. No. 383,203
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—475.02 **22 Claims**



1. A process for molding an object comprising the steps of:

a) drawing said object using a computer machine employing conventional CAD/CAM software to develop a data base file of the surface contour of said object;

b) establishing a parting line plane on said drawing containing the parting line of said object when cast in said mold;

c) modifying said data base file by dividing said surface contour into pixels of discrete area and assigning to each pixel an x-y co-ordinate defining the position of each pixel in an x-y plane and determining by computer calculation the distance of each pixel from said parting line plane and assigning said distance to said pixel x-y co-ordinate;

d) providing a mold frame having a plate extending in an x-y plane, said plate having a plurality of openings extending therethrough and within each opening a rod longitudinally movable relative to said holes, each rod having an end surface of area corresponding to said pixel; and

e) utilizing said modified data base by a computerized machine to index said frame to a computer controlled x-y position corresponding to any computer selected pixel and longitudinally moving said rod at said selected position a distance corresponding to the distance of said selected pixel from said parting line whereby said end surfaces of said rods replicate the surface of said object without machining a mold.

5,796,621

CIRCUIT DELAY ABSTRACTION TOOL

Peter E. Dudley, Essex Junction; Paul T. Gutwin, Williston, both of Vt., and Gara Pruesse, Toronto, Canada, assignors to International Business Machines Corporation, Armonk, N.J.

Filed Jul. 31, 1996, Ser. No. 688,936
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—489 **14 Claims**

7. A program storage device readable by the computer embodying a program of instructions executable by a machine which tangibly performs a method for reducing the size of graph representations of circuit delay networks, said method comprising the steps of:

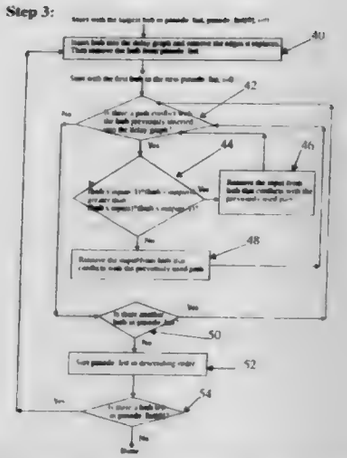
obtaining a list of pairs of inputs containing MDAG's for each pair;

sorting the list of pairs of inputs in descending order of pairs with the most edge savings over the complete graph;

cycling through each pair of inputs to obtain a first set of hubs for each input pair;

cycling through each first set of hubs for every other possible pair of inputs;

adding the inputs for the first set of hubs to the hubs generated when cycling through the first set of hubs for every other possible pair of inputs when each hub generated shares just one of the inputs for a hub in the first set of the hub and all of



the same outputs, thereby creating a set of hubs for each possible input combination;

sorting the set of hubs for each possible input combination in descending order of pairs of inputs with the largest possible edge savings;

selecting the hub with the largest possible edges saving by inserting it into the delay network representation and removing the edges it replaces;

removing any paths in the remaining unselected hubs that conflict with the previously selected hubs;

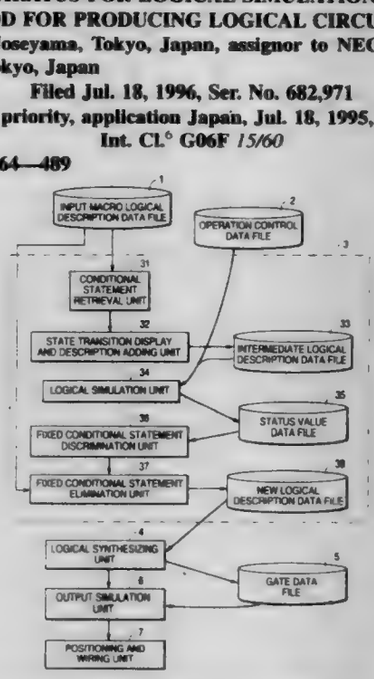
continuing the steps of selecting hubs and removing any paths in the remaining unselected hubs until there are no unselected hubs.

5,796,622

APPARATUS FOR LOGICAL SIMULATION AND METHOD FOR PRODUCING LOGICAL CIRCUIT DATA

Hajime Noseyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 18, 1996, Ser. No. 682,971
Claims priority, application Japan, Jul. 18, 1995, 7-181363
Int. Cl.[6] G06F *15/60*
U.S. Cl. 364—489 **2 Claims**



1. An apparatus for a logical simulation comprising:

redundancy function elimination means for executing a first logical simulation based on first logical descriptive data of a macro and operation mode control data of a logical design circuit, said macro being a ready-made circuit the function of which is predefined, for eliminating unnecessary redundancy

functions in said logical design circuit from said macro, and for producing a third logical descriptive data;

logical synthesizing means for executing a predetermined logical synthesis from said third logical descriptive data and for producing an output logical circuit at a gate level;

second logical simulation means for executing a simulation of said output logical circuit;

said redundancy function elimination means comprises,

conditional statement retrieval means for retrieving a conditional statement to indicate a condition of an output versus an input from said first logical descriptive data;

state transition display descriptive addition means for producing a second logical descriptive data to which a predefined state transition data is added based on said retrieved conditional statement;

first logical simulation means for receiving said operation mode control data and said second logical descriptive data to execute a logical simulation and for outputting status value data which is a result of the simulation;

invariable conditional statement discrimination means for discriminating and extracting an invariable conditional statement having an invariable status value, based on said status value data; and

invariable conditional statement elimination means for eliminating said invariable conditional statement from said first conditional descriptive data based on said discrimination result and for producing a third logical description.

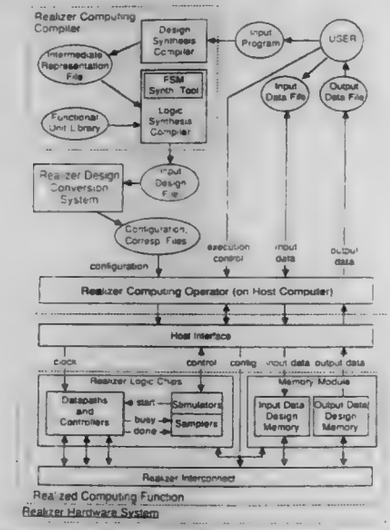
5,796,623
APPARATUS AND METHOD FOR PERFORMING COMPUTATIONS WITH ELECTRICALLY RECONFIGURABLE LOGIC DEVICES

Michael R. Butts, Portland, and Jon A. Batcheller, Newberg, both of Oreg., assignors to Quickturn Design Systems, Inc., Mountain View, Calif.

Continuation of Ser. No. 490,598, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 245,310, May 17, 1994, Pat. No. 5,452,231, which is a continuation of Ser. No. 923,361, Jul. 31, 1992, abandoned, which is a division of Ser. No. 698,734, May 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 417,196, Oct. 4, 1989, Pat. No. 5,036,473, which is a continuation-in-part of Ser. No. 254,463, Oct. 5, 1988, abandoned. This application Dec. 19, 1996, Ser. No. 770,656

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—489 **2 Claims**



1. An apparatus for performing computations comprising:

a compiler that converts a computer program comprising a sequence of instructions into input data representative of a digital logic network;

a partitioner which partitions said input data into at least a first partition and a second partition;

a first electrically reconfigurable device, said first electrically reconfigurable devices containing reprogrammable functional logic elements and input/output terminals capable of being connected to at least some of said functional logic elements, said first electrically reconfigurable device capable receiving said first partition so that a first portion of said digital logic network can take actual operating form in said first electrically reconfigurable device;

a second electrically reconfigurable device, said second electrically reconfigurable devices containing reprogrammable functional logic elements and input/output terminals capable of being connected to at least some of said functional logic elements, said second electrically reconfigurable device capable receiving said second partition so that a second portion of said digital logic network can take actual operating form in said second electrically reconfigurable device; and

at least one electrically reconfigurable device containing reprogrammable electrical conductors which are used to reconfigurably interconnect selected input/output terminals of said first and said second electrically reconfigurable devices.

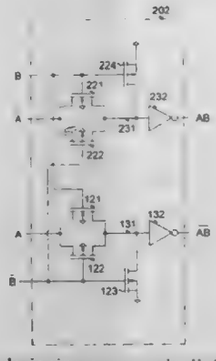
5,796,624
METHOD AND APPARATUS FOR DESIGNING CIRCUITS FOR WAVE PIPELINING

Ramalingam Sridhar, East Amherst, N.Y., and Zhang Xuguang, Cerritos, Calif., assignors to Research Foundation of State University of New York, Amherst, N.Y.

Division of Ser. No. 620,466, Mar. 22, 1996, Pat. No. 5,701,094, which is a division of Ser. No. 307,932, Sep. 16, 1994, Pat. No. 5,528,177. This application Feb. 6, 1997, Ser. No. 796,395

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—489 **28 Claims**



16. A method for designing a wave-pipelining circuit, the wave-pipelining circuit including a field-effect transistor logic circuit that performs a desired logic function and that has a substantially uniform overall gate delay substantially independent of input transition pattern, the method comprising the steps:

forming a map of the desired logic function;

assigning cells of the map into pairs of cells;

implementing a transmission gate for each one, if any, of the pairs of map cells that has one high value and one low value, and for each transmission gate, if any,

coupling a first terminal to a first input signal,

coupling a second terminal to a node, and

coupling a gate to a second input signal;

implementing a pull transistor for each one, if any, of the pairs of map cells having values that are equal, and for each pull transistor, if any,

coupling a first terminal to a voltage source,

coupling a second terminal to the node, and

coupling a gate to a third input signal;

implementing a driver coupled to the node, the driver amplifying a signal, adjusting logic levels, and providing an output signal; and

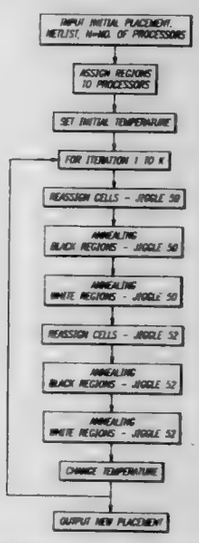
adjusting electrical properties of the pull transistor and/or the transmission gate to provide the substantially uniform overall gate delay substantially independent of input transition pattern for each one of a plurality of paths to the output signal from the first input signal, the second input signal and the third input signal, respectively, each one of the paths passing through the driver and one or more of the transmission gate and the pull transistor.

5,796,625

PHYSICAL DESIGN AUTOMATION SYSTEM AND PROCESS FOR DESIGNING INTEGRATED CIRCUIT CHIP USING SIMULATED ANNEALING WITH "CHESSBOARD AND JIGGLE" OPTIMIZATION

Ranko Scepanovic; James S. Koford, both of San Jose, Calif.; Alexander E. Andreev, Moskovskaja Oblast, Russian Federation, and Ivan Pavisic, Cupertino, Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Mar. 1, 1996, Ser. No. 609,359
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—491 **28 Claims**



1. A method of providing an initial temperature in a simulated annealing process, comprising the steps of:

(a) providing a placement of cells on the chip;

(b) performing simulated annealing on the cells using a current temperature without exchanging cell positions;

(c) computing a current cost function for the placement;

(d) changing said current temperature in accordance with said cost function; and

(e) repeating steps (b) to (d) until said current cost function satisfies a predetermined criterion, wherein said current temperature is used as said initial temperature for said simulated annealing process when said predetermined criterion is satisfied.

5,796,626

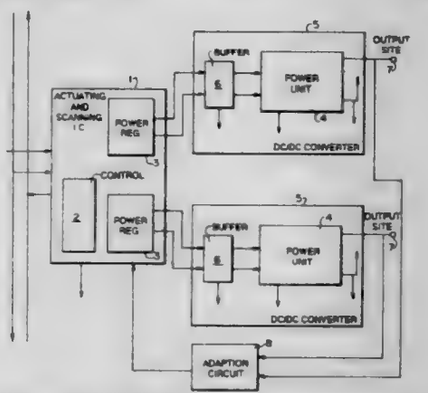
Patent Not Issued For This Number

5,796,627

ACTUATING AND DUAL SCANNING INTEGRATED CIRCUIT

Luis Pérez Roldán, Madrid, Spain, assignor to Telefonica De España, S.A., Madrid, Spain

Filed Apr. 17, 1995, Ser. No. 423,155
Claims priority, application Spain, May 20, 1994, 9401116
Int. Cl.[6] H02M *3/07*
U.S. Cl. 364—492 **5 Claims**



1. An actuating and dual scanning integrated circuit for simultaneously programmably controlling two power converters located outside the circuit, the circuit comprising:

a) an analog block that receives analog signals;

b) a digital filter means, connected to exchange digital signals with the analog block, for filtering digital representations of the analog signals and for providing digital filtered signals;

c) at least one register means for storing programming received from outside the actuating and dual scanning integrated circuit;

d) first and second programmable power regulators, each of the first and second programmable power regulators including modulator means for transmitting energy transfer commands to respective power converters, the energy transfer commands being based on the programming stored in the at least one register means;

e) means for generating a reset signal and a clock signal for the circuit; and

f) an interface for interfacing the analog block, the digital filter, and first and second power regulators to external elements.

5,796,628

DYNAMIC METHOD FOR PREVENTING VOLTAGE COLLAPSE IN ELECTRICAL POWER SYSTEMS

Hsiao-Dong Chiang, and Cheng-Shan Wang, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

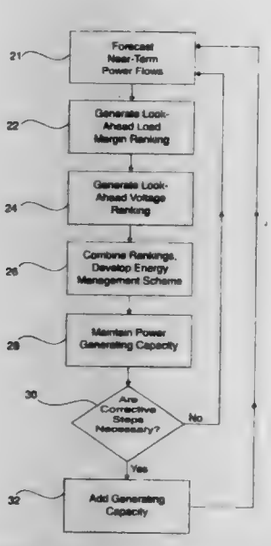
Filed Apr. 20, 1995, Ser. No. 425,555
Int. Cl.[6] H02J *3/14*
U.S. Cl. 364—492 **9 Claims**

6. A dynamic method of preventing voltage collapse in a power-generating system, comprising the steps of:

a) forecasting near-term power flows utilizing a saddle-node theory for a power-generating system having a power-generating grid;

b) determining from forecasts in step (a) load margin value indices that provide an assessment of load demand that said generating system can withstand before saddle-node voltage collapse; and

c) maintaining power-generating capacity of said power-generating system, by preventing voltage collapse of said



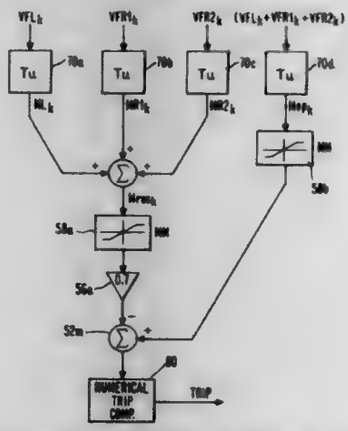
power-generating system based on said load demand assessment in step (b).

5,796,629

PROTECTIVE RELAYING SYSTEM COMPRISING NUMERICAL COMPARATOR-BASED LINE DIFFERENTIAL PROCESSING CIRCUITRY

Fernando Calero, Miami, and Eric Udren, Coral Springs, both of Fla., assignors to ABB Power T&D Company, Inc., Raleigh, N.C.

Filed Dec. 18, 1995, Ser. No. 574,374
Int. Cl.[6] H02H *3/00;* **G06F** *19/00*
U.S. Cl. 364—492 **21 Claims**



1. A protective relaying system for tripping a local circuit breaker (BL) connected to a transmission line by providing a trip signal (TRIP_BL) to said circuit breaker, comprising:

(a) a local filter operatively coupled to said transmission line, said local filter receiving inputs indicative of phase currents (IA, IB, IC) on said transmission line and providing an output (VFL_k) derived from said inputs; and

(b) a local relay operatively coupled to said filter, said local relay comprising means for (1) receiving said output (VFL_k) of said local filter, (2) receiving an output ($VFR1_k$, $VFR2_k$) of at least one remote filter, and (3) generating said trip signal (TRIP_BL);

wherein said local relay employs substantially all digital electronic circuitry to generate said trip signal; and

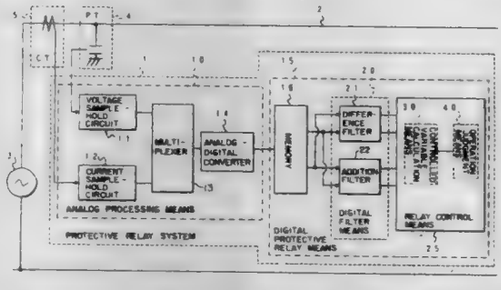
wherein said local relay comprises threshold means for computing a first value ($MRES_k$) and a second value (MOP_k) wherein said first value ($MRES_k$) is a function of a sum of the respective energies of said output (VFL_k) of said local filter and said output (s) ($VFR1_k$, $VFR2_k$ of said remote filter(s), and wherein said second value (MOP_k) is a function of the energy of a sum of said output (VFL_k) of said local filter and said output(s) ($VFR1_k$, $VFR2_k$) of said remote filter(s).

5,796,630

PROTECTIVE RELAY SYSTEM PROVIDED WITH DIFFERENCE AND ADDITION FILTERS

Takafumi Maeda; Hiroshi Yamakawa; Fumio Andow; Mitsuru Yamaura, and Yasuhiro Kurosawa, all of Tokyo-to, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCT/JP95/01297, § 371 Date Jul. 19, 1996, § 102(e) Date Jul. 19, 1996, PCT Pub. No. WO96/01515, PCT Pub. Date Jan. 18, 1996
PCT Filed Jun. 29, 1995, Ser. No. 600,935
Claims priority, application Japan, Jul. 1, 1994, 6-173266
Int. Cl.[6] H02J *13/00*
U.S. Cl. 364—492 **13 Claims**



2. A protective relay system adapted for detecting, in time series manner, a first electric variable and a second electric variable of a power system to discriminate on the basis of changes in the respective electric values in the time series whether or not a fault portion of line or equipment included in the power system exists within a predetermined range,

the protective relay system comprising:

digital filter means including a difference filter for outputting first difference electric variable data indicative of difference between at least two sample data of plural sampling data of the first electric variable and second difference electric variable data indicative of difference between at least two sample data of plural sample data of the second electric variable at plural sampling times of the time series, and an addition filter for outputting first and second additive electric variable data indicative of data respectively orthogonal to the first and second difference electric variable data in terms of vector; and

relay control means for calculating controlled variables of a relay operation in the power system on the basis of the first and second difference electric variable data at a certain sampling time point, first and second additive electric variable data at the certain sampling time point, the first and second difference electric variable data at any other sampling time point and the first and second additive electric variable data at the other sampling time point to judge, on the basis of the controlled variables, the operation as to whether or not protection of the sower system should be carried out,

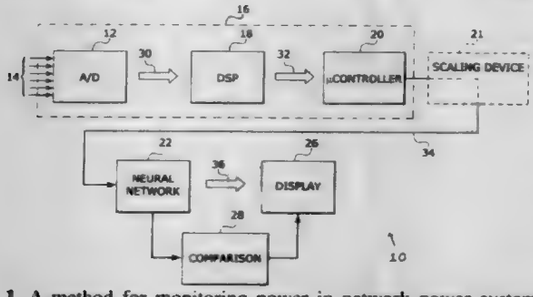
wherein the difference filter is a filter in which transfer function $Z^{-k}-Z^{-q}$ (Z is Z transform operator and k<q) is used to output voltage data v_{jm} and current data i_{jm} serving as the first and second difference electric variable data at a certain sampling time t_m and voltage data v_{jm-p} and current data i_{jm-p} at any other sampling time t_{m-p}, and the addition filter is a filter in which transfer function $(1+Z^{-1}+Z^{-2}+\ldots+Z^{-n})(1+Z^{-1})$ (where n+1=k+q) is used to output voltage data v_{sm} and current data i_{sm} serving as the first and second additive electric variable data at the certain sampling time t_m and voltage data v_{sm-p} and current data i_{sm-p} at the other sampling time t_{m-p}.

5,796,631

METHOD AND APPARATUS FOR MONITORING AND CHARACTERIZING POWER QUALITY, FAULTS AND OTHER PHENOMENA IN NETWORK POWER SYSTEMS

Daniel S. Iancu, Pleasantville, and Christian A. DiFranco, Melville, both of N.Y., assignors to Tempo Instrument, Inc., Commack, N.Y.

Filed Feb. 10, 1997, Ser. No. 797,136
Int. Cl.[6] G01R 21/06; H02H 3/26
U.S. Cl. 364—492 4 Claims



1. A method for monitoring power in network power systems comprising the steps of:

receiving voltage and current data from a power network including receiving three phase voltage and current data from a network protector relay;

processing and converting the received data into n-dimensional vectors representative of the received data;

scaling the n-dimensional vector information to be input into a processing device; and

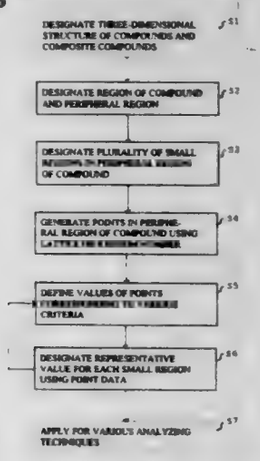
converting the scaled n-dimensional vector information into two-dimensional vector information having coordinates representing a pixel on a display screen.

5,796,632

METHOD FOR CONVERTING INFORMATION OF PERIPHERAL SPACE OF A THREE-DIMENSIONAL COMPOUND STRUCTURE INTO NUMERICAL DATA AND METHOD FOR CONVERTING INTERACTIONS BETWEEN A THREE-DIMENSIONAL COMPOUND STRUCTURE AND PERIPHERAL SPACE INTO NUMERICAL DATA

Kohtaro Yuta, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 20, 1995, Ser. No. 546,138
Claims priority, application Japan, Oct. 20, 1994, 6-255023
Int. Cl.[6] G06F 19/00
U.S. Cl. 364—496 16 Claims



1. A method for converting information representing an interaction in a peripheral space of a three-dimensional compound structure into numerical data, comprising the steps of:

(1) designating a peripheral region that includes the entire three-dimensional compound structure on the periphery thereof;

(2) designating a plurality of small regions in the peripheral region;

(3) generating a plurality of points in the peripheral region;

(4) calculating the interaction between the three-dimensional compound structure and each of points in the small regions to produce numerical data corresponding to each point;

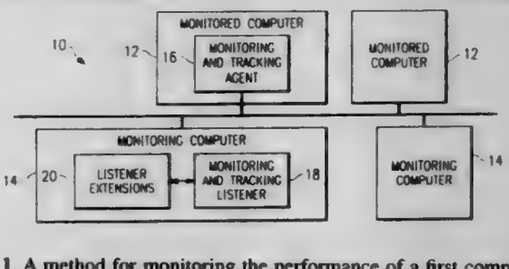
(5) generating numerical data that represents each of the small regions based on the numerical data corresponding to each point calculated in step (4).

5,796,633

METHOD AND SYSTEM FOR PERFORMANCE MONITORING IN COMPUTER NETWORKS

Gregory M. Burgess, Kirkland, Wash.; David B. Endicott, Plano, Tex.; Thomas Camarro, Troy, and Richard C. Jagers, Novi, both of Mich., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed Jul. 12, 1996, Ser. No. 678,934
Int. Cl.[6] G06F 11/00
U.S. Cl. 364—551.01 21 Claims



1. A method for monitoring the performance of a first computer coupled to a computer network, comprising:

repeatedly obtaining performance data comprising at least one performance value using the first computer, the performance value comprising a measure of the performance of the first computer;

automatically sending the performance data from the first computer over the computer network to a second computer coupled to the computer network; and

logging the performance data to a performance database using the second computer.

5,796,634

SYSTEM AND METHOD FOR IDENTIFYING THE GEOGRAPHIC REGION OF A GEOGRAPHIC AREA WHICH CONTAINS A GEOGRAPHIC ZONE ASSOCIATED WITH A LOCATION

William N. Craport, Norcross, and Bruce C. Winters, Lawrenceville, both of Ga., assignors to BellSouth Corporation, Atlanta, Ga.

Filed Apr. 1, 1997, Ser. No. 831,040
Int. Cl.[6] G01B 7/00
U.S. Cl. 364—559 22 Claims

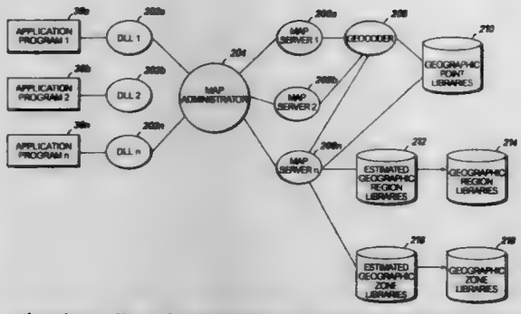
1. A method for identifying the geographic region of a geographic area which contains a geographic zone, said geographic zone being defined by a zone boundary of a plurality of zone boundary points, comprising the steps of:

A. dividing said geographic area into a plurality of non-overlapping geographic regions;

B. selecting one of said plurality of zone boundary points of said geographic zone as a selected zone boundary point;

C. selecting one of said plurality of non-overlapping geographic regions as a selected region, said selected region being defined by a region boundary of a plurality of region boundary points;

D. making a first determination as to whether said selected zone boundary point is located within said selected region by



drawing a line of predetermined slope through said selected zone boundary point and through said selected region so that said line intersects a first boundary point of said selected region and a second boundary point of said selected region,

checking whether said selected zone boundary point lies on said line between said first boundary point and said second boundary point, and

if said selected zone boundary point lies on said line between said first boundary point and said second boundary point, then defining said first determination to be that said selected zone boundary point is located within said selected region;

E. if said first determination is that said selected zone boundary point is located within said selected region, then repeating said step D with another one of said plurality of zone boundary points as a selected zone boundary point; and

F. if at least a predetermined percentage of said plurality of zone boundary points is located within said selected region, then identifying said selected region.

5,795,535

DEVICE AND PROCESS FOR LINEAR MEASUREMENT OF FIBER SLIVER THICKNESS OR MASS

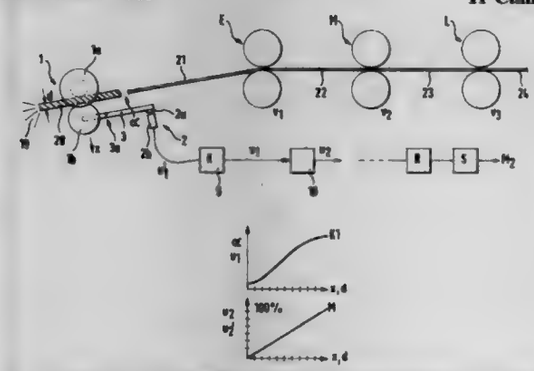
Joachim Dämmig, Ingolstadt, Germany, assignor to Rieter Ingolstadt Spinnereimaschinenbau AG, Ingolstadt, Germany

Filed Jul. 22, 1996, Ser. No. 681,178

Claims priority, application Germany, Aug. 8, 1995, 195 29 163.8; Oct. 16, 1995, 195 38 496.2

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—563 **11 Claims**



1. A process for measuring thickness characteristics of a fiber sliver in a textile fiber sliver processing machine wherein the sliver thickness characteristics are detected by a sensing device and acted upon by a control system for drafting the fiber sliver, the sensing device generating a normally non-linear measuring signal for linear changes in sliver thickness characteristics, said process comprising the steps of:

in a pre-operational phase of the tectile machine, determining data values from a predetermined number of test measurements input into the sensing device, the data values being calculated to generate a linear measuring signal from the sliver sensing device for linear changes in sliver thickness;

storing the data values in a memory in a control system of the textile machine;

in an operational phase of the textile machine, detecting sliver thickness characteristics with the sensor device which generates a non-linear measuring signal corresponding to linear changes in sliver thickness characteristics;

transmitting the non-linear measuring signal as an input signal to the memory and reading out corresponding data values stored in the memory so as to generate a linear output measuring signal for the non-linear input measuring signal; and

transmitting the linear output measuring signal to the control system for drafting of sliver thickness variations in the sliver.

5,796,636

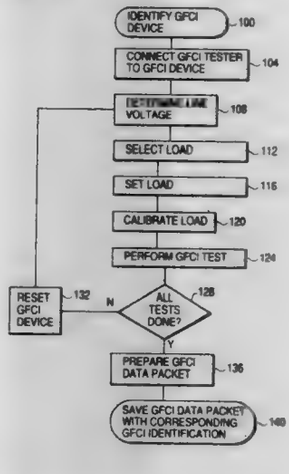
APPARATUS FOR AND METHOD OF TESTING AN ELECTRICAL GROUND FAULT CIRCUIT INTERRUPT DEVICE

Lowell B. Andrews, 2181-13th Ave. SW., Largo, Fla. 34640

Filed Jul. 12, 1996, Ser. No. 678,861

Int. Cl.[6] H02H *3/093*; G01R *19/00*

U.S. Cl. 364—571.01 **22 Claims**



1. An apparatus for testing a ground fault circuit interrupt device, said apparatus comprising:

a processor;

an input device coupled to said processor for receiving input from an operator;

an output device coupled to said processor for outputting information corresponding to test data to said operator;

a logging device coupled to said processor for logging said test data; and

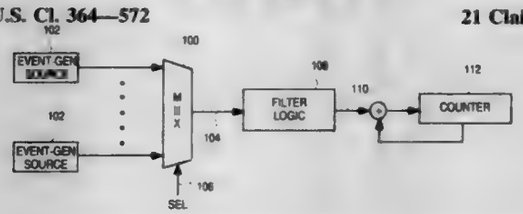
a calibrated variable load circuit coupled between said processor and said around fault circuit interrupt device, wherein said around fault circuit interrupt device is configured to trip a corresponding circuit breaker, wherein

said processor is configured to receive signals from said calibrated variable load circuit and to process said signals to determine one of a trip threshold current and a trip time, and wherein said calibrated variable load circuit comprises a leakage resistance switching matrix.

5,796,637
APPARATUS AND METHOD FOR FILTERING EVENT SIGNALS

Andrew F. Glew, Madison, Wis.; Sumeet Agrawal, Aloha; Kamla P. Huck, Portland, both of Oreg., and Patrick G. Franklin, Kent, Wash., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 6, 1996, Ser. No. 708,929
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—572 **21 Claims**



1. An apparatus for filtering event signals in a processing system comprising:

a selection circuit coupled to receive a plurality of event signals and select one of said event signals;

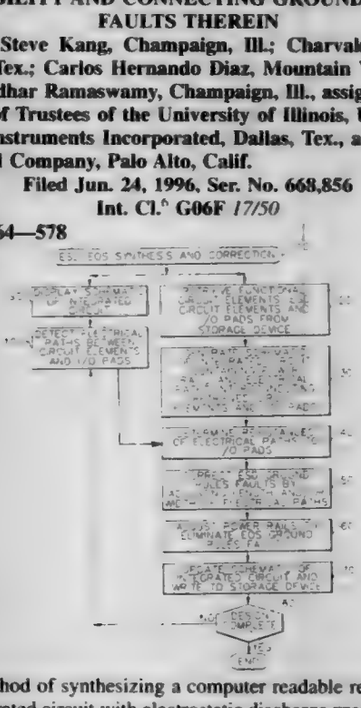
a filter circuit coupled to said selection circuit and receiving said selected event signal, said filter circuit generating a filtered event signal; and

a counter coupled to said filter circuit, said counter incremented in response to said filtered event signal.

5,796,638
METHODS, APPARATUS AND COMPUTER PROGRAM PRODUCTS FOR SYNTHESIZING INTEGRATED CIRCUITS WITH ELECTROSTATIC DISCHARGE CAPABILITY AND CONNECTING GROUND RULES FAULTS THEREIN

Sung-Mo Steve Kang, Champaign, Ill.; Charvaka Duvvury, Plano, Tex.; Carlos Hernando Diaz, Mountain View, Calif., and Sridhar Ramaswamy, Champaign, Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.; Texas Instruments Incorporated, Dallas, Tex., and Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 24, 1996, Ser. No. 668,856
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—578 **5 Claims**



1. A method of synthesizing a computer readable representation of an integrated circuit with electrostatic discharge protection capability, comprising the steps of:

generating a computer readable representation of an integrated circuit containing a representation of a first functional circuit element connected to a representation of a first input/output pad, via a representation of a first electrical path, and a representation of a first electrostatic discharge protection circuit element connected to the representation of the first input/output pad, via a representation of a second electrical path;

determining a quantity relating to a first sheet resistance of the representation of the first electrical path and determining a quantity relating to a second sheet resistance of the representation of the second electrical path; and

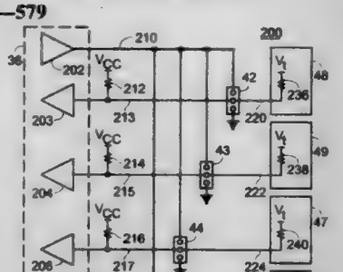
adjusting a length and/or width of the representation of at least one of the first and second electrical paths to improve the electrostatic discharge capability of the integrated circuit, if the first sheet resistance is greater than the second sheet resistance; and

wherein the first electrostatic discharge protection circuit element is characterized by a trigger voltage (V_{trigPD}), an on-resistance (R_{on}) and a maximum ESD current I_{ESD}; wherein the first functional circuit element is characterized by a trigger voltage (V_{trigF}); and wherein $V_{trigPD}+R_{on}I_{ESD}<V_{trigF}$.

5,796,639
METHOD AND APPARATUS FOR VERIFYING THE INSTALLATION OF STRAPPING DEVICES ON A CIRCUIT BOARD ASSEMBLY

Jerald N. Hall, Scappoose, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 715,857, Sep. 19, 1996. This application Jan. 2, 1997, Ser. No. 778,305
Int. Cl.[6] G01R *31/28*
U.S. Cl. 364—579 **17 Claims**



1. An apparatus comprising:

a plurality of strapping devices for configuring a plurality of configurable devices, wherein the plurality of strapping devices are selectively configurable into a plurality of configuration positions, each of the plurality of configuration positions having an associated output signal;

an output port, coupled to the plurality of strapping devices, and adapted to output electrical signals of a first state at a first time and a second state at a second time to the plurality of strapping devices;

a plurality of input ports, for receiving the associated output signal at each of the first time and second time; and

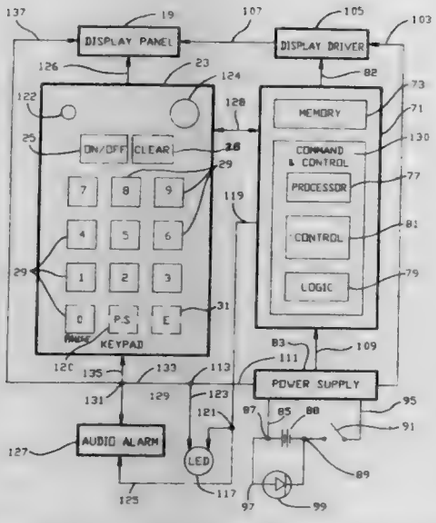
a first plurality of traces each having an associated pull-up resistor tied to a positive voltage level for coupling the plurality of strapping devices to the plurality of input ports, wherein unconfigured or malfunctioning ones of the plurality of strapping devices are identified.

5,796,640
DIETARY FAT CONTROL AUTOMATIC CALCULATOR SYSTEM AND FOLD LABEL FAT EVALUATOR

Henry Sugarman, and Marcia S. Sugarman, both of 2834 S. Extension, Unit 2092, Mesa, Ariz. 85210

Continuation-in-part of Ser. No. 45,507, Apr. 8, 1993, which is a continuation-in-part of Ser. No. 986,427, Dec. 3, 1992, abandoned. This application Jun. 21, 1995, Ser. No. 493,258
Int. Cl.[6] G06F *3/00*
U.S. Cl. 364—709.02 **6 Claims**

1. A relatively small, compact, portable hand-held, multi-purpose, dedicated dietary fat control automatic calculator system



for calculating the percentage of fat calories per serving of a given food item, including in combination:

a memory for storing user entered data, at least first and second operating programs, and a plurality of user prompts for at least said first operating program comprising 1) "enter fat grams"; 2) "enter saturated fat calories"; and 3) "enter calories";

a keypad for enabling a user to enter numerical data into said memory, and for selecting one of said operating programs;

a display for visually displaying information to the user;

a command and control circuit for executing said selected program, performing mathematical calculations, and generating control signals;

a logic circuit in said command and control circuit and coupled with said keypad for causing said command and control circuit to operate said selected program in response to entry of numerical data on said keypad following each of said user prompts, said command and control circuit coupled with said display for displaying information corresponding to said selected program and numerical data entered on said keypad; and

an alarm circuit responsive to said command and control circuit for producing alarm signals in response to predetermined combinations of numerical data supplied from said keypad to said command and control circuit for said selected first program indicative of the percentage of fat calories per serving exceeding a predetermined amount.

5,796,641

SYSTEM AND TABLE-BASED METHOD FOR CONVERTING BINARY FLOATING-POINT NUMBERS TO A DECIMAL REPRESENTATION

Nengkuan Tu, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1996, Ser. No. 650,204
Int. Cl.[6] G06F *7/00;15/00*
U.S. Cl. 364—715.03 **12 Claims**

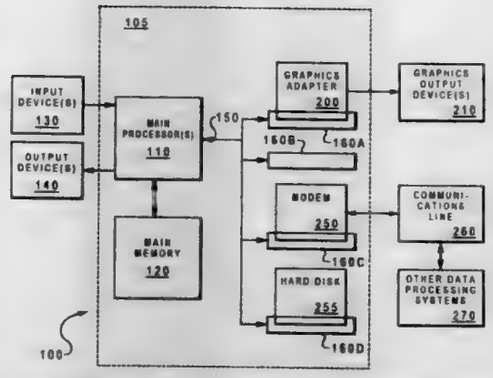
1. A table-based computer system capable of converting a binary floating-point number to a decimal representation, said table-based computer system comprising:

a first table having a plurality of entry locations, wherein each of said plurality of entry locations contains a number;

a second table having a plurality of entry locations, wherein each of said plurality of entry locations contains a number;

an extraction means for extracting a first index into said first table from said binary floating-point number;

an acquiring means for obtaining a second index into said second table from a number contained within an entry location in said first table referenced by said first index;



an identifying means for identifying a selected entry location of said second table by utilizing said second index or by utilizing a decremented second index only if a number contained within an initial entry location of said second table referenced by said second index is greater than said binary floating-point number;

a display means for displaying a most significant digit of a number contained within said selected entry location of said second table;

a subtraction means for subtracting said number contained within said selected entry location of said second table from said binary floating-point number;

a detecting means for checking whether said binary floating-point number is equal to zero.

5,796,642

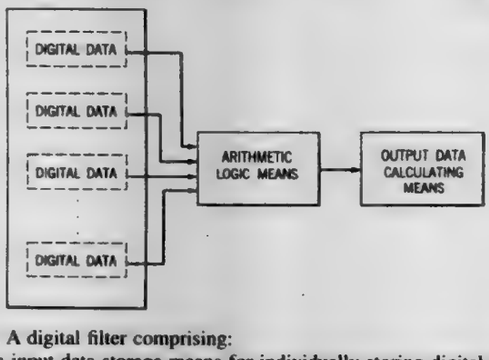
Patent Not Issued For This Number

5,796,643

LOGICAL OPERATOR BASED DIGITAL FILTER

Tomoyuki Nanami, Obu; Satoshi Yamashita, Kuwana, both of Japan; Dennis M. Wright, Eastlake, and Kendal R. Harris, Mentor, both of Ohio, assignors to Allen-Bradley Company, LLC, Milwaukee, Wis.

Filed Jan. 2, 1996, Ser. No. 582,002
Int. Cl.[6] G06F *17/10;7/38*
U.S. Cl. 364—724.011 **4 Claims**



1. A digital filter comprising:

an input data storage means for individually storing digital data sequentially read in a plurality of read cycles;

an arithmetic logic means that carries out logical OR or logical AND on the digital data stored in the input data storage means; and

an output data calculating means that calculates an output data according to the results of operation of the arithmetic logic means;

wherein the arithmetic logic means carries out logical OR and logical AND on the digital data, and the output data calculat-

ing means sets the output data to "1" when the variable of logical AND is "1", sets the output data to "0", when the logical AND is "0" and does not change the output data under other conditions.

5,796,644

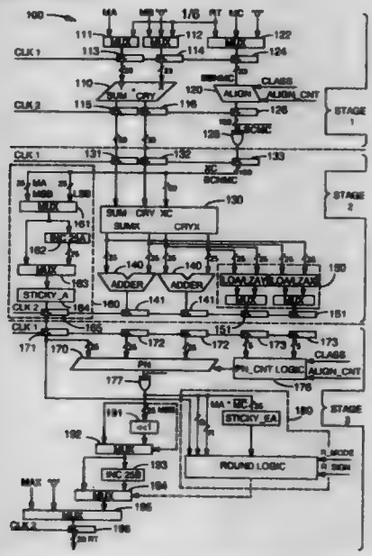
FLOATING-POINT MULTIPLY-AND-ACCUMULATE UNIT WITH CLASSES FOR ALIGNMENT AND NORMALIZATION

Shao-Kun Jiang, San Diego, Calif., assignor to Samsung Electronics Company, Ltd., Rep. of Korea

Filed Nov. 18, 1996, Ser. No. 746,828

Int. Cl.[6] G06F *7/38*

U.S. Cl. 364—748.07 **10 Claims**



1. A method for performing a multiply-and-accumulate operation on first, second, and third values, comprising:

determining an exponent difference indicating a sum of a first exponent for the first value and a second exponent for the second value minus a third exponent for the third value;

identifying from the exponent difference whether the operation is in a first class, a second class, or a third class;

generating a first signal representing a product of a first mantissa for the first value and a second mantissa for the second value;

loading a third mantissa for the third value into a first section of a shifter which has a first section, a second section, and a third section, the second section having a most significant bit location corresponding to a most significant bit of the first signal; and

accumulating the first signal with an output signal from the shifter, wherein during accumulation, the most significant bit location of the second section provides a bit accumulated with the most significant bit of the first signal, wherein:

in response to the operation being in the first class, the third mantissa is associated with the first section of the shifter during accumulation;

in response to the operation being in the second class, the method further comprises shifting the third mantissa by a fixed amount in the shifter so that a most significant bit of the third mantissa is in the most significant bit location of the second section of the shifter, and then shifting the third mantissa by a variable amount selected according to the exponent difference; and

in response to the operation being in the third class, the method further comprises shifting the third mantissa into the third section of the shifter.

5,796,645

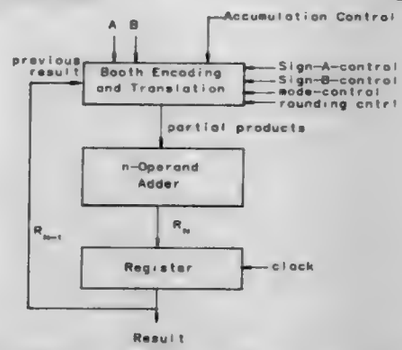
MULTIPLY ACCUMULATE COMPUTATION UNIT

Kheng Boon Peh, and Eng Han Lee, both of Singapore, Singapore, assignors to Tritech Microelectronics International Ltd., Singapore, Singapore

Filed Aug. 27, 1996, Ser. No. 697,700

Int. Cl.[6] G06F *7/00*

U.S. Cl. 364—750.5 **20 Claims**



1. A multiply/accumulate computation circuit to sequentially perform one of the set of operations to form a set of results, wherein said set of operations include multiplying one multiplicand of a plurality of multiplicands and one multiplier of plurality of multipliers to create a product that is one of the set of results, adding said product to one of the set of results from a previous operation to form a second result of the set of results, subtracting of said product from one of the set of results from a previous operation to form a third result of the set of results, multiplying of the product by a factor of two to form a fourth result of the set of results, adding said product that has been multiplied by a factor of two to form a fifth result of the set of results, subtracting said product that has been multiplied by a factor of two to form a sixth result of the set of results, and the rounding of the result of a present operation to form a seventh result of the set of results, comprising:

a) a multiplicand register to contain a first binary number that is one multiplicand of the set of multiplicands;

b) a multiplier register to contain a second binary number that is one multiplier of the set of multipliers;

c) a previous results register that contains a third binary number that is one of the set of results from the previous operation;

d) a control register to contain a digital control code to determine which present operation of the set of operations is to be performed by the multiply/accumulate computation circuit;

e) a modified Booth multiplier coupled to the multiplicand register, the multiplier register, the previous result register, and the control register to produce a plurality of partial products representing the multiplication of the multiplicand and each binary digit of the multiplier, a two's complement partial product to compensate for an inversion of the multiplicand to form a negative value of the multiplicand within the plurality of partial products, a previous result partial product to contain the previous result, and a multiplicand partial product to contain the multiplicand, and perform the subtracting of the product from the previous result according to two's complement arithmetic, as is determined by the digital control code, whereby each partial product of the plurality of partial products has a value of 1 and an inverted sign bit appended after the most significant digit, each two's complement partial product has the value 1 appended after its most significant digit, and the multiplicand partial product has a series of sign extension bits, the inverted sign bit and a series of 1's appended to the most significant digit to minimize a quantity of circuitry;

f) an operand adder means coupled to the multiplicand register and the modified Booth multiplier to sum all the plurality of partial products, the two's complement partial product, the previous result partial product, and the multiplicand partial product to form a result of the set of results; and

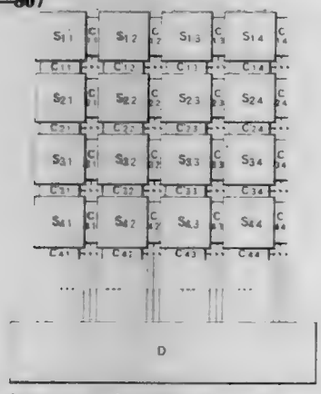
g) a result register coupled between the n operand adder means and the previous result register and external circuitry, wherein the result of the present operation is stored for use by the previous results register and the external circuitry.

5,796,646

GENERAL PURPOSE CHARGE MODE ANALOG OPERATION CIRCUIT

Yasuo Nagazumi, Tokyo, Japan, assignor to G.D.S. Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1995, Ser. No. 550,653
Claims priority, application Japan, Oct. 31, 1994, 6-290537
Int. Cl.[6] G06G 7/00
U.S. Cl. 364—807 **16 Claims**



1. A general purpose charge mode analog operation circuit comprising:

a two-dimensional lattice form circuit wherein a potential of all or part of charge transfer electrodes for driving a plurality of charge transfer devices are controlled independently, wherein addition, multiplication, division, sign inversion and other arithmetic operation functions are performed by cooperative control of the plurality of adjacent charge transfer devices in said two-dimensional lattice form circuit, and wherein at least one analog charge signal is input on said two-dimensional lattice form circuit prior to a beginning of each arithmetic operation function; and

a driving control circuit for supplying a plurality of charge transfer control signals defining a control mode of said two-dimensional lattice form circuit to the charge transfer electrodes in said two-dimensional lattice form circuit, and thereby said plurality of charge transfer devices are controlled to selectively perform the arithmetic operation functions depending on the control mode.

5,796,647

INNER PRODUCT CALCULATION DEVICE

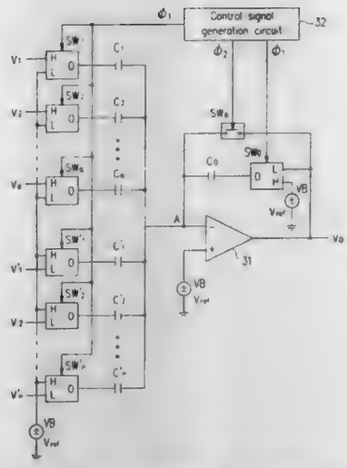
Kunihiko Iizuka, Sakai; Mitsuhiko Fujio, Ikoma; Hirofumi Matsui, Ikoma-gun, and Masayuki Miyamoto, Nabari, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1996, Ser. No. 599,746
Claims priority, application Japan, Feb. 14, 1995, 7-025537
Int. Cl.[6] G06G 7/00
U.S. Cl. 364—807 **6 Claims**

1. An inner product calculation device for calculating an inner product of a coefficient vector including at least one first element with a positive sign and at least one second element with a negative sign and an input vector including elements corresponding to a plurality of input voltages, the device comprising:

an amplifier having an input terminal and an output terminal;

at least one first capacitor corresponding to the at least one first element with the positive sign, the first capacitor including one end, another end, and a capacitance which is in proportion to a value of the at least one first element;



at least one second capacitor corresponding to the at least one second element with the negative sign, the second capacitor including one end, another end, and a capacitance which is in proportion to an absolute value of the second element;

a third capacitor having one end and another end, the one end of the third capacitor being connected to the one end of the first capacitor, the one end of the second capacitor, and the input terminal of the amplifier;

a voltage source for:

(a) applying, during a first period, a corresponding one of the plurality of input voltages to the other end of each of the at least one first capacitor and a reference voltage to the other end of the at least one second capacitor and the other end of the third capacitor; and

(b) applying, during a second period following the first period, the reference voltage to the other end of the first capacitor, a corresponding one of the plurality of input voltages to the other end of each of the at least one second capacitor, and an output voltage output from the output terminal of the amplifier to the other end of the third capacitor; and

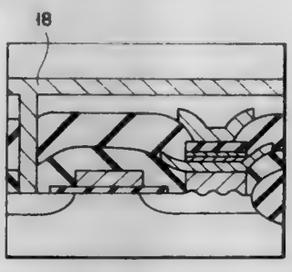
a switch for short-circuiting the input terminal of the amplifier and the output terminal of the amplifier during a third period.

5,796,648

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR MANUFACTURING SAME

Takashi Kawakubo, Yokohama, and Kazuhide Abe, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 10, 1996, Ser. No. 762,923
Claims priority, application Japan, Dec. 11, 1995, 7-321698
Int. Cl.[6] G11C 11/22
U.S. Cl. 365—145 **24 Claims**



1. A nonvolatile semiconductor memory device which comprises:

a ferroelectric cell and

a paraelectric cell;

wherein said ferroelectric cell includes a first thin-film capacitor which comprises a first lower electrode formed on a substrate, a first dielectric film grown on the first lower electrode, and a first upper electrode formed on the first dielectric film, and a first switching transistor connected to the first thin-film capacitor, and

wherein said paraelectric cell includes a second thin-film capacitor which comprises a second lower electrode, a second dielectric film grown on the second lower electrode, and a second upper electrode formed on the second dielectric film, and a second switching transistor connected to the second thin-film capacitor; and

wherein the first and second dielectric films are formed of the same material and have a single crystal structure, each of the first and second lower electrodes have a single crystal structure, and dielectric characteristics of the first and second dielectric films are controlled by changing lattice constants of the first and second-lower electrodes.

5,796,649

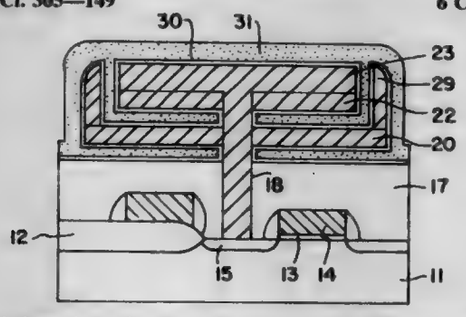
DYNAMIC RANDOM ACCESS MEMORY CAPACITOR AND METHOD FOR FABRICATING THE SAME

Dong Yeal Keum; Cheol Soo Park, and Eui Kyu Ryou, all of Kyoungki-do, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea

Division of Ser. No. 297,759, Aug. 30, 1994, Pat. No. 5,543,346. This application Jun. 7, 1996, Ser. No. 658,807

Int. Cl.[6] G11C *13/00;11/24*

U.S. Cl. 365—149 **6 Claims**



1. A dynamic random access memory capacitor comprising:

a planarizing layer formed over a semiconductor substrate including a field oxide film, a gate oxide film, gates and bit lines;

a contact hole formed by removing a predetermined portion of the planarizing layer disposed over a predetermined active region of the semiconductor substrate to be in contact with the capacitor is exposed, the active region being exposed through the contact hole;

a first conduction layer upwardly spaced a predetermined distance apart from the planarizing layer;

a second conduction layer upwardly spaced a predetermined distance apart from the first conduction layer, the second conduction layer extending through the first conduction layer to fill the contact hole and having a smaller width than the first conduction layer such that an edge of the first conduction layer is exposed;

a conduction spacer formed on the edge of the first conduction layer and spaced apart from an end of the second conduction layer; and

an insulating film formed over exposed surfaces of the first and second conduction layers and an exposed surface of the planarizing layer.

5,796,650

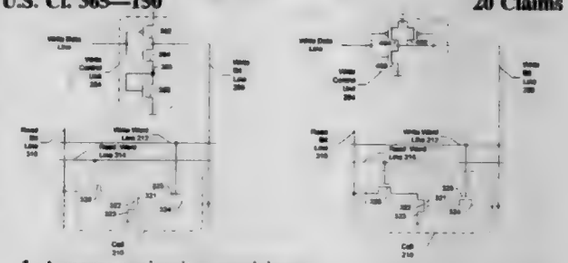
MEMORY CIRCUIT INCLUDING WRITE CONTROL UNIT WHEREIN SUBTHRESHOLD LEAKAGE MAY BE REDUCED

Thomas R. Wik, Livermore, and Shahryar Aryani, San Jose, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed May 19, 1997, Ser. No. 858,270

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—150 **20 Claims**



1. A memory circuit comprising:

a memory array including at least one storage cell configured to store a memory value on a storage node formed by a capacitance coupled to said storage node, wherein said at least one storage cell includes a write transistor configured to cause write data driven on a write bit line to be written to said storage node; and

a write control unit coupled to said write bit line and a first reference voltage, wherein said write control unit includes:

a buffer coupled to said write bit line, wherein said buffer is configured to convey a first output voltage on said write bit line in response to a first input voltage, and wherein said first output voltage establishes a first output logic state; and

an offset voltage element coupled to said buffer, wherein said offset voltage element is configured to cause said first output voltage to be offset from said first reference voltage by an amount determined by an offset voltage established across said offset voltage element.

5,796,651

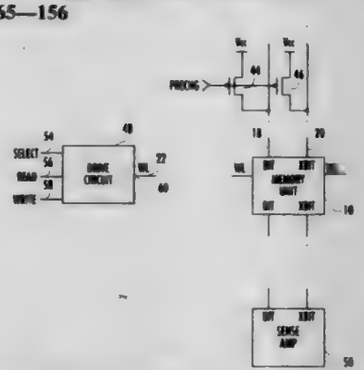
MEMORY DEVICE USING A REDUCED WORD LINE VOLTAGE DURING READ OPERATIONS AND A METHOD OF ACCESSING SUCH A MEMORY DEVICE

Stephen C. Horne, Austin, Tex.; Richard K. Klein, Mountain View, Calif.; Asim A. Selcuk, Cupertino, Calif.; Nicholas John Kepler, Saratoga, Calif.; Christopher A. Spence; Raymond T. Lee, both of Sunnyvale, Calif., and John C. Holst, San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 19, 1997, Ser. No. 858,589

Int. Cl.[6] G11C *11/418;11/419*

U.S. Cl. 365—156 **20 Claims**



1. A memory device, comprising:

a memory cell configured to store one of a HIGH voltage state and a LOW voltage state, the memory cell including a storage node and a pull-down transistor coupled to the storage node, the pulldown transistor being configured to hold the storage

node at the LOW voltage state upon application of a bias voltage sufficient to activate the pull-down transistor;

a bit line associated with the memory cell to conduct the HIGH and LOW voltage states;

a pass transistor coupled between the bit line and the storage node, the pass transistor having substantially the same conductivity as the pull-down transistor; and

a drive circuit having an output coupled to the pass transistor for applying a READ voltage having a magnitude sufficient to activate the pass transistor, the magnitude being less than the magnitude of the bias voltage applied to activate the pull-down transistor.

5,796,652

NON-VOLATILE SEMICONDUCTOR MEMORY CAPABLE OF WRITING MULTI-VALUE INFORMATION

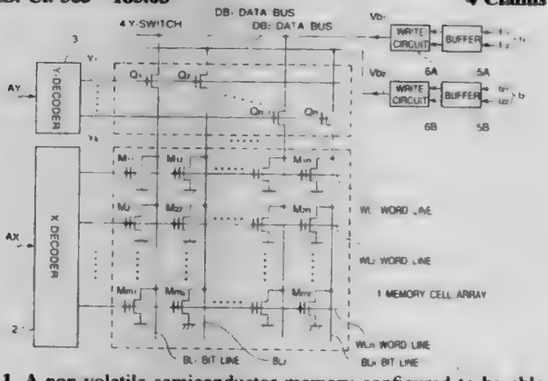
Toshio Takeshima, and Hiroshi Sugawara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1996, Ser. No. 773,834

Claims priority, application Japan, Dec. 27, 1995, 7-341643

Int. Cl.[6] G11C *16/06*

U.S. Cl. 365—185.03 **4 Claims**



1. A non-volatile semiconductor memory configured to be able to write a multi-value information into a memory cell, comprising:

a memory cell array composed of a number of memory cell transistors having an electrically controllable threshold, arranged in the form of a matrix having a plurality of rows and a plurality of columns;

a plurality of word lines provided for said plurality of rows of said memory cell array, respectively, each of said word lines being connected in common to a gate of memory cell transistors included in a corresponding row of said memory cell array;

a plurality of bit lines provided for said plurality of columns of said memory cell array, respectively, each of said bit lines being connected in common to a drain of memory cell transistors included in a corresponding column of said memory cell array; and

means for simultaneously writing a plurality of items of multi-value information which can take at least three values, into a corresponding number of memory cell transistors included in the memory cell transistors of one row selected by one word line.

wherein said means includes:

a row decoder receiving a row address signal for selecting one word line in accordance with the received row address signal, from said plurality of word lines, and for supplying a writing word line voltage of a predetermined level to said selected word line at the time of a writing;

a plurality of write circuits receiving respective input data of multi-value information, for generating, at the time of the writing, a corresponding number of writing bit line voltages having a level corresponding to the value of said respective input data, respectively; and

a column selection circuit receiving a column address signal for selecting from said plurality of bit lines in accordance with the received row address signal, bit lines of the same number as that of said plurality of write circuits, and for simultaneously supplying said corresponding number of writing bit line voltages generated by said plurality of write circuits, to said selected bit lines, respectively, at the time of the writing.

5,796,653

CIRCUIT FOR THE SELECTION OF REDUNDANT MEMORY ELEMENTS AND FLASH EEPROM MEMORY COMPRISING SAID CIRCUIT

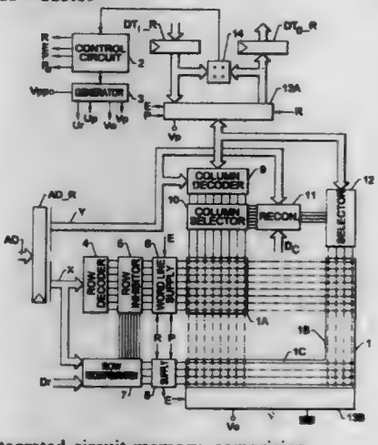
Jean-Marie Gaultier, Rousset, France, assignor to SGS-Thomson Microelectronics, S.A., Gentilly, France

Filed Feb. 22, 1995, Ser. No. 394,314

Claims priority, application France, Feb. 23, 1994, 94 02304

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.09 **14 Claims**



1. An integrated circuit memory, comprising:

an array of FLASH EEPROM memory cells, organized in rows and columns;

a plurality of redundant portions, each parallel to rows or columns of said array;

a nonvolatile memory storing defective address identifiers;

row and column selection logic, connected to access one of said rows and one of said columns as selected by externally received address bits, to thereby select one or more of said memory cells; and

redundancy selection logic, connected to said nonvolatile memory storing defective address identifiers, selectably operable in two modes;

wherein, in a first mode, said redundancy selection logic, whenever the externally received address bits match one of said defective address identifiers in said nonvolatile memory, inactivates a portion of said array whose address corresponds to said defective address identifier, and also activates one of said redundant portions;

wherein, in said first mode, said redundancy selection logic, whenever the externally received address bits match one of said defective address identifiers in said nonvolatile memory plus a predetermined increment value, inactivates a portion of said array whose address matches said defective address identifier plus said predetermined increment value, and also activates one of said redundant portions;

wherein, in a second mode, said redundancy selection logic activates two topologically adjacent ones of said redundant portions for each accessed address.

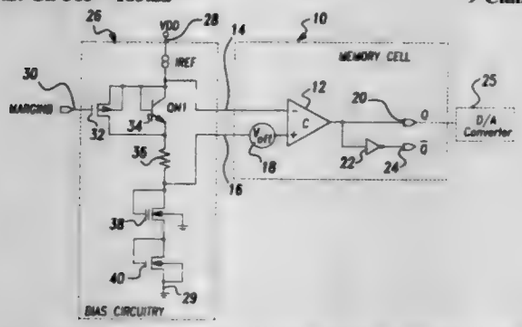
5,796,654

Patent Not Issued For This Number

5,796,655
MEMORY CELL HAVING PROGRAMMED MARGIN VERIFICATION

Robert Harrison Reed, Kokomo; Dennis Michael Koglin, Carmel, and Mark Billings Kearney, Kokomo, all of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Oct. 20, 1997, Ser. No. 954,152
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.22 **9 Claims**



1. A programmable memory cell having programming voltage margin verification, said memory cell comprising:

a voltage comparator having a differential input including a first input and a second input;

bias circuitry coupled to the first and second inputs of the comparator for generating the differential input voltage;

a voltage offset applied to the second input of the comparator so as to provide an input offset voltage;

an output for providing a memory cell output signal;

a programming input for receiving a programming voltage so as to program the memory cell;

margin detection circuitry having an input for receiving a verification signal to check unprogrammed state voltage margin;

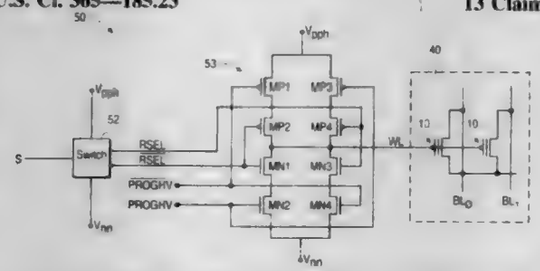
a current sensor for sensing current flow through the programming input; and

means for determining a proper programmed state voltage margin of the memory cell based on the sensed current.

5,796,656
ROW DECODER CIRCUIT FOR PMOS NON-VOLATILE MEMORY CELL WHICH USES ELECTRON TUNNELING FOR PROGRAMMING AND ERASING

Vikram Kowshik, San Jose; Andy Teng-Feng Yu, Palo Alto, and Jayson Giai Trinh, Milpitas, all of Calif., assignors to Programmable Microelectronics Corporation, San Jose, Calif.

Filed Feb. 22, 1997, Ser. No. 803,806
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.23 **13 Claims**



1. A row decoder circuit for selectively providing reading, programming, and erasing voltages to a word line of reading, programming, and erasing operations of an associated memory array employing PMOS floating gate transistors as memory cells, said row decoder circuit comprising:

a first transistor having a first terminal coupled to said word line and a second terminal coupled to receive a first potential on a first voltage line and having a gate coupled to receive a select control signal, said first transistor pulling said word line to said first potential in response to said select control signal indicating said word line is selected for one of said operations and electrically isolating said word line in response to said select control signal indicating said word line is not selected for one of said operations;

a second transistor having a first terminal coupled to said word line and second terminal coupled to receive a second potential on a second voltage line and having a gate coupled to receive said select control signal, said second transistor pulling said word line to said second potential in response to said select control signal indicating said word line is not selected for one of said operations and electrically isolating said word line in response to said select control signal indicating said word line is selected for one of said operations;

a third transistor having a first terminal coupled to said word line and a second terminal coupled to receive said first potential on said first voltage line and having a gate coupled to receive a select control signal, said third transistor pulling said word line to said first potential in response to said select control signal indicating said word line is selected for one of said operations and electrically isolating said word line in response to said select control signal indicating said word line is not selected for one of said operations;

a fourth transistor having a first terminal coupled to said word line and second terminal coupled to receive said second potential on said second voltage line and having a gate coupled to receive said select control signal, said fourth transistor pulling said word line to said second potential in response to said select control signal indicating said word line is not selected for one of said operations and electrically isolating said word line in response to said select control signal indicating said word line is selected for one of said operations; and

a select means having a first portion coupled between said first voltage line and said second terminals of said first and third transistors and having a second portion coupled between said second voltage line and said second terminals of said second and fourth transistors, said select means enabling the selective coupling of said first and second transistors to said first and second voltage lines, respectively, and preventing the selective coupling of said third and fourth transistors to said first and second voltage lines, respectively, during said programming operations, said select means preventing the selective coupling of said first and second transistors to said first and second voltage lines, respectively, and enabling the selective coupling of said third and fourth transistors to said first and second voltage lines, respectively, during said reading and erasing operations.

5,796,657
FLASH MEMORY WITH FLEXIBLE ERASING SIZE FROM MULTI-BYTE TO MULTI-BLOCK

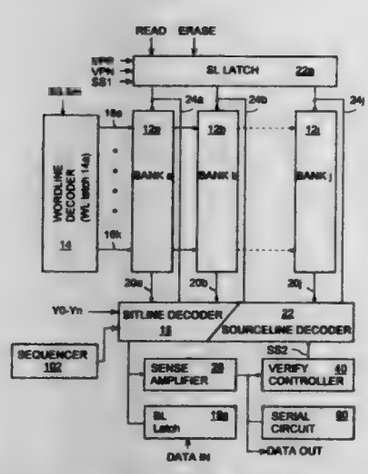
Peter W. Lee, Saratoga, Calif.; Hsing-Ya Tsao, and Fu-Chang Hsu, both of Taipei, Taiwan, assignors to Aplus Integrated Circuits, Inc., Saratoga, Calif.

Continuation-in-part of Ser. No. 624,322, Mar. 29, 1996, Pat. No. 5,646,890, Ser. No. 645,630, May 14, 1996, Pat. No. 5,687,121, Ser. No. 664,639, Jun. 17, 1996, and Ser. No. 676,066, Jul. 5, 1996. This application Aug. 1, 1996, Ser. No. 691,281
Int. Cl.[6] G11C *16/00*
U.S. Cl. 365—185.11 **11 Claims**

1. A flash memory with a flexible erasing size comprising:

a first bank of flash transistors forming a plurality of rows and a plurality of columns, each transistor having a gate, drain and source, where the gates of transistors in each row are coupled to common wordlines, the drains of transistors in each column are coupled to common bitlines and the sources of the transistors in the first bank are all coupled to a first sourceline;

a second bank of flash transistors forming a plurality of rows and a plurality of columns, each transistor having a gate, drain and source, where the gates of transistors in each row are



coupled to common wordlines, the drains of transistors in each column are coupled to common bitlines and the sources of the transistors in the second bank are all coupled to a second sourceline;

a wordline decoder coupled to said wordlines and configured to receive a wordline address signal and to decode said wordline address signal to select a wordline, said wordline decoder including a wordline latch configured to latch said selected wordline;

a sourceline decoder coupled to said sourcelines and configured to receive a sourceline address signal and to decode said sourceline address signal to select a sourceline, said sourceline decoder including a sourceline latch configured to latch said selected sourceline; and

a bitline decoder coupled to said bitlines and configured to receive a bitline address signal and to decode said bitline address signal to latch a selected bitline, said bitline decoder including a bitline latch configured to latch said selected bitline.

5,796,658

Patent Not Issued For This Number

5,796,659

SEMICONDUCTOR MEMORY DEVICE

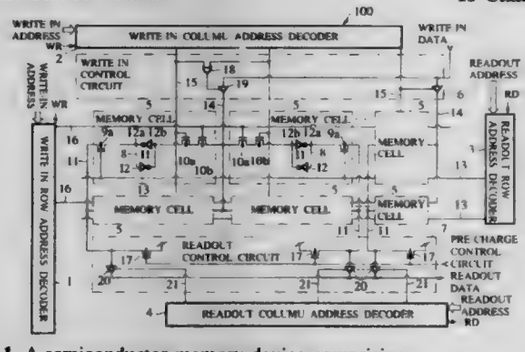
Yasuhiro Hegi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 16, 1997, Ser. No. 876,237

Claims priority, application Japan, Jun. 21, 1996, 8-161834

Int. Cl.[6] G11C *11/00*

U.S. Cl. 365—189.04 **15 Claims**



1. A semiconductor memory device comprising:

a write-in row address decoder for outputting a write-in row selection signal to select a row of a memory cell to which a data item being written when receiving a write-in address signal;

a write-in column address decoder for outputting a write-in column selection signal to select a column of the memory cell to which the data item being written when receiving the write-in address signal;

a readout row address decoder for outputting a readout row selection signal to select a row of a memory cell from which a stored data item is read when receiving a readout address signal;

a plurality of memory cells for storing data, each memory cell comprising:

a readout column address decoder for outputting a readout column selection signal to select the column of the memory cell from which the stored data item is read when receiving the readout address signal; a flip flop for storing a data item;

a readout transfer gate; and

first and second write-in transfer gates,

wherein the readout transfer gate is connected to a readout data line through which the data item stored in the flip flop in the memory cell is read and an output terminal of the flip flop, and the operation of the readout transfer gate is controlled by the readout row selection signal output from the readout row address decoder,

the first and second write-in transfer gates are connected between a write-in data line to which a data item to be written into the flip flop is provided and an input terminal of the flip flop,

operation of the first write-in transfer gate is controlled by the write-in row selection signal output from the write-in row address decoder, and operation of the second write-in transfer gate is controlled by the write-in column selection signal output from the write-in column address decoder,

a write-in control circuit for selectively transferring the write-in data item to the write-in data line based on the write-in column selection signal output from the write-in column address decoder; and

a readout control circuit for selectively outputting the stored data item, based on the readout column selection signal output from the readout column address decoder, on the readout data line read from the memory cell in the row selected by the readout row selection signal output from the readout row address decoder.

5,796,660

MEMORY DEVICE AND SERIAL-PARALLEL DATA TRANSFORM CIRCUIT

Haruki Toda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Division of Ser. No. 681,169, Jul. 22, 1996, Pat. No. 5,644,537, which is a division of Ser. No. 346,080, Nov. 29, 1994, Pat. No. 5,568,428. This application Mar. 11, 1997, Ser. No. 815,417

Claims priority, application Japan, Nov. 29, 1993, 5-298074

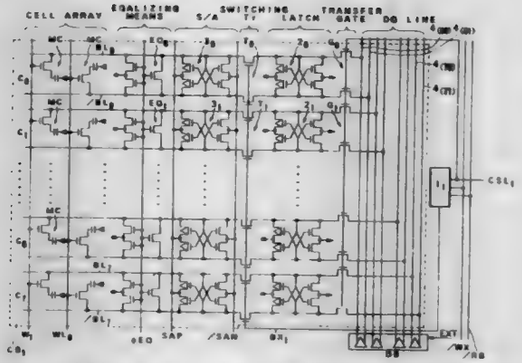
Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **21 Claims**

1. A method for writing data to a memory device having a plurality of column lines each having memory cells, a sense amplifier, a first gate, a latch, a second gate and a DQ line connected thereto, said method comprising the steps of:

writing data from the DQ line to at least one of the latches by tuning on the corresponding second gate using a CSL signal outputted by a column decoder, and storing in a mask circuit the column location of the column line connected to the latch in which the data is written;

activating a word line to transfer data stored in the memory cells connected to the word line to the sense amplifiers connected to the column lines;



turning on only the first gate connected to the written latch using a signal outputted by the mask circuit, and not turning on the first gates connected to unwritten latches; and

activating the sense amplifiers so that the data from the DQ line is written only in the memory cell corresponding to the written latch, and the data read from the remaining memory cells are rewritten so as not to destroy the data stored therein.

5,796,661

OUTPUT BUFFER CIRCUIT OF SEMICONDUCTOR MEMORY DEVICE

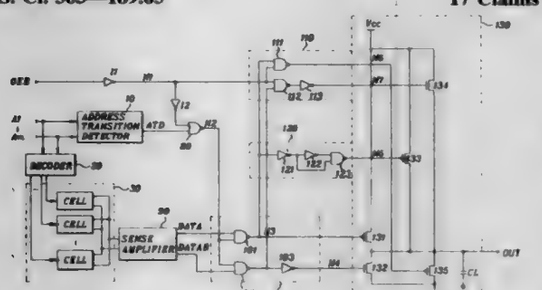
Kyung-Saeng Kim, Choongcheongbuk, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed Jul. 10, 1997, Ser. No. 890,025

Claims priority, application Rep. of Korea, Jul. 22, 1996, 1996-29547

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—189.05 **17 Claims**



1. An output buffer circuit of a semiconductor memory device having an address transition detector detecting a transition of an address signal, a sensing amplifier amplifying an output data from a memory unit, and a NOR gate for NORing an output enable signal and an address transition detecting signal, the circuit comprising:

an output data controller coupled to the sensing amplifier and controlling output signals from the NOR gate and the sensing amplifier;

a preset unit coupled to the output data controller;

a pull-up unit coupled to the preset unit and the output data controller and pulling up a voltage of the output terminal in accordance with the address transition detecting signal and the data read from the memory unit;

a data output unit coupled to the pull-up unit, the preset is unit, and the output data controller and outputting data in accordance with output signals from the output data controller, and the preset unit presetting an output terminal of the data output unit during a pulse interval of the address transition detecting signal.

5,796,662

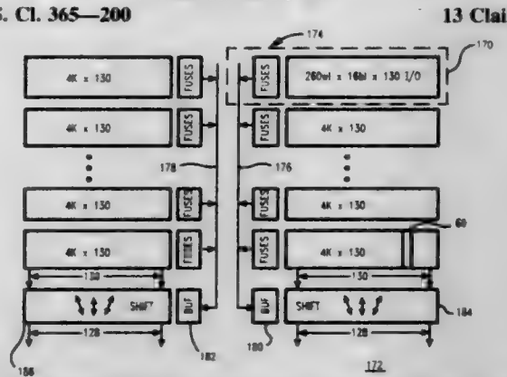
INTEGRATED CIRCUIT CHIP WITH A WIDE I/O MEMORY ARRAY AND REDUNDANT DATA LINES

Howard Leo Kalter, Colchester, and John Edward Barth, Jr., Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1996, Ser. No. 756,614

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—200 **13 Claims**



1. An integrated circuit chip having a data path at least 4 bytes wide, said integrated circuit chip comprising:

a plurality of arrays, each of said arrays including a plurality of interchangeable elements, said plurality of interchangeable elements being at least one more than the number of bits in said data path and connected to corresponding interchangeable elements of other of said plurality of memory arrays;

selection means for deselecting defective elements;

programming means in each said array for providing said selection means with a defective element location within said array; and

switching means for selectively coupling each bit of said data path to a correspond element or, responsive to said selection means, to a corresponding adjacent element.

5,796,663

ADDRESS SIGNAL STORAGE CIRCUIT OF DATA REPAIR CONTROLLER

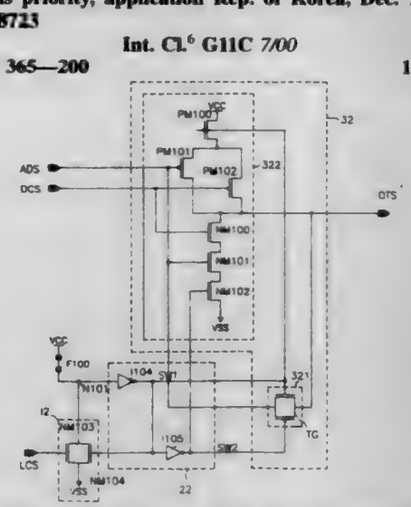
Jong Hoon Park, Kyungki-Do, and Tae Hyung Jung, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 12, 1996, Ser. No. 764,444

Claims priority, application Rep. of Korea, Dec. 12, 1995, 1995/248723

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—200 **11 Claims**



1. An address signal storage circuit of a data repair controller, comprising:

level stabilizing means for stabilizing a level of first signal based on an externally applied level control signal, wherein the

stabilized first signal corresponds to the connection and disconnection of a first fuse;

control signal generating means for generating first and second control signals based on the stabilized first signal from said level stabilizing means;

signal storage means for generating an output signal being either a signal of a constant level by said first control signal generated from said control signal generating means and an externally applied driving control signal, or an inversion signal of an address signal of a prescribed level based on said first and second control signals and said driving control signal; and

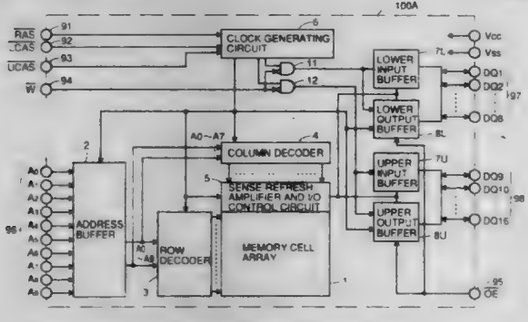
a driving control signal generator that generates said driving control signal based on a stabilized second signal and the level control signal.

5,796,664

SEMICONDUCTOR MEMORY DEVICE HAVING DIVIDED WORD LINE

Takahiro Tsuruda, and Kazutami Arimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 596,859, Feb. 5, 1996, abandoned. This application Oct. 1, 1997, Ser. No. 942,550
Claims priority, application Japan, Feb. 21, 1995, 7-032373
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—200 **41 Claims**



1. A semiconductor memory device comprising:

a memory cell array having a plurality of dynamic memory cells and divided into a plurality of memory array blocks; and

a plurality of main word lines extending through said plurality of memory array blocks, wherein

each of said plurality of memory cells includes a memory transistor and a memory capacitor;

each of said plurality of memory array blocks includes:

a plurality of sub-word lines connected to said plurality of memory cells in said memory array block, and connected to said plurality of main word lines, and

a cell plate divided correspondingly to said plurality of memory array blocks, and forming a common electrode of said memory capacitors of said plurality of memory cells in each of said memory array blocks; and

said semiconductor memory device further comprises:

a cell plate potential supply line for supplying a cell plate potential to said cell plates in said plurality of memory array blocks, and

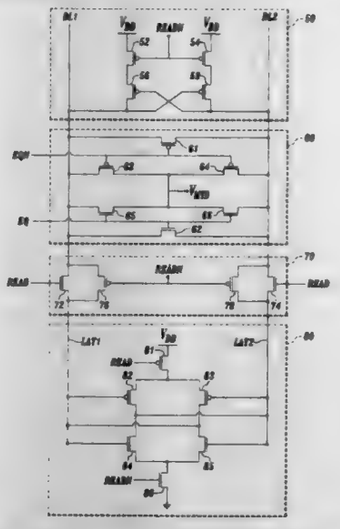
a plurality of cut-off means arranged between said cell plates in said plurality of memory array blocks and said cell plate potential supply line, respectively, and provided for cutting off the supply of said cell plate potential to a defective one among said memory array blocks.

5,796,665

SEMICONDUCTOR MEMORY DEVICE WITH IMPROVED READ SIGNAL GENERATION OF DATA LINES AND ASSISTED PRECHARGE TO MID-LEVEL

Luigi Ternullo, Jr., and Michael C. Stephens, Jr., both of San Jose, Calif., assignors to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed Oct. 17, 1997, Ser. No. 958,205
Int. Cl.[6] G11C *13/00*
U.S. Cl. 365—203 **30 Claims**



1. A semiconductor memory device for storing data, the semiconductor memory device comprising:

first and second data lines for carrying complementary data signals, the data signals being generated on the data lines during a signal cycle; and

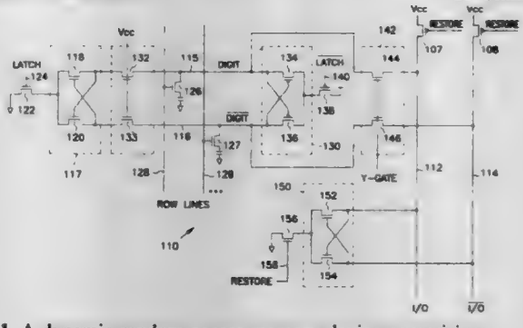
an accelerator circuit, the accelerator circuit being coupled to the first and second data lines, the accelerator circuit being activated by a first data signal that is generated on the first data line during a signal cycle, the accelerator circuit when activated accelerating the generation of a second data signal on the second data line.

5,796,666

METHOD AND APPARATUS FOR QUICKLY RESTORING DIGIT I/O LINES

Brian M. Shirley, and Kevin G. Duesman, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 587,472, Jan. 17, 1996, Pat. No. 5,677,878. This application Apr. 10, 1997, Ser. No. 831,609
Int. Cl.[6] G11C *7/00;7/02*
U.S. Cl. 365—205 **11 Claims**



1. A dynamic random access memory device comprising:

first and second DIGIT lines selectively coupled to independent memory cells in said memory device;

first and second I/O lines selectively coupled to the DIGIT lines and selectively resistively coupled to a voltage; and

a helper circuit coupled to the I/O lines.

5,796,667

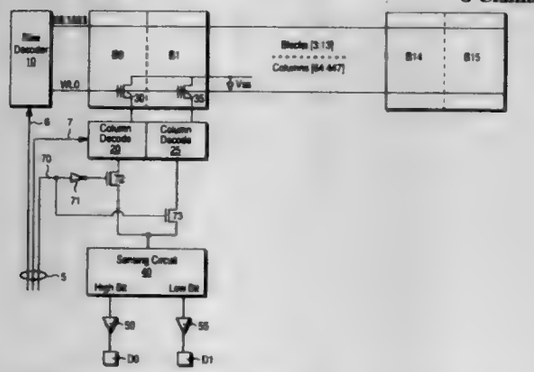
BIT MAP ADDRESSING SCHEMES FOR FLASH MEMORY

Sherif Sweha, El Dorado Hills, and Mark E. Bauer, Cameron Park, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 423,556, Apr. 17, 1995, abandoned, which is a division of Ser. No. 253,902, Jun. 2, 1994, Pat. No. 5,497,354. This application Apr. 19, 1996, Ser. No. 639,240

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—207 **6 Claims**



1. A memory device comprising:

an output;

a plurality of address inputs including row address inputs, column address inputs, and at least one multi-level cell (MLC) address input;

a memory cell array arranged in a plurality of rows and columns, the memory cell array comprising a plurality of memory cells wherein each memory cell is operative to store n bits of data, wherein n is greater than 1, each of the n bits of a memory cell having a different address;

a row decoder circuit coupled to the memory cell array wherein the row decoder circuit selects a row of the memory cell array in response to a row address received via the row address inputs;

a column decoder circuit coupled to the memory cell array wherein the column decoder circuit selects a column of the memory cell array in response to a column address received via the column address inputs such that a first memory cell is selected for reading in response to the row and column addresses;

a sensing circuit coupled to the first memory cell and the output, the sensing circuit for determining a state for each of the n bits stored in the first memory cell; and

a selecting circuit coupled to the sensing circuit, the MLC address input, and to the output, the selecting circuit for addressing and providing only one of the n bits from the sensing circuit to the output in response to the MLC address input such that each of the n bits stored by the first memory cell is individually addressed and output.

5,796,668

INTEGRATED CIRCUIT MEMORY DEVICES HAVING REDUCED WRITE CYCLE TIMES AND RELATED METHODS

Dong-Il Seo, and Hong-Sun Hwang, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

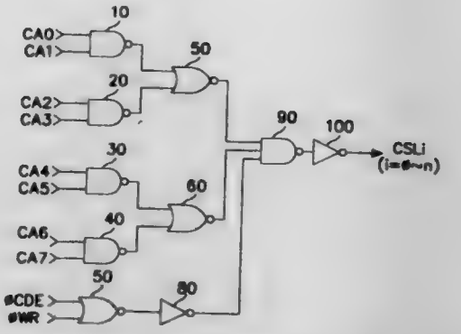
Filed Sep. 6, 1996, Ser. No. 709,622

Claims priority, application Rep. of Korea, Sep. 6, 1995, 95-29237

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—207 **8 Claims**

1. An integrated circuit dynamic random access memory device comprising:



a plurality of memory cells arranged in an array of rows and columns wherein each of said memory cells includes a memory cell capacitor and a memory cell access transistor;

a plurality of word lines wherein each of said word lines is associated with a predetermined row of said memory cells and wherein each of said word lines is connected to a gate of each of said memory cell access transistors of said predetermined row of said memory cells;

a plurality of column lines wherein each of said column lines is associated with a predetermined column of said memory cells;

a plurality of sense amplifiers wherein each of said sense amplifiers is associated with a respective column line and wherein each of said sense amplifiers detects a voltage difference between a pair of bit lines for said respective column of memory cells and amplifies said voltage difference during a read operation;

a row decoder which selects one of said word lines in response to a row address input during write and read operations;

an input/output driver which receives data input during the write operation;

a plurality of input/output gates wherein each of said input/output gates is connected between said input/output driver and a respective one of said column lines; and

a column decoder which activates one of said input/output gates without first sensing and amplifying said voltage difference using one of said sense amplifiers during the write operation;

wherein said column decoder activates one of said input/output gates in response to a write control signal and a column address during the write operation.

5,796,669

SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE

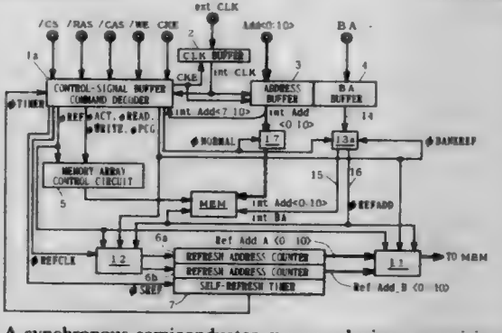
Takashi Araki; Hisashi Iwamoto, and Yasuhiro Konishi, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1997, Ser. No. 900,123

Claims priority, application Japan, Mar. 3, 1997, 9-047910

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **13 Claims**



1. A synchronous semiconductor memory device, comprising:

a memory array including a plurality of bank groups each consisting of at least one bank,

said synchronous semiconductor memory device, further comprising:

(a) refresh address counters provided correspondingly to said plurality of bank groups;

(b) a first switch receiving a first signal which is activated to indicate a refresh operation and a second signal which is activated to indicate a special refresh operation included in said refresh operation, and supplying a refresh clock to one of said refresh address counters by

(b-1) changing a connection every time said first signal is activated when said second signal is not activated, or

(b-2) determining said connection in accordance with a bank address for externally designating one of said plurality of bank groups when said second signal is activated, and

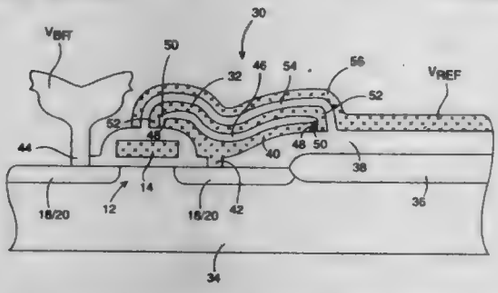
(c) a second switch adopting an output from said one of said refresh address counters which is supplied with said refresh clock as a refresh address to be used for refreshing said memory array.

5,796,670

NONVOLATILE DYNAMIC RANDOM ACCESS MEMORY DEVICE

Kwo-Jen Liu, San Jose, Calif., assignor to Ramax Semiconductor, Inc., San Jose, Calif.

Filed Nov. 7, 1996, Ser. No. 745,101
Int. Cl.° G11C *13/00*
U.S. Cl. 365—228 **20 Claims**



1. A nonvolatile semiconductor memory cell for a random access memory device, the memory cell comprising:

a transistor having gate, source, and drain regions, the gate coupled to a word line input and one of the source and drain coupled to a bitline input;

a data access capacitor for temporary data storage, the data access capacitor coupled to a reference voltage source and to a remaining one of the source and drain of the transistor;

a data storage capacitor coupled to the data access capacitor and to the reference voltage source, the data storage capacitor retaining a charge of electrons thereon after power supplied to the device is removed to provide nonvolatile data storage; and

a tunneling oxide interposed between the data access capacitor and the data storage capacitor for enhancing the ability of the data storage capacitor to retain data thereon, the data access and data storage capacitors configured to facilitate the tunneling of electrons therebetween for converting data between volatile and nonvolatile states.

5,796,671

DYNAMIC RANDOM ACCESS MEMORY

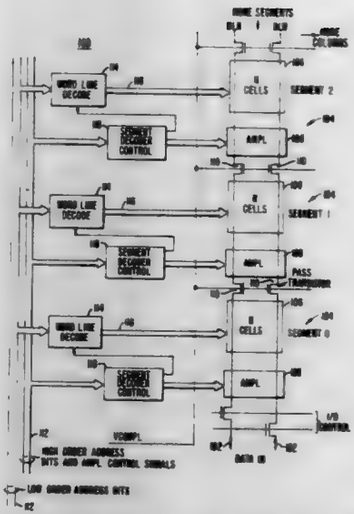
Sven E. Wahlstrom, 570 Jackson Dr., Palo Alto, Calif. 94303

Filed Mar. 1, 1996, Ser. No. 609,401
Int. Cl.° G11C *13/00*
U.S. Cl. 365—230.03 **24 Claims**

17. A dynamic random access memory comprising:

a storage capacitor for storing charge representative of a stored value;

a first, write transistor coupled to a first plate of said storage capacitor and a first bit line;



a second, read transistor having a first terminal coupled to a first terminal of a third transistor and a second terminal coupled to a second bit line, said third transistor comprising a gate coupled to said first plate of said storage capacitor, a gate of both said read transistor and said write transistor coupled to a word line;

a fourth transistor coupled to said first bit line and a clamp line, said clamp line having a clamp level intermediate to ground and a switching threshold of said write transistor; and

a sense amplifier coupled to said first and second bit lines,

wherein a refresh cycle of the dynamic random access memory may be interrupted with a memory read cycle without destroying data stored in the dynamic random access memory, and

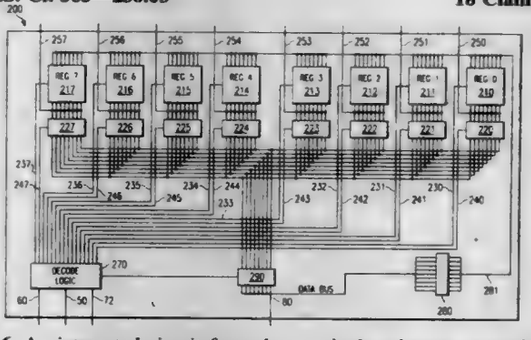
wherein a refresh cycle of the dynamic random access memory may be interrupted with a memory write cycle without destroying data stored in non-addressed columns of the dynamic random access memory.

5,796,672

METHOD AND CIRCUIT FOR ROUTING DATA TO REGISTERS IN AN INTEGRATED CIRCUIT

Jeanne K. Pitz, Richardson; Fredrick W. Trafton, Lewisville, and Richard C. Pierson, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 24, 1997, Ser. No. 842,342
Int. Cl.° G11C *8/00*
U.S. Cl. 365—230.03 **18 Claims**



6. An integrated circuit formed on a single substrate, comprising:

a plurality of circuit functional blocks;

an I/O port for receiving address and data signals, and for generating module select, register address, and output data signals;

a memory module associated with and located adjacent to a selected one of the circuit functional blocks;

a data bus connected to the I/O port and the memory module, for transmitting the output data signal to the memory module;

an address bus connected to the I/O port and the memory module, for transmitting the register address signal to the memory module; and

a plurality of memory output lines for transmitting memory output signals from the memory module to the selected circuit functional block.

5,796,673

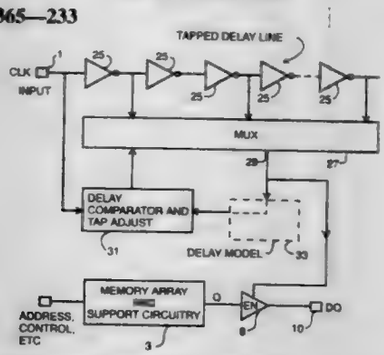
DELAY LOCKED LOOP IMPLEMENTATION IN A SYNCHRONOUS DYNAMIC RANDOM ACCESS MEMORY

Richard C. Foss, Calabogie Lake; Peter B. Gillingham, Kanata, and Graham Allan, Stittsville, all of Canada, assignors to Mosaid Technologies Incorporated, Kanata, Canada

Filed Oct. 6, 1994, Ser. No. 319,042

Int. Cl.[6] G11C 8/00

U.S. Cl. 365—233 **6 Claims**



1. A clock applying circuit for a synchronous memory comprising:

(a) a clock input for receiving a clock input signal,

(b) means connected to the synchronous memory for receiving a driving clock signal,

(c) a tapped delay line for receiving the clock input signal and for delivering said clock driving signal to the synchronous memory synchronism with but delayed from the clock input signal, the delay being a small fraction of the clock period of the clock input signal, the delay line being comprised of a series of delay elements for carrying said clock input signal,

(d) means for selecting said output from said one of the delay elements,

(e) means for providing the driving clock signal from an output of one of the delay elements,

(f) the selecting means being comprised of a comparator for comparing the clock input signal with said driving clock signal and for selecting said output from said one of the delay elements based on a closest predetermined one of a rising or falling edge of the clock input signal following an enable time required at a particular enable terminal-of the synchronous memory,

(g) means for providing the driving clock signal to said particular enable terminal,

(h) delay model means having a signal time delay simulating clock skew delay between a clock input terminal of the synchronous memory for receiving the clock input signal and said particular enable terminal, and

(i) an input port of the delay model means for receiving the driving clock signal and for providing a delayed driving signal to the comparator.

5,796,674

SIGNAL TRANSITION DETECTION CIRCUIT

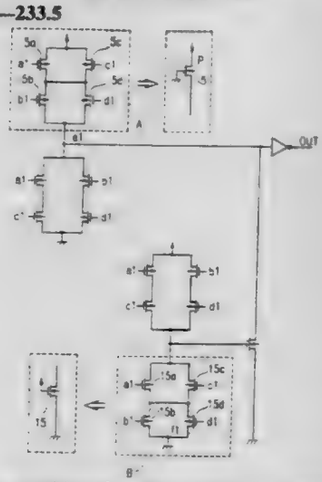
Yoshiaki Matsuura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1996, Ser. No. 767,451

Claims priority, application Japan, Mar. 22, 1996, 8-066871

Int. Cl.[6] G11C 8/00

U.S. Cl. 365—233.5 **11 Claims**



2. A signal transition detection circuit for generating first to fourth signals of four types in such a manner that delay times of the second to the fourth signals behind the first signal increases in the order from the second signal to the fourth signal, for detecting a first or a second predetermined combination of logic levels with respect to the first and the third signals or with respect to the second and the fourth signals, and for detecting transitions of a logic level of an input signal from one level to the other level or from another level to the one level, respectively, the signal transition detection circuit comprising:

a first detection circuit for detecting the first combination;

a second detection circuit for detecting the second combination;

a third detection circuit for detecting a third combination having different logic levels from those of the first combination with respect to the first and the third signals;

a fourth detection circuit for detecting a fourth combination having different logic levels from those of the second combination with respect to the second and the fourth signals; and

an output circuit for outputting a predetermined logic, level only when at least one of the first to the fourth combinations is detected by the first to the fourth detection circuits;

wherein

a signal b1 corresponding to the second signal, a signal c1 corresponding to the third signal, and a signal d1 corresponding to the fourth signal are delayed behind a signal a1 corresponding to the first signal by amounts corresponding to one inverter stage, three inverter stages and four inverter stages, respectively;

the first detection circuit is a first AND gate to which the signals a1 and c1 are inputted;

the second detection circuit is a second AND gate to which the signals b1 and d1 are inputted;

the third detection circuit is a first OR gate to which the signals a1 and c1 are inputted;

the fourth detection circuit is a second OR gate to which the signals b1 and d1 are inputted; and

the output circuit includes:

a NOR gate to which an output of the first AND gate and an output of the second AND gate are inputted;

a NAND gate to which an output of the first OR gate and an output of the second OR gate are inputted;

a coupling transistor to which an output of the NAND gate is inputted;

a pull-up circuit capable of charging a pull-up node from one side of the power supply, the pull-up node being connected with outputs of the coupling transistor and the NOR gate; and

inverters to which a potential from the pull-up node is inputted.

5,796,675

SYNCHRONOUS MEMORY DEVICE HAVING DUAL INPUT REGISTERS OF PIPELINE STRUCTURE IN DATA PATH

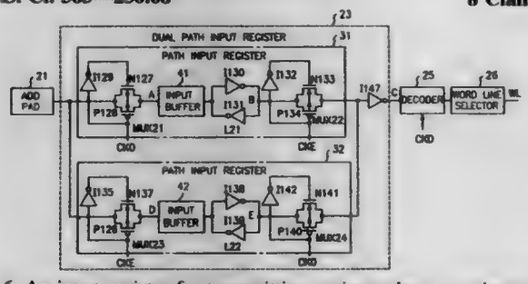
Seong Jun Jang, Kyoungkido, Rep. of Korea, assignor to Hyundai Electrics Industries Co., Ltd., Kyoungkido, Rep. of Korea

Filed Feb. 7, 1997, Ser. No. 796,219

Claims priority, application Rep. of Korea, Feb. 8, 1996, 1996-3078

Int. Cl.[6] G11G *8/00*

U.S. Cl. 365—230.08 **8 Claims**



6. An input register for transmitting an input data to an internal circuit in response to an external clock signal, the input register comprising:

a) a first input register for receiving the input datal through a first path, wherein the first input register includes:

1) a first switching means for receiving the input data;

2) a first storing means for the input signal; and

3) a second switching means for transmitting the stored input data to the internal circuit, wherein the signal receiving and transmission is selectively carried out by first and second control signals;

b) a second input register coupled to the first input register in parallel in order to receive the input signal through a second path, wherein the second input register includes:

1) a third switching means for receiving the input data;

2) a second storing means for the input signal; and

3) a fourth switching means for transmitting the stored input data to the internal circuit, wherein the signal receiving and transmission is selectively carried out by the first and second control signals.

5,796,676

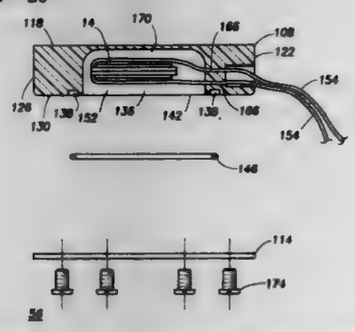
HYDROPHONE MODULE FOR A MARINE SEISMIC CABLE

Win Chang, Houston; Algernon S. Badger, Bernard; Richard H. Luce, Katy; David S. Lamance, Wallis; Hoan P. Nguyen, Houston, and Christopher A. Neighbors, Alvin, all of Tex., assignors to Input/Output, Inc., Stafford, Tex.

Filed Jan. 17, 1997, Ser. No. 783,931

Int. Cl.[6] G01V *1/00*

U.S. Cl. 367—20 **14 Claims**



1. A low-profile hydrophone module for a marine seismic system containing data-transmitting wires, the hydrophone module comprising:

a. a block having a curved surface and a receiving surface in which an open cavity is disposed;

b. a hydrophone assembly, to which lead wires attach, disposed in the cavity;

c. lead wires which pass out of the cavity;

d. a sound-transmitting material which fills the cavity: and

e. a wire-clearance recess disposed in the receiving surface, the wire-clearance recess displaced from the open cavity along a longitudinal axis of the block, the wire-clearance recess of sufficient size to receive connections between the lead wires and the data-transmitting wires.

5,796,677

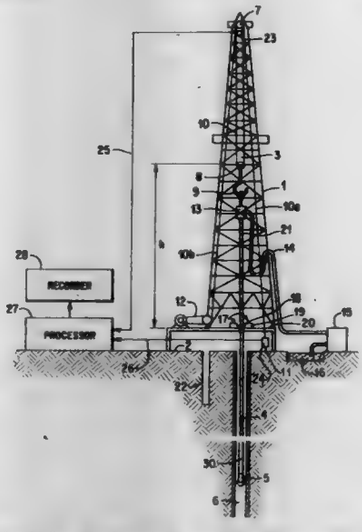
METHOD OF SONIC LOGGING WHILE DRILLING A BOREHOLE TRAVERSING AN EARTH FORMATION

Sergio Kostek, Ridgefield; Shu-Kong Chang, Redding, both of Conn.; Gordon McDaniel, Uetze, Germany; Thomas Plona, New Milford, Conn.; Curtis Randall, Missouri City, Tex.; Jean-Pierre Masson, Richmond, Tex.; James C. Mayes, and Kai Hsu, both of Sugar Land, Tex., assignors to Schlumberger Technology Corporation, Sugar Land, Tex.

Continuation-in-part of Ser. No. 839,969, Feb. 20, 1992, which is a continuation-in-part of Ser. No. 548,169, Jul. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 288,742, Dec. 22, 1988, abandoned. This application Apr. 29, 1994, Ser. No. 235,625

Int. Cl.[6] G01V *1/40*

U.S. Cl. 367—25 **14 Claims**



1. A method for performing sonic logging while drilling a borehole traversing an earth formation, including drilling the borehole with a drill string having a drill bit at its lower end and drilling fluid in the borehole surrounding the drill string, the steps of said method comprising:

a) drilling with a drill collar incorporated into the drill string;

b) transmitting, from a location on said drill collar, acoustic energy into the surrounding earth formations;

c) receiving, at a location on said drill collar, acoustic energy returned from the surrounding earth formations;

d) providing at least one output related to the received acoustic energy, said at least one output comprising a plurality of waveforms; and

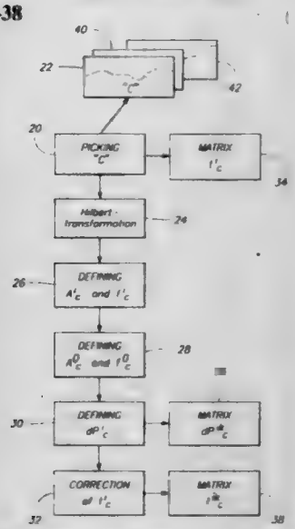
e) processing said at least one output to determine at least one characteristic of said earth formations, said processing comprising summing said plurality of waveforms to obtain a resultant stacked waveform.

5,796,678

METHOD FOR DETERMINING THE PRESENCE OF FLUIDS IN A SUBTERRANEAN FORMATION

Vladimir B. Pisetski, Yekaterinburg, Russian Federation, assignor to Trans Seismic International, Inc., San Francisco, Calif.

Filed Aug. 11, 1997, Ser. No. 909,454
Int. Cl.[6] G01V *1/36*
U.S. Cl. 367—38 **10 Claims**



1. A method for improving identification of locations of accumulation of fluids within a region of a subterranean formation, said region being characterized by a seismic image, said seismic image comprising a stacked time section representing horizons within said region, said horizons having associated isochronal maps, each said isochronal map having areas of relative highness and lowness relative to the average elevational dimension of said isochronal map, the method comprising the steps of:

a) picking a first selected horizon from said seismic image;

b) calculating a set of instantaneous amplitudes and frequencies for said first selected horizon;

c) determining the average amplitude and frequency of said set of instantaneous amplitudes and frequencies;

d) identifying pressure gradients associated with said instantaneous amplitudes and frequencies to generate a pressure gradient map, said pressure gradients corresponding to points at which said instantaneous amplitudes and frequencies vary from said average amplitude and frequency, wherein points at which said instantaneous amplitudes and frequencies are less than said average amplitude and frequency correspond to locations of relatively low pressure;

e) overlaying said pressure gradient map on the isochronal map corresponding to said first selected horizon; and

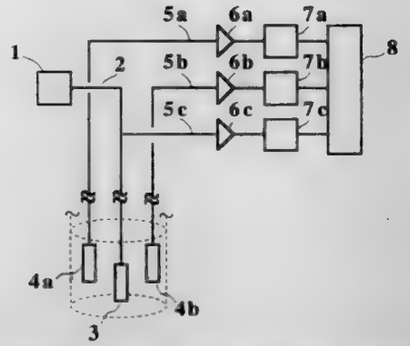
f) identifying said locations of relatively low pressure on said pressure gradient map which correspond to relatively high areas of said iscohron map to identify locations more likely to contain fluids than other locations within said region.

5,796,679

DOPPLER VELOCIMETER FOR MONITORING GROUNDWATER FLOW

Norbert E. Yankielun, Nottingham Circle, N.H., assignor to U.S. Army Corps. of Engineers as represented by The Secretary of The Army, Washington, D.C.

Filed Jun. 14, 1995, Ser. No. 490,269
Int. Cl.[6] G01S *15/00*; G01F *1/66;13/00*
U.S. Cl. 367—99 **16 Claims**



1. Apparatus for determining the velocity and direction of groundwater flow comprising:

a generator of a periodic electrical signal connected to a sound source submerged in groundwater in a borehole;

a first sound sensor and a second sound sensor submerged in groundwater in the borehole and located at the acute corners of a right isosceles triangle, with the sound source being at the right-angle corner of the triangle;

three amplifiers receiving, respectively, their input signals from the generator of the periodic electrical signal and from the first and the second sound sensor;

three pulse counters receiving, respectively, their input signals from the three amplifiers;

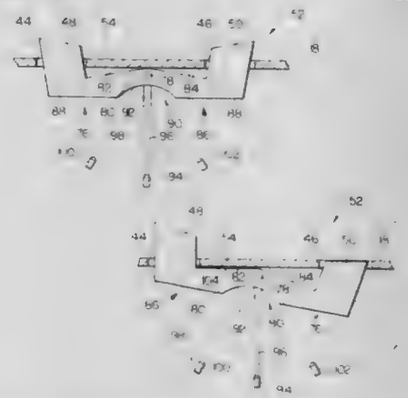
programmable computing means receiving the corresponding output signals of the three pulse counters and capable of carrying out mathematical computation instructions to compute the velocity and direction of groundwater flow and to display the results of this computation.

5,796,680

CHESS CLOCK

Lawrence R. Franklin, 11700 Amkin Dr., Clifton, Va. 20124

Filed Apr. 7, 1997, Ser. No. 834,943
Int. Cl.[6] G04F *3/00*
U.S. Cl. 368—96 **13 Claims**



1. A chess clock, comprising:

a housing;

a pair of clock means, one for each player of a chess game, for measuring the elapsed time and displaying the time remaining for each said player and for counting and displaying the number of moves made by each said player;

pulse generating means for providing a train of timing pulses to said pair of clock means for counting down said time remaining;

display means on said housing for displaying the time remaining and the number of moves made for each said player;

circuit means for directing said pulse train alternately and mutually exclusively to each of said clock means and for providing counting pulses to each of said clock means to count said number of moves; and

switching means for activating said circuit means to operatively switch between each of said clock means, said switching

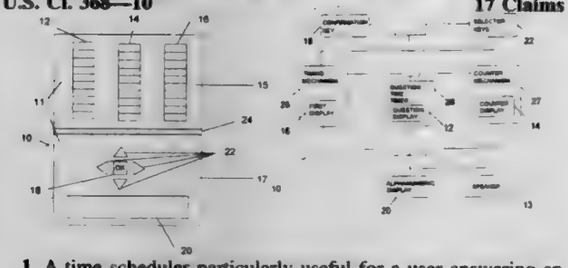
means having no mechanical or electrical operational connection with said circuit means.

5,796,681

TIME SCHEDULER PARTICULARLY USEFUL IN TESTS

Ehud Aronzo, 3/71 Yigal Alon Street, Kiryat Motzkin, Israel

Filed Jul. 8, 1997, Ser. No. 889,890
Int. Cl.[6] G04B *47/00*; G04F *7/00*
U.S. Cl. 368—10 **17 Claims**



1. A time scheduler particularly useful for a user answering an overall number of questions in an overall time available in a test comprising:

(a) a timing mechanism for measuring an overall time elapsed;

(b) a counting mechanism for counting a number of units;

(c) a front surface;

(d) a first display situated on said surface, for displaying a parameter selected from the group consisting of said overall time elapsed and said number of units; and

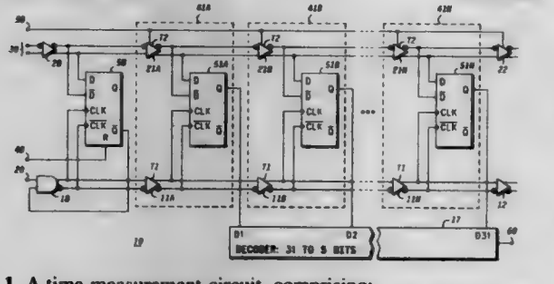
(e) a confirmation key on said surface, for changing said number of units, such that depressing said confirmation key changes said number of units by a single unit.

5,796,682

METHOD FOR MEASURING TIME AND STRUCTURE THEREFOR

Mavin C. Swapp, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 30, 1995, Ser. No. 550,055
Int. Cl.[6] G04F *8/00*
U.S. Cl. 368—120 **16 Claims**



1. A time measurement circuit, comprising:

a first logic gate having a first input, a second input, and an output, wherein the first input is coupled for receiving a clock signal;

a first storage element having a clock input, a data input, and a complementary output, wherein the clock input is coupled to the output of the first logic gate, the data input is coupled for receiving a first signal, and the complementary output is coupled to the second input of the first logic gate; and

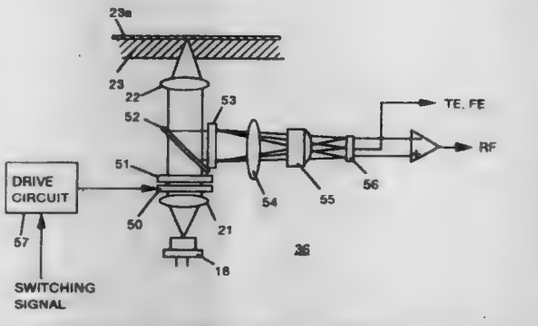
at least one phase detection element having a first input, a second input, a first delay output, a second delay output, and a logic output, wherein the first input is coupled to the clock input of the first storage element, the second input is coupled to the data input of the first storage element, the first delay output is coupled for providing a first delay signal, the second delay output is coupled for providing a second delay signal, and the logic output is coupled for providing a logic output signal.

5,796,683

MAGNETO-OPTICAL RECORDING DEVICE HAVING A CONTROLLABLE POLARIZING FILTER

Satoshi Sumi; Kenji Tanase, both of Gifu; Yoshihisa Suzuki, Aichi; Atsushi Yamaguchi, and Yoichi Tsuchiya, both of Gifu, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 25, 1997, Ser. No. 823,757
Claims priority, application Japan, Mar. 26, 1996, 8-070609; Apr. 16, 1996, 8-094105
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 **21 Claims**



1. An information recording and reproduction apparatus for a magneto-optical recording medium, comprising:

means responsive to a recording signal indicating information to be recorded for applying a magnetic field to a signal recording plane of said magneto-optical recording medium,

optical means commonly used both in recording and reproduction for emitting a laser beam to said signal recording plane of said magneto-optical recording medium, and detecting laser beam reflected from said signal recording plane, and

means for reproducing information from said detected laser beam,

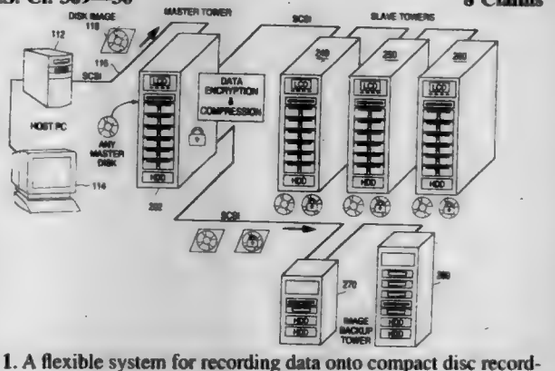
wherein said optical means includes polarization control means for blocking an inner portion of the laser beam emitted from said optical means so that a laser beam formed of a main lobe and side lobes is emitted onto said signal recording plane only in reproduction.

5,796,684

RECONFIGURABLE DUPLICATOR SYSTEM

Akira Yaegashi, San Diego, Calif., assignor to Sony Corporation, Tokyo, Japan, and Sony Electronics Inc., Park Ridge, N.J.

Filed Nov. 15, 1996, Ser. No. 752,453
Int. Cl.[6] G11B *17/22*
U.S. Cl. 369—30 **8 Claims**



1. A flexible system for recording data onto compact disc recordable media, the system including:

a plurality of system modules, each system module including:

a data reproducing means for reproducing data from a master compact disc;

a data receiving means for receiving data from an input terminal of an interface means;

a plurality of recording means, each recording means for recording data onto a compact disc recordable medium simultaneously with each other recording means of the system module recording data onto a compact disc recordable medium;

control means for controlling the system module to be in one of a standalone operating mode and a slave operating mode, wherein

in the standalone operating mode, the data recorded onto the compact disc recordable media by the plurality of recording means is the data reproduced from the master compact disc, and

in the slave operating mode, the recording data recorded by the recording means onto the compact disc recordable medium is the data received from the input terminal of the interface means by the data receiving means.

5,796,685

DIGITAL SERVO CIRCUIT GENERATING MIRROR DETECTING SIGNAL

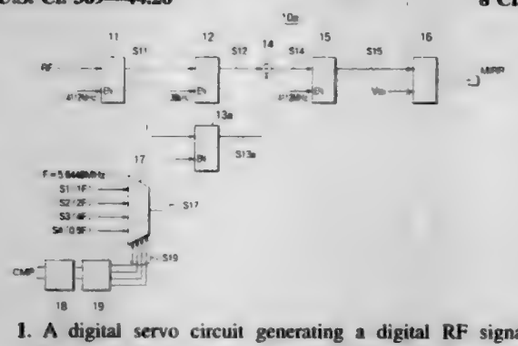
Hidenobu Noda, and Yasuyuki Suda, both c/o Sony LSI Design Corporation, 134 Koudo-Cho, Hodogaya-Ku Yokohama-Shi, Kanagawa, Japan

Filed Apr. 15, 1996, Ser. No. 631,965

Claims priority, application Japan, Apr. 28, 1995, 7-106681

Int. Cl.[6] G11B *7/095*

U.S. Cl. 369—44.28 **8 Claims**



1. A digital servo circuit generating a digital RF signal in accordance with the intensity of a reflected light of light irradiated to a surface of a recording medium by an optical pickup and generating a mirror-surface detection signal based on a peak level and bottom level of the digital RF signal,

said digital servo circuit comprising:

a peak level counter which performs a comparison between the potential of the digital RF signal and a first potential held in advance and, when the potential of the digital RF signal is larger than the first potential, holds the potential of the digital RF signal as the first potential and, when otherwise, performs a down count at a speed in accordance with an enable signal;

a bottom level counter which performs a comparison between the potential of the digital RF signal and a second potential held in advance and, when the potential of the digital RF signal is smaller than the second potential, holds the potential of the digital RF signal as the second potential and, when otherwise, performs an up count at a speed in accordance with an enable signal; and

a count speed selection circuit which selects the speed of the count in accordance with the speed of movement of the irradiated spot of light irradiated to the surface of the recording medium and supplies the same as the enable signal to the bottom level counter.

5,796,686

TRACK JUMP CONTROL APPARATUS FOR DISC REPRODUCING SYSTEM

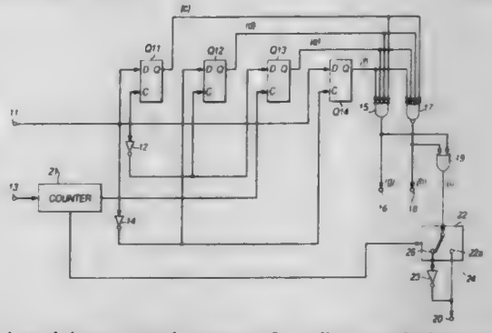
Satoru Maeda, Saitama-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 522,114, Aug. 31, 1995, abandoned. This application Jun. 2, 1997, Ser. No. 862,956

Claims priority, application Japan, Sep. 1, 1994, 6-208725

Int. Cl.[6] G11B *7/085*

U.S. Cl. 369—44.28 **9 Claims**



1. A track jump control apparatus for a disc reproducing system, the disc reproducing system including transport means for transporting, in the radial direction of a disc, a pickup element that reads data that has been recorded on the disc, detecting means for detecting, based on a picked-up signal output from the pickup element, a direction in which the pickup element is moving, and protection means for performing an operation that causes the movement of the pickup element to stop when it is determined that the direction of movement of the pickup element is opposite to an expected moving direction, the track jump control apparatus comprising:

measuring means for successively measuring pulse durations of the picked-up signal; and

wherein the protection means includes control means responsive to the measured result for preventing the protection means from causing the movement of the pickup element to stop when the ratio of pulse durations of two successive opposite polarity output signals has varied from a prescribed range.

5,796,687

INFORMATION RECORDING AND REPRODUCING APPARATUS WITH OFFSET COMPENSATION CIRCUIT AND METHOD THEREFOR

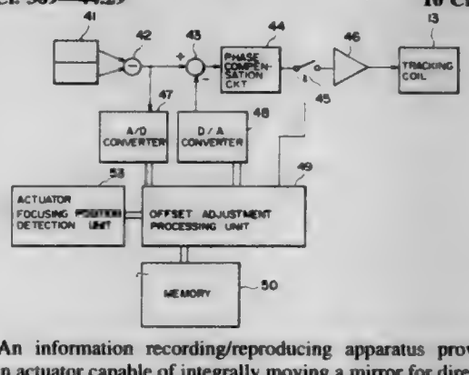
Hisatoshi Baba, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1996, Ser. No. 590,422

Claims priority, application Japan, Jan. 27, 1995, 7-011661

Int. Cl.[6] G11B *7/09*

U.S. Cl. 369—44.29 **10 Claims**



1. An information recording/reproducing apparatus provided with an actuator capable of integrally moving a mirror for directing a light beam from a light source toward a disc surface and an objective lens for condensing the light beam, in the focusing direction, said apparatus comprising:

means for detecting a tracking error signal representing a deviation of the light beam from a track on the disc;

means for measuring an offset value of said tracking error signal, generated by the movement of said actuator in the focusing direction, at a plurality of positions on the disc in a circumferential direction, by utilizing said tracking error signal;

means for correcting said tracking error signal at the plurality of positions on the disc in the circumferential direction, based on said measured offset value; and

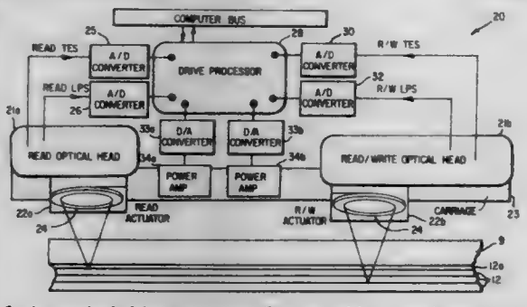
means for moving the position of the light beam on the disc surface in the tracking direction, based on said corrected tracking error signal.

5,796,688

OPTICAL DRIVE APPARATUS FOR USE WITH A MULTILAYER OPTICAL DATA STORAGE DEVICE

Edward Charles Gage, Fairport, and Randall Harry Victora, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 16, 1996, Ser. No. 715,267
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—44.34 **9 Claims**



1. An optical drive apparatus for use with a multilayer optical data storage device, including:

(a) at least two spaced apart storage layers, each of such layers being adapted to store information;

(b) a spacer layer positioned between alternating storage layers;

(c) at least one of the storage layers including tracking information, while another storage layer does not include substantial tracking information; and

(d) writing apparatus including a plurality of radiation beams arranged such that at least one beam is focused on a layer with tracking information and provides tracking information to at least one other beam that is focused on a layer to be written that does not have substantial tracking information; and

(e) means, coupled to the writing apparatus for producing a look-up table containing information of the radial displacement of the two beams, and wherein the radial displacement information is used for controlling the position of the other beam that is focused on the layer to be written that does not have substantial tracking information.

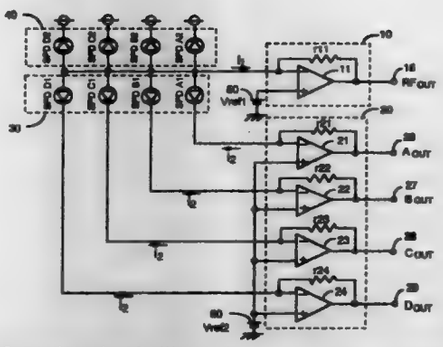
5,796,689

SIGNAL PROCESSING DEVICE FOR OPTICAL PICK-UP AND A SEMICONDUCTOR DEVICE FOR THE OPTICAL PICK-UP

Tatsuya Houmoto, and Fumihide Murao, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Filed Dec. 19, 1996, Ser. No. 770,641
Claims priority, application Japan, May 10, 1996, 8-116618
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—44.41 **12 Claims**

1. A signal processing device for optical pick-up comprising:



an information signal silicon photo diode group comprising a plurality of silicon photo diodes, a first electrode of each of said plurality of silicon photo diodes being directly connected to a common connection node, and a second electrode of each of said silicon photo diodes being connected to a predetermined potential node being supplied with a predetermined electrical potential, wherein each of said plurality of silicon photo diodes is connected in parallel between said predetermined potential node and said common connection node; and

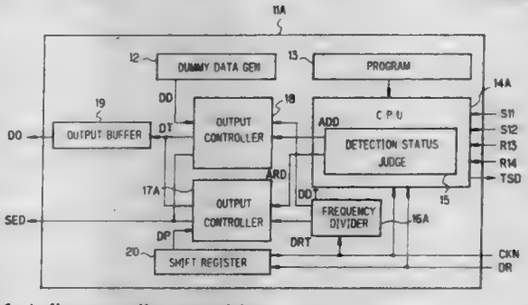
an information signal amplifier including an input node directly connected to said common connection node and an output node for outputting an information signal.

5,796,690

DISC CONTROLLER WITH IMPROVED DATA SYNC AND RE-SYNC MARK DETECTION

Naotaka Kanno, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 428,726, Apr. 25, 1995, abandoned. This application Feb. 4, 1997, Ser. No. 890,029
Claims priority, application Japan, Apr. 26, 1994, 6-088909
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—48 **13 Claims**



1. A disc controller comprising:

disc drive controller means including:

a drive mechanism for driving a disc recording medium and a write/read head;

disc interface means for supplying a write data signal as write target data formatted in a predetermined format to the disc drive controller means and receiving a read signal therefrom;

data formatting means for generating the write data signal from an input and supplying the write data signal to the disc interface means and for receiving the read signal from the disc interface means to output the read signal as a predetermined read signal;

first-in-first-out (FIFO) means for holding the read data in a buffer memory; and

direct-memory-access (DMA) controller means for controlling the transfer of data to the buffer memory,

said disc interface means including:

sync/re-sync mark detection status signal generating means for generating first and second sync mark detection status signals representing a start of a read data area and respec-

tively corresponding to the success and failure of a sync mark for synchronization and also for generating first and second re-sync mark detection status signals respectively corresponding to success and failure of a first one of re-sync marks for re-synchronization each inserted for each cycle of the read data; and

detection window opening means for opening a re-sync mark detection window for detecting a second re-sync mark in response to a data transfer end status signal indicative of an end of transfer of the read data,

said data formatting means including:

read data transferring means for transferring at a predetermined first transfer rate to the FIFO means a predetermined first number of read data between the sync mark and the first re-sync mark in response to the supply of the first sync mark detection status signal and the first number of read data between the first and the next second re-sync marks and also for generating the data transfer end status signal for each transfer of the first number of pieces of data is ended,

said disc controller further comprising:

re-sync mark detection window expanding means for controlling the detection window opening means to advance a timing of opening the re-sync mark detection window for detection of the second re-sync mark in response to the supply of the second sync and re-sync mark detection status signals with respect to an instance of generation of the first sync or re-sync mark detection status signal;

dummy data generating Means for causing the re-sync mark detection window expanding means to generate dummy data substituting for the read data;

detection failure judging means for generating a detection failure signal when judging a failure of detection of the sync and re-sync marks; and

dummy data transferring means for transferring the dummy data at a second rate of transfer rate higher than the first rate of transfer in response to the supply of the detection failure signal and generating the data transfer end status signal whenever the transfer of the predetermined number of dummy data is ended.

5,796,691

SPINDLE SERVO SYSTEM FOR ADJUSTING ROTATIONAL SPEED IN OPTICAL DISK PLAYER

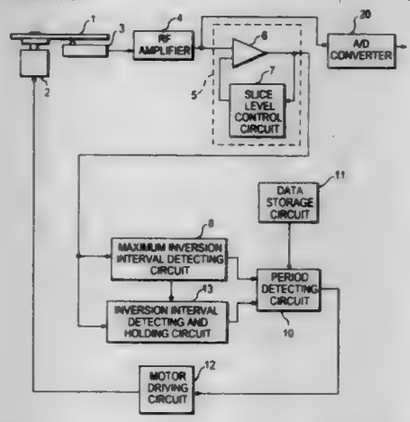
Junichi Furukawa, and Kiyoshi Tateishi, both of Tarugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 24, 1996, Ser. No. 773,034

Claims priority, application Japan, Dec. 28, 1995, 7-343243

Int. Cl.[6] G11B 5/09

U.S. Cl. 369—50 **4 Claims**



1. A spindle servo system for roughly adjusting a rotational speed of a spindle motor for rotationally driving an optical disk at a specified speed in an optical disk player for reproducing digital data composed of run length limited codes and synchronizing signals, the run length limited codes restricted between a minimum run length and a maximum run length, the synchronizing signals composed of a maximum bit pattern with a run length longer than the maximum run length an an additional bit pattern disposed just after the maximum bit pattern with a run length longer than the minimum run length and shorter than the maximum run length, the spindle servo system comprising:

a pickup for reading the digital data from the optical disk;

pattern detecting means for detecting a synchronizing signal composed of the maximum bit pattern and the additional bit pattern from the digital data read by the pickup;

period detecting means for detecting a period of the maximum bit pattern and the additional bit pattern in the synchronizing signal detected by the pattern detecting means; and

motor control means for controlling die rotational speed of the spindle motor according to the period of the maximum bit pattern and the additional bit pattern in the synchronizing signal detected by the period detecting means.

5,796,692

DATA REPRODUCING METHOD AND APPARATUS FOR DETERMINING THE INTERVAL BETWEEN PITS ON A RECORDING MEDIUM FROM A MODULATED READ-OUT SIGNAL

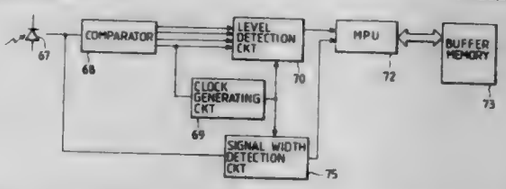
Hideki Hosoya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 296,852, Aug. 25, 1994, Pat. No. 5,408,456, which is a continuation of Ser. No. 649,730, Feb. 1, 1991, abandoned. This application Feb. 15, 1995, Ser. No. 388,968

Claims priority, application Japan, Feb. 2, 1990, 2-22050; Feb. 2, 1990, 2-22051; Feb. 20, 1990, 2-22049; Apr. 4, 1990, 2-88396

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—59 **9 Claims**



1. A method of reproducing data from a recording medium on which data is recorded as the arrangement of pits formed at intervals, said pits including two or more kinds of pits differing in the level of the detection signal when the pit is detected, and two or more kinds of pits differing in the length thereof, the interval between the pits having two or more kinds of values, said method comprising the steps of:

reading out from said medium a signal subjected to modulation by the pits;

detecting the interval between the pits from said read-out signal;

detecting the length of the pits from said read-out signal;

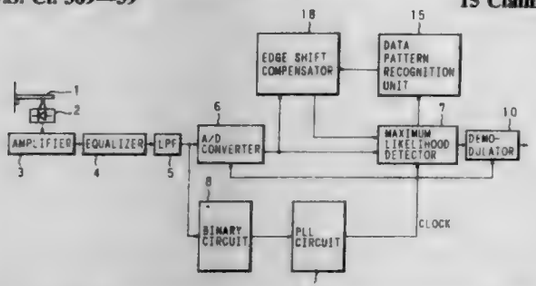
comparing said read-out signal with a plurality of reference values having different values; and

reproducing data from the result of said comparison, said detected pit interval and the detected length of the pits.

5,796,693
DATA REPRODUCTION APPARATUS AND DATA REPRODUCTION METHOD

Masakazu Taguchi; Michio Matsuura; Yoshihide Fujita, and Akihiro Itakura, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 10, 1997, Ser. No. 781,280
Claims priority, application Japan, Sep. 17, 1996, 8-245288
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—59 15 Claims



1. A data reproduction apparatus for reproducing data whose edge position is recorded in an optical disk, comprising:

means for obtaining a reproduction waveform from the optical disk;

a single A/D converter for obtaining a digital value of the obtained reproduction waveform;

means for detecting data by a single maximum likelihood detector in accordance with the converted digital value;

recognizing means for recognizing the pattern of the data recorded in the optical disk; and

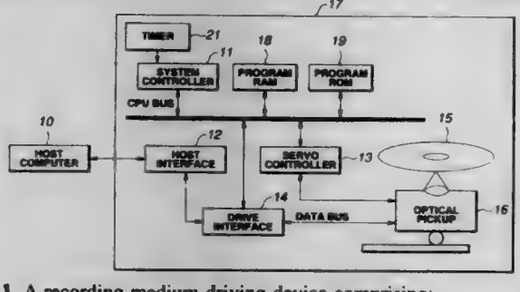
compensating means for compensating an edge shift according to the recognition result by said recognition means;

wherein said maximum likelihood detector effects a maximum likelihood detection in accordance with an amount of compensation from the edge shift compensating means.

5,796,694
METHOD AND APPARATUS FOR DRIVING A RECORDING MEDIUM

Kyoichi Shirane, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Toyko, Japan

Continuation of Ser. No. 702,890, Aug. 26, 1996, abandoned. This application Oct. 24, 1997, Ser. No. 957,186
Claims priority, application Japan, Aug. 31, 1995, 7-224074
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—59 22 Claims



1. A recording medium driving device comprising:

time information generating means for generating time information the value of which is indicative of an actual time of recording;

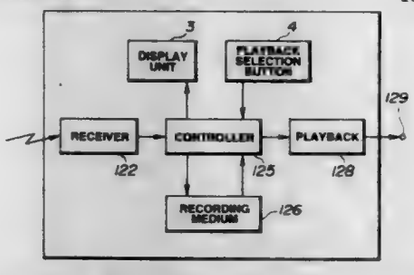
recording data generating means for generating recording data from digital data and the time information and including error code generating means for generating an error correction code for said digital data and the time information; and

data recording means for recording the recording data on a write-once recording medium wherein the time information chances upon a re-recording of recorded data.

5,796,695
INFORMATION TRANSMISSION METHOD AND APPARATUS AND INFORMATION RECEIVING METHOD AND APPARATUS

Kyoya Tsutsui, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 618,130, Mar. 19, 1996, Pat. No. 5,754,501. This application Jun. 18, 1997, Ser. No. 878,294
Claims priority, application Japan, Mar. 30, 1995, 7-073708
Int. Cl.[6] G11B 5/76
U.S. Cl. 369—60 10 Claims



1. An apparatus for receiving information transmitted by a transmitter comprising:

means for receiving the information repeatedly transmitted at a rate higher than a rate of reproduction of the information;

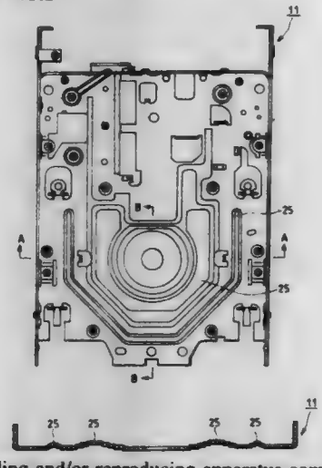
a recording medium for recording the received information; and

control means for recording the reception information on a recording medium from the received repeatedly transmitted information and reproducing the information recorded on the recording medium at said rate of reproduction.

5,796,696
CHASSIS WITH STRENGTHENING RIB HAVING STEPPED SECTION FOR RECORDING AND/OR REPRODUCING A APPARATUS

Osamu Shigenai, and Hideki Ishikawa, both of 1-7 Yukigaya, Otsuka-Cho, Ota-Ku, Tokyo, Japan

Filed Jan. 27, 1995, Ser. No. 379,427
Claims priority, application Japan, Feb. 3, 1994, 6-011812
Int. Cl.[6] G11B 33/02; 17/02
U.S. Cl. 369—75.1 5 Claims



1. A recording and/or reproducing apparatus comprising:

a chassis including a first flat plate;

a holder mounted on the chassis for containing a recording medium, the holder including a second flat plate;

rotation drive means mounted on the chassis for rotating and driving the recording medium;

guide means mounted on the chassis for guiding the holder to one of a recording position and an ejecting position; and

a head movably mounted on the chassis for reading from and writing to the recording medium, and

a supporting portion mounted to the chassis for supporting the rotation drive means,

wherein a continuous portion of the first plate is deformed to form a strengthening rib having a stepped section protruding from said first plate, the strengthening rib is formed in such a manner to at least partially surround the supporting portion, said stepped section including a plurality of continuous flat surfaces which are parallel to said first plate thereby allowing the strengthening rib to occupy a wider area and to increase the strength with less distortion in the chassis.

5,796,697

DISK APPARATUS

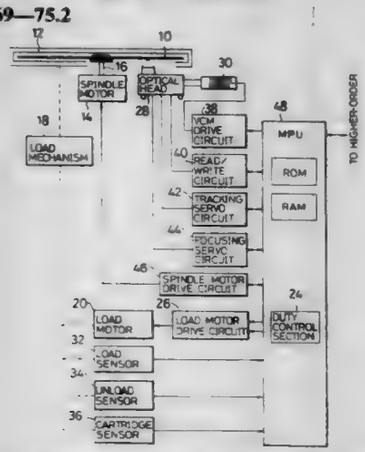
Takashi Masaki; Shigenori Yanagi, and Toru Fujiwara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 79,002, Jun. 17, 1993, abandoned. This application Jul. 16, 1996, Ser. No. 683,121

Claims priority, application Japan, Jul. 3, 1992, 4-176306; Jul. 3, 1992, 4-176307

Int. Cl.[6] **G11B** *33/02*

U.S. Cl. 369—75.2 **14 Claims**



1. A disc apparatus for writing information to and reading information from a recording medium in a cartridge, the disc apparatus comprising:

a housing;

a spindle motor for rotating the recording medium;

a head motor for driving a head in a radial direction of the recording medium;

cartridge loading/unloading means for executing a loading operation to attach the recording medium enclosed in the cartridge inserted from outside of said housing to a rotary shaft of said spindle motor, and for performing an unloading operation to remove the recording medium from the rotary shaft of said spindle motor and to eject the cartridge to the outside of said housing;

a load motor for driving the loading operation of said cartridge loading/unloading means by a rotation in first direction and for driving the unloading operation of said cartridge loading/unloading means by the rotation in an opposite direction to said first direction; and

torque control means for providing a plurality of predetermined on/off periods to control a drive torque of said load motor through the loading operation, for controlling a duty cycle of a drive current of said load motor corresponding to said on/off periods, and for turning on/off said drive current corresponding to said duty cycle through the loading/unloading operation;

wherein said torque control means comprises a processor and a memory, said processor reading data for setting said on/off periods from the memory, and turning on/off said drive current of said load motor in accordance with the data read from said memory, and further wherein said torque control means also comprises a switching means for turning on/off said drive current corresponding to said duty cycle.

5,796,698

DISC APPARATUS

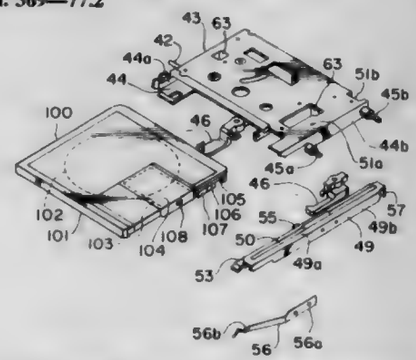
Eiichi Ookawa, Iwate-ken; Hiroto Nishida, Ishikawa-ken; Takashi Suzuki, Tokyo; Hitoshi Watanabe, Morioka, and Toshiaki Sasaki, Chofu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 301,992, Sep. 9, 1994, Pat. No. 5,590,109. This application Jun. 28, 1996, Ser. No. 671,591

Claims priority, application Japan, Sep. 17, 1993, 5-231185; Sep. 17, 1993, 5-231216; Sep. 17, 1993, 5-231217

Int. Cl.[6] **G11B** *33/02; 17/04*

U.S. Cl. 369—77.2 **1 Claim**



1. A disc apparatus comprising a holder for conveying a disc cartridge incorporating a data recording disc and a slide shutter, in a predetermined conveying direction to move said disc cartridge in a loading direction and in an ejecting direction; a shutter opener provided at one side of said holder so as to be reciprocatable in the conveying direction, relative to said holder, said holder and said shutter opener defining a cartridge insertion part, a shutter closing spring having at its one end an engaging part and fixed to said shutter opener, an opening formed in a cartridge insertion part side surface of said shutter opener, for allowing said engaging part of said shutter closing spring to project into said cartridge insertion part, and an escape mechanism provided on said holder, for retracting said engaging part of said shutter closing spring from said cartridge insertion part through said opening when said holder is positioned on a cartridge introducing side, said escape mechanism comprising a holder pin holding said shutter opener, said holder pin for making contact with said shutter closing spring so as to retract said engaging part of said shutter closing spring from said cartridge insertion part through said opening when said holder is positioned on the cartridge introducing side.

5,796,699

Patent Not Issued For This Number

5,796,700

OPTICAL PICKUP TO CIRCULARIZE LIGHT EMITTED FROM A LIGHT SOURCE

Chul-woo Lee; Pyeong-yong Seong, and Dong-ho Shin, all of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

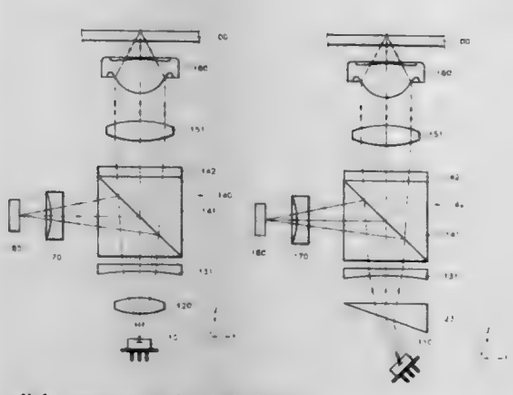
Filed Jun. 12, 1997, Ser. No. 873,740

Claims priority, application Rep. of Korea, Jun. 15, 1996, 96-21678

Int. Cl.[6] **G11B** *7/00*

U.S. Cl. 369—106 **15 Claims**

1. An optical pickup to read from and/or record to a recording medium, comprising:



a light source to emit a light beam;

light path changing means arranged along an optical path of the light, for changing a path along which the light travels;

an objective lens arranged along the optical path between said light path changing means and the recording medium, to converge the light to form a light spot on the recording medium;

a collimating lens arranged along the optical path between said light path changing means and said objective lens, to collimate the light going toward the recording medium;

a cylindrical lens arranged along the optical path between said light source and said collimating lens, to change the light, having an oval shape, into a light having a circular shape;

astigmatic difference correcting means arranged along the optical path between said cylindrical lens and said collimating lens, for correcting an astigmatic difference of the light; and

a photodetector for detecting information and error signals by receiving the light from said light source and reflected from the recording medium.

5,796,701

OPTICAL PICKUP AND OPTO-MAGNETIC SIGNAL REPRODUCING APPARATUS

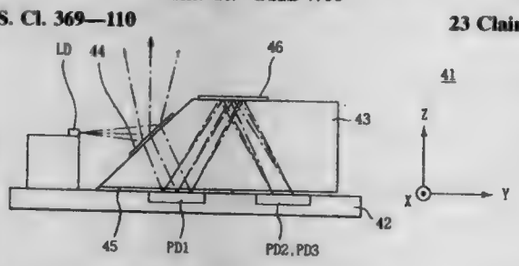
Noriaki Nishi, Chiba; Kimihiro Saito, Saitama; Shuichi Matsumoto, Kanagawa, and Masato Hattori, Chiba, all of Japan, assignors to Sony Corporation, Japan

Filed Jun. 20, 1996, Ser. No. 667,835

Claims priority, application Japan, Jun. 23, 1995, 7-180790

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—110 **23 Claims**



1. An optical pickup apparatus comprising:

a semiconductor substrate on which a plurality of light receiving elements are formed;

a light emitting element for emitting light beam;

a polarization component separation element disposed on said light receiving elements, for separating said light beam into a plurality of separated light beams, wherein said polarization component separation element consists of a unit of a birefringence material which guides the separated light beams to the plurality of light receiving elements.

5,796,702

OPTICAL PICKUP SYSTEM FOR AN OPTICAL DISC PLAYER

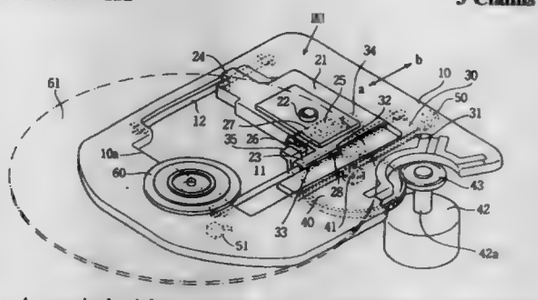
Akira Bessho, Saitama-ken, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 5, 1997, Ser. No. 851,532

Claims priority, application Japan, May 9, 1996, 8-115030

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—112 **5 Claims**



1. An optical pickup system for an optical disc player for reproducing at least two kinds of discs which are different from each other in standard, comprising:

a pickup provided to be moved in a radial direction of said discs within a scan area;

a rack provided to be moved in the radial direction beyond said scan area to over-scan areas at opposite sides of the scan area;

at least two optical elements provided to be moved together with the rack for performing reproduction of the discs;

engaging means for detachably engaging the pickup and the rack in the scan area and in the over-scan areas, respectively;

driving means for moving the rack to the opposite over-scan areas;

a pair of stoppers for stopping the pickup engaged with the rack by the engaging means at opposite ends of the scan area so that relative positions of the pickup to the rack are changed in the over-scan areas, respectively;

said optical elements being arranged to effect the reproduction of a corresponding kind of disc based on the change of the relative position of the pickup.

5,796,703

APPARATUS FOR CONTROLLING AN ELECTRICAL CURRENT PASSED TO A WRITING DEVICE IN AN OPTICAL STORAGE SYSTEM

David L. Schell, Colorado Springs, and David E. Lewis, Black Forest, both of Colo., assignors to Discovision Associates, Irvine, Calif.

Division of Ser. No. 376,882, Jan. 25, 1995. This application Apr. 11, 1995, Ser. No. 426,410

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **8 Claims**

1. An apparatus for controlling an electrical current passed to a writing device in an optical storage system during a data write operation, said apparatus comprising:

a pass device passing said electrical current to said writing device, said pass device having an current input, a current output and a reference input, said reference input determining the magnitude of said electrical current;

a write level source applying one of a set of predetermined reference voltages to said reference input;

a current source connected to said current input, said current source having a voltage input, a voltage output and a voltage output enable, said voltage output having a first voltage level and a second voltage level, said current source supplying said electrical current to said current input only when said voltage output is at said first voltage level, said first voltage level corresponding to said voltage input when said voltage output is enabled;

a voltage source providing a voltage to said voltage input when said writing device is to be activated; and



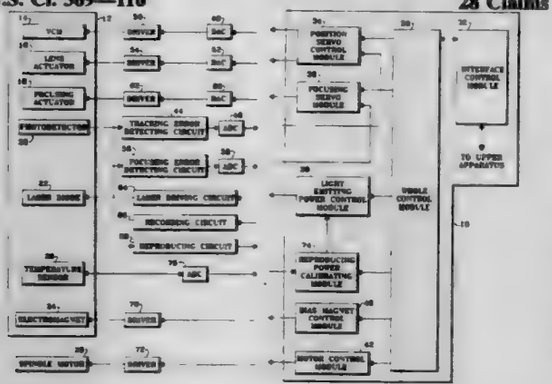
a write pulse generator connected to said voltage output enable, said write pulse generator generating a pulse train representing data during said write operation, said pulse train causing said voltage output to switch between said second voltage level and said first voltage level so that electrical power is consumed only when said writing device is energized and said writing device is protected from current spikes while enhanced rise and fall switching characteristics are achieved.

5,796,704

OPTICAL DISK APPARATUS AND RECORDING AND REPRODUCING METHOD OF OPTICAL RECORDING MEDIUM

Yoshiyuki Nanba, and Masaharu Moritsugu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 19, 1995, Ser. No. 530,705
Claims priority, application Japan, Feb. 17, 1995, 7-028943
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—116 **28 Claims**



1. An optical disk apparatus comprising:

an optical recording medium having at least a writing layer to record data and a readout layer to reproduce the data recorded in said writing layer on a substrate;

a recording unit for recording the data to said writing layer of said optical recording medium at a recording density smaller than a diameter of a focal spot of a laser beam;

a reproducing unit for reproducing the data recorded in said writing layer of said optical recording medium at the recording density smaller than said focal spot diameter by setting a reproducing laser power to a proper value; and

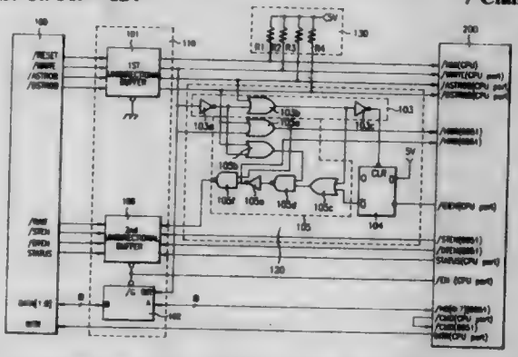
a reproduction power calibrating module for deciding an optimum value of the reproducing laser power which is used in said reproducing unit by executing a reproducing operation of said optical recording medium.

5,796,705

ENHANCED PARALLEL PORT ADAPTOR FOR INTERFACING A PC TO A CD-ROM DRIVER

Yong Jun Kim, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Aug. 29, 1995, Ser. No. 520,488
Claims priority, application Rep. of Korea, Aug. 29, 1994, 21434/1994
Int. Cl.[6] G06F *15/80;15/16;* G11B *7/00*
U.S. Cl. 369—124 **7 Claims**



1. Enhanced parallel port (EPP) adaptor for interfacing a PC to a CD-ROM driver via an enhanced PC parallel port comprising:

a first unidirectional buffer for storing control signals in the form of EPP standard outputted from the enhanced PC parallel port;

a bidirectional buffer for transferring data between the PC and the CD-ROM driver; and

a means for converting the control signals in the form of EPP standard outputted from the first unidirectional buffer into CD-ROM standard, and converting the control signals in the form of CD-ROM standard into the control signals in the form of EPP standard.

5,796,706

INFORMATION RECORDING APPARATUS

Toshimichi Shintani, Koganei; Ryo Imura, Tokorozawa; Kimio Nakamura, Kokubunji, and Sumio Hosaka, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

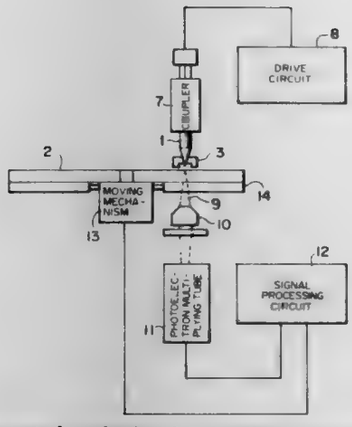
Continuation of Ser. No. 629,294, Apr. 8, 1996, abandoned.
This application Nov. 24, 1997, Ser. No. 976,505
Claims priority, application Japan, Apr. 11, 1995, 7-085081
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—126 **4 Claims**

1. An information recording apparatus for recording an information signal converted to a digital signal or an analog signal on a medium and reproducing said recorded information signal, comprising:

a probe for recording said information signal on said medium at a certain recording density selected from the range of 1×10^{11} bits/inch^2 to 1.3×10^{16} bits/inch^2;

a slider supporting said probe, wherein said slider has a structure by which air flow caused by the movement of the medium can be conducted between the probe and the medium and the probe is elevated from the medium by the air flow so that the top of the probe is left by a predetermined distance from the surface of the medium;

a signal processing circuit for processing said signal at a certain speed selected from the range of 100 MHZ to 1 GHz when said recorded information is read out by said probe; and



, a tracking control mechanism for controlling the position of said probe on said medium.

5,796,707

OPTICAL RECORDING AND REPRODUCING APPARATUS HAVING MEANS FOR CORRECTING INSTALLATION ANGLE OF SPINDLE MOTOR

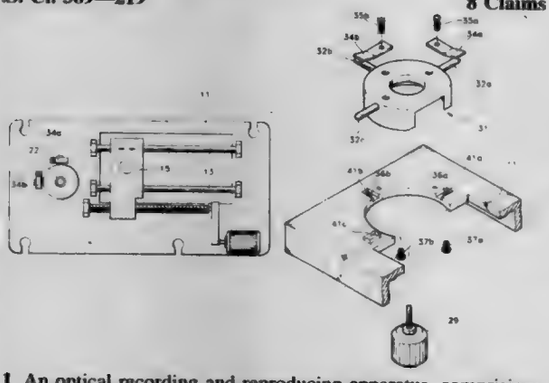
Seung-min Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 9, 1996, Ser. No. 731,015

Claims priority, application Rep. of Korea, Apr. 23, 1996, 96-12407

Int. Cl.[6] G11B *19/20*

U.S. Cl. 369—219 **8 Claims**



1. An optical recording and reproducing apparatus, comprising:

a deck;

a spindle motor having a shaft and installed on said deck;

a turn table attached to the shaft of said spindle motor; and

means for correcting the installation angle of said spindle motor in order to correct the tilt angle of said turn table in multiple directions, wherein a plurality of grooves are formed in said deck, said grooves having a plurality of adjusting screw holes formed in respective bottom portions thereof, and wherein said correcting means comprises:

a motor housing for housing said spindle motor, said motor housing having a plurality of horizontal protrusions formed on an outer surface thereof, said protrusions being inserted in and supported by said plurality of grooves;

elastic members fixed on an upper surface of said deck, for flexibly pressing said plurality of horizontal protrusions against said plurality of grooves; and

correcting screws inserted into said adjusting screw holes and end portions of said correcting screws contacting the bottom surfaces of said horizontal protrusions.

5,796,708

OPTICAL RECORDING MEDIUM AND RECORDING SYSTEM

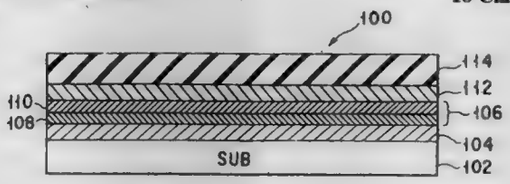
Hideki Ohkawa; Motonari Matsubara; Tomohisa Yoshimaru, all of Yokohama; Nobuhisa Yoshida, Zushi, and Satoru Koyahara, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

PCT No. PCT/JP93/00782, § 371 Date Nov. 8, 1995, § 102(e) Date Nov. 8, 1995, PCT Pub. No. WO94/29856, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 11, 1993, Ser. No. 556,992

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—283 **16 Claims**



1. An optical recording medium for recording information, comprising:

an organic substrate;

a recording layer comprising a first sublayer disposed on a predetermined portion of the substrate and a second sublayer disposed on the first sublayer;

the first sublayer being substantially composed of a mixture of Ge, Sb, and Te, and the second sublayer being substantially composed of a mixture of Bi and Te;

a first inorganic protective layer between the recording layer and the substrate;

a second inorganic protective layer disposed on the second sublayer; and

an organic plasma polymer film disposed on the second inorganic protective layer.

5,796,709

DISK REPRODUCTING APPARATUS HAVING IMPROVED CONNECTION BETWEEN THE CENTERING MEMBER AND TURNTABLE

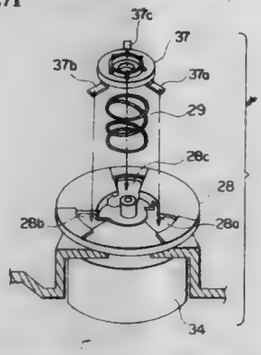
Makoto Ootsuka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 4, 1995, Ser. No. 538,940

Claims priority, application Japan, Oct. 4, 1994, 6-240434

Int. Cl.[6] G11B *23/00;25/04*

U.S. Cl. 369—271 **5 Claims**



1. A disc reproducing apparatus, comprising:

a turntable for holding and rotating a disc, said turntable having an upper surface with a plurality of hole portions formed therein;

a motor for driving said turntable;

a centering member for receiving a center hole of the disc so as to align the disc with the center of said turntable, said centering member including a plurality of radially extending protrusion portions formed thereabout, said protrusion portions being constructed and arranged to secure said centering mem-

ber to said turntable, said protrusion portions capable of being simultaneously inserted into the hole portions in the upper surface of said turntable and moved about the center of said centering member for a predetermined angle upon rotation of the centering member; and

a securing structure constructed and arranged to secure said protrusion portions of said centering member inserted into the hole portions of said turntable after the centering member is rotated to thereby secure said centering member to said turntable, said securing structure including:

(i) a plurality of stoppers formed adjacent to the hole portions of said turntable and projecting downwardly with respect to said upper surface of said turntable, said stoppers being adapted to engage said protrusion portions to thereby prevent said protrusion portions from reversely rotating and aligning with said hole portions after said centering member is secured to said turntable; and

(ii) an elastic member for elastically supporting said centering member on said turntable, said elastic member biasing said protrusion portions which have been inserted and moved in the hole portions towards a position in which said protrusion portions are axially aligned with said stoppers, said elastic member maintaining said protrusion portions aligned with said stoppers so that said stoppers prevent said protrusion portions from reversely rotating and aligning with said hole portions.

5,796,710

INFORMATION RECORDING MEDIUM ENCODED TO ENABLE TRACK FOLLOWING AND METHOD OF RECORDING

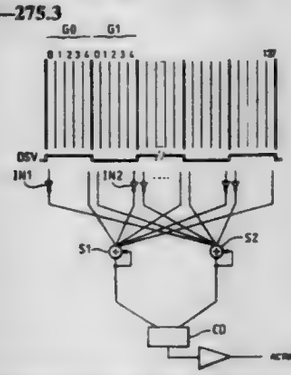
François Maurice, Verrieres le Buisson; Joseph Colineau, Bures S/Yvette; Charaf Hanna, Strasbourg, and Michel Sonrier, Bois d'Arcy, all of France, assignors to Thomson-CSF, Paris, and Thomson Consumer Electronics, Courbevoie, both of France

Division of Ser. No. 256,907, Aug. 9, 1994, Pat. No. 5,640,285. This application Mar. 7, 1997, Ser. No. 813,119

Claims priority, application France, Dec. 22, 1992, 92 15473

Int. Cl.[6] G11B 7/24

U.S. Cl. 369—275.3 **14 Claims**



1. Information recording medium in which the information elements are recorded in tracks located side by side, in which on each track the information elements are encoded, characterized in that the encoding of first identified tracks is done so that said first identified tracks have a continuous component with a first value while the encoding of second tracks of the recording medium is done so that said second tracks have a continuous component with a second value different from said first value wherein each one of said first identified tracks is in an alternating relationship with each one of said second tracks to form said side by side tracks.

5,796,711

OPTICAL DISC HAVING PLURAL ZONES OF RECORDING TRACKS

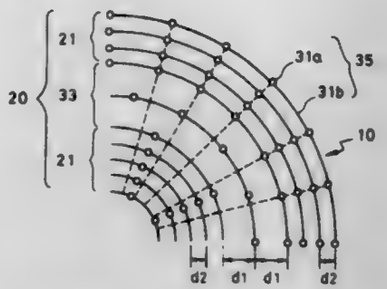
Yoshimi Tomita, and Hideki Hayashi, both of Tsurugashima, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 24, 1994, Ser. No. 295,256

Claims priority, application Japan, Aug. 26, 1993, 5-211784; Dec. 1, 1993, 5-301861

Int. Cl.[6] G11B 7/24

U.S. Cl. 369—275.4 **7 Claims**



1. An optical disc in which a circular recording area comprising either a plurality of concentric tracks or a spiral recording track carrying information signals including sync signals is divided into a plurality of zones by circular boundary areas, wherein:

each said recording track is constituted by a plurality of sectors each comprising a servo area and a data area,

said servo areas are located on straight lines in radial directions in each of said zones, and

a radial track pitch of said boundary area is larger than a radial track pitch within said zones.

5,796,712

OPTICAL DISK HAVING IDENTIFICATION SIGNAL RECORDED BETWEEN AND USED IN COMMON FOR TWO MUTUALLY ADJACENT TRACKS AND OPTICAL DISK UNIT THEREFOR

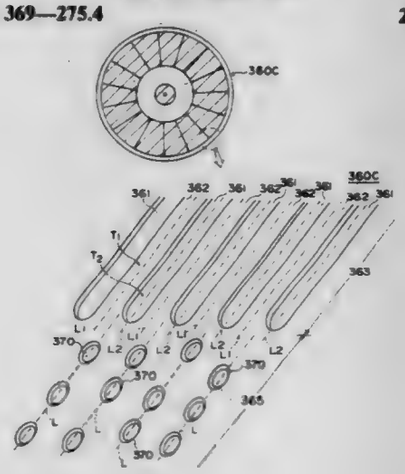
Mineo Moribe; Miyozo Maeda; Susumu Satoh, and Kyoko Miyabe, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 336,210, Nov. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 25,637, Mar. 2, 1993, Pat. No. 5,402,411. This application Jan. 8, 1997, Ser. No. 780,717

Claims priority, application Japan, Mar. 5, 1992, 4-048901; Aug. 27, 1992, 4-228526; Oct. 20, 1992, 4-281975

Int. Cl.[6] G11B 7/24

U.S. Cl. 369—275.4 **26 Claims**



1. An optical disk comprising:

a disk-shaped substrate having a surface;

a first track and a second track provided on the surface of the substrate, said first and second tracks being two mutually adjacent concentric tracks or two mutually adjacent track turns of a single spiral track, said first track extending along a first center line, said second track extending along a second center line; and

an identification signal recording part extending along a third center line and prerecorded with an identification signal including at least a sector number and a track number for identifying a position on the optical disk,

said third center line being arranged between the first and second center lines,

said identification signal prerecorded in said identification signal recording part being used in common for said first and second tracks on both sides of said identification signal recording part,

wherein the first track and the second track are information storable regions.

5,796,713

DISC CARTRIDGE WITH OPENING DETECTOR

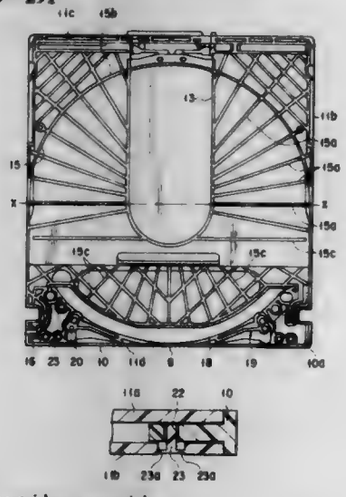
Satoshi Tanaka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 11, 1996, Ser. No. 730,293

Claims priority, application Japan, Oct. 13, 1995, 7-265861

Int. Cl.[6] G11B *23/03*

U.S. Cl. 369—291 **12 Claims**



1. A disc cartridge comprising:

a cartridge body for storing a disc-like recording medium, the recording medium contained rotatable in the cartridge body, the cartridge body including an opening portion for exposing a part of a surface of the recording medium, and a disc inlet/outlet port for taking out and putting in the recording medium;

a shutter slidably mounted on the cartridge body, for opening/closing the opening portion;

a lid member mounted on the cartridge body to be movable between a closed position wherein the lid member closes the disc inlet/outlet port and an opened position wherein the lid member opens the disc inlet/outlet port; and

opening detect means for detecting whether the lid member has been moved and the disc inlet/out port has ever been opened, wherein the opening detect means includes an engage portion provided on the lid member, and a detecting convex portion provided at the cartridge body and engaged with the engage portion of the lid member in the closed position, the detecting convex portion being removable from the cartridge body by opening movement of the lid member so as to indicate that the lid member has been opened.

5,796,714

OPTICAL MODULE HAVING A VERTICAL-CAVITY SURFACE-EMITTING LASER

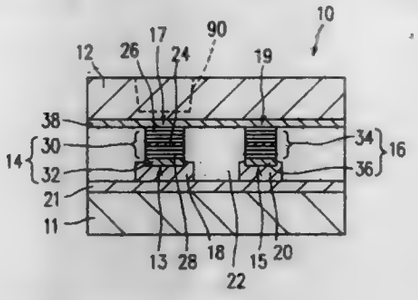
Toyoji Chino, Toyonaka; Kenichi Matsuda, Moriguchi; Takayuki Yoshida, Neyagawa, and Kenzo Hatada, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 25, 1995, Ser. No. 533,364

Claims priority, application Japan, Sep. 28, 1994, 6-233834

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—50 **51 Claims**



1. An optical module comprising:

a first substrate;

a vertical-cavity surface-emitting laser comprising an upper surface, a bottom surface and a semiconductor multi-layered structure including at least a light-emitting layer, the vertical-cavity surface-emitting laser being supported on the first substrate;

an electrode structure provided at a different position in the vicinity of the vertical-cavity surface-emitting laser, the electrode structure being electrically connected with the bottom surface of the adjacent vertical-cavity surface-emitting laser for realizing carrier injection between vertical-cavity surface-emitting laser and the electrode structure adjacent thereto, and the electrode structure being supported on the first substrate; and

a second substrate comprising a first bump and a second bump,

wherein an upper surface of the electrode structure and the upper surface of the vertical-cavity surface-emitting laser jut out from the first substrate, and the second substrate is positioned with respect to the first substrate so that the first bump and the second bump come into contact with the upper surface of the electrode structure and the upper surface of the vertical-cavity surface-emitting laser, respectively, and

each of the first bump and the second bump is made of a material which respectively accomplishes electrical bonding between the first bump and the electrode structure and electrical bonding between the second bump and the vertical-cavity surface-emitting laser without involving melting of the first bump and the second bump.

5,796,715

NON-BLOCKING DYNAMIC FAST PACKET SWITCH FOR SATELLITE COMMUNICATION SYSTEM

David Palmer Patterson, Los Altos, and Moshe L. Liron, Palo Alto, both of Calif., assignors to Teledesic Corporation, Kirkland, Wash.

Continuation-in-part of Ser. No. 790,805, Nov. 8, 1991, abandoned. This application May 12, 1994, Ser. No. 241,984

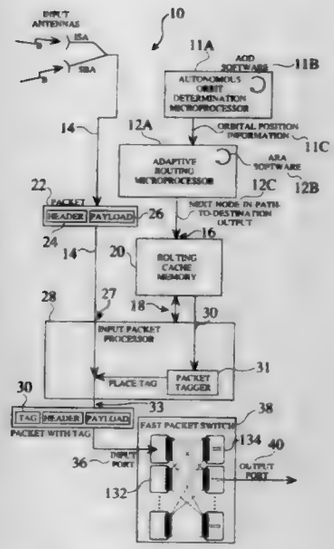
Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—60 **1 Claim**

1. Apparatus for directing a packet (**22**) having a header (**24**) and a payload (**26**) onboard a satellite (S) in earth orbit comprising:

an autonomous orbit determination microprocessor (**11A**);

said autonomous orbit determination microprocessor (**11A**) having a stored and continuously running autonomous orbit determination software (**11B**);



said autonomous orbit determination microprocessor (11A) further having an output containing orbital position information (11C);

an adaptive routing microprocessor (12A);

said adaptive routing microprocessor (12A) being coupled to said autonomous orbit determination microprocessor (11A);

said adaptive routing microprocessor (12A) having a stored and continuously running adaptive routing software (12B);

said adaptive routing microprocessor (12A) having an output containing a next-node-in-path-to-destination output (12C) derived from said output containing orbital position information (11C);

a routing cache memory (20);

said routing cache memory (20) being coupled to said output of said adaptive routing microprocessor (12A), containing a next-node-in-path-to-destination output (12C);

said routing cache memory (20) having a plurality of fast packet switch output port tags (30) stored in memory, each of said fast packet switch output port tags (30) being indexed by a supercell address (21A) which is part of said header (24);

an input packet processor (28);

said input packet processor (28) being coupled to said routing cache memory (20);

said input packet processor (28) having an input (27) through which said packet (22) is received;

said input packet processor (28) having a software program which extracts said supercell address (21A) from said header (24) of said packet (22);

said input packet processor (28) further having a software program which uses said supercell address (21A) as an index to read one of said plurality of fast packet switch output port tags (30) from said routing cache memory (20);

said input packet processor (28) also having a packet tagger (31); said packet tagger having an output in which one of said fast packet switch output port tags (30) is prepended to said packet (22) to create a tagged packet (34); and

a fast packet switch (38);

said fast packet switch (38) including

a plurality of input ports (36), through one of which said plurality of input ports (36), said tagged packet (34) is received;

a plurality of output ports (40);

a plurality of multi-stage self-routing switch modules (132);

a plurality of asynchronous packet multiplexors (134); said plurality of asynchronous packet multiplexors (134) being coupled to said plurality of multi-stage self-routing switch modules (132); and

said plurality of multi-stage self-routing switch modules (132) and said plurality of asynchronous packet multiplexors (134) cooperating together to uniquely route said tagged packet (34) to one of said plurality of output ports (40) without contention with any other tagged packet (34).

5,796,716

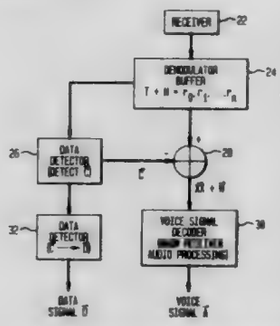
METHOD AND APPARATUS FOR SIMULTANEOUS VOICE/DATA TRANSMISSION

Richard Kent Smith, Seminole, Fla., assignor to Paradyne Corporation, Largo, Fla.

Filed Nov. 27, 1995, Ser. No. 562,954

Int. Cl.[6] H04J *11/00*

U.S. Cl. 370—207 **20 Claims**



1. A method of simultaneous voice/data transmission, comprising the steps of:

receiving at a transmitter and coding a time-varying user data signal using a selected coded signal sequence of a predetermined coding scheme defined by a plurality of permissible coded signal sequences to produce a coded data signal sequence;

receiving at the transmitter and coding a time-varying voice signal;

combining the coded data signal sequence with the coded voice signal;

transmitting the combined coded voice and coded data signals along a single communication channel to a receiver;

receiving the combined coded voice and coded data signals in the receiver;

buffering the combined coded voice and coded data signals received in the receiver over a predetermined period of time to define a buffered coded data signal sequence;

comparing the buffered coded data signal sequence with each of the plural permissible coded signal sequences to identify the selected coded signal sequence with which the user data signal was coded;

subtracting each coded data signal of the identified coded data signal sequence from the buffered combined coded voice and coded data -signal from which the selected coded signal sequence was identified to recover the coded voice signal; and

decoding the recovered coded voice signal and the identified coded data signal sequence to recover the voice and data signals received at the transmitter.

5,796,717

SYSTEM FOR SWITCHING FROM WORKING UNITS TO STAND-BY UNITS

Masahiro Shinbashi, Kawasaki, and Takashi Wakabayashi, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

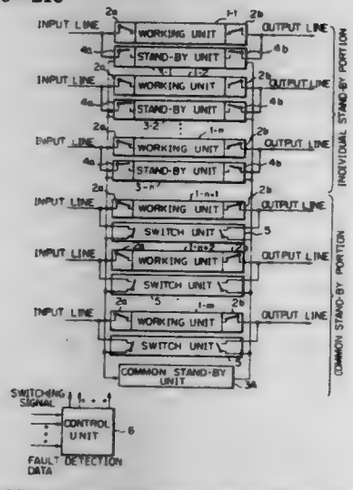
Continuation of Ser. No. 336,614, Apr. 6, 1989, Pat. No. 5,014,261, which is a continuation of Ser. No. 1,029, Jan. 7, 1987, abandoned. This application Dec. 3, 1990, Ser. No. 621,005

Claims priority, application Japan, Jan. 7, 1986, 61-000306

The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.

Int. Cl.[6] H04J *1/16*

U.S. Cl. 370—216 **8 Claims**



1. A switching system for data operation units, able to switch input and output lines from working units to individual stand-by units and a common stand-by unit, comprising:

an-electrical wiring arrangement for providing connections from the input and output lines to a plurality of first locations, each provided for one of the working units, and a plurality of second locations, each provided for one of an individual stand-by unit and a switching unit, said electrical wiring arrangement providing electrical connections in parallel to pairs of the first and second locations and between all of the second locations and a third location provided for the common stand-by unit, the switching unit, when mounted at one of the second locations, providing switchable connection between the input and output lines for a corresponding working unit and the common stand-by unit in response to a signal.

5,796,718

METHOD OF AND SYSTEM FOR INTELLIGENT ACCESS LINE PROTECT SWITCHING

Terry A. Caterisano, Allen, Tex., assignor to MCI Communications Corporation, Washington, D.C.

Filed Sep. 30, 1996, Ser. No. 720,414

Int. Cl.[6] G06F *11/20;* **H04J** *3/14*

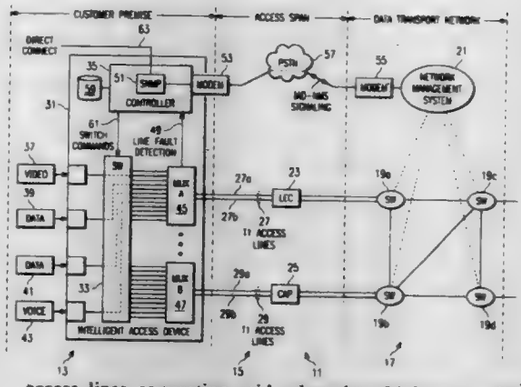
U.S. Cl. 370—217 **22 Claims**

7. A system for providing access line protection between a customer premises and a data transport network, said data transport network including a network management system, said system for providing access line protection comprising:

a customer premises switch;

a plurality of multiplexers connected to said customer premises switch, each of said multiplexers being connected to an access line and each of said access lines being connected to a separate switch of said data transport network;

means for operating said customer premises switch to route selected calls from said customer premises to selected ones of said multiplexers, thereby to establish a connection over



access lines connecting said selected multiplexers and said separate switches of said data transport network;

means for detecting a line fault at said multiplexers;

means for sending a query to said network management system to determine the origin of a line fault detected at a multiplexer;

means, responsive to receipt of a response to a query that indicates that a line fault originated in the access line connecting a selected multiplexer to a selected switch of said data transport network, for operating said customer premises switch to route at least some of said selected calls carried on said selected multiplexer to an alternative one of said multiplexers, thereby to connect said selected calls to said data transport network through an alternative access line.

5,796,719

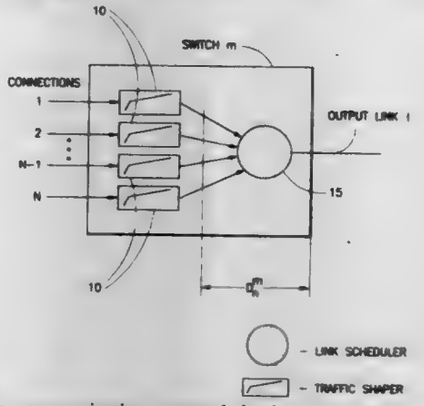
TRAFFIC FLOW REGULATION TO GUARANTEE END-TO-END DELAY IN PACKET SWITCHED NETWORKS

Vinod Gerard John Peris, Croton-on-Hudson, N.Y.; Leonidas Georgiadis, Thessaloniki, Greece; Roch Andre Guerin, Yorktown Heights, N.Y., and Subir Varma, San Jose, Calif., assignors to International Business Corporation, Armonk, N.Y.

Filed Jun. 6, 1996, Ser. No. 659,458

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—231 **5 Claims**



1. In a communications network having a plurality of packet switching nodes and providing a requested end-to-end delay guarantee to a sequence of packets of a connection having pre-determined traffic characteristics, each of said nodes having a leaky bucket and scheduler to regulate the flow of said packets therethrough, said network thus having a plurality of leaky buckets and schedulers, a method of transmitting said packets of said connection through a path of said network, said method comprising:

(a) setting initial values for parameters of said leaky buckets of said nodes of said path based upon said pre-determined traffic characteristics of said connection;

(b) determining an access delay bound for said packets of said connection from said pre-determined traffic characteristics of said connection and said values for said parameters;

(c) determining upper bounds on the scheduler delays that would be experienced by said packets of said connection at those of said nodes of said path based upon said values for said parameters;

(d) updating said values for said parameters if the sum of said access delay bound and said upper bound on scheduler delays as well as the propagation delays for all of said nodes on said path is outside a fixed interval;

(e) repeating steps (b) through (d) with said updated values for said parameters determined in step (d), instead of with said initial values, until said sum is within said interval; and

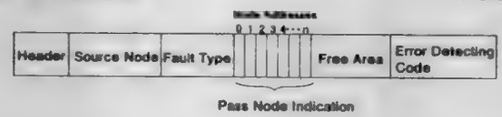
(f) transmitting said packets of said connection through said path, where the flow of said packets will be regulated at each of said nodes by a corresponding one of said leaky buckets and a corresponding one of said schedulers, where said updated values for said parameters for said leaky buckets are set in accordance with said updated values for said parameters determined in step (e), so as to ensure that each of said packets of said connection will be transmitted through said path within said end-to-end delay guarantee.

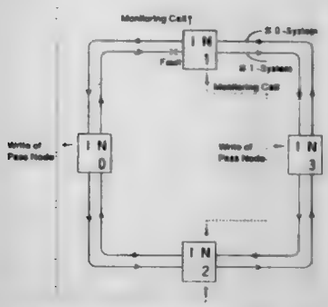
5,796,720

CONTROL METHOD OF ASYNCHRONOUS DATA COMMUNICATIONS

Toshiyuki Yoshida; Takaharu Kajiwara; Yushi Murata; Naoki Sase, and Masashi Hirome, all of Fukuoka, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 6, 1996, Ser. No. 597,645
Claims priority, application Japan, Jul. 5, 1995, 7-169943
Int. Cl.[6] H04J *3/14*
U.S. Cl. 370—245 **6 Claims**





1. A communication control method for a network including duplexed ring transmission lines and a plurality of communication controlling devices each accommodating a plurality of terminals and adapted to transmit data sent from any of the terminals and receive data over the ring transmission lines, the communication control method comprising the steps of:

causing one communication controlling device to transmit monitoring cells simultaneously over the duplexed transmission lines, the monitoring cells each including a pass indication area for retaining a source address and identification information for identifying a passed communication controlling device; and

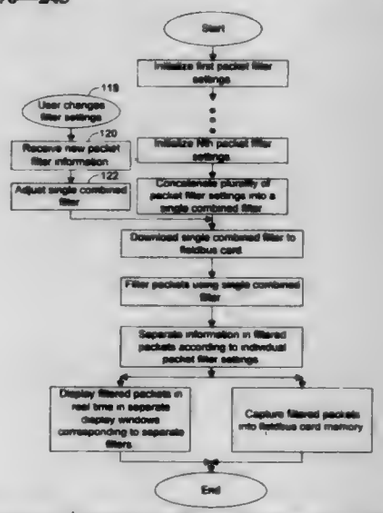
causing another communication controlling device which receives the monitoring cells respectively from the duplexed transmission lines to relay and circulate the monitoring cells respectively over the duplexed transmission lines after writing in the pass indication area of each of the received monitoring cells data indicative of passage indicating that each of said monitoring cells has passed through said another communication controlling device.

5,796,721

METHOD AND SYSTEM FOR MONITORING FIELDBUS NETWORK WITH DYNAMICALLY ALTERABLE PACKET FILTER

Robert E. Gretta, Jr., Austin, Tex., assignor to National Instruments Corporation, Austin, Tex.

Filed Jun. 21, 1996, Ser. No. 666,117
Int. Cl.[6] H04J *3/14*; **G06F** *11/00*
U.S. Cl. 370—245 **10 Claims**



1. A method of monitoring fieldbus packets on a fieldbus network using a monitor configured on the fieldbus network to receive the fieldbus packets, wherein the monitor includes a display screen, the method comprising:

initializing a first packet filter;

filtering said fieldbus packets with said first filter to produce filtered data;

capturing said filtered data, wherein said capturing includes storing said filtered data in a memory of said fieldbus monitor; and

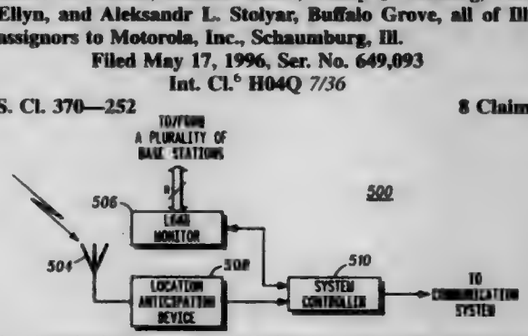
dynamically altering said first filter to produce an altered filter, wherein said fieldbus packets filtered after said dynamically altering are filtered with said altered filter and, wherein said dynamically altering occurs without substantially interrupting said filtering.

5,796,722

METHOD AND APPARATUS FOR DYNAMIC LOAD BALANCING USING HANDOFF

Michael D. Kotzin, Buffalo Grove; Philip J. Fleming, Glen Ellyn, and Aleksandr L. Stolyar, Buffalo Grove, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 17, 1996, Ser. No. 649,093
Int. Cl.[6] H04Q *7/36*
U.S. Cl. 370—252 **8 Claims**



1. A method of dynamically balancing call traffic (load) of a plurality of subscribers among a plurality of carriers in a multicar-

rier wireless communication system, the plurality of subscribers in communication with a base-station via the plurality of carriers, the method comprising the steps of:

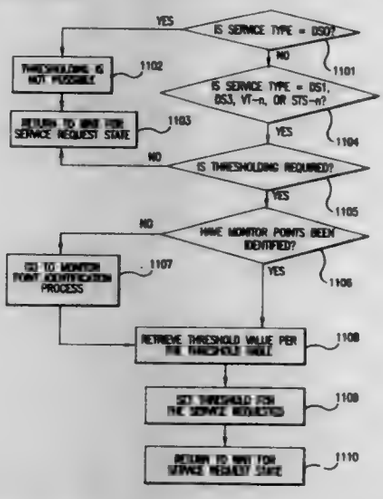
classifying each subscriber of the plurality of subscribers within the communication system into a class category based on a metric corresponding to each of the plurality of subscribers; and

balancing the load of the plurality of subscribers among the plurality of carriers based on the class category of each of the plurality of subscribers.

5,796,723
SYSTEM AND METHOD FOR END-TO-END THRESHOLD SETTING

Michael Bencheck, Garland; Robert Branton, Farmers Branch; Curtis Brownmiller, Richardson; Mark DeMoss, The Colony; Steve Landon, Richardson, and Minh T. Tran, Plano, all of Tex., assignors to MCI Communications Corporation, Washington, D.C.

Filed Jun. 28, 1996, Ser. No. 670,845
Int. Cl.[6] H04J *3/14;* **H04L** *12/26*
U.S. Cl. 370—252 **16 Claims**



1. A method of setting end-to-end thresholds for measuring and monitoring circuits in a telecommunications network, comprising the steps of:

(1) receiving a service provisioning request identifying termination points and a level of service identifying a quality of service desired by a customer;

(2) identifying a path topology for a provisioned channel between said termination points, said provisioned channel having said level of service;

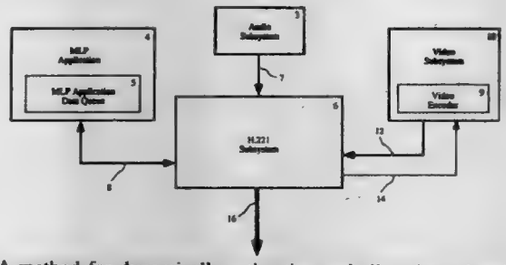
(3) if one or more monitoring points for monitoring a performance of said circuits have not been preassigned for said provisioned channel, assigning one or more monitoring points for monitoring a performance of said circuits along said provisioned channel;

(4) setting the end-to-end thresholds for said provisioned channel by assigning threshold levels at said one or more monitoring points based upon said service provisioning request to indicate when said one or more monitoring points are required to report an error or a potential occurrence of an error.

5,796,724
METHOD AND APPARATUS FOR PARTITIONING TRANSMISSION BANDWIDTH AMONG DIFFERENT DATA STREAMS

Krishnan Rajamani, and Krishnaswamy Viswanathan, both of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 28, 1995, Ser. No. 580,190
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—263 **16 Claims**



1. A method for dynamically estimating and allocating a bandwidth having a first portion and a second portion comprising the steps of:

measuring a utilization level of said first portion of said bandwidth by a first application by examining an amount of an unused portion of said first portion of said bandwidth;

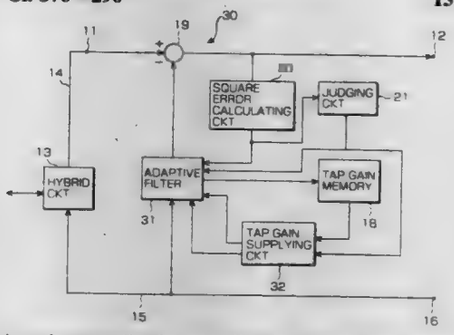
detecting whether said utilization level is outside of a predetermined range and whether a predetermined amount of data generated by said first application has been queued for transmission; and,

changing an allocation of said first portion and said second portion of said bandwidth based on said detecting step.

5,796,725
ECHO CANCELLER CAPABLE OF CANCELLING AN ECHO SIGNAL AT A HIGH SPEED

Shinya Muraoka, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 30, 1995, Ser. No. 521,434
Claims priority, application Japan, Aug. 31, 1994, 6-206185
Int. Cl.[6] H04B *3/23*
U.S. Cl. 370—290 **15 Claims**



1. An echo canceller for cancelling an echo signal produced on a transmission path on the basis of a received signal which is received through a reception path, said echo canceller comprising:

first producing means for producing an error signal representative of an error level between said echo signal and a pseudo-echo signal;

second producing means, supplied with said error signal, for producing selected tap gains of first through N-th tap gains as output tap gains when said error level is less than a predetermined threshold level, where N represents a positive integer which is not less than one and, said second producing means producing said first through N-th tap gains as said output tap gains when said error level is not less than said predetermined threshold level; and

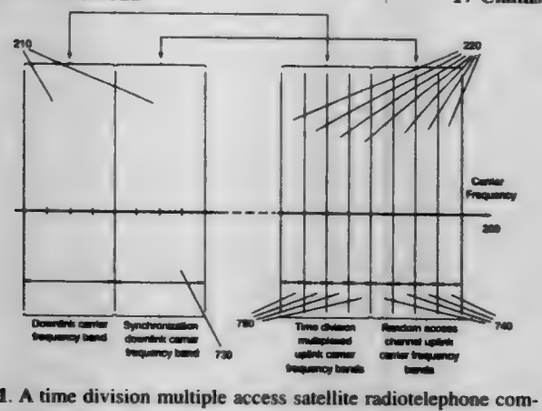
adaptive filter means for filtering said received signal into a filtered signal in accordance with said output tap gains to produce said filtered signal as said pseudo-echo signal, said adaptive filter means renewing said output tap gains into renewal tap gains in accordance with said received signal and said error signal.

5,796,726

SYSTEMS AND METHODS FOR RANDOM ACCESS IN TIME DIVISION MULTIPLE ACCESS SATELLITE RADIOTELEPHONE COMMUNICATIONS

Amer Hassan; Rajaram Ramesh; Stanley L. Reinhold, all of Cary; Larry W. Massengill, Selma, and Yi-Pin Eric Wang, Raleigh, all of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Apr. 8, 1996, Ser. No. 629,358
Int. Cl.[6] H04B *7/185*; H04T *4/00*
U.S. Cl. 370—322 **17 Claims**



1. A time division multiple access satellite radiotelephone communications system for communicating radiotelephone communications signals between at least one satellite and at least one radiotelephone over a carrier frequency spectrum including a plurality of downlink carrier frequency bands and a plurality of uplink carrier frequency bands, the system comprising:

downlink communicating means, responsive to the at least one satellite, for communicating radiotelephone communications signals from the at least one satellite to the at least one radiotelephone over the plurality of downlink carrier frequency bands; and

uplink communicating means, responsive to the at least one radiotelephone, for communicating radiotelephone communications signals from the at least one radiotelephone to the at least one satellite over the plurality of uplink carrier frequency bands, said uplink communicating means comprising:

time division multiplexed signal communicating means for communicating time division multiplexed radiotelephone communications signals over a time division multiplexed uplink carrier frequency band of the plurality of uplink carrier frequency bands; and

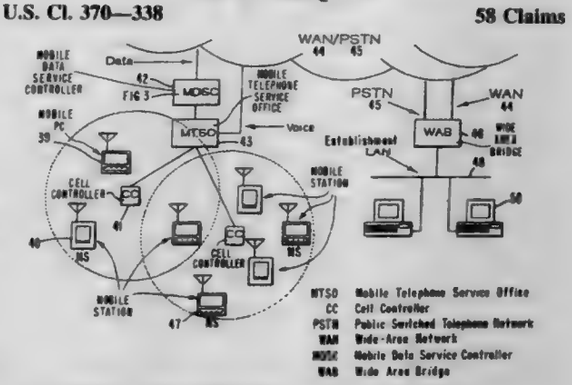
random access channel signal communicating means for communicating random access channel radiotelephone communications signals over a dedicated random access channel uplink carrier frequency band of the plurality of uplink carrier frequency bands, said dedicated random access channel uplink carrier frequency band being different from said time division multiplexed uplink carrier frequency band, said dedicated random access channel unlink carrier frequency band being dedicated to communication of random access channel radiotelephone communications signals.

5,796,727

WIDE-AREA WIRELESS LAN ACCESS

Colin George Harrison, Brookfield, Conn., and Dieter Jaepel, Richterswil, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1993, Ser. No. 56,285
Int. Cl.[6] H04Q *7/24*
U.S. Cl. 370—338 **58 Claims**



1. A method of transmitting data via a cellular telephone communication system comprising the steps of:

a. transmitting fragments of a LAN MAC frame over a wireless link from a source computer to a Cell Controller, CC, the source computer being equipped with a cellular wireless modem for use in the wireless link;

b. transporting fragments of the LAN MAC frame from the CC to a Mobile Telephone Service Office, MTSO;

c. routing the fragments of the LAN MAC frame through the MTSO to a Mobile Data Service Controller MDSC; and

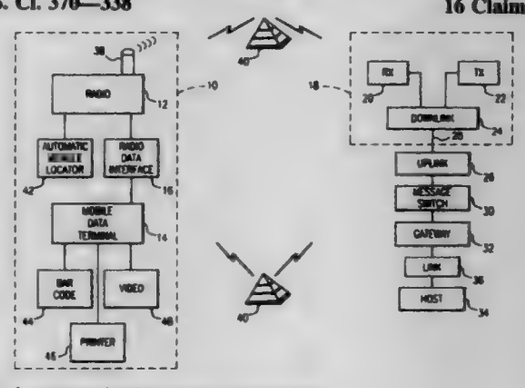
d. re-assembling the LAN MAC frame from successive fragments received at the MDSC.

5,796,728

COMMUNICATION SYSTEM AND METHOD FOR MODIFYING A REMOTE RADIO USING AN INTERNET ADDRESS

Michael N. Rondeau; Timothy J. Doiron, both of Forest; William J. Roderique, Lynchburg, and Philip M. Hoge, Forest, all of Va., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Jun. 25, 1996, Ser. No. 670,816
Int. Cl.[6] H04L *12/46*
U.S. Cl. 370—338 **16 Claims**



1. A communication system comprising:

(a) a host computer;

(b) a plurality of mobile, two-way radios in communication with said host computer; and

(c) a communication gateway between the host computer and said plurality of radios, said gateway including an address table containing a plurality of physical addresses and corresponding Internet addresses for the host computer and the plurality of radios, said address table further containing a

plurality of physical addresses and corresponding Internet addresses for a plurality of peripheral devices attached to at least one of the plurality of radios, said gateway controlling the communication between said host computer and said plurality of peripheral devices using at least one of the Internet addresses.

5,796,729

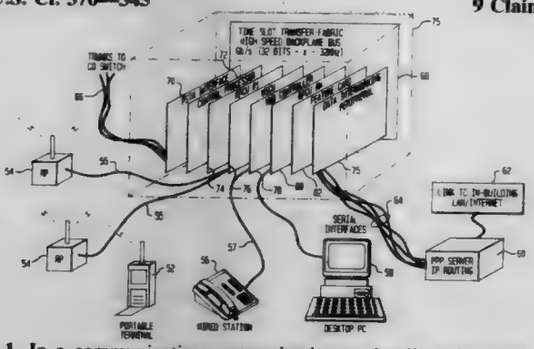
INTEGRATED TELECOMMUNICATION SYSTEM ARCHITECTURE FOR WIRELESS AND WIRELINE ACCESS FEATURING PACS RADIO TECHNOLOGY

Shaun J. Greaney, Tinton Falls, and Kenneth W. Leland, Middletown, both of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Filed May 9, 1996, Ser. No. 641,161

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 370—345 **9 Claims**



1. In a communication system having a plurality of terminals configured to exchange user communication signals, a device for routing said user communication signals among said terminals comprising:

a backplane bus having a number of modular connection means;

a controller device connected to said backplane bus through at least one of said modular connection means;

a plurality of interface devices connected to said backplane bus, each through at least one of said number of modular connection means, said interface devices being configured to provide said user communication signals through said backplane bus in a format and at a rate determined by said controller device;

wherein said format comprises a time division format in which said user communication signals are divided among a plurality of frames, each frame having a predetermined number of time slots, a first number of said time slots providing system control data and a second number of said time slots providing user data corresponding to said user communication signals.

5,796,730

RADIO COMMUNICATION SYSTEM WITH A DISPLACED RADIO STATION

Martial Bellec, Pleumeur Bodou, France, assignor to U.S. Philips Corporation, New York, N.Y.

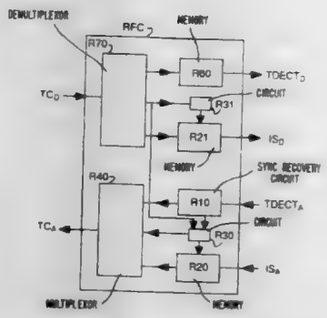
Filed Nov. 13, 1995, Ser. No. 556,365

Claims priority, application France, Nov. 15, 1994, 94 13640

Int. Cl.[6] H04Q *3/60*

U.S. Cl. 370—347 **9 Claims**

8. A radio station for use in a radio communication system that comprises a concentrator displaced from and connectable to said radio station, at least one terminal in communication with said radio station, means for said radio station to exchange radio frames at a first rate with said terminal, said radio frames comprising D1 bits, means for said concentrator to exchange channel frames at a second rate with said radio station, said channel frames comprising D2 bits, said radio frames being multiplexed on said channel frames and said ratio between the first rate and the second rate being equal to D1/D2, said radio station comprising:



means for reading said D1 bits in said radio frames,

means for distributing said D1 bits over said D2 bits of said channel frame;

means for coding operational data with D2-D1 bits; and

means for inserting a code bit of said operational data in said radio frame after a selected bit and prior to completely reading a subsequent bit.

5,796,731

MULTILINE PCM INTERFACE FOR SIGNAL PROCESSING

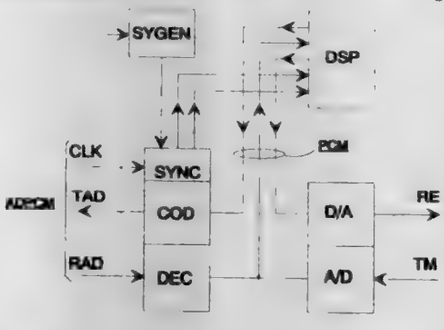
Augusto Guilabert Mellado, Madrid; José Antonio Vale Porben, Malaga, and Jorge Gonzalez Martinez, Torremolinos, all of Spain, assignors to Alcatel NV, Netherlands

Filed Dec. 27, 1995, Ser. No. 579,406

Claims priority, application Spain, Dec. 30, 1994, 9402697

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—362 **6 Claims**



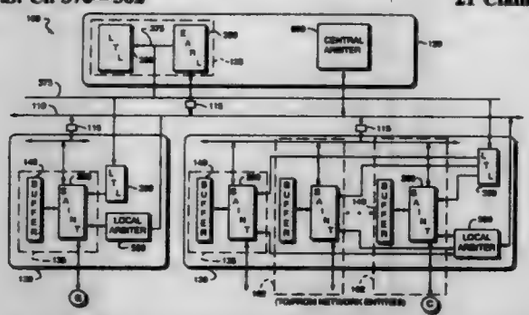
1. An Adaptive Differential Pulse Code Modulation/Pulse Code Modulation (ADPCM/PCM) coding interface for bidirectional digital communications channels, comprising a set of line coding devices of the bidirectional type, which incorporate ADPCM coders (COD), ADPCM decoders (DEC), analogue-to-digital converters (A/D), digital-to-analogue (D/A), signal processing means (MSP) and a synchronism generator (SYGEN), characterised in that all the outputs of the ADPCM decoders (DEC) and of the analogue-to-digital converters (A/D) are joined in a single PCM output bus (BPO), and in that all the input signals to the ADPCM coders (COD) and the input signals to the digital-to-analogue converters (D/A) are joined in a single PCM input bus (PI).

5,796,732

ARCHITECTURE FOR AN EXPANDABLE TRANSACTION-BASED SWITCHING BUS

Mario Mazzola, San Jose; Tom Edsall; Massimo Prati, both of Mountain View, and Luca Cafiero, Palo Alto, all of Calif., assignors to Cisco Technology, Inc., San Jose, Calif.

Filed Mar. 28, 1996, Ser. No. 621,720
Int. Cl.[6] H04L *12/403*
U.S. Cl. 370—362 **21 Claims**



21. A switching bus architecture that facilitates transfer of data within a network switch having a plurality of ports contained on cards interconnected by a switching bus, the architecture comprising:

a plurality of port interface circuits that pass data to and from the switching bus, each port interface circuit controlling an associated port and appending a header portion to the data passed through the port to the bus; and

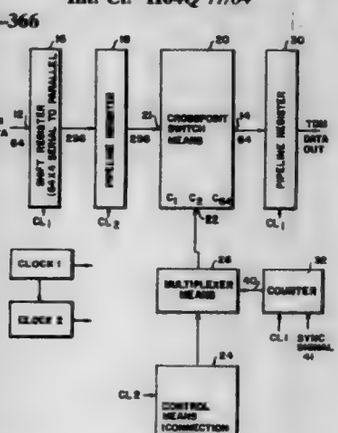
a forwarding engine cooperating with the port interface circuits to generate a unique index for translation to a port select signal in response to the header portion of the data, the port select signal selecting a port of a card as a destination for the data transferred over the bus.

5,796,733

TIME DIVISION SWITCHING SYSTEM

Joseph P. Norris, Mt. Laurel, N.J., assignor to General Signal Corporation, Stamford, Conn.

Filed Jul. 3, 1996, Ser. No. 675,165
Int. Cl.[6] H04Q *11/04*
U.S. Cl. 370—366 **8 Claims**



1. A switching system comprising:

a plurality of N/K input lines for transmitting respective data input signals in serial format at a predetermined time division multiplex rate; where K is an integer>1 representing the number of bits in each serial data input and N is the total number of bits in all of the serial data inputs;

conversion means, having plural outputs, said means being operative for receiving and converting the multiplexed data input signals into a non-time division multiplexed, parallel format, group of N data signals at respective outputs of said conversion means;

crosspoint switch means having a group of N/K data signals at the predetermined time division multiplex rate, on N/K outputs, respectively, and a first group of N inputs connected to the respective outputs of said conversion means; said crosspoint switch means also having a second group of N/K select inputs for controlling the selective connection of said first group of N inputs of said crosspoint switch means to the group of N/K outputs;

control means, including a connection memory, for storing N control signals to be transmitted to the select inputs of the crosspoint switch means, and for addressing the select inputs thereof; and

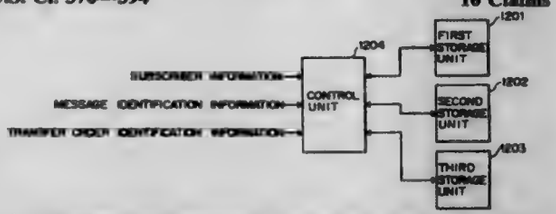
a group of N/K time division multiplexers connected between said select inputs on said crosspoint switch means and said connection memory for converting the N control signals accessed from said memory into time division mutliplexed signals.

5,796,734

SIMULTANEOUSLY-OCCURING MESSAGE CONTROL DEVICE IN A COMMUNICATIONS SYSTEM WHERE A MESSAGE IS TRANSMITTED USING A PLURALITY OF DATA UNITS

Naoyuki Izawa, and Masami Murayama, both of Kanagawa, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 16, 1996, Ser. No. 633,151
Claims priority, application Japan, Sep. 6, 1995, 7-229510
Int. Cl.[6] H04L *12/02*
U.S. Cl. 370—394 **10 Claims**



1. A simultaneously-occurring message control unit in a communications system where one message of a subscriber is transmitted using one or a plurality of data units, each of which is attached with subscriber identification information for identifying the subscriber, message identification information for identifying the message corresponding to the one or the plurality of data units, and transfer order identification information for identifying an order of transferring the one or the plurality of data units in the message corresponding to the one or the plurality of data units, comprising:

first storage means for storing a reception count, which is the number of simultaneously-occurring messages, for each of subscribers corresponding to the subscriber identification information;

second storage means for storing a predetermined number of the simultaneously-occurring messages, which is an upper limit of allowing the messages to occur in parallel, for each of the subscribers corresponding to the subscriber identification information;

third storage means for storing each piece of the message identification information corresponding to each of the simultaneously-occurring messages, together with the order of occurrence, for each of the subscribers corresponding to the subscriber identification information; and

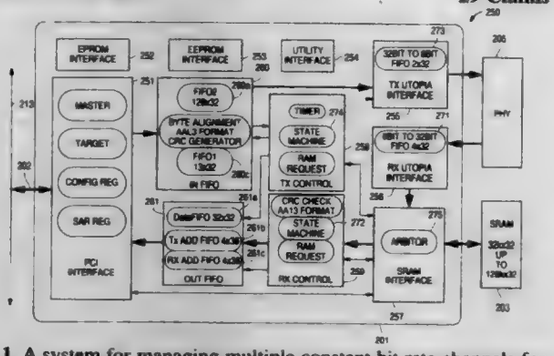
control means for controlling transfers of the simultaneously-occurring messages, by controlling said first, second, and third storage means according to the transfer order identification information, the subscriber identification information, and the message identification information extracted from a received data unit.

5,796,735

SYSTEM AND METHOD FOR TRANSMISSION RATE CONTROL IN A SEGMENTATION AND REASSEMBLY (SAR) CIRCUIT UNDER ATM PROTOCOL

Michael J. Miller, Saratoga; Bilal Murtaza, Newark, and Chih-Ping Sun, San Jose, all of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Aug. 28, 1995, Ser. No. 520,285
Int. Cl.[6] H04L *12/28;12/56*
U.S. Cl. 370—395 **29 Claims**



1. A system for managing multiple constant bit rate channels for transmitting data packets, comprising:

a memory circuit;

a control circuit for (i) maintaining in said memory circuit a transmission table having a plurality of entries, each entry representing an opportunity for transmitting a data packet; (ii) creating, for each of said multiple constant bit rate channels, a number of corresponding entries in said transmission table proportional to the bit rate of said channel; (iii) accessing in sequential order said entries of said transmission table whenever a data packet is transmitted; and (iv) for each entry accessed, sending a control signal indicating that a data packet of the channel to which said entry corresponds is to be transmitted; and

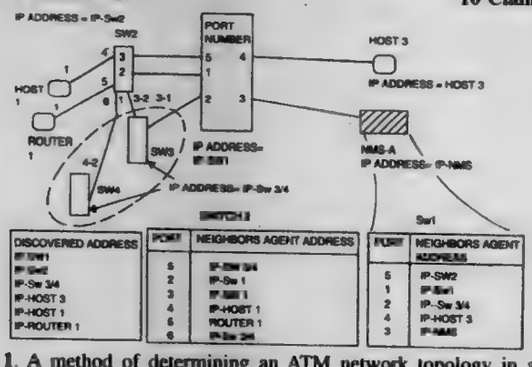
a transmission circuit, receiving said control signal, for transmitting said data packet.

5,796,736

ATM NETWORK TOPOLOGY AUTO DISCOVERY METHOD

Hiroshi Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 17, 1995, Ser. No. 503,021
Claims priority, application Japan, Jul. 19, 1994, 6-166856
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—399 **10 Claims**



1. A method of determining an ATM network topology in an ATM network by which a plurality of ATM switches and a plurality of ATM terminals are interconnected, each of said ATM terminals having at least one respective port and each of said ATM switches having a respective plurality of ports through which each of said ATM switches and ATM terminals is directly connected to its neighboring ATM switches and ATM terminals; said method comprising the steps of:

storing, in each respective one of said ATM switches and ATM terminals, a respective switch identifier that indicates whether said respective ATM switch or ATM terminal is an ATM switch;

exchanging said respective switch identifier between said respective ATM switch or ATM terminal with those of its neighboring ATM switches and ATM terminals;

determining, for each respective port of said respective ATM switch or ATM terminal, whether a network node interface for connecting two neighboring ATM switches is present or whether a user-network interface for connecting an ATM switch and an ATM terminal is present using said exchanged switch identifiers; and

automatically setting a data communications protocol format that corresponds to said determined interface and which identifies said respective ATM switch or ATM terminal.

5,796,737

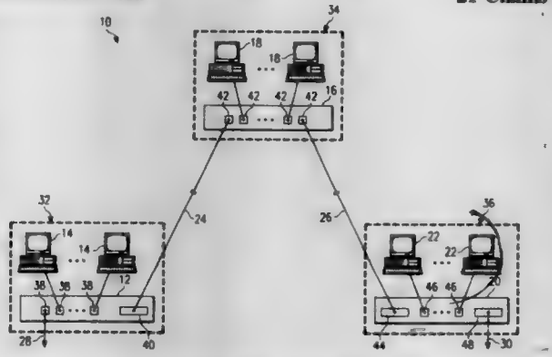
Patent Not Issued For This Number

5,796,738

MULTIPORT REPEATER WITH COLLISION DETECTION AND JAM SIGNAL GENERATION

Craig M. Scott, Irving; Li Tung Wang, Arlington; Arthur T. Bennett, and Ahmad Nouri, both of Carrollton, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 13, 1995, Ser. No. 403,206
Int. Cl.[6] H04L *12/28;12/56*
U.S. Cl. 370—401 **21 Claims**



1. A system for communicating data comprising:

a transmitting data device operable to generate a message for transmission to a receiving data device;

a first repeater coupled to the transmitting data device, the first repeater comprising an uplink module having a buffer disposed between the transmitting data device and the receiving data device, the buffer operable to store message data for transmission to the receiving data device, the first repeater operable to detect a saturated condition of the buffer, the first repeater operable to transmit, in response to the saturated condition, a collision indication to the transmitting data device without storing the message in the buffer;

a second repeater coupled to the uplink module of the first repeater, the second repeater coupled to the receiving data device.

5,796,739

SUBSCRIBER INPUT/OUTPUT DEVICE OF HIGH-SPEED PACKET SWITCHING SYSTEM WITH PARALLEL COMMON BUS TYPE

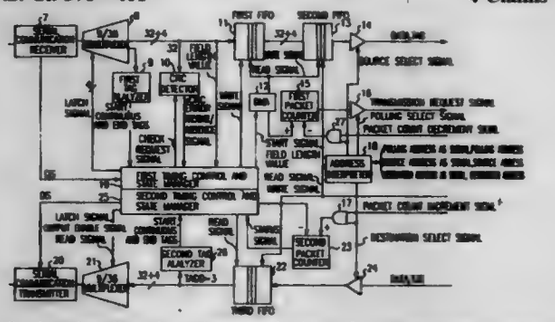
Dong Won Kim; Won Ryu, and Dae Ung Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecommunication Authority, Seoul, both of Rep. of Korea

Filed Jul. 24, 1996, Ser. No. 685,568

Claims priority, application Rep. of Korea, Jul. 24, 1995, 1995-21930

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—401 **4 Claims**



1. A subscriber input/output device of a high-speed packet switching system with a parallel common bus type, said subscriber input/output device comprising:

serial communication receiving means for receiving serial data of packet data and a tag, and generating a data strobe signal;

demultiplexing means for latching the output of said serial communication receiving means according to a latch signal, and generates data and a tag;

first tag analyzing means for receiving the tag of said demultiplexing means, and detecting a start tag, a continuous tag and an end tag;

cyclic redundancy code detecting means for receiving an error detecting code from said demultiplexing means, and detecting a cyclic redundancy code according to a check request signal;

direct memory access means for generating a read signal and a write signal by a field length value and a start signal;

first FIFO (first-in first-out) means for storing the output data of said demultiplexing means according to a write signal, and generating the output data of said demultiplexing means according to said read signal of said direct memory access means;

second FIFO means for storing the output of said first FIFO means according to said write signal of said direct memory access means, and generating the output of said first FIFO means according to a read signal received;

address interpreting means for receiving a polling address, a source address, a destination address, a polling address strobe signal, a source address strobe signal and a destination address strobe signal, and generating a polling select signal, a source select signal and a destination select signal;

first AND gate means for ANDing said source select signal of said address interpreting means with an external packet count decrement signal, and generating a packet count decrement signal;

first packet counting means for increasing a count value according to a packet count increment signal of said direct memory access means, and decreasing the count value according to said packet count decrement signal of said first AND gate means;

third FIFO means for storing data and a tag received according to an external write signal, and generating the data and the tag according to a read signal;

second AND gate means for ANDing said destination select signal of said address interpreting means with an external packet count increment signal, and generating a packet count increment signal;

second packet counting means for increasing a count value according to said packet count increment signal of said second AND gate means, decreasing the count value according to a packet count decrement signal, and generating a status signal;

second tag analyzing means for receiving the tag of said third FIFO means, and detecting a start tag, a continuous tag and an end tag;

multiplexing means for multiplexing the output of said third FIFO means by a latch signal and an output enable signal;

serial communication transmitting means for converting the output of said multiplexing means to serial data by a data strobe signal, and generating the converted data;

first timing controlling and state managing means for supplying latch signals to said demultiplexing means by said data strobe signal of said serial communication receiving means, receiving said start, continuous and end tags from said first tag analyzing means, receiving a field length value of said demultiplexing means and supplying a write signal to said first FIFO means when the tag is a start state, continuing to supply said write signal to said first FIFO means when the tag is a continuous state, supplying a check request signal for cyclic redundancy code detecting timing to said cyclic redundancy code detecting means when the tag is an end state, receiving an error presence/absence signal from said cyclic redundancy code detecting means, eliminating a packet when there are errors, and receiving one frame and supplying a field length value and a start signal to said direct memory access means when there are no errors; and

second timing controlling and state managing means for supplying a read signal to said third FIFO means when said status signal is received from said second packet counting means, receiving start, continuous and end tags from said second tag analyzing means, sequentially supplying a latch signal and output enable signals to said multiplexing means, supplying a data strobe signal to said serial communication transmitting means, and supplying a count decrement signal to said second packet counting means.

5,796,740

ROUTER USING MULTIPLE HOP REDIRECT MESSAGES TO ENABLE BRIDGE LIKE DATA FORWARDING

Radia Joy Perlman, Acton, Mass.; Alan J. Kirby, Hollis; Floyd J. Backes, Temple, both of N.H., and Charles W. Kaufman, Northborough, Mass., assignors to Cabletron Systems, Inc., Rochester, N.H.

Continuation of Ser. No. 569,618, Dec. 8, 1995, abandoned, which is a continuation of Ser. No. 716,027, Jun. 14, 1991, Pat. No. 5,500,860. This application May 28, 1997, Ser. No. 864,281

Int. Cl.[6] H04L *12/46*

U.S. Cl. 370—401 **23 Claims**

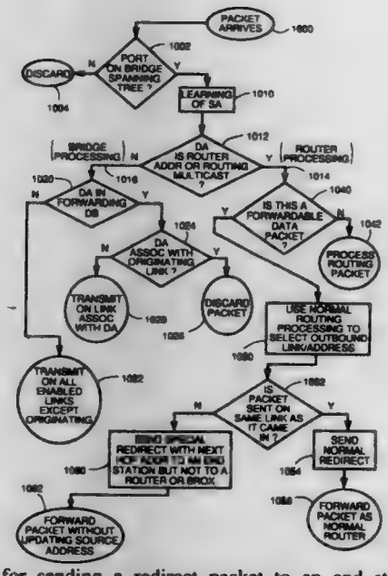
1. An apparatus for forwarding a packet from a first link to a second link, said apparatus having a data link address, said packet having a data link header and a network layer header, said data link header of said packet including a data link destination address field, comprising:

means for receiving said packet;

means for determining whether a value of said data link destination address field of said data link header of said packet is equal to said data link address of said apparatus;

means, responsive to said means for determining, for forwarding said packet based on addressing information in said data link header if said value of said data link destination address field of said data link header of said packet is not equal to said data link address of said apparatus;

means, responsive to said means for determining, for forwarding said packet based on addressing information within said network layer header and said data link header if said value of said data link destination address field of said data link header of said packet is equal to said data link address of said apparatus; and

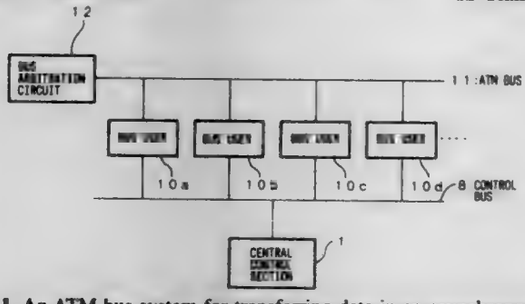


means for sending a redirect packet to an end station, said redirect packet for use by said end station to build an end station address table in said end station.

5,796,741
ATM BUS SYSTEM

Kazuo Saito, Yokohama; Koji Anai, Yokosuka; Keiju Igarashi, Nagoya; Takeshi Nishikawa, Yokosuka; Ryoichi Himeno, Yokohama, and Kazuhiro Yoguchi, Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Mar. 5, 1996, Ser. No. 611,048
Int. Cl.[6] H04L *12/403;12/56*
U.S. Cl. 370—439 **12 Claims**



1. An ATM bus system for transferring data in an asynchronous transfer mode using fixed-length cell units, the ATM bus transferring a single cell unit of data when a plurality of bus use requests for transferring data on an ATM bus are generated, said ATM bus system comprising:

a plurality of bus users connected to said ATM bus and sharing said ATM bus to transfer data; and

bus arbitration means for selecting a single bus use request from among a plurality of bus use requests simultaneously sent from said bus users, and for designating the bus user that issued said selected bus use request; wherein

each of said cell units include an expansion header in addition to an ATM bus header, said expansion header having bus use request data for indicating which said bus users issue bus use requests to said bus arbitration means, user address data for indicating bus users that have sent or are to receive data, and bus allowance data for indicating the designated bus user;

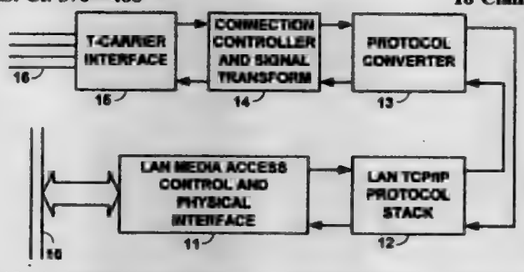
said bus arbitration means performing an arbitration of the plurality of bus use requests based on said bus use request data and notifying all of the bus users of bus use permission granted to the selected bus user through said bus use allowance data; and wherein

said bus users examine said bus use allowance data so that only the bus user designated by the allowance data transfers a cell unit of data within the same cell time as a transfer of said expansion header, and each bus user decides whether or not to receive ATM bus data in the transferred cell unit of data based on the user address data in the same cell unit of data.

5,796,742
BI-DIREDCTIONAL WIRE-LINE TO LOCAL AREA NETWORK INTERFACE AND METHOD

David Klotzbach, Carpentersville; Mark Pecen, Naperville; Keith Favreau, Wheeling, and Michael Knueven, Glen Ellyn, all of Ill., assignors to U.S. Robotics Corporation, Skokie, Ill.

Continuation of Ser. No. 418,120, Apr. 6, 1995, abandoned, which is a continuation of Ser. No. 95,682, Jul. 22, 1993, Pat. No. 5,410,754. This application Jan. 14, 1997, Ser. No. 783,539
Int. Cl.[6] H04L *12/46*
U.S. Cl. 370—466 **18 Claims**



13. A method used between a remote host on a local area network (LAN), and a wire-line carrier system comprising the steps of:

converting LAN data from said local area network to an outgoing-data packet with a machine readable format;

identifying a protocol type of the outgoing data packet from the LAN-MAC and physical interface;

correlating the outgoing-data packet to an incoming-data packet and to a channel number;

depacketizing the outgoing-data packet into outgoing-binary data;

polling, using the channel number, the outgoing-binary data;

transforming the outgoing-binary data to a digitized representation of an analog signal having pulse code modulation (PCM);

multiplexing, using the channel number, the digitized representation of the analog signal as an outgoing-wire-line carrier signal; and

sending the outgoing-wire-line carrier signal over said wire-line carrier system.

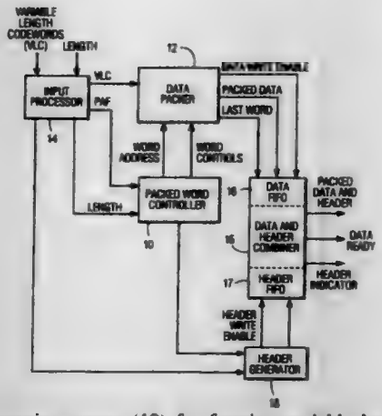
5,796,743
DATA WORD INDICATOR IN A SYSTEM FOR ASSEMBLING TRANSPORT DATA PACKETS

Richard Michael Bunting, Hamilton Square; David Isaac Harris, Kendall Park, both of N.J.; Alfonse Anthony Acampora, Staten Island, N.Y., and Charles Alan Brooks, Toms River, N.J., assignors to General Electric Company, Schenectady, N.Y.

PCT No. PCT/US93/11613, § 371 Date May 23, 1996, § 102(e) Date May 23, 1996, PCT Pub. No. WO95/15651, PCT Pub. Date Jun. 8, 1995
PCT Filed Nov. 30, 1993, Ser. No. 649,634
Int. Cl.[6] H04N *7/12*
U.S. Cl. 370—474 **8 Claims**

1. Apparatus for processing an image representative datastream, comprising:

means (14) for providing a datastream including a succession of Groups of Pictures;



first processing means (12) for forming variable length datastream data words into fixed length data packets, said data packets subject to containing an unpredictable variable number of data words;

means (12,37 (FIG. 2*c*); 46 (FIG. 4)) for providing a Last Word indicator designating a last one of said unpredictable number of data words in a data packet; and

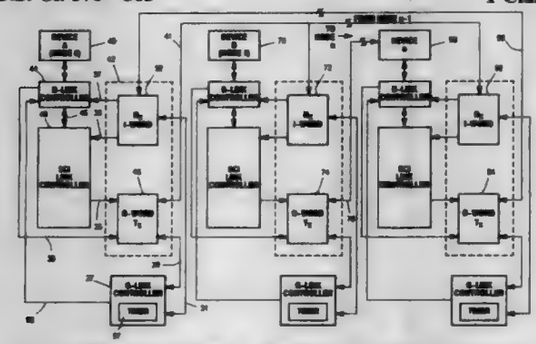
second processing means (15) responsive to said data packets and to said Last Word indicator for producing output packed data transport packets.

5,796,744

MULTI-NODE INTERCONNECT TOPOLOGY WITH NODES CONTAINING SCI LINK CONTROLLERS AND GIGABIT TRANSCEIVERS

John Anthony Krawczak, Minnetonka, and Steven Allen Murphy, Apple Valley, both of Minn., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed Sep. 12, 1997, Ser. No. 928,997
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—503 **1 Claim**



1. A method of forming a plurality of network nodes into a multi-node ring network and of initiating and synchronizing said multi-node network so that it is capable of transmitting data packets between nodes in said multi-node network, wherein each of said nodes comprises a Scalable Coherent Interface (SCI) link controller, a B-link interface controller coupled to the SCI link controller, a transceiver comprising a receiver and a transmitter, both of which are capable of operating up to gigabit data transmission rates and are coupled to the SCI controller and to said B-link controller comprising:

(a) adding a G-link controller to each of said nodes by coupling said G-link controller to said transmitter, said receiver and said B-link controller and performing the following steps (b)–(h) when required,

(b) operating the G-link controller and the SCI link controller at each node downstream of said first node to determine if said transmitter and said receiver at said downstream nodes are not in synchronization or if said receiver at said downstream node has received a first control word **FF0** which is part of the normal G-link initialization process from the transmitter of the adjacent upstream node so as to initialize said SCI link controller in either event,

(c) operating the B-link controller at each node in response to said initialization to transmit a second control word to the next downstream node,

(d) setting a first timing period for said G-link controller in said first node that prevents any additional first control words that are received at said first node from affecting said first node for the time it takes for a first control word to propagate around the ring network,

(e) operating the G-link controller at all nodes such that when said G-link first timing period terminates the method will start over at step (b),

(f) operating the B-link controller and the SCI link controller in a first node when said SCI link controller is either not in synchronization with the incoming SCI stream from said receiver or is not operational so that said B-link controller initializes said SCI link controller and transmits a second control word to the next downstream receiver if said SCI link controller was not operational or said SCI link controller was not in synchronization with said incoming SCI stream,

(g) operating the B-link controller at each node to determine when said node has received a second control word from the transmitter of the adjacent upstream node to cause said transmitter at said node to transmit said second control word to the next downstream node and to set a second timing period for said B-link controller at said node that prevents any additional second control words that are received at said node from affecting said node for the time it takes for the second control word to propagate around the ring network,

(h) operating the B-link controller at all nodes such that when said B-link second timing period terminates the method will start over at step (b), and

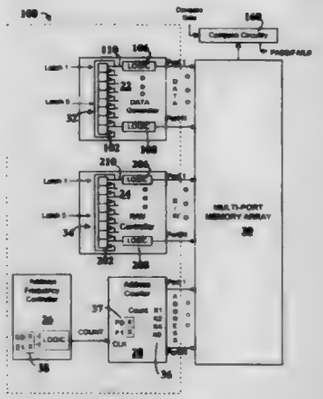
(i) enabling the transmission of data when said SCI link, G-link transmitter and receiver are all synchronized and operational.

5,796,745

MEMORY ARRAY BUILT-IN SELF TEST CIRCUIT FOR TESTING MULTI-PORT MEMORY ARRAYS

Robert D. Adams, Essex Junction; John Connor, Burlington; Garrett S. Koch, Cambridge, and Luigi Ternullo, Jr., Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 19, 1996, Ser. No. 684,519
Int. Cl.[6] G01R *31/28*
U.S. Cl. 371—21.1 **20 Claims**



1. An on-chip built-in test circuit for a memory array having multiple ports, said test circuit comprising:

a data generator, coupled to said memory array, for providing a unique data at each of said multiple ports of said memory array;

a read/write controller, coupled to said memory array, for providing a unique read/write control at each of said multiple ports of said memory array;

an address counter, coupled to said memory array, for providing a unique address to each of said multiple ports of said memory array; and

a frequency controller, coupled to said address counter, for providing a frequency at which said address counter updates said unique address applied at each of said multiple ports of said memory array,

wherein each of said multiple ports simultaneously receive one said unique data, one said unique read/write control and one said address of said memory array for said one unique data and said one unique read/write control.

5,796,746

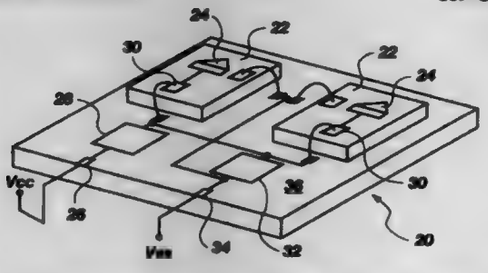
DEVICE AND METHOD FOR TESTING INTEGRATED CIRCUIT DICE IN AN INTEGRATED CIRCUIT MODULE

Warren M. Farnworth, Nampa; James M. Wark, Boise; Eric S. Nelson, Boise, and Kevin G. Duesman, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 577,840, Dec. 22, 1995, and Ser. No. 666,247, Jun. 20, 1996. This application Sep. 19, 1996, Ser. No. 718,173

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—21.1 **109 Claims**



1. An apparatus for switching first and second voltages to a function circuit in an integrated circuit die having a bond pad, the die being provided in an integrated circuit module having a module terminal for receiving the first voltage from circuitry external to the module, the apparatus comprising:

a switching circuit connected with the bond pad between the module terminal and the function circuit for selectively isolating the function circuit from the module terminal and for otherwise conducting the first voltage to the function circuit; and

an impedance circuit for conducting the second voltage to the function circuit when the function circuit is isolated from the module terminal and for otherwise supporting a voltage differential between the first voltage at the function circuit and the second voltage.

5,796,747

Patent Not Issued For This Number

5,796,748

PATTERN GENERATOR IN SEMICONDUCTOR TEST SYSTEM

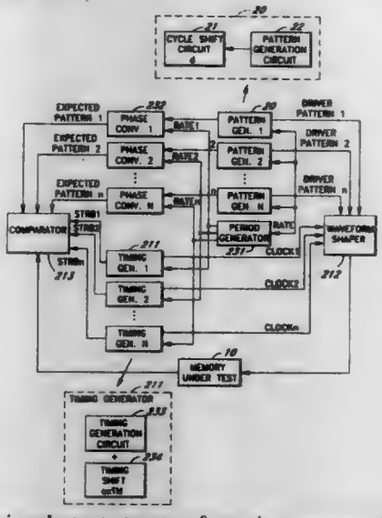
Takahiro Housako, Gyoda, and Jun Hashimoto, Sohka, both of Japan, assignors to Advantest Corp., Tokyo, Japan

Continuation of Ser. No. 518,560, Aug. 23, 1995, Pat. No. 5,682,390. This application Jul. 15, 1997, Ser. No. 893,103

Claims priority, application Japan, Jun. 19, 1995, 7-175532

Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—21.3 **7 Claims**



3. A semiconductor test system for testing a memory (**10**) having latency cycles, comprising:

a plurality of pattern generators (**20**) each of which consisting of a pattern generation circuit (**22**) that generates a driver pattern and expected value signal at the operating period of said pattern generator and a cycle shift circuit (**21**) that shifts the expected value signal at the operating cycle of the pattern generator;

a plurality of phase converters (**232**) each of which generates an expected value pattern when receiving an expected value signal from corresponding one of said plurality of pattern generators (**20**) and shifting said expected value signal with a phase of a rate signal having the same operating cycle of said memory;

a plurality of timing generators (**211**) each of which consisting of a timing generation circuit (**233**) that generates a strobe (STRB) signal by the operating period of the memory and a timing shift circuit (**234**) that generates a shifted strobe (STRB) signal shifted by the number of cycle delays within the range of the number of pattern generators;

a logic comparator (**213**) that compares the cycle delayed output data generated from said memory (**10**) with the expected value patterns output from said plurality of phase converters (**232**) using the STRB signals output from said plurality of timing generators (**211**).

5,796,749

DELAY CORRECTION CIRCUIT FOR SEMICONDUCTOR TESTER

Shinichi Hashimoto, Saitama, Japan, assignor to Advantest Corp., Tokyo, Japan

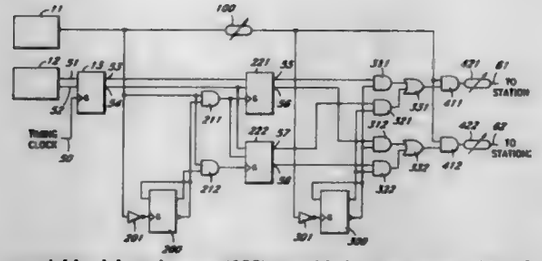
PCT No. PCT/JP95/01733, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO97/08563, PCT Pub. Date Mar. 6, 1997

PCT Filed Aug. 31, 1995, Ser. No. 776,835

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.1 **4 Claims**

1. A delay correction circuit for a semiconductor tester having a plurality of test stations for mounting semiconductor devices to be tested thereon, characterized in having:



a variable delay element (**100**) provided at an output side of a waveform controller (**11**);

flip-flops (**200**, **221**, **222**) provided at an output of a waveform output controller (**12**) for performing an inter-leave function based on a waveform control signal from the waveform output controller;

gate circuits (**311**, **321**, **331**, **312**, **322**, **332**) which combine elements of the inter-leave functions based on output signals from the variable delay element (**100**); and

an AND gate (**411**) which produces a logical AND between an output of the gate circuit (**331**) corresponding to the test station n and an output of the variable delay element (**100**).

5,796,750

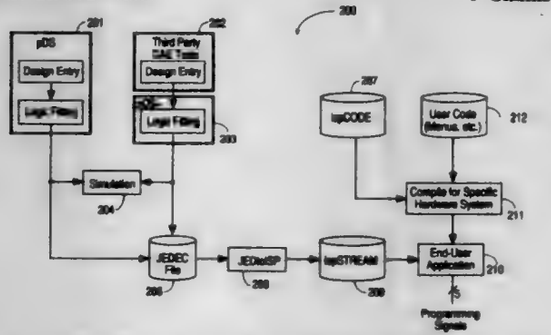
METHOD FOR PROGRAMMING A PROGRAMMABLE LOGIC DEVICE IN AN AUTOMATIC TESTER

Michael W. Lottridge, Tigard; Jock F. Tomlinson, Beaverton, and Guy A. Townsend, Hillsboro, all of Oreg., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Division of Ser. No. 232,546, Apr. 22, 1994. This application Aug. 13, 1996, Ser. No. 696,444

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.2 **9 Claims**



1. A method for programming a programmable logic device on a system board using an automatic tester, said system board having a test interface over which functional testing of said system board can be achieved, said method comprising the steps of:

providing through said test interface access to programming pins of said programmable logic device;

creating a fuse map for said programmable logic device;

creating, from said fuse map, a first set of test vectors executable on said automatic tester, said first set of vectors including, for implementing said fuse map, specific signals to be applied to said programming pins of said programmable logic device through said test interface;

creating a second set of test vectors to be applied to said system board through said test interface for a functional test of said system board;

including said programmable logic device in an unprogrammed state in said system board;

mounting said system board, including said programmable logic device in said unprogrammed state, onto said automatic tester in a configuration for functional testing of said system board through said test interface;

applying, through said test interface, said first set of test vectors on said system board, thereby programming said programmable logic device; and

applying said second set of test vectors through said test interface, after said step of applying said first set of test vectors, to perform said functional test of said system board.

5,796,751

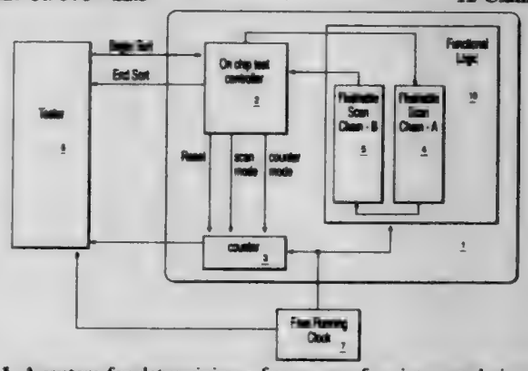
TECHNIQUE FOR SORTING HIGH FREQUENCY INTEGRATED CIRCUITS

Sandip Kundu, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 22, 1996, Ser. No. 684,751

Int. Cl.[6] G01R *31/00*; **H04B** *17/00*

U.S. Cl. 371—22.3 **12 Claims**



1. A system for determining a frequency of an integrated circuit including a plurality of sequentially connected scan circuits, comprising:

control means for providing a test bit to a first one of said scan circuits, and for determining when said test bit is output by a last one of said scan circuits; and

means for determining a time period for said test bit to traverse all of said scan circuits

means for determining said frequency of said integrated circuit based on said time period.

7. A method of determining a frequency for an integrated circuit having a plurality of sequentially connected scan circuits, comprising the steps of:

providing a test bit to a first one of said scan circuits, and determining when said test bit is output by a last one of said scan circuits; and

determining a time period for said test bit to traverse all of said scan circuits

determining said frequency of said integrated circuit based on said time period.

5,796,752

METHOD AND APPARATUS FOR CONSTRUCTING VERIFICATION TEST SEQUENCES BY EULER TOURING A TEST SUBSEQUENCE GRAPH

Xiao Sun, and Carmie A. Hull, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 6, 1995, Ser. No. 399,392

Int. Cl.[6] G06F *11/00*

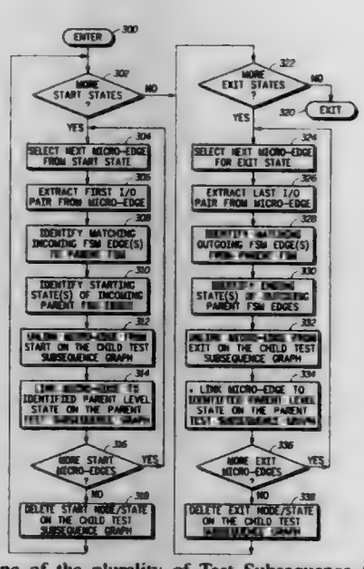
U.S. Cl. 371—27.1 **17 Claims**

1. A method for touring an Augmented Graph constructed from a Test Subsequence (TS) Graph based on a Finite State Machine (FSM) Model for use in constructing a Verification Test Sequence (VTS) to be used to test conformance of a Machine Under Test (MUT) against the FSM Model, wherein:

said FSM Model has a plurality of Model States connected by a plurality of State Transitions (TR), wherein:

each said State Transition (TR) starts at a Starting Model State, and ends at a Ending Model State;

said Test Subsequence (TS) Graph is a directed graph stored in a memory having a plurality of Test Subsequence (TS) Graph Vertices connected by a plurality of Test Subsequence (TS) Graph Micro-Edges, wherein:



each one of the plurality of Test Subsequence (TS) Graph Vertices corresponds to a different Model State,

each one of the plurality of Test Subsequence (TS) Graph Micro-Edges is a Micro-Edge,

each Micro-Edge comprises a sequentially ordered plurality of serially connected State Transition (TR)s, and

each of said Test Subsequence (TS) Graph Micro-Edge starts at a Test Subsequence (TS) First Graph Vertex and ends at a Test Subsequence (TS) Last Graph Vertex; and

said Augmented Graph is a Directed Graph stored in the Memory having a plurality of Augmented Graph Vertices connected by a plurality of Augmented Graph Micro-Edges, wherein:

all Augmented Graph Micro-Edges are Micro-Edges,

each of the Test Subsequence (TS) Graphs Micro-Edge corresponds to a different one of the plurality of Augmented Graph Micro-Edges, and

each of the Test Subsequence (TS) Graph Vertices corresponds to a different one of the plurality of Augmented Graph Vertex;

said method comprising the steps:

(a) providing control signals to direct a Computer Processor to count a number of incoming Test Subsequence (TS) Graph Micro-Edges to each Test Subsequence (TS) Graph Vertex and to count a number of Outgoing Test Subsequence (TS) Graph Micro-Edges from each Test Subsequence (TS) Graph Vertex, wherein:

the number of Outgoing Test Subsequence (TS) Graph Micro-Edges for each of the Test Subsequence (TS) Graph Vertices is an Outdegree for that respective Test Subsequence (TS) Graph Vertex, and

the number of Incoming Test Subsequence (TS) Graph Micro-Edges for each of the Test Subsequence (TS) Graph Vertices is an Indegree for that respective Test Subsequence (TS) Graph Vertex;

(b) constructing for storage in the Memory the Augmented Graph from the Test Subsequence (TS) Graph by constructing Micro-Edge Bridging Sequences between the Test Subsequence (TS) Graph Vertices with Indegree greater than Outdegree to the Test Subsequence (TS) Graph Vertices with Outdegree greater than Indegree wherein:

the construction of the Augmented Graph results in every one of the Augmented Graph Vertices having an equal number of Incoming Augmented Graph Micro-Edges and Outgoing Augmented Graph Micro-Edges,

said step of constructing comprising the substeps of:

(1) sorting Test Subsequence (TS) Graph Vertices by the difference between Indegree and Outdegree,

(2) matching Test Subsequence (TS) Graph Vertices with the highest Indegree minus Outdegree with Test Subsequence (TS) Graph Vertices with the highest Outdegree minus Indegree, and

(3) constructing at least one Augmented Graph Micro-Edge as the Micro-Edge Bridging Sequence between corresponding matched Augmented Graph Vertices; and

(c) creating the Verification Test Sequence (VTS) by touring the Augmented Graph Micro-Edges.

5,796,753

HIGH SPEED TEST PATTERN TRANSFER APPARATUS FOR SEMICONDUCTOR TEST SYSTEM

Yoshiaki Kato, Saitama, Japan, assignor to Advantest Corp., Tokyo, Japan

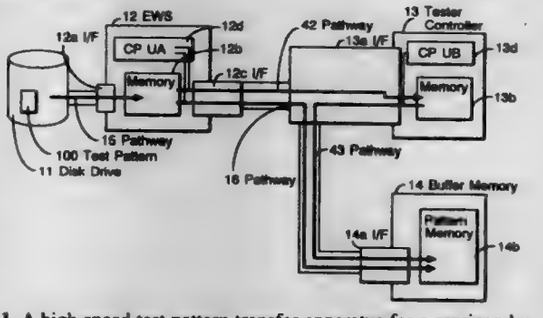
PCT No. PCT/JP95/02692, § 371 Date Nov. 18, 1996, § 102(e) Date Nov. 18, 1996, PCT Pub. No. WO96/20409, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 26, 1995, Ser. No. 700,451

Claims priority, application Japan, Dec. 28, 1994, 6-338918

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27.1 **6 Claims**



1. A high speed test pattern transfer apparatus for a semiconductor test system, comprising:

an engineering work station EWS (**12**) which functions as a host computer of said semiconductor test system;

a tester controller (**13**) which receives data from said EWS (**12**) and controls a test operation of said semiconductor test system;

a buffer memory (**14**) provided in said semiconductor test system for storing test patterns (**100**) produced by said EWS (**12**) and generating said test patterns to apply said test patterns (**100**) to a semiconductor device under test;

a first interface (**12***c*) provided in said EWS (**12**) for interfacing between said EWS (**12**) and said tester controller (**13**);

a second interface (**14***a*) provided in said buffer memory (**14**) for interfacing between said tester controller (**13**) and said buffer memory (**14**); and

a third interface (**13***a*) provided in said tester controller (**13**) and arranged such that;

said test patterns (**100**) in said EWS (**12**) are either directly transferred to the buffer memory (**14**) through said third interface (**13***a*) or indirectly transferred to said buffer memory (**14**) through said third interface (**13***a*) and said tester controller (**13**).

5,796,754

APPARATUS FOR TESTING DIGITAL SIGNAL PROCESSOR IN OPTICAL DISK PLAYER

Woog-Ig Son, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

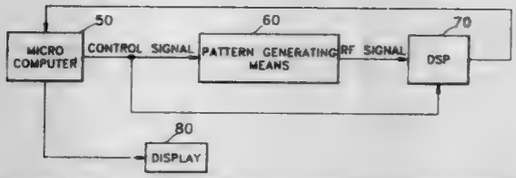
Filed Sep. 20, 1996, Ser. No. 717,151

Claims priority, application Rep. of Korea, Apr. 4, 1996, 10272/1996

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—27.1 **14 Claims**

6. A method for testing the operation of a digital signal processor in an optical disk player, said method comprising the steps of:



generating a control signal representative of a data transmission speed of said optical disk player;

generating a radio frequency signal corresponding to said data transmission speed in response to said control signal, and providing said radio frequency signal to said digital signal processor;

generating a digital signal, via said digital signal processor, in response to said radio frequency signal;

making an evaluation of the operation of said digital signal processor based on said digital signal generated via said digital signal processor; and

providing visual display of a message indicative of said evaluation.

5,796,755

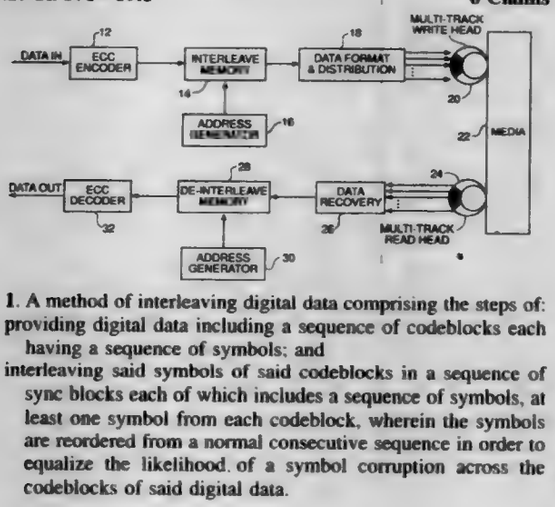
ERROR MINIMIZATION IN INTERLEAVED ERROR CORRECTING CODES

Russell D. Shon, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 19, 1996, Ser. No. 666,171

Int. Cl.[6] H03M *13/22*

U.S. Cl. 371—39.1 **6 Claims**



1. A method of interleaving digital data comprising the steps of:

providing digital data including a sequence of codeblocks each having a sequence of symbols; and

interleaving said symbols of said codeblocks in a sequence of sync blocks each of which includes a sequence of symbols, at least one symbol from each codeblock, wherein the symbols are reordered from a normal consecutive sequence in order to equalize the likelihood of a symbol corruption across the codeblocks of said digital data.

5,796,756

SURVIVOR MEMORY DEVICE IN VITERBI DECODER USING TRACE DELETION METHOD

Hyung-Jin Choi; Sung-Bae Cho; Suk-Jin Jung, and Hyung-Kil Lee, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 28, 1997, Ser. No. 808,663

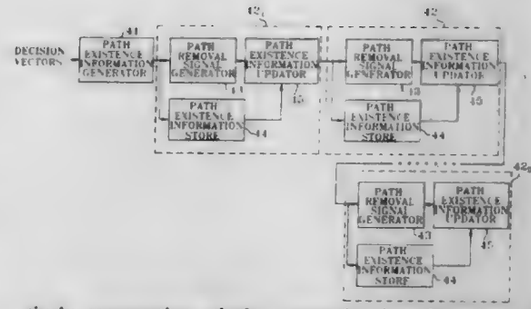
Claims priority, application Rep. of Korea, Feb. 28, 1996, 1996 4986

Int. Cl.[6] H03M *13/12*

U.S. Cl. 371—43.7 **15 Claims**

1. A survivor memory device in a Viterbi decoder which determines a final survivor path using a trellis diagram and a plurality of decision vectors, and outputs decoded data corresponding to the determined survivor path, the survivor memory device comprising:

a path existence information generator for receiving the plurality of decision vectors, the plurality of decision vectors respectively representing whether respective branch paths exist between respective current states and corresponding next states in the trellis diagram, and generating first branch path existence information representing whether the respective branch paths exist between the respective current states and the corresponding next states in the trellis diagram using the received decision vectors; and



a plurality of units which are serially connected with respect to an output of said path existence information generator, wherein each of said units comprises:

a path existence information store for receiving and storing the first branch path existence information;

a path removal signal generator for generating corresponding path removal signals when the first branch path existence information corresponding to the respective current states represents that respective branch paths do not exist between the respective current states and the corresponding next states; and

a path existence information updator for receiving the first branch path existence information stored in said path existence information store and the path removal signals generated by said path removal signal generator, and for updating second branch path existence information corresponding to the respective current states to represent that respective branch paths do not exist between the respective current states and corresponding previous states, wherein the second branch path existence information represents whether the respective branch paths exist between the respective current states and the corresponding previous states in the trellis diagram.

5,796,757

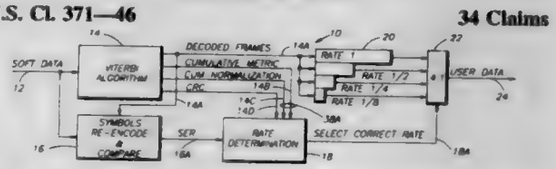
METHODS AND APPARATUS FOR PERFORMING RATE DETERMINATION WITH A VARIABLE RATE VITERBI DECODER

Stash Czaja, Cardiff, Calif., assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Sep. 15, 1995, Ser. No. 529,101

Int. Cl.[6] H03M *13/12*

U.S. Cl. 371—46 **34 Claims**



14. Apparatus for determining a data rate of a received encoded signal, comprising:

a decoder for decoding a signal received from a communications channel for extracting data therefrom, the data being received at one of a plurality of rates, said decoder comprising an accumulator for accumulating a normalization value of Cumulative Metrics;

means for combining an accumulated normalization value with a Cumulative Metric to reconstruct a Total Cumulative Metric for at least a Most Likely decoder path;

a comparator for comparing the Total Cumulative Metric to at least one threshold value corresponding to at least one of said plurality of rates; and

means, responsive to said comparator, for identifying a rate at which the data was received from the communications channel.

5,796,758

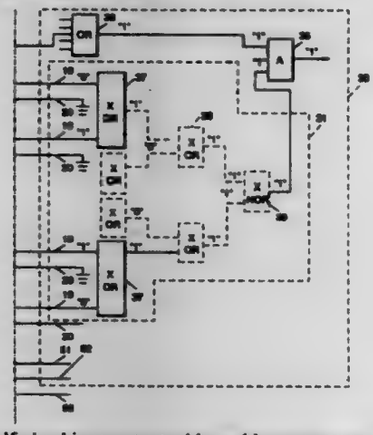
SELF-CHECKING CONTENT-ADDRESSABLE MEMORY AND METHOD OF OPERATION FOR DETECTING MULTIPLE SELECTED WORD LINES

David Stephen Levitan, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1996, Ser. No. 727,334

Int. Cl.[6] G06F *11/10*; H03M *13/00*

U.S. Cl. 371—49.1 6 Claims



6. In a self-checking content addressable memory comprising an array of content addressable memory cells in "m" rows and "n" columns where "m" and "n" are any non-zero integer and means coupled to the columns as bit lines for writing information into and reading information from the content addressable memory cells in a selected row as a word line in a "write" and "read" operations, respectively, a method for detecting multiple selected word lines in a "read" operation, comprising the steps of:

a) providing an input to the array to select a word line;

b) sensing multiple word lines in a parity checker and combinatorial logic circuit both coupled to the word lines; and

c) providing an output at the combinatorial logic circuit only when multiple word lines have been selected in the "read" operation.

5,796,759

SYSTEM AND METHOD FOR ASSESSING MEDICAL RISK

Alan J. Eisenberg, Monmouth Junction, N.J., and Alexander Adelson, Peekskill, N.Y., assignors to Base Ten Systems, Inc., Trenton, N.J.

Continuation of Ser. No. 523,879, Sep. 6, 1995, abandoned, which is a division of Ser. No. 239,811, May 9, 1994, Pat. No. 5,492,117, which is a continuation of Ser. No. 67,305, May 26, 1993, Pat. No. 5,594,637. This application Sep. 11, 1997, Ser. No. 927,931

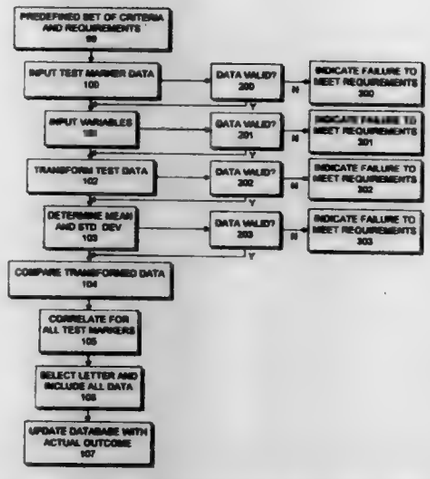
Int. Cl.[6] G06F *7/02*; *11/00*

U.S. Cl. 371—67.1 4 Claims

3. A system for validating data comprising:

a memory for storing a predefined set of criteria for all data to be input to the system by a user and a predefined set of criteria for data to be calculated from input data by the system;

a validation circuit for comparing data input by a user to said stored predefined set of criteria for input data and for comparing data calculated by the system from input data to said stored predefined set of criteria for calculated data; and



a display for indicating to the user when at least one of the input data and the calculated data does not adhere to the stored sets of criteria.

5,796,760

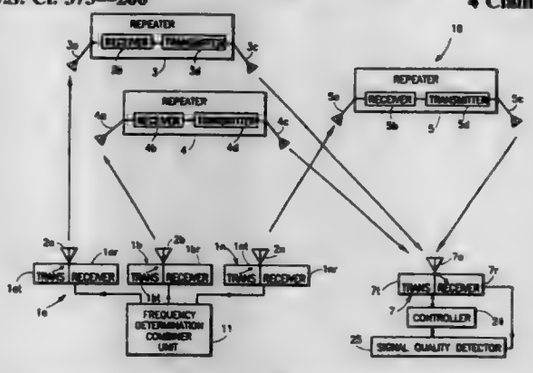
MULTIPATH COMMUNICATION SYSTEM OPTIMIZER

Robert A. Wiedeman, Los Altos, and Paul Monte, San Jose, both of Calif., assignors to Globalstar L.P., San Jose, Calif.

Continuation of Ser. No. 239,750, May 9, 1994. This application Jul. 30, 1997, Ser. No. 903,166

Int. Cl.[6] H04K *1/02*; H04B *7/02*

U.S. Cl. 375—200 4 Claims



1. A satellite communication system, comprising:

a plurality of satellite-based signal repeaters in low earth orbit;

a groundstation comprised of a plurality of code division multiple access (CDMA) spread spectrum transceivers, each of said plurality of transceivers being coupled to a directional antenna for transmitting spread spectrum signals to and for receiving spread spectrum signals from one of said plurality of signal repeaters;

a user terminal comprised of a CDMA spread spectrum transceiver that is coupled to an omni-directional antenna for simultaneously transmitting spread spectrum signals to and for receiving spread spectrum signals from two or more of said directional antennas via two or more of said plurality of signal repeaters;

wherein at least two of said plurality of spread spectrum transceivers of said groundstation simultaneously transmit a same communication signal to said user terminal through different ones of said plurality of repeaters, said transmitted communication signals being identifiable one from the other;

wherein said user terminal is comprised of circuitry for repetitively determining a signal quality of each communication

signal received through at least some of said different ones of said plurality of repeaters, and for periodically and simultaneously transmitting a signal indicating said determined signal qualities back to said groundstation through said at least some of said different ones of said plurality of repeaters; and

wherein

said groundstation is responsive to a receipt of the periodically transmitted signal from said user terminal for selectively and independently activating the transmission of, deactivating the transmission of, and controlling the transmission power of individual ones of said plurality of spread spectrum transceivers that are simultaneously transmitting said same communication signal through said different ones of said plurality of repeaters.

5,796,761

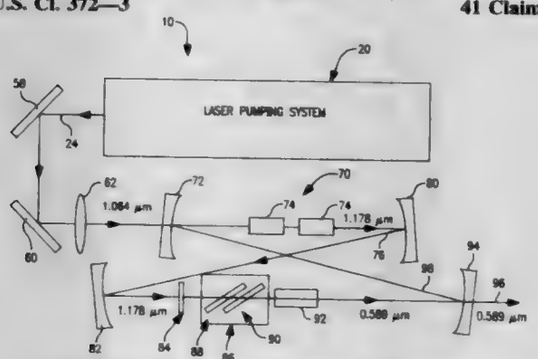
HIGH EFFICIENCY SOLID STATE RAMAN LASER SYSTEM

Hagop Injeyan, Glendale; Eric C. Cheung, Torrance, and James G. Ho, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 11, 1996, Ser. No. 712,251

Int. Cl.[6] H01S *3/30*

U.S. Cl. 372—3 **41 Claims**



1. A high efficiency Raman laser system, the system comprising:

laser pumping means for generating an input beam, the laser pumping means including a laser cavity and stabilizing means disposed inside the laser cavity for suppressing relaxation oscillations in the input beam;

a resonator cavity;

an input coupler for inputting the input beam into the resonator cavity;

a solid Raman medium disposed inside the resonator cavity for shifting the frequency of the input beam to produce a Raman beam;

a solid, non-linear medium disposed inside the resonator cavity for shifting the frequency of the Raman beam to produce an output beam; and

an output coupler for extracting the output beam from the resonator cavity.

5,796,762

ROOM TEMPERATURE STABLE COLOR CENTER LASERLIF:F_2^{+***} MATERIAL AND METHOD OF LASING

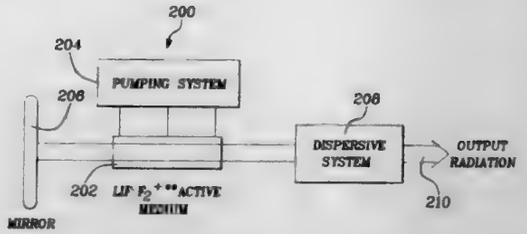
Sergey Mirov, and Alex Dergachev, both of Birmingham, Ala., assignors to The UAB Research Foundation, Birmingham, Ala.

Filed Apr. 8, 1997, Ser. No. 826,924

Int. Cl.[6] H01S *3/30*

U.S. Cl. 372—5 **15 Claims**

1. A laser material for a solid state tunable laser which comprises a lithium fluoride crystal having anion and cation impurities, said crystal having a crystallographic structure with point defects comprising F_2^{+**} color centers, said F_2^{+**} color centers comprising



F_2^+ color centers perturbed by neighboring anion impurities, cation impurities and vacancies, said F_2^{+**} color centers being present in concentrations sufficient to obtain lasing in a wide temperature range including room temperature and above, and said impurities being present in concentrations sufficient to provide photothermostabilization of said color centers.

5,796,763

Patent Not Issued For This Number

5,796,764

RARE-EARTH DOPED LITHIUM NIOBATE DBR LASER

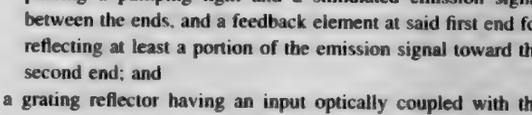
Raffaele Corsini, Villadossola, and Dietmar Hiller, Milan, both of Italy, assignors to Pirelli Cavi S.p.A., Italy

Filed Dec. 5, 1996, Ser. No. 760,735

Claims priority, application European Pat. Off., Jan. 12, 1996, 96830008

Int. Cl.[6] H01S *3/30*; G02B *6/34*; H04J *14/02*

U.S. Cl. 372—6 **35 Claims**



1. A laser, comprising:

a substrate doped with a lasing material, the doped substrate having first and second ends and including a wavelength for passing a pumping light and a stimulated emission signal between the ends, and a feedback element at said first end for reflecting at least a portion of the emission signal toward the second end; and

a grating reflector having an input optically coupled with the waveguide at the second end of the doped substrate and an output, the grating reflector and the feedback element defining a laser cavity including the doped substrate, characterized in that the grating reflector is an optical fibre modified to provide a grating reflector for the emission signal and reflects at least a portion of the emission signal toward the first end of the doped substrate and in that the reflectivities of said feedback element and of said grating reflector for said emission signal are selected to provide emission signal amplification by lasing when pumping light is supplied to said waveguide.

5,796,765

OPTICAL PULSE SEQEUNCE GENERATOR

Julian Kazimirez Lucek, and Kevin Smith, both of Suffolk, United Kingdom, assignors to British Telecommunication public limited Company, London, England

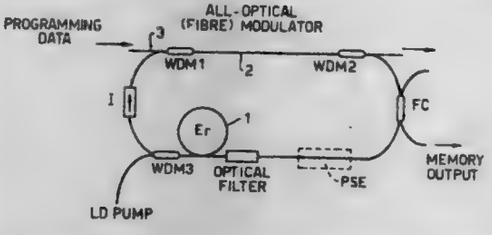
PCT No. PCT/GB94/02239, § 371 Date Mar. 25, 1996, § 102(e) Date Mar. 25, 1996, PCT Pub. No. WO95/10870, PCT Pub. Date Apr. 20, 1995

PCT Filed Jun. 24, 1996, Ser. No. 617,868

Claims priority, application European Pat. Off., Oct. 11, 1993, 93308067; United Kingdom, Apr. 7, 1994, 9406882; European Pat. Off., May 3, 1994, 94303193

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—25 **20 Claims**



1. A method of generating an optical pulse sequence comprising:

applying a repetitive optical signal to an optical modulator connected in the laser cavity of a mode-locked laser, and

outputting a pulse sequence form the laser cavity,

the repeat period of the repetitive optical signal being equal to, or an integer multiple of, the cavity round-trip time,

the laser thereby being driven to output pulses in bit positions corresponding to the non-zero pulses of the input repetitive optical signal.

5,796,766

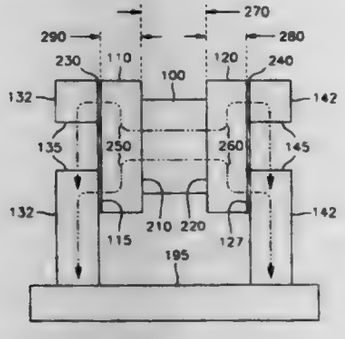
OPTICALLY TRANSPARENT HEAT SINK FOR LONGITUDINALLY COOLING AN ELEMENT IN A LASER

David E. Hargis, La Jolla, and Sven E. Nelte, Carlsbad, both of Calif., assignors to Laser Power Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 731,823, Oct. 21, 1996, abandoned, which is a continuation of Ser. No. 295,006, Oct. 23, 1994, Pat. No. 5,574,740. This application Jan. 17, 1997, Ser. No. 784,051

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—36 **31 Claims**



1. A laser assembly comprising:

an optical cavity;

a laser element having a first surface and a second surface, said laser element located within said optical cavity;

an optically transparent heat sink (OTH) located within said optical cavity, having a first surface and a second surface, said second surface of said OTH coupled at an interface to said first surface of said laser element; and

wherein at least one of said laser element and said OTH forms an etalon structure wherein said first and second surfaces of said etalon structure are approximately flat and parallel to each other, with one of said flat surfaces being located at said interface of said laser element and said OTH, such that said etalon structure produces constructive interference effects which minimize optical losses at said interface thereby improving laser efficiency.

5,796,767

DRIVER CIRCUIT OF LIGHT-EMITTING DEVICE

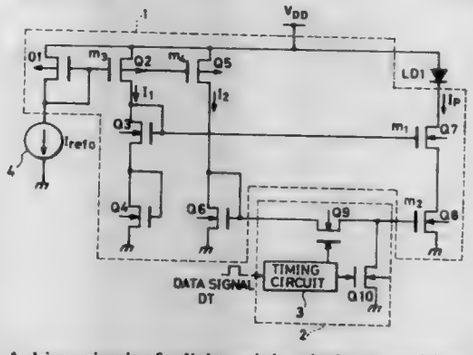
Yukio Aizawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 20, 1997, Ser. No. 803,370

Claims priority, application Japan, Feb. 20, 1996, 8-032216

Int. Cl.[6] H01S *3/00*

U.S. Cl. 372—38 **10 Claims**



1. A driver circuit of a light-emitting device comprising:

a reference current source for generating a reference current;

a cascode current source circuit for generating a driving current for said light-emitting device with the use of said reference current;

an input circuit for switching said driving current according to a data signal;

said cascode current source circuit having a first current mirror formed by first and second transistors and a second current mirror formed by third and fourth transistors;

said first transistor of said first current mirror being supplied with a first constant current proportional to said reference current, and controlling said second transistor so that said driving current flows through said second transistor;

said third transistor of said second current mirror being supplied with a second constant current proportional to said reference current, and generating a mirror current with respect to said second constant current;

said second mirror current flowing through said fourth transistor as said driving current;

said input circuit serving to turn on and off said fourth transistor according to said data signal, thereby controlling said output of said driving current to said light-emitting device.

5,796,768

BURIED STRUCTURE LASER DEVICE FOR INTEGRATED PHOTONIC CIRCUIT AND METHOD OF MANUFACTURE

Boumédienne Mersali, Arcueil, and François Dorgeuille, Paris, both of France, assignors to France Telecom, Paris, France

Filed Jun. 28, 1996, Ser. No. 670,876

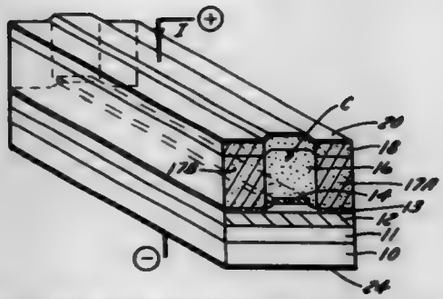
Claims priority, application France, Jul. 6, 1995, 95 08200

Int. Cl.[6] H01S *3/19;3/00;* G02B *6/12*

U.S. Cl. 372—45 **19 Claims**

1. A double buried heterostructure optical device comprising:

a buffer layer doped with carriers of a first type and covering an entire surface of a substrate doped with carriers of the first



type, and the buffer layer having a rectangular cross section such that a top surface of the buffer layer and a bottom surface of the buffer layer are of equal width,

a guiding layer formed by a non-doped quaternary compound and covering an entire surface of the buffer layer,

an extremely thin intermediate layer, the intermediate layer being highly doped with carriers of the first type and covering an entire surface of the guiding layer so as to provide the guiding layer with a high confinement factor,

a strip of active layer, the strip of active layer forming at least one of a laser and an amplifier, the strip of active layer being formed of a non-doped quaternary compound, and

a sheathing layer doped with carriers of a second type and covering the strip of active layer, and

wherein a width of the guiding layer, the width of the top and bottom surfaces of the buffer layer, and a width of the substrate are all equal.

5,796,769

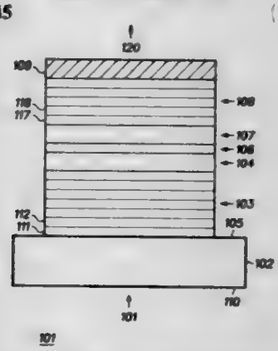
RED LIGHT VERTICAL CAVITY SURFACE EMITTING LASER

Jamal Ramdani, Gilbert; Michael S. Lebby, Apache Junction, and Wenbin Jiang, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 19, 1996, Ser. No. 699,319

Int. Cl.[6] H01S 3/19

U.S. Cl. 372—45 **12 Claims**



1. A red light vertical cavity surface emitting laser comprising:

a first stack of distributed Bragg reflectors, the first stack of distributed Bragg reflectors including a plurality of alternating layers of material having alternating refractive indexes with the first stack of distributed Bragg reflectors having a first dopant type;

a first cladding region disposed on the first stack of distributed Bragg reflectors;

an active area disposed on the first cladding region, the active area including a first layer of indium aluminum gallium phosphide, a second layer of indium gallium arsenide phosphide disposed on the first layer of indium aluminum gallium phosphide, and a third layer of indium aluminum gallium phosphide disposed on the second layer of indium gallium arsenide phosphide;

a second cladding region disposed on the active area;

a second stack of distributed Bragg reflectors disposed on the second cladding region, the second stack of distributed Bragg reflectors including a plurality of alternating layers of material having alternating refractive indexes with the second stack of distributed Bragg reflectors having a second dopant type; and

a contact region disposed on the second stack of distributed Bragg reflectors.

5,796,770

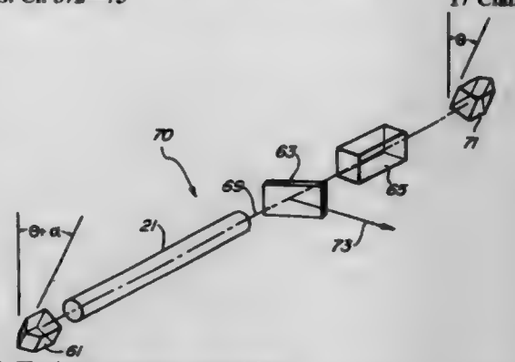
COMPACT DIODE PUMPED SOLID STATE LASER

Eduard Gregor, Pacific Palisades; Tzeng S. Chen, Ranco Palos Verdes, and Hans W. Bruesselbach, Monte Nido, all of Calif., assignors to Raytheon Company, El Segundo, Calif.

Filed Oct. 11, 1995, Ser. No. 540,732

Int. Cl.[6] H01S 3/0941;3/08

U.S. Cl. 372—75 **17 Claims**



1. The laser apparatus comprising:

a lasing medium for generating a coherent beam of radiation; and

an uncrossed double roof prism resonator including first and second roof prisms having respective roof lines and having said lasing medium located therein, said roof prisms comprising respective reflectors of said resonator, said first and second roof prisms having an angle between their respective roof lines selected to provide radial homogenization through multiple reflections within said resonator.

5,796,771

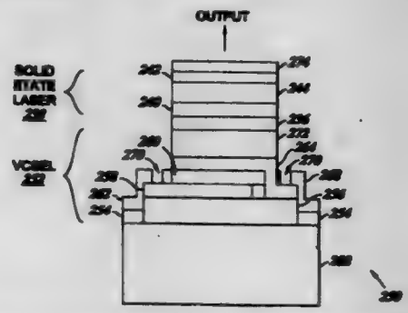
MINIATURE SELF-PUMPED MONOLITHICALLY INTEGRATED SOLID STATE LASER

Steven P. DenBaars; James S. Speck, both of Goleta, Calif.; Charles H. Church, Chapel Hill, N.C.; Robert G. Wilson, Winnetka, Calif., and John M. Zavada, Durham, N.C., assignors to The Regents of the University of California, Oakland, Calif.; The United States of America as represented by the Secretary of the Army, Washington, D.C., and Hughes Electronics, Los Angeles, Calif.

Filed Aug. 19, 1996, Ser. No. 699,361

Int. Cl.[6] H01S 3/091

U.S. Cl. 372—75 **49 Claims**



1. An integrated solid state laser device comprising:

a substrate;

a semiconductor light source to provide pump light; and

a solid state laser positioned between the substrate and the semiconductor light source and including a layer doped with metal ions, and wherein the metal ions are pumped by pump light emitted by the semiconductor light source.

5,796,772

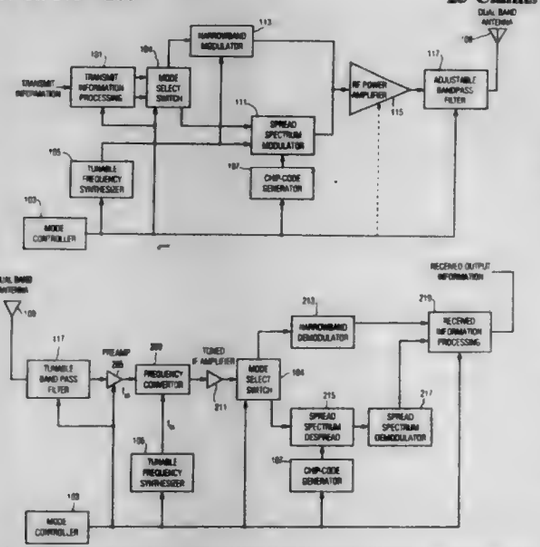
MULTI-BAND, MULTI-MODE SPREAD-SPECTRUM COMMUNICATION SYSTEM

Douglas G. Smith, Arlington, Va.; Robert C. Dixon, Palmer Lake, and Jeffrey S. Vanderpool, Colorado Springs, both of Colo., assignors to Omnipoint Corporation, Colorado Springs, Colo.

Continuation-in-part of Ser. No. 293,671, Aug. 18, 1994, which is a continuation-in-part of Ser. No. 146,492, Nov. 1, 1993, abandoned, and Ser. No. 59,021, May 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 976,700, Nov. 16, 1992, abandoned, and Ser. No. 206,045, Mar. 1, 1994, abandoned, which is a continuation of Ser. No. 948,293, Sep. 18, 1992, Pat. No. 5,291,516, which is a continuation of Ser. No. 698,694, May 13, 1991. This application Jun. 7, 1995, Ser. No. 485,987

Int. Cl.[6] H04K *1/00*; H04L *27/00*;5/16

U.S. Cl. 375—200 **25 Claims**



10. An apparatus for muiti-band multi-mode communication comprising:

a transmitter comprising

a first tunable frequency source;

a plurality of modulators coupled to said first tunable frequency source, said plurality of modulators comprising a plurality of transmission modes;

a first mode selection signal coupled to each of said plurality of modulators;

a first filter coupled to an output of each of said plurality of modulators;

said plurality of modulators comprising a spread spectrum modulator and a narrowband modulator and said transmitter is capable of transmitting a spread spectrum signal and a narrowband signal; and

a receiver comprising

a second filter;

a second tunable frequency source;

a frequency converter coupled to said second filter and coupled to said second tunable frequency source;

a plurality of demodulators coupled to said frequency converter, said plurality of demodulators comprising a plurality of reception modes

a second mode selection signal coupled to each of said plurality of demodulators.

5,796,773

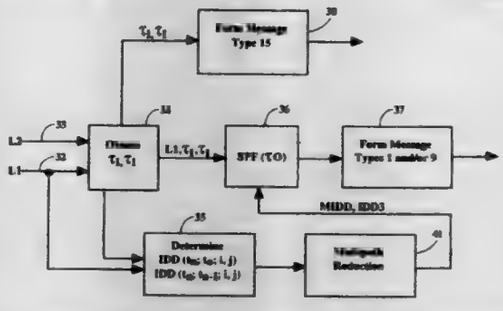
COMPENSATING FOR MULTIPATH ERRORS, IONOSPHERIC TIME DELAY AND NOISE ERRORS IN DIFFERENTIAL SATELLITE POSITIONING SYSTEMS

Len Sheynblat, Belmont, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation of Ser. No. 216,671, Mar. 22, 1994, Pat. No. 5,563,917. This application Oct. 7, 1996, Ser. No. 722,436

Int. Cl.[6] H04B *1/69*

U.S. Cl. 375—200 **22 Claims**



1. A method for reducing multipath signal error from signals received in a Satellite Positioning System (SATPS) from one or more SATPS satellites, the method comprising the steps of:

receiving SATPS signals, which have been transmitted from one or more SATPS satellites, numbered j=1, 2, . . . , at one or more SATPS reference stations, numbered i=1, 2, . . . , whose location coordinates are accurately known, where each SATPS signal includes at least one indicium that is specific to the satellite that transmitted that SATPS signal;

processing the SATPS signals at each SATPS reference station to produce pseudorange measurement values PR(t;i;j) and to produce carrier phase measurement values $\Phi(t;i;j)$ that vary with time t, for a sequence of selected signal sampling times $\{t_n\}_n$;

determining an ionospheric propagation time delay $\tau_j(t;i;j)$ and a rate of change with respect to time of ionospheric propagation time delay $\tau_j(t;i;j)$ for SATPS signal propagation through an ionosphere from satellite number j toward each SATPS reference station;

for a selected time t_0 and a subsequent sampling time t_n, forming a difference signal $IDD(t_n;t_0;i;j)=\{PR(t_n;i;j)-\tau_j(t_n;i;j)\}-\{PR(t_0;i;j)-\tau_j(t_0;i;j)\}-\{\Phi(t_n;i;j)+\tau_j(t_n;i;j)\}+\{\Phi(t_0;i;j)+\tau_j(t_0;i;j)\}$;

passing the difference signal $IDD(t_n;t_0;i;j)$ through a first statistical processing filter having a first selected filter time constant $\tau 1$ that lies in a range 5–20 seconds, to produce a first output signal $IDD1(t_n;t_0;i;j)$;

passing the signal $IDD(t_n;t_0;i;j)$ through a second statistical processing filter having a second selected filter time constant $\tau 2$ that lies in a range 50–1000 seconds, to produce a second output signal $IDD2(t_n;t_0;i;j)$; and

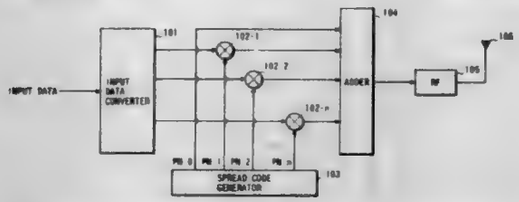
forming a difference signal $IDD3(t_n;t_0;i;j)=IDD2(t_n;t_0;i;j)-IDD1(t_n;t_0;i;j)$ as a third output signal that contains primarily SATPS multipath signal error; and

forming a difference signal $MPR(t_n;t_0;i;j)=PR(t_n;i;j)-IDD3(t_n;t_0;i;j)$ as a pseudorange output signal that has reduced multipath signal error.

5,796,774
SPREAD SPECTRUM COMMUNICATION APPARATUS WITH CONVERSION OF INPUT PATTERNS TO UNIFORM SPECTRAL PATTERNS

Ichiro Kato, Kawsaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1996, Ser. No. 602,307
Claims priority, application Japan, Feb. 20, 1995, 7-055122
Int. Cl.[6] H04B 1/707
U.S. Cl. 375—206 **18 Claims**



1. A spread spectrum communication method comprising the steps of:

processing parallel data;

spreading each of the parallel data processed in said processing step, using a different spread code; and

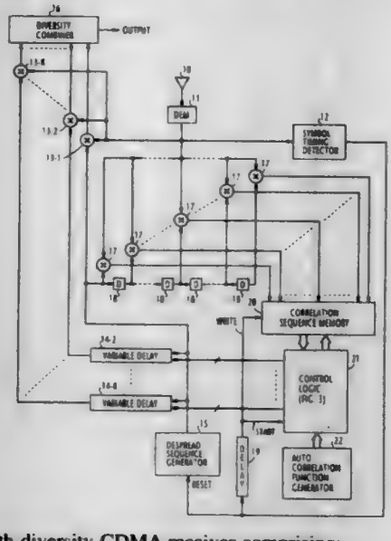
communicating the parallel data, each of which is spread using the spread code,

wherein the parallel data is processed in said processing step such that a spectrum of a signal communicated in said communicating step becomes uniform.

5,796,775
PATH-DIVERSITY CDMA RECEPTION BY DETECTING LOWER-PEAK CORRELATION SEQUENCE FOLLOWING REMOVAL OF HIGHER-PEAK SEQUENCES

Akio Aoyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 23, 1997, Ser. No. 880,381
Claims priority, application Japan, Jun. 21, 1996, 8-162097
Int. Cl.[6] H04K 1/00; H04B 1/707
U.S. Cl. 375—208 **17 Claims**



1. A path-diversity CDMA receiver comprising:

means for receiving a spread spectrum radio frequency signal and producing therefrom a chip sequence;

a pseudo-noise (PN) sequence generator for producing a despreading sequence;

means, connected to said PN sequence generator, for producing a plurality of successively time shined replicas of said despreading sequence;

a plurality of correlators for detecting correlations between the chip sequence and the time shifted replicas of the despreading sequence and producing therefrom a plurality of correlation sequences, one of the correlation sequences which is produced corresponding to an intermediate one of said time shifted replicas having a maximum peak;

a memory for storing said correlation sequences;

control means for detecting a correlation sequence having said maximum peak and correlation sequences having side peaks inherently associated with said maximum peak and removing all the detected sequences from said memory, detecting a correlation sequence having a maximum peak among the correlation sequences remaining in said memory and producing a timing control signal corresponding to the detected correlation sequence;

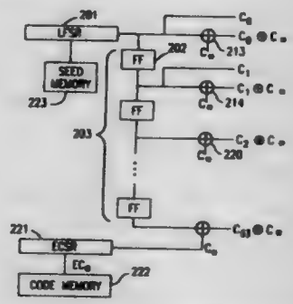
variable delay means for introducing a delay to the despreading sequence from the PN sequence generator in accordance with said timing control signal; and

a despreader for despreading the chip sequence with the despreading sequence from the variable delay means to produce a diversity branch signal.

5,796,776
CODE SEQUENCE GENERATOR IN A CDMA MODEM

Gary Lomp, Centerpot; Fatih Ozluturk, Port Washington, and Avi Silverberg, Commack, all of N.Y., assignors to Interdigital Technology Corporation, Wilmington, Del.

Filed Jun. 27, 1996, Ser. No. 669,769
Int. Cl.[6] G06F 1/02; H04L 27/20
U.S. Cl. 375—222 **4 Claims**



1. A code sequence generator apparatus which generates a plurality of spreading code sequences including a master spreading code sequence, the plurality of spreading code sequences having relatively low mutual cross correlation, and having a predetermined mutual code phase relationship, said code sequence generator apparatus comprising:

a clock generator means for generating a clock signal

a linear feedback shift register (LFSR), responsive to the clock signal and having a plurality of stages including a first stage and a last stage, each stage defining a respective tap, each tap producing a tap signal; wherein a predetermined group of the tap signals including the tap signal of the last stage are applied to logic circuitry which combines the tap signals to produce a feedback spreading-code signal, said feedback spreading-code signal being applied as an input signal to the first stage of the LFSR;

first memory means for storing a plurality of spreading-code seeds, each spreading-code seed comprising a set of spreading-code sequence bit values, and said first memory being connected to the LFSR and being responsive to a load signal for transferring each one of a predetermined set of the spreading-code sequence bit values of a selected one of the plurality of spreading-code seed into a respective one of the shift register stages of the LSFR;

code generator controller means for selecting one of the plurality of spreading-code seeds to determine the plurality of spreading code sequences and for providing the load signal indicating said one spreading-code seed;

wherein said LSFR is responsive to the clock signal to sequentially transfer each respective tap signal from one stage to the next stage, from the first stage to the last stage and for transferring the feedback spreading-code value to the first stage, and each successive one of the tap values of the last stage defines the master spreading code sequence

second memory means being responsive to the clock signal for providing a repetitive even code sequence, said even code sequence having relatively low cross correlation with the master spreading sequence and having an even number of chip spreading values;

a plurality of cascade connected feedforward means, coupled to receive the master spreading code sequence, for providing a plurality of code sequences, each code sequence being a distinct spreading code sequence of said plurality of spreading code sequences, said feedforward means being responsive to the clock signal, to provide a plurality of spreading code sequences; and

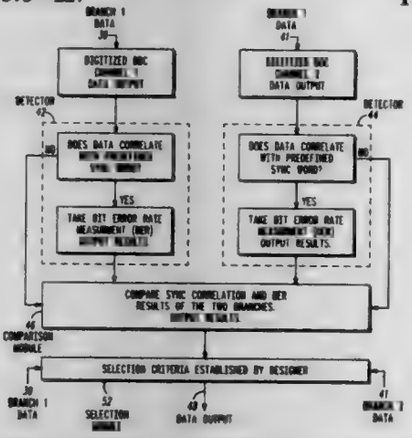
a plurality code sequence combining means, each code sequence combining means for combining respective spreading code sequence with said even code sequence to produce a plurality of relatively long spreading code.

5,796,777

APPARATUS AND METHOD FOR DIGITIZING AND DETECTING A RECEIVED RADIO FREQUENCY SIGNAL

Daniel Joseph Terlep, Crystal Lake, and Robert Charles Elder, McHenry, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1996, Ser. No. 607,752
Int. Cl.[6] H04B *3/46;17/00*
U.S. Cl. 375—227 **17 Claims**



1. A method of digitizing and detecting a received signal comprising the steps of:

digitizing a first radio frequency signal at a first clock rate to produce a first digitized signal;

digitizing a second radio frequency signal at a second clock rate to produce a second digitized signal;

performing a first signal quality measurement indicative of the signal quality of the first digitized signal, the first signal quality measurement comprising a synchronization measurement;

performing a second signal quality measurement indicative of the signal quality of the second digitized signal, the second signal quality measurement comprising a synchronization measurement; and

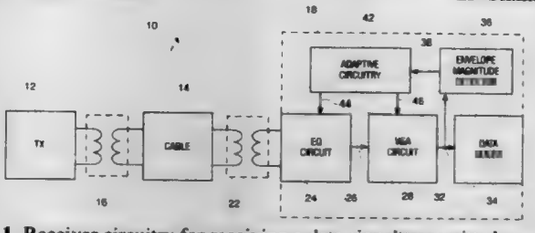
selecting at least one of the first and second digitized signals based on the first and second signal quality measurements.

5,796,778

RECEIVER CIRCUIT HAVING ADAPTIVE EQUALIZER WITH CHARACTERISTICS DETERMINED BY SIGNAL ENVELOPE MEASUREMENT AND METHOD THEREFOR

Christopher M. Kurker, Fort Collins, Colo., assignor to Symbios, Inc., Fort Collins, Colo.

Filed Sep. 26, 1995, Ser. No. 534,228
Int. Cl.[6] H03H *7/30;7/40;* **H03Q** *1/20*
U.S. Cl. 375—229 **23 Claims**



1. Receiver circuitry for receiving a data signal transmitted upon a transmission channel, said receiver circuitry comprising:

an adaptive equalizer circuit having selectable adaptive characteristics and coupled to receive a receive signal representative of the data signal, said adaptive equalizer for equalizing the receive signal and for generating an equalized signal;

a variable gain amplifier circuit having selectable variable gain characteristics and coupled to receive the equalized signal, said variable gain amplifier circuit for amplifying the equalized signal and for forming an amplified signal;

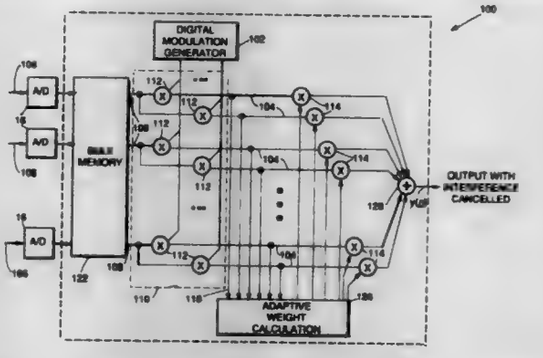
a signal detector coupled to detect a signal envelope of at least a portion of either the equalized signal or the amplified signal, wherein the signal envelope detected by said signal detector is utilized to select the selectable adaptive characteristics of said adaptive equalizer and to select the selectable gain characteristics of said variable gain amplifier.

5,796,779

ADAPTIVE SIGNAL PROCESSOR FOR NON-STATIONARY ENVIRONMENTS AND METHOD

Howard S. Nussbaum; Oleg Brovko, and Douglas G. Dewolf, all of Los Angeles, Calif., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 653,753, May 31, 1996, abandoned, which is a continuation of Ser. No. 496,031, Jun. 28, 1995, abandoned, which is a continuation of Ser. No. 285,596, Aug. 3, 1994, abandoned, which is a continuation of Ser. No. 905,939, Jun. 29, 1992, abandoned. This application May 9, 1997, Ser. No. 853,545
Int. Cl.[6] H04B *7/02*
U.S. Cl. 375—267 **2 Claims**



1. In an adaptive signal processor for use with a receiving system on a non-stationary environment having means for receiving a composite signal including a desired input signal and an interference signal, a method for canceling said interference signal including the steps of:

digitizing said composite signal with a plurality of analog-to-digital converters to provide a digitized composite signal;

modelling the interference environment including clutter, jamming signals, and noise, by generating a plurality of modulation functions to enable said non-stationary environment to be matched by a combination of modulated signals;

selecting which of the plurality of modulation functions most effectively cancels the interference signal;

modulating said digitized composite signal using said selected modulation function to provide a plurality of modulated digitized composite signals;

calculating and applying a plurality of adaptive weight values to said plurality of modulated digitized composite signals to provide a plurality of time varying weighted signals; and

combining said time varying weighted signals to eliminate said interference signal from said composite signal.

5,796,780

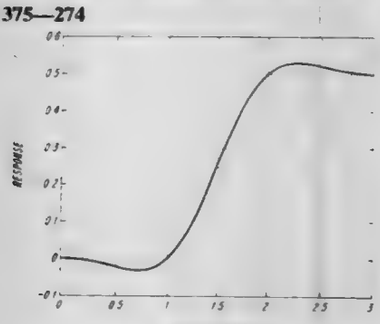
COHERENT MODULATION OF CPM SIGNALS

Rajaram Ramesh, Cary, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Feb. 9, 1996, Ser. No. 599,011

Int. Cl.[6] H04L *27/10;27/12;27/14*

U.S. Cl. 375—274 **16 Claims**



1. A method for transmitting and receiving a digital communications signal, comprising the steps of:

obtaining data bits from a source;

mapping sets of q data bits into data symbols b_k having one of the 2^q values $\{0,1, \ldots 2^q-1\}$, where k is a time index;

generating a data dependent signal

$$s_d(t) = e^{j2\pi h\left(b_{m-L} + \sum_{k=1}^{L} 2^{(b_{m-L+k}-b_{m-L+k-1} \bmod 2^q)} f(\tau+LT-kT) \right)}$$

where h is a modulation index of the form $K/2^q$ for an integer K and $f(\tau)$ is a normalized phase pulse;

generating a data independent signal

$$s_i(t) = e^{j2\pi h\left(\sum_{k=-\infty}^{m-L} \frac{-(2^q-1)}{2} + \sum_{k=1}^{L} (-1)^{2^q-1} f(\tau+LT-kT) \right)}$$

generating a product signal from the data-dependent signal and the data-independent signal;

transmitting the product signal over a communication channel;

receiving the transmitted product signal; and

demodulating the received signal by estimating the data symbols b_k from the received signal determining the data bits from the estimation of the data symbols.

5,796,781

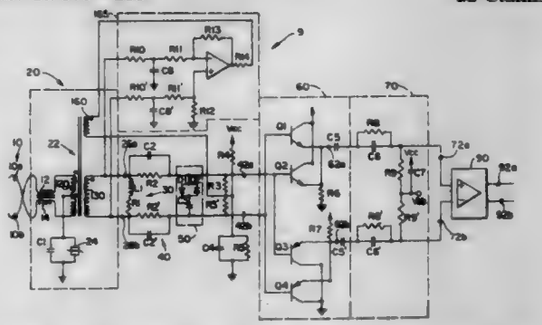
DATA RECEIVER HAVING BIAS RESTORATION

John J. DeAndrea, Lawrenceville, N.J., and Keith M. Conroy, Philadelphia, Pa., assignors to Technitrol, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 89,973, Jul. 9, 1993, Pat. No. 5,533,054. This application Apr. 5, 1995, Ser. No. 417,239

Int. Cl.[6] H04L *25/06*

U.S. Cl. 375—288 **22 Claims**



18. A data receiver circuit, for receiving pseudoternary line-coded data signals, comprising:

(a) an equalizer for correcting distortion in the line-coded signals and for producing equalized pseudoternary signals therefrom;

(b) a differential decoder having an input terminal connected with said equalizer for producing binary signals in response to the equalized pseudoternary signals; and

(c) a restoration circuit connected with the input of said differential decoder for detecting a shift in an average level of the equalized pseudoternary signals and for applying a counteracting bias to the equalized pseudoternary signals in response to the shift.

5,796,782

DIGITAL MODULATOR WITH ROOT-NYQUIST FILTER

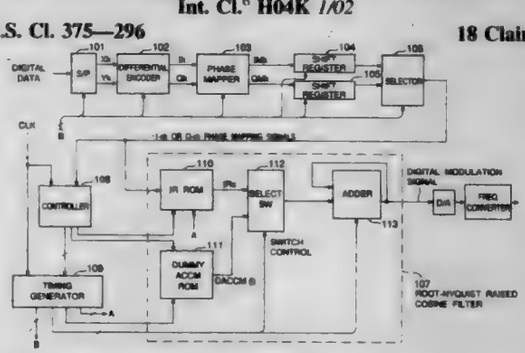
Yuichirou Sagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 27, 1996, Ser. No. 722,492

Claims priority, application Japan, Sep. 29, 1995, 7-252140

Int. Cl.[6] H04K *1/02*

U.S. Cl. 375—296 **18 Claims**



1. A digital modulator comprising:

first converting means for converting a stream of input digital data into mapping signals each indicating a signal point on an orthogonal coordinate according to a PSK (phase shift keying) modulation scheme having a first predetermined number of signal points on the orthogonal coordinate;

second converting means for converting the mapping signals into impulse responses corresponding to the mapping signals, respectively, in symbol timings, each impulse response having a time period of a second predetermined number of symbol timings;

accumulation means for accumulating the second predetermined number of impulse responses in symbol timings to produce digital modulation data, the second predetermined number of

impulse responses consisting of prior impulse responses and posterior impulse responses;

storage means for previously storing an accumulation value of each combination of dummy prior impulse responses in a predetermined transition course prior to a target impulse response corresponding to each of the first predetermined number of signal points on the orthogonal coordinate; and

control means for controlling the accumulation means, the second converting means and the storage means such that, when lacking a first number of prior impulse responses, a second number of impulse responses obtained by the second converting means are accumulated and added to the accumulation value of the first number of dummy prior impulse responses stored in the storage means to produce the digital modulation data wherein the first number plus the second number equals the second predetermined number with incrementing the second number up to the second predetermined number in symbol timings.

5,796,783

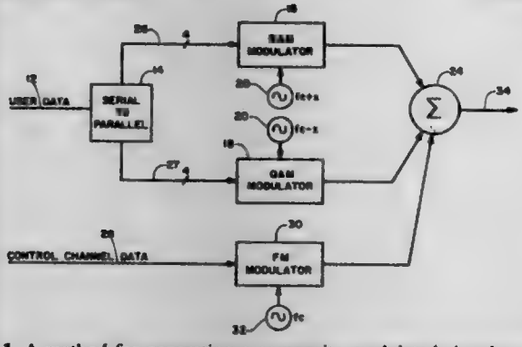
DIGITAL TRANSMISSION SYSTEM

James A. Crawford, San Diego, Calif., assignor to Andre Alain Tabourian, San Diego, Calif.

Filed Oct. 31, 1995, Ser. No. 550,857

Int. Cl.[6] H04L *27/09*

U.S. Cl. 375—298 **1 Claim**



1. A method for generating a composite modulated signal comprising the steps of:

quadrature modulating a first signal and a second signal onto a first carrier to result in a first modulated carrier;

quadrature modulating a third signal and a fourth signal onto a second carrier to result in a second modulated carrier;

frequency modulating a fifth signal onto a third carrier to result in a third modulated carrier;

combining said first modulated carrier with said second modulated carrier and with said third modulated carrier to result in a composite modulated signal wherein said first carrier and said second carrier are separated in frequency by a predetermined amount and said third carrier is in the center of said first carrier and said second carrier.

5,796,784

METHOD AND APPARATUS FOR MODIFYING AMPLITUDE OF AT LEAST ONE SYMBOL

Robert D. LoGalbo, Bartlett; Donald G. Newberg, Hoffman Estates, and Bradley M. Hiben, Glen Ellyn, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

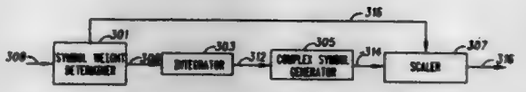
Filed Mar. 27, 1996, Ser. No. 624,042

Int. Cl.[6] H04L *27/36;27/20*

U.S. Cl. 375—298 **21 Claims**

1. An apparatus for modifying at least one symbol, the apparatus comprising:

a symbol weight determiner that takes as input the at least one symbol and determines a scaling factor, corresponding to the at least one symbol, according to a symbol weighting function based at least upon an operating mode and a type of the at least one symbol;



an integrator that takes as input the at least one symbol and produces a phase representation of the at least one symbol;

a complex symbol generator, coupled to the integrator, that takes as input the phase representation of the at least one symbol and produces at least one complex symbol; and

a scaler, coupled to the complex symbol generator and the symbol weight determiner, that takes as input the at least one complex symbol and the scaling factor, and produces at least one scaled complex symbol, the at least one scaled complex symbol having been scaled according to the scaling factor.

5,796,785

DIGITAL AUDIO BROADCAST RECEIVER HAVING CIRCUITRY FOR RETRIEVING EMBEDDED DATA AND FOR SUPPLYING THE RETRIEVED DATA TO PERIPHERAL DEVICES

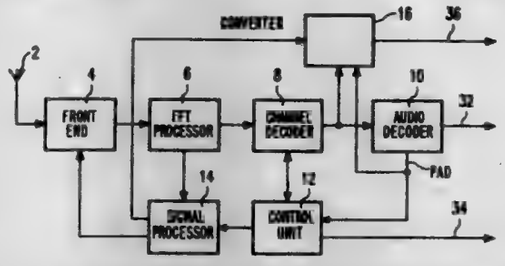
Richard C. Spiero, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 1, 1996, Ser. No. 724,389

Claims priority, application European Pat. Off., Oct. 4, 1995, 95202670

Int. Cl.[6] H04L *29/10*

U.S. Cl. 375—316 **8 Claims**



5. A method for supplying at least a part of a digital sequence of data, said digital sequence of data comprising a plurality of sequences of different data types, at least one sequence out of said plurality of sequences of different data types being embedded in the digital sequence of data together with at least one other sequence out of said plurality of sequences of different data types, characterized in that the method comprises the steps:

retrieving said at least one sequence out of said plurality of sequences of different data types which had been embedded in said digital sequence of data; and

inserting the retrieved at least one sequence separate from the at least one other embedded sequence into the at least part of the digital sequence of data.

5,796,786

PHASE ERROR DETECTING METHOD AND PHASE TRACKING LOOP CIRCUIT

Myeong-hwan Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

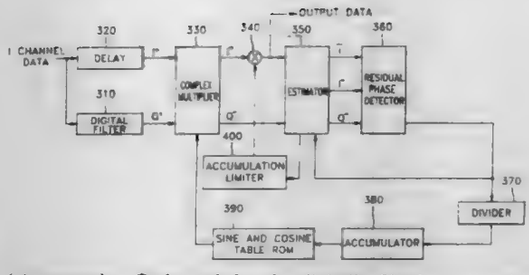
Filed Oct. 18, 1996, Ser. No. 733,569

Claims priority, application Rep. of Korea, Oct. 18, 1995, 95-36047

Int. Cl.[6] H04L *27/14*

U.S. Cl. 375—326 **18 Claims**

1. A phase error detecting method in a communication device of a digital VSB modulation system, comprising the steps of:



(a) recovering Q-channel data by digitally filtering transmitted I-channel data;

(b) correcting the phases of said I-channel data and said Q-channel data by a predetermined weighted phase error value to produce phase-corrected I-channel data and phase corrected Q-channel data;

(c) deciding an I-channel level value closest to the phase-corrected I-channel data among predetermined I-channel level values;

(d) obtaining a phase error value by subtracting the decided I-channel level value from said phase-corrected I-channel data, and multiplying the subtracted result by the sign of said phase-corrected Q-channel data; and

(e) multiplying said phase error value by a weight value according to a predetermined weighting function W(I) to produce a weighted phase error value, and feeding back said weighted phase error value for use in step (b).

5,796,787

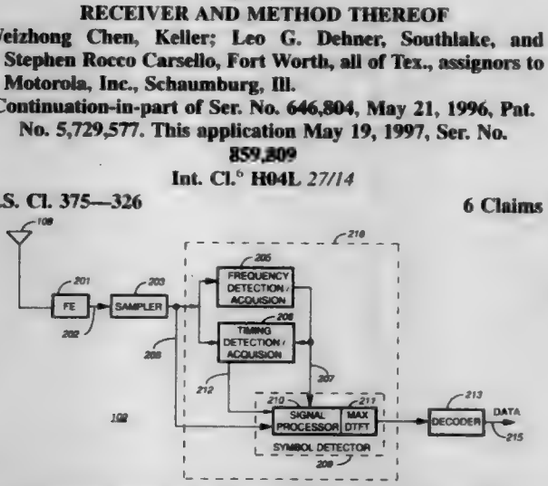
RECEIVER AND METHOD THEREOF

Weizhong Chen, Keller; Leo G. Dehner, Southlake, and Stephen Rocco Carsello, Fort Worth, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 646,804, May 21, 1996, Pat. No. 5,729,577. This application May 19, 1997, Ser. No. 859,809

Int. Cl.[6] H04L *27/14*

U.S. Cl. 375—326 **6 Claims**



1. A receiver arranged and constructed to receive a signal using a noncoherent matched filter structure comprising in combination:

a frequency detector arranged to process a first portion of the signal to provide a frequency error;

a timing detector, responsive to said frequency error, arranged to process a second portion of the signal to provide a timing error; and

a symbol detector, responsive to said frequency error, arranged to process a symbol portion of the signal to provide a detected symbol, the symbol detector comprising:

a recursive structure, coupled to the signal and operating on a sequence of samples of the signal, for providing an output and a first previous output, said output proportional to a combination of the current sample of the signal and the first previous output weighted by a sinusoidal function, less a second previous output, said sinusoidal function having an argument corresponding to a frequency representative of the detected symbol, and

a combiner coupled to said output and said first previous output for providing a discrete time Fourier transform (DTFT) signal proportional to a DTFT evaluated at said frequency representative of the detected symbol for said sequence of samples.

5,796,788

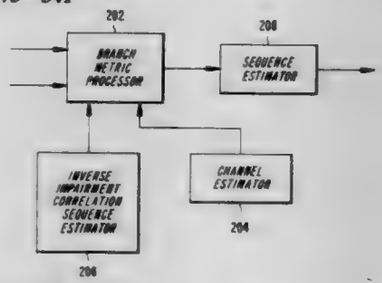
METHOD AND APPARATUS FOR INTERFERENCE DECORRELATION IN TIME AND SPACE

Gregory Edward Bottomley, Cary, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Apr. 19, 1996, Ser. No. 636,752

Int. Cl.[6] H04B *7/10;* **H04L** *1/02*

U.S. Cl. 375—341 **19 Claims**



17. A receiver comprising:

at least two antennas each for receiving a radio signal to produce at least two antenna signals; and

a processor for receiving said at least two antenna signals and processing said at least two antenna signals to determine information symbols present in said radio signal, wherein said processor includes:

means for determining branch metrics, which branch metrics are used to form hypotheses of said information symbols, wherein said branch metrics are determined taking into account both space and time impairment correlation.

5,796,789

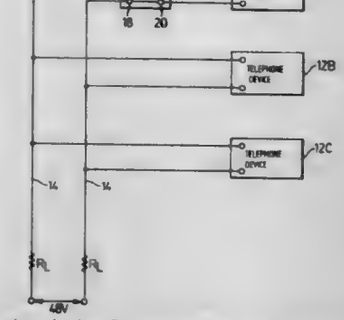
ALERTING DEVICE FOR TELEPHONES

Vakis Eftechiou, Mississauga, Canada, assignor to Omega Electronics Inc., Downsview, Canada

Filed Jan. 6, 1997, Ser. No. 779,314

Int. Cl.[6] H04M *1/24;3/08;3/22*

U.S. Cl. 379—35 **20 Claims**



9. An alerting device for connection to a telephone line having tip and ring lines and a telephone device, the alerting device comprising:

a voice circuit for connection between the telephone line and the telephone device, said voice circuit including indicating means for indicating when a current is passing through said voice circuit and current limiting means for limiting the current through said voice circuit;

a monitoring circuit comprising telephone line monitoring means for detecting when the potential across said telephone line drops below a predetermined value; voice circuit monitoring means responsive to said indicating means for detecting

when a current is passing through said voice circuit; and an alarm means for indicating an alarm when said line monitoring means detects that said potential is below said predetermined value and said voice circuit monitoring means detects that current is passing through said voice circuit;

coupling means for coupling said monitoring circuit between said tip and ring lines.

5,796,790

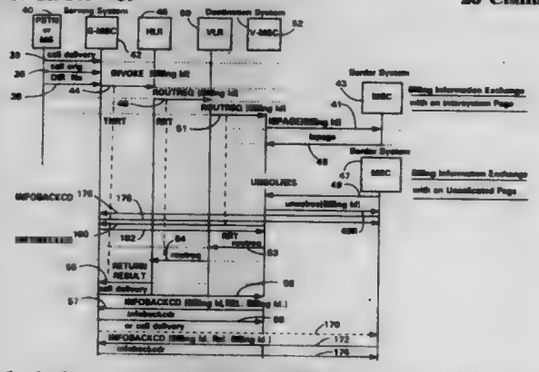
RELIABLE RELATED BILLING ID INFORMATION METHOD FOR CALL DELIVERY

Robert Frank Brunner, Montreal, Canada, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 24, 1995, Ser. No. 409,664

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 379—59 **28 Claims**



1. A data message handler (DMH) communication protocol system for use in a cellular telecommunications network for communicating accounting and billing information associated with a call to a mobile station within the network, said system comprising:

a visiting mobile switching center (V-MSC) where said mobile station to which the call is being directed is located;

a gateway mobile switching center (G-MSC) which upon delivery of said call to the G-MSC, generates first billing identification data and transmits the first billing identification data as part of a call invoke message to said V-MSC;

means within said V-MSC for allocating second billing identification data corresponding to a call transaction that has occurred in the V-MSC in response to said call invoke message; and

means within said V-MSC for returning said second billing identification data to the G-MSC as related billing identification data after an outcome for the call has been determined.

5,796,791

NETWORK BASED PREDICTIVE DIALING

Michael J. Polcyn, Allen, Tex., assignor to InterVoice Limited Partnership, Reno, Nev.

Filed Oct. 15, 1996, Ser. No. 730,742

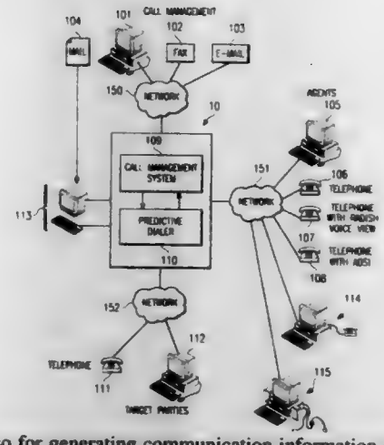
Int. Cl.[6] H04M *3/42;7/00*

U.S. Cl. 379—265 **89 Claims**

73. A networked system for initiating a plurality of outbound information communication contacts directed to a plurality of predetermined target network elements connectable to said system through a network, ones of said communication contacts to be handled by one or more agent network elements connected to said system through said network, said system comprising:

a centralized communication apparatus comprising:

call management means for receiving a set of communication parameters including said plurality of target network elements and corresponding information identifying individual agents authorized to communicate with ones of said plurality of target network elements, said call management means



also for generating communication information comprising information associated with said system initiating contact with said plurality of target network elements; and

communication means for initiating said outbound information communication contacts to said plurality of target network elements, said communication means being in information communication with said call management means, said communication means adapted for interfacing said one or more agent network elements and contacted one of said predetermined plurality of target network elements;

at least one call management network element connectable to said communication apparatus through said network, said call management network element for communicating a set of communication parameters to said call management means through said network;

at least one agent network element connectable to said communication apparatus through said network, said at least one agent network element comprising a general purpose information communication device, said agent network element for information communication with at least one target network element of said plurality of target network elements, said agent network element also for information communication with said communication apparatus; and

at least one target network element connectable to said communication apparatus through said network.

5,796,792

DATA IDENTIFYING DEVICE AND LIGHT RECEIVER USING THE SAME

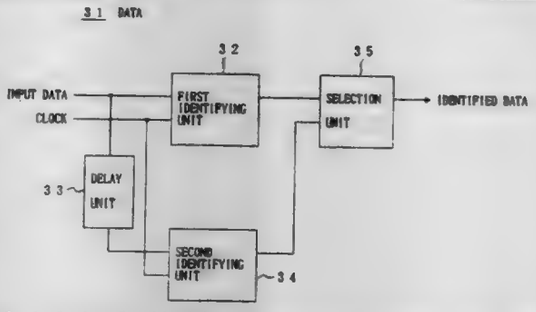
Hiroyuki Rokugawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 29, 1995, Ser. No. 581,158

Claims priority, application Japan, Mar. 20, 1995, 7-061328; Nov. 20, 1995, 7-301442

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—354 **15 Claims**



1. A device for identifying input data by using a first clock signal, said device comprising:

a first identifying unit which identifies said input data by using said first clock signal to generate first identified data, and

generates a first phase-relation determination result indicating whether a phase relation between said input data and said first clock signal is such that an identifiable period of said input data is used in identifying said input data;

a delay unit for delaying said input data by a predetermined phase amount to generate delayed input data;

a second identifying unit which identifies said delayed input data by using said first clock signal to generate second identified data, and generates a second phase-relation determination result indicating whether a phase relation between said delayed input data and said first clock signal is such that an identifiable period of said delayed input data is used in identifying said delayed input data;

a selection unit which selects one of said first identified data and said second identified data based on at least one of said first phase-relation determination result and said second phase-relation determination result.

5,796,793

HIERARCHICAL SYNCHRONIZATION METHOD

Jukka Kainulainen, Helsinki, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

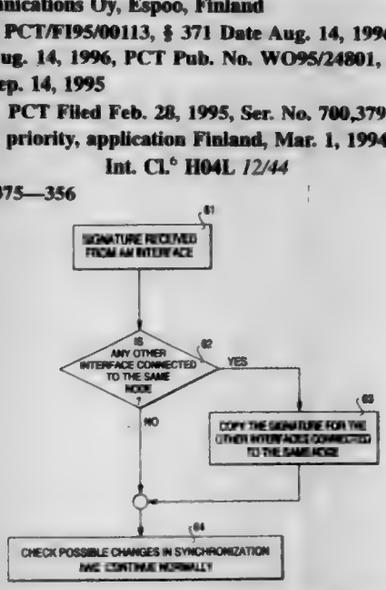
PCT No. PCT/FI95/00113, § 371 Date Aug. 14, 1996, § 102(e) Date Aug. 14, 1996, PCT Pub. No. WO95/24801, PCT Pub. Date Sep. 14, 1995

PCT Filed Feb. 28, 1995, Ser. No. 700,379

Claims priority, application Finland, Mar. 1, 1994, 940980

Int. Cl.[6] H04L *12/44*

U.S. Cl. 375—356 **8 Claims**



1. A hierarchical synchronization method for a telecommunications system employing message-based synchronization and comprising a plurality of nodes interconnected by transmission lines, comprising the steps of:

the nodes interchanging signals containing synchronization messages each with a synchronization signature indicating the priority of the corresponding signal in the internal synchronization hierarchy of the system, there being several transmission lines between two nodes and the same synchronization signature being transmitted over more than one of these transmission lines, and

when the synchronization signature from a neighboring node connected to several node interfaces changes, a respective node copying the new signature of the interface which first received the changed signature to immediately apply also to the other interfaces connected to the same neighboring node, and using the new signature for synchronization.

5,796,794

METHOD AND APPARATUS FOR SERIAL-TO-PARALLEL CONVERSION OF DATA BASED ON SYNC RECOVERY

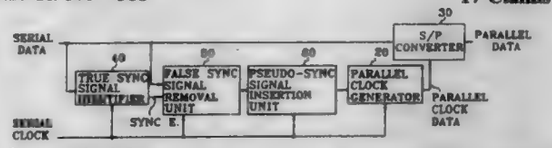
Byeong-soo Kim, Kwachun, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 27, 1996, Ser. No. 606,761

Claims priority, application Rep. of Korea, Feb. 27, 1995, 95-3884

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—368 **17 Claims**



1. A method for converting a serial data signal into a parallel data signal based on sync signals contained in the serial data signal, said method comprising the steps of:

(a) detecting the sync signals contained in the serial data signal based on a predetermined sync pattern;

(b) individually determining for each of the sync signals detected in step (a) whether the detected sync signal is a true sync signal having the same position within the serial data signal as one of the sync signals contained in the serial data signal;

(c) removing from said serial data signal a false sync signal, wherein said false sync signal is one of the sync signals detected in step (a) which is not one of the sync signals determined in step (b) to be said true sync signal; and

(d) generating a clock signal for performing a serial-to-parallel conversion of the serial data signal by using the sync signals contained in the serial data signal after step (c) is performed.

5,796,795

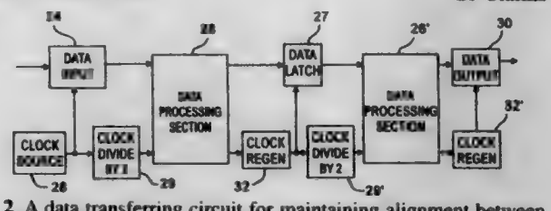
DATA TRANSFERRING CIRCUIT WHICH ALIGNS CLOCK AND DATA

Harry Edward Mussman, Bedford, Mass.; Hung-San Chen, Petaluma, Calif., and Stephen P. Hartman, Jericho, Vt., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 30, 1994, Ser. No. 347,618

Int. Cl.[6] H04L *25/36;25/40;7/00*

U.S. Cl. 375—372 **26 Claims**



2. A data transferring circuit for maintaining alignment between clock and data, said circuit comprising:

input means for receiving first data at a data rate;

a clock source configured to provide a reference clock which oscillates at a frequency less than said data rate;

output means for presenting second data at substantially said data rate;

a data processor for transforming said first data and said reference clock into said second data and a second reference clock, respectively, said data processor comprising a switch fabric having a first stage which is distributed among a plurality of first cards and a second stage which is distributed among a plurality of second cards, said first cards being oriented generally perpendicular to said second cards and each of said first cards coupling to all of said second cards; and

a clock regenerator, coupled to said data processor and said output means, for generating a clock signal which oscillates substantially at said data rate and is synchronized to said

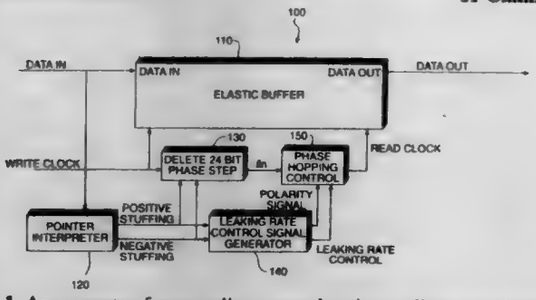
second reference clock, said clock signal being used to clock said second data into said output means.

5,796,796

POINTER ADJUSTMENT JITTER CANCELLATION PROCESSOR UTILIZING PHASE HOPPING AND PHASE LEAKING TECHNIQUES

Bor-Min Wang, Taichung, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 11, 1996, Ser. No. 584,196
Int. Cl.[6] H04L *7/00;25/36;25/40*
U.S. Cl. 375—372 **11 Claims**



1. An apparatus for canceling network pointer adjustment jitters (PAJs), having an elastic buffer to receive, according to a write clock signal, and for temporarily storing a plurality of data bits therein and a pointer interpreter for determining a pointer adjustment event (PAE) and a polarity of bit-stuffing from said data bits, said apparatus comprising:

a leaking rate control signal generator for generating a leaking rate control based on said PAE and a polarity signal based on said polarity of bit stuffing; and

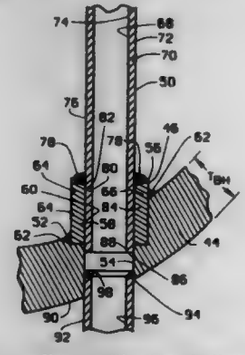
a phase hopping control device for applying said write clock signal, said leaking rate control signal and said polarity signal for performing a phase-hopping read clock adjustment to generate a read clock signal for controlling a bit-leaking from said elastic buffer whereby said bit-leaking is controlled to release in a fraction of a phase step of each bit of said data.

5,796,797

METHOD FOR SEALING A STUB TUBE IN A NUCLEAR REACTOR

Thomas Theodore Fallas, San Jose, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1997, Ser. No. 801,091
Int. Cl.[6] G21C *13/028*
U.S. Cl. 376—260 **6 Claims**



1. A method for sealing an elongate hollow member within a reactor pressure vessel of a nuclear reactor, the reactor pressure vessel including a bottom head dome, a stub tube, and the elongate hollow member, the bottom head dome having at least one opening therein, the stub tube having a first end, a second end, and a bore extending between the first and second ends, the stub tube welded to the bottom head dome adjacent the second end with a lower stub tube attachment weld so that the stub tube bore and the bottom head dome opening are substantially aligned, the elongate hollow member having a first end, a second end, and a bore extending between the first and second ends, the elongate member extending through the stub tube bore and secured to the stub tube adjacent the stub tube first end with an upper stub tube attachment weld, said method comprising the steps of:

cutting the elongate member at a location below the upper stub tube weld to separate an upper portion of the elongate member from a lower portion of the elongate member;

removing the lower portion of the elongate member from the bottom head opening;

inserting a replacement lower portion in the bottom head opening; and

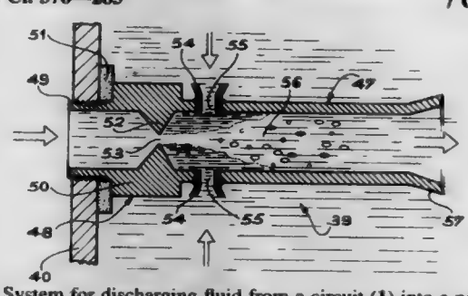
securing the replacement lower portion to the bottom head dome without securing the replacement lower portion to the upper portion of the elongate member.

5,796,798

INTERNAL CONDENSER VAPOR DISCHARGE SYSTEM

Patrick Aujollet, and Guy-Marie Gautier, both of Pertuis, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 18, 1997, Ser. No. 896,945
Claims priority, application France, Jul. 19, 1996, 96 09099
Int. Cl.[6] G21C *9/004;* **B01F** *15/02*
U.S. Cl. 376—283 **7 Claims**



1. System for discharging fluid from a circuit (1) into a pool (6, 31, 43), comprising an internal condensation conduit (20, 39, 47) connected to said circuit (1) and opening into the pool, characterized by the fact that it comprises a diaphragm (21, 52) with an orifice (22, 53) in the conduit and a cold water feed orifice (23, 55) passing through the conduit immediately downstream of the diaphragm and communicating with a liquid feed tank (6, 30, 43).

5,796,799

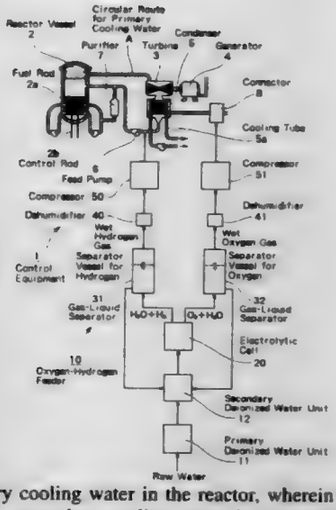
CONTROL APPARATUS FOR OXYGEN CONCENTRATION OF WATER IN ATOMIC REACTOR

Hiroko Kobayashi, Kobe; Takashi Sasaki, Miki; Kiyoshi Hirai, Kakogawa; Shinichi Yasui, Kako-gun; Mamoru Nagao, Osaka, and Hiroyuki Harada, Tokyo, all of Japan, assignors to Shinko Pantec Co., Ltd., Kobe, and Mitsubishi Corporation, Tokyo, both of Japan

Filed Oct. 25, 1995, Ser. No. 548,091
Claims priority, application Japan, Oct. 25, 1994, 6-260024
Int. Cl.[6] G21C *19/317*
U.S. Cl. 376—306 **11 Claims**

6. An apparatus to control dissolved oxygen concentration of cooling water in a pressurized water reactor, said apparatus comprising an electrolytic cell having an anode chamber and a cathode chamber separated from one another by a diaphragm of a solid polymer electrolyte membrane, said diaphragm comprising: (a) an ion exchange membrane, and (b) a pair of multilayered electrodes chemical plated to both surfaces of said ion exchange membrane,

wherein a first electrolytic cell is operatively connected to a circular route for primary cooling water and a second electrolytic cell is operatively connected to a circular route for



secondary cooling water in the reactor, wherein said circular route for secondary cooling water is positioned to be heat exchanged with said circular route for primary cooling water, and wherein hydrogen gas generated through electrolysis of deionized water in the cathode side of the cells is introduced into said circular route for primary cooling water and into said circular route for secondary cooling water to control dissolved oxygen concentration of said primary and secondary cooling water.

5,796,800

COUNTING ROTOR ASSEMBLIES

Siavosh Hafezan, and Martin Gordon Snook, both of Colchester, Great Britain, assignors to Pelcombe Limited, United Kingdom

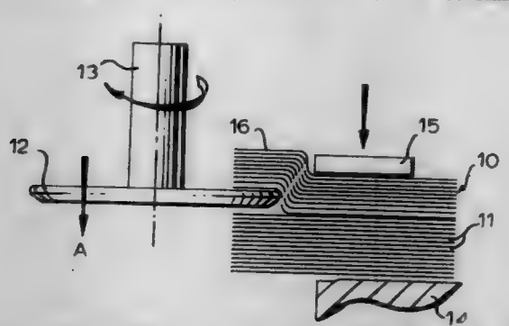
PCT No. PCT/GB95/01356, § 371 Date Dec. 13, 1996, § 102(e) Date Dec. 13, 1996, PCT Pub. No. WO95/34875, PCT Pub. Date Dec. 21, 1995

PCT Filed Jun. 9, 1995, Ser. No. 750,727

Claims priority, application United Kingdom, Jun. 16, 1994, 9412104

Int. Cl.[6] G06M *7/00*

U.S. Cl. 377—8 **16 Claims**



1. A rotor assembly for counting sheets (**11**) in a stack (**10**) thereof and comprising a support (**18**), a rotor (**12**) rotatably mounted on the support to engage an edge region of the stack (**10**) and arranged upon rotation to transfer an edge portion of each sheet (**11**) in turn through a transfer groove (**45**) to the other side of the rotor (**12**), there being at least one suction port in the rotor (**12**) through which air is drawn in a timed relationship to the rotation of the rotor to assist in the separation of the sheet edge portions, the suction port being connected through the rotor to an inlet port (**46**) on an external surface (**22**) of the rotor, and a foot (**21**) mounted on the support (**18**) to bear on said external surface of the rotor and having a further port (**47**) which comes into and out of registration with the inlet port (**46**) upon rotation of the rotor, so that suction applied to the further port (**47**) is connected in said timed relationship to the suction port of the rotor (**12**), characterised in that the rotor (**12**) is movable axially with respect to the support (**18**) and detection means (**36,60**) are provided to detect the position of the foot (**21**) with respect to the support (**18**) thereby to give an output indicative of the position of the rotor (**12**) with respect to the support (**18**).

5,796,801

CHARGE COUPLED DEVICE WITH HIGH CHARGE TRANSFER EFFICIENCY

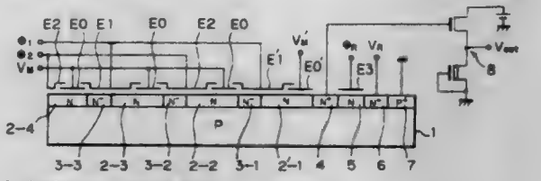
Yasutaka Nakashiba, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1996, Ser. No. 655,910

Claims priority, application Japan, May 31, 1995, 7-133151

Int. Cl.[6] G11C *19/28;* **H01L** *29/768*

U.S. Cl. 377—60 **10 Claims**



1. A charge coupled device comprising:

a semiconductor substrate;

a plurality of first semiconductor regions formed on said semiconductor substrate, each of said first semiconductor regions having a first part and a second part;

a plurality of second semiconductor regions formed on said semiconductor substrate, each of said second semiconductor regions being arranged between two adjacent ones of said first semiconductor regions,

a third semiconductor region formed on said semiconductor substrate and adjacent to an outermost one of said first semiconductor regions;

a plurality of first electrodes, each of said first electrodes formed over said first part of one of said first semiconductor regions; and

a plurality of second electrodes, each of said second electrodes formed over said second part of one of said first semiconductor regions and one of said second semiconductor regions, wherein, in a pair of said second electrodes, a first voltage operates one of the pair of second electrodes and a second voltage, of opposite phase to said first voltage, operates the other of the pair of second electrodes

an outermost one of said first electrodes being electrically isolated from others of said first electrodes, the others of said first electrodes being connected to each other.

5,796,802

MULTIPLE ANGLE PRE-SCREENING TOMOGRAPHIC SYSTEMS AND METHODS

Bernard M. Gordon, Manchester-by-the-Sea, Mass., assignor to Analogic Corporation, Peabody, Mass.

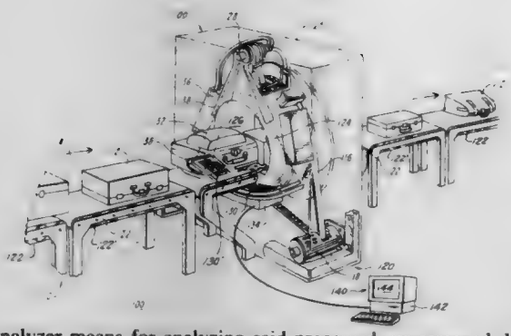
Continuation of Ser. No. 699,400, Aug. 19, 1996, abandoned. This application Aug. 7, 1997, Ser. No. 908,286

Int. Cl.[6] G01N *23/04;* **A61B** *6/03*

U.S. Cl. 378—8 **24 Claims**

1. A CT scanning system of the type for generating projection data of at least a portion of an object disposed within the system for each of a preterminned number N projections at corresponding N projection angles for each scan of the object, said system further comprising:

pre-screening processor means for processing pre-screen data for each of a predetermined number of M projections at M projection angles, wherein $2 \leqq M < N$; and



analyzer means for analyzing said processed pre-screened data to determine whether there is a likelihood of the presence of a physical attribute within the location of the object being scanned.

5,796,803

METHOD FOR IMAGE RECONSTRUCTION IN A COMPUTED TOMOGRAPHY APPARATUS

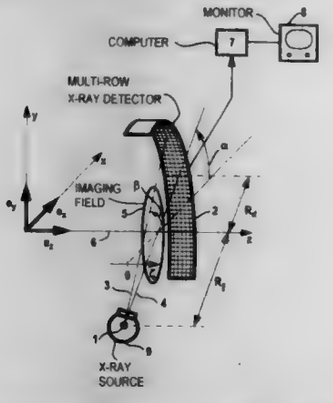
Thomas Flohr, Udhlfeld, and Stefan Schaller, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed May 2, 1997, Ser. No. 850,685

Claims priority, application Germany, May 2, 1996, 19617609.3; Mar. 21, 1997, 19711963.8

Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—15 **1 Claim**



1. An approximative method for image reconstruction in a computed tomography apparatus, comprising the steps of:

conducting a spiral scan of an examination subject containing an image plane, by rotating a pyramid-shaped X-ray beam containing a plurality of fan beams and a multi-row x-ray detector through a plurality of projection angles around a longitudinal axis disposed perpendicularly to said image plane, to obtain fan data respectively from fan beams attenuated by said subject striking said detector;

reinterpolating said fan data by rebinning to obtain parallel data independently for each row of said detector;

approximating a weight, by a Fourier series, for a contribution made by each of said beams to the image as a function of a distance of said beam from said image plane;

synthesizing the frequency spectra of averaged parallel projections by summing up all contributing parallel projections multiplied with their respective weighting Fourier coefficients and subsequently performing FFTs along the direction of the channels

generating the overall spectrum by summing overall projection angles

producing a Cartesian frequency grid from said overall spectra and back-transforming said Cartesian frequency grid into the spatial domain to form an image of said examination subject in said image plane.

5,796,804

X-RAY MASK STRUCTURE FOR REDUCING THE DISTORTION OF A MASK

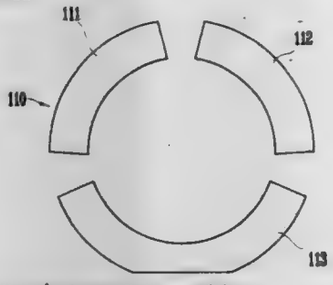
Young Jin Jeon; Sang Soo Choi; Hai Bin Chung; Jong Hyun Lee, and Hyung Joun Yoo, all of Taejon-shi, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Feb. 4, 1997, Ser. No. 794,906

Claims priority, application Rep. of Korea, May 25, 1996, 96-17848

Int. Cl.[6] G21K *5/08*

U.S. Cl. 378—35 **2 Claims**



1. An X-ray mask structures, comprising:

a mask substrate having an opening in a central part thereof;

a membrane formed on the mask substrate, the membrane having a chip site on which absorbers are arranged according to a desired pattern of a semiconductor device; and

a support ring for supporting the mask substrate, which is defined by a plurality of fragments.

5,796,805

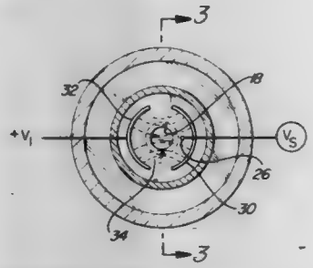
X-RAY SOURCE

Charles J. Armentrout, Ann Arbor, and Thomas J. Basinger, Ypsilanti, both of Mich., assignors to Pilot Industries, Inc., Dexter, Mich.

Filed Jan. 17, 1997, Ser. No. 784,836

Int. Cl.[6] H01J *35/00*

U.S. Cl. 378—136 **6 Claims**



1. An x-ray source comprising:

an enclosure,

a cathode assembly contained in said enclosure, said cathode assembly having a through opening along a predefined axis,

an anode positioned in said enclosure at a position spaced from said cathode assembly,

wherein said anode has a face normal to and aligned with said predefined axis so that a portion of X-rays emitted from said anode pass through said cathode assembly opening wherein said cathode assembly further comprises

an electron source which generates electrons, said electron source being positioned outside of said cathode assembly opening,

means for directing electrons from said electron source across said cathode assembly opening, and

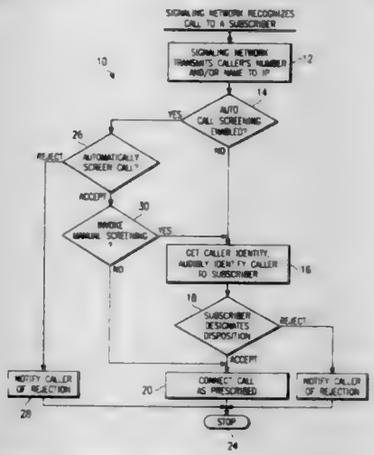
wherein said directing means comprises a pair of arcuate electric field shaping elements disposed on opposite sides of said cathode assembly opening, said electron source being positioned adjacent one field shaping element and means for setting the other field shaping element at a positive electrical potential.

5,796,806

APPARATUS AND METHOD FOR SPOKEN CALLER IDENTIFICATION USING SIGNALS OF THE ADVANCED INTELLIGEN NETWORK

Rich D. Birckbichler, Austin, Tex., assignor to DSC Telecom, L.P., Plano, Tex.

Filed Mar. 20, 1995, Ser. No. 407,538
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—67 **20 Claims**



1. A telephone system, comprising:

a first advanced intelligent network (AIN) service switch point connected to a first telephone;

a second advanced intelligent network (AIN) service switch point connected to a second telephone;

a voice network coupling the first (AIN) service switch point to the second (AIN) service switch point;

an intelligent peripheral system connected to the first (AIN) service switch and including an intelligent peripheral and a data server, the data server resident to the intelligent peripheral system and operable to store a plurality of data sets, the data sets including a caller number and associated customer name, the intelligent peripheral operable to process a call from a caller at the second telephone and to receive caller identification information identifying the caller number associated with the second telephone, the intelligent peripheral operable to query the data server to provide an associated customer name stored in a data set with the caller number, the intelligent peripheral operable to initiate the first (AIN) service switch to connect the intelligent peripheral to a called party at the first telephone and to audibly deliver the customer name to the first telephone; and

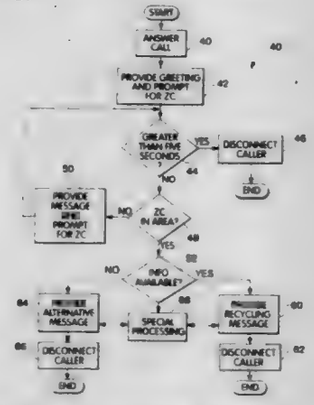
a signaling network coupled to the first (AIN) service switch, the second (AIN) service switch and the intelligent peripheral system, the signaling network operable to communicate the caller identification information to the intelligent peripheral.

5,796,807

TELEPHONE RECYCLING SYSTEM

Matthew W. Costello, 7 Myrtle St., Apartment 3, Boston, Mass. 02114; Dan B. Carpenter, 508 Park Pl., Raynham, Mass. 02767, and Gerald V. McNabb, 6928 Kenfig Dr., Falls Church, Va. 22042

Filed Jan. 19, 1996, Ser. No. 588,835
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **20 Claims**



1. A telephone recycling system, comprising:

answering means for answering an incoming telephone call placed by a user;

prompting means, coupled to said answering means, for prompting the user to enter a ZIP Code via the user's touchtone telephone keys;

first messaging means, for providing the user with a recycling voice message that varies according to the ZIP Code entered by the user, wherein the recycling message is provided directly in response to the ZIP Code, without the user having to provide additional input;

second messaging means for providing an alternative message is the recycling message is now available; and

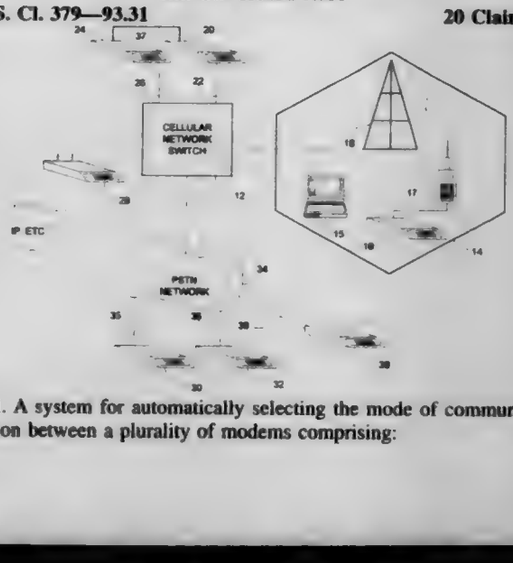
means for detecting a signal for updating the recycling message while the recycling message is provided to the user and for updating the alternative message while the alternative message is provided to the user.

5,796,808

SYSTEM AND METHOD FOR AUTOMATICALLY SELECTING THE MODE OF COMMUNICATION BETWEEN A PLURALITY OF MODEMS

Robert Earl Scott, Indian Rocks Beach, and E. Robert Lastinger, Jr., Lithia, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Jan. 9, 1997, Ser. No. 781,067
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—93.31 **20 Claims**



1. A system for automatically selecting the mode of communication between a plurality of modems comprising:

a calling modem and an answering modem disposed for intercommunication across an established communication link of a telephone network;

calling signal means for generating and transmitting a continuous calling signal across the established link;

answering modem detecting means for detecting the calling signal;

answering modem analyzing means for analyzing the detected calling signal to determine the configuration of the calling modem;

answering signal means for generating and transmitting an answering signal across the established link;

calling modem detecting means for detecting the answering signal;

calling modem analyzing means for analyzing the detected answering signal to determine the configuration of the answering modem;

determining means for determining whether the established link passes through a public switched telephone (PSTN); and

transmitting means responsive to the determining means for transmitting a 2100 hertz tone across the established link only if the established link passes through a PSTN.

5,796,809

TECHNIQUE FOR CONTROLLING RING VOLUME AND SELECTIVELY RECEIVING MESSAGES BY FACSIMILE

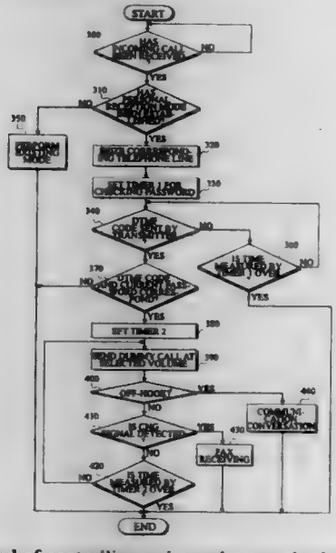
Nam-Dae Baek, Daegu, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 20, 1996, Ser. No. 777,712

Claims priority, application Rep. of Korea, Dec. 23, 1995, 1995/55746

Int. Cl.[6] H04M *11/00*; **H04N** *1/32*

U.S. Cl. 379—100.06 **6 Claims**



1. A method of controlling a ring volume and selectively receiving messages by facsimile in a facsimile machine, comprising:

determining if there is a key input for establishing a personal reception mode;

if it has been determined that there is a key input for establishing a personal reception mode, determining if a ring volume control has been requested;

if it has been determined that a ring volume control has not been requested, then setting the ring volume to the previously set value and if it has been determined that the ring volume has been requested, then setting the ring volume to a value set by a user;

determining if there is a recorded reception password;

if it has been determined that there is no recorded reception password, then recording an input password from the user;

if it has been determined that there is a recorded reception password, determining if there is a change of password requested;

if it has been determined that there is a change of password requested, then recording an input new password from the user;

determining if an incoming call has been received;

if it has been determined that an incoming call has been received, determining if a personal reception mode has been established;

if it has been determined that a personal reception mode has been established, then seizing a corresponding telephone line and setting a timer **1** to a first predetermined time period;

determining if a dual tone multi-frequency code has been sent by a transmitter which placed the incoming call;

if it has been determined that no dual tone multi-frequency code has been sent by the transmitter, determining if the time period measured by timer **1** is over;

if the time period measured by the timer **1** is over, then releasing the telephone line;

if it has been determined that a dual tone multi-frequency code has been sent by the transmitter, determining if the dual tone multi-frequency code and the recorded password correspond;

if it has been determined that the dual tone multi-frequency code and recorded password do not correspond, then releasing the telephone line;

if it has been determined that the dual tone multi-frequency code and recorded password correspond, then setting a timer **2** to a second predetermined time period and sending a dummy call at the previously selected ring volume;

determining if a telephone handset of the facsimile machine is off the hook;

if it has been determined that the telephone handset is off the hook, then placing the facsimile machine in a communication conversation mode;

if it has been determined that the telephone handset is not off the hook, then determining if a CNG signal has been detected;

if it has been determined that CNG signal has been detected, then placing the facsimile machine in a receiving mode for receiving a transmission from the transmitter;

if it has been determined that no CNG signal has been detected, then determining if the time measured by the timer **2** is over; and

if it has been determined that the time measured by the timer **2** is not over, then returning to the step of sending a dummy call at the previously selected ring volume and alternatively if it has been determined that the time measured by timer **2** is over, then releasing the telephone line.

5,796,810

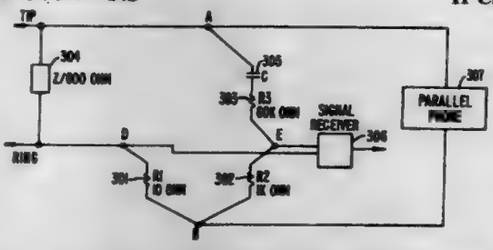
APPARATUS FOR DIALING OF CALLER ID BLOCK CODE AND RECEIVING CALL WAITING CALLER-ID-SIGNAL

Boon Chen Lim, Flat B 26/F. Begonia Mansion, and Yeung How Lim, Flat C 26/F. Begonia Mansion, both of Taikooshing, Hong Kong

Filed Oct. 10, 1995, Ser. No. 540,532

Int. Cl.[6] H04M *1/56;15/06;1/66*

U.S. Cl. 379—142 **11 Claims**



8. A call-waiting, caller-ID receiving apparatus, comprising:

a receiver for receiving a caller-ID signal that originates from a telephone line; and

a Wheatstone bridge, coupled to said receiver, to said telephone line, and to a speech generating source; and

wherein said connections of said Wheatstone bridge reduces/eliminates the interference of speech/voice coming from the said speech generating source to said caller-ID signal originating from the telephone line to the said receiver.

5,796,811

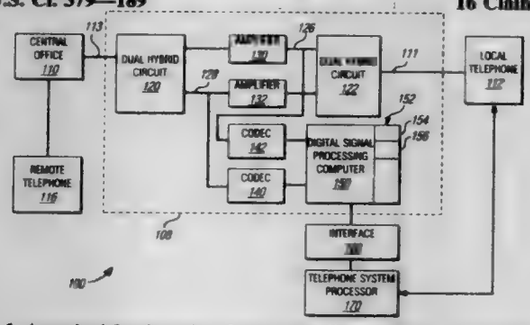
THREE WAY CALL DETECTION

John D. McFarlen, Arlington, Tex., assignor to Gateway Technologies, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 558,155, Nov. 15, 1995. This application Mar. 11, 1996, Ser. No. 613,025

Int. Cl.[6] H04N 3/22

U.S. Cl. 379—189 **16 Claims**



1. A method for detecting three way call attempts on a telephone line comprising the steps of:

sampling audio signals on the telephone line at a selected sampling rate;

sorting the sampled audio signals according to a level associated with each sampled signal to produce a profile of sampled signals;

monitoring the profile for reset and reference conditions;

resetting the profile when a reset condition is detected; and

tagging the profile as a potential click when no reset conditions are detected for a first preselected interval and a reference condition is detected.

5,796,812

METHOD FOR TRANSFERRING CALL-SPECIFIC DATA BETWEEN CALLED PARTIES

Edite M. Hanlon, 16 Cloverhill La.; Steven T. Heinsius, 214-C Harding Rd., both of Freehold, N.J. 07728; Mrinalini Natarajan, 36 Stony Hill Dr., Morganville, N.J. 07751; Antoinette Rule, 5 Windfall La., Trenton, N.J. 08690; Tejanand Sarju, 937 Manhattan Ave., Brooklyn, N.Y. 11222, and Gary D. Walden, 179 W. Valley Brook Rd., Califon, N.J. 07830

Filed May 13, 1996, Ser. No. 649,874

Int. Cl.[6] H04M 3/58

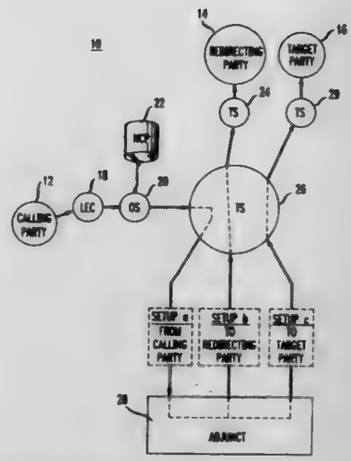
U.S. Cl. 379—212 **8 Claims**

1. A method for transferring data within a telecommunications network obtained by a re-directing party from a calling party following answering of a call by the re-directing party from the calling party, the data transferred from said re-directing party to a target party in connection with re-direction of the telephone call answered by the re-directing party to the target party, the method comprising the steps of:

generating an out-of-band re-direction request to signal the network to re-direct the call from the re-directing party to the target party;

generating an out-of-band message for transfer to the target party containing said data obtained by the re-directing party following answering of said call from the calling party;

transmitting, from the re-directing party to the network, the message containing the data obtained by the re-directing party following answering of said call from the calling party; and



forwarding the data from the network to the target party together with the re-directed call.

5,796,813

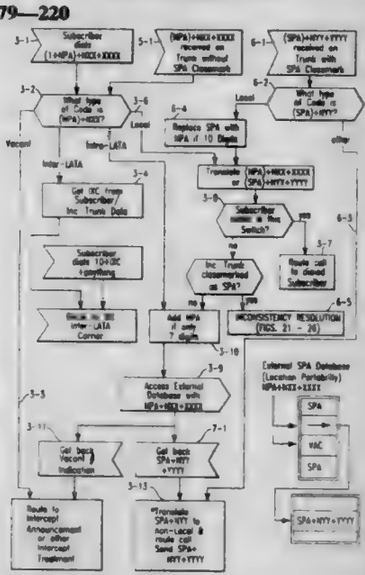
METHOD FOR ROUTING A CALL

Edward Sonnenberg, Coral Springs, Fla., assignor to Siemens Telecom Networks, Boca Raton, Fla.

Division of Ser. No. 497,408, Jun. 30, 1995. This application Aug. 8, 1996, Ser. No. 694,380

Int. Cl.[6] H04M 3/42

U.S. Cl. 379—220 **5 Claims**



1. A method for routing a call to a called Subscriber having an assigned directory number, NXX-XXXX or NPA-NXX-XXXX, and having moved to a different location served by a switch having a different exchange code, NYY, and a line code YYYY, comprising the steps of:

(a) dialing the directory number of the called Subscriber;

(b) determining from the dialed number, whether the call is an intra-LATA call or a call to an exchange code (NXX) served by a local switch,

(i) if the call is to an exchange code (NXX) served by the local switch, determining whether the dialed directory number is served by the local switch; and,

(A) if the dialed directory number is served by the local switch, routing the call to the called Subscriber using the directory number; and,

(B) if the dialed directory number is not served by the local switch, accessing a database external to the local switch to obtain routing information for the call; and,

(ii) if the call is an intra-LATA call, determining based on an NPA code of the dialed directory number and the dialed exchange code NXX of the dialed directory number, whether the dialed exchange code supports local number portability, and if it does, then accessing the database external to the local switch to obtain routing information for the call; and

wherein accessing the database external to the local switch comprises the steps of:

(c) adding to the dialed directory number an NPA code if such NPA code is absent from the dialed directory number, to provide a database accessing number;

(d) retrieving from the database, in response to the database accessing number, a corresponding number comprising an SPA code of the called Subscriber's service provider plus the NYY exchange code plus the line code YYYY, where

an SPA code is a three digit designation code assigned to each one of a plurality of Local Service Providers within a common Numbering Plan Area (NPA), each one of the Local Service Providers being assigned a different SPA code in the common Numbering Plan Area (NPA); and

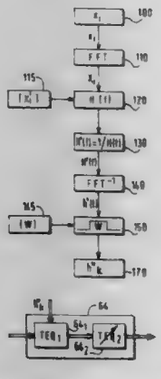
(e) routing the call using the corresponding number.

5,796,814

DIGITAL TRANSMISSION SYSTEM COMPRISING A RECEIVER WITH CASCADED EQUALIZERS

Américo Brajal, Villeneuve-Le-Roi, and Antoine Chouly, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1996, Ser. No. 618,933
Claims priority, application France, Mar. 22, 1995, 95 03350
Int. Cl.[6] H03H *7/30*
U.S. Cl. 375—232 **12 Claims**



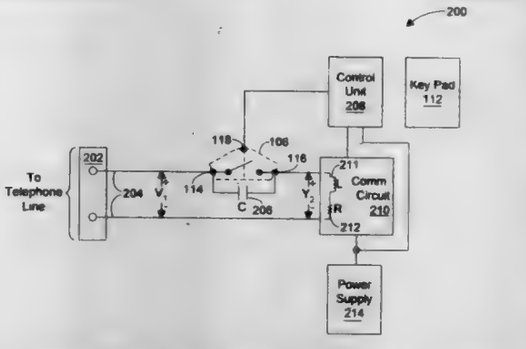
6. A receiver which receives multicarrier digital signals transmitted by a channel, the receiver comprising equalizer means which include at least one equalizer and computing means for updating weight factors of the equalizer, wherein the equalizer is a semi-fixed equalizer for which the computing means estimate an inverse transfer function to a transfer function that characterizes the channel, while the computing means determine via the inverse transfer function the weight factors for intermittently updating the semi-fixed equalizer.

5,796,815

COMMUNICATIONS DEVICE WITH IMPROVED RING SIGNAL DETECTION

David J. Guercio, Austin, and Zheng-Yi Xie, Richardson, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 5, 1996, Ser. No. 760,818
Int. Cl.[6] H04M *1/00;1/57*
U.S. Cl. 379—372 **20 Claims**



1. A communications device adapted for coupling to a telephone line carrying an a.c. ring signal, wherein the telephone line comprises a first and second wire, the communications device comprising:

a hookswitch having a first and second switch terminal and a control terminal, wherein the first switch terminal is coupled to the first wire of the telephone line, and wherein the control terminal is coupled to receive a control signal, and wherein an open condition exists between the first and second switch terminals when the control signal is not asserted, and wherein a closed condition exists between the first and second switch terminals when the control signal is asserted;

a communications circuit having a first and second terminal, wherein the first terminal of the communications circuit is coupled to the second switch terminal of the hookswitch and the second terminal of the communications circuit is coupled to the second wire of the telephone line, and wherein the communications circuit is configured to detect the a.c. ring signal and to generate a ring detect signal, and wherein the communications circuit asserts the ring detect signal when the a.c. ring signal is detected; and

a capacitor having a first terminal and a second terminal, wherein the first terminal of the capacitor is connected to the first switch terminal of the hookswitch, and wherein the second terminal of the capacitor is connected to the second switch terminal of the hookswitch, and wherein the capacitor couples the a.c. ring signal from the first switch terminal to the second switch terminal when the hookswitch control signal is not asserted.

5,796,816

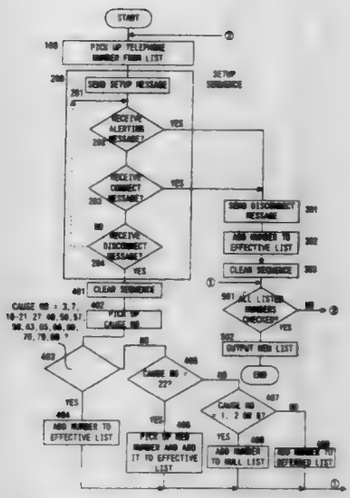
DEVICE AND METHOD FOR CLEANING TELEPHONE NUMBER LIST

Katsunori Utsumi, Yugawara-machi, Japan, assignor to Jintec Corporation, Japan

PCT No. PCT/JP96/01758, § 371 Date Feb. 21, 1997, § 102(e) Date Feb. 21, 1997, PCT Pub. No. WO97/01915, PCT Pub. Date Jan. 16, 1997
PCT Filed Jun. 25, 1996, Ser. No. 793,248
Claims priority, application Japan, Jun. 26, 1995, 7-158958
Int. Cl.[6] H04M *1/56*
U.S. Cl. 379—381 **5 Claims**

1. A cleaning system for a telephone number list including a computer such as a personal computer, comprising the following elements of:

being connected with an ISDN to process circuit-switched call control procedures defined in the ITU-T recommendation Q.931 as a calling terminal;



retrieving a telephone number sequentially from a telephone number list to be cleaned as a called party number to send a SETUP message including an unrestricted or a restricted digital information in a bearer capability information element to the network;

sending a DISCONNECT message to the network immediately to perform a clear sequence and determining the called party number in the SETUP message effective when the network receives the SETUP message sent and transfers an ALERTING or CONNECT message;

performing a clear sequence immediately and obtaining a cause in an information element of the DISCONNECT message from the network to determine the called party number in the SETUP message either effective or null according to the cause when the network does not receive the SETUP message sent and transfers a DISCONNECT message; and

generating a new telephone number list, which includes the telephone numbers determined effective and the telephone numbers determined null, separately.

5,796,817

HYBRID CIRCUIT FOR AN ELECTRIC OPERATING AND SCANNING INTERFACE, APPLICABLE TO ELECTRONIC RECORDERS OF ELECTROMECHANICAL TELEPHONE STATIONS

Jose Antonio Pozas Alvarez, and Luis Perez Roldan, both of Madrid, Spain, assignors to Telefonica de Espana, S.A., Madrid, Spain

Filed Nov. 17, 1994, Ser. No. 343,916
Claims priority, application Spain, Dec. 9, 1993, 9302558
Int. Cl.[6] H04M 1/00
U.S. Cl. 379—384 **9 Claims**

1. A hybrid circuit for an electric operating and scanning interface especially suitable for use with electronic recorders of electromechanical telephone stations that include elements that have conditions that can be scanned, the hybrid circuit comprising:

a) a programmable control unit contained an integrated circuit, the programmable control unit including:

1) means for receiving commands from an external processing unit by which the programmable control unit is programmed; and

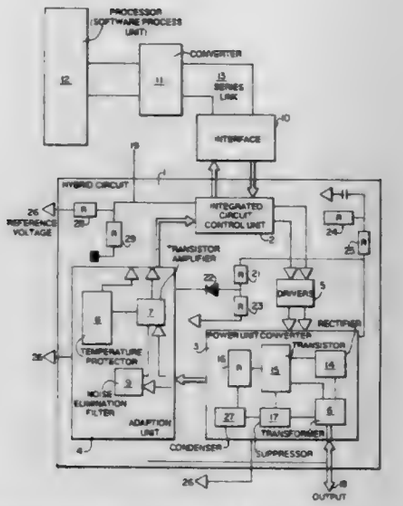
2) means for providing pulse-width modulation signals in response to the commands received from the external processing unit;

b) an adaptation unit, controlled by the control unit, the adaptation unit and the control unit collectively constituting means for scanning the condition of the elements in a telephone station; and

c) a power unit, controlled by the pulse-width modulation signals from the programmable control unit and in response to load requirements at an output of the power unit, to operate in first and second modes, including:

1) a first mode for acting on the elements of the telephone station by outputting programmable-level currents and programmable-level voltages that are programmable in accordance with the pulse-width modulation signals from the programmable control unit; and

2) a second mode for sensing electrical characteristics of the telephone station elements at the output to communicate to the control unit.

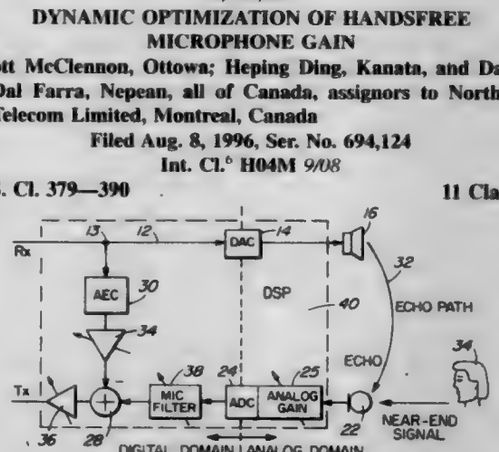


5,796,818

DYNAMIC OPTIMIZATION OF HANDSFREE MICROPHONE GAIN

Scott McClennon, Ottowa; Heping Ding, Kanata, and David Dal Farra, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 8, 1996, Ser. No. 694,124
Int. Cl.[6] H04M 9/08
U.S. Cl. 379—390 **11 Claims**



6. A method of dynamically controlling the analog gain for a microphone in an audio system of a handsfree telephone terminal, the audio system comprising a receive path having a digital to analog converter and a loudspeaker; a transmit path having a microphone serially connected with an analog signal amplifier, an analog to digital converter, a microphone adjustable filter and a transmit volume scalar; a processing means including detector means to monitor speech activity on respective paths; an acoustic echo canceller communicatively coupled between the receive and transmit paths, a summing node of the echo canceller being connected serially in the transmit path and an echo canceller scalar connected serially between the echo canceller and the summing node, the method comprising:

a) setting an analog gain target for the analog amplifier;

b) determining whether the actual gain of the analog amplifier meets the gain target;

c) if the analog amplifier meets the gain target, continue monitoring the speech activity on the receive and transmit paths; and

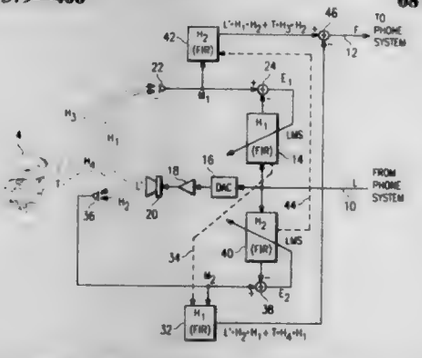
d) if the analog amplifier does not meet the gain target, adjust the analog amplifier gain dynamically in an appropriate direction followed by corresponding adjustments to the microphone filter, the echo canceller scalar and the transmit scalar.

5,796,819

ECHO CANCELER FOR NON-LINEAR CIRCUITS

Eric Douglas Romesburg, Chapel Hill, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Jul. 24, 1996, Ser. No. 685,495
Int. Cl.[6] H04M *9/00*
U.S. Cl. 379—406 **68 Claims**



1. In an audio circuit comprising a microphone and a loudspeaker, said microphone detecting a speech signal from a near-end user, said loudspeaker receiving a far-end speech signal and generating a corresponding echo signal that is also detected by said microphone, a method of cancelling the echo signal comprising the steps of:

providing at least one other microphone in said audio circuit for detecting said echo signal, said at least one other microphone also detecting said near-end speech signal;

estimating a plurality of acoustic transfer functions in a plurality of adaptive filters each having a plurality of coefficients, at least one of said adaptive filters using the far-end speech signal as a reference signal for adjusting its coefficients;

filtering the outputs of one or more of said microphones using the coefficients of one or more of said adaptive filters; and

combining the filtered and any unfiltered microphone outputs so as to substantially cancel said echo signal while substantially preserving said near-end speech signal.

5,796,820

RECOVERY OF PREVIOUS FILTER COEFFICIENTS WITH SMALLER CAPACITY MEMORY

Tnisuke Sasada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

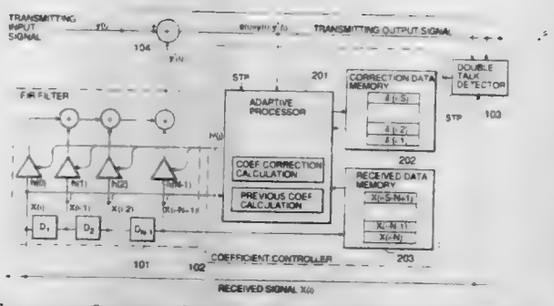
Filed Apr. 12, 1996, Ser. No. 631,241
Claims priority, application Japan, Apr. 14, 1995, 7-089798
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—410 **21 Claims**

7. An echo canceler comprising:

an N-tap finite impulse response (FIR) filter for generating an artificial echo signal based on N received signals modified by N filter coefficients, respectively, and each of the N received signals being sequentially generated by delaying an input received signal by an integral multiple of a predetermined sampling interval;

a subtracter for subtracting the artificial echo signal from a transmitting input signal to produce a transmitting output signal;

a monitor for monitoring the transmitting input signal to check whether the transmitting output signal is greater in power than the transmitting input signal;



first means for generating a coefficient correction value based on the transmitting output signal and the received signals received from the N-tap FIR filter at each sampling instant, the coefficient correction value being used to update the filter coefficients, and the first means stopping generating the coefficient correction value when the transmitting output signal is greater in power than the transmitting input signal;

first storage means for storing M (M is an integer) coefficient correction values which are sequentially received from the first means at sampling instants;

second storage means for storing (N−1+M) received signals which are sequentially generated by delaying the input received signal by an integral multiple of the predetermined sampling interval;

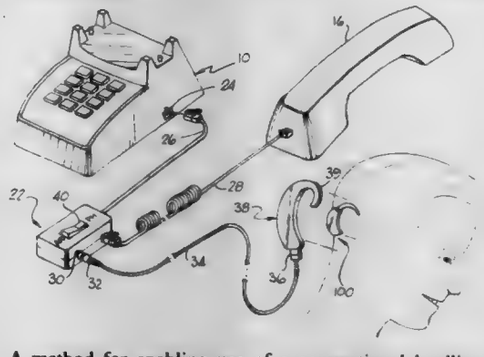
second means for generating previous filter coefficients based on the M coefficient correction values and the (N−1+M) received signals when the first means is stopped generating the coefficient correction value, the previous filter coefficients being filter coefficients which were generated at a previous sampling instant earlier than a sampling instant when the first means is stopped generating the coefficient correction value by a predetermined number of sampling instants, the previous filter coefficients being used to generate the artificial echo signal.

5,796,821

HEARING AID TELEPHONE INTERCONNECT SYSTEM

Shirley Aline Crouch, 7050 Goldsmith Ct., Colorado Springs, Colo. 80911; James D. Potter, 4955 E. Dahila Dr., Scottsdale, Ariz. 85254, and Joan Phillips Waldron, 138 Kilgore St., Colorado Springs, Colo. 80911

Continuation of Ser. No. 177,557, Jan. 5, 1994, abandoned.
This application Aug. 8, 1995, Ser. No. 512,563
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—430 **4 Claims**



1. A method for enabling use of a conventional landline telephone employing separate base and receiver units by a hearing impaired person, said hearing impaired person using a conventional hearing aid employing an input T-coil within an earpiece, the method comprising the steps of:

providing a T-coupler separate from the hearing aid, the T-coupler being adapted to be hooked over the user's ear proximate said earpiece and being arcuate in shape to correspond with a shape of the user's ear;

hooking the T-coupler over the user's ear proximate said earpiece;

switching a telephone receiver audio signal from the telephone receiver to the T-coupler;

transmitting the telephone receiver audio signal to the T-coupler; and

inductively coupling the telephone receiver audio signal from the T-coupler into the input T-coil of the hearing aid earpiece.

5,796,822

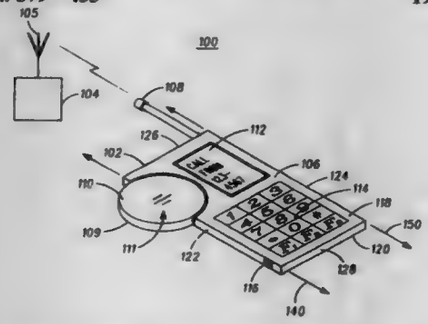
PORTABLE ELECTRONIC DEVICE HAVING A ROTATABLE EARPIECE

Kenneth Warren Larson, Elmhurst; Leonid Soren, Lincolnwood, and Daniel L. Williams, Vernon Hills, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 19, 1997, Ser. No. 802,826

Int. Cl.[6] H04M *1/00*; H04B *1/38*

U.S. Cl. 379—433 **19 Claims**



1. A portable electronic device, comprising:

a body, said body defining a front surface having a side edge, said body defining a hollow area along a portion of said side edge;

a rotatable earpiece, said rotatable earpiece rotatably mounted on said body along said side edge and rotatable between a first position and a second position, said rotatable earpiece outwardly directed away from said front surface and at least partially disposed in said hollow area when in the first position, said rotatable earpiece outwardly directed away from said side edge and substantially perpendicular to said front surface when in the second position; and

a microphone, said microphone disposed within said body and outwardly directed from said side edge.

5,796,823

Patent Not Issued For This Number

5,796,824

STORAGE MEDIUM FOR PREVENTING AN IRREGULAR USE BY A THIRD PARTY

Takayuki Hasebe; Ryota Akiyama, and Makoto Yoshioka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 341,176, Nov. 18, 1994, Pat. No. 5,555,304, which is a division of Ser. No. 31,339, Mar. 15, 1993, Pat. No. 5,392,351. This application Feb. 20, 1996, Ser. No. 603,760

Claims priority, application Japan, Mar. 16, 1992, 4-058048

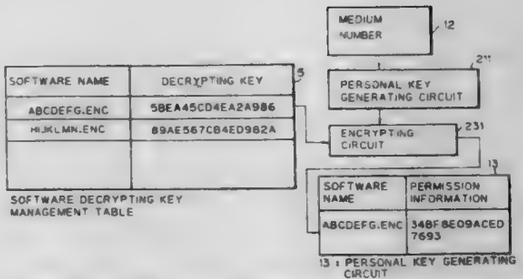
Int. Cl.[6] H04L *9/32*

U.S. Cl. 380—4 **16 Claims**

1. A storage medium accessed by a vendor computer and user computer, said storage medium for storing information readable by said user computer, said storage medium comprising:

encrypted electronic data; and

a medium personal number which is unique for each storage medium, wherein at least the medium personal number is written onto the storage medium in an un-rewritable form which said user computer cannot rewrite, and said medium personal number is used for generating a decryption key for decrypting said encrypted electronic data in said user computer.



5,796,825

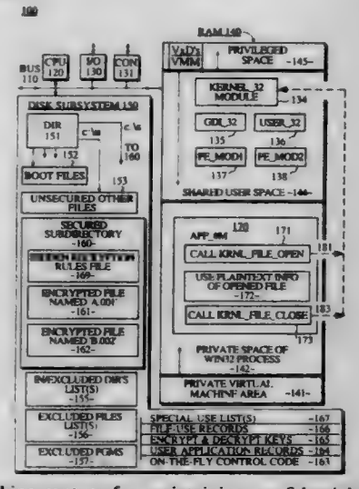
SYSTEM FOR AUTOMATIC DECRYPTION OF FILE DATA ON A PER-USE BASIS AND AUTOMATIC RE-ENCRYPTION WITHIN CONTEXT OF MULTI-THREADED OPERATING SYSTEM UNDER WHICH APPLICATIONS RUN IN REAL-TIME

William D. McDonnal, Tigard; Shawn Lohstroh, Beaverton, and David Grawrock, Aloha, all of Oreg., assignors to Symantec Corporation, Cupertino, Calif.

Division of Ser. No. 586,511, Jan. 16, 1996, Pat. No. 5,699,428. This application Oct. 6, 1997, Ser. No. 944,397

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **13 Claims**



1. A machine system for maintaining confidential information generally in encrypted form while allowing for decryption of such confidential information into temporary plaintext form, said machine system comprising:

(a) a memory storing a plurality of digital data files, wherein each of said files is organized as belonging to one of at least first and second directories or subdirectories, and further wherein at least a first file among said files belongs to a corresponding one of said directories or subdirectories, and said first file contains first data representing a pre-encrypted form of confidential first information;

(b) a decrypting mechanism for decrypting ciphertext data into plaintext data;

(c) recryption control means for selecting one of the files stored in said memory and for causing the decrypting mechanism to decrypt data contained in the selected file and for automatically later eliminating the decrypted data.

(c.1) wherein said recryption control means is responsive to a supplied directory exclusion list, the directory exclusion list identifying one or more directories or subdirectories whose files are to be excluded from being selected by the recryption control means for decryption, and wherein the recryption control means accordingly does not select files identified by the directory exclusion list for decryption by the decrypting mechanism.

5,796,826

APPARATUS FOR LIMITING REPRODUCIBLE NUMBER OF MAGNETIC RECORDING MEDIUM

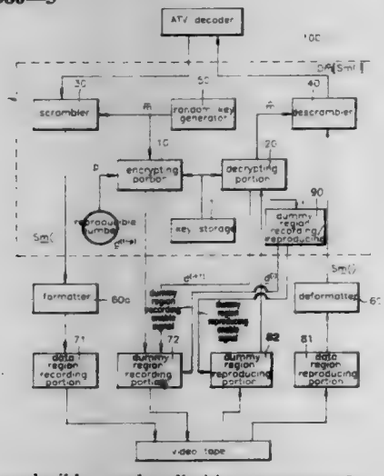
Tae Joon Park, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Dec. 1, 1995, Ser. No. 565,998

Claims priority, application Rep. of Korea, Jan. 16, 1995, 1995-612

Int. Cl.[6] G11B *15/087*

U.S. Cl. 380—5 **19 Claims**



1. A reproducible number limiting apparatus for a magnetic recording medium using a reproducible number limiting algorithm comprising:

scrambling means for scrambling an input bit stream using a scrambling key;

encryption means for encrypting said scrambling key used in said scrambling means' scrambling and additional information, and outputting a ciphertext;

decryption means for updating said additional information for every playback from the ciphertext using an encryption key, and destroying said scrambling key when said additional information satisfies a specific condition; and

descrambling means for descrambling a reproduced bit stream using said scrambling key from said decryption means;

wherein said encryption means comprises:

a key storage for storing an encryption key required in encryption;

an error correction code encoder for receiving data of predetermined bits and performing error-correcting encoding;

an adder for EXCLUSIVE-OR operating the output of said error correction code encoder and the additional information; and

a matrix multiplier for multiplying the output of said adder by a nonsingular matrix from said key storage, and outputting a ciphertext.

5,796,827

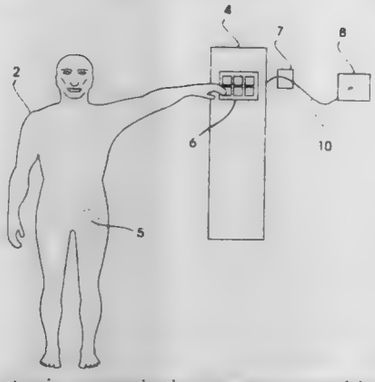
SYSTEM AND METHOD FOR NEAR-FIELD HUMAN-BODY COUPLING FOR ENCRYPTED COMMUNICATION WITH IDENTIFICATION CARDS

Don Coppersmith, Ossining, N.Y.; Prabhakar Raghavan, Saratoga, and Thomas G. Zimmerman, Cupertino, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1996, Ser. No. 749,865

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—9 **17 Claims**



1. An electronic communication apparatus comprising:

a portable transmitter, to be carried or worn on a user's person, the transmitter including:

(i) means for storing an item of information,

(ii) means for producing an encrypted electrical signal representative of the item of information, and

(iii) a physical interface for coupling the signal from the means for producing to the user's body; and

a receiver including:

(i) a physical interface for establishing an electrical coupling between the receiver and the user's body,

(ii) means for receiving the encrypted signal from the user's body through the physical interface,

(iii) means for decrypting the signal to obtain the item of information, and

(iv) means for performing an action responsive to the item of information.

5,796,828

CONTROLLED-ACCESS BROADCAST SIGNAL RECEIVING SYSTEM

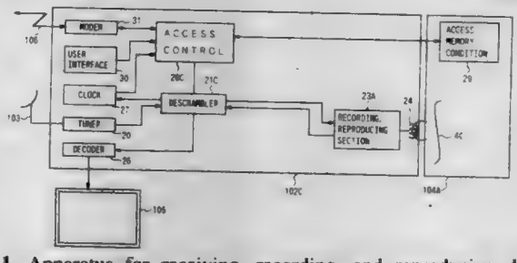
Junichi Tsukamoto, Tokyo; Koichi Goto, and Shinichi Fukushima, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 7, 1995, Ser. No. 499,332

Claims priority, application Japan, Jul. 8, 1994, 6-180637

Int. Cl.[6] H04N *7/167*; H04L *9/00;9/32*

U.S. Cl. 380—10 **40 Claims**



1. Apparatus for receiving, recording, and reproducing data signals, comprising:

receiving means for receiving said data signals and an access-control signal generated by a remote provider which grants users rights to reproduce said data signals;

processing means, coupled to said receiving means, for processing said data signals to produce processed data signals;

control means for controlling said processing means in response to said access-control signal;

storage means for storing said processed data signals and for storing said access-control signal;

means for reproducing said stored processed data signals to produce reproduced data signals and for retrieving said stored access-control signal; and

reprocessing means coupled to said control means for reprocessing said reproduced data signals in response to said retrieved access-control signal.

5,796,829

CONDITIONAL ACCESS SYSTEM

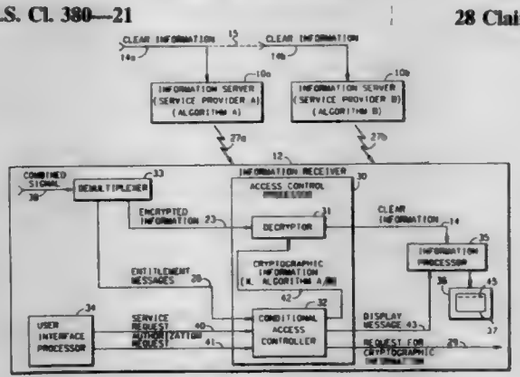
Charles F. Newby, San Diego, and Michael V. Harding, Santa Monica, both of Calif., assignors to The Titan Corporation, San Diego, Calif.

PCT No. PCT/US95/10571, § 371 Date Apr. 24, 1996, § 102(e) Date Jun. 24, 1996, PCT Pub. No. WO96/08912, PCT Pub. Date Mar. 21, 1996

Continuation-in-part of Ser. No. 303,409, Sep. 9, 1994, abandoned. This PCT application Aug. 17, 1995, Ser. No. 646,251

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—21 **28 Claims**



10. A conditional access system in which encrypted information is provided by a plurality of information service providers in accordance with different conditional access processes respectively utilizing different algorithms for encrypting the information, comprising

encryption means for encrypting information segments for transmission in accordance with different conditional access processes respectively utilizing different algorithms for encrypting the information segments;

a decryptor in an information receiver for decrypting encrypted information segments received by the information receiver by processing the received encrypted information segments with a session key used for encrypting the information segments in accordance with an algorithm utilized in one of said conditional access processes; and

a conditional access controller in the information receiver for selectively enabling the decryptor to decrypt received information segments encrypted in accordance with any of said different conditional access processes by providing to the decryptor cryptographic information for defining the algorithm utilized in said one of said different conditional access processes for use by the decryptor to decrypt the received information segment encrypted in accordance with said algorithm.

5,796,830

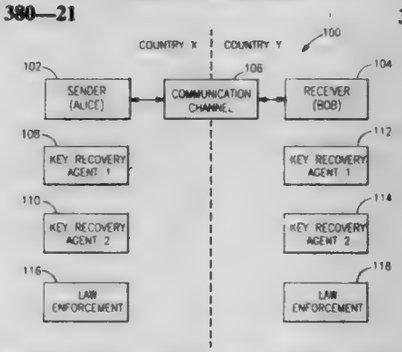
INTEROPERABLE CRYPTOGRAPHIC KEY RECOVERY SYSTEM

Donald Byron Johnson, Pleasant Valley, N.Y.; Paul Ashley Karger, Acton; Charles William Kaufman, Jr., Northborough, both of Mass.; Stephen Michael Matyas, Jr., Poughkeepsie, N.Y.; David Robert Safford, Brewster, N.Y.; Marcel Mordechay Yung, New York, N.Y., and Nevenko Zunic, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 29, 1996, Ser. No. 681,679

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—21 **32 Claims**



1. A method of providing, in a manner verifiable by a possessor of a cryptographic key, for the recovery of said key using a plurality of cooperating key recovery agents, comprising the steps of:

generating a plurality of shared key recovery values from which said key may be recovered, said key recovery values being generated as a function only of said key and public information;

encrypting said shared key recovery values under respective keys of said key recovery agents to generate encrypted recovery values; and

transmitting said encrypted recovery values over a communications channel to make said shared key recovery values available to said key recovery agents, whereby said shared key recovery values may be regenerated from said cryptographic key and said public information by a possessor of said key to verify said encrypted recovery values without requiring additional secret information.

5,796,831

METHOD FOR CONDUCTING A TRANSACTION BETWEEN A CHIP CARD AND AN INFORMATION SYSTEM

Pierre Paradinas, Coudekerque Branche, and Jean-Jacques Vandewalle, Villenauve D'Aso, both of France, assignors to Gemplus, Gemenos, France

Filed May 31, 1995, Ser. No. 455,279

Claims priority, application France, Jun. 3, 1994, 94 06858

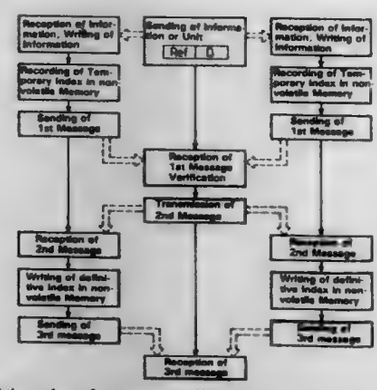
Int. Cl.[6] H04L *9/00;* **G06F** *7/04;5/22;* **G07D** *7/00*

U.S. Cl. 380—24 **22 Claims**

12. A method of conducting a transaction between first and second chip cards, the first and second chip card being linked by a transaction management device, the method comprising the steps of

A. sending transaction information which describes the transaction the transaction information being sent from the transaction management device to the first and second chip cards; then

B. temporarily recording the transaction in the first and second chip cards, including the step of performing an update of information previously stored information in the first and second chip cards, the update being performed based on the transaction information, and the update having a temporary character; then



C. verifying that the temporarily recording step has been correctly performed in both the first and second chip cards; and

D. in response to the verifying step, definitively recording the transaction in the first and second chip cards, including the step of changing the character of the previously performed temporary update from temporary to definitive.

5,796,832

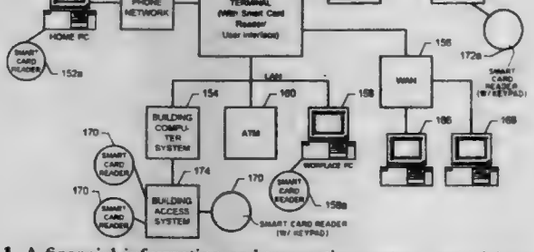
WIRELESS TRANSACTION AND INFORMATION SYSTEM

Joseph C. Kawan, Hollywood, Calif., assignor to Transaction Technology, Inc., Santa Monica, Calif.

Filed Nov. 13, 1995, Ser. No. 558,091

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—24 **31 Claims**



1. A financial information and transaction system comprising:

a host financial computer system, said host system maintaining records of user account information;

a plurality of user interface terminals for accessing said host financial computer system, at least one of said terminals comprising first means for wirelessly transmitting and receiving data, and a smart card reader;

a wireless communications interface comprising a second means for wirelessly transmitting and receiving data operatively counted to said at least one of said terminals comprising first means for wirelessly transmitting and receiving data; and

a communications interface coupled to said wireless communications interface and coupled to said host system;

wherein data corresponding to said user account information is exchanged between said host system and said at least one of said terminals comprising first means for wirelessly transmitting and receiving data via said wireless communications interface and said communications interface, such that a user obtains information and performs transactions on said host financial system through a smart card device that is coupled to said smart card reader, said smart card device including means for encrypting data which is exchanged with said host financial system.

5,796,833

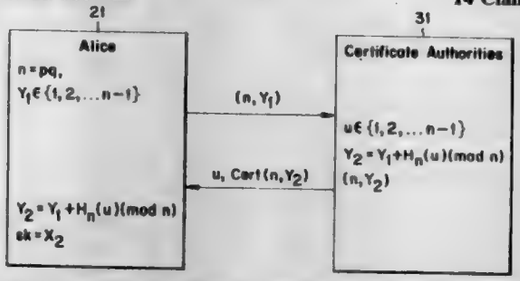
PUBLIC KEY STERILIZATION

Lidong Chen, Sunnyvale, and Charles S. Williams, Cupertino, both of Calif., assignors to Cylink Corporation, Sunnyvale, Calif.

Filed Sep. 23, 1996, Ser. No. 718,755

Int. Cl.[6] H04L *9/00;9/30*

U.S. Cl. 380—25 **14 Claims**



10. A system for sterilizing a first public key by a certificate authority (CA), with "sterilizing" defined to mean a process for randomly perturbing the first public key, comprising:

a user processor, located at a user, for generating a first private key, and for generating a first public key from the first private key using a first function easy for computing the first public key from the first private key, and difficult for computing the first private key from the first public key, with "easy" meaning a function executable on a computer in seconds and "computationally difficult" meaning a problem for which a known most efficient solution requires such large amounts of time and memory that a solution to the problem is computationally infeasible, said user processor sending, from the user to the certificate authority, the first public key;

a CA processor, located at the certificate authority, for generating at least a first random factor and a second random factor, and for calculating a second public key from the first public key and the first and second random factors, using a second function easy for computing the second public key from the first public key and the first and second random factors, and difficult for computing the first and second random factors from the second public key and the first public key, with "easy" meaning a function executable on a computer in seconds and "computationally difficult" meaning a problem for which a known most efficient solution requires such large amounts of time and memory that a solution to the problem is computationally infeasible, said CA processor sending, from the certificate authority to the user, the first and second random factors and a certificate of the second public key; and

said user processor for calculating the second public key from the first random factor, the second random factor and the first public key, and for calculating, at the user with the user processor, a second private key from the first and second random factors and the first private key.

5,796,834

SYSTEM AND METHOD FOR CONTROLLING THE DISPENSING OF AN AUTHENTICATING INDICIA

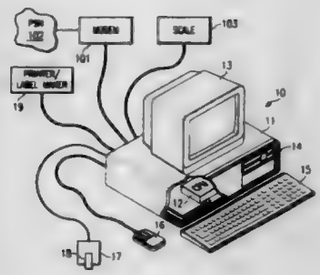
Jonathan W. Whitney; David M. Gressett, and Salim G. Kara, all of Houston, Tex., assignors to E-Stamp Corporation, Houston, Tex.

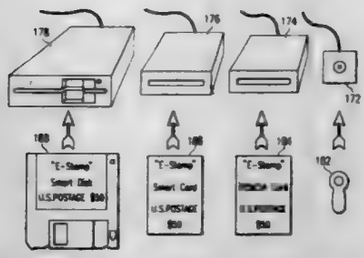
Continuation of Ser. No. 51,601, Aug. 16, 1995, which is a continuation-in-part of Ser. No. 263,751, Jun. 22, 1994, Pat. No. 5,606,507, which is a continuation-in-part of Ser. No. 176,716, Jan. 3, 1994, Pat. No. 5,510,992. This application Mar. 6, 1997, Ser. No. 812,803

Int. Cl.[6] H04K *1/00;* **G06F** *17/00;* **H04L** *9/00*

U.S. Cl. 380—25 **41 Claims**

1. A general purpose processor-based system operable for outputting data pertaining to a postage meter stamp to be printed on a piece of mail, said system comprising:





means for verifying that a universal storage means, programmed to contain a predetermined amount of postage that may be printed, is coupled to said system and is an authorized storage means, said means for verifying using data retrieved from said storage means; means for reading date information provided within said universal storage means;

means for retrieving a portion of an amount of postage contained within said verified storage means;

means for outputting data pertaining to said retrieved portion along with data operable for printing said postage meter stamp including an indication of said retrieved postage portion; and

means operable prior to said outputting of data for displaying a graphical representation of said postage meter stamp including said retrieved portion of postage, wherein the postage meter stamp displayed is at least in part encoded by the general purpose processor-based system.

5,796,835

METHOD AND SYSTEM FOR WRITING INFORMATION IN A DATA CARRIER MAKING IT POSSIBLE TO LATER CERTIFY THE ORIGINALITY OF THIS INFORMATION

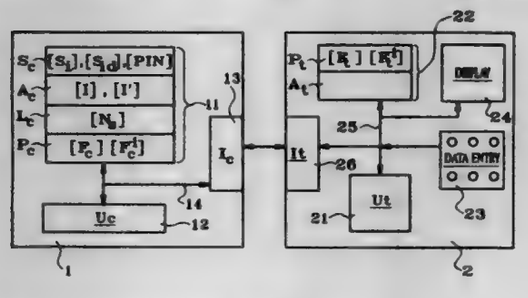
Charles Sauda, Saint-Cloud, France, assignor to Bull CP8, Louveciennes, France

Continuation of Ser. No. 256,057, Jun. 27, 1994, abandoned. This application May 7, 1997, Ser. No. 852,567

Claims priority, application France, Oct. 27, 1992, 92 12786

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—25 **18 Claims**



18. A portable electronic object, comprising:

an accessible memory portion which is accessible for at least reading, means for enabling information to be memorized on request of a person representative of an authority in said accessible memory portion, and means for enabling an image of said information to be memorized in said accessible memory portion, wherein said image is defined by an encipherment of the information with a predetermined encipherment function using a first datum and a second, secret datum both being representative of said authority;

a secret memory portion storing said second, secret datum; and

cipher means for performing a predetermined encipherment function which is identical to said predetermined encipherment function or a corresponding decipherment function.

5,796,836

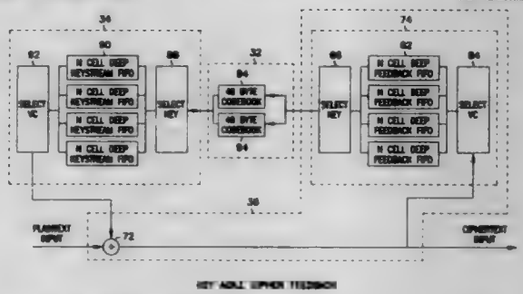
SCALABLE KEY AGILE CRYPTOGRAPHY

Thomas R. Markham, Anoka, Minn., assignor to Secure Computing Corporation, Roseville, Minn.

Continuation-in-part of Ser. No. 518,617, Aug. 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 423,082, Apr. 17, 1995, abandoned. This application Aug. 29, 1995, Ser. No. 521,056

Int. Cl.[6] H04L *9/28*

U.S. Cl. 380—28 **46 Claims**



31. An encryption device, comprising:

a ciphertext memory module for storing ciphertext;

a codebook module, connected to the ciphertext memory module, wherein the codebook module comprises a first codebook, the first codebook comprising:

a plurality of encryption algorithm devices;

an input module connected to the ciphertext memory module and to the plurality of encryption algorithm devices, wherein the input module distributes the ciphertext received from the ciphertext memory module according to a dispersion algorithm;

output means, connected to the plurality of encryption algorithm devices, for forming keystream by combining data received from the plurality of encryption algorithm devices according to the dispersion algorithm, wherein the output means includes means for forming at least one bit of the keystream as a function of data received from two or more of the plurality of encryption algorithm devices;

a keystream memory module, connected to the output means, for storing keystream generated from the ciphertext; and

encryption means, connected to the keystream memory module, for combining the keystream with plaintext to form ciphertext and for feeding the ciphertext back into the ciphertext memory module.

5,796,837

APPARATUS AND METHOD FOR GENERATING A SECURE SUBSTITUTION-BOX IMMUNE TO CRYPTANALYSES

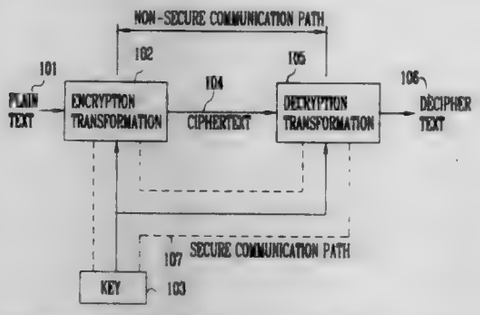
Kwang Jo Kim; Sang Jin Lee; Sang Joon Park; Seung Cheol Goh, and Dai Ki Lee, all of Taejon-shi, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Taejon, Rep. of Korea

Filed Dec. 26, 1996, Ser. No. 780,143

Claims priority, application Rep. of Korea, Dec. 26, 1995, 95-56850

Int. Cl.[6] H04L *9/06;9/28;9/00*

U.S. Cl. 380—28 20 Claims



1. An apparatus for providing a secure substitution-box immune to differential and linear cryptanalysises comprising:

a preprocessor for exchanging a location by the unit of bit while passing the input of 64 bits data to be protected;

a parity checker for obtaining 56 bits key information by passing the input of the 64 bits key by byte unit;

a key expander for repetitive operation for generating 48 bits information upon receiving the key information;

at least sixteen operating portions for performing the 16 times of operation for one data from the preprocessor while mixing the data with an expanding key information from the key expander; and

a postprocessor for generating an output signal of 64 bits data upon receiving an operated result from each of said 16 operating portions.

5,796,838

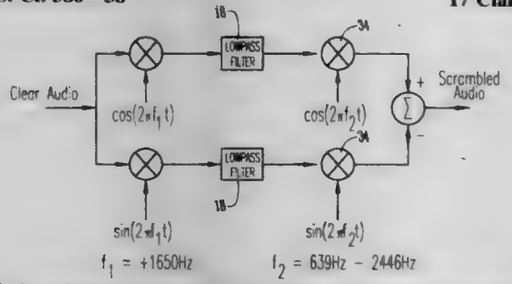
METHOD AND APPARATUS FOR PERFORMING FREQUENCY SPECTRUM INVERSION

Douglas A. Heerman, Raymond, Nebr., assignor to Transcrypt International, Inc., Lincoln, Nebr.

Filed Aug. 2, 1996, Ser. No. 691,600

Int. Cl.[6] H04K *1/00;* H04L *9/00*

U.S. Cl. 380—38 17 Claims



1. A method of processing a digitized audio signal having upper and lower sidebands comprising the steps of:

inverting the frequency spectrum of at least one of the sidebands of the digitized audio signal;

constructing a complex signal having real and imaginary components and a single sided frequency spectrum based on the inverted frequency spectrum; and

extracting the real component of the complex signal to produce a real signal.

5,796,839

ENCRYPTION METHOD, ENCRYPTION APPARATUS, RECORDING METHOD, DECODING METHOD, DECODING APPARATUS AND RECORDING MEDIUM

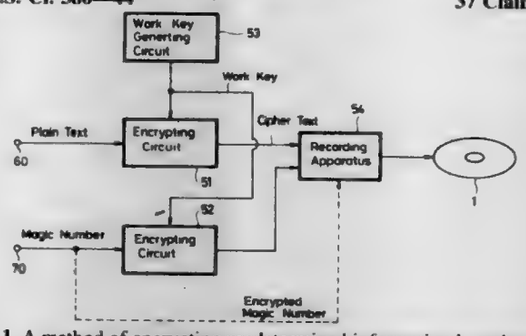
Ryuji Ishiguro, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 15, 1996, Ser. No. 704,311

Claims priority, application Japan, Oct. 16, 1995, 7-267250

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—44 37 Claims



1. A method of encrypting predetermined information by using a predetermined encryption key comprising the steps of:

hierarchizing the encryption of said encryption key by sequentially encrypting a version of an encryption key from an immediate previously encrypted version of an encryption key by using a one way function, and

decoding said predetermined information by using said hierarchized encryption of said encryption key wherein only a subsequent version excluding a first master version of an encryption key is able to decode the predetermined information of a previous version of an encryption key.

5,796,840

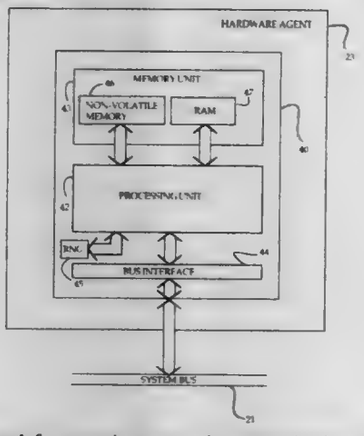
APPARATUS AND METHOD FOR PROVIDING SECURED COMMUNICATIONS

Derek L. Davis, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 251,486, May 31, 1994, Pat. No. 5,539,828. This application Oct. 4, 1995, Ser. No. 538,869

Int. Cl.[6] H04L *9/00;9/30*

U.S. Cl. 380—50 15 Claims



5. A method for ensuring secured communications between a system employing a hardware agent and a remote system, the method comprising the steps of:

establishing a communication link between the hardware agent and the remote system;

outputting a unique device certificate from the system to the remote system;

decrypting said device certificate to obtain a public key of the hardware agent;

transmitting a message from the remote system to the system;
returning a response to said message, said response encrypted with a private key of the hardware agent;
decrypting said response with said public key of the hardware agent;
and
maintaining communications if said response is identical to that expected by the remote system.

5,796,841

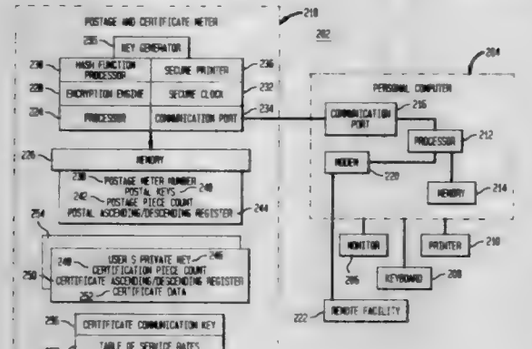
SECURE USER CERTIFICATION FOR ELECTRONIC COMMERCE EMPLOYING VALUE METERING SYSTEM

Robert A. Cordery, Danbury; David K. Lee, Monroe; Leon A. Pintsov, W. Hartford; Frederick W. Ryan, Jr., Oxford, and Monroe A. Weiant, Jr., Trumbull, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 21, 1995, Ser. No. 518,404

Int. Cl.[6] H04L *9/00;9/30*

U.S. Cl. 380—55 **34 Claims**



17. A system, comprising:
register means for storing funds;
means for processing a digital token providing proof of postage payment;
means for processing a cryptographic certificate; and,
means, operatively connected to said register means and to said means for processing a digital tokens and to said means for processing a certificate, for debiting funds stored in said register means when said digital token is processed and when said cryptographic certificate is processed.

5,796,842

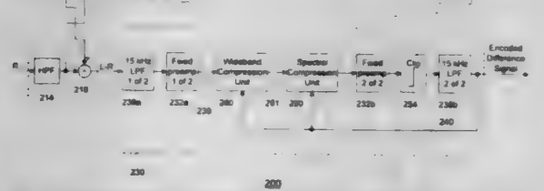
BTSC ENCODER

Christopher M. Hanna, Marlborough, Mass., assignor to THAT Corporation, Marlborough, Mass.

Filed Jun. 7, 1996, Ser. No. 661,412

Int. Cl.[6] H04H *5/00*

U.S. Cl. 381—4 **45 Claims**



45. A digital BTSC signal encoder for encoding digital left and right channel audio signals at a predetermined sample rate so that the encoded left and right channel audio signals can be subsequently decoded so as to reproduce the digital left and right channel audio signals with little or no distortion of the signal content of the digital left and right channel audio signals, said encoder comprising:
(A) matrix means for receiving a digital left channel audio signal and a digital right channel audio signal, and including means for summing said digital left and right channel audio signals and thereby generating a digital sum signal, and including means for subtracting one of said digital left and right channel audio signals from the other of said digital left and right channel audio signals and thereby generating a digital difference signal;
(B) difference channel processing means for digitally processing said digital difference signal, said digital processing introducing a first phase error to said digital difference signal;
(C) sum channel processing means for processing said digital sum signal and including means for introducing a second phase error to said digital sum signal and thereby compensating for said first phase error introduced into said digital difference signal;
wherein the matrix means, the difference channel processing means and the sum channel processing means each operate at a predetermined sample rate so as to preserve the signal content of said digital left and right channel audio signals.

5,796,843

VIDEO SIGNAL AND AUDIO SIGNAL REPRODUCING APPARATUS

Kiyofumi Inanaga, Kanagawa, and Yuji Yamada, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

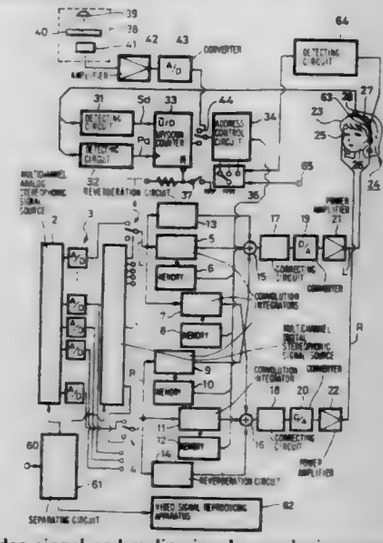
PCT No. PCT/JP95/00197, § 371 Date Sep. 8, 1995, § 102(e) Date Sep. 8, 1995, PCT Pub. No. WO95/22235, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 14, 1995, Ser. No. 513,806

Claims priority, application Japan, Feb. 14, 1994, 6-017601; Feb. 14, 1994, 6-017602; Mar. 4, 1994, 6-034975; Mar. 8, 1994, 6-037254

Int. Cl.[6] H04S *5/00;* **H04R** *5/02*

U.S. Cl. 381—17 **31 Claims**



1. A video signal and audio signal reproducing apparatus comprising:
a signal source for supplying a video signal and audio signals in a plurality of channels;
storage means for storing an impulse response from a virtual sound source reference position with respect to a reference direction of a listener's head to both ears, the impulse response corresponding to a measured head movement of the listener, and for storing a control signal and a level signal corresponding respectively to a measured difference in time between audio signals from the virtual sound source reference

position with respect to the reference direction of the listener's head to both ears and a measured difference in level between the audio signals from the virtual sound source reference position with respect to the reference direction of the listener's head to both ears;

an angle detecting means for detecting a head movement angle of the listener with respect to the reference direction at every predetermined angle and outputting a detected angle signal, the angle detecting means including a reset switch for selectively setting the reference direction;

address signal generating means for generating an address signal supplied to the storage means to read out the impulse response or the control signal stored in the storage means;

video signal reproducing means for reproducing the video signal supplied from the signal source;

movement detecting means for detecting a relative movement of the virtual sound source on the video signal reproducing means and the listener's head;

control means for correcting the audio signals with respect to the relative movement of the listener's head and the movement of the listener's head with respect to the position of the virtual sound source on the video reproducing means in a real-time manner based on the impulse response or the control signal read out from the storage means, the control means correcting the audio signals after an address of the storage means is designated by the address signal generated by the address signal generating means based on the detected angle signal from the angle detecting means and an output signal from the movement detecting means to thereby read out the impulse response or the control signal stored in the storage means, the control means correcting the audio signals from the signal source so that a plurality of reproduced sound images are localized at a position corresponding to a picture reproduced by the video signal reproducing means;

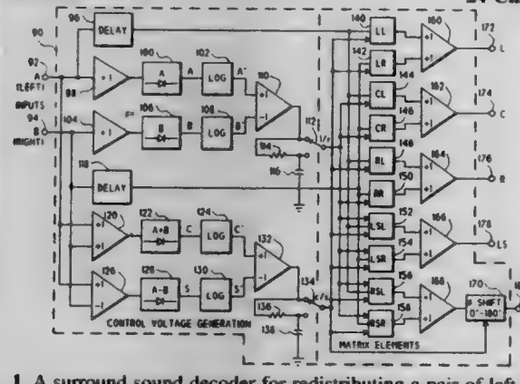
audio signal reproducing means adapted for mounting on the listener's head, the audio signal reproducing means receiving and reproducing the audio signals corrected by the control means so that the plurality of reproduced sound images are localized at the position corresponding to the picture reproduced by the video signal reproducing means.

5,796,844

MULTICHANNEL ACTIVE MATRIX SOUND REPRODUCTION WITH MAXIMUM LATERAL SEPARATION

David H. Griesinger, Cambridge, Mass., assignor to Lexicon, Bedford, Mass.

Filed Jul. 19, 1996, Ser. No. 684,948
Int. Cl.[6] H04S *3/00*
U.S. Cl. 381—18 **24 Claims**



1. A surround sound decoder for redistributing a pair of left and right audio input signals including directionally encoded and non-directional components into a plurality of output channels for reproduction through loudspeakers surrounding a listening area, and incorporating circuitry for determining the directional content of the left and right audio signals and generating therefrom at least a left-right steering signal and center-surround steering signal, the decoder comprising:

delay means for delaying each of said left and right audio input signals to provide delayed left and right audio signals;

a plurality of multiplier means equal to twice the number of said plurality of output channels, organized in pairs, a first element of each said pair receiving said delayed left audio signal and a second element receiving said delayed right audio signal, each of said multiplier means multiplying its input audio signal by a variable matrix coefficient to provide an output signal;

said variable matrix coefficient being controlled by one or both of said steering signals; and

a plurality of summing means one for each of said plurality of output channels each said summing means receiving the output signals of a pair of said multiplier means and producing at its output one of said plurality of output signals,

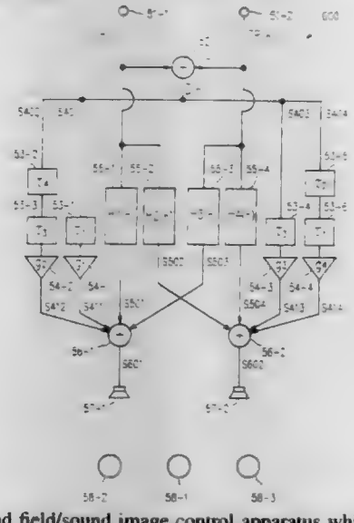
the decoder having said variable matrix values so constructed as to reduce directionally encoded audio components in outputs which are not directly involved in reproducing them in the intended direction; enhance directionally encoded audio components in the outputs which are directly involved in reproducing them in the intended direction so as to maintain constant total power for such signals; while preserving high separation between the left and right channel components of non-directional signals regardless of the said steering signals; and maintaining the loudness defined as the total audio power level of non-directional signals effectively constant whether or not directionally encoded signals are present and regardless of their intended direction if present.

5,796,845

SOUND FIELD AND SOUND IMAGE CONTROL APPARATUS AND METHOD

Mitsuhiko Serikawa, Nishinomiya; Ryou Tagami; Akihisa Kawamura, both of Hirakata; Masaharu Matsumoto, Katano; Mikio Oda, Yawata, and Hiroko Numazu, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 247,269, May 23, 1994, Pat. No. 5,684,881. This application Jun. 26, 1997, Ser. No. 883,276
Int. Cl.[6] H04R *5/00*
U.S. Cl. 381—18 **10 Claims**



1. A sound field/sound image control apparatus which performs a sound field control and a sound image localization by processing stereophonic signals including a plurality of channel signals, the apparatus comprising:

input means for inputting the plurality of channel signals;

first signal processing means for receiving the plurality of channel signals, for performing a filtering process after dividing

each of the channel signals into a plurality of branched signals, and for outputting a plurality of first processed signals;

subtracting means for receiving at least two of the plurality of channel signals, for producing a difference signal by subtracting one of the two channel signals from the other channel signal, and for outputting the difference signal;

at least one pair of second signal processing means, each for receiving the difference signal, for delaying the difference signal by a predetermined time, for adjusting the level to a predetermined level, and for outputting a pair of second processed signals;

at least one pair of adding means for receiving the first processed signals and at least a pair of the second processed signals, for adding the first and the second processed signals at a predetermined ratio, and for outputting at least a pair of added signals; and

at least one pair of reproducing means, each for receiving a corresponding one of the added signals, and for reproducing the corresponding signal at a predetermined position,

wherein the sound image is localized by reproducing the first processed signals, and the sound field is reproduced with presence by reproducing the second processed signals.

5,796,846

Patent Not Issued For This Number

5,796,847

SOUND REPRODUCTION APPARATUS

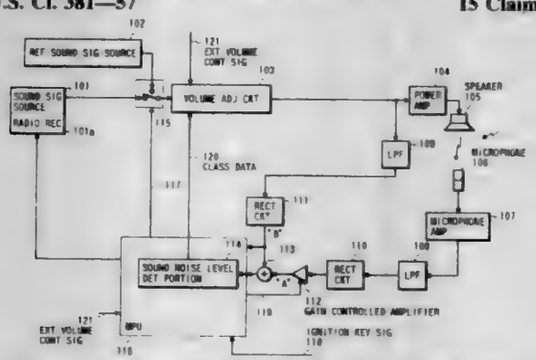
Yuji Kaihotsu, Yokohama; Toshikazu Chiba, Zushi, and Katsushi Yamada, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd.

Filed Sep. 1, 1995, Ser. No. 522,925

Claims priority, application Japan, Sep. 6, 1994, 6-212417; Oct. 18, 1994, 6-251891

Int. Cl.[6] H03G *3/20*

U.S. Cl. 381—57 **15 Claims**



1. A sound reproduction apparatus for a vehicle comprising:

a sound source for generating a sound signal;

sound reproduction means for generating and emitting a sound from said sound signal into a compartment of said vehicle;

a microphone, provided in said compartment, for detecting the sound transmitted in said compartment and environmental sound noise and for generating a sound detection signal;

detection means for detecting a magnitude of said environmental sound noise by detecting a difference between magnitudes of said sound signal and said sound detection signal;

volume control means for effecting volume controlling of said sound signal in accordance with said magnitude of said environmental sound noise from said detection means; and

equalizing means for substantially equalizing a first signal path of said sound signal supplied to said detection means and a second gain of a second signal path of said sound detection signals supplied to said detection means.

5,796,848

DIGITAL HEARING AID

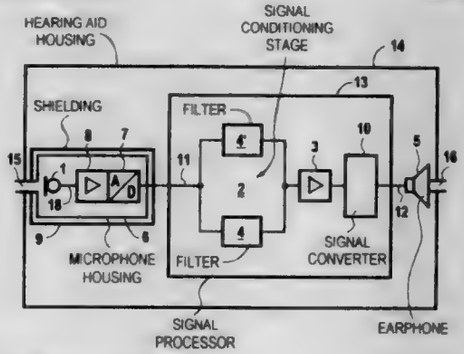
Raimund Martin, Eggolsheim, Germany, assignor to Siemens Audiologische Technik GmbH, Erlangen, Germany

Filed Dec. 6, 1996, Ser. No. 761,495

Claims priority, application Germany, Dec. 7, 1995, 195 45 760.9

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—68.2 **13 Claims**



1. A hearing aid comprising:

a housing;

a microphone disposed in said housing;

an earphone disposed in said housing;

digital signal processing means for processing a signal received by said microphone for producing a signal supplied to said earphone for correcting a hearing impairment, said digital signal processing means being connected in said housing between said microphone and said earphone and including a signal converter, an amplifier and a filter stage;

a microphone housing disposed in said housing and surrounding said microphone in said housing said microphone housing comprising a shielding against high-frequency electromagnetic signals; and

an analog digital converter connected between said microphone and said signal processing means and integrated into said microphone housing.

5,796,849

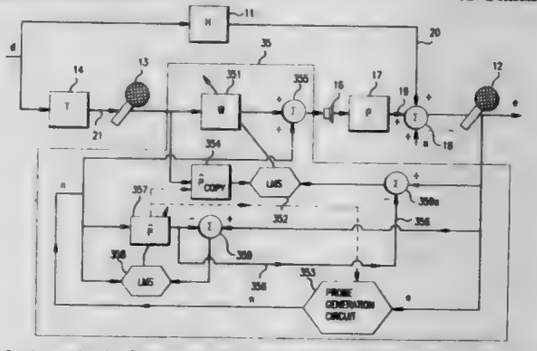
ACTIVE NOISE AND VIBRATION CONTROL SYSTEM ACCOUNTING FOR TIME VARYING PLANT, USING RESIDUAL SIGNAL TO CREATE PROBE SIGNAL

Ronald Bruce Coleman, Arlington; Bill Gene Watters, Gloucester, and Roy Allen Westerberg, Concord, all of Mass., assignors to Bolt, Beranek and Newman Inc., Cambridge, Mass.

Filed Nov. 8, 1994, Ser. No. 335,936

Int. Cl.[6] A61F *11/06*; **H03B** *29/00*

U.S. Cl. 381—71.8 **46 Claims**



1. A method of generating a probe signal for use in estimating the transfer function of a time-varying plant in an active noise or vibration control system, comprising steps of:

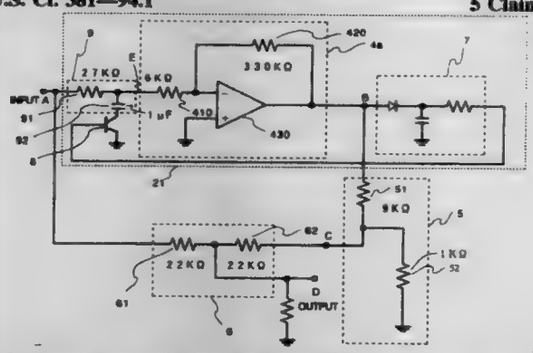
(a) creating a residual signal by algebraically combining a response due to a disturbance with a response induced by the output of a controller of said control system;
(b) feeding the residual signal back into the controller; and
(c) generating said probe signal inside of said controller by processing the residual signal fed back to the controller at said step (b), said processing including spectral shaping so that a substantially constant signal-to-noise ratio probe signal is generated throughout the controller bandwidth.

5,796,850

NOISE REDUCTION CIRCUIT, NOISE REDUCTION APPARATUS, AND NOISE REDUCTION METHOD

Takashi Shiono, and Mutsumi Yoshinaga, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1996, Ser. No. 752,527
Claims priority, application Japan, Apr. 26, 1996, 8-106997
Int. Cl.[6] H04B *15/00*
U.S. Cl. 381—94.1 **5 Claims**



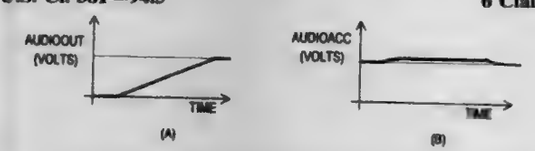
1. A noise reduction circuit comprising:
(a) an inverting amplifier for receiving an input signal containing noise, and for outputting an inverted amplified signal which is restricted in amplitude;
(b) an attenuator for attenuating the inverted amplified signal outputted from the inverting amplifier to develop an attenuated signal; and
(c) a mixer for adding the input signal and the attenuated signal to develop an output signal at an output terminal, wherein the output signal corresponds to the input signal but with a reduction in the amount of noise contained in the input signal.

5,796,851

DIGITAL METHOD TO ELIMINATE POWER-ON POPS AND CLICKS

Larry Hewitt, and Carlin Dru Cabler, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 5, 1996, Ser. No. 760,760
Int. Cl.[6] H04B *15/00*
U.S. Cl. 381—94.5 **6 Claims**



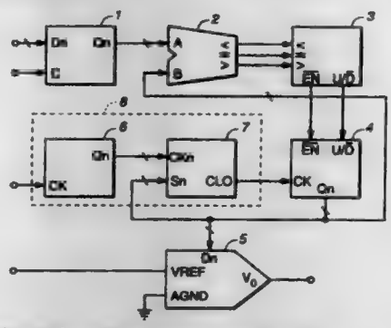
1. An apparatus for click-free initiation of audio operation which comprises:
an audio amplifier coupled to receive an input audio signal and an enable signal, and configured to provide to an output line (1) an output audio signal by amplification of the input audio signal when said enable signal is asserted, and (2) a high impedance path to ground when said enable signal is not asserted;
a digital-to-analog converter configured to receive a digital sequence and coupled to provide said input audio signal to said audio amplifier; and
a control element configured to provide as a portion of said digital sequence a ramp sequence which progresses smoothly across a range from minimum voltage to nominal operating voltage, and configured to initiate assertion of said enable signal while the ramp sequence is at minimum voltage.

5,796,852

SYSTEM AND METHOD FOR ELECTRONIC VOLUME CONTROL OF AUDIO SIGNALS

Hisashi Yamaguchi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 83,791, Jun. 25, 1993, abandoned. This application Aug. 23, 1996, Ser. No. 702,333
Claims priority, application Japan, Jun. 25, 1992, 4-167864
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—104 **2 Claims**



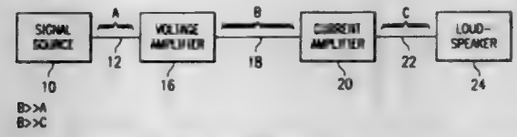
1. An electronic volume control comprising:
a volume control register for storing a digital value used for volume control;
a frequency divider having an input terminal receiving a base clock signal having a base frequency, a selection terminal, and an output terminal for selectively outputting one of the base clock signal and a divided signal having a frequency less than the base frequency as an output clock signal;
an up/down counter coupled to said frequency divider for counting the output clock signal, said up/down counter having an output comprising a digital value representative of a volume value;
a comparator coupled to said volume control register and to the output of sad up/down counter for comparing the stored digital value from said volume control register with the digital value from said up/down counter, wherein the results obtained by said comparator determine the selected frequency of the output clock signal;
a control circuit responsive to said comparator and coupled to said up/down counter for controlling the counting operation of said up/down counter by incrementing during a first time period, decrementing during a second time period and stopping during a third time period, respectively, the counting operations of said up/down counter based on a result of comparisons made by said comparator so as to match the digital value from said u/down counter with the stored distal value from said volume control register; and
a digital/analog converter having a reference voltage terminal to which an audio signal is coupled, and an input coupled to said up/down counter output to receive said digital volume value from said up/down counter during the first, second, and third time periods;
wherein change of volume of the audio signal is gradually increased in the first time period, gradually decreased in the second time period, and left unchanged during the third time period, respectively, by said digital/analog converter according to a frequency of the output clock signal and results obtained by said comparator during the first, second and third time periods.

5,796,853

SPEAKER AND AMPLIFIER SYSTEM

Noel Lee, South San Francisco, Calif., assignor to Monster Cable Internation, Ltd., South San Francisco, Calif.

Filed Dec. 15, 1993, Ser. No. 167,411
Int. Cl.[6] H04B 15/00
U.S. Cl. 381—120 2 Claims



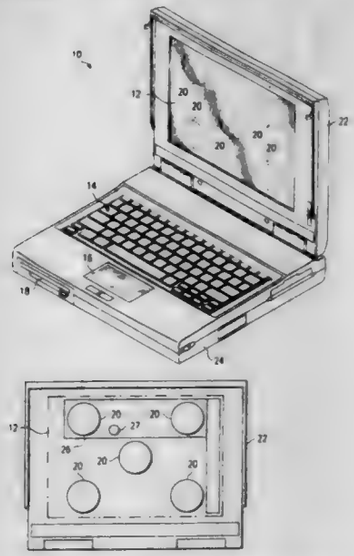
1. A high fidelity system comprising a signal source; a speaker comprising terminal means and a frame; and an amplifier coupled to said signal source and to said speaker, said amplifier comprising: a first section connected to said signal source via first conductors, said first section receiving source signal from said signal source and amplifying the voltage thereof; a second section mounted directly on the external surface of said speaker frame for minimizing the length of a third conductor; said second section being connected to said first section via second conductors and being connected to said terminal means of said speaker via third conductors, said second section receiving the output of said first section, amplifying the current thereof, and applying a current amplified power output signal to said speaker, said third conductors being much shorter than said second conductors; said speaker contains a terminal means for connecting the third connector.

5,796,854

THIN FILM SPEAKER APPARATUS FOR USE IN A THIN FILM VIDEO MONITOR DEVICE

Mitchell A. Markow, Spring, Tex., assignor to Compaq Computer Corp., Houston, Tex.

Filed Mar. 4, 1997, Ser. No. 810,432
Int. Cl.[6] H04R 25/00
U.S. Cl. 381—188 23 Claims



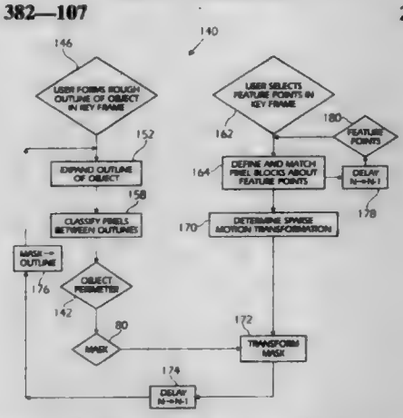
1. A thin film video monitor apparatus comprising:
a thin film video display panel;
a stiffening panel, placed adjacent said thin film video display panel;
a plurality of piezo transducers, attached to at least a first side of said stiffening panel, and
an acoustic labyrinth transmission line for connecting a first piezo transducer and a second piezo transducer selected from said plurality of piezo transducers to provide a first distance for said first piezo transducer and a second distance for said second piezo transducer and to provide frequency overlap between said two piezo transducers.

5,796,855

POLYGON BLOCK MATCHING METHOD

Ming-Chieh Lee, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jun. 4, 1996, Ser. No. 657,274
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—107 23 Claims



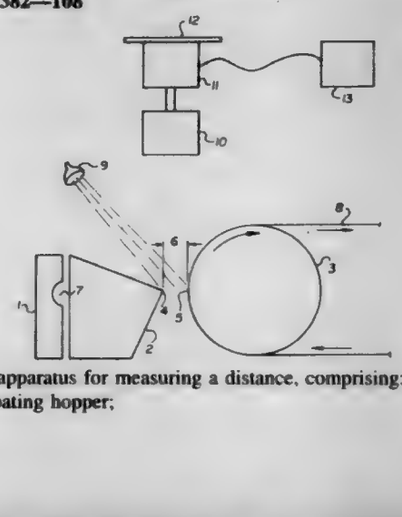
1. A block matching motion estimation method for estimating motion of corresponding pixels between first and second video image frames, comprising:
defining a reference pixel block of multiple pixels relative to a first reference pixel in the first video image frame and a sample pixel block of multiple sample pixels in the second video image frame, the reference pixel block being a quadrilateral array of pixels;
determining and storing for the pixels in the sample pixel block correlations to the pixels in the reference pixel block, including using shape of an arbitrary image feature to exclude pixels in the reference pixel block located outside the arbitrary image feature from correlation determinations; and
identifying from the correlations a first sample pixel corresponding to the first reference pixel.

5,796,856

GAP MEASURING APPARATUS AND METHOD

Ernest A. Graff, Ontario, and Dan S. Albright, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 296,048, Aug. 24, 1994, abandoned.
This application Apr. 8, 1997, Ser. No. 835,555
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—108 8 Claims



1. An apparatus for measuring a distance, comprising:
a) a coating hopper;

b) a coating roller spaced apart from said coating hopper to form a gap;

c) a light source located above said gap for illuminating the gap between the coating hopper and the coating roller;

d) an optical focusing device positioned away from the gap comprising a long range microscope and positioned above said gap;

e) a CCD camera coupled to said optical focusing device, said CCD camera generating an image signal of the gap between the coating hopper and the coating roller;

f) a computer for processing the image signal by;

i) digitizing the image signal into a series of discrete points;

ii) assigning intensity values to the series of discrete points;

iii) creating a plurality of arrays of the intensity values and then creating an array of the averages wherein the computer samples columns of pixels from the digitized image to create an array of pixels with aligned rows, the array of pixels being averaged row by row to create a single array of light intensity values;

iv) determining an edge location of the coating hopper by a first derivative of the light intensity value between each pixel from the digitized image and an edge location of the coating roller by a first and second derivative of the said array of averages wherein the computer applies an algorithm which determines the first and second derivatives of the light intensity values between each pixel and its neighbor and searches for extrema: maxima, minima and inflection points;

v) determining the distance between the edge of the coating hopper and the edge of the coating roller.

5,796,857

APPARATUS FOR FINGERPRINT VERIFICATION USING DIFFERENT VERIFICATION METHOD IN ACCORDANCE WITH QUALITY GRADE DATA

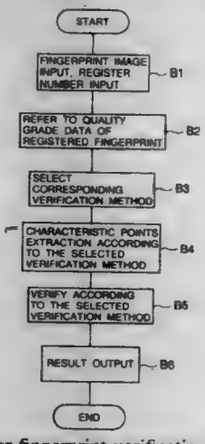
Masanori Hara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 313,566, Sep. 29, 1994, abandoned. This application Jul. 28, 1997, Ser. No. 900,918

Claims priority, application Japan, Oct. 21, 1993, 5-263246

Int. Cl.[6] G06K *9/00;9/46;9/66;9/52*

U.S. Cl. 382—124 **10 Claims**



1. An apparatus for fingerprint verification comprising:

a data base wherein feature points data and quality grade data of fingerprints to be verified are registered with a respective register number of each fingerprint as an index for access,

a register number input unit for generating the register number of a fingerprint to be compared,

a fingerprint image input unit for generating a fingerprint image of said fingerprint to be compared,

a feature points extraction unit for extracting feature points data of said fingerprint image from said fingerprint image input unit, and

a verifier unit for comparing said feature points data extracted from said fingerprint image and the feature points data read out from said data base,

wherein one of a plurality of different verification methods is assigned in accordance with quality grade data, and said verifier unit determines the one verification method for said fingerprint to be compared in accordance with the quality grade data associated with the register number of said fingerprint to be compared, and

wherein the verifications methods are based on one of feature points extraction area, ridge line direction, feature points, and feature points and relations.

5,796,858

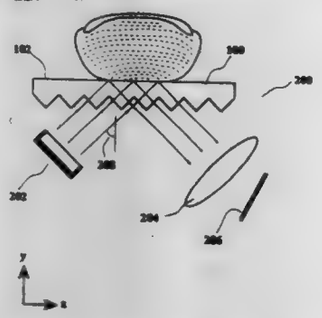
FINGERPRINT SENSING SYSTEM USING A SHEET PRISM

Gan Zhou, Pasadena; Yong Qiao, Alhambra, and Fai Mok, West Hills, all of Calif., assignors to Digital Persona, Inc., Redwood City, Calif.

Filed May 10, 1996, Ser. No. 646,531

Int. Cl.[6] G06K *9/00;9/74*

U.S. Cl. 382—127 **28 Claims**



1. A fingerprint sensing system comprising:

a sheet prism having

a sensing surface,

a plurality of rigid prismlets positioned opposite to the sensing surface,

each prismlet having an entrance surface and an exit surface, each prismlet being adjacent to another prismlet,

the width of the sheet being more than ten times the maximum thickness of any one of the prismlets;

such that when a finger is positioned on the sensing surface, a portion of illumination radiation illuminating the system, entering a plurality of the entrance surfaces and incident at the sensing surface is reflected through total internal reflection and emitted from a plurality of the exit surfaces to create an image of the fingerprint.

5,796,859

PROCESSING OF KERATOSCOPIC IMAGES EMPLOYING LOCAL SPATIAL PHASE

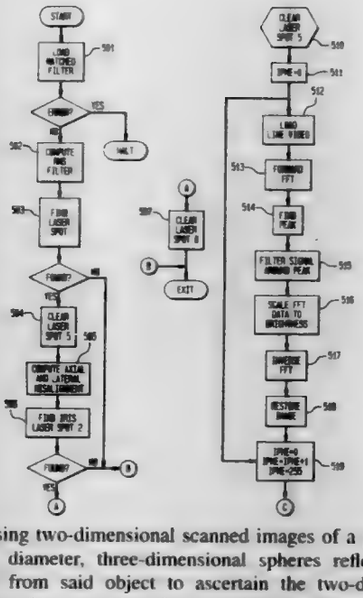
Richard J. Mammone, Bridgewater, N.J., assignor to Computed Anatomy Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 287,126, Aug. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 44,104, Apr. 8, 1994, which is a continuation of Ser. No. 773,679, Oct. 8, 1991, abandoned. This application Jun. 2, 1995, Ser. No. 459,531

Int. Cl.[6] G06K *9/00;* **A61B** *3/10*

U.S. Cl. 382—128 **24 Claims**

1. The process of operating a stored program controlled apparatus to display a two-dimensional map of measurements of the local surface magnification of a three-dimensional surface reflecting a quasi-periodic mire pattern from an illuminated object, comprising the steps of:



a. processing two-dimensional scanned images of a plurality of known diameter, three-dimensional spheres reflecting said pattern from said object to ascertain the two-dimensional distances (h') on said surface at which predetermined local spatial phases occur in said scanned images;

b. computing, for each of said images, the ratio of said two-dimensional distances (h') to the size (h) of a corresponding portion of said object to ascertain the local magnification of said surface;

c. processing a two-dimensional image of an unknown surface to ascertain the two-dimensional distances thereon at which said predetermined local spatial phases occur in said scanned image; and

d. displaying an indication of the local magnification of said unknown surface corresponding to said last-mentioned two-dimensional distances.

5,796,860

METHOD FOR DECOMPOSING SCINTIGRAPHIC IMAGES INTO TOTAL ABSORPTION AND DIFFUSED COMPONENTS

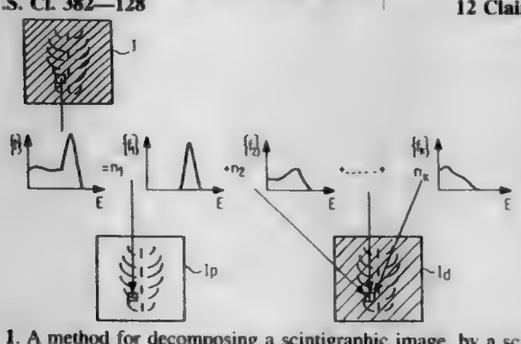
Irene Buvat, Cosne D'Allier; Habib Benali, L'Hay Les Roses; Jean-Pierre Bazin, Villejuif, and Robert Di Paola, Saulx Les Chartreux, all of France, assignors to Inserm, Paris, and Sopha Medical, Buc, both of France

Continuation of Ser. No. 246,233, May 18, 1994, abandoned. This application Sep. 3, 1996, Ser. No. 706,970

Claims priority, application France, May 18, 1993, 93 05992

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—128 **12 Claims**



1. A method for decomposing a scintigraphic image, by a scintillation camera functioning sequentially, into one component called the total absorption component and one component called the diffused component, of energy spectra $\{t_i\}$ furnished, for N image elements i (i =1, 2, . . . , N), characterized in that each spectrum $\{t_i\}$ K fundamental spectra $\{f_k\}$ (k=1, 2, . . . , K) having the following form:

$$\{t_i\} = \sum_{k=1}^{K} n_k(i)\,\{f_k\}$$

where n_k (i) are unknown coefficients which are to be determined and where one of these fundamental spectra, $\{f_1\}$, called the total absorption spectrum, is representative of said total absorption component, and the K−1 other fundamental spectra, $\{f_k\}$ where k=2, . . . , K, which are called diffused spectra, are representative of said diffused component, first generating a scintigraphic image by applying radiation to a patient, passing radiation through a part of the patient, and sensing radiation which has passed through the part of the patient; and then performing said decomposition method comprising:

(a) sampling the energy of the spectra in the form of P samples j (j=1, 2, . . . , P);

(b) recording the values $t_i(j)$ of each spectrum $\{t_i\}$ of an image element i for each energy sample j;

(c) constructing a table Y of $Yi^t(j)$ values of m aggregate spectra $\{Y_{i^t}\}$ for the P energy samples j, as well as the matrix defined by Y^tDYM, where D and M are diagonal matrices specifying a metric;

(d) determining the base of specific vectors $\{v_q\}$ (q=0, 1, 2, . . . , P−1) that are specific orthogonal vectors of the matrix Y^tDYM, classified by order of decreasing values, said base being such that

$$\{Yi^t\} = \sum_{q=0}^{P-1} a_{iq}\{v_q\}$$

where a_{iq} are elements of a matrix of passage from one base to another,

(e) determining the K fundamental spectra $\{f_k\}$ in the space generated by the Q (Q≦P) first specific vectors $\{v_q\}$ by applying the constraints listed below to the coefficients b_{kq} defined by:

$$\{f_k\} = \sum_{q=0}^{Q} b_{kq}\,\{v_q\},\ b_{k0} = b_0\ \forall\ k$$

$$\text{where}\quad Yi^t(j) = \sum_{q=0}^{Q} a_{iq}\,v_q(j)$$

$$\text{and}\quad Yi^t(j) = \sum_{k=1} c_{ik}\,f_k(j)$$

the aforementioned constraints being the following:

the b_{1q} coefficients (q=1, 2, . . . , Q), corresponding to the total absorption spectrum $\{f_1\}$, are determined by the point in space of the $\{v_q\}$ values best satisfying the condition of nullity in certain regions of energy samples j;

the b_{kq} coefficients (k=2, . . . , K), corresponding to the diffused spectra, are determined under the following conditions:

condition of positivity of the spectra:

$f_k(j) \geqq 0$ for all j, where k=2, . . . , K;

condition of positivity of the images:

$c_i k \geqq 0$ for all i' and for all k;

condition of dissimilarity between $\{f_1\}$ and $\{f_k\}$, where k is not equal to 1;

(f) projecting the image element spectra $\{t_i\}$ onto the base of the fundamental spectra $\{f_k\}$ in order to determine the $n_k(i)$ values that minimize the following difference:

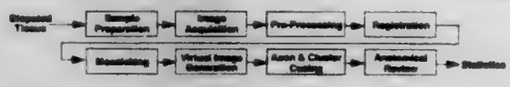
$$eij = t_i(j) - \sum_{k=1}^{K} n_k(i)\,f_k(j).$$

5,796,861

MOSAIC CONSTRUCTION, PROCESSING, AND REVIEW OF VERY LARGE ELECTRONIC MICROGRAPH COMPOSITES

Robert C. Vogt, Ann Arbor, and John M. Trenkle, Ypsilanti, both of Mich., assignors to Frim International, Inc., Ann Arbor, Mich.

Filed Jul. 11, 1997, Ser. No. 893,889
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—128 11 Claims



1. An automated mosaic construction process and review method for electron micrograph composite images, comprising the steps of:

imaging a nerve cross-section at high magnification to obtain a plurality of high-resolution images arranged as multiple frames within multiple rows;

registering the frames within each row and between rows;

mosaicking the frames into a single, large composite image; and

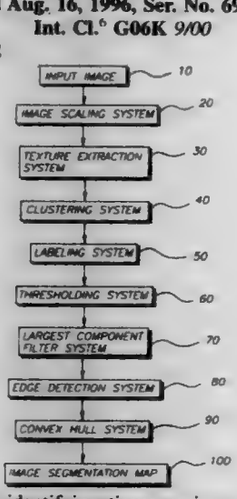
performing one or more morphological operations to assist in estimating the number of axons, clusters, and fibers within the composite image.

5,796,862

APPARATUS AND METHOD FOR IDENTIFICATION OF TISSUE REGIONS IN DIGITAL MAMMOGRAPHIC IMAGES

Thaddeus Francis Pawlicki, Rochester; Roger Stephen Gaborski, Pittsford, and Robert Allen Senn, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 16, 1996, Ser. No. 698,748
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—132 9 Claims



1. A method of identifying tissue regions in a digital image representing a body part comprising the steps of:

providing a digital image representing a body part having tissue regions;

scaling said provided digital image by subsampling or interpolating, to produce a scaled digital image;

texture extracting said scaled digital image by texture extraction system to produce a plurality of texture images having a different measure of image texture of said scaled digital image;

clustering said plurality of texture images by operation of a clustering system to produce a clustered image;

labeling said clustered image by operation of a labeling system based on both pixel intensity values and geometric adjacency of the pixels to produce a labeled image;

thresholding the labeled image by operation of thresholding system to produce a threshold image;

filtering said threshold image by operation of a largest component filter system to produce a largest component image which is the largest geometrically connected region in said threshold image;

edge detecting said largest component image by operation of an edge detection system to produce an edge image containing only edge pixels at high code value;

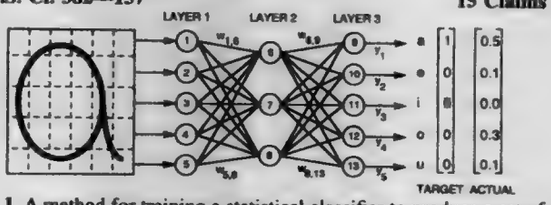
operating on said edge image by a convex hull calculation system to produce a convex hull image which outlines the skin line of the tissue region of said body part of said provided digital image.

5,796,863

METHOD FOR TRAINING AN ADAPTIVE STATISTICAL CLASSIFIER TO BALANCE UNIGRAM PRIOR FACTORS

Richard F. Lyon, Los Altos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 8, 1995, Ser. No. 512,329
Int. Cl.[6] G06T 1/40
U.S. Cl. 382—157 15 Claims



1. A method for training a statistical classifier to produce a set of probability estimates more nearly proportional to $P(x|c_i)$ than to $P(c_i|x)$, for any hypothetical input pattern x for each class c_i of a set of predetermined classes, using a set of training patterns in which the frequencies of occurrence of said classes are substantially unequal, comprising the steps of:

determining an original relative frequency of occurrence for each class with respect to all of the classes, on the basis of the training patterns in said set;

selecting training patterns sequentially from said set of training patterns in a manner determined in accordance with said original relative frequencies, to thereby reduce disparities between relative frequencies of classes in the sequence of said sequentially selected training patterns, compared to said original relative frequencies; and

supplying said selected training patterns with reduced frequency disparities sequentially to a statistical classifier to train the classifier to estimate the probability $P(c_i|x)$.

5,796,864

METHOD AND APPARATUS FOR REAL-TIME LOSSLESS COMPRESSION AND DECOMPRESSION OF IMAGE DATA

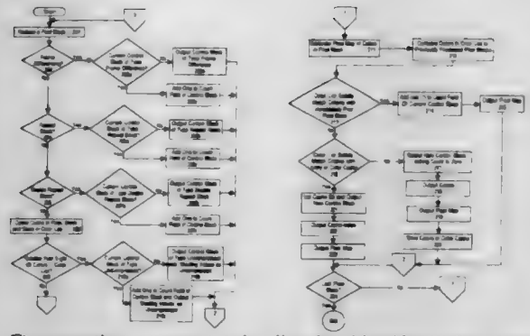
Sean M. Callahan, Cupertino, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 881,770, May 12, 1992, Pat. No. 5,408,542. This application Jan. 4, 1995, Ser. No. 368,337
Int. Cl.[6] G06T 9/00
U.S. Cl. 382—166 22 Claims

1. A method in a digital processing system for encoding a current pixel block by determining whether colors represented in a current pixel block match colors represented in any one of a plurality of other pixel blocks, the method comprising the steps of:

A) generating a plurality of color lists by generating a color list for each pixel block of said plurality of other pixel blocks, wherein the color list for each given pixel block of said plurality of other pixel blocks identifies colors represented in said given pixel block;

B) storing said plurality of color lists in a plurality of color caches, wherein said plurality of color lists are stored in said plurality of color caches based upon the number of colors represented in each of said plurality of color lists;



C) generating a current color list that identifies colors represented in said current pixel block;

D) identifying a selected color cache of said plurality of color caches, the selected color cache being a color cache that stores color lists that represent at least the same number of colors as are represented in said current color list;

E) comparing said current color list to one or more color lists contained in said selected color cache;

F) if said current color list matches a color list of said one or more color lists stored in said selected color cache, then outputting a first compressed data stream for said current pixel block wherein said first compressed data stream includes a cache index that corresponds to an entry in said color cache containing said one or more color lists that matches said current color list, and a current pixel map; and

G) if said current color list does not match said color list of said one or more color lists stored in said selected color cache, then outputting a second compressed data stream for said current pixel block wherein said second compressed data stream includes said current color list, and said current pixel map.

5,796,865

GRADATION CORRECTING METHOD AND APPARATUS

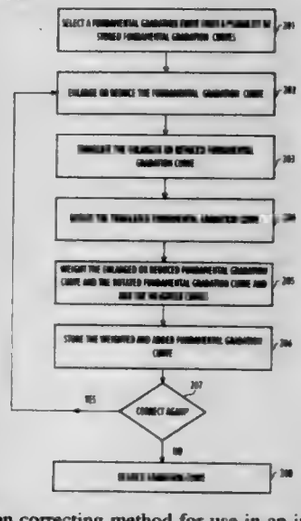
Tatsuya Aoyama; Wataru Ito, and Shigeru Saotome, all of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 7, 1995, Ser. No. 474,729

Claims priority, application Japan, Jul. 4, 1994, 6-152442

Int. Cl.[6] G06K *9/00;9/38*

U.S. Cl. 382—169 **22 Claims**



1. A gradation correcting method for use in an image reproducing method, wherein a desired gradation curve is obtained by correcting a fundamental gradation curve, which serves as a reference gradation curve, and a visible image having desired gradation is reproduced from an image signal, which represents an image, in accordance with the desired gradation curve,

the gradation correcting method comprising the steps of:

i) setting a signal level-density coordinate system, in which the density of the visible image is plotted on one of orthogonal coordinate axes, and the level of the image signal is plotted on the other axis, and which is thus constituted of the density axis and the signal level axis,

ii) enlarging or reducing the fundamental gradation curve along the density axis on said signal level-density coordinate system such that the minimum density and the maximum density, which are represented by the fundamental gradation curve, may be changed respectively to a desired minimum density and a desired maximum density, an enlarged or reduced fundamental gradation curve being thereby obtained,

iii) translating said enlarged or reduced fundamental gradation curve in parallel with the density axis such that a point, which is located on said enlarged or reduced fundamental gradation curve and which corresponds to a predetermined density, may be shifted to a point representing a desired density, a translated fundamental gradation curve being thereby obtained,

iv) rotating said translated fundamental gradation curve by a predetermined angle around said point, which is located on said translated fundamental gradation curve and which corresponds to said desired density, such that said point corresponding to said desired density may represent a desired contrast, a rotated fundamental gradation curve being thereby obtained, and

v) weighting said enlarged or reduced fundamental gradation curve and said rotated fundamental gradation curve with predetermined weight factors, and adding said weighted gradation curves to each other such that the minimum density and the maximum density, which are represented by said rotated fundamental gradation curve, may be changed respectively to said desired minimum density and said desired maximum density, and such that said point corresponding to said desired density may represent said desired density and said desired contrast, whereby the desired gradation curve is obtained.

5,796,866

APPARATUS AND METHOD FOR EDITING HANDWRITTEN STROKE

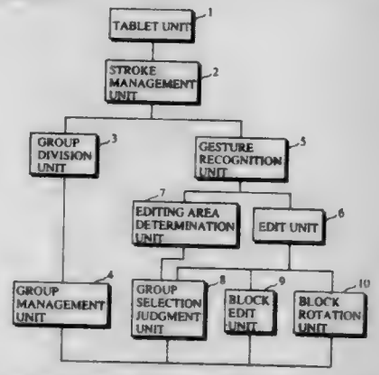
Yasuhiro Sakurai, Osaka, and Osamu Kamo, Kobe, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 8, 1994, Ser. No. 351,785

Claims priority, application Japan, Dec. 9, 1993, 5-309333

Int. Cl.[6] G06K *9/00;9/03;9/20*

U.S. Cl. 382—187 **30 Claims**



1. A handwritten stroke data editing system comprising:

group management means for managing group data and box data for each group, said group data representing strokes within one group, said box data representing a box that is circumscribed to each group, said group including at least two of a character group representing a handwritten character, a word

group representing a handwritten word, a line group consisting of a plurality of handwritten characters and words, and a figure group representing a handwritten figure;

gesture recognition means for recognizing an editing area based on a gesture inputted by means of a stylus, said stylus being furnished for said system, said input gesture being represented by the stroke data, said editing area including said stroke data; and

to-be-edited group selection means for selecting a to-be-edited group by computing an overlapping area of the editing area and each box, said selected to-be-edited group having the overlapping area more than a predetermined ratio to an area of the box, and the predetermined ratio being different for the character group, word group, line group, and figure group, respectively.

5,796,867

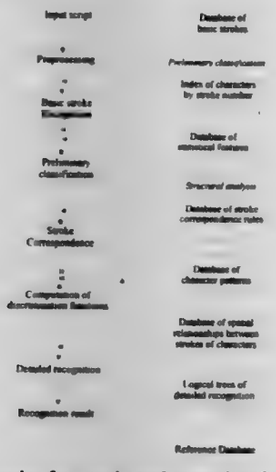
STROKE-NUMBER-FREE AND STROKE-ORDER-FREE ON-LINE CHINESE CHARACTER RECOGNITION METHOD

Ju-Wei Chen, and Suh-Yin Lee, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 12, 1996, Ser. No. 662,861

Int. Cl.[6] **G06K** *9/00;9/64;9/68*

U.S. Cl. 382—187 **18 Claims**



1. A stroke-order-free and stroke-number-free method for the on-line recognition of Chinese characters comprising the steps of:

(a) obtaining a database of template characters, each template character being represented by a set of stroke correspondence rules for describing its constituent basic strokes;

(b) obtaining a database of spatial relationships between strokes of characters and a database of character patterns;

(c) inputting a handwritten input script on an on-line basis;

(d) preprocessing said input script to select candidate template characters for matching against said input script;

(e) performing a basic stroke recognition procedure to identify all basic strokes contained in said input script using a database of basic strokes;

(f) classifying said strokes into fore strokes, back strokes, and points, wherein said fore strokes are strokes that actually appear in the character, said back strokes are fictitious strokes to allow for stroke connections that do not appear in said database of template characters, and said points are provided to allow for truncated back strokes in said input script;

(g) for each candidate template character, performing a stroke correspondence for each stroke correspondence rule contained therein until all the stroke correspondence rules contained in said template character are exhausted, so as to identify all fore stroke→fore stroke correspondence;

(h) performing stroke matchings in accordance with an input stroke order to find other strokes correspondences including: back→point, back→fore, fore→null, null→fore, back→null, and null→back; and

(i) performing computation of discrimination functions to find a template character with a minimum distance.

5,796,868

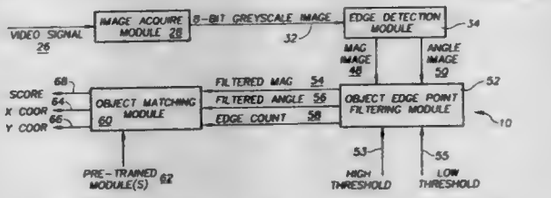
OBJECT EDGE POINT FILTERING SYSTEM FOR MACHINE VISION

Paul Dutta-Choudhury, Bellingham, Mass., assignor to Cognex Corporation, Natick, Mass.

Filed Dec. 28, 1995, Ser. No. 579,958

Int. Cl.[6] **G06K** *9/48;9/00;9/52;9/40*

U.S. Cl. 382—199 **32 Claims**



1. A method for filtering possible edge points in an edge image represented by an array of edge image coordinates each having an edge point magnitude in a preselected range of edge point magnitudes, the edge image corresponding to an image of an object represented by an array of pixels, comprising the steps of:

a. forming an edge map array of edge map coordinates arranged in correspondence with the edge image, each edge map coordinate assigned one of three preselected edge indicator values indicative of a relationship between the corresponding edge image coordinate edge point magnitude and two preselected edge point magnitude thresholds, the assigned edge map coordinate values being stored in an addressable memory;

b. forming an output edge point array of output edge point coordinates arranged in correspondence with the edge image, comprising the steps of:

c. initializing each output edge point coordinate to a first of two preselected edge point values, the initialized coordinate values being stored in an addressable memory;

d. constructing a first address stack to track memory addresses at which edge map coordinate values in the edge map array are stored;

e. constructing a second address stack to track memory addresses at which output edge point coordinate values in the output edge point array are stored;

f. assigning to selected of the initialized output edge point coordinates the second preselected edge point value, comprising the steps of:

g. scanning the edge map array for an edge map coordinate assigned the first preselected edge indicator value;

h. pushing on the first stack the edge map array address of a first encountered edge map coordinate assigned the first preselected edge indicator value;

i. pushing on the second stack the output edge point array address corresponding to the edge map array address pushed on the first stack in step h;

j. popping off of the first and second stacks the edge map coordinate address and corresponding output edge point coordinate address, respectively most recently pushed on the stacks;

k. assigning to the edge map coordinate whose address was popped off of the first stack in step j the third edge indicator value;

l. assigning to the output edge point coordinate whose address was popped off the second stack in step j the second preselected edge point value;

m. examining edge map coordinates in the edge map array that neighbor the edge map coordinate whose address was popped

off the first stack in step j for any edge map coordinates assigned either the first or second preselected edge indicator values;

n. pushing on the first stack addresses of edge map coordinates found in step m to be assigned either the first or second preselected edge indicator values;

o. pushing on the second stack the output edge point coordinate address corresponding to any edge map array address pushed on the first stack in step n;

p. repeating steps j–o until all addresses are popped off the first and second stacks;

q. repeating steps g–p until the edge map array is entirely scanned, those selected output edge point coordinates in the resulting output edge point array assigned with the second preselected edge point value each representing a likely edge point in the object image.

5,796,869

IMAGE PROCESSING SYSTEM

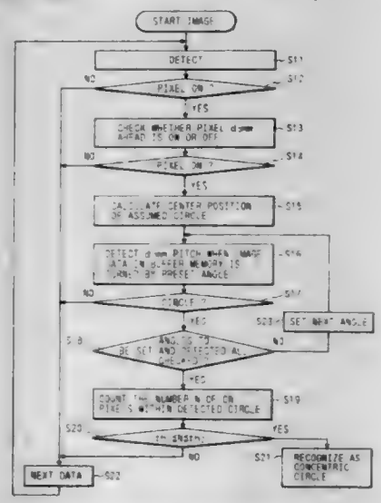
Masato Tsuji; Masao Seki; Svay Leng; Koji Aikawa; Koichiro Shinohara, and Fumio Nakaya, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 458,697, Jun. 2, 1995, Pat. No. 5,629,990, which is a division of Ser. No. 132,983, Oct. 7, 1993, Pat. No. 5,515,451. This application Aug. 30, 1996, Ser. No. 707,981

Claims priority, application Japan, Oct. 8, 1992, 4-296323

Int. Cl.[6] G06K *9/46*

U.S. Cl. 382—203 **4 Claims**



1. An image processing system which reads, in pixel units, an image on an original document using a scanner, processes the read image, and outputs image data, said original document comprising a circular image including a plurality of concentric circles, said concentric circles representing coded information by at least one of widths of lines of the circles, spaces between adjacent lines of the circles, and diameters of the circles, said image processing system including:

detecting means for detecting a first pixel of the image;

circle detecting means for determining whether a second pixel positioned a predetermined distance from the first detected pixel is on, and for recognizing a circle when the second pixel is on;

center calculating means for calculating a center of the recognized circle;

concentric circle recognizing means for recognizing a concentric circle surrounding the recognized circle; and

determining means for determining whether at least one of the widths of lines of the concentric circles, spaces between adjacent lines of the circles, and diameters of the circles of the recognized concentric circle correspond to a predetermined concentric circle.

5,796,870

METHOD AND APPARATUS FOR COMPRESSING DYNAMIC RANGES OF IMAGES

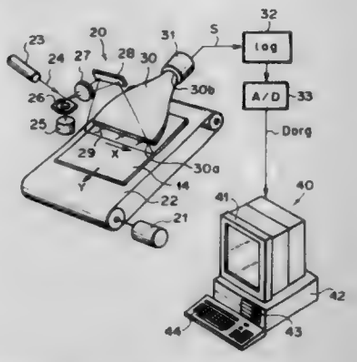
Hideya Takeo, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-Ken, Japan

Filed Apr. 19, 1996, Ser. No. 635,387

Claims priority, application Japan, Apr. 20, 1995, 7-094932

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—232 **48 Claims**



1. A method for compressing a dynamic range of an image, comprising the steps of:

i) calculating an unsharp mask signal Lu, which corresponds to super-low frequency, from an original image signal Dorg representing an original image,

ii) changing the rate of compression, at which the dynamic range of the original image is compressed, in accordance with the unsharp mask signal Lu, and

iii) carrying out a dynamic range compressing process with respect to each of picture elements in the original image, with the rate of compression being thus changed for each of the picture elements, the dynamic range compressing process being carried out with Formula (1)

$$Dproc=Dorg+f(Lu) \quad (1)$$

where f(Lu) is a function of Lu, a processed image signal Dproc being thereby obtained,

wherein the unsharp mask signal Lu represents the mean value of the image signal values of all picture elements located within a rectangular unsharp mask having shorter sides, which extend across an edge of a region of interest in the original image, and longer sides extending in the direction along which the edge extends.

5,796,871

METHOD AND APPARATUS FOR REPRODUCING ENCODED DATA

Makoto Kawamura, Kanagawa; Yoshinori Shimizu, Tokyo, and Yasushi Fujinami, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 18, 1996, Ser. No. 588,458

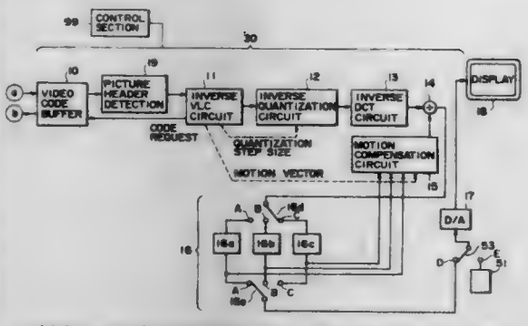
Claims priority, application Japan, Jan. 31, 1995, 7-032943

Int. Cl.[6] H04N *7/32*

U.S. Cl. 382—236 **24 Claims**

1. An apparatus for reproducing data compressed in accordance with a motion picture experts group (MPEG) standard and recorded on a recording medium, said apparatus comprising:

means for reading the compressed data from said recording medium, said data representing a plurality of frames which correspond to a plurality of groups of pictures (GOPs), in



which each of said GOPs includes different types of pictures including intraframe predictively (I) encoded and interframe predictively (P) encoded pictures;

means for detecting the type of pictures corresponding to the read data;

means for decoding said read image data and for supplying the decoded image data to a display device; and

means, responsive to a special processing operation, for causing an auxiliary signal to be supplied to said display device instead of the decoded image data until image data corresponding to an intraframe predictively encoded (I) picture and either another intraframe predictively encoded (I) picture or an interframe predictively encoded (P) picture are detected and, upon such detection, for properly decoding the respective image data by utilizing the image data corresponding to the detected P and/or I pictures and for supplying the properly decoded image data to said display device instead of said auxiliary signal.

5,796,872

METHOD AND APPARATUS FOR COMPRESSING AND DECOMPRESSING IMAGE DATA

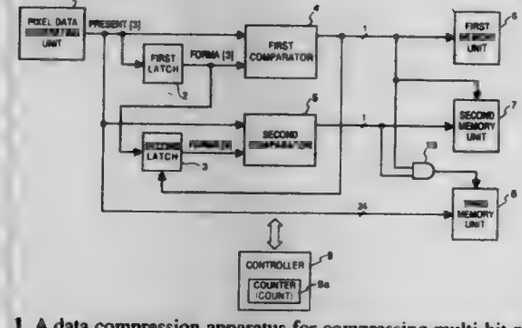
Yukari Shimomura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1993, Ser. No. 36,559

Claims priority, application Japan, Mar. 25, 1992, 4-066799; Jul. 29, 1992, 4-202525

Int. Cl.[6] G06K *9/36;9/46*

U.S. Cl. 382—237 **24 Claims**



1. A data compression apparatus for compressing multi-bit pixel data comprising:

first memory means for detecting a position at which there is a change in successively entered multi-bit pixel data and storing one-bit data for each pixel, the one-bit data representing, pixel by pixel, whether a pixel which is currently of interest is at the detected position;

holding means for holding at least one item of multi-bit pixel data prior to the change at previously detected positions;

comparing means which, when a position at which an entered multi-bit pixel data change has been detected, is for comparing said entered multi-bit pixel data and the multi-bit pixel data that has been stored in said holding means;

second memory means for storing a result of a comparison performed by said comparing means;

third memory means which, when the result of comparison performed by said comparing means is that multi-bit pixel data held by said holding means is different from said entered multi-bit pixel data, is for storing said entered pixel data as multi-bit data; and

updating means for updating the multi-bit pixel data held by said holding means to multi-bit pixel data prior to the change at said position.

5,796,873

IMAGE ENHANCEMENT

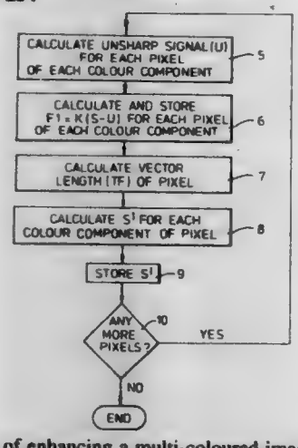
Jacqueline Margaret Deane, Essex, England, assignor to Fujifilm Electronic Imaging Ltd., London, England

Filed Sep. 12, 1991, Ser. No. 758,149

Claims priority, application United Kingdom, Sep. 14, 1990, 9020079

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—254 **6 Claims**



1. A method of enhancing a multi-coloured image, defined by a plurality of colour components represented by electrical signals respectively representing the value of each colour component of each pixel of a first resolution version of the image, to produce an enhanced image, the method comprising, for said each colour component of each pixel, obtaining a fringe value by determining the difference between the component values at the first resolution and at a second, lower resolution; determining for each pixel the length of a vector whose components are defined by values related to the fringe values of that pixel; and modifying one of each original colour component value and a value derived from each original colour component value by an amount related to the respective fringe value in accordance with the relationship of said vector length with a threshold to produce said enhanced image.

5,796,874

RESTORATION OF FADED IMAGES

Geoffrey John Woolfe, Penfield; Bruce Harold Pillman, and Michael James Barry, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1996, Ser. No. 643,155

Int. Cl.[6] G06K *9/40*

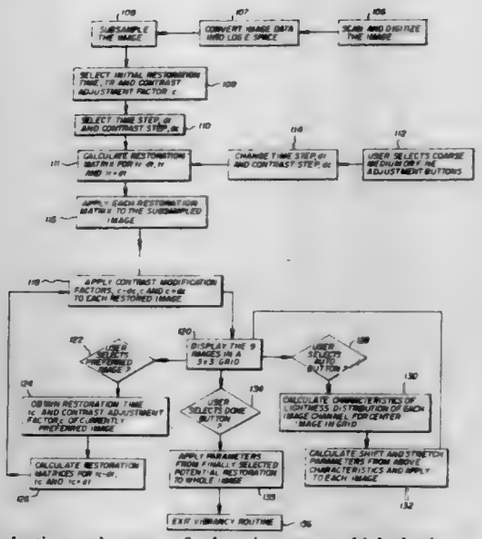
U.S. Cl. 382—254 **25 Claims**

1. A method of restoring a color image comprised of one or more colorants and which image may have faded over time, which image is represented by an image signal, the method comprising:

(a) obtaining a restoration model which is a function of a variable time, which is the inverse of a model representing the fade rate of at least one of the colorants as a function of at least a variable time;

(b) selecting a time over which the image may have faded;

(c) applying the restoration model to the image signal to obtain a first preliminary restoration;



(d) selecting at least one further time over which the image may have faded;

(e) applying the restoration model to the image signal for each of the further times to obtain one or more further preliminary restorations;

(f) displaying the preliminary restorations;

(g) upon a user selecting one of the displayed restorations which corresponds to a currently selected time, t_c, in a first direction from another time, t_f, to which another of the displayed restorations corresponds, then applying the restoration model to the image signal using an additional time, t_a, to obtain an additional preliminary restoration, and displaying the additional preliminary restoration, wherein:

$t_a > t_c$ if $t_c > t_f$

or

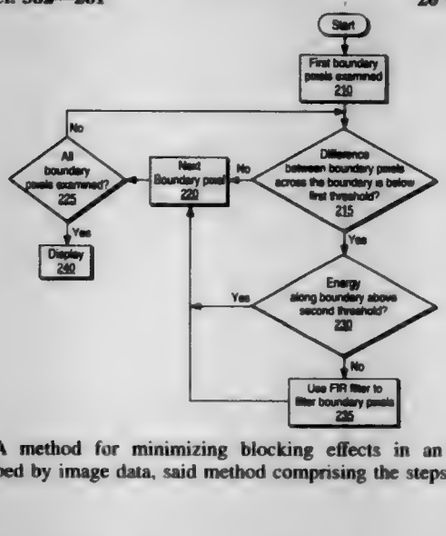
$t_a < t_c$ if $t_c < t_f$.

5,796,875

SELECTIVE DE-BLOCKING FILTER FOR DCT COMPRESSED IMAGES

Christopher Jensen Read, San Diego, Calif., assignor to Sony Electronics, Inc., Park Ridge, N.J., and Sony Corporation, Tokyo, Japan

Filed Aug. 13, 1996, Ser. No. 696,323
Int. Cl.[6] G06K 9/40; G06T 5/00
U.S. Cl. 382—261 **20 Claims**



1. A method for minimizing blocking effects in an image described by image data, said method comprising the steps of:

for each pair of boundary pixels across a block boundary,

determining if a difference between boundary pixels is less than a first predetermined threshold,

determining if the energy along the boundary is greater than a second predetermined threshold,

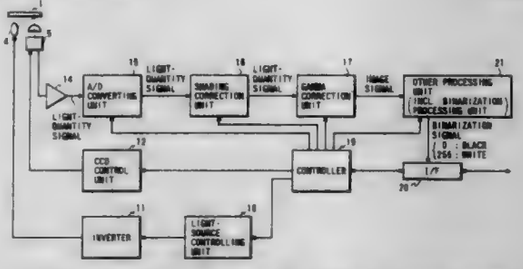
if the difference between boundary pixels is less than the first predetermined threshold and energy along the boundary is less than a second predetermined threshold, filtering the boundary pixels to minimize blocking effects to generate an adjusted image, said filtering configured to minimize the variance between a filtered pixel and the same pixel in a corresponding original.

5,796,876

APPARATUS FOR READING IMAGE AND METHOD THEREFOR

Laiqiang Wang, and Fujio Furuhata, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 18, 1995, Ser. No. 544,814
Claims priority, application Japan, Dec. 20, 1994, 6-316986
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—270 **17 Claims**



1. An image reading apparatus for reading an image signal of each pixel of an image and binarizing the image signal of each pixel by using a threshold, the image reading apparatus comprising:

scanning means for scanning the image while consecutively focusing attention to each pixel;

attention-focused-block defining means for defining an attention-focused block as a set of pixels including a pixel to which attention is focused;

adjacent-block defining means for defining at least one adjacent block as a set of pixels located in a vicinity of said attention-focused block;

characteristic-value calculating means for determining a characteristic value of the image signal of said attention-focused block and a characteristic value of the image signal of said adjacent block;

threshold determining means for determining the threshold to binarize the pixel to which attention is focused, said threshold determined by utilizing said characteristic value of said attention-focused block and said characteristic value of said adjacent block, said threshold determining means comprising:

first-area defining means for defining a first area so as to include at least one adjacent block offset from the attention-focused block in a first direction and said attention-focused block;

second-area defining means for defining a second area so as to include at least one adjacent block located outside said first area and offset from said attention-focused block in a second direction orthogonal to said first direction;

first-characteristic-value calculating means for calculating a first characteristic value on the basis of the image signal in said first area;

second-characteristic-value calculating means for calculating a second characteristic value on the basis of the image signal in said second area; and

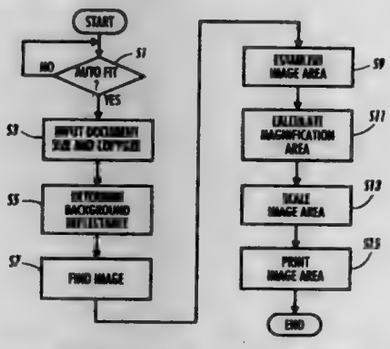
threshold calculating means for calculating said threshold by referring to said first characteristic value and said second characteristic value.

5,796,877

METHOD AND APPARATUS FOR AUTOMATICALLY FITTING AN INPUT IMAGE TO THE SIZE OF THE OUTPUT DOCUMENT

Donald J. Gusmano, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 11, 1995, Ser. No. 570,064
Int. Cl.[6] G06K 9/42
U.S. Cl. 382—298 6 Claims



1. A method for automatically fitting an image of an input document onto an output document, comprising the steps of:

(a) scanning a predetermined portion of the input document;

(b) generating pixels of image data from scanning the predetermined portion of the input document;

(c) generating a background value from the pixels of image data corresponding to the predetermined portion of the input document;

(d) scanning a remaining portion of the input document

(e) generating pixels of image data from scanning the remaining portion of the input document;

(f) comparing a reflectance value of the pixels of image data corresponding to the remaining portion of the input document with a predetermined threshold value corresponding to the generated background value;

(g) identifying a pixel of image data as a pixel corresponding to an image when the reflectance value of the pixel of image data is less than the predetermined threshold;

(h) establishing a single image area based the pixels corresponding to the image so as to identify and isolate the image on the input document;

(i) determining a size of the single image area;

(j) determining a size of the output document;

(k) scaling only the single image area to correspond to the size of the output document; and

(l) rendering the scaled image area on the output document.

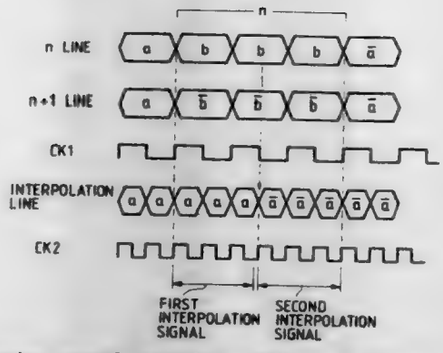
5,796,878

IMAGE INTERPOLATING CIRCUIT

Tadayoshi Nakayama, and Norihiro Kawahara, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 77,963, Jun. 18, 1993, abandoned, which is a continuation of Ser. No. 942,089, Sep. 8, 1992, abandoned, which is a continuation of Ser. No. 622,537, Dec. 5, 1990, abandoned. This application Dec. 13, 1994, Ser. No. 357,207
Claims priority, application Japan, Dec. 8, 1989, 1-319929
Int. Cl.[6] H04N 9/42
U.S. Cl. 382—300 27 Claims

1. An image interpolating circuit for producing pixel information of an interpolation line to be inserted between first and second scanning lines by using pixel information of the first and second scanning lines which are adjacent to each other, comprising:



detection means for detecting an oblique edge pattern by using pixel information formed from said oblique edge pattern of the first and second scanning lines; and

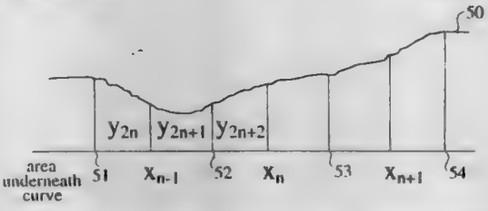
interpolation signal producing means for setting a number of pixels of said interpolation line to be inserted between said first and second scanning lines to be 2 m times (where m is an integer) as large as the number of pixels of each of the first and second scanning lines and inserting said interpolation line by locating the position of the edge of said interpolation line at a central position between the position of the edge of the first scanning line and the position of the edge of the second scanning line according to the oblique edge pattern detected by said detection means.

5,796,879

AREA BASED INTERPOLATION FOR IMAGE SCALING

Ping Wah Wong, Sunnyvale, and Cormac Herley, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 23, 1995, Ser. No. 447,863
Int. Cl.[6] H04N 1/393; G06K 15/36;9/64;9/32
U.S. Cl. 382—300 25 Claims



1. A method for image scaling by area based interpolation, comprising the steps of:

representing a section of an image as a function of a continuous variable;

taking the integral of a curve for each area of said section, where the size of each area is determined by the sampling size of a first sampling cell;

sampling said image at a first, low resolution with respect to said first sampling cell, wherein a pixel value is determined for each area of said section;

resampling said image at a second, higher resolution with respect to a second sampling cell that has a finer spacing than that of said first sampling cell; and

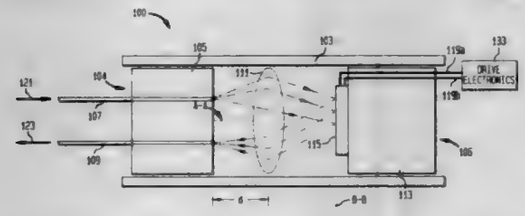
taking the integral of a curve for each area of said section, where the size of each area is determined by the sampling size of said second sampling cell.

5,796,880

TECHNIQUE FOR MODULATING OPTICAL SIGNALS IN OPTICAL COMMUNICATIONS

Joseph Earl Ford, Oakhurst, and James Albert Walker, Howell, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 18, 1996, Ser. No. 751,833
Int. Cl.[6] G02F *1/01*; G02B *5/08*
U.S. Cl. 385—1 **33 Claims**



1. Apparatus for modulating an optical signal in response to data, the modulated signal being transported through a light transmissive medium, comprising:

a reflective layer for reflecting the optical signal onto said light transmissive medium in a first state corresponding to a first value of said data so that a substantial portion of energy of the optical signal is transported through said light transmissive medium, the reflective layer including thereon a plurality of transformable areas which are separated from one another, the transformable areas each being in a first shape in the first state, the transformable areas each being controllably transformed into a second shape to deflect the optical signal off said light transmissive medium in a second state corresponding to a second value of said data so that a reduced portion of said energy is transported through said light transmissive medium.

24. A method for use in a modulator for modulating an optical signal in response to data, said modulator comprising a reflective layer the reflective layer including thereon a plurality of transformable areas which are separated from one another, the modulated signal being transported through a light transmissive medium, comprising the steps of:

reflecting, from the reflective layer, said optical signal onto said light transmissive medium in a first state corresponding to a first value of said data so that a substantial portion of energy of the optical signal is transported through said light transmissive medium, the plurality of transformable areas each being in a first shape; and

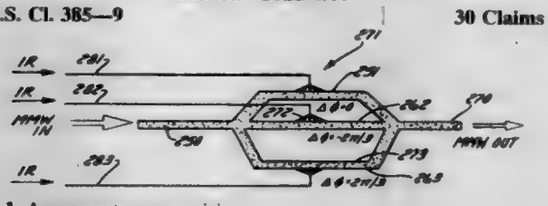
causing each transformable area on said reflective layer to be transformed into a second shade to deflect the optical signal off said light transmissive medium in a second state corresponding to a second value of said data so that a reduced portion of said energy is transported through said light transmissive medium.

5,796,881

LIGHTWEIGHT ANTENNA AND METHOD FOR THE UTILIZATION THEREOF

Vladimir A. Manasson, Los Angeles, and Lev S. Sadovnik, Irvine, both of Calif., assignors to WaveBand Corporation, Torrance, Calif.

Filed Oct. 16, 1996, Ser. No. 732,062
Int. Cl.[6] G02B *6/10*
U.S. Cl. 385—9 **30 Claims**



1. An apparatus, comprising:

a base;

a feeder waveguide connected to said base; and

a waveguide array (i) connected to said base, and (ii) electromagnetically coupled to said feeder waveguide, said waveguide array including:

a plurality of arms, each of said plurality of arms including:

a plasma induced modulator having a transmission coefficient that is $\leqq 1$, said plasma induced modulator including:

a rib waveguide electromagnetically coupled to said feeder waveguide, said rib waveguide including a nonphotosensitive dielectric waveguide;

a photosensitive semiconductive plasma injector connected to said nonphotosensitive dielectric waveguide, said photosensitive semiconductive plasma injector including a proximal tapered end and a distal tapered end;

an optical fiber connected to said photosensitive semiconductive plasma injector with a connector that includes a layer of indium tin oxide; and

an infrared light emitting diode connected to said optical fiber with a nonimaging coupler,

wherein each of said plurality of arms has a phase shift of approximately $\Delta\phi = 2\pi dn_{eff}/\lambda$ relative to every other of said plurality of arms, where d is a distance between each of said plurality of arms, $n_{eff}=\beta/K_o$ is an effective index of refraction in said feeder waveguide, β is a propagation constant in said feeder waveguide, $K_o=2\pi/\lambda$ is a free space wavenumber, λ is the wavelength of an electromagnetic signal, and $d \leqq \lambda/3$ and

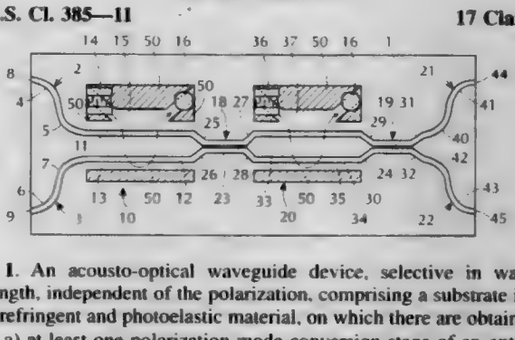
wherein a coupling coefficient K_p between each of said plurality of arms and said feeder waveguide varies according to a relationship $K_p=0.3(P/B)^2$, where P is a rank number of an individual arm and B is a total number of said plurality of arms.

5,796,882

ACOUSTO-OPTICAL WAVEGUIDE DEVICE, TUNABLE, WITH A POLARIZATION INDEPENDENT RESPONSE, AND A METHOD FOR THE ACOUSTO-OPTICAL PROCESSING OF OPTICAL SIGNALS

Steffen Schmid, Via Bellani, 2 - 20052 Monza, Italy

Filed Jul. 12, 1996, Ser. No. 679,731
Claims priority, application Italy, Aug. 2, 1995, MI95 A 001699
Int. Cl.[6] G02B *6/10*
U.S. Cl. 385—11 **17 Claims**



1. An acousto-optical waveguide device, selective in wavelength, independent of the polarization, comprising a substrate in a birefringent and photoelastic material, on which there are obtained:

a) at least one polarization mode conversion stage of an optical signal in a preselected range of wavelengths, including

a1) a first and a second optical waveguide substantially parallel to one another and placed at a preselected distance,

a2) first generating means of an acoustic surface wave associated with said first and second optical waveguide and

a3) a first acoustic waveguide containing at least one portion of said first and second optical waveguide,

a4) each of said first and second optical waveguide being capable of receiving one of two mutually orthogonal polarization components of said optical signal and being capable of emitting a respective component of orthogonal polarization,

b) a first and a second polarization selective element placed upstream and downstream, respectively, of said conversion stage and optically connected to said first and second waveguide in order to transmit said two polarization components separately;

characterized in that in said substrate there is also obtained

c) at least one compensation stage for the conversion of the polarization mode of said optical signal in said preselected range of wavelengths including

c1) at least one third optical waveguide optically connected to one of said first and second polarization selective element,

c2) second generating means of an acoustic surface wave, associated with said third optical waveguide, and

c3) a second acoustic waveguide containing at least one portion of said third optical waveguide,

c4) wherein said third optical waveguide is connected serially to said conversion stage of the polarization mode, and

c5) said third optical waveguide guides said two polarization components in a combined form.

5,796,883

OPTICAL INTEGRATED CIRCUIT AND METHOD FOR FABRICATING THE SAME

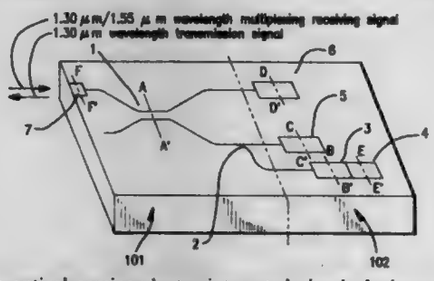
Kiichi Hamamoto; Tatsuya Sasaki; Takeshi Takeuchi; Masako Hayashi; Keiro Komatsu; Ikuo Mito, and Kenko Taguchi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 4, 1996, Ser. No. 706,529

Claims priority, application Japan, Sep. 4, 1995, 7-226127; Jan. 10, 1996, 8-002339

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—14 **38 Claims**



1. An optical semiconductor integrated circuit device comprising:

a semiconductor substrate having a passive region and an active region; and

a ridged structure constituting at least a branch selectively extending over said passive region, at least a laser diode selectively extending over said active region and at least a photo diode selectively extending over said active region, said ridged structure including a semiconductor waveguide layer sandwiched between optical confinement layers, said semiconductor waveguide layer in said active region having a wavelength composition larger than that in said passive region,

wherein said waveguide layer has a semiconductor crystal structure which is continuous not only over said active and passive regions but also at a boundary between said active and passive regions.

5,796,884

OPTICAL CROSS CONNECT DEVICE

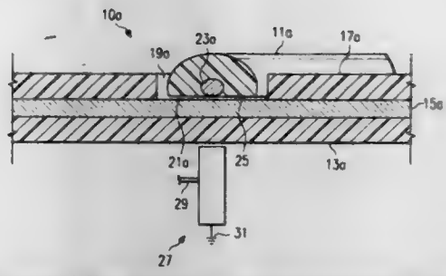
Dale T. Wingo, Richardson, Tex., assignor to MCI Communications Corporation, Washington, D.C.

Filed Jun. 26, 1996, Ser. No. 673,631

Int. Cl.[6] G02B *6/35*

U.S. Cl. 385—16 **18 Claims**

1. An optical switch, which comprises:



a first optical fiber light guide, said first optical fiber light guide including a core and cladding, said first optical fiber light guide having formed therein a notch through said cladding to expose said core;

a second optical fiber light guide, said second optical fiber light guide including a core and cladding, said second optical fiber light guide having formed therein a notch through said cladding to expose said core, said first and second optical fiber light guides being engaged with each other at their respective notches to form a junction;

a layer of material at said junction, said material having an index of refraction different from that of said cores and being able to change to an index of refraction matching said index of refraction of said cores; and

means for matching said index of refraction of said material to that of said cores, thereby to permit light signals to pass from said first optical fiber light guide to said second optical fiber light guide across said junction.

5,796,885

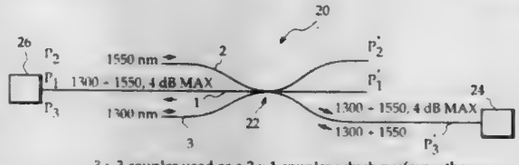
3×3 WAVEGUIDE COUPLER FOR BIDIRECTIONAL DUAL WAVELENGTH TRANSMISSION AND SIGNAL SAMPLING AND METHOD FOR MAKING THE SAME

Francois Gonthier, 8582 rue Rene-Labelle, Montreal (Quebec), Canada, H2M 2L7; Robert G. Files, 136 King Street, Mount Albert (Ontario), Canada, L0G 1M0, and Paul Rivett, 42 Kimbolton Court, Scarbourough (Ontario), Canada, M1C 3G2

Filed May 9, 1996, Ser. No. 647,172

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—15 **18 Claims**



3 x 3 coupler used as a 3 x 1 coupler which performs the same functions as the two couplers of FIG. 1. The signal directions and maximum insertion loss specifications are noted on the appropriate ports

1. An optic coupler for a fiber optic system, comprising:

a first optical port responsive to and for providing a first forward optical signal;

a second optical port responsive to and for providing a second forward optical signal;

single coupling means, responsive to the first forward optical signal, and further responsive to the second forward optical signal, for providing a coupled first and second forward optical signal, and further responsive to a combined first and second reverse optical signal, for providing a coupled first and second reverse optical signal;

a system port responsive to and for providing the coupled first and second forward optical signal to the fiber optic system, and further responsive to and for providing the combined first and second reverse optical signal to the single coupling means; and

a detector port, responsive to and for providing the coupled first and second reverse optical signal.

5,796,886

OPTICAL COUPLER 2×2 OPTICAL SWITCH AND METHOD FOR OPTICAL SWITCHING THEREWITH

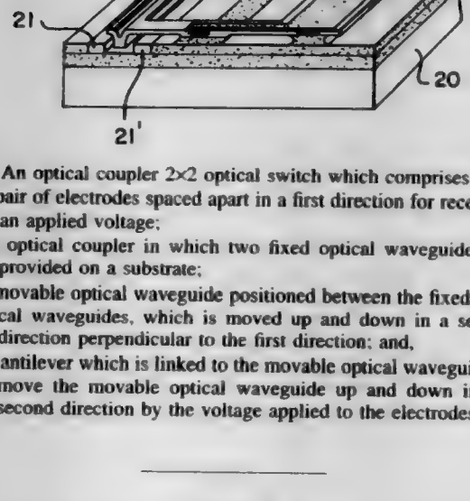
Song-Cheol Hong, and Doo-Young Ha, both of Taejon, Rep. of Korea, assignors to Korea Advanced Institute of Science and Techanology, Taejon, Rep. of Korea

Filed Jun. 24, 1996, Ser. No. 669,691

Claims priority, application Rep. of Korea, Jun. 24, 1995, 95-17254

Int. Cl.[6] G02B 6/35

U.S. Cl. 385—21 4 Claims



1. An optical coupler 2×2 optical switch which comprises:

a pair of electrodes spaced apart in a first direction for receiving an applied voltage;

an optical coupler in which two fixed optical waveguides are provided on a substrate;

a movable optical waveguide positioned between the fixed optical waveguides, which is moved up and down in a second direction perpendicular to the first direction; and,

a cantilever which is linked to the movable optical waveguide to move the movable optical waveguide up and down in the second direction by the voltage applied to the electrodes.

5,796,887

OPTICAL DEVICE FOR COUPLING AND SEPARATING TWO LIGHT COMPONENTS

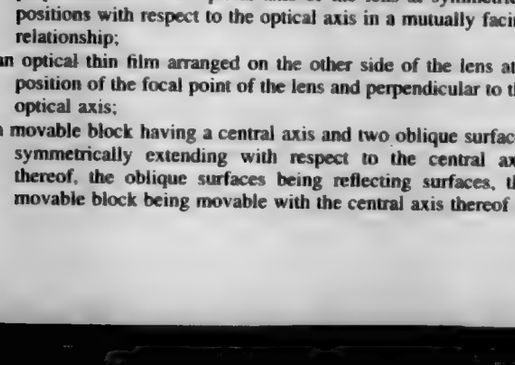
Norihisa Naganuma, Sapporo, and Hideki Noda, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 20, 1997, Ser. No. 825,444

Claims priority, application Japan, Jun. 6, 1996, 8-143917

Int. Cl.[6] G02B 6/26

U.S. Cl. 385—18 18 Claims



11. An optical device comprising:

a lens having an optical axis and a focal point;

first and second optical fibers arranged on one side of the lens perpendicular to the optical axis of the lens at symmetrical positions with respect to the optical axis in a mutually facing relationship;

an optical thin film arranged on the other side of the lens at a position of the focal point of the lens and perpendicular to the optical axis;

a movable block having a central axis and two oblique surfaces symmetrically extending with respect to the central axis thereof, the oblique surfaces being reflecting surfaces, the movable block being movable with the central axis thereof in alignment with the optical axis of the lens to adjust angles of the transmitted light components made incident to the optical thin film;

a third optical fiber arranged on the opposite side of the lens from the optical thin film at a position on an optical path passing through the first optical fiber, the reflecting surface, the lens and the optical thin film; and

whereby two light components can be transmitted through the first optical fiber, one of the two light components can be reflected by the optical thin film toward the second optical fiber and be transmitted, through the second optical fiber, and the other of the two light components can pass through the optical thin film toward the third optical fiber and be transmitted through the third optical fiber.

5,796,888

OPTICAL SWITCH APPARATUS

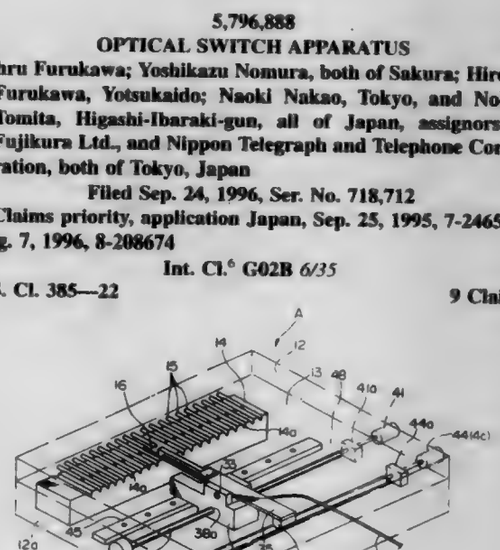
Tohru Furukawa; Yoshikazu Nomura, both of Sakura; Hiroshi Furukawa, Yotsukaido; Naoki Nakao, Tokyo, and Nobuo Tomita, Higashi-Ibaraki-gun, all of Japan, assignors to Fujikura Ltd., and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan

Filed Sep. 24, 1996, Ser. No. 718,712

Claims priority, application Japan, Sep. 25, 1995, 7-246514; Aug. 7, 1996, 8-208674

Int. Cl.[6] G02B 6/35

U.S. Cl. 385—22 9 Claims



1. An optical switch apparatus for matching and bringing into communicative proximity an end of a movable optical fiber and an end of a fixed optical fiber selected from among a plurality of fixed optical fibers, said optical switch apparatus comprising:

a container containing an index-of-refraction matching agent for immersing a junction between a fixed optical fiber and a movable optical fiber in communicative proximity;

a fixed optical fiber support means for supporting each end of said plurality of fixed optical fibers within said container so that each fixed optical fiber is matchable and able to be brought into communicative proximity to an end of said movable optical fiber;

a movable optical fiber base means for moving an end of said movable optical fiber into a standby position for matching with one of said plurality of fixed optical fibers and into a proximal position in communicative proximity with said one of said fixed optical fibers;

a moving means for moving the movable optical fiber base means, the moving means comprising a worm gear installed in said movable base and a worm gear driving means for driving said worm gear the worm gear driving means positioned on the outside of the container; and

a matching means for moving said movable optical fiber to a standby position, matching the movable optical fiber with said one of said fixed optical fibers, and controlling the moving means to move the movable optical fiber base means to bring said movable optical fiber into communicative proximity with said one of said fixed optical fibers.

5,796,889

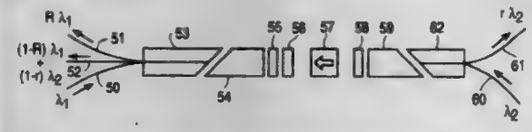
INTEGRATED WDM COUPLER DEVICES FOR FIBEROPTIC NETWORKS

Jingyu Xu, San Jose, and Jing-Jong Pan, Milpitas, both of Calif., assignors to E-Tek Dynamics, Inc., San Jose, Calif.

Filed Mar. 13, 1996, Ser. No. 614,864

Int. Cl.[6] G02B 6/28

U.S. Cl. 385—24 **11 Claims**



6. A wavelength division coupler for coupling five optical fibers, said coupler comprising

an end of a first optical fiber;

an end of a second optical fiber;

an end of a third optical fiber;

an end of a fourth optical fiber;

an end of a fifth optical fiber;

a collimating GRIN lens having first and second end faces, said first end face of said GRIN lens and said ends of said first, second and third optical fibers proximate each other and said first end face;

a first partial reflecting element proximate said second end of said first collimating lens, said ends of said first and second optical fibers, said first partial reflecting element arranged with respect to each other so that light from said first fiber and reflected by said first partial reflecting element passes into said third optical fiber;

a long/short pass filter proximate said second end face of said GRIN lens, said ends of said first and third optical fibers, said first partial reflecting element and said first long/short pass filter arranged with respect to each other so that light from said first fiber and reflected by said first long/short pass filter passes into said third optical fiber;

an optical isolator core proximate said long/short pass filter and opposite said first partial reflecting element, said isolator core arranged to block light from said first fiber and to pass light toward said first fiber;

a second partial reflecting element proximate said optical isolator core opposite said long/short pass filter; and

a second collimating lens, said ends of said fourth and fifth optical fibers in close proximity with a first end face of said second collimating lens, said ends of said fourth and fifth optical fibers, said second collimating lens, said second partial reflecting element, said optical isolator core, said first long/short pass filter, said first collimating lens and said ends of said first, second and third optical fibers arranged so that said light from said fourth optical fiber and reflected by said second partial reflecting means passes into said fifth optical fiber, and light from said fourth optical fiber and passed by said second partial reflecting element, said optical isolator core, said long/short pass filter and said first partial reflecting element, passes into one of said first, second or third optical fibers.

5,796,890

BIDIRECTIONAL OPTICALLY POWERED SIGNAL TRANSMISSION APPARATUS

Nobuhiko Tsuji, Kanagawa; Naoki Kaiho, Tokyo, and Yasukazu Sano, Kanagawa, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

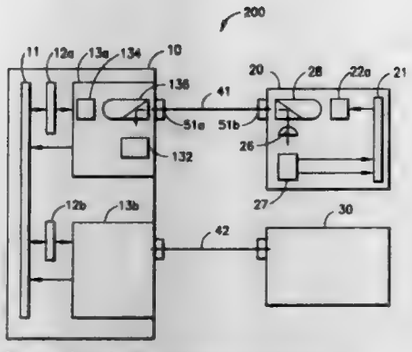
Continuation-in-part of Ser. No. 419,141, Apr. 10, 1995, Pat. No. 5,664,035. This application May 31, 1996, Ser. No. 652,639

Claims priority, application Japan, May 31, 1995, 7-133039

Int. Cl.[6] G02B 6/293

U.S. Cl. 385—24 **20 Claims**

2. A bidirectional optically powered signal transmission apparatus, comprising:



first and second optical transmission stations;

first means, in said first optical transmission station, for sending a first light beam over an optical transmission path to said second optical transmission station;

second means, in said first optical transmission station, for receiving a second light beam sent from said second optical transmission station;

said first light beam including an AC signal component superimposed on a DC power component;

third means, in said second optical transmission station, for sending said second light beam to said first optical transmission station over said optical transmission path;

fourth means, in said second optical transmission station, for receiving said first light beam sent from said first optical transmission station;

fifth means, in said second optical transmission station, for converting said DC power component to an electric power for powering said second optical transmission station and for converting said AC signal component to a first electric signal for controlling said second optical transmission station;

said first means including first light source means for radiating said first light beam of a first predetermined wavelength, and driving means for regulating said AC component;

said third means including second light source means for radiating said second light beam of a second predetermined wavelength; and

said second predetermined wavelength being different from said first predetermined wavelength.

5,796,891

OPTICAL FILTER COMPRISING MULTI-MODE WAVEGUIDES COUPLED IN SERIES

Alistair J. Poustie, Ipswich, and Neil Finlayson, Felixstowe, both of Great Britain, assignors to British Telecommunications PLC, London, England

PCT No. PCT/GB94/02488, § 371 Date May 30, 1996, § 102(e) Date May 30, 1996, PCT Pub. No. WO95/13552, PCT Pub. Date May 18, 1995

PCT Filed Nov. 11, 1994, Ser. No. 646,256

Claims priority, application European Pat. Off., Nov. 12, 1993, 93309089; Mar. 10, 1994, 94301705

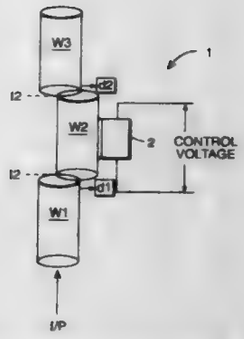
Int. Cl.[6] G02B 6/26

U.S. Cl. 385—28 **31 Claims**

1. An optical filter comprising:

a multi-mode waveguide having a first number n modes and a second waveguide having a different number m modes coupled in series,

where n and m are integers and n>m, the interaction of different modes at the n-mode/m-mode interface being effective to filter an optical signal propagating through the waveguides to provide a predetermined filter response characteristic, and



means for changing a lateral offset between the central axes of the waveguides at their interface thereby controlling the response of the filter.

5,796,892

DELIVERY OF RADIATION FROM A FIRST TRANSPARENT MEDIUM TO A SECOND TRANSPARENT MEDIUM HAVING A LOWER REFRACTION INDEX

Jacob Karni, Rehovot, Israel; Harald Ries, Munich, Germany; Akiba Segal, Rehovot, Israel; Vladimir Krupkin, Rishon Le-Zion, Israel, and Amnon Yogev, Rehovot, Israel, assignors to Yeda Research And Development Co. Ltd., Rehovot, Israel

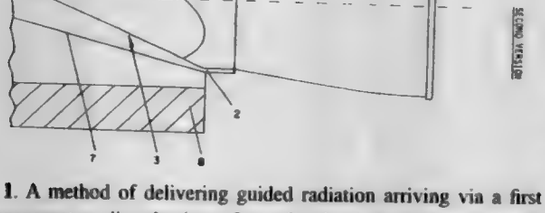
PCT No. PCT/US95/04915, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO95/29415, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 20, 1995, Ser. No. 727,458

Claims priority, application Israel, Apr. 21, 1994, 109366

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—38 **40 Claims**



1. A method of delivering guided radiation arriving via a first transparent medium having a first refraction index n_1,into a second transparent medium having a second refraction index n_2 that is smaller than n_1,comprising providing a transparent radiation delivery waveguide having a longitudinal axis and a third refraction index n_3 substantially equal to or greater than n_1 and adapted to guide said radiation along said longitudinal axis, said waveguide having a tapered radiation delivery portion of non-circular cross-sectional shape, mounting said waveguide in optical contact with said first transparent medium and so that said radiation delivery portion projects inside said second transparent medium, and causing said first transparent medium to take up radiation whereby radiation transmitted by the waveguide is extracted through the radiation delivery portion into said second transparent medium.

5,796,893

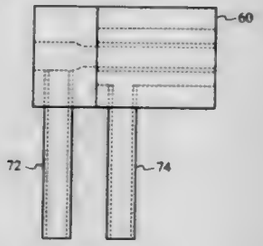
METHOD AND SYSTEM FOR PROVIDING AN IMPROVED OPTICAL COUPLER

Yong Huang, San Jose, and Yu Zheng, Sunnyvale, both of Calif., assignors to Oplink Communications, Inc., San Jose, Calif.

Filed Sep. 27, 1996, Ser. No. 720,079

Int. Cl.[6] G02B *6/26;6/42*

U.S. Cl. 385—43 **19 Claims**



1. A system for providing an optical coupler comprising:

a plurality of optical fibers formed together in parallel, and

a torch, capable of maintaining a temperature of approximately 1200 degrees Celsius, plus or minus approximately 50 degrees Celsius on the plurality of optical fibers, for a predetermined period of time.

5,796,894

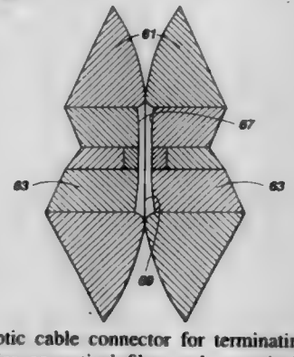
FIBER OPTIC CONNECTOR WITH IMPROVED RETURN LOSS PERFORMANCE

Andrei Csipkes, Columbia, Md.; John Mark Palmquist, Lilburn, and Ian Arthur White, Dunwoody, both of Ga., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Nov. 21, 1996, Ser. No. 754,948

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—56 **24 Claims**



1. A fiber optic cable connector for terminating a fiber optic cable that carries an optical fiber and operatively coupling the optical fiber to the optical fiber of a like cable terminated by a matable connector for facilitating the transfer of a light borne signal from one of the optical fibers to the other, said fiber optic cable connector comprising:

a connector body having a longitudinal axis, a first end receiving the end portion of said optical cable, and a second end adapted to be coupled to a matable optical connector terminating another optical cable;

a ferrule mounted in said connector body extending along said longitudinal axis thereof, said ferrule having a free end and an axial passageway within which the end portion of said optical fiber is secured with the endface of said fiber being exposed at the end of said ferrule;

said ferrule being positioned to align axially with and engage a like ferrule in the matable connector when the connectors are coupled together;

biasing means in said connector for maintaining the end of said ferrule in engagement with the end of a like ferrule in the

matable connector with a predetermined force when the connectors are coupled together; and

said endface of said optical fiber being recessed within said axial passageway a distance sufficient to bring the endface of said optical fiber into engagement with the endface of the optical fiber of the matable connector with near null pressure when the ends of the ferrules are compressed under the influence of said predetermined force.

5,796,895

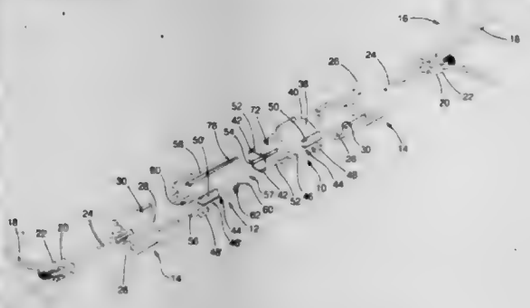
FIBER OPTIC LIGHTING-INLINE CONNECTOR

Kurt Lynn Jennings, Warren, Ohio, and John Fred Wassam, Canonsburg, Pa., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 12, 1997, Ser. No. 799,540

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—56 **14 Claims**



1. A fiber optic inline connector system comprising:

a male connector comprising a connector housing having a cable passage extending therethrough, a plurality of flexible cable alignment fingers extending from the housing for engaging and aligning a fiber optic cable and constructed and arranged with sufficient flexibility to allow a fiber optic cable to be inserted into the male housing and sufficient resiliency to accurately align the cable with respect to a center line extending through the cable passage;

a female connector having a connector housing including a cable passage extending therethrough and a plurality of flexible cable alignment fingers extending from the housing for engaging and aligning a fiber optic cable and constructed and arranged with sufficient flexibility to allow a fiber optic cable to be inserted into the female connector and sufficient resiliency to accurately align the cable with a center line extending through the cable passage;

said male and female connectors being constructed and arranged to be mated together to reduce loss of light associated with misalignment of fiber optic cables in the male and female connectors.

5,796,896

MULTI-FERRULE FIBER OPTIC CONNECTOR FOR HIGH DENSITY BACKPLANE APPLICATIONS

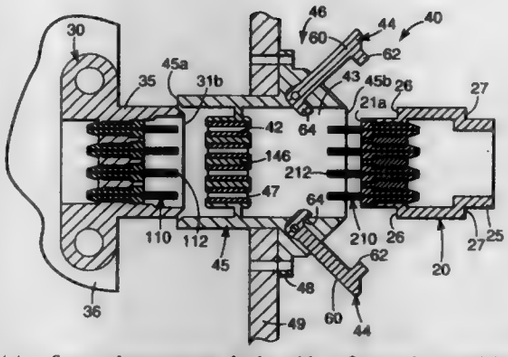
Nicholas A. Lee, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 14, 1996, Ser. No. 615,374

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—59 **13 Claims**

1. A connector for high-density optical fiber interconnection, comprising:



(a) a first male connector body with a first end comprising a mounting structure for attachment of the first connector body to a generally planar substrate, a second end, and a first bore between the first and second ends,

a first ferrule retaining member attached to said first body and positioned generally diametrically across said first bore, said first ferrule retaining member comprising a plurality of ferrule retention bores which are generally axially aligned with the first bore,

a helical spring and a ferrule in each ferrule retention bore of the first ferrule retaining member, wherein each ferrule comprises a first end proximal the first end of the first body and a second end proximal the second end of the first body, and wherein each ferrule is free to axially and transversely move in the first ferrule retaining member independent of another ferrule therein;

(b) a second male connector body with a first end, a second end, and a second bore between the first end and the second end, wherein an external surface of the second connector body comprises a first shoulder structure proximal the first end of the second connector body and a second shoulder structure proximal the second end of the second connector body,

a second ferrule retaining member attached to said second body and proximal the first end of said second connector body, wherein said ferrule retaining member is positioned generally diametrically across said second bore, said ferrule retaining member comprising a plurality of ferrule retention bores which are generally axially aligned with the second bore,

a helical spring and a ferrule in each ferrule retention bore in the second ferrule retaining member, wherein each ferrule comprises a first end proximal the second end of the second body and a second end proximal the first end of the second body, wherein each ferrule is free to axially and transversely move in the second ferrule retaining member independent of another ferrule therein;

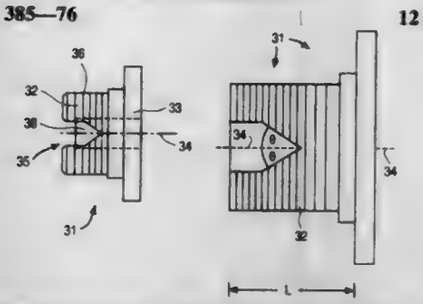
(c) a female coupling body with a first end slideably engaging the second end of the first male connector body, a second end slideably engaging the first end of the second male connector body, and a coupling bore between the first end and the second end, said coupling body further comprising a ferrule coupling member generally diametrically across said coupling bore and attached to the coupling body, wherein said ferrule coupling member comprises a plurality of ferrule alignment bores generally axially aligned with the coupling bore and having a first end engaging the second end of the ferrules in the first male connector body and a second end engaging the second end of the ferrules in the second male connector body such that the second ends of the ferrules in the first male connector body abut the second ends of the ferrules in the second male connector body and provide optical interconnection therebetween, and

a latching member pivotally mounted on said female coupling body, wherein said latching member releasably engages the shoulder structures on the second male connector body.

5,796,897
UNIVERSAL ADAPTOR FOR KEYED FIBEROPTIC CONNECTORS

Gregory J. Ronan, Palo Alto, Calif., assignor to Wave Optics, Inc., Mt. View, Calif.

Filed Feb. 6, 1997, Ser. No. 794,385
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—76 **12 Claims**



1. A universal adaptor for a fiber optic connector having a ferrule and a key for rotational alignment of said connector to said adaptor, said adaptor comprising

an alignment sleeve for receiving said connector ferrule; and

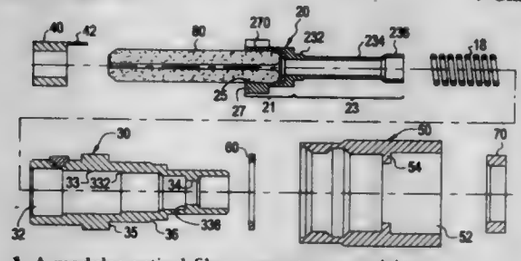
a housing having a threaded barrel and a flange fixed to and extending perpendicularly from said threaded barrel, said threaded barrel coaxially mounting said sleeve within said barrel and having a wall displaced from said sleeve, said wall terminating in an edge, said edge having a V-shaped slot therein;

whereby criticality of key size matching to said slot is avoided.

5,796,898
MODULAR OPTICAL FIBER CONNECTOR

Hsin Lee, Issaquah, Wash., assignor to Fiberon, Inc., Issaquah, Wash.

Filed Feb. 28, 1996, Ser. No. 608,497
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—78 **7 Claims**



1. A modular optical fiber connector comprising:

a ferrule body having a longitudinal axis, a first end attached to a ferrule and a second end for receiving an optical fiber, said ferrule body including a ferrule holder at said first end for retaining said ferrule, and a buffer back post extending from said ferrule holder to said second end, said buffer back post having a buffer passage extending therethrough from said second end to said ferrule holder, said first end of said ferrule body including a tab passage extending substantially parallel to said longitudinal axis,

an insert having a tab projecting outwardly therefrom and an insert passage extending therethrough to receive said ferrule, said insert being positioned against said first end of said ferrule body with ferrule extending through said insert passage and said tab received in the tab passage in said first end of said ferrule body, said insert passage and tab passage in said first end of said ferrule body being sized to permit longitudinal movement of said ferrule body and ferrule relative to said insert, said tab and tab passage in the front end of said ferrule body preventing rotational movement of said ferrule body relative to said insert, and

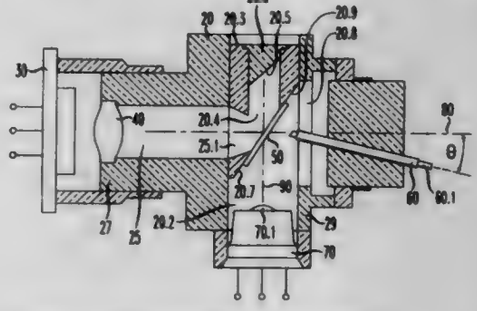
a connector body having a longitudinal passage extending therethrough, said insert being secured within said longitudinal passage, and

a spring mounted in the longitudinal passage of said connector body to extend between said connector body and said ferrule body, said spring being a coil spring mounted externally on said buffer back post to engage the first end of said ferrule body and operating to bias said ferrule body against said insert.

5,796,899
BIDIRECTIONAL OPTICAL TRANSCEIVER ASSEMBLY WITH REDUCED CROSSTALK

Timothy Butrie, Orefield, Pa.; Shigemasa Enoeda, Okaya, Japan; Joseph Edward Riska, Macungie, Pa.; Stephen James Salko, Weatherly, Pa.; Thomas Stanley Stakelon, Allentown, Pa.; Alka Swanson, San Diego, Calif., and Toshimichi Yasuda, Okaya, Japan, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 25, 1996, Ser. No. 755,635
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—92 **2 Claims**



1. An optical transceiver assembly comprising

a housing,

mounted in the housing, a light source, a beam splitter, an optical fiber, a photodetector, and a lens for focusing an outgoing optical signal from said source through said splitter into said fiber, said splitter being positioned to reflect an incoming optical signal on said fiber to said photodetector, said splitter also reflecting a portion of said outgoing signal, said reflected portion being incident on surfaces within said housing, which surfaces further reflect said signal to said photodetector, CHARACTERIZED IN THAT

said housing includes a cavity into which said reflected portion of said outgoing signal is directed by said splitter and an oblique surface disposed in said cavity so as to further reflect said portion in such a way as to reduce the amount thereof which reaches said photodetector,

said source, lens, splitter and fiber are disposed along a first axis; said photodetector, splitter and cavity are disposed along a second axis transverse to said first axis; and said oblique surface makes an acute angle with said second axis,

said housing includes a central section along said second axis, said photodetector is located at one end of said central section and a cylindrical member is located at the other end thereof, and

said cylindrical member includes said cavity therein and a plug positioned in said cavity, said oblique surface being formed on the end of said plug disposed within said cavity.

5,796,900

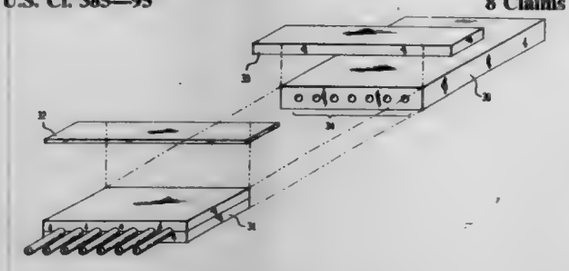
APPARATUS AND METHODS FOR INTERCONNECTING ARRAYS OF OPTICAL TRANSMISSION PATHS EMPLOYING EXTERNALLY LOCATED CONNECTOR PADS

Yinon Degani, and Herman Melvin Presby, both of Highland Park, N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation of Ser. No. 350,869, Dec. 7, 1994, abandoned. This application Dec. 17, 1996, Ser. No. 768,769

Int. Cl.[6] G02B *6/255*

U.S. Cl. 385—95 8 Claims



1. A method of securely butt-joining the wavepaths in a first array of optical wavepaths to the respective wavepaths in a second array of optical wavepaths using a connector pad comprising the steps of:

first, placing an end of one of said arrays adjacent to an end of the second of said arrays and optically aligning the optical wavepaths in said respective arrays;

then placing a single connector pad so as to extend from a position along said first array to the opposite side of said butt-joint to a position along said second array;

and then bonding said single connector pad to both of said arrays.

5,796,901

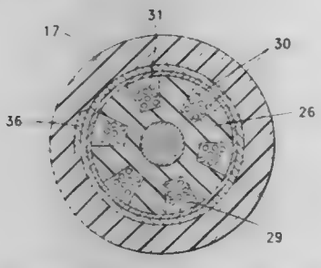
INDOOR/OUTDOOR TRANSITION CABLE

Marc Stammer, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Continuation of Ser. No. 921,673, Jul. 30, 1992, abandoned. This application Jul. 30, 1993, Ser. No. 100,332

Int. Cl.[6] G02B *6/44*

U.S. Cl. 385—100 6 Claims



1. A light waveguide cable, comprising a flame retardant outer jacket holding at least one light waveguide and also holding an interior plug between a first lengthwise portion of the cable located outside of a building holding waterblocking material and a second lengthwise portion of the cable located in a building holding no waterblocking material.

5,796,902

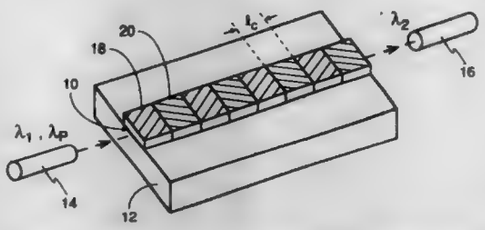
COHERENT BLUE/GREEN OPTICAL SOURCE AND OTHER STRUCTURES UTILIZING NON-LINEAR OPTICAL WAVEGUIDE WITH QUASI-PHASE-MATCHING GRATING

Rajaram Bhat, Middletown; Catherine Caneau, Red Bank; Mark A. Koza, Colonia, and Sung Joo Yoo, Long Branch, all of N.J., assignors to Bell Communications Research, Inc., Morristown, N.J.

Continuation-in-part of Ser. No. 602,391, Feb. 16, 1996. This application Jul. 5, 1996, Ser. No. 682,863

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—122 11 Claims



1. An integral optical circuit formed in a single substrate, comprising:

a first waveguide formed in said substrate and having an active layer that emits radiation at a first frequency; and

a second waveguide formed in said substrate and integrated with and coupled to said first waveguide and including an alternating structure of alternating crystallographic characteristics including an optically non-linear material and being operatively matched to said radiation of said first frequency.

5,796,903

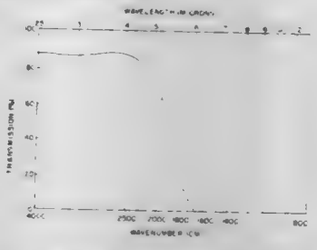
HEAVY METAL-OXIDE GLASS OPTICAL FIBERS FOR USE IN LASER MEDICAL SURGERY AND PROCESS OF MAKING

Danh C. Tran, Bethesda, Md., assignor to Infrared Fiber Systems, Inc., Silver Spring, Md.

Continuation-in-part of Ser. No. 907,380, Jul. 6, 1992, Pat. No. 5,274,778. This application Dec. 27, 1994, Ser. No. 356,379

Int. Cl.[6] G02B *6/02;* C03C *13/04*

U.S. Cl. 385—123 20 Claims



1. A surgical laser operating in the wave length region of 2.06 microns up to 4.5 microns for power transmission and including an optical fiber for transmitting laser light, the improvement wherein said optical fiber has a solid core formed of a glass comprising a mixture of (1) GeO_2 as class former and (2) at least one dooant selected from the group consisting of oxides and halides of heavy metal cations having an atomic weight above 73, said mixture constituting at least 73 mol % of said glass.

5,796,904

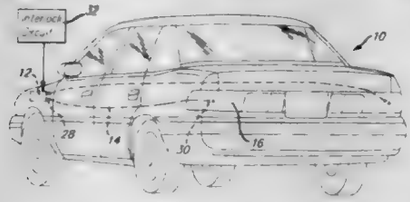
ELECTRICAL CONTINUITY INTERLOCK FOR A LASER-BASED FIBER OPTIC VEHICLE LIGHTING SYSTEM

Michael Anthony Marinelli, Northville; Jeffrey Thomas Remillard, Ypsilanti, both of Mich., and Timothy Fohl, Carlisle, Mass., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Jun. 12, 1997, Ser. No. 873,434

Int. Cl.[6] G02B *6/02*

U.S. Cl. 385—123 **12 Claims**





7. A vehicle lighting system, comprising:

a remote light source having an interlock circuit with a first energized condition operative to power the remote light source and a second de-energized condition preventing operation of the remote light source;

an optical element;

a fiber optic light guide having a light transmissive core with a longitudinal axis, a first end, and a second end, the first end is electrically coupled to the remote light source and the second end is electrically coupled to the optical element; and

an electrically conductive wire adjacent to and axially coextensive with the longitudinal axis and terminating at the first end and the second end thereby forming an electrically continuous connection so that when there is an electrically continuous connection the first energized condition is operative and when there is an electrically discontinuous connection the second deenergized condition is operative.

5,796,905

OPTICAL FIBER WITH A COLOR MARKING

Michael Hoffart, Heiligenhaus; Jürgen Rosenkranz, Mönchengladbach; Franz-Peter Bartling, Düsseldorf; Bertram Glessner, Mönchengladbach, and Hans-Jürgen Lysson, Korschrenbroich, all of Germany, assignors to Kabel Rheydt Aktiengesellschaft, Germany

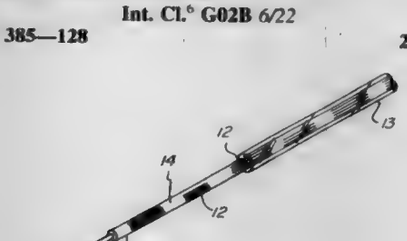
PCT No. PCT/EP94/04241, § 371 Date Jul. 29, 1996, § 102(e) Date Jul. 29, 1996, PCT Pub. No. WO95/17695, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 20, 1994, Ser. No. 663,287

Claims priority, application Germany, Dec. 23, 1993, 43 44 223.4; Mar. 5, 1994, 44 07 406.9

Int. Cl.[6] G02B *6/22*

U.S. Cl. 385—128 **25 Claims**



1. An optical fiber comprising:

(a) a fiber core;

(b) a cladding surrounding the fiber core;

(c) a coating made of at least one plastic layer surrounding the cladding;

(d) a color marking joined with the coating; and

(e) a further layer extending continuously along the full length of the fiber and covering the color marking, the further layer is colored and made substantially solely from a material which permits transmission of rays of light so the color marking can be seen therethrough.

5,796,906

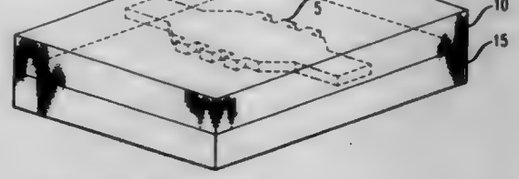
OPTICAL PLANAR WAVEGUIDE NOTCH FILTERS

Chellappan Narayanan, Alpharetta, Ga., and Herman Melvin Presby, Highland Park, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 27, 1996, Ser. No. 704,341

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—129 **24 Claims**



1. A planar waveguide notch filter comprising:

a planar waveguide disposed within a cladding, said planar waveguide having first, second and third regions, said first and third regions having a structure for propagating an optical signal in a first transmission mode and said second region disposed between said first and third regions and having a structure for propagating an optical signal in a corresponding first transmission mode and at least one other transmission mode, wherein said second region further has a structure such that signal energy of a particular band of at least one wavelength of a signal propagating from said first region through to said third region is coupled in said second region from said first transmission mode to said at least one other transmission mode to attenuate said band of said signal propagating to said third region.

5,796,907

OPTICAL TRANSMISSION LINE OPTICAL TRANSMITTER, AND PHOTOGRAPHIC PRINTING APPARATUS

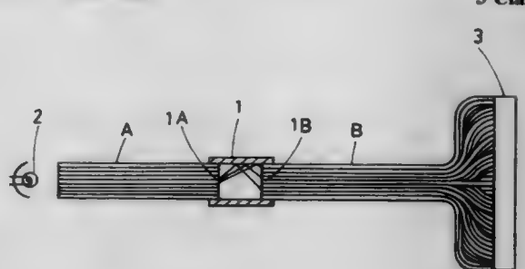
Teruo Shiba; Michio Oishi; Masazumi Ishikawa, and Tohru Tanibata, all of Wakayama-ken, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Filed Nov. 9, 1995, Ser. No. 552,478

Claims priority, application Japan, Nov. 9, 1994, 6-275017; Sep. 26, 1995, 7-247836

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—133 **5 Claims**



1. An optical transmission line for transmitting a uniform intensity of light, comprising:

a first bundle of optical fibers having a light emitting end which emits diffused light components from each of the optical fibers of said first bundle;

a second bundle of optical fibers having a light receiving end, wherein said light receiving end optically confronts the light emitting end of said first bundle of optical fibers; and

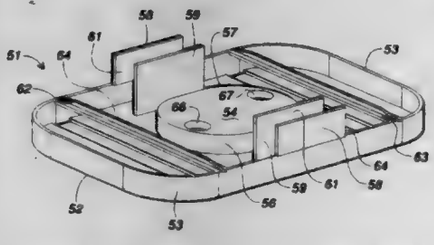
a reflector tube which has a mirrored surface on the inner side thereof and which maintains a gap between said first and second bundles of optical fibers, wherein said reflector tube is interposed between the light emitting end of said first bundle of optical fibers and the light receiving end of said second bundle of optical fibers so as to optically couple said first and second bundles, wherein said reflector tube redirects and distributes the diffused light components emitted from each of the optical fibers at the light emitting end of said first bundle into the optical fibers at the light receiving end of said second bundle, and wherein the gap of said reflector tube is a vacuum.

5,796,908

OPTICAL FIBER ORGANIZING TRAY

William Anthony Vicory, Suwanee County, Ga., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 11, 1996, Ser. No. 712,504
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—135 **14 Claims**



1. An optical fiber organizing tray for holding and protecting optical fibers typified by having a critical bend radius and modular components connected thereto, said tray comprising:

a base member having a substantially planar surface floor and first and second ends;

a peripheral wall having a first height extending around the periphery of said floor and defining a fiber containing space;

a hub member approximately centrally located on said floor, said hub member having at least a first curved portion whose radius of curvature is greater than the critical bend radius of the optical fibers;

a first pair of spaced upstanding walls having a second height on a first side of said hub member and spaced therefrom;

a second pair of spaced upstanding walls having a second height on a second side of said hub member opposite said first side and spaced therefrom;

each of said first and second pairs of walls defining a module containing space extending beyond the height of said peripheral wall;

said tray having a longitudinal centerline and being symmetrical relative thereto;

mounting means on said hub displayed from the longitudinal centerline of said tray; and

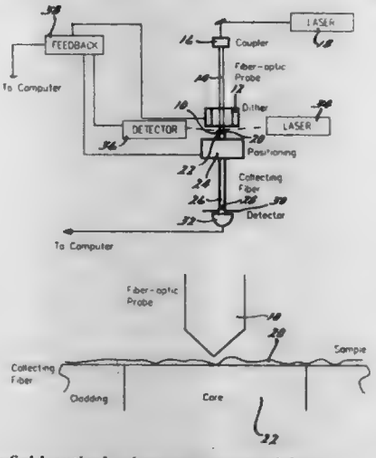
wherein the second height is being greater than the height of the first height.

5,796,909

ALL-FIBER, HIGH-SENSITIVITY, NEAR-FIELD OPTICAL MICROSCOPY INSTRUMENT EMPLOYING GUIDED WAVE LIGHT COLLECTOR AND SPECIMEN SUPPORT

Mohammed N. Islam, 2717 Holyoke La., Ann Arbor, Mich. 48103

Filed Feb. 14, 1996, Ser. No. 601,600
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—147 **22 Claims**



1. A near-field optical microscope, comprising:

a fiber optic probe having first end for coupling to a light source and having a second end that forms a light emitting tapered tip;

a light wave guiding structure having an exposed surface positioned adjacent said tapered tip for supporting a specimen in the near field of said tapered tip, said guiding structure having a center region of a first index of refraction and having a surrounding region of a second index of refraction lower than said first index, said guiding structure defining a window of light collection that is disposed within said near field of said tapered tip and that extends over at least a portion of said exposed surface that includes said center region;

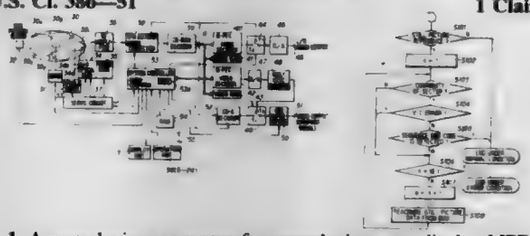
said guiding structure further having an interface for coupling to a light detector, thereby permitting light emitted from said tapered tip and gathered through said window to be processed.

5,796,910

DECODER FOR DECODING STILL PICTURE DATA AND DATA ON WHICH DATA LENGTH OF STILL PICTURE DATA IS RECORDED, REPRODUCING APPARATUS FOR REPRODUCING RECORDING MEDIUM, AND REPRODUCING METHOD THEREOF

Shuichi Nagano, and Kenji Tomizawa, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 534,862, Sep. 27, 1995, Pat. No. 5,651,087. This application Apr. 4, 1997, Ser. No. 832,757
Claims priority, application Japan, Oct. 4, 1994, 6-263295
Int. Cl.[6] H04N *5/92; 5/93*
U.S. Cl. 386—51 **1 Claim**



1. A reproducing apparatus for reproducing on a display MPEG audio/video data from addressed locations of a recording medium, wherein lists are recorded on said recording medium which list by

address segment play items and associated play branches of MPEG audio/video moving pictures, each segment play item containing still picture data of variable data length representing a menu of said play branches of MPEG audio/video moving pictures, wherein data length information corresponding to said still picture data is recorded on said recording medium, comprising:

a reader for reading out both of said still picture data and said data length information corresponding to the still picture data from the recording medium;

a decoder for MPEG decoding the still picture data and also the data length information corresponding to said still picture data, which are read out by said reader;

a counter for counting a data length of said still picture data decoded by said decoder;

a comparator for comparing the data length information decoded by the decoder to the data length counted by said counter;

a controller for judging whether said still picture data is valid when the data length information decoded by the decoder is equal, as determined by said comparator, to the data length of the still picture data counted by the counter, and for controlling said reader to again read out the same still image data when said controller judges the still picture data is invalid; and

wherein said controller causes said display to display a respective menu of said still picture data judged valid by said controller and to display thereafter associated MPEG audio/video play branches selected from said respective menu.

5,796,911

Patent Not Issued For This Number

5,796,912

DIGITAL SIGNAL RECORDING/REPRODUCING APPARATUS CAPABLE OF RECORDING SEQUENCE SIGNALS IN SLANTED AND LONGITUDINAL TRACKS ON A MAGNETIC TAPE

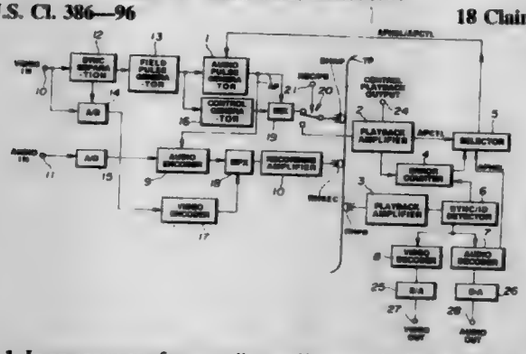
Yoshinori Sato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 9, 1993, Ser. No. 74,293

Claims priority, application Japan, Jun. 15, 1992, 4-178829

Int. Cl.[6] G11B *5/02*; H04N *5/91*

U.S. Cl. 386—96 **18 Claims**



1. In an apparatus for recording and/or reproducing digital audio and video signals in slanted tracks on a magnetic tape, and wherein an integral number of samples of said digital audio signals forming a unit thereof are allocated to a plurality of fields of said digital video signals, said apparatus comprising

sequence signal forming means for forming sequence signals indicating the units of said digital audio signals on the basis of said fields of said digital video signals,

longitudinal track recording means for recording said sequence signals in a longitudinal track on said magnetic tape,

slanted track recording means for recording said sequence signals in the slanted tracks in which said digital audio signals are recorded,

longitudinal track reproducing means for reproducing said sequence signals from said longitudinal track,

slanted track reproducing means for reproducing the recorded digital audio signals and said sequence signals from said slanted tracks,

error rate detection means for detecting an error rate of the sequence signals reproduced from said longitudinal track and an error rate of the sequence signals reproduced with the digital audio signals from said slanted tracks, and

selection means for selecting the sequence signals reproduced from said longitudinal track or the sequence signals reproduced from said slanted tracks

based on whether said error rate detection means detects a lower error rate of the reproduced sequence signals from said longitudinal track or from said slanted tracks, respectively.

5,796,913

VIDEO DISK AND VIDEO REPRODUCTION DEVICE WHICH AUTOMATICALLY EXTRACTS REPRODUCTION CONTROL DATA FROM A DISK AND SUBSEQUENTLY MODIFIES A CONTROL PROGRAM WHICH WAS STORED IN A ROM

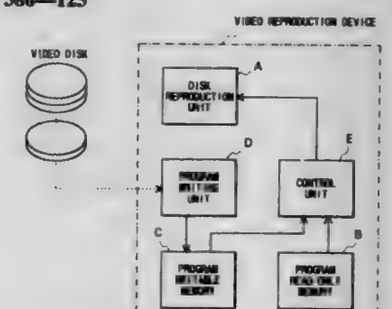
Hiroyuki Takada, Haguri-gun; Koichi Hayashi, Nagoya; Yasutada Aoyama, Inazawa; Norio Chaya, and Hiroshi Nishikawa, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 378,354, Jan. 25, 1995, abandoned. This application Dec. 30, 1996, Ser. No. 777,061

Claims priority, application Japan, Jan. 26, 1994, 6-007072

Int. Cl.[6] H04N *5/781;5/85*; G11B *15/18;17/00*

U.S. Cl. 386—125 **10 Claims**



1. A video reproduction device for reproducing video data from a video disk, the video disk storing the video data and a reproduction control program data representative of a desired reproduction manner in which the video data is desired to be reproduced from the video disk, the device comprising:

disk reproduction means for retrieving video data from video disk set thereon, the video disk storing the video data and a reproduction control program data representative of a desired reproduction manner in which the video data is desired to be reproduced from the video disk;

a program read-only memory for storing in advance a control program for controlling the disk reproduction means;

a program read/write memory in which a program can be written in and read from;

means for modifying said control program comprising:

means to automatically extract the reproduction control program data from the video disk, and

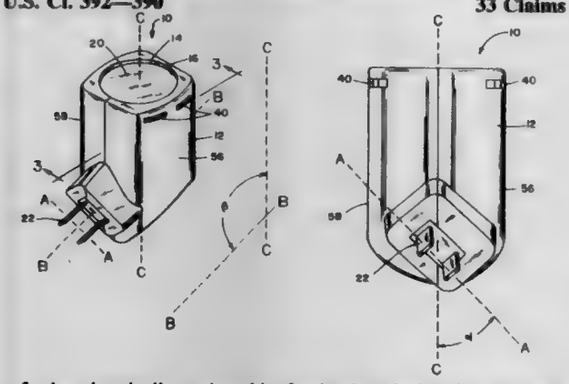
means to store the extracted reproduction control program data in the program read/write memory, wherein the extracted reproduction control program data modifies said control program; and

control means for controlling the disk reproduction means, based on the modified control programs the video data being retrieved from the video disk in the desired reproducing manner represented by the reproduction control program data.

5,796,914
ELECTRIC FUMIGATION DEVICE

John J. Gatzemeyer, Racine; Robert E. Corba; Scott W. Demarest, both of Caledonia, and Nicholas M. Gerrits, Whitefish Bay, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Apr. 17, 1996, Ser. No. 633,335
Int. Cl.[6] A61M *16/00;* **A01M** *13/00*
U.S. Cl. 392—390 **33 Claims**



1. An electrically activatable fumigating device for use with electrical receptacles conventionally mounted in generally vertical or upwardly facing surfaces, the fumigating device comprising:

a. a body, the body having a well with a well mouth that opens to the atmosphere at one end of the well's longitudinal axis and contains a heat-activatable chemical charge including an active ingredient and blowing agent means for expelling the active ingredient from the well by a self-sustaining chemical reaction, the well mouth being closed by a cover that is openable by the blowing agent means to release fumigant at the well mouth;

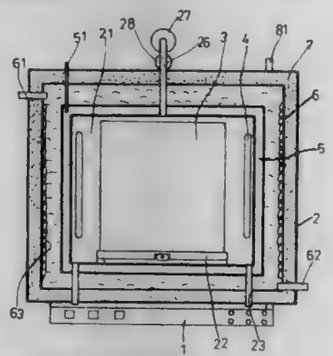
b. an electrical plug having a transverse axis that extends from side-to-side across the face of an electrical receptacle when the electrical plug is plugged thereinto, the electrical plug being fixedly attached to the body with the longitudinal axis of the well oriented at an angle of about 35° to about 55° to the transverse axis of the electrical plug to direct the mouth of the well sidewardly at that angle with respect to any electrical receptacle into which the electrical plug is plugged; and

c. a heating means for heating the heat-activatable chemical charge to initiate the action of the blowing agent means, the heating means being activatable by electricity delivered via the electrical plug.

5,796,915
HOT WATER HEATER WITH REFUSE INCINERATOR

Hsieh Hsing-Lin, P. O. Box 82-144, Taipei, Taiwan

Filed Oct. 2, 1996, Ser. No. 725,306
Int. Cl.[6] A47J *27/00;31/54;* **F24H** *1/18*
U.S. Cl. 392—441 **1 Claim**



1. A hot water heater comprising:

a primary combustion chamber having air circulation holes at a bottom side, and an access door at a front side;

a stand mounted inside said primary combustion chamber;

a heat-resisting dustbin put in said stand and adapted for holding inflammable waste articles for burning in said primary combustion chamber;

an exhaust pipe adapted for guiding exhaust gas out of said primary combustion chamber;

a gas filter connected to said exhaust pipe and adapted for removing ashes from exhaust gas, said gas filter comprising a transparent ash collector adapted for collecting removed ashes;

a water filtration chamber adapted for receiving and cooling exhaust gas from said gas filter, said water filtration chamber having a drain pipe at a bottom side, an exhaust hole and a water filling hole at a top side;

a heating element mounted around said primary combustion chamber and controlled to produce heat at 500° C. for causing inflammable waste articles to be burned;

an air chamber surrounding said primary combustion chamber and having an air pipe extending to the outside;

a water chamber disposed around said air chamber for holding water and receiving heat energy transmitted from said primary combustion chamber through said air chamber;

a heat isolation layer covered around said water chamber;

a cold water supply pipe and a hot water supply pipe respectively connected to said water heating chamber, and adapted for guiding cold water into said water chamber and hot water out of said water chamber respectively;

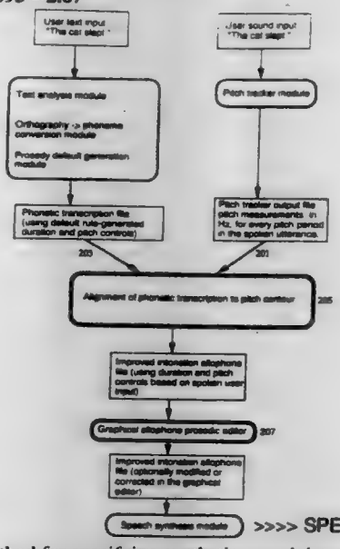
an electric heater installed inside said water chamber, and controlled to heat water in said water chamber when said heating element does no work; and

a water level indicating means adapted for indicating water level in said water filtration chamber.

5,796,916
METHOD AND APPARATUS FOR PROSODY FOR SYNTHETIC SPEECH PROSODY DETERMINATION

Scott E. Meredith, San Francisco, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 8,958, Jan. 21, 1993, abandoned. This application May 26, 1995, Ser. No. 451,617
Int. Cl.[6] G10L *5/02*
U.S. Cl. 395—2.67 **24 Claims**



1. A method for specifying synthetic speech intonation, comprising the steps of:

(a) obtaining natural pitch and duration values for a natural voicing section of a natural utterance;

(b) obtaining synthetic pitch and duration values for a synthetic voicing section of a synthetic equivalent to the natural utterance;

(c) aligning the natural voicing section to the synthetic voicing section; and

(d) replacing the synthetic pitch and duration values of the synthetic voicing section with the natural pitch and duration values.

5,796,917

METHOD AND APPARATUS FOR PARALLEL PROCESSING OF FUZZY RULES

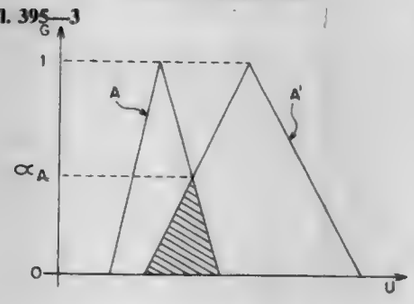
Vincenzo Matranga, Palermo; Biagio Giacalone, Trapani, and Massimo Abruzzese, Catania, all of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed May 2, 1995, Ser. No. 434,161

Claims priority, application European Pat. Off., May 23, 1994, 94830241

Int. Cl.[6] G06G *7/00*

U.S. Cl. 395—3 **8 Claims**



1. A method of parallel processing of multiple fuzzy logic inference rules organized in fuzzy sets or logical functions of multiple fuzzy sets including membership functions defined in a so-called universe of discourse and said inference rules being configured essentially as IF-THEN rules with at least one antecedent preposition and at least one consequent implication, each preposition having at least one term of comparison between membership functions and a plurality of input data and each term being separated by logical operators, the method comprising the steps of:

determining a series of operator elements corresponding to an order of the logical operators separating terms;

associating maximum and minimum operations with each of the operator elements among two or more terms;

determining partial truth levels based upon the terms and the corresponding maximum and minimum operations of the series of operators;

determining the overall degree of truth of a rule as at least one of a maximum and minimum of the partial truth levels; and

dividing rules having more than a predetermined number of terms, wherein the predetermined number is greater than one, in the antecedent part into a plurality of sub-rules having no more than the predetermined number of terms in the antecedent part; and

adding additional logical operators and neutral elements to each subrule so that each subrule has the predetermined number of terms and neutral elements.

5,796,918

METHOD FOR RANKING MEMBERSHIP FUNCTION VALUES OF LINGUISTIC INPUT VALUES IN A FUZZY LOGIC PROCESSOR AND ARRANGEMENT FOR THE IMPLEMENTATION THEREOF

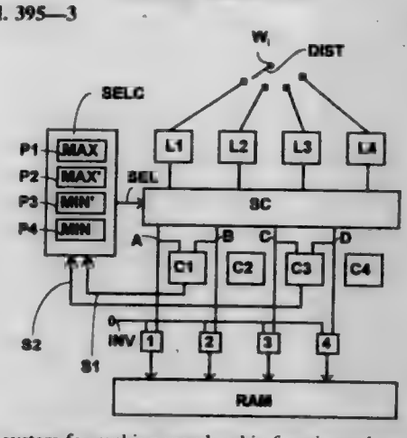
Manfred Menke, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 28, 1996, Ser. No. 705,865

Claims priority, application Germany, Aug. 28, 1995, 195 31 635.5

Int. Cl.[6] G06G *7/00*

U.S. Cl. 395—3 **14 Claims**



11. A system for ranking membership function values of linguistic input values in a fuzzy logic processor, comprising:

a source of membership function values;

a distributor for distributing the membership function values;

a plurality of holding elements coupled to the distributor for receiving said membership function values in succession;

a selector circuit operatively coupled to the holding elements to redirect the membership function values at outputs thereof in accordance with a selection signal applied to the selection circuit;

a plurality of comparators operatively coupled to the outputs of the selection circuit to generate first and second control signals; and

means for generating the selection signal operatively coupled to receive the first and second control signal, said means for generating the selection signal including a plurality of position registers which contain pointers to the holding elements, said means for generating the selection signal operatively coupled to the selection circuit to apply the selection signal thereto,

wherein:

a) within the time of one processor clock, the membership values are successively read into the holding elements and, after every reading, the membership function values in the holding elements are through-connected onto the outputs of the selection circuit as determined by a selection signal;

b) the signals at the outputs of the selection circuit are compared by the comparators which in turn generate control signals for the means for generating a selection signal which in turn generates the selection signal;

c) pointers are written into the position registers with the assistance of the control signals such that the pointers enable a ranked access to the membership function values in the holding elements;

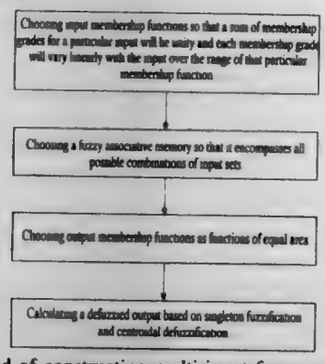
d) a first output of the selection circuit is connected to a first input of a first comparator and a second output of the selection circuit is connected to a second input of the first comparator, said first comparator supplying a first control signal; and

e) a third output of the selection circuit is connected to a first input of a second comparator and a fourth output of the selection circuit is connected to a second input of the second comparator, said second comparator supplying a second control signal.

5,796,919
METHOD OF CONSTRUCTING AND DESIGNING FUZZY CONTROLLERS

Eric Gregory Kubica, 380 Erb Street West, Apartment #105, Waterloo, Ontario, Canada, N2L 1W6

Filed Oct. 7, 1996, Ser. No. 729,758
Int. Cl.[6] G06G *7/00;* **G06F** *17/00*
U.S. Cl. 395—3 **15 Claims**



7. A method of constructing multi-input fuzzy controllers for a microprocessor based control system, said system controlling a plant, said method being based on a finite dimensional linear controller for said system, said method comprising:

(a) choosing input membership functions so that a sum of membership grades for a particular input will be unity and each membership grade will vary linearly with the input over the range of that particular membership function;

(b) choosing a fuzzy associative memory so that it encompasses all possible combinations of input sets, and so that a rule exists for every possible combination of input sets in the fuzzy associative memory and each rule has a separate output set, said output sets are based on linear control law, the input sets are normal, triangular in shape with an overlap at a membership grade of 0.5;

(c) choosing output membership functions as symmetrical unimodal functions of equal area; and

(d) using said microprocessor to calculate a defuzzified output based on singleton fuzzification, product inferencing and centroidal defuzzification, the singleton fuzzification and product inferencing for each output in accordance with the equation:

$$y_0(u) = \frac{\sum_{l=1}^{M} \bar{B}^l \left(\prod_{i=1}^{n} \mu'_{A_i}(u_i) \right)}{\sum_{l=1}^{M} \left(\prod_{i=1}^{n} \mu'_{A_i}(u_i) \right)}$$

where $y_0(u)$ is the control action:

u is the input vector;

$\bar{B}^l$ is the centroid of the output set for rule l of each output;

n is the number of inputs;

u_i is the elements of the input vector;

M is the number of rules in the fuzzy associative measures;

$\mu_A(u_i)$ is a membership grade for input i on rule l; and

a denominator of the equation is equal to one;

wherein the linear controller satisfies the equation:

where y_0 is the control action;

K(t) is a time varying gain matrix;

z(x) is a vector of any linear function of the plant states;

c(t) is a time varying offset vector

and the input membership functions are triangular and the membership grades corresponding to the membership function are calculated as:

$$\mu_{A_i^0}(z_i) = \frac{\bar{A}_i^1 - z_i}{\bar{A}_i^1 - \bar{A}_i^0} = 1 - \mu_{A_i^1}(z_i),\ i \in \{1,2,\ldots,n\}$$

where z_i is equal to u;

$\bar{A}_i^0$ is the centroid of the first membership function of input i with a non-zero membership grade;

$\bar{A}_i^1$ is the centroid of the second membership function of input i with a non-zero membership grade;

making the sum of the membership grades equal to one and the fuzzy associative memory contains all possible combinations of the input sets such that the number of unique rules is:

where n is the number of inputs;

η_i is the number of sets spanning input i and is a positive integer >1;

the centroids of the output sets for each output are based on the linear control law of the equation $y_0=K(t)z(x)+c(t)$ and are determined for the first and second membership functions with the non-zero membership grades in accordance with the equation:

$$\bar{B}^0(t) = k_1(t)\bar{A}_1^0 + k_2(t)\bar{A}_2^0 + \ldots + k_n(t)\bar{A}_n^0 + c(t)$$

$$\bar{B}^1(t) = k_1(t)\bar{A}_1^0 + k_2(t)\bar{A}_2^0 + \ldots + k_n(t)\bar{A}_n^1 + c(t)$$

$$\bar{B}^2(t) = k_1(t)\bar{A}_1^0 + k_2(t)\bar{A}_2^0 + \ldots k_{n-1}(t)\bar{A}_{n-1}^1 + k_n(t)\bar{A}_n^0 + c(t)$$

. . .

$$\bar{B}^{2^n-2}(t) = k_1(t)\bar{A}_1^1 + k_2(t)\bar{A}_2^1 + \ldots + k_{n-1}(t)\bar{A}_{n-1}^1 + k_n(t)\bar{A}_n^0 + c(t)$$

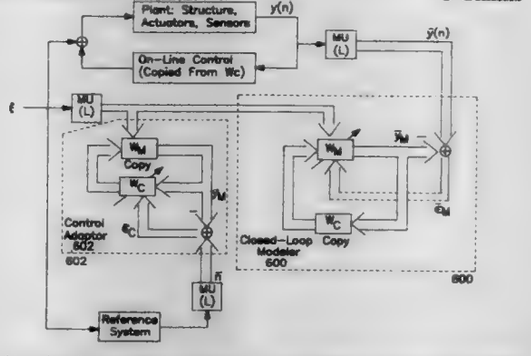
$$\bar{B}^{2^n-1}(t) = k_1(t)\bar{A}_1^1 + k_2(t)\bar{A}_2^1 + \ldots + k_{n-1}(t)\bar{A}_{n-1}^1 + k_n(t)\bar{A}_n^1 + c(t)$$

where $\bar{B}$ is the centroid of the output set for rules 0 . . . to . . . 2^n-1 for each output; and $k_1(t) \ldots k_n(t)$ is the row in k(t) corresponding to the particular output being dealt with.

5,796,920
MULTIPROCESSOR SYSTEM AND METHOD FOR IDENTIFICATION AND ADAPTIVE CONTROL OF DYNAMIC SYSTEMS

David C. Hyland, Melbourne Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 19, 1994, Ser. No. 293,654
Int. Cl.[6] G06E *1/100;* **G06F** *15/18*
U.S. Cl. 395—22 **3 Claims**



1. An adaptive control system for controlling a plant, said plant having an output signal related to a state of said plant and an actuator responsive to an input signal, comprising a neural network comprising:

a plurality of neurons, each neuron having a forward and backward signal path, said forward signal path receiving a forward input signal and providing a forward output signal related to said forward input signal and a forward neural function, and said backward signal path receiving a backward input signal and providing a backward output signal related to the backward input signal and a backward neural function;

a plurality of synapses, each synapse having a forward and backward signal path, said forward signal path receiving a forward input signal and providing a forward output signal related to said forward input signal and a gain signal, and said backward signal path receiving a backward input signal and providing a backward output signal related to the backward input signal and said gain signal, and said synapses interconnecting the signal paths of said neurons; and, wherein said

neurons and said synapses are arranged in a plural ganglia, each ganglion having an array of L neurons allocated as a unit to process a time series signal and its L−1 delayed values, each ganglia receiving a input signal from a tapped delay line, and one of said ganglia providing a network output signal;

an on-line control system receiving an output signal from said plant and providing an input control signal to said actuator;

a control adaptor said neural network configured to model said plant and said neural network configured to model said on-line control system, said control adaptor receiving input signals related to signal supplied to said actuator and comparing the network output signal with a reference signal related to a desired response of the plant to said signals applied to said actuator, and for injecting differences between the network output signal and the desired response into the backward signal path of the output ganglion of the neural network modelling the on-line control system and adjusting the gains of the synapses to reduce said differences;

a closed-loop modeler said neural network configured to model said plant and said neural network configured to model said on-line control system, said closed loop modeler receiving input signals related to the signal supplied to said actuator and comparing the network output signal of said plant model with a signal related to response of the plant and for injecting differences between the network output signal and the plant response into the backward signal path of the output ganglion of the neural network modelling the plant and adjusting the gains of the synapses to reduce said differences;

wherein the rains of the synapses of said closed-loop modeler are not changed simultaneously with chances to the gains of the synapses of said control adapter.

5,796,921

MAPPING DETERMINATION METHODS AND DATA DISCRIMINATION METHODS USING THE SAME

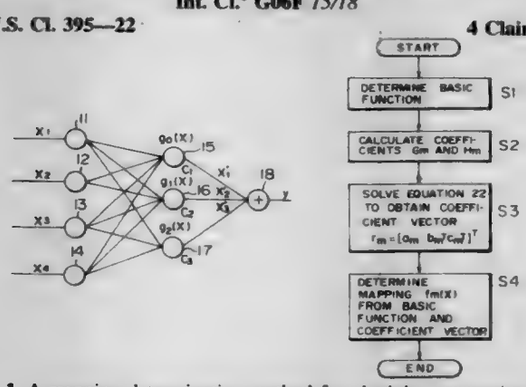
Katsuki Minamino, Tokyo; Masao Watari, Ibaragi; Miyuki Tanaka, Tokyo; Kazuo Ishii; Yasuhiko Kato, both of Kanagawa; Hiroaki Ogawa, Tokyo; Masanori Omote, Kanagawa; Kazuo Watanabe, and Hitoshi Honda, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1995, Ser. No. 540,948

Claims priority, application Japan, Oct. 28, 1994, 6-264948

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **4 Claims**



1. A mapping determination method for obtaining a mapping F from an N-dimensional metric vector space Ω_N to an M-dimensional metric vector space Ω_M, comprising the steps of:

a first step of setting L_m complete, periodic basic functions $g_{m,i}(X)$, where i is an integer in the range from 1 through L_m, according to a distribution of samples classified into Q categories on said N-dimensional metric vector space Ω_N;

a second step of expressing functions $f_m(X)$, where m=1, 2, . . . , N, each indicating the m-th component of said mapping F as a linear sum determined by said functions $g_{m,i}(X)$ and a set of L_m coefficients c_m;

a third step of providing Q teacher vectors $T_q=(t_{q,1}, t_{q,2}, t_{q,2}, \ldots t_{q,M})$ (where q=1, 2, . . . , Q) for said categories on said M-dimensional metric vector space Ω_M, calculating an estimation function J specified by the functions $f_m(X)$, said teacher vectors, and said distribution of samples, and determining values of said coefficients c_m which minimize said estimation function J; and

a fourth step of storing into memory said values of said coefficients c_m obtained in the third step, wherein said estimation function J is expressed as follows, where $E\{X\epsilon S_q\}x\ \{f(X)\}$ indicates a calculation for obtaining expected values of said functions $f_m(X)$ over all elements in learning samples S_q:

$$J=\sum_{q=1}^{Q} E\{X\epsilon S_q\}x\left\{\sum_{m=1}^{M}(f_m(X)-t_{q,m})^2\right\}.$$

wherein said values of the coefficients c_m which minimize said estimation function J are obtained by partially differentiating said estimation function J by said coefficients c_m, and setting the result to 0 in the third step, and wherein the third step further comprises the steps of:

calculating

$$G_m=\sum_{q=1}^{Q} E\{X\epsilon S_q\}x\{g_m(X)xg_m{}^T(X)\};$$

calculating

$$H_m=\sum_{q=1}^{Q} t_{q,m}xE\{X\epsilon S_q\}x\{g_m(X)\};$$

and

obtaining said values of said coefficients c_m from $G_m \times c_m - Hm = 0$.

5,796,922

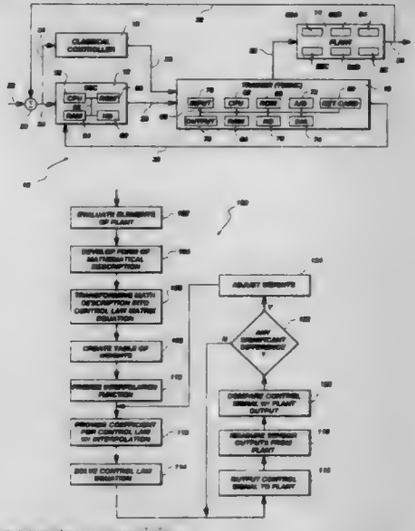
TRAINABLE, STATE-SAMPLED, NETWORK CONTROLLER

Jay L. Smith, Ogden, Utah, assignor to Weber State University, Ogden, Utah

Filed Mar. 29, 1996, Ser. No. 626,181

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—22 **21 Claims**



1. An apparatus comprising:

sensors connected to a plant for sensing outputs of the plant;

a memory device for storing a table of weights corresponding to state variables reflecting the outputs sampled at discrete locations in a range of a state space over which a form of a control law is operative, the form of the control law being represented by a matrix equation in terms of state variables having

unknown coefficients, and constituting a transformation into the state space of a form of a mathematical description of the plant; and

a programming processor for providing the unknown coefficients by interpolating the table of weights with an interpolation function, for solving the matrix equation, and for providing a control output reflecting a solution to the matrix equation.

5,796,923

METHODS AND APPARATUS FOR ESTIMATING UNKNOWN QUANTITIES

Tomoaki Ueda, 34-2 Ecchukitamachi, Nagaoka, Momoyama, Fushimi-ku, Kyoto-shi, Kyoto 612, Japan

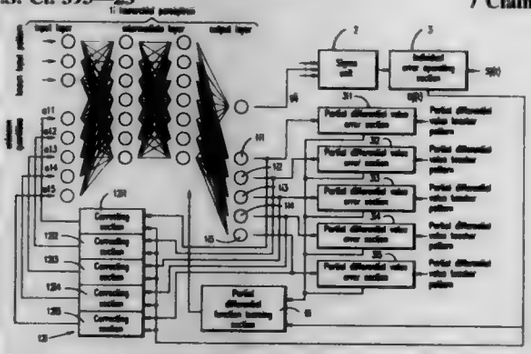
PCT No. PCT/JP92/01724, § 371 Date Jul. 6, 1994, § 102(e) Date Jul. 6, 1994, PCT Pub. No. WO93/13486, PCT Pub. Date Jul. 8, 1993

PCT Filed Dec. 25, 1992, Ser. No. 256,129

Claims priority, application Japan, Dec. 27, 1991, 3-346828

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—23 **7 Claims**



1. A method for estimating unknown quantities, comprising:

supplying arbitrary values corresponding to unknown quantities to each of a plurality of neural networks as a first group of inputs, supplying known values to each of the neural networks as a second group of inputs,

supplying a predetermined measurement value to the plurality of neural networks as a teacher pattern, each of the neural networks having multiple layers and a completed learning of a predetermined function,

repeatedly correcting the arbitrary values for each neural network, based upon partial differential values corresponding to the function value output of the neural network, so as to decrease a difference between the teacher pattern and a cumulative addition of the function value output for each neural network, and

obtaining the corrected arbitrary quantities which reduce the difference between the teacher pattern and the cumulative addition of the function value output for each neural network to the least value as estimated results of the unknown quantities.

5,796,924

METHOD AND SYSTEM FOR SELECTING PATTERN RECOGNITION TRAINING VECTORS

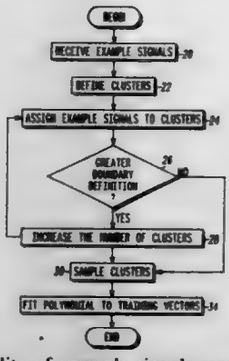
James H. Errico, Palatine, and Theodore Mazurkiewicz, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 19, 1996, Ser. No. 618,223

Int. Cl.[6] G06F *1/00;15/18*

U.S. Cl. 395—23 **32 Claims**

1. In a computer, a method of selecting a plurality of training vectors for a pattern recognition system, the method comprising the following steps:



receiving a plurality of example signals representing a plurality of classes within an example space, each of the plurality of example signals being associated with a respective class;

defining a plurality of clusters, each of the plurality of clusters being associated with one of the plurality of classes;

assigning the plurality of example signals to the plurality of clusters as a function of a plurality of cluster-example distances;

determining whether at least one decision boundary needs greater definition, if so, increasing in number the plurality of clusters and repeating the step of assigning;

selecting the plurality of training vectors by sampling of the plurality of example signals from each of the plurality of clusters; and

fitting a polynomial expansion to the plurality of training vectors using a least squares estimate, wherein the polynomial expansion has a form

$$y = a_0 + \sum_{i=0}^{n} b_i x_i + \sum_{i=0}^{n} \sum_{j=0}^{n} c_{ij} x_i x_j;$$

wherein x represents at least one element of a training vector, i, j, and n are integers, y represents a discriminant signal, a_0 represents a zero-order coefficient, b_i represents a first-order coefficient, and c_{ij} represents a second-order coefficient.

5,796,925

NEURAL DIGITAL PROCESSOR UTILIZING AN APPROXIMATION OF A NON-LINEAR ACTIVATION FUNCTION

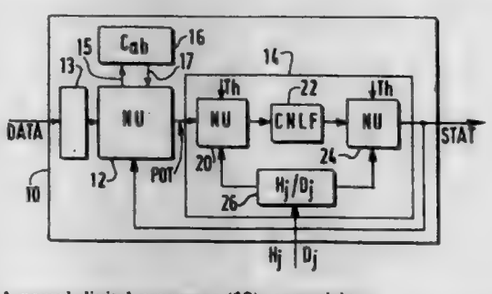
Yannick Deville, Villescresnes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 980,829, Nov. 24, 1992, abandoned. This application Feb. 6, 1995, Ser. No. 384,191

Claims priority, application France, Dec. 11, 1991, 91 15373

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—27 **17 Claims**



1. A neural digital processor (**10**), comprising:

a. an input (**13**) for receiving digital data and generating an output signal,

b. a neural unit (**12**) coupled to the input for calculating neural potentials, from the output signal, according to a function of the output signal and synaptic coefficients, said synaptic coef-

ficients are weight connections either between neurons or between neurons and the input,

c. memory (**16**) for storing said synaptic coefficients,

d. means (**14**) for subjecting at least one of the neural potentials, designated POT, to at least one approximative non-linear activation function ANLF which is formed by n segments in order to produce at least one neural state, said means (**14**) comprising another neural digital processor which comprises:

I. means (**20**) for calculating n combinations, $M_j=H_j \cdot POT+Th_j$, where

n is an integer;

j is an integer such that $1 \leqq j \leqq n$;

H_j are predetermined synaptic coefficients; and

Th_j are thresholds,

II. means (**22**) for calculating states $S_j=F(M_j)$, using another non-linear function CNLF which is formed by

A. a segment F(x), where x is a running independent variable, which segment is not constant when x is situated in an interval $(-x_{min}, x_{max})$, and

B. two segments $F(x)=F_{max}$ and $F(x)=-F_{min}$ when $x \geqq x_{max}$ and $x \leqq -x_{min}$, respectively,

III. means (**24**) for linearly combining the states with further synaptic coefficients D_j in order to produce said at least one neural state STAT.

5,796,926

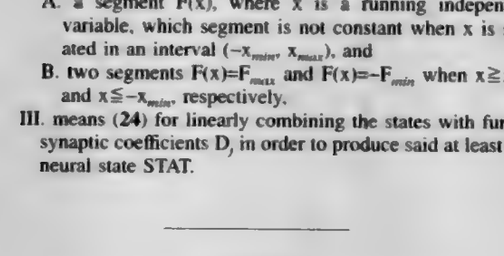
METHOD AND APPARATUS FOR LEARNING INFORMATION EXTRACTION PATTERNS FROM EXAMPLES

Scott B. Huffman, Menlo Park, Calif., assignor to Price Waterhouse LLP, New York, N.Y.

Filed Jun. 6, 1995, Ser. No. 469,981

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—77 **5 Claims**



1. In a computer-based information extraction system having text as input and events as output, a method for learning information extraction patterns for use in logging events, said learning method comprising the steps of:

a) presenting an example sentence to a pattern learning engine;

b) identifying to said pattern learning engine a valid event, said valid event comprising a set of syntactic constituents from within said example sentence; and

c) determining whether said example sentence and its corresponding valid event is not already matched by any known pattern, wherein said determining step comprises:

segmenting said example sentence into in a series of syntactic constituents, each said syntactic constituent containing a head word/head entity characterizing said syntactic constituent; and

matching each said head word/entity and selected other syntactic properties of said series of syntactic constituents against said known patterns in order to verify plausibility of specific syntactic relationships between said syntactic constituents of the event under test;

and, if the example sentence and its valid event are not matched by any of said known patterns,

d) attempting to generalize one of said known patterns to match the example sentence with its corresponding valid event; and, if no acceptable resultant pattern is produced,

e) building, in said learning engine, a new grammar pattern based on said example sentence and its corresponding valid event, for use in constructing subsequent valid events from subsequent input sentences which are input to said information extraction system.

5,796,927

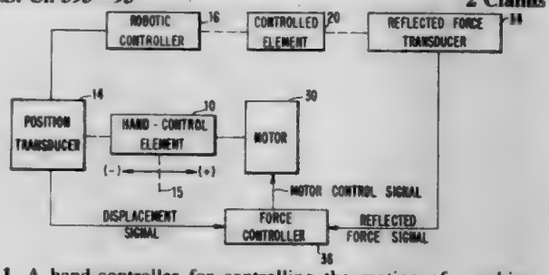
RATE MODE HAND CONTROLLER WITH FORCE REFLECTION

Jeff Hegg, North Redington Beach, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 416,946, Apr. 4, 1995, abandoned, which is a continuation of Ser. No. 149,018, Nov. 10, 1993, abandoned, which is a continuation of Ser. No. 715,825, Jun. 14, 1991, abandoned. This application Jan. 23, 1997, Ser. No. 787,780

Int. Cl.[6] G06F *15/46;* **G05B** *19/18*

U.S. Cl. 395—95 **2 Claims**



1. A hand-controller for controlling the motion of an object, characterized by:

position sensing means for providing a position signal that manifests a change in position of the hand-controller;

first actuator means for moving the object at a velocity that is a function of the magnitude of the position signal;

force sensing means for providing a force signal that manifests a force applied by the first actuator means to the object;

second actuator means for providing a tactile feel to the hand-controller by applying force to the hand-controller as a function of the magnitude of a control signal; and

control means for varying the magnitude of the control signal as a function of the sum of the position signal and the force signal.

5,796,928

IMAGE READING APPARATUS WITH AUTOMATIC DOCUMENT FEEDER

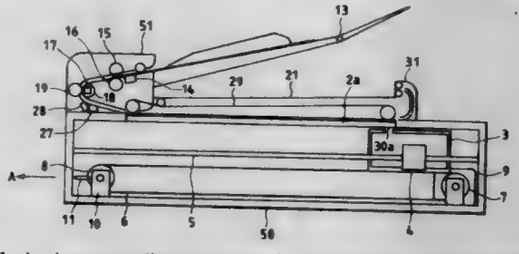
Yuuji Toyomura, Fukuoka, and Toshihumi Abe, Kitakyushu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 15, 1995, Ser. No. 388,796

Claims priority, application Japan, Feb. 22, 1994, 6-023920

Int. Cl.[6] G06K *15/00;* **H04N** *1/04;1/46*

U.S. Cl. 395—106 **20 Claims**



1. An image reading apparatus for outputting an image signal comprising:

a transporting portion, having a transporting pass, for transporting a copy along said transporting pass in a sub-scanning direction at a predetermined feeding rate;

a first image reading portion, provided on the way of said transporting pass for reading an image on said copy through scanning said image in a main scanning direction in a scan-

ning cycle to produce said image signal when said transporting portion is transporting said copy;

a second image reading portion, provided on the way of said transporting pass upstream from said first image reading portion, for reading said image;

a statistic amount measuring portion for accumulating samples of said image from an output of said second image reading portion to determine a statistical quantity relating to said image;

an attribution detection portion for detecting an attribution of said image on the basis of said measured statistic quantities; and

a control portion for changing said cycle in accordance with an output of said attribution detection portion.

5,796,929

BANDING AND INK-BLEEDING REDUCTION IN CLUSTER DITHER BY SCREEN DISPLACEMENT

Joseph S. Shu, and Chia-Hsin Li, both of San Jose, Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 24, 1996, Ser. No. 741,426

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—109 **36 Claims**



1. For operating an ink-jet printing mechanism to produce a display in response to electrical source-image signals representing a source image consisting of a plurality of image components associated with respective color components and collectively specified by values of an array of pixels of which the image consists, the value of each pixel consisting of a plurality of relatively fine-resolution component values associated with that pixel, a method comprising the steps of:

A) performing a sequence of at least one image-revision step, in which sequence each image-revision step receives electrical signals representing an input image consisting of input pixels and produces therefrom electrical signals representing an output image consisting of output pixels, the input image of a first image-revision step is the source image, the input image of any subsequent image-revision step is the output image of a preceding image-revision step, and one said image-revision step is a half-toning step, the input pixels of whose input image collectively specify a plurality of half-tone-input color-component images, the value of each input pixel of the half-toning step's input image including fine-resolution half-tone-input color-component values associated with respective ones of the half-tone-input color-component images, the half-toning step including:

i) performing a half-toning operation on a first of the half-tone-input color-component images by comparing the first half-tone-input color-component image's fine-resolution half-tone-input color-component values with quantization thresholds of a first clustered-dot-dither array thereof; and

ii) performing a half-toning operation on a second of the half-tone-input color-component images by comparing the second half-tone-input color-component image's fine-resolution half-tone-input color-component values with quantization thresholds of a second clustered-dot-dither array thereof, the quantization thresholds of the first and second clustered-dot-dither arrays forming clusters that are spatially offset from each other; and

B) applying to the ink-jet printing mechanism electrical command signals that represent the output of a last image-revision step.

5,796,930

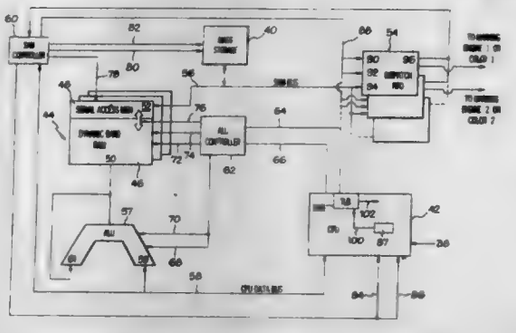
SYSTEM ARCHITECTURE FOR PROCESSING AND TRANSPORTING PAGE-MAP OR BIT-MAP DATA TO A RASTER PRINT ENGINE

Forrest P. Gauthier, Maineville, and Dimitrije L. Jovic, Cincinnati, both of Ohio, assignors to Varis Corporation, Mason, Ohio

Filed Nov. 13, 1995, Ser. No. 558,007

Int. Cl.[6] G09G *5/36*

U.S. Cl. 395—116 **20 Claims**



1. An apparatus for processing raster page-map data for transmission to a marking engine, the page-map data being broken up into a plurality of non-overlapping, contiguous raster image data blocks, the apparatus comprising:

a central processing unit;

a dual-port memory device having a dynamic band RAM for storing a plurality of image data blocks, and a serial access memory for storing at least one image data block;

mapping means, initiated by said central processing unit, for reading an image data block from said dynamic band RAM, modifying the image data block and writing the image data block back to said dynamic band RAM; and

dispatching means, initiated by said central processing unit, for transferring another image data block from said serial access memory to the raster printer;

wherein said mapping means and said dispatching means are performed in parallel.

5,796,931

IMAGE DATA CONVERTING METHOD AND IMAGE PROCESSING APPARATUS

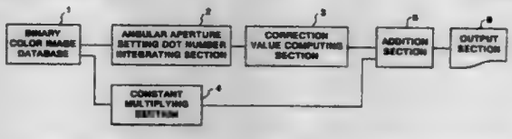
Mitsumasa Sugiyama, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 575,863, Aug. 31, 1990, abandoned. This application Jun. 6, 1994, Ser. No. 254,434

Claims priority, application Japan, Sep. 5, 1989, 1-229786; Sep. 5, 1989, 1-229787; Sep. 5, 1989, 1-229790; Jan. 25, 1990, 2-13584

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—131 **17 Claims**



1. A color image converting method comprising the steps of:

inputting binary color image data consisting of first color components;

converting the binary color image data into m-state color image data (where m>2) consisting of first color components;

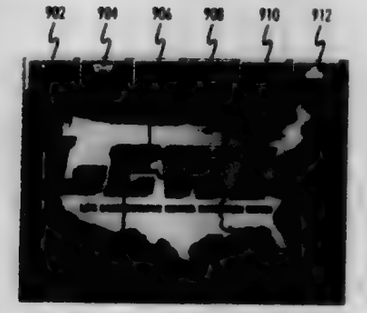
converting the m-state color image data into m-state color image data consisting of second color components; and

performing a masking process on the m-state color image data consisting of second color components in accordance with a color reproducing characteristic of an output section.

5,796,932
USER INTERFACE FOR GRAPHICALLY DISPLAYING THE IMPACT OF WEATHER ON MANAGERIAL PLANNING

Frederick D. Fox, Wayne; Douglas R. Pearson, Wyomissing, both of Pa.; Diane Caine, Newark, Del.; Andrew Kenney, Glen Mills, Pa.; Richard A. Morris, Harrogate, England; Steve A. Beck; Cathy J. Beck, both of Chadds Ford, Pa., and Robert J. Chu, Chicago, Ill., assignors to Strategic Weather Services, Wayne, Pa.

Continuation of Ser. No. 181,560, Jan. 14, 1994, abandoned. This application Jul. 20, 1995, Ser. No. 504,952
Int. Cl.[6] G06F *15/00;17/60*
U.S. Cl. 395—161 13 Claims



907

1. A graphical user interface in a computer based system, comprising:

a plurality of computer based databases having stored therein weather data and sales data, said sales data including prior actual sales data, prior deweatherized sales data, predicted sales data, and predicted weatherized sales data;

command receiving means for receiving a command from an operator;

determining means for determining whether said command designates a location analysis function; and

location analysis performing means, responsive to said determining means, for performing location analysis if said command designates a location analysis function;

wherein said location analysis performing means comprises:

means for prompting the operator for a time period;

means for receiving from the operator information identifying a time period;

geographical area image displaying means for displaying an image of a geographical area having a plurality of metropolitan statistical areas (MSAs);

weather data retrieving means for retrieving from said databases weather data for said time period and said geographical area;

weather data displaying means for displaying over said image of said geographical area graphical objects that represent said weather data;

MSA selecting means for enabling the operator to select one of said MSAs;

means, responsive to said MSA selecting means, for receiving from the operator information that identifies a MSA selected by the operator; and

MSA-level product report displaying means for displaying a MSA-level product report containing information corresponding to said MSA selected by the operator, said MSA-level product report displaying means comprising:

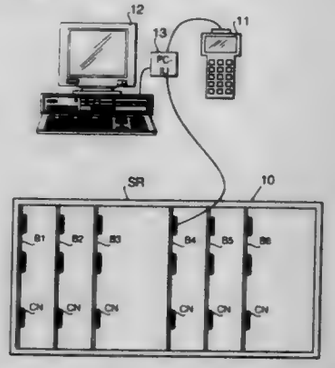
means for retrieving from said databases prior actual sales data, prior deweatherized sales data, predicted sales data, and predicted weatherized sales data for said MSA selected by the operator; and

means for displaying said prior actual sales data, prior deweatherized sales data, predicted sales data, and predicted weatherized sales data in said MSA-level product report.

5,796,933
BACK-UP METHOD FOR EQUIPMENT SETTINGS

Aarto Aitoniemi, Nurmijarvi, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI95/00061, § 371 Date Aug. 12, 1996, § 102(e) Date Aug. 12, 1996, PCT Pub. No. WO95/22105, PCT Pub. Date Aug. 17, 1995
PCT Filed Feb. 13, 1995, Ser. No. 693,199
Claims priority, application Finland, Feb. 14, 1994, 940688
Int. Cl.[6] H05K *10/00*
U.S. Cl. 395—180 12 Claims



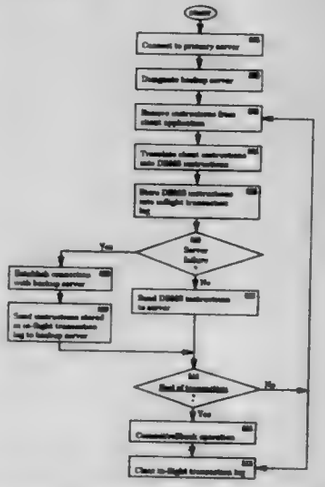
1. A back-up method for equipment settings of electronic equipment which has a plurality of parallel board units located in a subrack comprising the steps of:

storing set data of each board unit in a first storage area of that board unit; storing a back-up copy of the set data of each board unit initially, in connection with outfitting said subrack with each said board unit said storing including storing the respective addresses of two of said board units in the set data for each board unit in such a way that a first address indicates another said board unit in which is stored a back-up copy of the set data of the respective board unit, and a second address indicates a respective other one of said units a back-up copy of the set data of which is stored in the respective board unit.

5,796,934
FAULT TOLERANT CLIENT SERVER SYSTEM

Pradeep Bhanot, Redwood Shores, Calif., and Paul Jackson, Philadelphia, Pa., assignors to Oracle Corporation, Redwood Shores, Calif.

Filed May 31, 1996, Ser. No. 656,665
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.02 15 Claims



1. In a client/server computer system, a method for providing fault tolerance, comprising the steps of:

establishing a connection from a client computer to a primary server computer;

designating a backup server computer for processing transactions from the client if the primary server becomes disabled, wherein the transactions are processed according to database management system (DBMS) instructions;

storing connection information for connecting the client to the backup server;

storing in-flight client transaction information by a log writing process for completing in-flight transactions without user intervention if the primary server becomes disabled;

determining whether the primary server is disabled, wherein if the primary server becomes disabled:

A) establishing a connection from the client to the backup server;

B) submitting the in-flight transaction information to the backup server;

C) completing the in-flight transactions on the backup server;

D) routing subsequent transactions from the client to the backup server for processing.

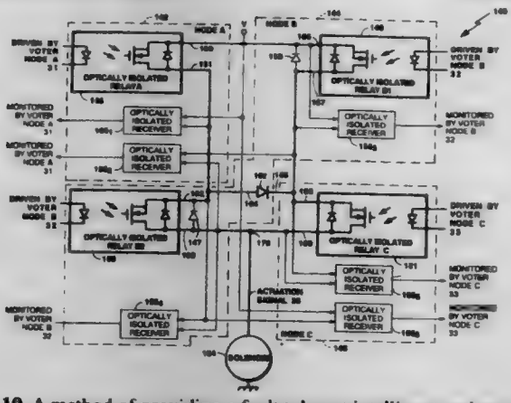
5,796,935
VOTING NODE FOR A DISTRIBUTED CONTROL SYSTEM

Brian D. Morrison, Hopkinton; Martin R. Batten, North Grafton; Michael N. Robillard, Shrewsbury, and Creig E. Wienke, Holliston, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 20, 1995, Ser. No. 504,942

Int. Cl.[6] G06F *11/18*

U.S. Cl. 395—182.09 **10 Claims**



10. A method of providing a fault tolerant intelligent voting node in a fault tolerant distributed control system having a plurality of intelligent nodes interconnected by at least one communication media comprising the steps of:

providing at least three redundant processing elements, each of said redundant processing elements connected to said communication media;

receiving internode messages from said communication media and processing said internode messages by each of said redundant processing elements, said processing elements generating device actuation commands;

generating a first actuation signal;

generating a second actuation signal;

generating a third actuation signal;

providing a first optically isolated relay responsive to the first activation signal and having a first and a second output lead; a second optically isolated relay responsive to the second activation signal and having a first and a second output lead; a third optically isolated relay responsive to the second activation signal and having a first and a second output lead; and a fourth optically isolated relay responsive to the third activation signal and having a first and a second output lead; said first output lead of said first optically isolated relay connected to said first output lead of said third optically isolated relay; said second output lead of said first optically isolated relay connected to said first output lead of said second optically isolated relay; said second output lead of said third optically isolated relay connected to said first output lead of said fourth optically isolated relay; and a diode having a first lead and a second lead, said first lead of said diode connected to said first output lead of said second optically isolated relay and said second lead of said diode connected to said first output lead of said fourth optically isolated relay for providing an actuation signal when at least two of the activation signal are similar; and

providing fault isolation and fault containment with optically isolated receivers.

5,796,936
DISTRIBUTED CONTROL SYSTEM IN WHICH INDIVIDUAL CONTROLLERS EXECUTED BY SHARING LOADS

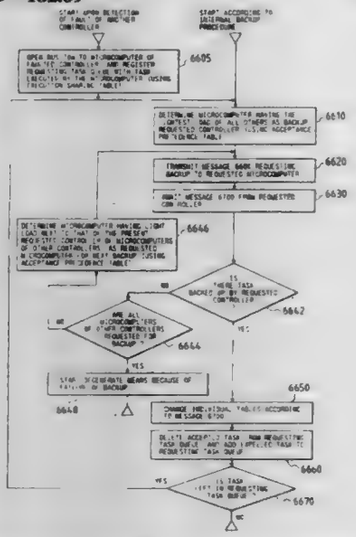
Mitsuru Watabe, Urizura-machi, and Hiromasa Yamaoka, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 203,295, Mar. 1, 1994, abandoned. This application Feb. 14, 1997, Ser. No. 801,923

Claims priority, application Japan, Mar. 1, 1993, 5-39643

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—182.09 **21 Claims**



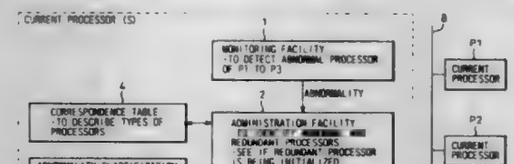
1. A distributed control system comprising a plurality of controllers each having a plurality of tasks to be executed; for controlling said controllers in a distributed manner,

wherein each of said controllers includes detect means for detecting a fault or overload condition of another controller; memory means for detecting and storing information indicating a priority and a load factor of each task of said controllers; and backup means for distributing tasks of a faulty or overloaded controller, when a fault or overload condition is detected by said detect means and the faulty or overloaded controller is specified, to at least one controller selected to serve as a backup controller, a distributing of respective said tasks being decided in accordance with both priorities and load factors indicated in said memory means.

5,796,937
METHOD OF AND APPARATUS FOR DEALING WITH PROCESSOR ABNORMALITY IN MULTIPROCESSOR SYSTEM

Yoshitaka Kizuka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 29, 1995, Ser. No. 536,739
Claims priority, application Japan, Sep. 29, 1994, 6-235422
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.11 **4 Claims**



1. In a multiprocessor system having processors for processing distributed processes, a monitoring facility for detecting an abnormality in any one of the processors, an administration facility for providing information about an abnormal processor and information about a redundant processor, and a work allocation facility for seeking the distributed processes of the abnormal processor from a work table according to these pieces of information and allocating the distributed processes of the abnormal processor to given ones of the processors, a method of dealing with the abnormal processor comprising:

storing in an abnormality measures table data that describes actions to be taken for each of the distributed processes in response to an abnormality;

determining by the work allocation facility, for each of the distributed processes of the abnormal processor, an action to be taken according to the abnormality measures table and allocating the distributed processes of the abnormal processor to given ones of the processors accordingly;

managing by the administration facility to determine information about a possibility of the abnormality being recursive;

suspending by the work allocation facility an allocation of the distributed processes to the processors and reallocating the distributed processes to each processor for rerun or continuation if the administration facility notifies that the abnormality may be recursive;

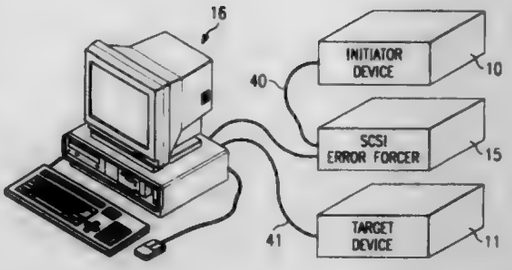
managing by the administration facility to determine information about whether the redundant processor is being initialized; and

delaying by the work allocation facility an allocation of any process to the redundant processor if the administration facility notifies that the redundant processor is being initialized.

5,796,938
DIAGNOSTIC SUBSYSTEM AND METHOD FOR SCSI INTERFACE

Robert George Emberty; Craig Anthony Klein, and Felix Joseph Misewich, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1996, Ser. No. 763,792
Int. Cl.[6] G06F *11/26*
U.S. Cl. 395—183.03 **12 Claims**



1. A diagnostic subsystem for use with a Small Computer System Interface (SCSI), said interface having a plurality of lines connecting an initiator system and a target system, said diagnostic subsystem comprising:

a set of line drivers for providing a range of signals, said set of line drivers comprising a pair of line drivers for each line of, respectively, the initiator and target systems;

a set of switches for selectively connecting said initiator system and said target system to each other or to said line drivers, said set of switches comprising a pair of switches for, respectively, the initiator and target systems;

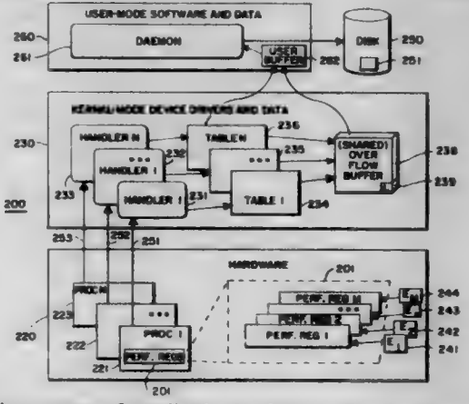
a set of sense lines connected to said initiator system and to said target system, said set of sense lines comprising a pair of sense lines connected to each line of, respectively, the initiator and target systems; and

a controller for selectively operating selected ones of said switches to disconnect said initiator and said target systems and connect selected ones of said line drivers at selected lines of said Interface, operating said selected line drivers to selectively provide selected signals within said range to said Interface, said controller selectively operating said selected ones of said switches and operating said selected line drivers upon sensing a selected phase of operation of said Interface at said sense lines, and said controller selectively operating said selected switches and said selected line drivers upon sensing said selected phase of operation and upon a generation of request signal by one of said initiator or target systems at said Interface a selected number of times.

5,796,939
HIGH FREQUENCY SAMPLING OF PROCESSOR PERFORMANCE COUNTERS

Lance M. Berc, Menlo Park; Sanjay Ghemawat, Mountain View; Monika H. Henzinger; Richard L. Sites, both of Menlo Park; Carl A Waldspurger, Atherton, and William E. Weihl, San Francisco, all of Calif., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 10, 1997, Ser. No. 812,899
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—184.01 **18 Claims**



1. An apparatus for collecting performance data in a computer system including a plurality of processors for concurrently executing instructions of a program, comprising:

a plurality of performance counters coupled to each processor, the performance counters for storing performance data generated by each processor while executing the instructions;

an interrupt handler executing on each processors, the interrupt handler for sampling the performance data of the processor in response to interrupts;

a first memory including a hash table associated with each interrupt handler, the hash table for storing the performance data sampled by the interrupt handler executing on the processor;

a second memory including an overflow buffer, the overflow buffer for storing the performance data while portions of the hash tables are being flushed;

a third memory including a user buffer; and

means for periodically flushing the performance data from the hash tables and the overflow buffer to the user buffer.

5,796,940

METHOD FOR EXECUTING SOFTWARE PROGRAM AND CIRCUIT FOR IMPLEMENTING THE METHOD

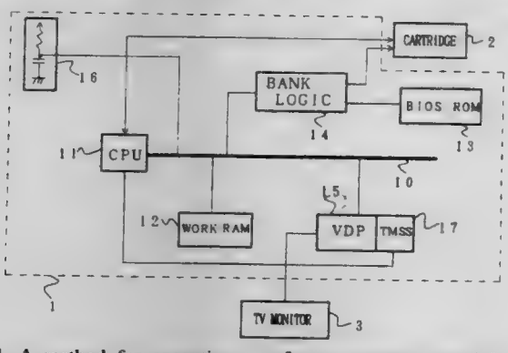
Takeshi Nagashima, Tokyo, Japan, assignor to Sega Enterprises, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 335,848, Jan. 27, 1995, abandoned. This application Jun. 6, 1995, Ser. No. 466,207

Claims priority, application Japan, Mar. 10, 1993, 5-76299

Int. Cl.[6] G06F *1/00;12/06;7/58*

U.S. Cl. 395—186 **11 Claims**



1. A method for executing a software program stored in an external memory, using console equipment which includes a CPU and a BIOS ROM, said method comprising the steps of:

(a) bank switching from the BIOS ROM to the external memory, to activate the external memory rather than the BIOS ROM without executing a BIOS program stored in the BIOS ROM;

(b) resetting the operation of the CPU while the external memory rather than the BIOS ROM is activated; and

(c) starting to read the software program with the CPU, after the CPU has been reset.

5,796,941

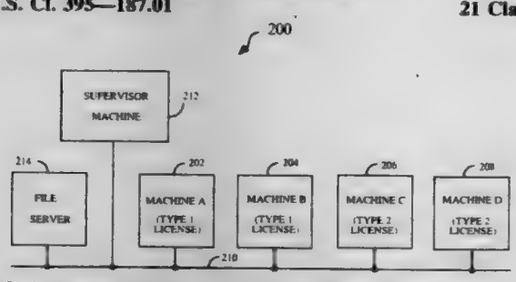
METHOD FOR SUPERVISING SOFTWARE EXECUTION IN A LICENSE RESTRICTED ENVIRONMENT

Mihai N. Litu, South San Francisco, Calif., assignor to Catalyst Semiconductor, Inc., Sunnyvale, Calif.

Filed Sep. 6, 1996, Ser. No. 708,941

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—187.01 **21 Claims**



1. A computer-implemented method for performing a job in a restricted software license environment, the software license environment having at least two machines, each of the machines capable of being licensed for at least a first class of operations or a second class of operations, and the job includes a number of portions, a first portion of the job requires the first class of operations and a second portion of the job requires the second class of operations, said computer-implemented method comprising:

(a) submitting the job for processing on a first machine;

(b) determining whether the job stopped before completion due to a license violation;

(c) determining at what point in the job the job was stopped when it is determined that the job has stopped before completion; and

(d) thereafter resuming the job to a second machine to continue processing the job at the point just after the point where the job was determined to have stopped, said resuming includes at least the operations of,

identifying the licensed machines that are licensed to perform the second class of operations;

selecting one of the identified licensed machines; and

forwarding the second portion of the job to the selected one of the identified licensed machines for processing thereon.

5,796,942

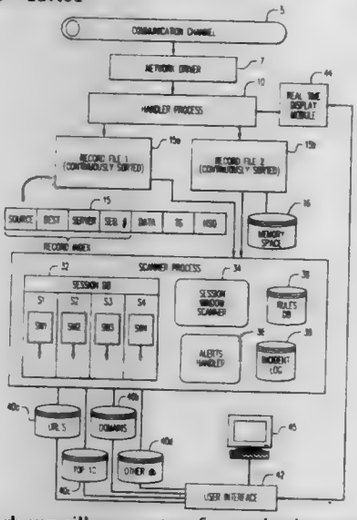
METHOD AND APPARATUS FOR AUTOMATED NETWORK-WIDE SURVEILLANCE AND SECURITY BREACH INTERVENTION

Daniel Esbensen, Kihei, Hi., assignor to Computer Associates International, Inc., Islandia, N.Y.

Filed Nov. 21, 1996, Ser. No. 749,352

Int. Cl.[6] G06F *11/00;13/00*

U.S. Cl. 395—187.01 **20 Claims**



1. A network surveillance system for conducting surveillance on a network independent of a network server comprises:

a network driver for capturing data on a network, said data not necessarily addressed to said surveillance system;

a handler process for receiving data from said network driver and storing said data in real time;

a plurality of record files for receiving network data and storing said data before further examination;

a scanner process for designating one of said plurality of record files as a receive file while reading data from another of said plurality of record files and for using said data to construct a plurality of session data streams, said session data streams providing a sequential reconstruction of network data traffic organized by session;

a session window scanner for reading a window of data in one of said plurality of session data streams;

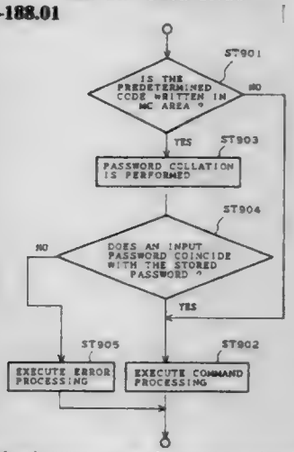
a set of surveillance rules defining data patterns which, when met, will trigger a surveillance alert; and

an alerts handler for responding to fired rules and taking defined actions.

5,796,943
COMMUNICATION APPARATUS

Shuzo Fujioka, Hyogo, Japan, assignor to Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Filed May 31, 1996, Ser. No. 655,888
Claims priority, application Japan, Jan. 26, 1996, 8-011899
Int. Cl.[6] G11B *23/28*
U.S. Cl. 395—188.01 **20 Claims**



1. A communication apparatus that communicates with an external apparatus, comprising:

a memory divided into a first area and a second area, the first area including a third area for storing a code indicating that access from the external apparatus to the memory requires a coincidence of a first password;

deciding means for deciding whether the code is stored in the third area;

password collating means for collating a first password sent from the external apparatus with a first password stored in the communication apparatus when the external apparatus accesses communication apparatus; and

access allowing means for allowing access from the external apparatus to the second area if the first password from the external apparatus coincides with the first password stored in the communication apparatus as a result of a collation of the password collating means when the code is stored in the third area and for allowing access from the external apparatus to the first area or to the second area regardless of a result of the first password collation of the password collating means when the code is not stored in the third area.

5,796,944
APPARATUS AND METHOD FOR PROCESSING DATA FRAMES IN AN INTERNETWORKING DEVICE

Shannon Q. Hill, Westford, and Christopher P. Lawler, Wellesley, both of Mass., assignors to 3Com Corporation, Santa Clara, Calif.

Filed Jul. 12, 1995, Ser. No. 501,500
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.8 **22 Claims**

1. An internetworking device comprising:

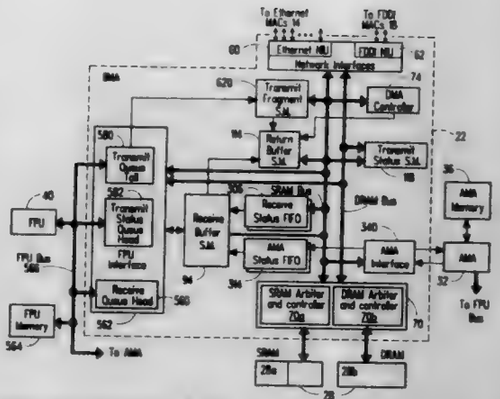
a buffer management circuit for providing addresses;

a memory having a plurality of addresses stored therein; and

an address management circuit, coupled to said buffer management circuit and said memory, said address management circuit for receiving addresses from said buffer management circuit and for searching addresses in said memory, wherein said address management circuit includes:

a search engine having first and second search circuits for simultaneously searching for first and second addresses in said memory; and

a network processor unit coupled to said search engine for accessing said memory and for providing an indication of a last address stored in said memory to said search engine,



wherein each of said first and second search circuits of said search engine comprise:

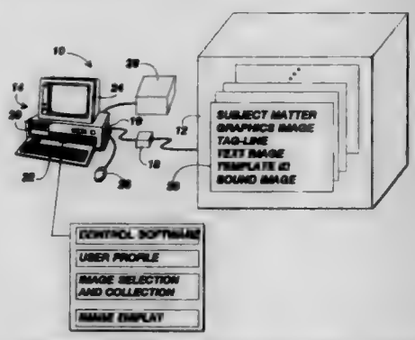
a comparator having a first input terminal coupled to receive an address from said buffer management circuit and a second input terminal coupled to receive an address retrieved from said memory, wherein said comparator compares a first address received from said buffer management circuit and a second address received from said memory and provides an output indication thereof; and

a math unit, coupled to said comparator, said math unit for searching said memory and for identifying a next address to be provided to the second terminal of said comparator from said memory.

5,796,945
IDLE TIME MULTIMEDIA VIEWER METHOD AND APPARATUS FOR COLLECTING AND DISPLAYING INFORMATION ACCORDING TO USER DEFINED INDICIA

Robert M. Tarabella, 824 Wood Hollow Dr., Marietta, Ga. 30067

Filed Jun. 7, 1995, Ser. No. 478,105
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—200.9 **24 Claims**



1. An apparatus for displaying images during idle time of a personal computer, comprising:

means for generating a set of user-defined indicia of images comprising audio, graphics, or text, to collect from a selected database of a plurality of image collections for creating individualized selected sets of image collections of interest to a user of a personal computer for subsequent display of the graphics or text images on a video terminal of said personal computer or display of audio images by communicating sound from said personal computer during idle time as defined by said user of said personal computer;

means for collecting said sets of image collections based on said set of user-defined indicia of images to collect, said collecting of said sets of image collections occurring automatically at user-specified instances whereby said sets of image collec-

tions are communicated from said database of image collections to said personal computer of the user;

means for displaying repeatedly in a sequence of images, representative portions of said sets of image collections during said idle time of said personal computer; and

means for displaying upon user selection during display of one of said representative portions the one of the sets of image collections corresponding to said one representative portion.

5,796,946

MULTI-PROCESSOR SYSTEM BARRIER SYNCHRONIZER NOT REQUIRING REPEATED INTIALIZATIONS OF SHARED REGION

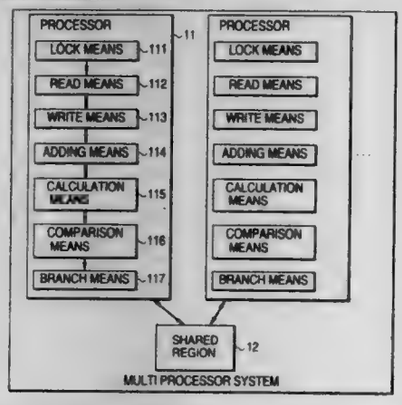
Shoichi Sakon, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 10, 1994, Ser. No. 339,278

Claims priority, application Japan, Nov. 29, 1993, 5-297945

Int. Cl.[6] G06F *15/16*

U.S. Cl. 395—200.19 **8 Claims**



1. A barrier synchronizer of a multi-processor system having a plurality of processors and a shared region shared by each of said processors, each processor comprising:

a lock means for exclusively locking the shared region;

a read means for reading a value of the shared region locked by the lock means;

an adding means for adding a predetermined value to said value to generate an added value;

a write means for writing the added value to the shared region;

a calculation means for calculating a next barrier value based on the added value, the next barrier value representing a value of the shared region at a time when all the processors will have reached a synchronized condition;

a comparison means for comparing the added value with the next barrier value; and

a branch means for branching to a next process when said comparison means determines that all the processors have reached the synchronized condition, and for queuing until all the processors have reached the synchronized condition when said comparison means determines that all the processors have not reached the synchronized condition.

5,796,947

Patent Not Issued For This Number

5,796,948

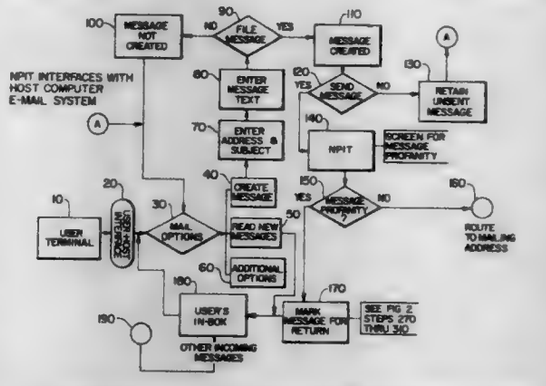
OFFENSIVE MESSAGE INTERCEPTOR FOR COMPUTERS

Elliot D. Cohen, 2601 SE. Solana La., Port St. Lucie, Fla. 34952

Filed Nov. 12, 1996, Ser. No. 745,650

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.36 **12 Claims**



1. An automated network offensive message interception method comprising the steps of:

(a) incorporating a network profanity interception technology "NPIT" software means onto an existing network computer system said NPIT software means having preprogrammed definitions and being operative to recognize forms of profanity included by any message creator, said profanity being network defined and within accepted parameters of said network use and selected from the group consisting of vulgar language, hateful, threatening and defamatory speech, derogatory labels and terms of race, religion, gender, sexual orientation and sexually degrading, obscene, lewd or pornographic messages in all natural and artificial languages;

(b) screening electronic messages transported through said network computer system for offensive messages for one of said forms of profanity;

(c) activating a flagging means for marking offensive messages screened by said NPIT software means; and

(d) preventing the transmission of said offensive messages by returning said messages to the creator via a method that is fully automated and therefore does not involve human intervention.

5,796,949

VIDEO DATA SENDING DEVICE AND DATA HIGH-RATE RETURNING DEVICE FOR SENDING A DATA THROUGH A COMPUTER NETWORK

Takashi Ishida; Yasuhiro Yoshida, both of Osaka, and Hideyuki Oka, Neyagwa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1995, Ser. No. 529,568

Claims priority, application Japan, Sep. 20, 1994, 6-225193; Nov. 14, 1994, 6-279509

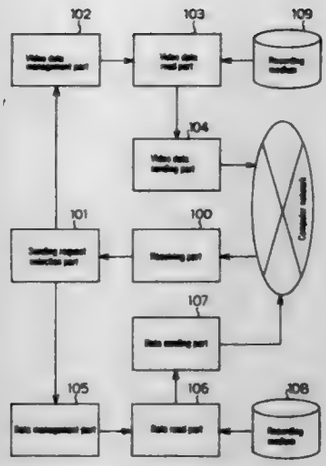
Int. Cl.[6] G06F *15/16*; **H04N** *7/14*

U.S. Cl. 395—200.47 **16 Claims**

1. A video data sending device, comprising:

a receiving part for receiving a sending request sent from each of plural terminals to receive either video data or data other than video data, the video data being stored in a video data storing part, the data other than video data being stored in a data storing part;

a sending request selection part for selectively determining whether the sending request received by said receiving part is either the one relating to the video data or the one relating to the data other than video data;



a video data management part which where the sending request selectively determined by said sending request selection part is the one relating to the video data, executes sending control of the video data;

a video data read part for reading the video data from said video data storing part according to the sending control of the video data;

a video data sending part for returning the video data read by said video data read part to a terminal corresponding to the send request;

a data management part which where the sending request selectively determined by said sending request selection part is the one relating to the data other than video data, executes sending control of the data;

a data read part for reading the data other than video data from said data storing part according to the sending control of the data; and

a data sending part for returning the data other than video data read by said data read part to said terminal corresponding to the sending request.

5,796,950

METHOD OF DETECTING SERVICE INTERACTIONS IN INTELLIGENT NETWORKS

Johan Willem Sips, Voorburg; Alfonsius Antonius Johannes Melisse, Rijen; Eric Bryan Kuisch, Gouda, and Ronaldus Gerardus Johannes Janmaat, Voorschoten, all of Netherlands, assignors to Koninklijke PTT Nederland N.V., Groningen, Netherlands

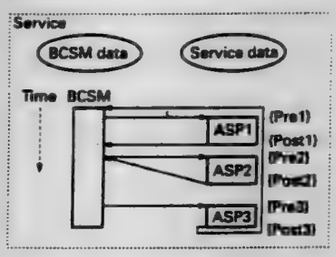
PCT No. PCT/EP95/00460, § 371 Date Aug. 9, 1996, § 102(e) Date Aug. 9, 1996, PCT Pub. No. WO95/22231, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 9, 1995, Ser. No. 687,426

Claims priority, application European Pat. Off., Feb. 9, 1994, 94200299

Int. Cl.[6] B42F *17/34*

U.S. Cl. 395—200.48 **3 Claims**



1. A method of detecting interactions of services in networks having stations which are selectively connectable together during a basic call state, the method comprising:

establishing a model of the basic call state;

modeling said services as external states of the basic call state model;

pairwise comparing features of the services during an established call between at least two of the stations, wherein the features include conditions associated with the services, the conditions comprising preconditions defining the state of the basic call state model prior to execution of a service, post conditions defining the state of the basic call state model after execution of the service, global conditions defining a condition of the basic call state model during an entire call, global preconditions defining a condition of the basic call state model during the call until the execution of the service, and global post conditions defining a condition of the basic call state model during the call after execution of the service.

5,796,951

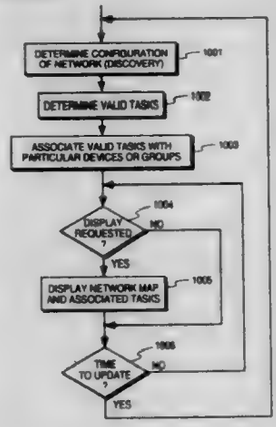
SYSTEM FOR DISPLAYING INFORMATION RELATING TO A COMPUTER NETWORK INCLUDING ASSOCIATION DEVICES WITH TASKS PERFORMABLE ON THOSE DEVICES

John F. Hamner, Pleasant Grove; Sandra Janich, Salt Lake City; Jeffrey L. Despain, Pleasant Grove; Katherine D. Niemann, Orem; Brian D. Sevy, Lehi, all of Utah; Dzung D. Tran, Beaverton, and Frank K. Welch, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 22, 1995, Ser. No. 577,875

Int. Cl.[6] G06F *15/177*

U.S. Cl. 395—200.53 **39 Claims**



1. A method of displaying information relating to a computer network, the network including a plurality of devices, each of a plurality of tasks being performable upon at least one of the devices, the method comprising the steps of:

determining a present state of the network, the present state of the network including a present configuration of the network;

storing data representing the present state of the network in a database;

determining for each of the devices the tasks which may be performed; and

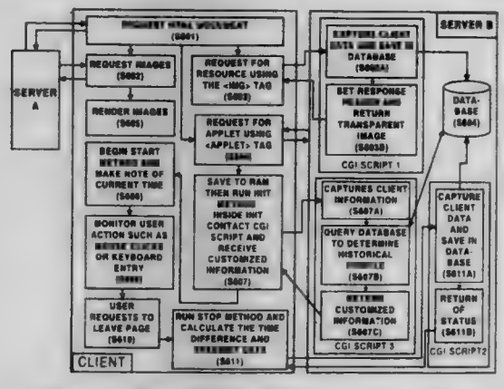
generating a display corresponding to the present state of the network, wherein the display includes an association of the devices with the tasks performable on the devices.

5,796,952

METHOD AND APPARATUS FOR TRACKING CLIENT INTERACTION WITH A NETWORK RESOURCE AND CREATING CLIENT PROFILES AND RESOURCE DATABASE

Owen Davis, New York, and Vidyut Jain, Brooklyn, both of N.Y., assignors to Dot Com Development, Inc., New York, N.Y.

Filed Mar. 21, 1997, Ser. No. 821,534
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.54 **71 Claims**



1. In a computer network having one or more servers connectable to one or more clients, a method of monitoring the amount of time a user interacts with and displays a file downloaded from a server, comprising the steps of:

using a client to specify an address of a resource located on a first server;

downloading a file corresponding to the resource from the first server in response to specification of the address;

using the client to specify an address of a first executable program located on a second server, the address of the first executable program being embedded in the file downloaded from the first server, the first executable program including a software timer for monitoring the amount of time the client spends interacting with and displaying the file downloaded from the first server;

downloading the first executable program from the second server to run on the client so as to determine the amount of time the client interacts with the file downloaded from the first server;

using a server to acquire client identifying indicia from the client; and

uploading the amount of time determined by the first executable program to a third server.

5,796,953

SYSTEM HAVING USER TERMINAL CONNECTING TO A REMOTE TEST SYSTEM VIA THE INTERNET FOR REMOTELY TESTING COMMUNICATION NETWORK

David A. Zey, Fuquay-Varina, N.C., assignor to MCI Communications Corporation, Washington, D.C.

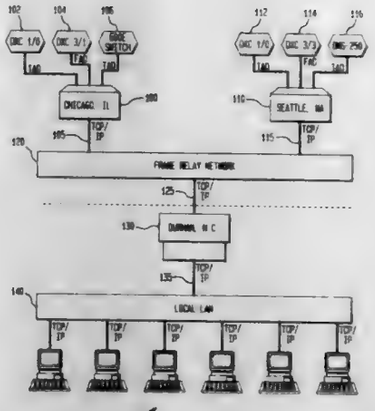
Filed Jun. 21, 1996, Ser. No. 667,311
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.57 **10 Claims**

1. A method for connecting to a remote test system coupled with a node in a telecommunications network, wherein said remote test system tests communication circuits within the telecommunications network, the method comprising the steps of:

connecting to an internet connection processor from a user terminal;

logging in to said internet connection processor from said user terminal;

receiving, at said user terminal, a remote site selection menu from said internet connection processor, said remote site



selection menu comprising a list of one or more remote sites each said remote sites being associated with a particular remote test system;

displaying, at said user terminal, said remote site selection menu;

selecting said remote test system by choosing a remote site from said remote site selection menu;

identifying, at said internet connection processor, an internet address for said remote test system; and

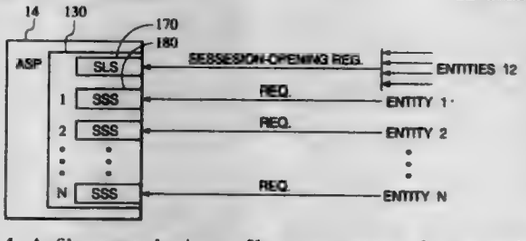
establishing an internet connection between said user terminal and said remote test system for remotely testing telecommunication circuit paths.

5,796,954

METHOD AND SYSTEM FOR MAXIMIZING THE USE OF THREADS IN A FILE SERVER FOR PROCESSING NETWORK REQUESTS

Mohammad Hanif, Fremont, and Kazuhisa Yanagihara, Santa Cruz, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Oct. 13, 1995, Ser. No. 542,836
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—200.61 **12 Claims**



4. A file server having a file server process for processing request received from entities on a network, the file server comprising:

a first queue for storing a first type of request for opening a session received over the network;

a second queue for storing a second type of request received over the network;

means for processing the first type of request in the first queue with a first set of threads; and

means for processing the second type of request in the second queue with a second set of threads, wherein the use of the threads in the file server process is maximized.

5,796,955

METHOD FOR CONTROLLING THE CONFIRMATION OF ASSOCIATION ON AN APPLICATION LAYER OF OPEN SYSTEMS INTERCONNECTION BETWEEN ONE COMMUNICATION EQUIPMENT AND A FACING COMMUNICATION AND A LOOP CARRIER SYSTEM USING THE METHOD

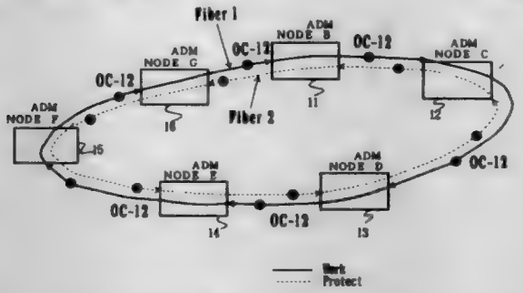
Souichi Takahashi, and Satoshi Yasutaka, both of Kanazawa, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Continuation-in-part of Ser. No. 333,521, Nov. 2, 1994, abandoned. This application Jul. 24, 1997, Ser. No. 900,044

Claims priority, application Japan, May 18, 1994, 6-128178

Int. Cl.[6] G06F *13/38;15/16;* **H04L** *29/08*

U.S. Cl. 395—200.62 **12 Claims**



1. A method for controlling confirmation of associations on an application layer of Open Systems Interconnection between one communication equipment and faced communication equipment, comprising the steps of:

sending an association confirmation request from the one communication equipment to the faced communication equipment to confirm an association between the one communication and the faced communication equipment on an application layer of Open Systems Interconnection;

identifying a reason of rejection in the one communication equipment, in the case where the faced communication equipment rejects the association confirmation request;

retransmitting the association confirmation request according to the reason of rejection;

counting times for retransmission; and

finishing transmitting of the association confirmation request, in the case where the count value of the times for retransmission exceeds a predetermined value.

5,796,956

ATM CELL SWITCH

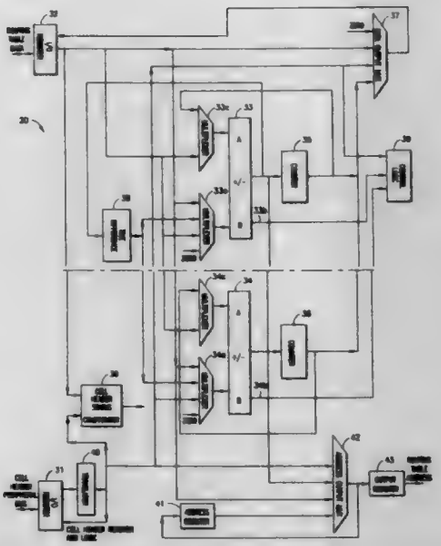
Trevor Jones, Maldon, United Kingdom, assignor to General DataComm Advanced Research Centre limited, Essex, United Kingdom

Filed Mar. 17, 1995, Ser. No. 406,300

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.63 **6 Claims**

1. An ATM cell switch comprising a plurality of data input/output link controllers connected to external data links, each link controller comprising a leaky bucket processor to monitor and control cell flow rates, the leaky bucket processor comprising timer means for timing the arrival of each ATM cell, and calculating means to calculate the time interval between the reception of two consecutive cells on the same connection, means for storing a predetermined regular bucket increment, means for determining from the calculated time interval and from the predetermined regular bucket increment the resultant level in the bucket, and means for comparing the resultant level in the bucket with a predetermined maximum level and, if the maximum level will be exceeded, for discarding, or changing the Cell Loss Priority of, the current cell, wherein the leaky bucket processor includes means for



performing the calculation of the resultant bucket level for a pair of buckets simultaneously.

5,796,957

NETWORK SYSTEM AND TERMINAL APPARATUS

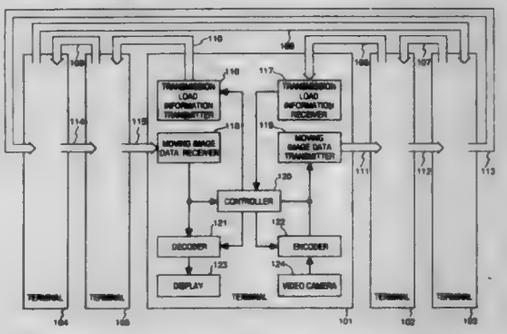
Mitsuru Yamamoto, Yokohama, and Hiroshi Mashimo, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 122,340, Sep. 17, 1993, abandoned. This application Sep. 11, 1997, Ser. No. 927,799

Claims priority, application Japan, Sep. 21, 1992, 4-250864; Jun. 30, 1993, 5-162462

Int. Cl.[6] G06F *13/00;* **H04L** *11/00*

U.S. Cl. 395—200.81 **15 Claims**



1. A moving image network system, in which a plurality of terminals are connected to each other via a transmission path having a plurality of channels over which information can be transmitted in first and second opposite directions, for transmitting/receiving moving image data inserted into one or more of the channels, each terminal comprising:

generating means for generating first load information indicative of a transmission load for first moving image data, the first load information indicating a transmission priority order of the first moving image data;

transmitting/receiving means for transmitting/receiving the first load information over the transmission path in the first direction;

coding means for encoding the first moving image data based on a lossy compression coding method selected in accordance with the first load information; and

decoding means for decoding received coded second moving image data based on a decoding method selected in accordance with second load information received by said

transmitting/receiving means, the second load information having been transmitted in the second direction.

5,796,958

ISDN ADAPTER CARD FOR A COMPUTER

Ralf Koenzen, Herzogenrath, Germany, assignor to ELSA GmbH, Aachen, Germany

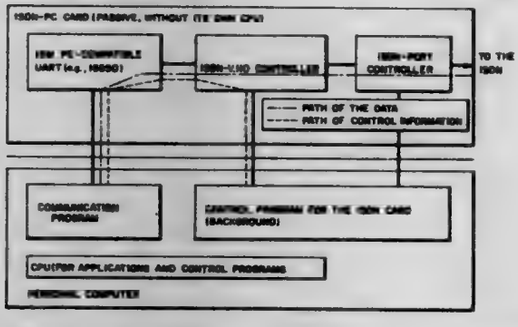
PCT No. PCT/DE94/00245, § 371 Date May 14, 1996, § 102(e) Date May 14, 1996, PCT Pub. No. WO94/22271, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 8, 1994, Ser. No. 513,931

Claims priority, application Germany, Mar. 13, 1993, 93 03 712 U

Int. Cl.[6] G06F *13/00*; H04Q *11/04*; H04M *11/06*

U.S. Cl. 395—200.8 **15 Claims**



7. Process for making a passive ISDN adapter card compatible with a communications device connected to the serial port of a computer having a CPU, wherein an external communications device is simulated by the processor of the computer with the use of said ISDN adapter card, said process comprising:

receiving data and control information from a communications program (5) running on the computer (4) first by a serial controller (1) and then sending said control information back via an ISDN communications controller (2) to the CPU of the computer (4);

a control program (6) running in the background on the CPU of the computer (4) evaluating said control information sent from the ISDN communications controller (2) and establishing the ISDN connection;

sending said data directly to the ISDN network via the serial controller (1), the ISDN communications controller (2), and an ISDN port controller (3) during a data transfer phase; and

upon completion of the data transfer phase, sending new control information via the serial controller (1) and the ISDN communications controller (2) to the control program (6) running in the background on the CPU of the computer (4).

5,796,959

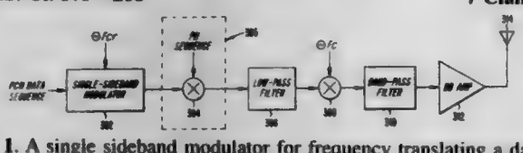
NOISE SHAPING TECHNIQUE FOR SPREAD SPECTRUM COMMUNICATIONS

Timothy F. Moore, Port Washington, N.Y., assignor to Inter-Digital Technology Corporation, Wilmington, Del.

Division of Ser. No. 542,306, Oct. 12, 1995. This application Aug. 12, 1996, Ser. No. 696,195

Int. Cl.[6] H04C *1/69*

U.S. Cl. 375—206 **7 Claims**



1. A single sideband modulator for frequency translating a data signal prior to spread spectrum encoding within a spread spectrum bandwidth comprising:

means for converting said data signal into I and Q components;

means for modulating said I and Q components; and

means for adding said modulated I and Q components to provide a frequency translated data signal to be spread at the edge of the spread spectrum bandwidth.

5,796,960

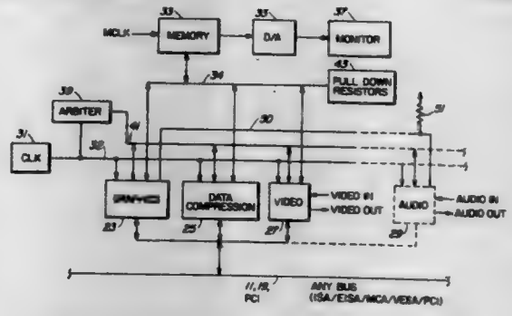
MULTI-MEDIA COMPUTER ARCHITECTURE

Robert P. Bicevskis, Richmond Hill; Adrian H. Hartog, Toronto; Gordon Caruk, Bramalea, and Michael A. Alford, Ajax, all of Canada, assignors to ATI Technologies, Inc., Ontario, Canada

Division of Ser. No. 92,477, Jul. 16, 1993, abandoned. This application May 26, 1995, Ser. No. 452,318

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—286 **2 Claims**



1. A method of operating a computer system, comprising:

(a) under control of an arbiter, receiving video signals and storing data representations thereof in a first memory space, via a high bandwidth bus having a high bandwidth sufficiently high to carry video rate data signals,

(b) reading the stored video signals, compressing them and storing them in a second different memory space than the first memory space via the high bandwidth bus,

(c) storing graphic signals and display control signals in a third, different memory space than said first and second memory spaces, via the high bandwidth bus,

(d) reading said memory spaces, decompressing the compressed video signals and displaying combined decompressed video and graphic signals as defined by the display control signals on a monitor to provide a multi-media image.

5,796,961

HEURISTIC BUS ACCESS ARBITER

Rita M. O'Brien, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 715,238, Sep. 16, 1996, abandoned, which is a continuation of Ser. No. 359,287, Dec. 19, 1994, abandoned. This application Oct. 20, 1997, Ser. No. 954,617

Int. Cl.[6] G06F *13/18*; *13/20*

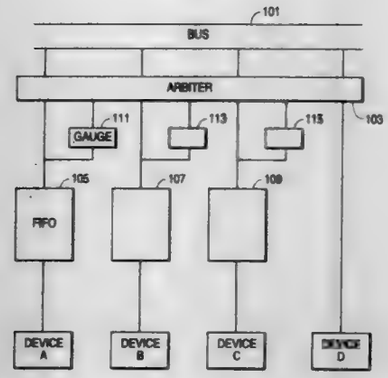
U.S. Cl. 395—287 **7 Claims**

1. A method for arbitrating bus access among devices, comprising:

determining unused buffer capacity for each of said devices;

determining, from unused buffer capacity, a remaining processing capacity prior to idleness for each of said devices; and

assigning bus access priority to each of said devices in order of remaining processing capacity, wherein a device with lowest



remaining processing capacity prior to idleness receives highest bus access priority.

5,796,962

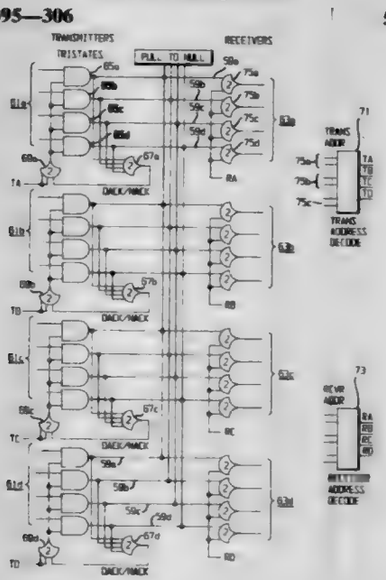
NULL CONVENTION BUS

Karl M. Fant, Minneapolis, and Larry L. Kinney, Fridly, both of Minn., assignors to Theeus Logic, St. Paul, Minn.

Continuation-in-part of Ser. No. 368,811, Jan. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 318,510, Oct. 5, 1994, Pat. No. 5,664,211, which is a continuation-in-part of Ser. No. 220,636, Mar. 31, 1994, Pat. No. 5,664,212, which is a continuation of Ser. No. 74,288, Jun. 8, 1993, Pat. No. 5,305,463, which is a continuation of Ser. No. 702,016, May 17, 1991, abandoned. This application Apr. 18, 1995, Ser. No. 424,865

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—306 **50 Claims**



1. A logic bus comprising:

a plurality of bus transmission lines, each transmission line having at least a first state representative of the presence of asserted data, and a NULL state having no data significance;

a plurality of transmitter ports; and

a plurality of receiver ports;

wherein at least one transmitter port asynchronously propagates alternating wavefronts of data and NULL across the bus transmission lines to at least an addressable one of said receiver ports.

5,796,963

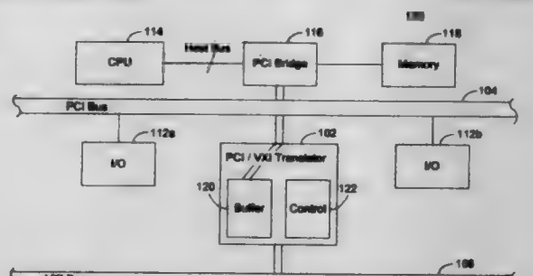
SYSTEM AND METHOD FOR CONVERTING VXI BUS CYCLES TO PCI BURST CYCLES

B. Keith Odom, Pflugerville, Tex., assignor to National Instruments Corporation, Austin, Tex.

Filed May 16, 1996, Ser. No. 648,880

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—308 **15 Claims**



1. A method of converting VXI block transfer cycles to PCI burst cycles in a system including a VXI bus and a PCI bus, comprising:

generating a plurality of VXI block cycles which transfer data on the VXI bus, wherein said plurality of VXI block cycles use a block transfer protocol, wherein said data transferred on said plurality of VXI block cycles are asynchronous and are transferred at a variable rate, wherein said plurality of VXI block cycles includes first block cycles comprising first data and corresponding to a first block transfer, and wherein said plurality of VXI block cycles includes second block cycles comprising second data corresponding to a second block transfer;

receiving said plurality of VXI block cycles from the VXI bus;

capturing said data from the plurality of VXI block cycles in a buffer;

examining said captured data from the plurality of VXI block cycles to determine which of said captured data from the plurality of VXI block cycles is part of said first block transfer and said second block transfer;

tagging the captured first data from the plurality of VXI block cycles with a first identifier in response to determining that the captured first data are part of the first block transfer, wherein said first identifier identifies said first block transfer as one or more PCI bus burst transfers;

tagging the captured second data from the plurality of VXI block cycles with a second identifier in response to determining that the captured second data are part of the second block transfer, wherein said second identifier identifies said second block transfer as one or more PCI bus burst transfers;

transferring the captured first data from the plurality of VXI block cycles on the PCI bus using a first PCI burst cycles, wherein said transferring the captured first data utilizes said first identifier to identify the captured first data; and

transferring the captured second data from the plurality of VXI block cycles on the PCI bus using a second PCI burst cycle, wherein said transferring the captured second data utilizes said second identifier to identify the captured second data.

5,796,964

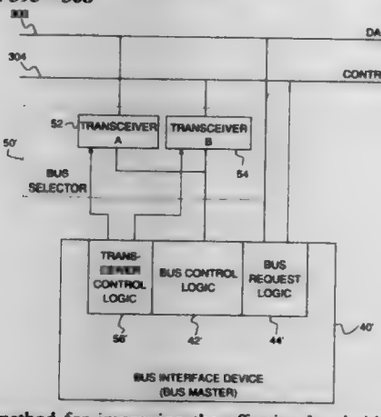
METHOD FOR MODIFYING AN EXISTING COMPUTER BUS TO ENHANCE SYSTEM PERFORMANCE

Brian Mitchell Bass, Apex; Douglas Ray Henderson; Karen Park Heron, both of Raleigh; Jeffrey Wayne Kidd; Edward Hau-chun Ku, both of Cary; Charles Steven Lingafelt, Sr., Durham, and Loren Blair Reiss, Raleigh, all of N.C., assignors to International Business Machines, Armonk, N.Y.

Filed Jan. 16, 1996, Ser. No. 586,409

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—308 **8 Claims**



1. A method for improving the effective bandwidth of a computer system having a predetermined group of components connected to a single bus, without altering said predetermined group of components, said method comprising the steps of:

providing a second bus that is identical to said single bus;

separating all of said predetermined group of components into at least two groups according to a respective flow type;

connecting a first group of said predetermined group of components to said single bus; and

connecting a second group of said predetermined group of components to said second bus, wherein said second group of said predetermined group of components provides different functionalities from said first group of said predetermined group of components, wherein data flow associated with said first and second group of said predetermined group of components stay in a respective bus and do not crossover, wherein each group of said predetermined group of components act as if each component is still connected to said single bus such that effective bandwidth of said computer system is improved.

5,796,965

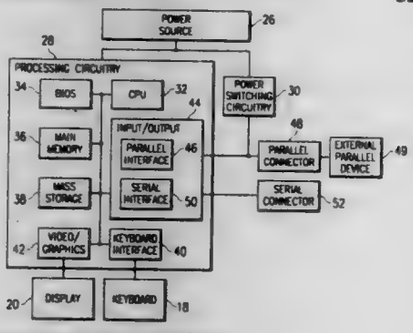
INTELLIGENT POWER CIRCUIT FOR EXTERNAL DATA DRIVE

Hwangsoo Choi, Cupertino; Manpo Kwong, San Jose, and Seong S. Shin, Cupertino, all of Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 14, 1996, Ser. No. 663,754

Int. Cl.[6] G06F *13/00; 1/18*

U.S. Cl. 395—309 **32 Claims**



1. A computer system comprising:

processing circuitry;

an input/output port connector coupled to said processing circuitry comprising a plurality of input/output pins for transmitting signals;

data drive detection circuitry for detecting a connection of a data drive to said input/output port connector; and

power enable circuitry, responsive to said detection circuitry, for selectively applying power to one of said pins to power a detected data drive.

5,796,966

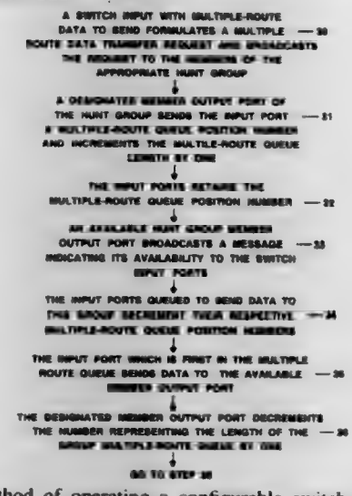
METHOD AND APPARATUS FOR DYNAMICALLY CONTROLLING DATA ROUTES THROUGH A NETWORK

Robert Simcoe, Westborough; Robert E. Thomas, Hudson, and George Varghese, Bradford, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 24,580, Mar. 1, 1993, abandoned. This application May 5, 1997, Ser. No. 850,975

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—311 **8 Claims**



1. A method of operating a configurable switch to send data between source stations connected to switch input ports and destination stations that receive data packets from switch output ports, said configurable switch to dynamically select between routing modes, where said switch output ports are configured as hunt groups, the method including the steps of:

A. assigning a service number to each switch input port;

B. assigning one or more service numbers to each switch output port which is a member of a hunt group and which handles the transfer of single-route data including a string of data packets which must arrive at a particular destination station in a particular order;

C. dynamically determining whether a data transfer is a single-route data transfer or a multiple-route data transfer;

D. if data is to be transferred as single-route data

i. broadcasting to the members of a hunt group associated with the particular destination station a data transfer request for a single-route data transfer which includes the service number assigned to the requesting input port;

ii. sending, from the member which is assigned the service number included in the data transfer request, a member identifier and a single-route queue position number to the requesting input port;

iii. broadcasting to the input ports a message from the assigned member that the member is available to perform a single-route data transfer;

iv. responding to the message by sending to the assigned member data from the input port which is in the first position in the single-route queue; or

E. if data is to be transferred as a multiple-route data transfer including one or more data packets which may arrive at a particular destination station in any order

i. broadcasting to the members of a hunt group associated with the particular destination station a data transfer request from an input port;

ii. returning from a designated member to the requesting input port a multiple-route queue position number;

iii. broadcasting from a next available member of the hunt group to the input ports, a message that the member is available to perform a multiple-route data transfer;

iv. responding to the message by sending, to the member station identified in the message, data from the input port which is in the first position in the multiple route queue.

5,796,967

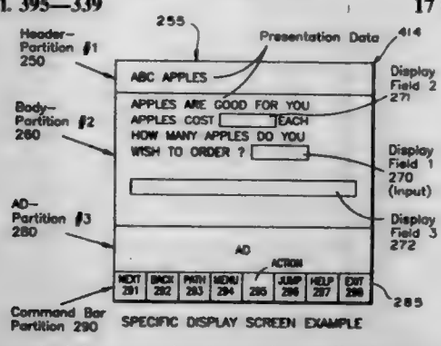
METHOD FOR PRESENTING APPLICATIONS IN AN INTERACTIVE SERVICE

Robert Filepp, Springfield, N.J.; Kenneth H. Appleman, White Plains; Alexander W. Bidwell, New York, both of N.Y.; Allan M. Wolf, Ridgefield; James A. Galambos, Westport, both of Conn., and Sam Meo, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 388,156, Jul. 28, 1989, Pat. No. 5,347,632, which is a continuation-in-part of Ser. No. 328,790, Mar. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 219,931, Jul. 15, 1988, abandoned. This application Nov. 26, 1993, Ser. No. 158,031

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—339 **17 Claims**



SPECIFIC DISPLAY SCREEN EXAMPLE

1. A method for presenting interactive applications on a computer network, the network including a multiplicity of user reception systems at which respective users may request a multiplicity of available applications, the respective reception systems including a monitor at which the applications requested can be presented as one or more screens of display, the method comprising the steps of:

a. generating a screen display at a respective reception system for a requested application, the screen display being generated by the respective reception system from data objects having a prescribed data structure, at least some of which objects may be stored at the respective reception system, the screen display including a plurality of partitions, the partitions being constructed from objects, the objects being retrieved from the objects stored at the respective reception system, or if unavailable from the objects stored at the respective reception system, then from the network, such that at least some of the objects may be used in more than one application;

b. generating at least a first partition for presenting applications; and

c. generating concurrently with the first partition at least a second partition for presenting a plurality of command functions, the command functions including at least a first group which are selectable to permit movement between applications.

5,796,968

BUS ARBITER USED IN A COMPUTER SYSTEM

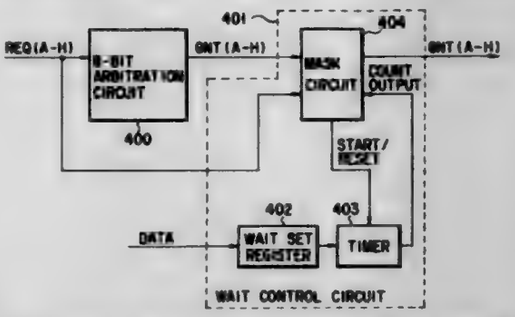
Takeshi Takamiya, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 7, 1996, Ser. No. 659,255

Claims priority, application Japan, Jun. 9, 1995, 7-143128

Int. Cl.[6] G06F *13/366*

U.S. Cl. 395—293 **12 Claims**



1. In a computer system where a plurality of bus masters are connected to a bus, a bus arbiter connected to said bus, comprising:

an arbitration circuit that arbitrates between the bus access request signals from said plurality of bus masters and outputs a bus access grant signal to a single bus master of said plurality of bus masters;

means for holding a value indicating the duration during which the switching of said bus access grant signal is to be inhibited;

counting means capable of counting on the basis of the value held in said holding means;

means for causing said counting means to start counting at the time when said arbitration circuit has given a bus access grant signal to a bus master;

means for inhibiting said arbitration circuit from switching the bus access grant signal in the period until said counting has been completed, as long as the bus access request signal from said bus master to which the bus access grant signal has been given remains active; and

means for permitting said arbitration circuit to switch the access grant signal after said counting has been completed;

wherein said inhibiting means includes a circuit for masking a bus access grant signal outputted from said arbitration circuit.

5,796,969

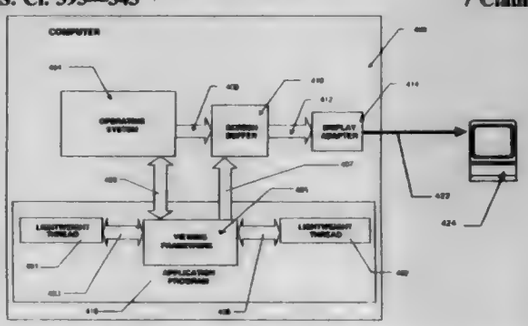
OBJECT-ORIENTED VIEW COORDINATE SPACE SYSTEM

Debra L. Orton, and Maire Lee Howard, both of San Jose, Calif., assignors to Object Licensing Corporation, Cupertino

Continuation of Ser. No. 175,870, Dec. 30, 1993, abandoned. This application Dec. 20, 1995, Ser. No. 575,238

Int. Cl.[6] G06F *3/14*

U.S. Cl. 395—343 **7 Claims**



1. A system for displaying screen information in a first and a second view, in which the first view may partially obscure a portion of the second view leaving a non-obscured visible area of the second view, the system comprising:

(a) a screen buffer for holding screen information;

(b) display adapter means for directly obtaining the screen information from the screen buffer and for displaying the screen information on a display controlled by the display adapter means;

(c) a processor and an attached memory, holding a first and a second application program;

(d) coordinate means for defining a predefined coordinate space having at least one axis, and an origin, the coordinate means including matrix means for mapping points in a two-dimensional plane into the predefined coordinate space;

(e) view system means, responsive to user requests to change the first view and cooperating with the coordinate means, for maintaining a first visible area definition, designating a first portion of the screen buffer for holding screen information for the first view, and for maintaining a second visible area definition, designating a second portion of the screen buffer for holding screen information for the visible area of the second view;

(f) wherein the first and second application programs each comprise

means for obtaining a visible area definition,

means for generating screen information using the matrix means contained in the coordinate means, and

means for directly storing the screen information in the screen buffer under the control of the obtained visible area definition.

5,796,970

INFORMATION PROCESSING APPARATUS FOR REALIZING DATA TRANSFER FOR A PLURALITY OF REGISTERS USING INSTRUCTIONS OF SHORT WORD LENGTH

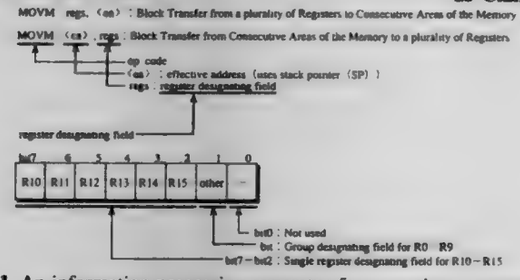
Nobuo Higaki, Osaka; Nobuki Tominaga, Kyoto; Shinya Miyaji, Hirakata, and Shuichi Takayama, Takarazuka, all of Japan, assignors to Matsushita Electric Industrisl Co., Ltd., Osaka, Japan

Filed Sep. 20, 1996, Ser. No. 716,946

Claims priority, application Japan, Sep. 22, 1995, 7-244757

Int. Cl.[6] G06F *9/345*

U.S. Cl. 395—376 **25 Claims**



1. An information processing apparatus for executing a program from a memory, the apparatus including:

a register set having a plurality of registers;

decoding means for decoding machine language instructions in the program and extracting a selected machine language instruction,

wherein the selected machine language instruction includes a first operand and a second operand and indicates data transfer between a plurality of registers from the register set designated by the first operand and a memory block designated by an effective address of the memory block stored in the second operand,

wherein the first operand has a single field of at least one bit which shows whether each individual register of a plurality of registers from the register set, represented by the bits of the single field, is individually designated, and a group field which shows whether a plurality of registers of the register set which are not represented by the bits of the single field are designated as a register group,

wherein there are more registers in the register group than there are bits in the group field;

determining means for determining whether each bit in the single field and in the group field of the first operand of the selected machine language instruction is valid;

first generating means for generating a register number for each register corresponding to a bit in the single field determined as being valid;

second generating means for generating, in order, a register number of each of the registers in the register group to which the group field relates, when a bit in the group field has been determined as being valid; and

transferring means for executing data transfer between registers identified by the register numbers generated by the first generating means and the second generating means and consecutive memory areas starting from the effective address of the memory block.

5,796,971

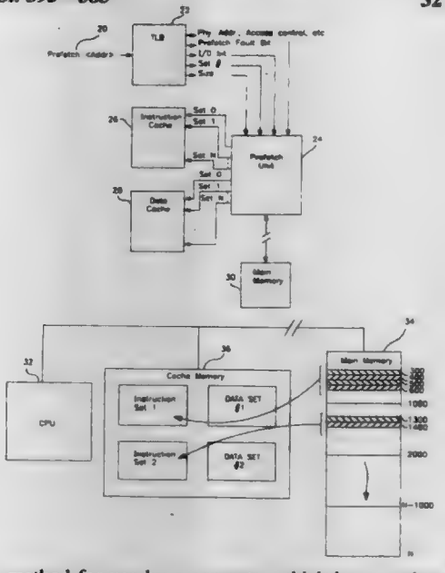
METHOD FOR GENERATING PREFETCH INSTRUCTION WITH A FIELD SPECIFYING TYPE OF INFORMATION AND LOCATION FOR IT SUCH AS AN INSTRUCTION CACHE OR DATA CACHE

David R. Emberson, 300 Moore Creek Rd., Santa Cruz, Calif. 95060

Continuation of Ser. No. 499,364, Jul. 7, 1995, abandoned. This application Aug. 22, 1997, Ser. No. 918,707

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—383 **32 Claims**



1. A method for use by a computer which has a main memory for maintaining stored information which is either data or instructions and a cache memory including a data cache and an instruction cache, said method for enhancing an already existing prefetch instruction for use by a prefetch unit, comprising the steps of:

receiving said already existing prefetch instruction;

adding a dynamically adjustable unfilled instruction/data field to form an annexed prefetch instruction;

receiving said annexed prefetch instruction including said dynamically adjustable unfilled instruction/data field; and

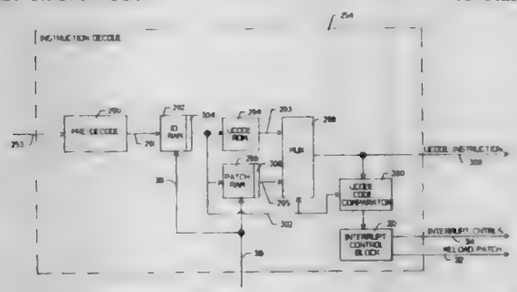
filling said dynamically adjustable unfilled instruction/data field with a prefetch type value which indicates whether said stored information is instructions or data, such indicating whether to store said information in said instruction cache or in said data cache to generate an enhanced prefetch instruction.

5,796,972

METHOD AND APPARATUS FOR PERFORMING MICROCODE PAGING DURING INSTRUCTION EXECUTION IN AN INSTRUCTION PROCESSOR

David C. Johnson, Roseville; Douglas A. Fuller, Eagan; Kenneth L. Engelbrecht, Blaine, all of Minn.; Gregory A. Marlan, San Jose, Calif.; Ronald G. Arnold, Apple Valley, and Gerald G. Fagerness, Mazeppa, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jan. 14, 1997, Ser. No. 783,614
Int. Cl.[6] G06F *9/24*
U.S. Cl. 395—384 **48 Claims**



1. A data processing system, wherein the data processing system is controlled, at least in part, by a number of sequentially executed instructions, the number of sequentially executed instructions being selected from an instruction set, wherein selected instructions of the instruction set have a corresponding group code associated therewith, the data processing system comprising:

a. an addressable memory element for storing a group of microcode instruction, wherein selected microcode instructions have a corresponding group code associated therewith;

b. a decoder block for sequentially decoding the number of sequentially executed instructions, and providing a corresponding address to said addressable memory element, said addressable memory element providing a microcode instruction that is stored at the corresponding address location, including the corresponding group code therefor;

c. a comparing block coupled to said addressable memory element and further coupled to said decoder block for sequentially comparing the group codes associated with the sequentially executed instructions with the group codes of the resulting microcode instructions; and

d. a loading block for loading the addressable memory element with microcode instructions that have a group code that corresponds to the group code of a currently executed instruction if the comparing block determines that the group code of the currently executed instruction does not match the group code of the microcode instruction.

5,796,973

METHOD AND APPARATUS FOR DECODING ONE OR MORE COMPLEX INSTRUCTIONS INTO CONCURRENTLY DISPATCHED SIMPLE INSTRUCTIONS

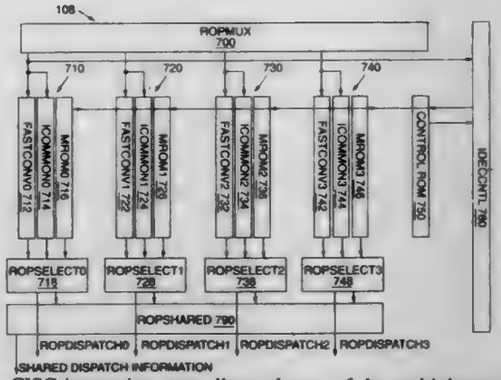
David B. Witt, and Michael D. Goddard, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 628,389, Apr. 5, 1996, abandoned, which is a continuation of Ser. No. 146,383, Oct. 29, 1993, abandoned. This application Aug. 6, 1997, Ser. No. 912,622
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—384 **47 Claims**

1. An apparatus for dispatching up to a plurality "m" of RISC-like operations ("ROPs") in parallel wherein the ROPs are mapped from one or more CISC instructions, comprising:

a memory for storing a CISC instruction and pre-decode information, wherein the pre-decode information includes a value identifying a number of ROPs to which the CISC instruction maps;

a multiplexer having a plurality "m" of outputs and being coupled to the memory for directing information from the



CISC instruction to unallocated ones of the multiplexer outputs equal to the number of ROPs to which the CISC instruction maps, up to "m" ROPs;

a plurality of conversion paths respectively coupled to the multiplexer outputs for converting the CISC instruction information present on the multiplexer outputs into respective ones of the ROPs to which the CISC instruction maps; and

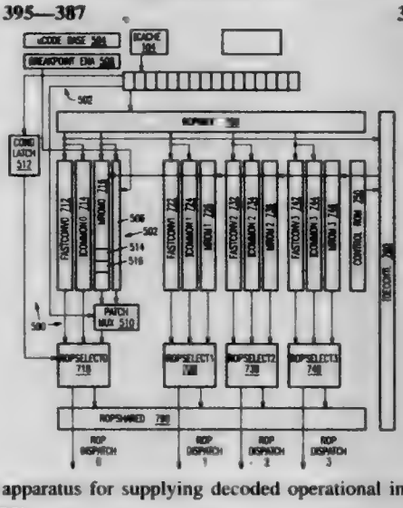
dispatch logic coupled to the conversion paths for dispatching the ROPs in a current dispatch window.

5,796,974

MICROCODE PATCHING APPARATUS AND METHOD

Michael D. Goddard, and David S. Christie, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 7, 1995, Ser. No. 553,204
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—387 **31 Claims**



1. An apparatus for supplying decoded operational information comprising:

an external memory storing codes including instructions and decoded operational information;

a permanent memory including a plurality of operational information elements;

a decoder coupled to the external memory and coupled to the permanent memory, the decoder including a circuit converting an instruction to an entrypoint directing the location of access into the permanent memory;

a programmable memory coupled to the decoder including a plurality of selection elements corresponding to the plurality of operational information elements; and

a patch circuit coupled to the external memory, permanent memory and programmable memory, the patch circuit including a patch base address register a breakpoint select switch, and a patch multiplexer, the patch circuit supplying operational information designated by the entrypoint from the per-

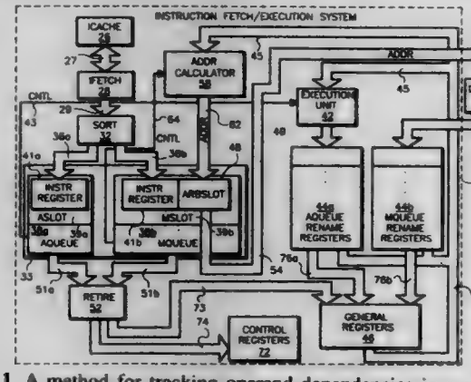
manent memory when the breakpoint select switch is set to a first switch value and supplying decoded operational information from the external memory at an address designated by the patch base address register when the breakpoint select switch is set to a second switch value, the selection being controlled by the breakpoint select switch via operation of the patch multiplexer.

5,796,975

OPERAND DEPENDENCY TRACKING SYSTEM AND METHOD FOR A PROCESSOR THAT EXECUTES INSTRUCTIONS OUT OF ORDER

Gregg B. Lesartre, and Donald Kipp, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 24, 1996, Ser. No. 653,573
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—394 **19 Claims**



1. A method for tracking operand dependencies in a processor that executes instructions out of order, comprising the steps of:

(a) acquiring a set of instructions for execution;

(b) detecting a producer instruction and a dependent instruction in a set that is potentially dependent upon said producer instruction, said producer instruction destined to modify data in a register that stores address information;

(c) commencing execution of said dependent instruction after said producer instruction commences execution;

(d) while executing said dependent instruction, determining whether said dependent instruction is destined to use said data in said register;

(e) when said dependent instruction is destined to use said data in said register, then aborting said execution of said dependent instruction until after said producer instruction retires from execution; and

(f) when said dependent instruction is not destined to use said data in said register, then completing execution of said dependent instruction regardless of when said producer retires from execution.

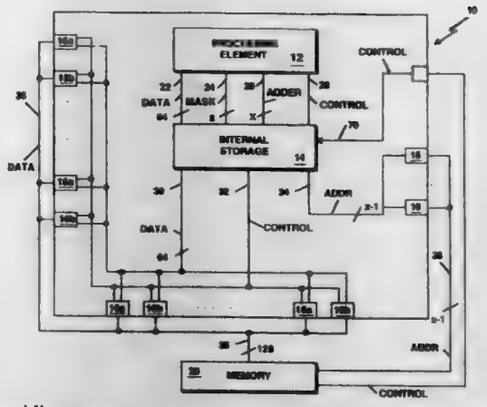
5,796,976

TEMPORARY STORAGE HAVING ENTRIES SMALLER THAN MEMORY BUS

Bhavin Shah, Mountain View, Calif.; Era Nangia, Austin, Tex.; Gilbert Wolrich, Framingham, and Nital Patwa, Marlboro, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 58,286, May 4, 1993, abandoned. This application Jan. 23, 1996, Ser. No. 590,214
Int. Cl.[6] G06F *13/00;13/14*
U.S. Cl. 395—403 **30 Claims**

1. A method for storing information in temporary storage and subsequently transferring the information to a memory over a bus, comprising



providing a temporary storage having a plurality of entries and a plurality of multi-bit address entries, wherein a different multi-bit address entry is associated with each entry of the plurality of entries and wherein a size of each entry of the plurality of entries is smaller than a size of said bus;

storing information that is designated for a common area of said memory in different ones of said plurality of entries by:

receiving said information from a processing element in successive packets each of which has an address provided by said processing element,

storing a received packet in a first one of said plurality of entries, and

determining whether said packets are designated for said common area based on the addresses of each packet;

establishing said link between said first one of said plurality of entries and a second one of said plurality of entries in which a previously received packet is stored if the address of said received packet has a predetermined relationship with the address of said previously received packet; and

assembling said information from said different ones of said plurality of entries between which said link has been established and transferring information that is so assembled together over said bus to said memory,

wherein said common area comprises an entry of said memory, and further comprising determining that addresses have said predetermined relationship if the addresses identify different portions of said entry of said memory.

5,796,977

HIGHLY PIPELINED BUS ARCHITECTURE

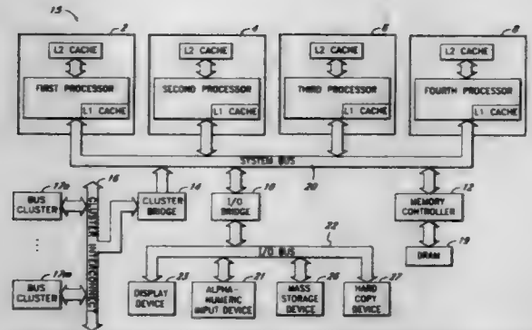
Nitin V. Sarangdhar; Gurbir Singh, both of Portland; Konrad Lai, Aloha; Stephen S. Pawlowski, Beaverton; Peter D. MacWilliams, Aloha, and Michael W. Rhodehamel, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 390,969, Feb. 21, 1995, abandoned, which is a continuation-in-part of Ser. No. 206,382, Mar. 1, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 688,238
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 395—406 **16 Claims**

1. A method for transferring information through a computer system comprising the steps of:

interconnecting a plurality of agents via a bus pipelining a plurality of multi-phase bus transactions, said plurality of agents include at least one microprocessor having a cache;

maintaining coherency of said information by said at least one microprocessor performing a cache snoop during a snoop phase of each of said plurality of multi-phase bus transactions; and



deferring at least one transaction of said plurality of multi-phase bus transactions without disrupting said pipelining of said bus by an agent of said plurality of agents asserting a control signal to postpone transfer of said information until said agent initiates a deferred reply transaction after gaining access to said information while continuing to request multi-phase bus transactions that are order independent of said at least one transaction.

5,796,978

DATA PROCESSOR HAVING AN ADDRESS TRANSLATION BUFFER OPERABLE WITH VARIABLE PAGE SIZES

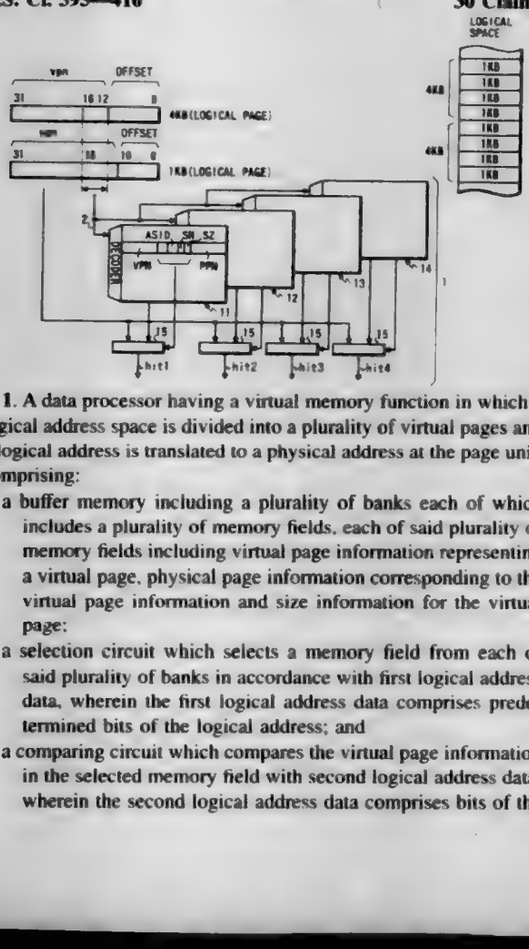
Shinichi Yoshioka; Ikuya Kawasaki, both of Kodaira; Susumu Narita, Kokubunji, and Saneaki Tamaki, Higashimurayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 7, 1995, Ser. No. 524,561

Claims priority, application Japan, Sep. 9, 1994, 6-241993; Mar. 17, 1995, 7-086068; Aug. 25, 1995, 7-240871

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—416 **30 Claims**



1. A data processor having a virtual memory function in which a logical address space is divided into a plurality of virtual pages and a logical address is translated to a physical address at the page unit, comprising:

a buffer memory including a plurality of banks each of which includes a plurality of memory fields, each of said plurality of memory fields including virtual page information representing a virtual page, physical page information corresponding to the virtual page information and size information for the virtual page;

a selection circuit which selects a memory field from each of said plurality of banks in accordance with first logical address data, wherein the first logical address data comprises predetermined bits of the logical address; and

a comparing circuit which compares the virtual page information in the selected memory field with second logical address data, wherein the second logical address data comprises bits of the logical address, wherein the bits of the logical address are determined in response to the size information in the selected memory field.

5,796,979

DATA PROCESSING SYSTEM HAVING DEMAND BASED WRITE THROUGH CACHE WITH ENFORCED ORDERING

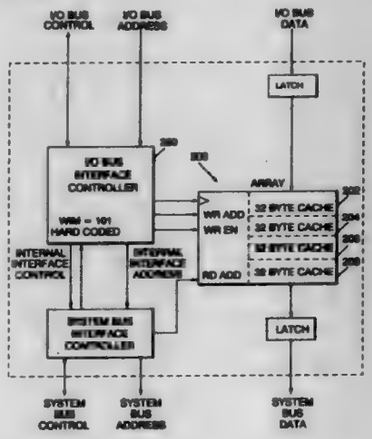
Ravi Kumar Arimilli, Round Rock; John Steven Dodson, Pflugerville; Guy Lynn Guthrie, Austin, and Jerry Don Lewis, Round Rock, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 316,979, Oct. 3, 1994, abandoned.

This application Oct. 16, 1996, Ser. No. 730,994

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—469 **3 Claims**



1. A data processing system, comprising:

one or more processing units;

a system memory;

one or more input/output channel controllers operably associated with one or more I/O devices wherein each said input/output channel controller includes an I/O bus;

a system bus connecting said processing units, said memory and said I/O channel controllers;

a system controller for controlling operation of said processing units, said memory and said input/output channel controllers; and

wherein each of said input/output channel controllers further comprises a write through cache storage for storing lines of data from said system memory or said processing units for use by said processing units, said write through cache storage including means for performing a demand based write through operation of said cache wherein additional data is stored in said cache until one of a plurality of predetermined conditions cause writing of data from said cache to said system memory to thereby insure coherency between data stored in said cache and said system memory; and

wherein said input/output channel controller further comprises means for determining whether an address for access to a portion of a line of data in said write through cache is in an immediate sequence with a previous address and means for inhibiting writing of data to a non-sequential address in said write through cache until data stored in said write through cache is written to said system memory using said demand based write through operation.

5,796,980

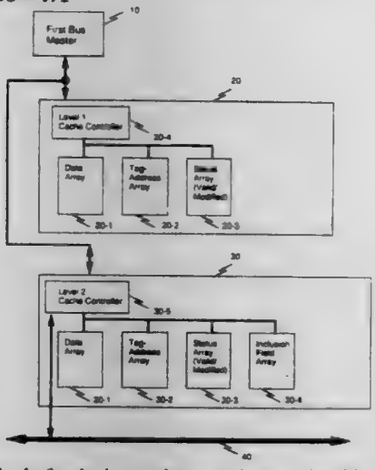
REDUCING CACHE SNOOPING OVERHEAD IN A MULTILEVEL CACHE SYSTEM WITH INCLUSION FIELD IN SHARED CACHE INDICATING STATE OF DATA IN LOWER LEVEL CACHES

James E. Bowles, Austin, Tex., assignor to Advanced Micro Devices Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 462,985, Jun. 5, 1995. This application Feb. 22, 1996, Ser. No. 605,741

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—471 4 Claims



1. A method of reducing cache snooping overhead in a two-level cache system with a first bus master, a second bus master, a first level 1 cache connected to said first bus master via a first bus, a second level 1 cache connected to said second bus master via a second bus, a shared level 2 cache connected to said first level 1 cache and said second level 1 cache and a main memory, the method comprising the steps of:

a) detecting a memory read request on said first bus by said first level 1 cache;

b) determining if said first level 1 cache can process said memory read request by determining if a tag-address of said memory read request corresponds to a tag-address for each of a plurality of storage locations in said first level 1 cache;

c) comparing said tag address of said memory read request to a tag-address for each of a plurality of storage locations of said shared level 2 cache if said first level 1 cache cannot process said memory read request;

d) if there is a correspondence in said shared level 2 cache, checking an inclusion field for a corresponding storage location in said shared level 2 cache to determine if said second level 1 cache contains modified data in a storage location that has the tag-address corresponding to said memory read request;

e) if said second level 1 cache contains modified data in the storage location that has the tag-address corresponding to said memory read request, obtaining said modified data from said second level 1 cache and storing said modified data in said shared level 2 cache;

f) writing said modified data from said shared level 2 cache to a storage location within said first level 1 cache;

g) writing said modified data from said shared level 2 cache to said main memory;

h) writing said modified data from said first level 1 cache to said first bus master; and

i) updating an inclusion field for said corresponding storage location within said shared level 2 cache to indicate that data in both of said first and second level 1 caches corresponding to said coincident tag-address is currently in an unmodified state.

5,796,981

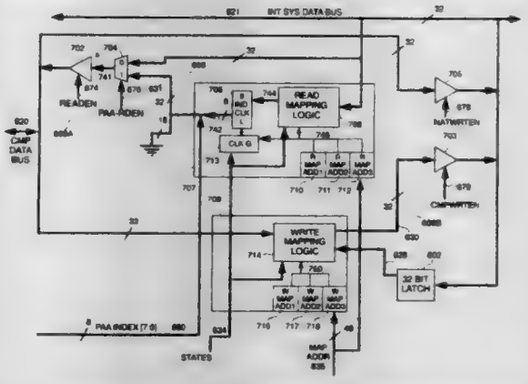
METHOD AND APPARATUS FOR PROVIDING REGISTER COMPATIBILITY BETWEEN NON-IDENTICAL INTEGRATED CIRCUITS

Jihad Y. Abudayyeh, Fremont; Ashutosh S. Dikshit, Mountain View; Daniel G. Bezzant, Pleasanton; Stephen A. Smith, Palo Alto; Narasimha R. Nookala, San Jose, and Arunachalam Vaidyanathan, Fremont, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Sep. 16, 1994, Ser. No. 308,167

Int. Cl.[6] G06F *9/00;13/00*

U.S. Cl. 395—500 25 Claims



1. A compatibility engine apparatus for mapping and steering bits of an accessed nonresident register set into or out of registers within a resident register set comprising:

means for detecting when one of the plurality of differing format register sets is being accessed by the system for completion of a read or write operation to or from one of the plurality of differing format register sets;

means for determining which one of the plurality of differing format register sets are being accessed by the system if one of the plurality of differing format register sets is being accessed;

means for mapping bits corresponding to bits in an appropriate one of the registers within the accessed nonresident register set into appropriate registers within the resident register set if an operation reading data from a nonresident register set is being completed; and

means for mapping bits corresponding to bits in an appropriate one of the registers within the accessed nonresident register set from appropriate registers within the resident register set if an operation writing data to a nonresident register set is being completed.

5,796,982

SWITCHING REGULATOR, AN INFORMATION PROCESSING APPARATUS AND A CONTROL METHOD FOR THE SAME

Tomoyuki Iwami, and Izuru Narita, both of Sagamihara, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1995, Ser. No. 508,496

Claims priority, application Japan, Jul. 29, 1994, 6-178204

Int. Cl.[6] G05F *1/61*

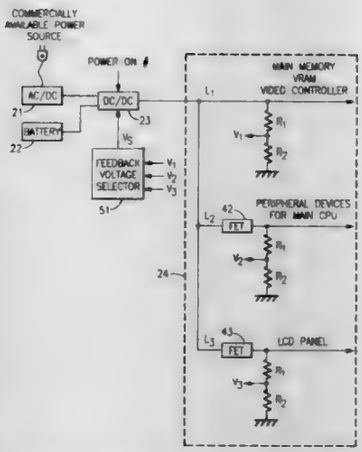
U.S. Cl. 395—500 9 Claims

2. An information processing apparatus, which includes a switching regulator that permits or inhibits electrical power being supplied from an external power source in response to a feedback voltage, said information processing apparatus comprising:

a first power supply line for supplying power to a first electric circuit;

a second power supply line for supplying power to a second electric circuit;

an i_{th} power supply line for supplying power to an ith electric circuit, i being an integer between 1 and n and wherein n is an integer at least equal to 2; and



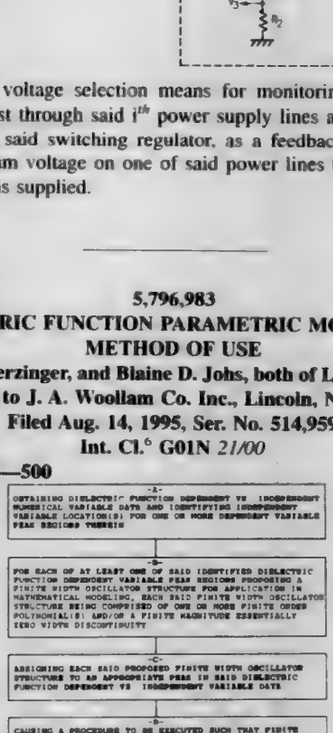
feedback voltage selection means for monitoring voltages of said first through said i^{th} power supply lines and for outputting to said switching regulator, as a feedback voltage, the minimum voltage on one of said power lines through which power is supplied.

5,796,983

DIELECTRIC FUNCTION PARAMETRIC MODEL, AND METHOD OF USE

Craig M. Herzinger, and Blaine D. Johs, both of Lincoln, Nebr., assignors to J. A. Woollam Co. Inc., Lincoln, Nebr.

Filed Aug. 14, 1995, Ser. No. 514,959
Int. Cl.[6] G01N *21/00*
U.S. Cl. 395—500 **25 Claims**



14. A method of calculating dielectric function dependent variable numerical values, given independent variable numerical values, comprising the steps of:

a obtaining dielectric function dependent vs. independent numerical variable data and identifying independent variable locations of at least two dependent variable peak regions thereon;

b. for each of at least two of said identified dependent variable peak regions proposing an oscillator structure for application in mathematical modeling of said dielectric function numerical data which demonstrate a dependent-independent variable relationship, each of said at least two proposed oscillator structures comprising at least one component selected from the group consisting of:

a. a finite-width combination of a finite order polynomial and an essentially zero-width, finite magnitude discontinuity;

b. a finite-width combination of a plurality of finite order polynomials; and

c. an essentially zero-width, finite magnitude discontinuity;

each said finite order polynomial comprising coefficient(s) and each said essentially zero-width finite magnitude discontinuity comprising a magnitude, which finite order polynomial coefficient(s) and essentially zero-width finite magnitude discontinuity magnitude(s) determine finite width oscillator structure mathematical model coefficients, which finite width oscillator structure mathematical model coefficients for each finite width oscillator structure at least partially define a relationship between dependent and independent numerical variables over a range of said independent variable corresponding to the finite width of said finite width oscillator structure;

c. assigning each said proposed finite width oscillator structure to an appropriate peak in said dielectric function dependent variable vs. independent variable data;

d. causing a procedure to be executed such that finite width oscillator structure mathematical model coefficients are, for each of said at least two finite width oscillator structures, evaluated; and

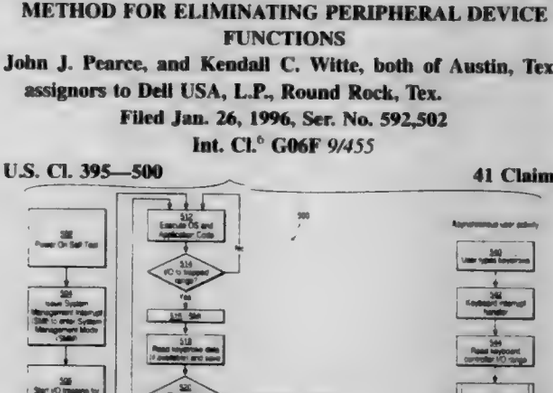
e. utilizing said determined mathematical model coefficients to, for each finite width oscillator structure, calculate dependent variable numerical values which correspond to independent variable values, and combining contributions from each of said at least two finite width oscillator structures at each independent variable value.

5,796,984

OPERATING SYSTEM INDEPENDENT APPARATUS AND METHOD FOR ELIMINATING PERIPHERAL DEVICE FUNCTIONS

John J. Pearce, and Kendall C. Witte, both of Austin, Tex., assignors to Dell USA, L.P., Round Rock, Tex.

Filed Jan. 26, 1996, Ser. No. 592,502
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **41 Claims**



1. A method of operating a computer system having a memory coupled to a processor, the method comprising the steps of:

trapping an address to an I/O device address range;

checking a type of an I/O operation associated with the trapped address; and

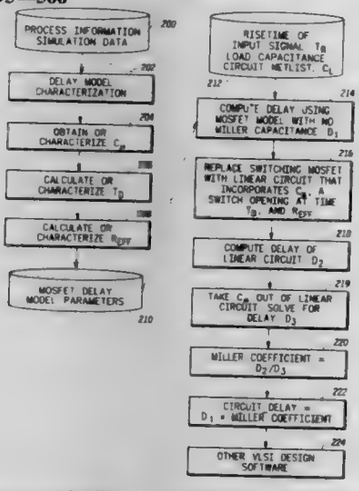
replacing an I/O device function associated with the I/O operation type by providing instructions from the memory to the processor which completely emulate the I/O device function.

5,796,985

METHOD AND APPARATUS FOR INCORPORATING A MILLER COMPENSATION FOR MODELING ELECTRICAL CIRCUITS

Peter R. O'Brien, Austin, and Richard Paul Wiley, Round Rock, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 29, 1996, Ser. No. 639,393
Int. Cl.[6] G06F *17/50*
U.S. Cl. 395—500 **27 Claims**



1. A system embodied in a computer readable medium for calculating timing delays for integrated circuit design, the system comprising:

means for specifying at least one switching device in a circuit design, wherein operation of the at least one switching device is defined as:

$$\text{OFF for } 0 \leq t \leq a\,T_{input}$$

$$\text{ON for } a\,T_{input} < t$$

where a is a function of the at least one switching device, and T_{input} is defined as input switching time;

means for generating an representative configuration having a resistance and a Miller capacitance, the Miller capacitance having a Miller coefficient;

means for calculating timing delays for the at least one switching device using the representative configuration having the resistance and the Miller capacitance, where the Miller coefficient is used to calculate timing delays;

means for generating a circuit model according to the calculated timing delays; and

means for outputting the circuit model.

5,796,986

METHOD AND APPARATUS FOR LINKING COMPUTER AIDED DESIGN DATABASES WITH NUMERICAL CONTROL MACHINE DATABASE

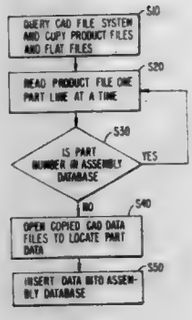
Mark Fuller, San Jose, Calif., assignor to 3Com Corporation, Santa Clara, Calif.

Continuation of Ser. No. 444,944, May 19, 1995, abandoned. This application Aug. 22, 1996, Ser. No. 703,110
Int. Cl.[6] G06F *15/46*
U.S. Cl. 395—500 **16 Claims**

1. A system for performing integrated design and manufacturing of a product comprising:

a Computer Aided Design (CAD) system capable of accepting design instructions and capable of generating a detailed description of said product, said description specifying the interrelationship of said product's plurality of parts;

a first database generated and modified by said CAD system containing detailed design data regarding said product and



regarding said parts used to construct said product, said first database containing data which includes data specific to the manufacture of said product but not used by said CAD system in product design;

a second database, said second database stored in an operating system environment distinct from that storing said first database, containing said data specific to the manufacture of said product;

a translator for automatically extracting said data specific to the manufacture of said product from said first database and placing said data in said second database;

a robot capable of assembling said parts into said product; and

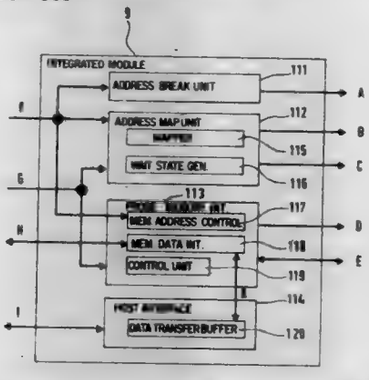
a robot programmer capable of interpreting said second database and of directing specific movements of said robot to assemble said product.

5,796,987

EMULATION DEVICE WITH MICROPROCESSOR-BASED PROBE IN WHICH TIME-CRITICAL FUNCTIONAL UNITS ARE LOCATED

Erwin Habermayr, Oberhausen; Christian Huebner, Dachau; Juergen Hofmeister, Freising; Dieter Horak, Moosburg; Werner Pichl, Eching, and Wolfgang Schmitt, Freising, all of Germany, assignors to Hitex-Systementwicklung, Karlsruhe, Germany

Filed Sep. 30, 1996, Ser. No. 723,117
Claims priority, application Germany, Sep. 30, 1995, 195 36 622.0
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **2 Claims**



1. An emulation device for emulating a target system with a system emulator to which an external host is coupled, comprising:

an emulator probe including an emulation processor, said emulator probe connecting to the system emulator and being plugable into the target system instead of a target system processor in order to couple the target system with the system emulator;

wherein said emulator probe further has located therein an address map unit and a probe memory interface which perform time critical functions, as well as a host interface

directly connected to the external host, said address memory unit, probe memory interface and host interface being combined into an integrated module, whereby the time critical functions are shifted to said emulator probe from the system emulator.

5,796,988

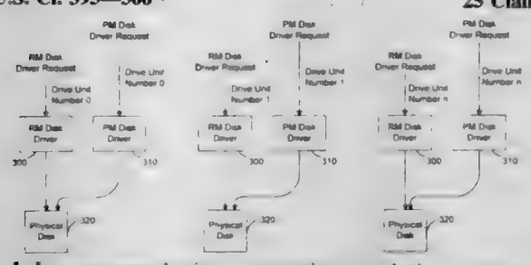
METHOD AND SYSTEM USING DEDICATED LOCATION TO SHARE INFORMATION BETWEEN REAL MODE AND PROTECTED MODE DRIVERS

Harish Naidu, and William G. Parry, both of Redmond, Wash., assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 184,668, Jan. 21, 1994, Pat. No. 5,604,887. This application Nov. 15, 1996, Ser. No. 746,717

Int. Cl.[6] G06F *13/10*

U.S. Cl. 395—500 **25 Claims**



1. In a computer having a connection to a device, a processor that can operate in real mode and protected mode, a real mode device driver for the device and a protected mode device driver for the device, a method comprising the steps of:

(a) with the real mode device driver, assigning a unique reference value to the device that is accessed by the real mode device driver;

(b) accessing the device by the real mode device driver, to read device information which uniquely identifies the device;

(c) storing the reference value assigned to the device by the real mode device driver in a memory location associated with the device information read from the device;

(d) with the protected mode device driver, accessing the device to read the device information;

(e) retrieving the reference value that was stored in the memory location associated with the device information; and

(f) with the protected mode device driver so that both the real mode device driver and the protected mode device driver identify the device with the reference value, assigning the reference value obtained in step (e) to the device accessed by protected mode device driver.

5,796,989

METHOD AND SYSTEM FOR INCREASING CACHE EFFICIENCY DURING EMULATION THROUGH OPERATION CODE ORGANIZATION

John E. Morley, Kapaa, Hi., and Mark I. Himelstein, Saratoga, Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

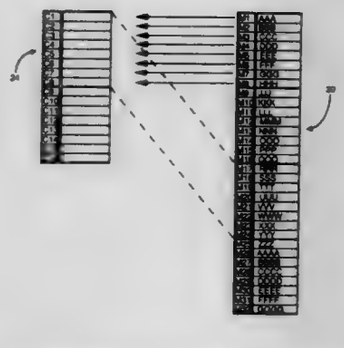
Continuation of Ser. No. 406,434, Mar. 20, 1995, abandoned. This application Aug. 1, 1997, Ser. No. 904,458

Int. Cl.[6] G06F *12/10*

U.S. Cl. 395—500 **8 Claims**

1. In a computer having a processor which executes instructions in a first instruction set, a main memory, a cache memory, and an emulation program for emulating the operation of a processor which executes instructions from a second, different instruction set, a method for increasing the efficiency of operation of the computer while said emulation program is running, comprising the steps of:

running an emulated program on said computer which is designed to operate with said second instruction set, and executing commands issued by said emulated program through said emulation program;



identifying the instructions from said first instruction set which are executed the most number of times when said emulated program is running;

storing said identified instructions in said main memory at neighboring address locations that are sufficiently close to one another; and

loading said identified instructions into the cache memory such that a predetermined number of said identified instructions are simultaneously stored in the cache memory, wherein said predetermined number is equal to the smallest number of entries that are transferred from the main memory to the cache memory at one time.

5,796,990

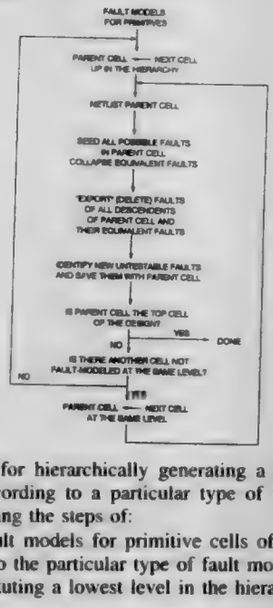
HIERARCHICAL FAULT MODELING SYSTEM AND METHOD

Mark Alan Erle, South Burlington; Matthew Christopher Graf, Essex Junction, and Peter Wohl, Williston, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 459,995, Jun. 2, 1995, abandoned. This application Sep. 15, 1997, Ser. No. 929,578

Int. Cl.[6] G06F *11/263*

U.S. Cl. 395—500 **4 Claims**



1. A method for hierarchically generating a fault model of a logic circuit according to a particular type of fault model, said method comprising the steps of:

generating fault models for primitive cells of the logic circuit according to the particular type of fault model, the primitive cells constituting a lowest level in the hierarchy of the logic circuit;

identifying a parent cell corresponding to a next cell in the hierarchy of the logic circuit;

creating a netlist of all connections in said parent cell;

seeding and identifying all possible faults in said parent cell, including equivalent faults and untestable faults, the untest-

able faults corresponding to faults which are not testable under the particular type of fault model;

collapsing the equivalent faults in said parent cell;

deleting untestable faults of all cells below said parent cell and their equivalent faults;

identifying new untestable faults by executing test software on said parent cell after untestable faults from cells below said parent cell have been removed from a fault model of said parent cell, and storing the new untestable faults in the fault model of said parent cell;

first testing to determine if said parent cell is a top cell in the hierarchy of said logic circuit;

second testing to determine if there is another cell not previously fault modeled at a same level in the hierarchy of said logic circuit as said parent cell;

identifying said another cell at said same level as said parent cell as a new parent cell;

repeating each step set forth above for said new parent cell; and

continuing said steps, beginning from the step of identifying the parent cell, until said top cell of said logic circuit has been fault modeled.

5,796,991

IMAGE SYNTHESIS AND DISPLAY APPARATUS AND SIMULATION SYSTEM USING SAME

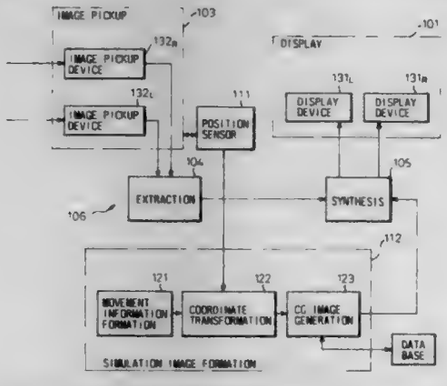
Seiya Shimizu, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 432,273, May 1, 1995, abandoned. This application Nov. 19, 1997, Ser. No. 974,557

Claims priority, application Japan, May 16, 1994, 6-101214

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **13 Claims**



1. An image synthesis and display apparatus comprising:

image pickup means for picking up an image of a range of an actual space corresponding to a field of view presented to a user by a display;

extraction means for extracting an image from the image picked up by said pickup means, the extracted image representing a specified object;

synthesis means for inserting the image extracted by said extraction means into a simulation image of an exclusively virtual space, and for providing the simulation image with the inserted image to the display for displaying to the user;

a position sensor which measures a position and light axis direction of said image pickup means in a real space; and

a simulation image forming means which forms a simulated image which represents an object in the virtual space, based on a position and light axis direction in the virtual space corresponding to the position and light axis direction measured by said position sensor, wherein said simulation image forming means comprises

movement information forming means for forming virtual movement information related to movement of a virtual position of the user in the virtual space,

coordinate transforming means for transforming the position and light axis direction measured by said position sensor to a position and light axis direction in the virtual space, based on said virtual movement information, and

computer graphic image generating means for generating computer graphics having a projection reference point and normal direction to a picture plane, in accordance with the position and light axis direction in the virtual space.

5,796,992

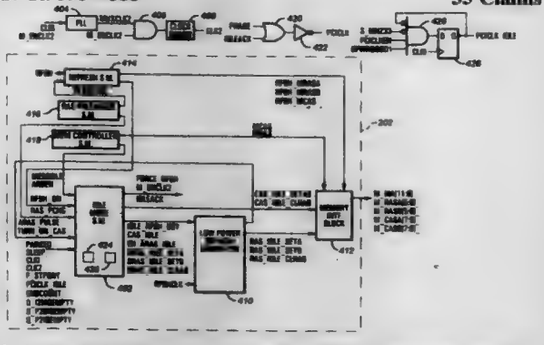
CIRCUIT FOR SWITCHING BETWEEN SYNCHRONOUS AND ASYNCHRONOUS MEMORY REFRESH CYCLES IN LOW POWER MODE

James R. Reif, Houston; Michael J. Collins, Tomball, and Todd J. DeSchepper, Houston, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 20, 1995, Ser. No. 575,370

Int. Cl.[6] G06F *1/04*

U.S. Cl. 395—555 **35 Claims**



1. A circuit for generating refresh cycles to a memory device in a computer system, the computer system having a memory controller coupled to the memory device, an asynchronous clock and a synchronous clock, and at least a first low power state, the circuit comprising:

means for detecting if the computer system is in the first low power state;

means coupled to said detecting means for disabling the memory controller if the computer system is in the first low power state, wherein the memory controller includes first synchronous refresh generating means receiving the synchronous clock for generating periodic refresh cycles based off the synchronous clock while the computer is not in a low power state; and

means coupled to said detecting means and receiving the asynchronous clock for generating periodic refresh cycles based off said asynchronous clock while the computer system is in the first low power state.

5,796,993

METHOD AND APPARATUS FOR SEMICONDUCTOR DEVICE OPTIMIZATION USING ON-CHIP VERIFICATION

Jeffrey E. Maguire, 2207 Rabb Glen St., Austin, Tex. 78704

Filed Oct. 29, 1996, Ser. No. 740,456

Int. Cl.[6] G06F *15/00*

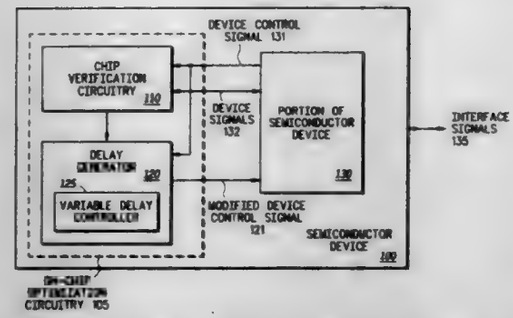
U.S. Cl. 395—555 **27 Claims**

1. A method for optimizing timing of an integrated circuit device, the method comprising the steps of:

(a) receiving a control delay value;

(b) producing a modified device timing, based on the control delay value;

(c) testing the modified device timing by using on-chip verification circuitry to determine if the integrated circuit device is a functional device;



(d) receiving a new control delay value, where the new control delay value replaces the control delay value and is different from the control delay value; and

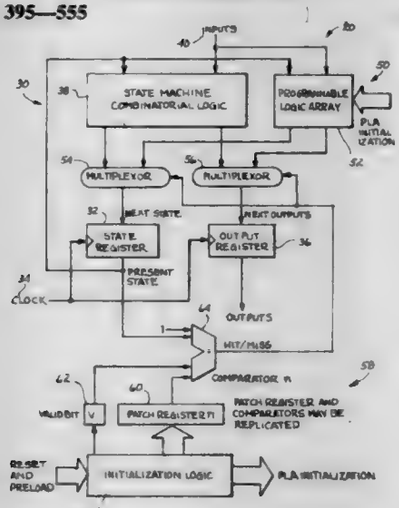
(e) repeating steps (b)–(e) to determine an optimal control delay value for the integrated circuit device.

5,796,994

PATCH MECHANISM FOR ALLOWING DYNAMIC MODIFICATIONS OF THE BEHAVIOR OF A STATE MACHINE

Peter Chambers, and Roger Lee Shelton, both of Phoenix, Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 30, 1997, Ser. No. 792,713
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—555 **15 Claims**



1. A patch mechanism for dynamic modification of the behavior of a state machine without interfering with normal operation of said state machine when modification is not required comprising, in combination:

programmable logic array means for storing a modified transition for an individual state of said state machine to be modified from a current state to a modified next state and for storing a modified output transition for said individual state of said state machine to be modified from a current output to a modified next output;

multiplexer means having inputs coupled to said state machine having said individual state to be modified and inputs coupled to said programmable logic array means for allowing said state machine to select at least one of an unmodified current transition defined by said state machine and said modified transition and for allowing said state machine to select at least one of an unmodified output transition defined by said state machine and said modified output transition; and

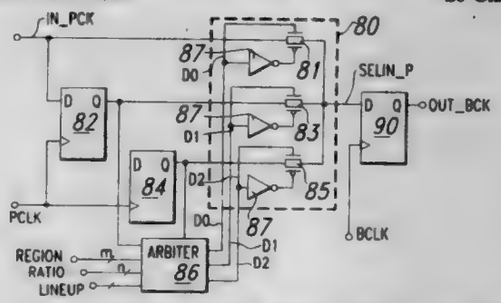
logic means coupled to said state machine and to said multiplexer means for signalling said multiplexer means when it is valid to modify said individual state to be modified from said unmodified current transition defined by said state machine to said modified transition and from said unmodified output transition defined by said state machine to said modified output transition.

5,796,995

CIRCUIT AND METHOD FOR TRANSLATING SIGNALS BETWEEN CLOCK DOMAINS IN A MICROPROCESSOR

Mitra Nasserbakht, Dallas, and Patrick W. Bosshart, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 28, 1997, Ser. No. 810,175
Int. Cl.[6] G06F *1/12*
U.S. Cl. 395—558 **20 Claims**



1. A clock domain translation circuit having a signal input receiving a digital signal clocked by a first clock signal, for communicating the digital signal to an output in a second clock domain controlled by a second clock signal, the second clock signal being at a frequency less than that of the first clock signal, comprising:

a phase determining circuit, having inputs receiving the first and second clock signals, for generating a phase region signal corresponding to the phase relationship of the first clock signal to the second clock signal;

a storage circuit, coupled to the signal input and coupled to receive the first clock signal, for storing the state of the digital signal received at the signal input for at least one cycle of the first clock signal after receipt;

an output register, having a data input, and having a clock input coupled to receive the second clock signal;

a multiplexer, for selectably coupling, to the data input of the output register, the digital signal at the signal input or an output of the storage circuit, responsive to a control signal; and

an arbiter circuit, coupled to the phase determining circuit and to the multiplexer, for generating the control signal to the multiplexer responsive to the phase region signal.

5,796,996

PROCESSOR APPARATUS AND ITS CONTROL METHOD FOR CONTROLLING A PROCESSOR HAVING A CPU FOR EXECUTING AN INSTRUCTION ACCORDING TO A CONTROL PROGRAM

Shoji Temma, and Jun Funaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

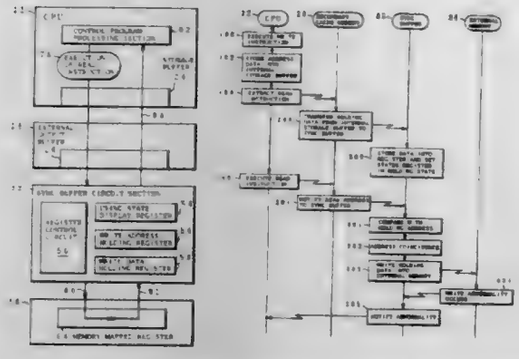
Filed Jul. 14, 1995, Ser. No. 502,351
Claims priority, application Japan, Nov. 11, 1994, 6-277287
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—566 **17 Claims**

1. A processor comprising:

a CPU having a control program processing section for executing an instruction according to a control program;

an external memory in communication with said CPU; said external memory having a memory mapped register in communication with said CPU;

an output buffer section connected to said CPU for receiving and storing a write address and write data using a memory



mapped register write instruction executed by the control program processing, section, thereby finishing the execution of the memory mapped register write instruction;

a memory access unit connected to said output buffer section and through which said CPU communicates with said external memory, said memory access unit being provided with:

a using state display register showing a holding state of the write address and the write data;

a write address holding register for holding the write address;

a write data holding register for holding the write data; and

a sync buffer circuit section for storing the write address and the write data transferred from said output buffer section into said write address holding register and said write data holding register when a memory mapped register read instruction is fetched subsequently to the end of the execution of the memory mapped register write instruction, for setting said using state display register into a data holding state, for reading the write data in said write data holding register and writing said write data into said memory mapped register in association with the execution of the memory mapped register read instruction by said control program processing section, and for allowing said CPU to respond the write data read out from said write data holding register as read data by the memory mapped register read instruction synchronously with the transfer and writing into the memory mapped register.

5,796,997

FAST NULLIFY SYSTEM AND METHOD FOR TRANSFORMING A NULLIFY FUNCTION INTO A SELECT FUNCTION

Gregg Lesartre, and Jonathan Lotz, both of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 15, 1996, Ser. No. 647,539
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—581 **12 Claims**

1. A method for implementing a fast nullify procedure for facilitating handling of nullification dependencies in a processor that executes instructions out of order, comprising the steps of:

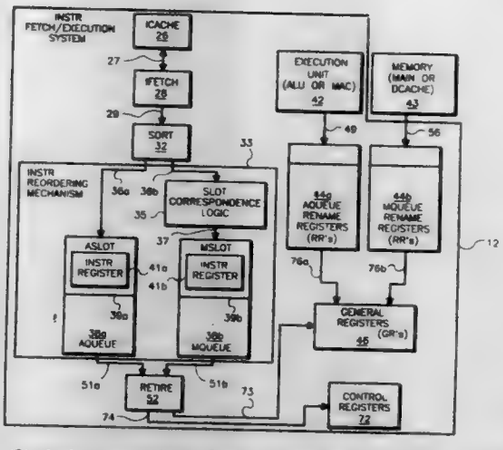
(a) identifying a nullifying instruction and a dependent instruction that can potentially be nullified by said nullifying instruction;

(b) determining whether said dependent instruction qualifies for said fast nullify procedure in that said dependent instruction requires less operands, if any, than a number than can be read by an execution unit;

(c) allowing said dependent instruction to execute during execution of said nullifying instruction;

(d) when said dependent instruction qualifies for said fast nullify procedure:

(1) executing said dependent instruction without waiting for a target architecture register to be updated with a previous result;



(2) during execution of said dependent instruction, reading with said execution unit said previous result of said target architecture register along with said operands, if any;

(3) storing a current result of said dependent instruction in a target rename register when said dependent instruction is not nullified by said nullifying instruction; and

(4) storing said previous result in said target rename register when said dependent instruction is nullified by said nullifying instruction;

(5) transferring either said current result or said previous result, whichever resides in said target rename register, from said target rename register to said target architecture register; and

(e) when said dependent instruction does not qualify for said fast nullify procedure;

(1) executing said dependent instruction after said target architecture register is updated with said previous result;

(2) during execution of said dependent instruction, reading said operands with said execution unit, one of which is instead of said previous result;

(3) storing said current result of said dependent instruction in said target rename register;

(4) transferring said current result from said target rename register to said target architecture register when said dependent instruction is not nullified by said nullifying instruction; and

(5) refraining from transferring said current result of said dependent instruction in said target rename register to said target architecture register when said dependent instruction is nullified by said nullifying instruction.

5,796,998

APPARATUS AND METHOD FOR PERFORMING BRANCH TARGET ADDRESS CALCULATION AND BRANCH PREDICITON IN PARALLEL IN AN INFORMATION HANDLING SYSTEM

David Stephen Levitan; John S. Muhich, both of Austin, Tex.; Adam R. Talcott, Santa Clara, Calif., and Steven W. White, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1996, Ser. No. 754,377
Int. Cl.[6] G06F *9/32*
U.S. Cl. 395—586 **22 Claims**

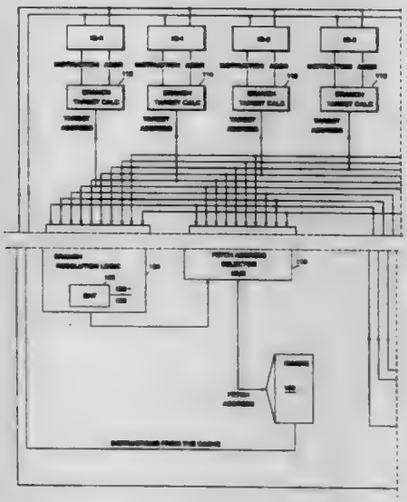
1. In an information handling system, an apparatus for fetching instructions comprising:

cache for storing addressable instructions;

instruction queues operably coupled to said cache for storing a set of fetched instructions;

fetch address selector operably coupled to said cache for selecting a fetch address and for providing said fetch address to said cache to fetch a new set of instructions;

at least one branch target calculator operably coupled to said instruction queues and to said fetch address selector for deter-



mining, in parallel, if instructions in said instruction queues are branch instructions and for providing, in parallel, target addresses of the branch instructions to said fetch address selector such that said fetch address selector can provide said cache with one of a plurality of target addresses as said fetch address.

branch resolution logic operably coupled to said fetch address selector for resolving or predicting said branch instructions, and

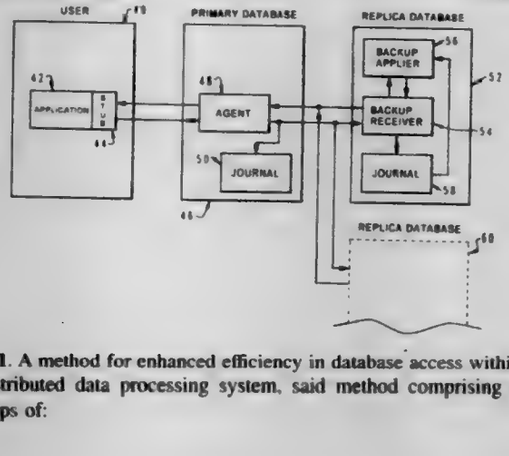
a branch queue operably coupled to said branch target calculators for receiving said target addresses operably coupled to said instruction queues for receiving the addresses of said set of fetched instructions stored in said in instruction queues and operably coupled to said fetched address selector for providing said fetch address selector with at least one resolved address.

5,796,999

METHOD AND SYSTEM FOR SELECTABLE CONSISTENCY LEVEL MAINTENANCE IN A RESILENT DATABASE SYSTEM

Alain Charles Azagury, Nesher; Danny Dolev, Mevaseret Yerushalayim, both of Israel; German Goft, Endicott, N.Y.; John Michael Marberg, Haifa, Israel; James Gregory Ranweiler, Rochester, Minn., and Julian Satran, Somers, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 15, 1994, Ser. No. 228,319
Int. Cl.[6] G06F *17/00*
U.S. Cl. 395—600 **4 Claims**



1. A method for enhanced efficiency in database access within a distributed data processing system, said method comprising the steps of:

designating a selected database within said distributed data processing system as a primary database, said selected database having a plurality of records stored therein;

replicating said primary database at at least two physical locations within said distributed data processing system;

specifying a plurality of diverse consistency levels which may be maintained between said primary database and each of said replicated databases;

permitting a user to specify a different one of said plurality of diverse consistency levels for query transactions against each of said replicated databases; and

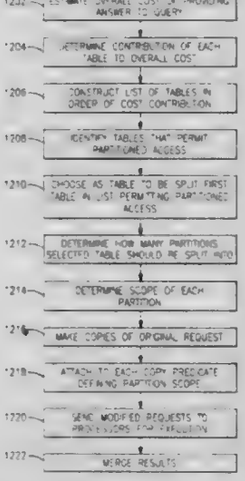
thereafter, automatically maintaining said specified one of said plurality of diverse consistency levels between said primary database and each of said replicated databases in response to updates to records within said primary database wherein queries requiring less than a full consistency level may be applied to a replicated database maintained at less than a full consistency level.

5,797,000

METHOD OF PERFORMING A PARALLEL RELATIONAL DATABASE QUERY IN A MULTIPROCESSOR ENVIRONMENT

Partha Pratim Bhattacharya, Briarcliff Manor; Jen-Yao Chung, Yorktown Heights, both of N.Y.; Mir Hamid Pirahesh; Patricia G. Selinger, both of San Jose, Calif.; Marisa S. Viveros, Hartsdale, N.Y.; Yun Wang, Saratoga, Calif., and Lawrence Peter Zaino, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 148,769, Nov. 4, 1993. This application Jun. 20, 1996, Ser. No. 667,056
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—602 **18 Claims**



1. In a database system having a plurality of processing units, a method of performing a parallel query on a plurality of tables of a database, each of said tables comprising a set of one or more tuples, at least some of said tables permitting partitioned access, said query having an overall cost associated therewith, said method comprising the steps of:

determining the estimated contribution of each of said tables to the overall cost of said query;

selecting the table with the greatest estimated contribution to the overall cost of said query that also permits partitioned access;

partitioning the selected table into a plurality of subsets of one or more tuples;

dividing said query into a plurality of subqueries restricted to respective subsets of the selected table; and

transmitting said subqueries to respective processing units for processing.

5,797,001

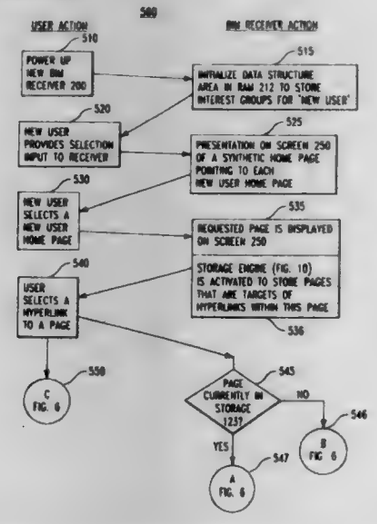
BROADCAST INTERACTIVE MULTIMEDIA SYSTEM

Joseph Ellis Augenbraun, Princeton, N.J.; Larry Alan Pearlstein, Newtown, and Michael Allen Plotnick, Southampton, both of Pa., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Continuation of Ser. No. 346,515, Nov. 29, 1994, Pat. No. 5,617,565. This application Sep. 26, 1996, Ser. No. 719,574

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—609 **7 Claims**



1. A method for receiving data elements by each of a plurality of users of the data elements, the data elements being communicated from a common database wherein: (i) interest categories for the database are defined which express the collective interest of the users; (ii) at least one of the interest categories is assigned to each data element; and (iii) data attributes for each of the data elements are identified, one of the data attributes being an interest level for each of the interest categories such that each interest level expresses an estimate of the collective interest of the users in each of the interest categories assigned to each data element, the method comprising the steps of

(a) generating a user profile indicative of data elements of interest for each particular user,

(b) selecting and locally storing data elements of interest for each particular user in correspondence to the selections of each user with respect to the communicated data elements and with reference to the user profile, and

(c) modifying the user profile in correspondence to the data attributes of data elements selected by each particular user, and returning to step (b).

5,797,002

TWO-WAY WIRELESS SYSTEM FOR FINANCIAL INDUSTRY TRANSACTIONS

L. Thomas Patterson, Jr., Chatham, N.J.; Desmond Sean O'Neill, Norwalk, Conn., and Stephen Tyler Carroll, Chatham, N.J., assignors to Papyrus Technology Corp., New York, N.Y.

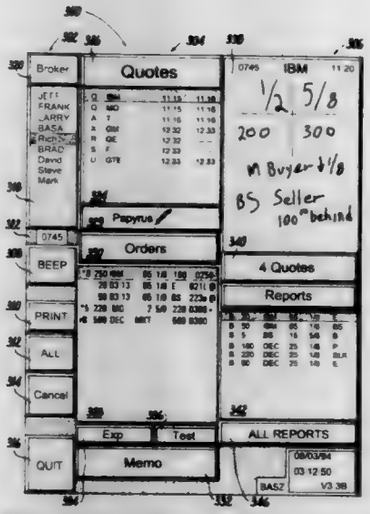
Continuation-in-part of Ser. No. 309,337, Sep. 20, 1994. This application Jun. 7, 1995, Ser. No. 478,286

Int. Cl.[6] G06F *7/00;17/00*

U.S. Cl. 395—611 **13 Claims**

1. In a system for processing one or more executions against an order, a local computer-readable memory for storing data for access by an application program being executed on a two-way wireless system, comprising:

a data structure stored in said local computer-readable memory, said data structure including information used by said application program and including:



a plurality of data packets stored in said local computer-readable memory, each of said data packets containing said information and further containing a sequence code and a volley code, said sequence code associating a subset of said plurality of data packets together and said volley code defining a hierarchical relationship among said subset of data packets;

an order data packet being one of said subset of data packets and having one hierarchical level;

at least one execution data packet being another of said subset of data packets and having another hierarchical level, said at least one execution data packet having a many-to-one relationship with said order data packet, each of said at least one execution data packet being defined by a uniquely assigned execution sequence number, said execution sequence number being assigned by said application program.

5,797,003

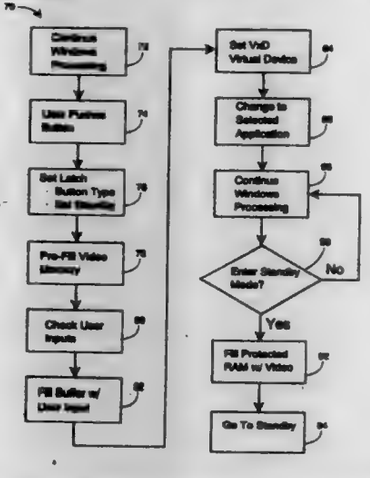
QUICK ACCESS TO COMPUTER APPLICATIONS

Maurice F. Voce, San Carlos, Calif., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 342,117, Nov. 18, 1994, abandoned. This application Aug. 14, 1997, Ser. No. 911,346

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—652 **25 Claims**



1. A method for enabling a user of a personal general purpose computer to rapidly begin using applications which have been previously placed in a non-running state, the personal general

purpose computer having system and long-term storage memories, the personal general purpose computer having a keyboard for data entry, the personal general purpose computer having buttons, each button being associated with one of the applications, the personal general purpose computer having a display for displaying interactive screens Generated by the applications, comprising the steps of:

storing the applications in the long-term storage memory;

loading the applications from the long-term storage memory into the system memory to run the applications;

placing an application into the non-running state by having at least a portion of the software code required to run the application removed from the system memory;

prior to a time when one of the applications was placed in the non-running state:

storing, in the system memory of the computer, information defining an image of an interactive screen associated with the application, and

locking the memory in which the image is stored to prevent corruption by other running applications; and

in response to a request from the user to begin using the application, by the user pressing the button associated with the application, at a time when the interactive screen image is not displayed, and before the application has been sufficiently loaded into the system memory of the computer to be again running:

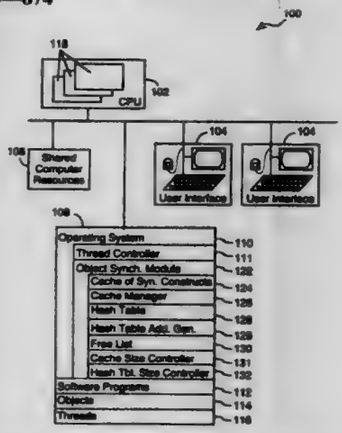
displaying, to the user, the image defined by the stored information.

5,797,004

SYSTEM AND METHOD FOR CACHING AND ALLOCATING THREAD SYNCHRONIZATION CONSTRUCTS

Timothy G. Lindholm, Palo Alto, Calif., and Jonathan Payne, Seattle, Wash., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Dec. 8, 1995, Ser. No. 569,805
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—674 **35 Claims**



3. In a computer system that includes a plurality of threads and a set of objects that each can only be synchronized with a predefined number of said threads at a time, an object synchronization module comprising:

a cache of synchronization constructs, the number of the synchronization constructs being less than the number of the objects;

a free list of each of said synchronization constructs that are not currently allocated; and

a cache manager that allocates respective ones of the synchronization constructs from said free list to respective ones of the objects when at least one of said threads requests synchronization with said respective objects, and that deallocates each respective one of said synchronization constructs from a corresponding one of said objects and returns said deallocated synchronization construct to said free list of synchronization constructs when none of said threads are waiting to be synchronized with said corresponding object and none of said threads is currently synchronized with said respective object;

wherein:

each of said synchronization constructs includes (A) an object identifier, (B) a synchronizers list, and (C) a waiters list;

said cache manager, for each respective thread of the threads that seeks synchronization with a respective one of the objects, allocates a respective synchronization construct in the free list for synchronizing the respective thread with the respective object when none of the synchronization constructs is currently allocated for synchronizing the respective object with any of the threads, the cache manager allocating the respective synchronization construct by (A) updating the respective synchronization construct's object identifier to identify the respective object as being synchronized by said respective one of said synchronization constructs, (B) updating the respective synchronization construct's synchronizers list to include the respective thread so as to indicate that the respective thread is synchronized with the respective object, and (C) removing the respective synchronization construct from the free list;

the cache manager adding the respective thread to the waiters list of a particular one of the synchronization constructs so that the respective thread must wait to be synchronized with the respective object when the particular synchronization construct is currently allocated for synchronizing the respective object with a particular thread of the threads;

the cache manager, for each specific one of the threads that seeks de-synchronization with a specific one of the objects when a specific one of the synchronization constructs is currently allocated for synchronizing the specific thread with the specific object, re-allocating the specific synchronization construct for synchronizing a waiting one of the threads with the specific object when the specific synchronization construct's waiters list contains the waiting thread, the cache manager re-allocating the specific synchronization construct by (A) updating the specific synchronization construct's synchronizer identifier to identify the waiting thread, and (B) removing the waiting thread from the specific synchronization construct's waiters list;

the cache manager deallocating the specific synchronization construct when the specific synchronization construct's waiters list does not contain any waiting threads of the threads, the cache manager deallocating the specific synchronization construct by adding the specific synchronization construct to the free list.

5,797,005

SHARED QUEUE STRUCTURE FOR DATA INTEGRITY

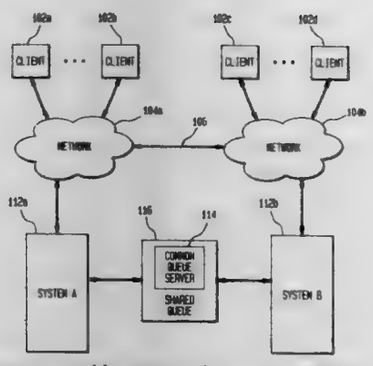
James W. Bahls, Pleasanton; George S. Denny, San Jose; Richard G. Hannan, San Jose; Janna L. Mansker, San Jose; Bruce E. Naylor, Morgan Hill, all of Calif.; Karen D. Paffendorf, East Brunswick, N.J.; Betty J. Patterson, San Jose, Calif.; Sandra L. Stoob, Morgan Hill, Calif.; Judy Y. Tse, San Francisco, Calif., and Anu V. Vakkalagadda, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1994, Ser. No. 366,554
Int. Cl.[6] G06F *15/163;9/00*
U.S. Cl. 395—680 **24 Claims**

1. A system for allowing one or more processing systems to process client requests, comprising:

a first data processing system, said first data processing system having a first data processing application program running thereon, wherein said application program is configured to submit a message for processing;

a plurality of second data processing systems, at least one of said plurality of second data processing systems is configured to receive said message and transmit said message for storage on a queue, at least one of said plurality of second data processing systems configured to retrieve said message from said



queue, process said message via one or more data processing programs running thereon, and transmit a second message to said queue;

a queue processor and shared storage device, said queue processor and shared storage device configured to provide communications between said plurality of second data processing systems, and to store said message in said queue in the form of a list entry, said queue comprising:

a plurality of queue types having one or more list headers, wherein said message is stored within said list entry associated with a list header associated with one of said queue types based on the type of said message,

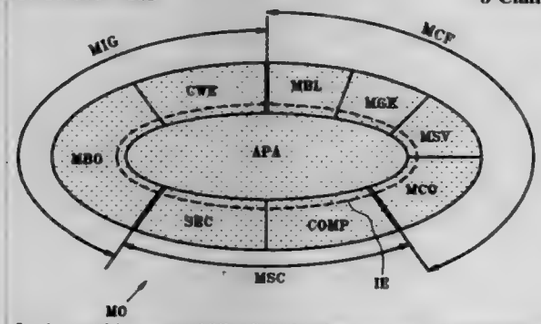
wherein each of said one or more list headers is accessible at any given time by only one of said second data processing systems, such that said one or more list headers minimize contention for access to messages located therein.

5,797,006

APPLICATION INTEGRATION ARCHITECTURE FOR A DATA PROCESSING PLATFORM

Gerard Sitbon, Vitry; Christian Baillif, Bourg La Reine; Marc Blochet, Les Clayes/Bois, and Jean-François Bassier, Sucy en Brie, all of France, assignors to Bull S.A., Louveciennes, France

Filed Jul. 19, 1996, Ser. No. 683,413
Claims priority, application France, Jul. 21, 1995, 95 08851
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—682 **8 Claims**



1. An architecture (MO) for the integration of applications (APA) into a business data processing platform (PL) constituted by an internal network (RE) of machines (PLC1 through PLC4) running a plurality of heterogeneous applications (APA), the codes of which are not modifiable and each of which contains at least some or all of the following external interfaces (IE):

a configuration file (FIG),

a log file (LOG) which records the events related to it,

a mechanism (COM) for communicating between processes running on this machine or these machines,

a set of commands (CD) which make it possible to modify its characteristics,

a set of system resources (RES) which allow it to run,

a set of peripherals (PER) used for its data input/output needs,

characterized in that, for the purpose of modifying the basic characteristics of these applications, in a way that is transparent to the user, relative to their security, availability, ergonomics, administratability, interoperability, monitoring, accounting of the resources consumed by the user, it comprises:

a) an ergonomic integration module (MIG) for centralized control of the applications (APA) with a graphical interface (GI),

b) an operational continuity module (MCF) which, by periodically scanning the log files and by monitoring the components of the applications (APA), executes actions to prevent them from operating abnormally,

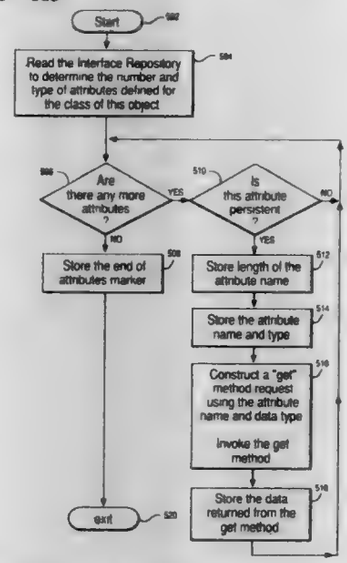
c) a module (MSC) for intercepting the dialogues between these components in order to ensure the logical security of the applications (APA) and the accounting of the resources consumed by the user.

5,797,007

PERSISTENT OBJECT STORAGE SYSTEM WITH DEFAULT OBJECT ENCODER/DECODER

Charles Robert Erickson, Cedar Park, and Roger Hereward Sessions, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1993, Ser. No. 77,348
Int. Cl.[6] G06F *7/00*
U.S. Cl. 395—683 **8 Claims**



1. A system for storing data for a selected object to a persistent medium in an object oriented computer system also having a memory, a processor, and operator interaction means, wherein data resides in system objects in said memory, and wherein said data is manipulated by processing methods associated with said object, the system comprising:

attribute extraction means for determining a number, names, and types of attributes defined for said selected object, said attribute extraction means being responsive to a data storage request;

method construction means for constructing a method invocation request to get attribute values for the attributes extracted by said attribute extraction means, said method construction being responsive to said data storage request;

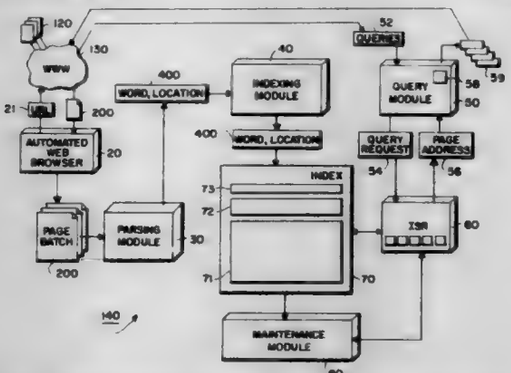
data formatting means for formatting said attribute names, types and values for storage to said persistent medium; and

data restoration means for restoring said attributes to a restored object instance.

5,797,008
MEMORY STORING AN INTEGRATED INDEX OF DATABASE RECORDS

Michael Burrows, Palo Alto, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 9, 1996, Ser. No. 694,919
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—612 **1 Claim**



1. In a data processing system, at least one central processor executing instructions of software programs, comprising

a memory containing a data structure common to the software programs, the common data structure including

a compressed index data structure, the index structure including a plurality of index entries referencing a database, the database including a plurality of records, each record having a unique address in the database;

each index entry including a word entry if the index entry represents a compressed encoding of a unique portion of information sequentially parsed from the database, the word entry followed by one or more location entries, the one or more location entries referencing occurrences of the unique portions of information in the database;

each index entry including a metaword entry if the index entry represents a unique attribute of one or more related words, the metaword entry followed by one or more location entries, the location entries referencing the occurrences of the unique attributes in the database;

the index entries sequentially stored according to a collating order of the words and metawords, the location entries stored according to their collating order;

a summary data structure including a plurality of summary entries generated by periodically sampling the location entries of the compressed index data structure, each summary entry including an encoding of the word entry associated with the sampled location entry, an encoding of the sampled location entry, and a pointer to a next location entry following the sampled location entry.

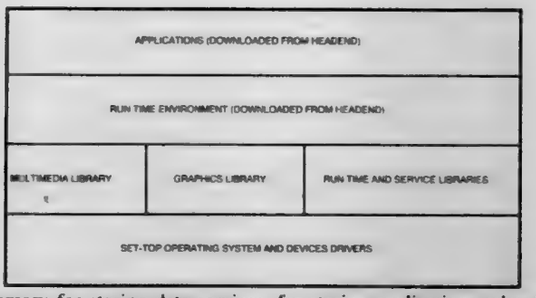
5,797,009

Patent Not Issued For This Number

5,797,010
MULTIPLE RUN-TIME EXECUTION ENVIRONMENT SUPPORT IN A SET-TOP PROCESSOR

Ralph W. Brown, Boulder, Colo., assignor to Time Warner Cable, Stamford, Conn.

Filed Dec. 22, 1995, Ser. No. 577,210
Int. Cl.[6] G06F *9/06*
U.S. Cl. 395—712 **7 Claims**



1. In a network providing data-services to subscribers, said network including a head-end having servers for receiving requests for data-services from subscribers, and said network including memory for storing data-services, for storing applications related to data-services and for storing execution-environments that are designed and compiled to enable execution of applications, said head-end being coupled to a plurality of set-tops that are resident at subscriber locations, a method for supporting execution of applications by processors that are within said set-tops, comprising the steps of:

sending a request for data-service from a given set-top to said head-end;

accepting said data-service request at said head-end;

downloading from said head-end to said given set-top execution-environments designed and compiled to enable processor-execution of applications;

accepting and storing said downloaded execution-environment at said given set-top;

downloading from said head-end to said given set-top applications;

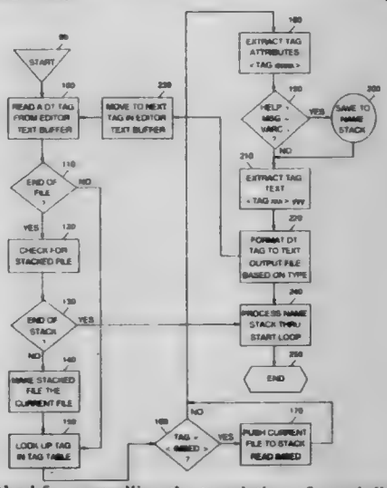
accepting and storing said downloaded applications at said given set-top; and

utilizing a processor within said given set-top to execute said stored applications by the use of said stored execution-environment.

5,797,011
METHOD FOR CONTROLLING THE TRANSLATION OF INFORMATION ON A DISPLAY SCREEN FROM A SOURCE LANGUAGE TO A TARGET LANGUAGE

Oren Kroll, Marietta; Rian Lee Emrick, Stone Mountain, and David Winser Johnston, Dunwoody, all of Ga., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 195,743, Oct. 23, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 478,169
Int. Cl.[6] G06F *3/14*
U.S. Cl. 395—705 **20 Claims**



1. A method for controlling the translation of panel displays and associated panel tags on a display screen from a source language to a target language comprising the steps of:

opening a source language panel file having panel tags containing textual information;

opening a target language panel file;

translating said textual information of said source language panel file;

writing the output of said translated textual information of said source language panel file to said target language panel file;

displaying in a plurality of windows on said display screen said source language panel tag file, said target language panel tag file, a source language panel image and a target language panel image; and

modifying said target language panel tag file if comparison of the source panel image with the target panel image indicates that the target language panel file requires modification.

5,797,012

CONNECTIVITY BASED PROGRAM PARTITIONING

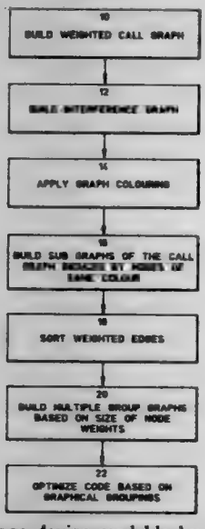
Robert James Blainey, Newmarket; Christopher Michael Donawa, and James Lawrence McInnes, both of Toronto, all of Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 7, 1996, Ser. No. 727,720

Claims priority, application Canada, Dec. 28, 1995, 2166253

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—705 **7 Claims**



7. A program storage device readable by a machine in a data processing system having preset memory size constraints, tangibly embodying a program of instructions executable by the machine to perform method steps for partitioning a computer program with multiple procedures into compilation modules, said method steps comprising:

i) defining a graph with nodes, edges, and edge weights, each node representing a respective procedure of said multiple procedures, each edge connecting two respective nodes and representing a call between the two respective nodes, each edge weight representing an execution count between two respective procedures;

ii) sorting the edge weights into a highest to lowest sorted list;

iii) selecting an edge having a highest edge weight and any node or nodes connecting to said edge remaining for selection;

vi) aggregating the weight of the selected node or nodes;

v) dividing the edge and the selected node or nodes into compilation unit having an aggregate node weight not exceeding the size constraint on memory when the aggregate weight of the selected node or nodes is added;

vi) removing the selected edge from the sorted list; and

vii) repeating steps iii) through vi) for all edges.

5,797,013

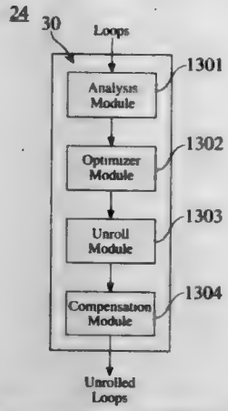
INTELLIGENT LOOP UNROLLING

Uma Mahadevan, Sunnyvale, and Lacky Shah, Fremont, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 29, 1995, Ser. No. 564,514

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—709 **16 Claims**



1. In a programmable machine, a compiler comprising:

an analysis module for analyzing and unrolling loops within source applications;

an optimizer module for determining an optimum unroll factor in response to said analysis module;

an unroll module for generating an unrolled loop having said optimum unroll factor; and

a compensation module for generating and placing any compensation code as required as a result of loop unroll optimization,

wherein said compensation module performs a placement calculation to determine whether to put said compensation code before the unrolled loop or after the unrolled loop.

5,797,014

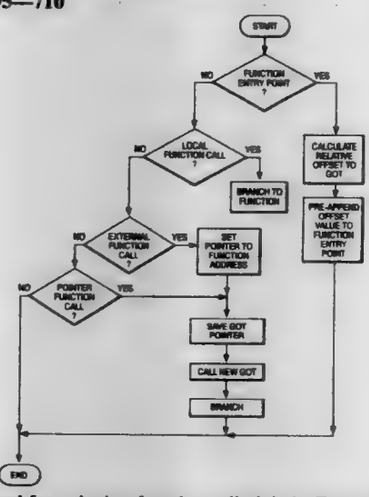
METHOD FOR REDUCING PROCESSOR CYCLES USED FOR GLOBAL OFFSET TABLE ADDRESS COMPUTATION IN A POSITION INDEPENDENT SHARED LIBRARY

Ahmed Mohammed Gheith, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1995, Ser. No. 572,467

Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—710 **6 Claims**



1. A method for reducing function call global offset table address calculation during compilation of a plurality of callable functions compiled to create a shared library module containing executable

code, the module having memory position independent code and a global offset table for resolving internal and external function references, the method comprising the steps of:

inserting before each function entry point a function entry offset value representing the offset from the function entry point address to a module global offset table for the module;

testing each function call to determine whether the called function is local to the module or external to the module;

replacing each external function call with a first calculation and storing of the called shared library module global offset table address based on the function entry offset and the function entry point address and then a branch to the function entry address; and

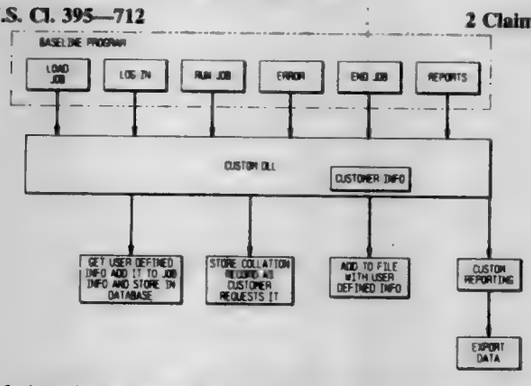
replacing each local function call with a direct branch to the function entry point address without recalculating the global offset table address.

5,797,015

METHOD OF CUSTOMIZING APPLICATION SOFTWARE IN INSERTER SYSTEMS

Edward P. Daniels, Jr., Trumbull, and Clare E. Woodman, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 18, 1995, Ser. No. 424,747
Int. Cl.[6] G06F *9/40*
U.S. Cl. 395—712 **2 Claims**



1. A method of customizing application software in an inserting system, comprising the steps of:

providing a system baseline program for operating the inserting system in a standard baseline mode;

providing a dynamic link library (DLL) including a table of features to be included in the inserting system and an application routine corresponding to each of the features;

integrating into a call table in the system baseline program an address for each feature corresponding to the location of the application program for the feature;

customizing the DLL based on information received from the baseline program;

calling each of the features when indicated in the system baseline program;

providing information to each DLL application program corresponding to the feature;

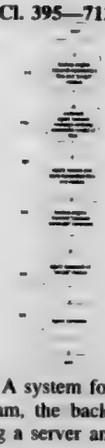
modifying the information to make the system baseline program execute a different set of logic corresponding the customization of the machine.

5,797,016

REGENERATION AGENT FOR BACK-UP SOFTWARE

Chia-Hwang Chen, Plainview; Miguel Long, Brooklyn, and William Hsieh, Syosset, all of N.Y., assignors to Cheyenne Software Inc., and Cheyenne Software International Sales Corp., both of Roslyn Heights, N.Y.

Filed Oct. 29, 1996, Ser. No. 743,459
Int. Cl.[6] G06F *11/14;13/00*
U.S. Cl. 395—712 **14 Claims**



11. A system for updating an agent used in a backup software program, the backup software program operating on a network having a server and a plurality of workstations, the system comprising:

a backup engine executing on the server; and

an agent executing on each of the plurality of workstations to be backed up;

the backup engine transmitting an updated agent to each workstation and transmitting an executable regeneration module to each workstation and transmitting an execute command to the agent at each workstation;

the agent at each workstation storing the updated agent and the executable regeneration module at each workstation and causing the execution of the executable regeneration module;

the executable regeration module at each workstation, deleting the agent and renaming the updated agent to the name of the agent and thereafter enabling operation of the updated agent as the agent.

5,797,017

Patent Not Issued For This Number

5,797,018

APPARATUS AND METHOD OF PREVENTING A DEADLOCK CONDITION IN A COMPUTER SYSTEM

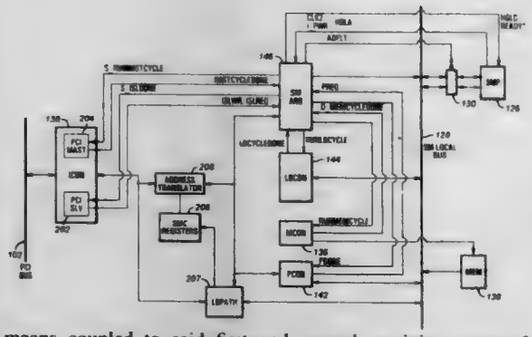
Siamak Tavallaei, Spring, and Joseph P. Miller, Cypress, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Dec. 7, 1995, Ser. No. 568,478
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—726 **43 Claims**

1. A circuit for preventing deadlock between a microprocessor coupled to a first bus and a bus master coupled to a second bus, wherein the microprocessor has data and address outputs for connection to the first bus and has cycle control outputs, and wherein the first bus has data and address portions and is coupled to a resource, the circuit comprising:

first means for receiving the microprocessor cycle control outputs to determine a request by the microprocessor for a microprocessor-to-second-bus cycle, wherein the microprocessor continuously drives or controls its address, data, and control cycle outputs once it starts said microprocessor-to-second-bus cycle;

second means for receiving a request from the second bus master for the first bus resource;



means coupled to said first and second receiving means for generating a float signal, said float signal being asserted if said microprocessor-to-second-bus cycle request is pending when said second bus master request is asserted; and

a plurality of tristate buffers responsive to said float signal, said tristate buffers being connected between the microprocessor data and address outputs and said first bus data and address portions, said plurality of tristate buffers being disabled if said float signal is asserted,

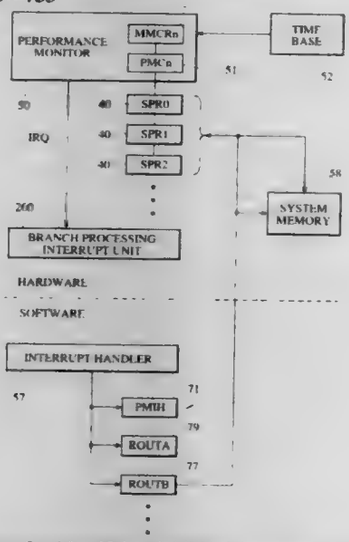
wherein said tristate buffers are implemented with bi-directional high speed bus switches.

5,797,019

METHOD AND SYSTEM FOR PERFORMANCE MONITORING TIME LENGTHS OF DISABLED INTERRUPTS IN A PROCESSING SYSTEM

Frank Eliot Levine; Charles Philip Roth, and Edward Hugh Welbon, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 2, 1995, Ser. No. 539,023
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—735 **11 Claims**



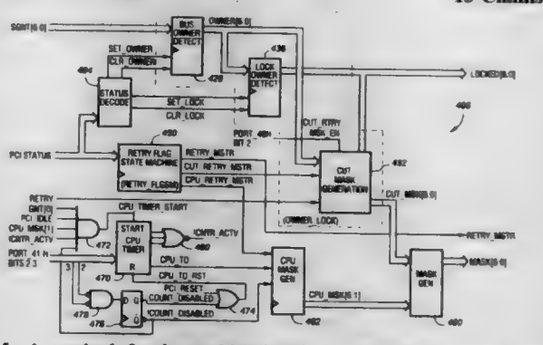
6. A system for identifying inhibited interrupts in a processor system, the processor system including at least one performance monitor counter (PMC) and at least one monitor mode control register (MMCR) to configure the operations of the at least one PMC, the system comprising a circuit for initializing the at least one PMC; for enabling counting in the at least one PMC through a bit set in the at least one MMCR, the bit set comprising a plurality of bits of the at least one MMCR; for identifying at least one section of code causing inhibited interrupts; for identifying a number of cycles that an enable exception bit of a machine state register is at a low logic level; and for counting a number of cycles with the at least one PMC that an interrupt is pending during a predetermined sampling period, wherein the counted number of cycles indicate efficiency of the processor system.

5,797,020

BUS MASTER ARBITRATION CIRCUITRY HAVING IMPROVED PRIORITIZATION

Randy M. Bonella, Cypress, and Maria L. Melo, Houston, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 187,843, Jan. 28, 1994, abandoned. This application Aug. 5, 1996, Ser. No. 692,207
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—728 **15 Claims**



1. A method for bus arbitration in a computer system, the computer system having a bus for connection to a plurality of bus masters and bus slaves, each bus master requesting control of the bus by use of a bus request signal and receiving control by use of a grant signal, and wherein operation cycles of the bus masters can be directed to be retried by the bus slaves, wherein the main memory of the computer system is both a bus master and a bus slave, the bus arbitration method comprising the steps of:

receiving the bus request signals from the bus masters;

determining when an operation cycle is to be retried;

determining the bus request priority of the bus masters with respect to each other;

granting control of the bus to the highest priority requesting bus master and providing the corresponding bus grant signal; and

determining if the bus slave indicating a retry to the bus master is the main memory;

masking the bus requests of all bus masters other than the main memory if the main memory has indicated a retry; and

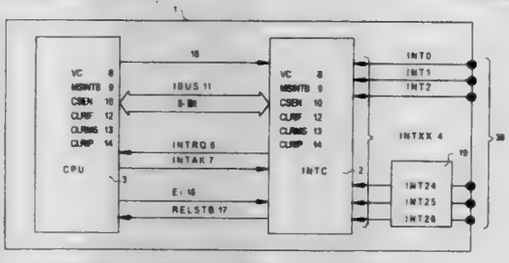
granting control of the bus to main memory.

5,797,021

INFORMATION PROCESSING APPARATUS FOR EMULATION

Masako Ideta, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 25, 1995, Ser. No. 506,496
Claims priority, application Japan, Jul. 25, 1994, 6-172541
Int. Cl.[6] G06F *9/46;13/14*
U.S. Cl. 395—734 **8 Claims**



1. An interrupt processing apparatus comprising:

an interrupt control unit;

a central processing unit;

a bus for transferring data between said interrupt control unit and said central processing unit;

an interrupt request line which transmits an interrupt request signal to said central processing unit when an interrupt signal is inputted to said interrupt control unit;

an interrupt knowledge signal line which transmits to said interrupt control unit an interrupt acknowledge signal requesting a vector address which responds to said interrupt signal when said interrupt signal is input to said central processing unit;

a first output buffer which is provided within said interrupt control unit and outputs to said bus said vector address and a control signal required for carrying out an interrupt processing in response to a first edge of said interrupt acknowledge signal;

a first latch circuit which is provided within said central processing unit and latches said vector address and said control signal on said bus in response to said first edge of said interrupt acknowledge signal;

a second output buffer which is provided within said central processing unit and outputs on said bus an interrupt state signal indicating a state of interrupt processing in response to a second edge of said interrupt acknowledge signal different from said first edge of said interrupt acknowledge signal;

a second latch circuit which is provided within said interrupt control unit and latches said interrupt state signal on said bus in response to said second edge of said interrupt acknowledge signal;

a first edge detection circuit which is provided within said interrupt control unit and detects said first edge of said interrupt acknowledge signal;

a second edge detection circuit which is provided within said interrupt control unit and detects said second edge of said interrupt acknowledge signal; and

a third edge detection circuit which is provided within said central processing unit and detects said second edge of said interrupt acknowledge signal, said first output buffer outputting to said bus said vector address and said control signal when said first edge detection circuit detects said first edge, said second output buffer outputting to said bus said interrupt state signal when said third edge detection circuit detects said second edge, said first latch circuit latching said vector address and said control signal on said bus in response to said first edge, and said second latch circuit latching said interrupt state signal on said bus when said second edge detection circuit detects said second edge.

5,797,022

DISK CONTROL METHOD AND APPARATUS

Susumu Shimotono, Hadano; Tomohiro Miyahira, and Akihiro Nakao, both of Yamato, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 19, 1996, Ser. No. 684,026

Claims priority, application Japan, Jul. 21, 1995, 7-185771

Int. Cl.[6] G06F 1/26

U.S. Cl. 395—750.05 **12 Claims**

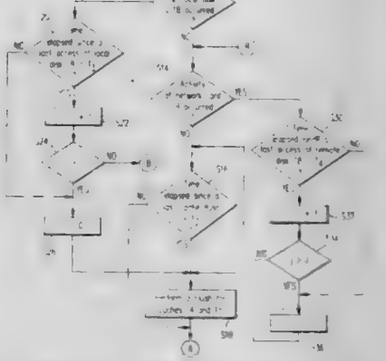
1. An apparatus for controlling a disk drive in a computer system having a cache for storing data and the disk drive having a rotatable disk, comprising:

a detection means for detecting a disk access request;

a sync means for writing data from the cache to the disk; and

a power management means, responsive to the detection means, for detecting a predetermined threshold of disk access requests, and enabling the sync means,

wherein the sync means writes data from the cache to the disk after a predetermined period of time has elapsed after data



was last written to the disk from the cache or if the predetermined threshold is greater than one.

5,797,023

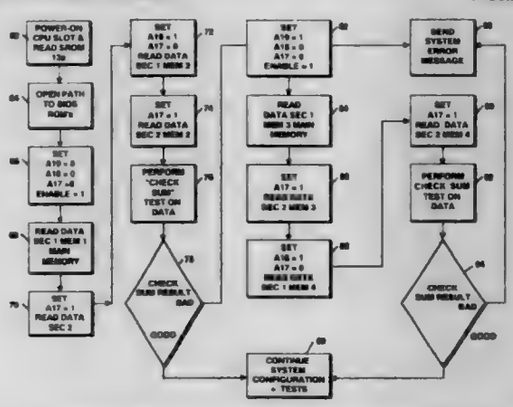
METHOD AND APPARATUS FOR FAULT TOLERANT BIOS ADDRESSING

Rachael Berman, Maynard; Stephen F. Shirron, Acton; Fidelma Hayes, Marlborough; Kevin Peterson, Sudbury, and Marco Ciaffi, Hudson, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 324,198, Oct. 17, 1994, abandoned. This application Jul. 10, 1997, Ser. No. 891,249

Int. Cl.[6] G06F 1/28

U.S. Cl. 395—750.06 **4 Claims**



1. A method for providing a fault tolerant power-on of a computer system having a stored primary power-on system level configuration program, comprises the steps of:

accessing said primary power-on system level configuration program storage location;

performing a first check-sum calculation on said primary power-on system level configuration program;

executing said primary power-on system level configuration program to enable said computer system operations if said first check-sum operation indicates no failure in said primary power-on system level configuration program;

automatically accessing a secondary power-on system level configuration program storage location if said first checksum operation indicates a failure in said primary power-on system level configuration program data, and automatically notifying

a system operator of said failure in said primary power-on system level configuration program;

performing a second check-sum calculation on said secondary power-on system level configuration program; and

executing said secondary power-on system level configuration program to enable said computer system operations if said second check-sum operation indicates no failure.

5,797,024

PC CARD

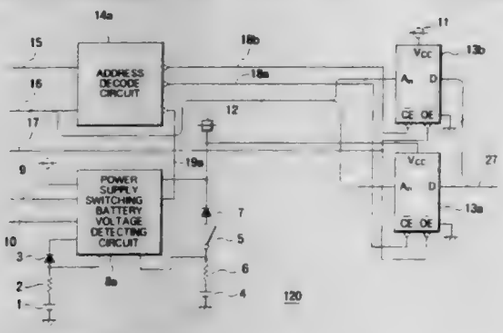
Hidenobu Gochi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 16, 1995, Ser. No. 558,869

Claims priority, application Japan, Nov. 25, 1994, 6-291478

Int. Cl.[6] G06F *1/30*

U.S. Cl. 395—750.08 **3 Claims**



1. A PC card comprising:

a main battery for supplying power to a volatile memory to maintain data stored in the volatile memory;

an auxiliary battery for supplying power to the volatile memory when said main battery is in a non-operating state; and

auxiliary battery voltage detection means for detecting a voltage of said auxiliary battery and outputting a detection result indicative of the voltage in response to an external address signal indicative of an ordinarily unaccessed memory area.

5,797,025

PROCESSOR ARCHITECTURE SUPPORTING SPECULATIVE, OUT OF ORDER EXECUTION OF INSTRUCTIONS INCLUDING MULTIPLE SPECULATIVE BRANCHING

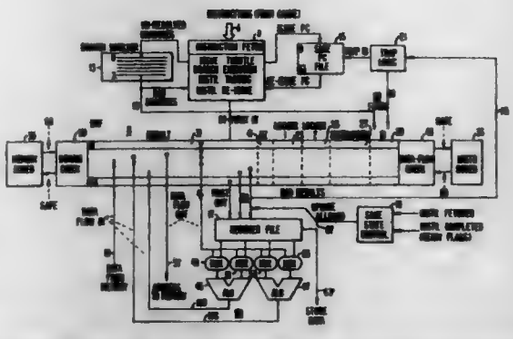
Valeri Popescu, San Diego; Merle A. Schultz, Escondido; Gary A. Gibson, Carlsbad; John E. Spracklen, and Bruce D. Lightner, both of San Diego, all of Calif., assignors to Hyundai Electronics America, Inc., San Jose, Calif.

Division of Ser. No. 710,358, Sep. 17, 1996, which is a continuation of Ser. No. 471,651, Jun. 6, 1995, Pat. No. 5,625,837, which is a division of Ser. No. 622,893, Dec. 5, 1990, Pat. No. 5,487,156, which is a continuation-in-part of Ser. No. 451,403, Dec. 15, 1989, abandoned. This application Nov. 14, 1996, Ser. No. 749,291

Int. Cl.[6] G06F *9/30;9/38;15/82*

U.S. Cl. 395—800 **17 Claims**

1. A processor for processing information in response to an ordered sequence of instructions, the ordered sequence of instructions including a plurality of arithmetic instructions that control arithmetic operations on the information, the ordered sequence of instructions including a plurality of branch instructions, each branch instruction being associated with a test instruction, said processor being capable of performing speculative, out-of-order execution of instructions contained within said ordered sequence of instructions for enhanced computational efficiency, said processor comprising:



register means for storing information, said register means comprising an array of registers, each register having a unique register number;

predicting means for predicting speculative sequences of instructions following each branch instruction within the sequence of instructions, the speculative sequence of instructions being capable of containing at least one of the arithmetic instructions;

fetching means for fetching the speculative sequence of instructions from an instruction memory;

shelving means coupled to said fetching means to receive fetched instructions and to store multiple such instructions in the order fetched, said shelving means comprising:

means for storing an operation code associated with each of said instructions;

content-addressable means for storing a destination register number associated with each of said instructions;

means for storing a result associated with each of said instructions;

scheduling means coupled to said shelving means for continuously selecting instructions in said shelving means for which all information required for execution is available in one of said register means or said shelving means and for issuing those instructions for execution in an order independent of the order in which those instructions were fetched;

multiple arithmetic means coupled to said scheduling means for simultaneously performing operations on information in one of said register means or said shelving means in response to instructions supplied from said shelving means to generate execution results, said arithmetic means further coupled to said shelving means so that said shelving means receives the execution result and is capable of storing the execution result in said means for storing, said scheduling means being capable of simultaneously supplying each of several of said arithmetic means with a different arithmetic instruction from said shelving means, along with the information needed to execute each of said different arithmetic instructions stored in either said register means or said shelving means;

means for evaluating each branch instruction stored in said shelving means subsequent to performance of an operation responsive to the test instruction associated with the branch instruction to determine based on a result of the operation performed responsive to the test instruction whether the branch instruction associated with the test instruction was correctly predicted;

means, upon detection of an incorrectly predicted branch instruction by said evaluating means, for repairing the incorrectly predicted branch instruction and instructions of the speculative sequence following the branch instruction predicted by said predicting means; and

means for copying the results of execution of the oldest instruction in said shelving means into said register means and removing that instruction from said shelving means;

wherein said predicting means is capable of predicting a speculative sequence of instructions following a later branch instruction while an earlier branch instruction remains unevaluated and said repairing means is capable of repairing either the later branch instruction or the earlier branch instruction if they are determined to be incorrectly predicted.

5,797,026

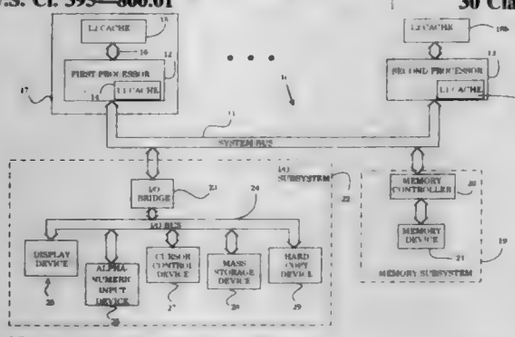
METHOD AND APPARATUS FOR SELF-SNOOPING A BUS DURING A BOUNDARY TRANSACTION

Michael W. Rhodehamel, Beaverton; Nitin V. Sarangdhar, Woodland; Amit A. Merchant, Portland; Matthew A. Fisch, and James M. Brayton, both of Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 679,744, Jul. 15, 1996, abandoned, which is a continuation of Ser. No. 205,015, Feb. 28, 1994, abandoned. This application Sep. 2, 1997, Ser. No. 921,845

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800.01 | **30 Claims**



12. A computer system comprising:

bus means for providing an interconnect between a plurality of bus agents to allow information to be exchanged said plurality of bus agents through a request, based on a boundary transaction, issued on said bus means;

memory means for storing said information; and

a plurality of bus agents including a first bus agent and a second bus agent each coupled to said bus means, said first bus agent being further coupled to said memory means, said first bus agent issues the request and snoops said bus means during the boundary transaction after issuing said request to determine whether said request can only be serviced by accessing said memory means, issues a first control signal indicating said request can only be serviced by accessing said memory means and places data from said memory means onto said bus means in order to service said request and to complete the boundary transaction.

5,797,027

DATA PROCESSING DEVICE AND DATA PROCESSING METHOD

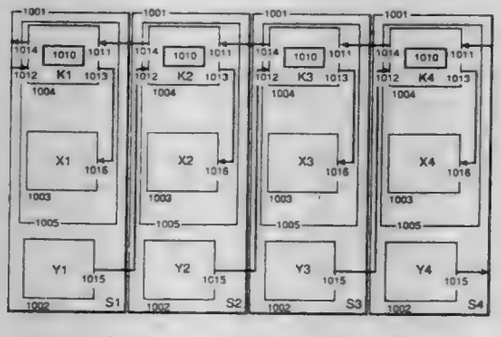
Hiroyuki Kajiura, Ichihara, Japan, assignor to Sharp Kubushiki Kaisha, Osaka, Japan

Filed Sep. 20, 1996, Ser. No. 717,286

Claims priority, application Japan, Feb. 22, 1996, 8-034486

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800.11 | **12 Claims**



1. A data processing device comprising one-dimensionally or multi-dimensionally interconnected processors each of which comprises a first data-holding means for storing data and a storage means consisting of one or more second data-holding means for storing data and a connecting means, wherein the connecting means of each processor has at least two inputs, at least two outputs and a state variable for setting input-output connections: the first input of the connecting means is connected to a second output of connecting means of a first physically or logically neighboring processor; the first output of the connecting means is connected to an input of the second data-holding means disposed in the same storage means wherein the connecting means exists; the second input of the connecting means is connected to an output of a first data-holding means of connecting means of a second physically or logically neighboring processor; the second output of the connecting means is connected to a first input of the first data-holding means of connecting means of the second physically or logically neighboring processor, and the input-output connections of the connecting means can be changed according to a state value of the state variable.

5,797,028

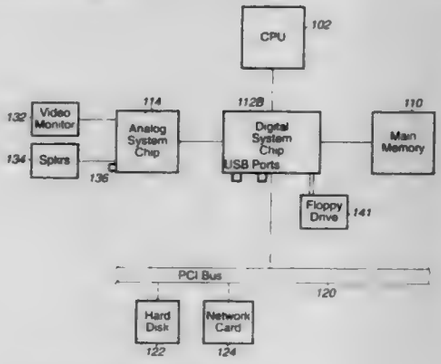
COMPUTER SYSTEM HAVING AN IMPROVED DIGITAL AND ANALOG CONFIGURATION

Dale E. Gulick; Andy Lambrecht; Mike Webb; Larry Hewitt, all of Austin, and Brian Barnes, Round Rock, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 11, 1995, Ser. No. 526,488

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—800.32 | **32 Claims**



1. A computer system, comprising:

a CPU;

chipset logic coupled to said CPU;

main memory coupled to said chipset logic which stores data accessible by the CPU;

a digital system chip coupled to said chipset logic, wherein said digital system chip comprises:

one or more DSP engines, wherein said one or more DSP engines process multimedia data and perform video and audio functions;

one or more input/output channels coupled to said one or more DSP engines for transmitting data; and

an analog system chip coupled to said digital system chip, wherein said analog system chip receives digital data from said digital system chip, wherein said analog system chip comprises:

digital to analog conversion logic for converting digital data to analog data;

analog to digital conversion logic for converting analog data to digital data;

a video port coupled to said digital to analog conversion logic, wherein said video port is adapted for coupling to a video monitor; and

an audio port coupled to said digital to analog conversion logic, wherein said audio port is adapted for transferring audio data to external speakers.

5,797,029

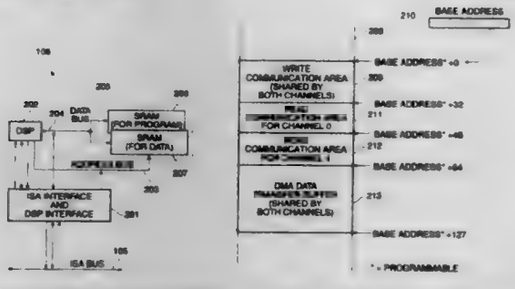
SOUND BOARD EMULATION USING DIGITAL SIGNAL PROCESSOR USING DATA WORD TO DETERMINE WHICH OPERATION TO PERFORM AND WRITING THE RESULT INTO READ COMMUNICATION AREA

Mark Hsu, San Jose; Yann Le Cornec, Fremont, and Julien T. Nguyen, Redwood City, all of Calif., assignors to Sigma Designs, Inc., Fremont, Calif.

Continuation of Ser. No. 219,841, Mar. 30, 1994, Pat. No. 5,598,576. This application Jan. 22, 1997, Ser. No. 786,295

Int. Cl.[6] G06F *15/02*

U.S. Cl. 395—825 **20 Claims**



1. A method for emulating a sound board, the method comprising the steps of:

receiving a command from a device;

performing a write operation into an addressable space within a write communication area when said command indicates that data should be written into a designated register, said step of performing a write operation further including a step of mapping said designated register to said addressable space within said write communication area;

performing a read operation from an addressable space within a read communication area when said command indicates that data should be read from a designated register, said step of performing a read operation further including a step of mapping said designated register to said addressable space within said read communication area; and

writing a data word which contains information corresponding to said command into an addressable space within said write communication area and signaling a digital signal processor when said command indicates that said digital signal processor should be interrupted, said digital signal processor responsive to said signal by using said data word to determine which operation to perform, said digital signal processor writing a result of said operation into an addressable space within said read communication area.

5,797,030

SYSTEM FOR OUTPUT RECORD HANDLER WITH LOGON REQUEST PROCESSOR THAT RECEIVES FIRST REQUEST THAT IS VALIDATED BY COMPARISION WITH FIRST AND SECOND ID/PASSWORD PAIRS

Scott Ernest Hoaby, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 298,489, Aug. 30, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 755,718

Int. Cl.[6] G06P *13/00*

U.S. Cl. 395—827 **16 Claims**

2. A data processing system, said data processing system comprising:

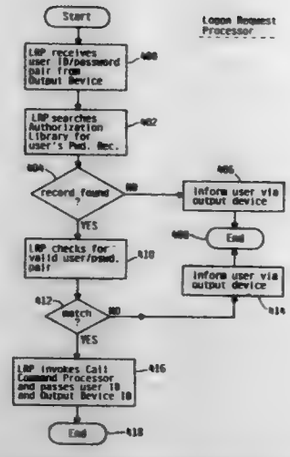
an output library administrator, said output library administrator comprising:

an output record handler, said output record handler comprising:

means for creating at least one output material record, said output material record comprising an output material file;

means for storing said at least one output material record into an output record library;

a logon request processor, said logon request processor comprising:



means for receiving a first request from at least one user to output said output material file, said first request comprising a first user ID/password pair that is validated by said means for receiving through comparison to a second user ID/password pair, said second user ID/password pair being associated with said at least one user, said first request being submitted from an output device, said output device having a display; and

a call command processor, said call command processor comprising:

means for fetching said output material file from said output record library and;

means for routing said output material file to said output device for processing, said processing not involving presentation of said output material file on said display.

5,797,031

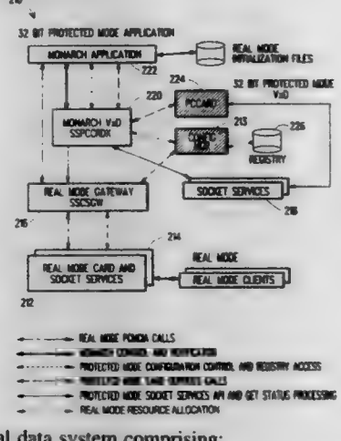
METHOD AND APPARATUS FOR PERIPHERAL DEVICE CONTROL BY CLIENTS IN PLURAL MEMORY ADDRESSING MODES

Raymond E. Shapiro, Marlborough, Mass.; Paul C. Stanley, Houston, Tex., and Steven Schumacher, Brighton, Mass., assignors to SystemSoft Corporation, Natick, Mass.

Continuation of Ser. No. 458,665, Jun. 2, 1995, abandoned. This application Aug. 26, 1997, Ser. No. 920,096

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—828 **27 Claims**



1. A digital data system comprising:

a central processing unit (CPU) that operates in first and second addressing modes;

peripheral devices comprising a first peripheral device and a second peripheral device;

at least one adapter for receiving said peripheral devices:

a first peripheral device service subsystem for handling communications between said first peripheral device in said at least one adapter and a first client executing on said CPU in said first addressing mode, and

a second peripheral device service subsystem for handling communications between said second peripheral device in said at least one adapter and a second client executing on said CPU in said second addressing mode,

wherein said first peripheral device service subsystem is in communication with said second peripheral device service subsystem to thereby provide concurrent availability of both said first and second peripheral device service subsystems,

wherein said first peripheral device subsystem comprises a configuration management section for allocating digital data system resources for communications between said peripheral devices in said at least one adapter and said first and second clients executing on said CPU in any of said first and second addressing modes.

5,797,032

BUS FOR CONNECTING EXTENSION CARDS TO A DATA PROCESSING SYSTEM AND TEST METHOD

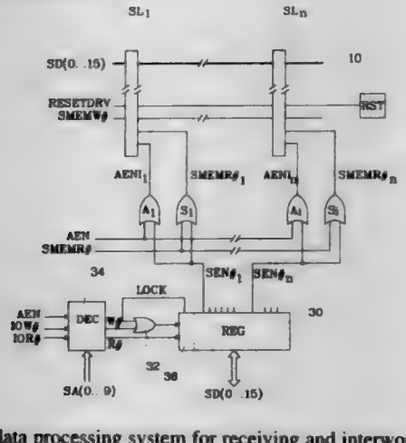
Philippe Boccon-Gibod, Eybens, France, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 11, 1993, Ser. No. 16,218

Claims priority, application France, Feb. 13, 1992, 92 01849

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—829 **6 Claims**



1. A data processing system for receiving and interworking with ISA extension cards for interfacing with a standard ISA bus, the extension cards including peripheral device means and memory with respective addresses, said data processing system including:

an ISA-based bus having address, data and control lines, said control lines including a first line for signals controlling access to said peripheral device means and a second line for signals enabling a memory read mode for reading said memory;

a plurality of slots for receiving ISA extension cards, at least some of said address, data and control lines being connected in parallel to said slots;

conflict testing means connected to said bus; and

selection means connected to said conflict testing means and operatively interposed between said slots and said first and second control lines for selectively controlling, under the control of said conflict testing means, transmission of said access controlling signals from said first and second lines to said slots,

said conflict testing means comprising:

(a) selection control means for controlling said selection means during a test phase such that each slot in turn receives, during a corresponding test period, said access controlling signals from the first and second control lines to enable the peripheral device means and memory of any extension card present in that slot to be accessed over said bus during the corresponding test period, the other of said slots being supplied during this test period with signals from said selecting means inhibiting access to the peripheral device means and memory of any said extension cards present in said other slots,

(b) address determining means for supplying further signals to the bus during each test period to ascertain the addresses of the peripheral device means and memory of the extension card, if any, present in the slot to which the further signals of the first and second control lines are currently being coupled, the address-determining means storing these addresses with an identifier of the slot concerned, and

(c) conflict-determining means for comparing the addresses stored for each slot by said address-determining means and determining the presence of any conflicts, the conflict-determining means including output means for generating an output signal dependent on any conflicts found.

5,797,033

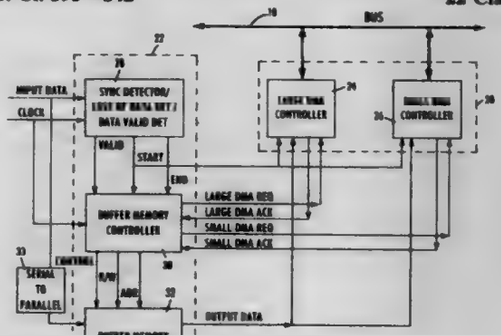
DIRECT MEMORY ACCESS FOR STORING AND RETRIEVING DATA BASED ON PACKET SIZE

Peter Ecclesine, Livermore, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Mar. 31, 1995, Ser. No. 414,468

Int. Cl.[6] G06F *13/14;13/28;15/02*

U.S. Cl. 395—842 **22 Claims**



1. An arrangement for receiving data and storing received data in a host memory using direct memory access, comprising:

a host memory having at least a first memory area for storing large packets of data and a second memory area for storing small packets of data;

a DMA controller, coupled to the host memory, that receives data and transfers the received data to specific memory areas of the host memory;

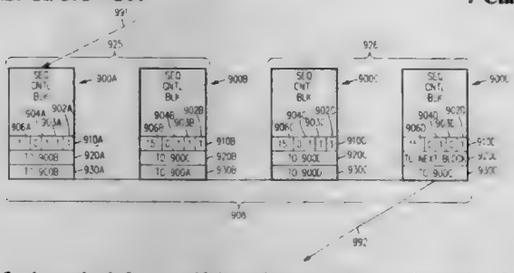
a packet size determiner coupled to the DMA controller, the packet size determiner determining whether the received data is a large packet of data or a small packet of data, the DMA controller selecting said first memory area of the host memory for storing the data when the received data is determined to be a large packet of data and selecting said second memory area of the host memory for storing the data when the received data is determined to be a small packet of data; and

a buffer memory coupled to the DMA controller and to said packet size determiner to supply the DMA controller with the data to be transferred to the host memory.

5,797,034
METHOD FOR SPECIFYING EXECUTION OF ONLY ONE OF A PAIR OF I/O COMMAND BLOCKS IN A CHAIN STRUCTURE

B. Arlen Young, Palo Alto, Calif., assignor to Adaptec, Inc., Milpitas, Calif.

Filed Mar. 15, 1996, Ser. No. 616,836
Int. Cl.[6] G06F *13/14*
U.S. Cl. 395—844 **7 Claims**



1. A method for specifying abortion of one of a pair of I/O command blocks in a chain structure comprising:

configuring one I/O command block in said pair to execute concurrently with another I/O command block in said pair;

configuring an offshoot block pointer in said one I/O command block to point to said another I/O command block;

configuring an offshoot block pointer in said another I/O command block to point to said one I/O command block;

setting an abort bit in each of said one and another I/O command blocks; and

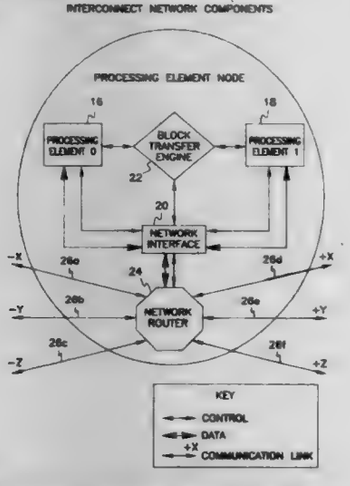
resetting an aborted bit in each of said one and another I/O command blocks;

wherein upon execution of said one and another I/O command blocks, the execution of the I/O command block first initiating data transfer sets the aborted bit in the I/O command block pointed to by the offshoot block pointer in the I/O command block first initiating data transfer.

5,797,035
NETWORKED MULTIPROCESSOR SYSTEM WITH GLOBAL DISTRIBUTED MEMORY AND BLOCK TRANSFER ENGINE

Mark S. Birrittella, Chippewa Falls; Richard E. Kessler, Eau Claire; Steven M. Oberlin; Randal S. Passint, both of Chippewa Falls, and Greg Thorson, Altoona, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.

Division of Ser. No. 165,266, Dec. 10, 1993, Pat. No. 5,583,990. This application Jun. 12, 1996, Ser. No. 661,908
Int. Cl.[6] G06F *15/16;9/315*
U.S. Cl. 395—855 **18 Claims**



1. A multiprocessor computer system, comprising:

a plurality of processing element nodes, each node comprising:

a processing element having a processor and a local memory, wherein globally addressable portions of local memory of each processing element form a distributed memory, and

a block transfer engine for redistributing data between the globally addressable portions of local memory without interrupting the associated processors;

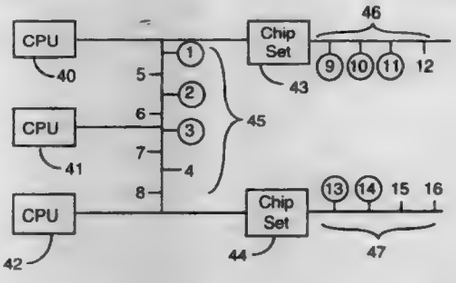
a host communication path for connecting at least one of the processing elements with a host system; and

an interconnection network connecting together the processing element nodes in an n-dimensional topology, the network comprising internode communication paths connecting each of the plurality of processing element nodes to adjacent processing element nodes.

5,797,036
APPARATUS WHICH PREPARES A MASTER MAP PORTRAYING LOCATION OF DEVICES RELATIVE TO BUS INTERFACE CIRCUITS AND COPYING THE PERTINENT PORTION OF THE MASTER MAP TO EACH BUS INTERFACE CIRCUITS

Dan Kikinis, Saratoga, Calif., assignor to Elonex I.P. Holdings, Ltd., United Kingdom

Continuation of Ser. No. 511,916, Aug. 7, 1995, abandoned, which is a continuation of Ser. No. 194,242, Feb. 10, 1994, abandoned. This application Apr. 29, 1997, Ser. No. 840,429
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—858 **31 Claims**



1. In a computer system having three or more separate buses connected by bus interface circuits, a method for routing requests for devices connected to the separate buses, comprising steps of:

(a) preparing a digital master map which portrays the location relative to the bus interface circuits of each connected device;

(b) determining the portion of the master map pertinent to each bus interface circuit according to the buses connected by each interface circuit;

(c) copying the portion of the digital master map pertinent to each interface circuit to the associated bus interface circuit; and

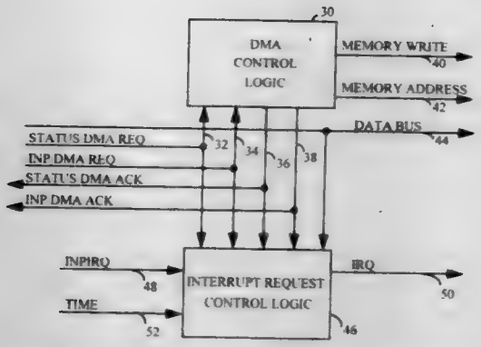
(d) routing requests for connected devices at the bus interface circuits according to the map portions copied to the associated bus interface circuits.

5,797,037
INTERRUPT REQUEST CONTROL LOGIC REDUCING THE NUMBER OF INTERRUPTS REQUIRED FOR I/O DATA TRANSFER

Peter Ecclesine, Livermore, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Mar. 31, 1995, Ser. No. 414,474
Int. Cl.[6] G06F *13/14;9/46*
U.S. Cl. 395—868 **22 Claims**

1. An interrupt-driven system for DMA data transfer between a data source and a memory comprising:



an input/output (I/O) controller responsive to said data source for interfacing said data source to said memory,

a DMA controller responsive to said I/O controller for handling data transfer between said data source and said memory, and

an interrupt request control logic responsive to said I/O controller for generating an interrupt request to interrupt a central processing unit (CPU) upon completion of a data transfer operation,

wherein said interrupt request control logic delays said interrupt request until a predetermined condition is met.

5,797,038

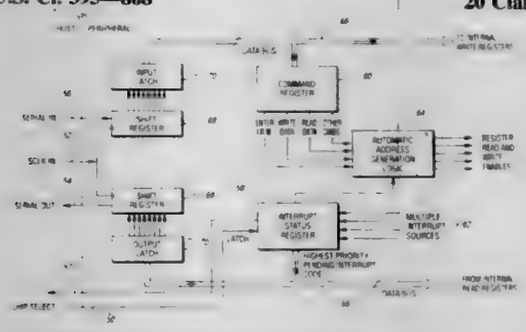
METHOD AND SYSTEM FOR SERIALLY BASED HOST/PERIPHERAL COMMUNICATION

Robert Dennis Crawford, Livonia, and Bradley Earl BeMent, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 9, 1996, Ser. No. 709,945

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—868 **20 Claims**



1. A method for serial communication between a host device and a peripheral device, the method comprising:

(a) transmitting an interrupt command from the host to the peripheral in response to a peripheral interrupt signal;

(b) transmitting, substantially simultaneously to (a), interrupt status data from the peripheral to the host, the interrupt status data representing a pending peripheral interrupt and indicating whether a communication error has occurred;

(c) transmitting a continue code from the host to the peripheral based on the interrupt status data; and

(d) transmitting, substantially simultaneously to (c), information associated with the pending interrupt from the peripheral to the host in response to the interrupt command, the information having a predefined structure based on the interrupt status data for use in resolution of the pending interrupt.

5,797,039

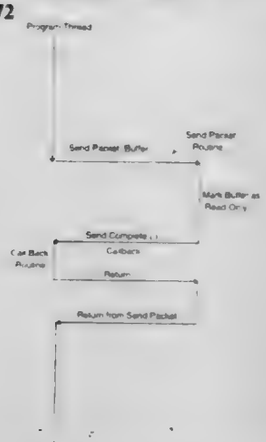
METHOD OF EFFICIENTLY SENDING PACKETS ONTO A NETWORK BY ELIMINATING AN INTERRUPT

Baruch Cochavy, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 29, 1995, Ser. No. 578,197

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—872 **8 Claims**



1. A method for passing information to be sent externally from a computer program to network hardware, said method comprising the steps of:

placing said information to be sent into a buffer;

calling a send-packet routine from said computer program to send said information;

marking said buffer as read-only memory from within said send-packet routine; and

returning to the computer program.

5,797,040

COMPUTER SYSTEM HAVING SYTEM BUS WHICH COUPLES ADAPTER AND PROCESSING UNITS AND REQUIRES ACQUISITION FOR DATA TRANSMISSION THEREOVER

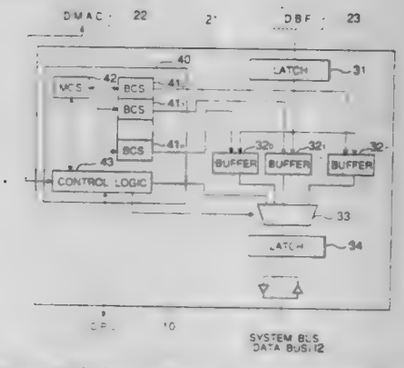
Yoichi Nakamura, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 216,026, Mar. 22, 1994, abandoned. This application Feb. 9, 1996, Ser. No. 599,118

Claims priority, application Japan, May 19, 1993, 5-117271

Int. Cl.[6] G06F *13/362*

U.S. Cl. 395—872 **4 Claims**



1. A data transmission system in a computer system including at least one processing unit for processing data, at least one adapter for controlling a device coupled thereto, and a system bus to which each said processing unit and each said adapter is coupled, in which each said processing unit and each said adapter selectively acquires use of said bus for forwarding information over said bus and wherein, after information is forwarded to said bus by each

said processing unit or each said adapter which has acquired use of said bus, said bus is released therefrom, said data transmission system comprising:

a plurality of buffers, provided in said adapter, for storing data to be transmitted to said processing unit;

a plurality of buffer control means respectively coupled to said plurality of buffers, each of said buffer control means being operative for controlling transmission, over the system bus, of data stored in the respective buffer when use of said bus is granted to the respective buffer control means in response to a request for permission to transmit data over the acquired system bus; and

each of said plurality of buffer control means further comprising;

state indication means for indicating a data transmission state of a corresponding one of said plurality of buffers, and

master control means for supervising the state indication means of each of said plurality of buffer control means so that until the data stored in all of said plurality of buffers is completely transmitted to said processing unit, each of said plurality of buffer control means is prohibited from starting the transmission of data in a next cycle in which new data stored in said plurality of buffers is to be transmitted, said state indication means indicating one of:

a first state indicating that there is no operation;

a second state indicating waiting permission to transmit the data;

a third state indicating that the data is being transmitted; and

a fourth state indicating that the transmission of the data is completed.

5,797,041

COMMUNICATION CONTROL SYSTEM UTILIZING A SHARED BUFFER COMPOSED OF FIRST AND SECOND DESCRIPTORS WHICH ARE MANAGED BY HIGH AND LOW LEVEL PROTOCOLS

Toshikazu Yasue, Chigasaki; Hidemitsu Higuchi, Yokohama; Yukio Shimamoto, Chigasaki, and Toru Horimoto, Atsugi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

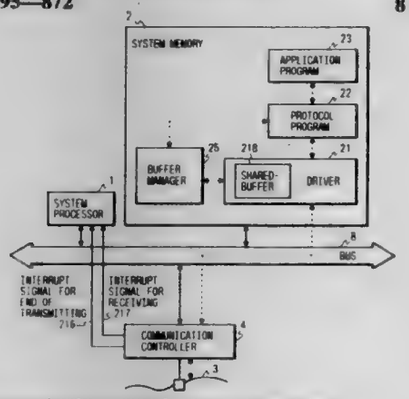
Continuation of Ser. No. 79,872, Jun. 23, 1993, abandoned.

This application Jun. 20, 1996, Ser. No. 667,336

Claims priority, application Japan, Jun. 30, 1992, 4-172325; Aug. 31, 1992, 4-230915

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—872 **8 Claims**



1. A communication control system comprising:

a processor system for processing a communication protocol, said processor system includes:

a system processor which operates according to a high hierarchical communication protocol,

a system memory,

a communication controller, connected to a transmission line and to said system memory, for transmitting and receiving frame data on said transmission line while controlling said transmission line and operating according to a low hierarchical communication protocol, and

a shared-buffer operating as a buffer for managing said communication protocol of said processor system and functions of said communication controller in buffering frame data, said shared-buffer being constructed such that both of said system processor and said communication controller share said shared buffer and read out and write in data directly to said shared-buffer to execute protocol processing without copying buffer data, said shared-buffer being composed of two different kinds of descriptors and a kind of buffer data;

said shared-buffer is composed of a first descriptor managed by a higher level protocol processed in said system processor, a second descriptor managed by a lower level protocol processed in said communication controller and a kind of data buffer, said higher level protocol accesses said data buffer using said first descriptor and said lower level protocol access said data buffer using the second descriptor.

5,797,042

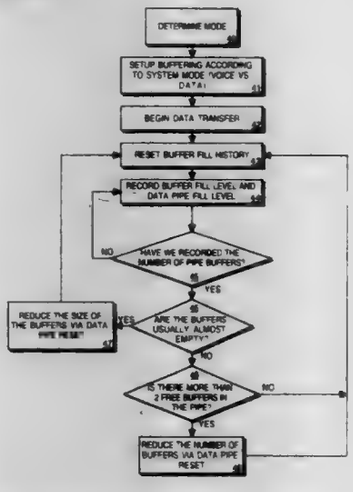
METHOD AND APPARATUS FOR ADJUSTING THE BUFFERING CHARACTERISTIC IN OF A DATA TRANSFER SYSTEM

Jeremy Gaylord, Portland, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 16, 1995, Ser. No. 405,291

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—876 **13 Claims**



1. In a data transfer system having a plurality of buffers, a method of dynamically changing a buffering characteristic of a system comprising the steps of:

detecting a mode in which the system is operating;

configuring the buffering characteristic based on the mode;

determining buffer usage including a number of buffers used and a usual fill for the buffers used;

further configuring the buffering characteristic based on usage; and

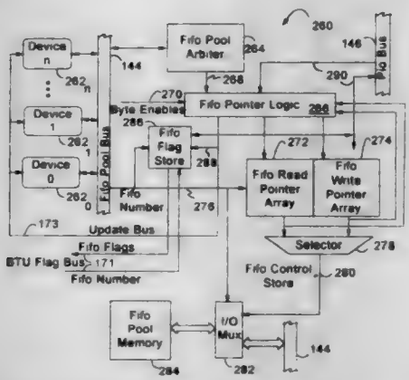
wherein configuring includes preventing data from entering the buffers; emptying the buffers of any residual data; changing a size and a number of buffers and allowing data to enter the reconfigured buffers.

5,797,043

SYSTEM FOR MANAGING THE TRANSFER OF DATA BETWEEN FIFOS WITHIN POOL MEMORY AND PERIPHERALS BEING PROGRAMMABLE WITH IDENTIFICATIONS OF THE FIFOS

Adrian Lewis, Fremont; James K. Gifford, Danville; Sridhar Begur; Donald J. Spencer, both of San Jose; Thomas E. Kilbourn, and Daniel B. Gochnauer, both of Saratoga, all of Calif., assignors to Diamond Multimedia Systems, Inc., San Jose, Calif.

Filed Mar. 13, 1996, Ser. No. 615,682
Int. Cl.[6] G06F *15/02*
U.S. Cl. 395—876 **10 Claims**



1. A data transfer control system comprising:

a) a pool memory providing for the storage of data in a plurality of FIFOs formed within said pool memory;

b) a plurality of peripherals coupleable to said pool memory for the transfer of data between programmatically associated ones of said FIFOs and said peripherals said peripherals being programmable with identifications of said FIFOs; and

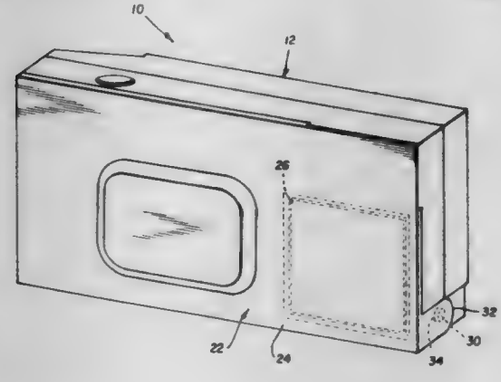
c) a transfer controller coupled to said pool memory and to said peripherals for selectively managing the transfer of data between said FIFOs and said peripherals, said transfer controller including a distributed signaling system coupled to said peripherals to permit the broadcast of status information reflective of a transfer of data relative to a predetermined FIFO to said peripherals, said status information including a predetermined identifier of said predetermined FIFO.

5,797,044

ONE-TIME-USE CAMERA WITH THROW-AWAY FOLDABLE CARRIER FOR FLAT BATTERY

Joel S. Lawther, East Rochester, N.Y., and Ralph M. Lyon, Marshfield, Wis., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 14, 1997, Ser. No. 800,951
Int. Cl.[6] G03B *17/02*
U.S. Cl. 396—6 **6 Claims**



1. A compact camera comprising:

a camera body; and

a throw-away carrier-with-battery unit connected to said camera body to be supported for movement between one position, substantially against the camera body, and another position, extended from the camera body, and being disconnectable from said camera body to permit said throw-away carrier-with-battery unit to be replaced with a fresh one,

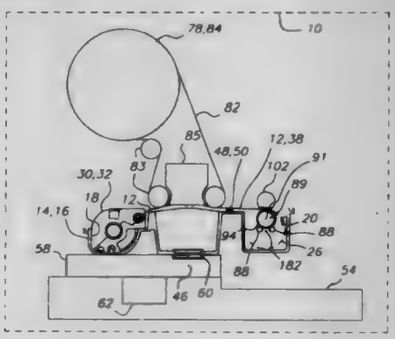
wherein said camera body has a lens opening which contains a taking lens, and said throw-away carrier-with-battery unit is a lens shield configured to cover said lens opening when the carrier-with-battery unit is moved to its one position and to uncover the lens opening when the carrier-with-battery unit is moved to its other position.

5,797,045

THREE ROLLER FILM WINDER AND METHOD

Joseph A. Watkins, Rochester; Dennis R. Zander, Penfield, and Matthew Stanzione, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 30, 1997, Ser. No. 866,867
Int. Cl.[6] G03B *17/02*
U.S. Cl. 396—6 **25 Claims**



14. A film loading apparatus, for use with: a camera frame assembly including a camera frame having a cartridge chamber, a supply chamber, and an intermediate section disposed between said chambers; and a film cartridge disposed in said cartridge chamber, said film cartridge having a case and a filmstrip, said filmstrip having a leading portion, a main portion and a tail portion; said film loading apparatus comprising:

a receiver for the camera frame assembly, said receiver defining sites for said chambers and said intermediate section;

a sleeve movable between a first position outside said supply chamber and a second position inside said supply chamber;

a pair of lower rollers movable, independent of said sleeve, between a rest position outside said supply chamber and a use position inside said supply chamber;

an upper roller disposable over said sleeve when said sleeve is in said second position, said upper roller and said lower rollers together defining a cylindrical scroll space;

a film transport disposed to propel said leading portion of said filmstrip to said scroll space; and

a roller drive rotating said lower and upper rollers.

5,797,046

VISUAL AXIS CONTROLLABLE OPTICAL APPARATUS INCLUDING A VISUAL AXIS DETECTING DEVICE FOR DETECTING A VISUAL AXIS

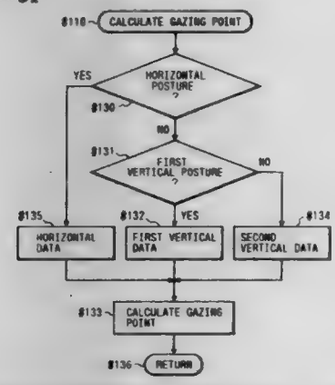
Akihiko Nagano, Ichihara; Akira Yamada, and Yoshiaki Irie, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1995, Ser. No. 408,281

Claims priority, application Japan, Mar. 23, 1994, 6-076567; Jan. 13, 1995, 7-019970; Jan. 13, 1995, 7-019972

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—51 **26 Claims**



1. A visual axis controllable optical apparatus, which is used in mutually different postures, comprising:

an image pick-up device that picks up at least a portion of an eyeball image:

a posture detecting device that detects a posture of said optical apparatus:

a storage device that stores personal data for correcting an individual difference in a visual axis, wherein said storage device stores personal data corresponding to each of the mutually different postures; and

a visual axis detecting device that detects a visual axis, wherein said visual axis detecting device detects the visual axis using personal data corresponding to the posture of said optical apparatus detected by said posture detecting device and the eyeball image picked up by said image pick-up device.

5,797,047

CAMERA WITH HINGED MOUNTED LENS BARRIER MOVABLE WITH MOVEMENT OF THE LENS

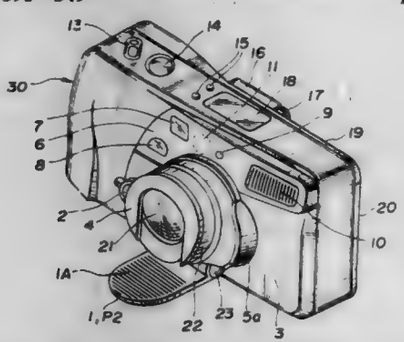
Hiroyuki Ando, Hachioji; Tatsuya Suzuki, Tokyo, and Takashi Muroi, Tachikawa, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1996, Ser. No. 707,738

Claims priority, application Japan, Oct. 17, 1995, 7-268185

Int. Cl.[6] G03B *17/04;17/00*

U.S. Cl. 396—349 **19 Claims**



1. A camera having a photographing lens tube movable between a collapsed position taken in a non-photographing condition and an extension position taken in a photographing condition, comprising:

drive means for driving said photographing lens tube within a range between said collapsed position and said extension position; and

a barrier composed of a member which is rotatable about a supporting shaft arranged in parallel to a plane substantially perpendicular to an optical axis of a photographing lens to take a closed position at which said barrier covers at least a front surface of said photographing lens and further to take an open position at which said photographing lens front surface is exposed,

wherein, when moving to said extension position, said photographing lens tube is brought into contact with said barrier to shift said barrier toward said open position.

5,797,048

AUTOMATIC FOCUSING DEVICE WHICH INHIBITS TRACKING DRIVE CONTROL WITH A ZOOM LENS HAVING FOCUS SHIFT

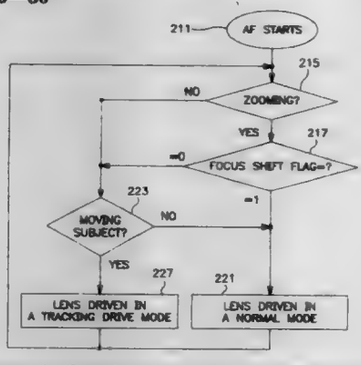
Yoshiharu Shiokama, Chiba-ken, and Seiichi Yasukawa, Yotsukaido, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jun. 10, 1997, Ser. No. 872,143

Claims priority, application Japan, Jun. 14, 1996, 8-176010

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—80 **16 Claims**



1. An automatic focusing device for automatically focusing a photographic lens having a zooming function, the automatic focusing device having a first lens drive mode in which movement of an object in an optical axis direction is detected and driving of the lens is compensated according to the detected movement and a second lens drive mode in which movement of the object is not detected and driving of the lens is not compensated, comprising:

a determination device to determine whether a focus shift occurs as a result of a zooming operation of the photographic lens and to output a signal indicating that focus shift occurs due to the zooming operation; and

an inhibition device to receive the signal indicating that focus shift occurs and to inhibit lens drive in the first drive mode in response to the focus shift signal.

5,797,049

FOCUS DETECTION DEVICE FOR OBJECTIVE LENS

Keiji Ohtaka, Yokohama, and Yusuke Ohmura, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 241,574, May 12, 1994, abandoned. This application Dec. 9, 1996, Ser. No. 762,252

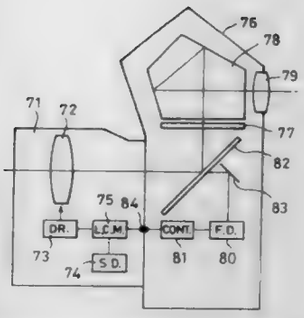
Claims priority, application Japan, May 20, 1993, 5-141334

Int. Cl.[6] G01J *1/20*

U.S. Cl. 396—122 **10 Claims**

1. A focus detection device for an objective lens, comprising:

a storage device which contains a stored focus correction value for at least one predetermined region in a field of focus of said objective lens;



detection means for detecting a focus state of the objective lens with respect to another region located at a given distance from said predetermined region and for producing a corresponding detection signal; and

calculation means for calculating a correction value for said another region on the basis of said given distance and said stored focus correction value.

5,797,050

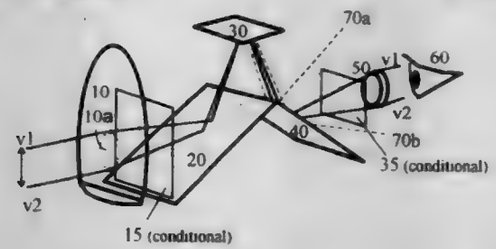
SELECTIVE GLARE REDUCTION OCULAR FOR SCENERY WITH VERY BRIGHT OBJECTS

James Lynn Smith, 1933 Evistal St., Ft. Walton Beach, Fla. 32547

Filed Feb. 18, 1997, Ser. No. 801,622

Int. Cl.[6] G03B *7/08;* **G01J** *1/32;* **G02F** *1/01;1/35*

U.S. Cl. 396—241 **12 Claims**



1. A transmissive scene viewing apparatus containing an objective lens means which gathers light rays from scenery, forms an intermediate image and provides an eyepiece means for viewing by the eye or a camera which substitutes for the eye, all said components on the same optical axis: furthermore said apparatus having:

an internal holder means for the containment of a uniform, non-segmented, optically nonlinear, transmissive attenuator device of at least one layer essentially in said intermediate image region and for containment of any required filters needed for the full realization of said transmissive attenuator device,

said objective lens means sized and positioned so as to direct more light rays onto said transmittance attenuator device than are intercepted by the eyepiece, whereby sensitivity of operation is increased for said attenuator device to bright image regions without sacrificing viewed image sharpness; one example of said means having a larger objective lens than eyepiece with distance between said attenuator device and objective lens being similar to that between said attenuator device and eyepiece,

an eyepiece means suitable for collimating light when scenery is distant, said eyepiece bordered by a nonreflective stop material for absorbing scattered light,

a housing generally of conical shape tapering down on the eyepiece end for each viewing eye or camera which substitutes for the eye, deviating only for a) any necessary connecting surfaces and b) any necessary melding of adjoining surfaces for binocular applications; whereby said housing obscures minimum object scenery around each said apparatus field-of-view.

5,797,051

NON-PHOTOGRAPHIC STRIP HAVING A BASE LAYER SIMILAR TO A PHOTOGRAPHIC FILMSTRIP AND A MAGNETIC RECORDING LAYER

Dale Frederick McIntyre, Honeoye Falls, and J. Kelly Lee, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1996, Ser. No. 637,116

Int. Cl.[6] G03B *17/24;17/26*

U.S. Cl. 396—319 **5 Claims**



1. A cartridge sized and shaped to be received in a cartridge receiving chamber of a photographic camera contains a strip having a base layer with two opposed elongated edges, and said strip being sized and shaped to be moved within the camera from the cartridge, and is characterized in that:

said strip is non-photographic from one edge of the base layer to the other, and includes magnetic recording means.

5,797,052

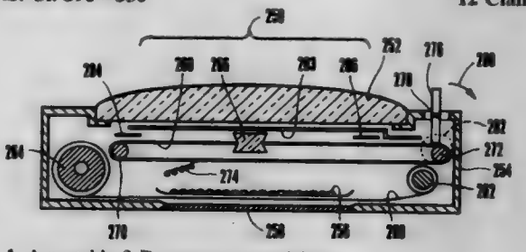
THREE DIMENSIONAL CAMERA

Maureen Meredith Day, Encinitas, Calif., assignor to Angraphie Dimensional Systems, LLC, Encinitas, Calif.

Continuation-in-part of Ser. No. 619,190, Mar. 20, 1996, Pat. No. 5,655,167. This application May 20, 1997, Ser. No. 859,139

Int. Cl.[6] G03B *35/00*

U.S. Cl. 396—330 **12 Claims**



1. A portable 3-D camera, comprising:

a housing;

a camera lens positioned on the housing;

a lenticular lens positioned on the housing;

a scanning lens translationally movable in the housing, the scanning lens being disposed between the lenses; and

a pad characterized by a relatively high coefficient of friction, the pad being disposed on the side of the lenticular lens opposite the camera lens for contacting film and inhibiting relative motion therebetween.

5,797,053

APPARATUS AND METHOD FOR FEEDING FILM HAVING PERFORATIONS INCLUDING JUDGING WHETER A FILM TIP HAS PASSED A DETECTOR

Yoshiharu Tanaka, Sakai, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Filed Jan. 29, 1997, Ser. No. 790,599

Claims priority, application Japan, Jan. 31, 1996, 8-016169

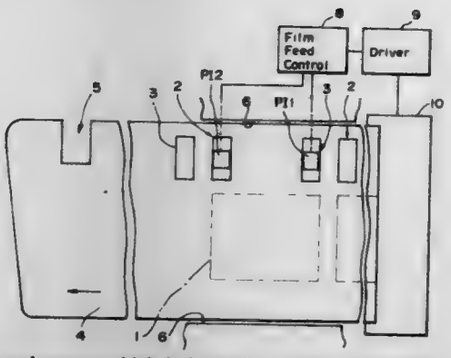
Int. Cl.[6] G03B *1/18*

U.S. Cl. 396—397 **8 Claims**

7. A camera for use of a film stored in a cartridge and having perforations on the edge thereof, said camera comprising:

a feeding means for feeding out the film from the cartridge;

a first sensor which is located to sense the presence of the film on the upstream side of a photo-taking position in the direction of film feeding;



a second sensor which is located to sense the presence of the film on the downstream side of the photo-taking position in the direction of film feeding;

a first preventing means which prevents a detecting operation by the first sensor between a beginning of film feeding and a detection of a change in the output of the second sensor;

a second preventing means which prevents a detecting operation by the second sensor between a detection of a change in the output of the second sensor and the detection of a change in the output of the first sensor; and

a control means for stopping the operation of the feeding means when a change in the output of both the first and second sensors is detected.

5,797,054

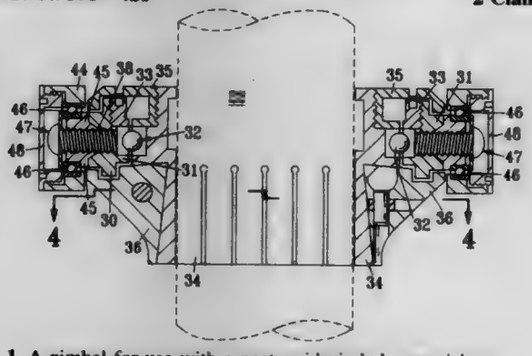
THREE AXIS GIMBAL FOR USE IN A CAMERA SUPPORT SYSTEM

George K. Paddock, and Christopher C. Haarhoff, both of 6040 Rodgerton Rd., Los Angeles, Calif. 90068

Filed Jun. 9, 1995, Ser. No. 488,856

Int. Cl.[6] G03B *29/00;17/00;21/00*

U.S. Cl. 396—421 **2 Claims**



1. A gimbal for use with a post, said gimbal comprising:

a. an inner gimbal ring having an outer bearing surface;

b. a bearing assembly including an inner race, an outer race and a plurality of ball bearings coupling said inner race to said outer race wherein said outer race is disposed in and coupled to said outer bearing surface of said inner gimbal ring;

c. an outer race retainer axially aligned with and threadedly coupled to said inner gimbal ring whereby said outer race retainer secures said outer race of said bearing assembly;

d. a collet, including a rigid collar and a radially compressible skirt axially fixed together, having an inner bearing surface which is axially aligned with said outer bearing surface of said inner gimbal ring, said collet being disposed around the post and said collet being positionable on the post wherein said inner race of said bearing assembly is disposed in and coupled to said inner bearing surface of said collet;

e. an inner race retainer axially aligned with and threadedly coupled to said collet whereby said inner race retainer secures said inner race of said bearing assembly to said inner bearing surface of said collet; and

f. a clamp ring disposed around and coupled to said radially compressible skirt of said collet, said clamp ring fixedly coupling said collet to the post whereby said gimbal is rotatively coupled to the post about a first axis and whereby said rigid collar of said collet maintains its axial alignment about said first axis within a very close tolerance.

5,797,055

FOCAL PLANE SHUTTER AND METHOD FOR PRODUCING SAME

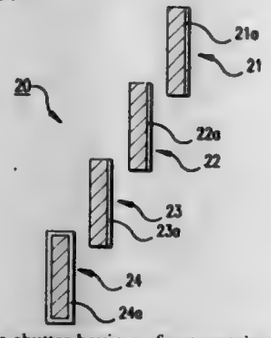
Takashi Matsubara, and Masanori Hasuda, both of Yokohama, Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 498,766, Jul. 6, 1995, abandoned. This application Jul. 5, 1996, Ser. No. 675,868

Claims priority, application Japan, Jul. 6, 1994, 6-177593; Oct. 20, 1994, 6-281359; Jul. 5, 1995, 7-194162

Int. Cl.[6] G03B *9/28;9/36;9/40*

U.S. Cl. 396—484 **30 Claims**



1. A focal plane shutter having a front curtain and a rear curtain each including a plurality of dividing blades, wherein at least one but not all of said dividing blades among one of said front curtain and said rear curtain positioned on a photo lens side of a camera is formed from a black material having at least one uncoated surface and at least one coated surface, and the at least one uncoated surface of the material is positioned such that it is exposed to a film side of the camera during use of the camera.

5,797,056

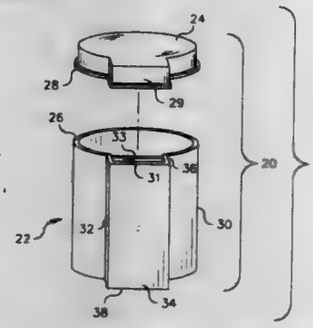
FILM CARTRIDGE CANISTER WITH SOUND DEVICE STORAGE

Cynthia S. Bell, Webster; James Gresko, Rochester, and William C. Archie, Jr., Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1996, Ser. No. 753,666

Int. Cl.[6] C03B *17/26;* **B65D** *85/30*

U.S. Cl. 396—512 **12 Claims**



1. An improved photographic film cartridge canister of the type having a cartridge containing thin-walled body and a cap forming a seal with the body, the improvement comprising:

a sound card retaining compartment integrally formed with the canister body and shaped to conform to and receive a planar sound recording card capable of bearing sound recorded in associated with images captured on photographic film in the film cartridge.

5,797,057

METHOD OF WATER REPLENISHMENT FOR AN AUTOMATIC DEVELOPING APPARATUS AND DEVICE THEREFOR

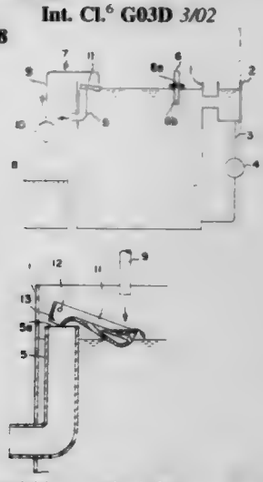
Togo Kinoshita, and Ryosuke Matsumoto, both of Wakayama-ken, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Mar. 24, 1997, Ser. No. 822,016

Claims priority, application Japan, Mar. 25, 1996, 8-067809; Mar. 25, 1996, 8-067929

Int. Cl.[6] G03D *3/02*

U.S. Cl. 396—578 **15 Claims**



1. A water replenishing method for an automatic developing apparatus having a processing solution tank and a water supply means to replenish water into the processing solution tank, comprising the steps of:

providing a water supply guide member for automatically switching the replenished water from the water supply means to guide the replenished water to at least one of the processing solution tank and outside the processing solution tank in response to a water level change of processing solution in the processing solution tank; and

discharging the excess replenished water supplied from the water supply means outside the processing solution tank by the water supply guide member when the water level of the processing solution goes up by the water replenished from the water supply means after the processing solution reaches a predetermined level.

5,797,058

PHOTO-PROCESSING APPARATUS

Shinji Narukami, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama

Filed Sep. 14, 1995, Ser. No. 528,098

Claims priority, application Japan, Sep. 19, 1994, 6-223146; Jul. 4, 1995, 7-168993

Int. Cl.[6] G03D *3/08*

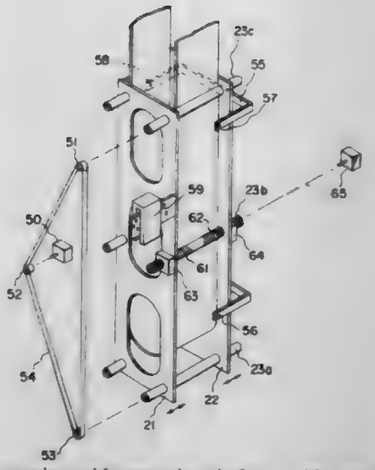
U.S. Cl. 396—615 **5 Claims**

1. A photo-processing apparatus having a stock tank section which contains and stores a strip-shaped photo-sensitive material, said stock tank section including a pair of guide plates disposed in said stock tank section and being oppositely spaced in a transverse direction to guide said strip material along a looped path of travel through said stock tank section, and a guide path width-changing mechanism comprising:

a plurality of unthreaded, rotatable guide plate supporting shafts disposed at spaced locations along the length of said guide plates,

axially aligned holes in said opposed guide plates receiving said supporting shafts,

means for moving at least one of said guide plates in the transverse direction to change the distance between the plates in the transverse direction to alter the guide path width in response to the width of the photo-sensitive material to be passed through the stock tank section,



means for rotating said supporting shafts as said guide plates are moved in said transverse direction;

means for sensing the width of the photo-sensitive material to be passed to said tank section, and means connecting said sensing means to said guide plate moving means for moving said at least one guide plate in response to said width of said photo-sensitive material.

5,797,059

PHOTOGRAPHIC PROCESSING APPARATUS

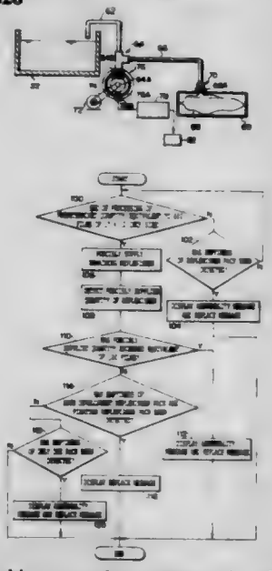
Seiichi Yoshizawa; Yoko Takegawa; Akira Sugiyama; Motoi Suzuki, and Ryoei Nozawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 11, 1997, Ser. No. 798,264

Claims priority, application Japan, Feb. 15, 1996, 8-027923

Int. Cl.[6] G03D *3/02*

U.S. Cl. 396—626 **16 Claims**



1. A photographic processing apparatus in which a processing replenisher is replenished from a replenisher container to a processing tank in a quantity proportional to a quantity of a photosensitive material processed by being immersed in a processing solution, said photographic processing apparatus comprising:

an emptiness detecting mechanism for detecting an empty state of said replenisher container;

a replenisher supplying mechanism for replenishing the replenisher from said replenisher container to said processing tank;

a determining mechanism for determining a function of said replenisher supplying mechanism on the basis of a relationship between a timing of an end of processing of a predeter-

mined quantity of photosensitive material and a timing at which said emptiness detecting mechanism detects the emptiness of said replenisher container in which a predetermined necessary and minimum quantity of the replenisher was accommodated for processing the predetermined quantity of photosensitive material; and

a controlling mechanism for controlling the operation of said photographic processing apparatus.

5,797,060

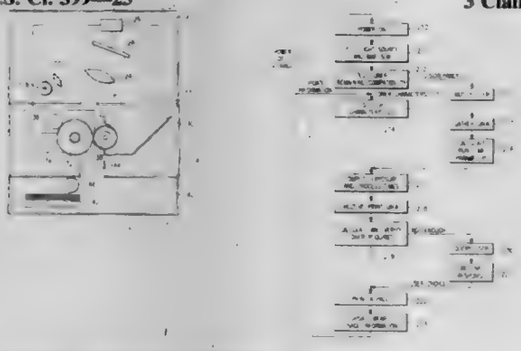
ELECTROPHOTOGRAPHIC PRINTING SUBSYSTEM WITH SELF-MONITORING AND ADJUSTMENT

E. Earle Thompson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex., and AGFA-Gevaert N.V., Mortsel-Belgit, Belgium

Continuation of Ser. No. 475,273, Jun. 7, 1995, abandoned, which is a division of Ser. No. 261,614, Jun. 17, 1994, Pat. No. 5,673,106. This application Nov. 5, 1996, Ser. No. 743,927

Int. Cl.[6] G03G *15/00;21/00*

U.S. Cl. 399—25 **3 Claims**



1. An EP subsystem comprising:

a. a photoreceptor;

b. a light sensor operable to monitor light generated by a light imaging subsystem, wherein said light imaging subsystem includes a spatial light modulator array of individually controlled elements;

c. at least one toner dispenser operable to dispense toner to photoreceptor, wherein said toner dispenser includes monitoring capability and is operable to transfer said toner to said photoreceptor;

d. a processor, wherein said processor processes data with regard to at least one of the following processes:

i. light received from a light-imaging subsystem at said sensor, wherein said sensor provides said processor with information on the intensity of said light;

ii. said photoreceptor's characteristics, wherein said characteristics include wear on said photoreceptor;

iii. said toner dispenser's contents, both in amount and composition; and

iv. operating parameters for select subcomponents of said subsystem based upon data received by said processor and said light imaging subsystem, wherein said parameters for said light imaging subsystem include positions and numbers of said elements on said modulator array to be activated for transferring light to said EP subsystem; and

e. a non-volatile memory, into which these parameters are written, wherein said memory is erased upon opening of said EP subsystem.

5,797,061

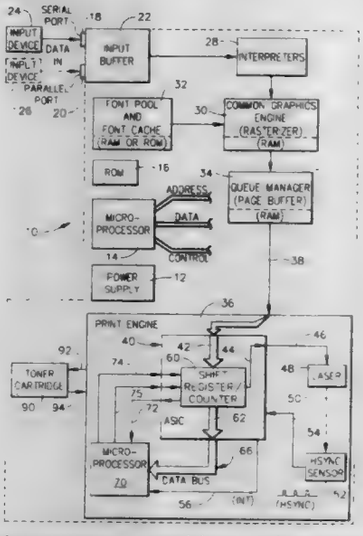
METHOD AND APPARATUS FOR MEASURING AND DISPLAYING A TONER TALLY FOR A PRINTER

Gary Scott Overall; Thomas Campbell Wade; James Francis Webb, and Phillip Byron Wright, all of Lexington, Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed May 12, 1997, Ser. No. 854,875

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—27 **32 Claims**



1. A printing apparatus, comprising: a print engine that determines the number of pels of a print job that are being printed upon a page of print media, a memory circuit that stores information, and a processing circuit that is configured to receive said number of pels of a print job's page from said print engine and to temporarily store said number of pels in said memory circuit as a "Toner Tally";

said print engine containing an electrical circuit that sends print data in a serial format as a first electrical signal to a printhead, and also sends a second electrical signal to a counter circuit, said counter circuit having a most significant bit ("MSB") output that produces a third electrical signal that is directed to said processing circuit, said counter circuit also having a "Clear MSB" input that receives a fourth electrical signal that is sourced at said processing circuit, wherein said MSB output third electrical signal remains at a first logic state until said counter has accumulated enough counts to set said MSB output to a second logic state, then said processing circuit is further configured to modify the value of a predetermined memory register and then to output a transition in said fourth electrical signal directed to said Clear MSB input at said counter circuit, which clears said MSB output to said first logic state; and said counter continues to accumulate a count value at its other count outputs.

5,797,062

MEASURING DEVICE FOR AMOUNT OF CHARGE OF DEVELOPER

Takasumi Wada; Yoichi Yamamoto, both of Nara, and Keiji Taniguchi, Fukui, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 25, 1996, Ser. No. 719,451

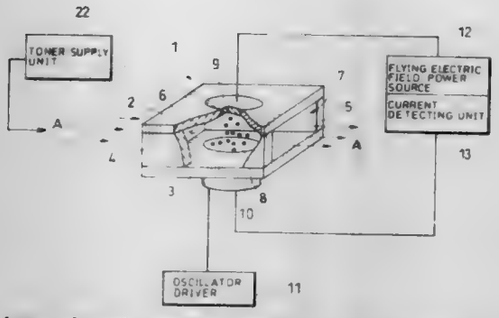
Claims priority, application Japan, Oct. 23, 1995, 7-274488

Int. Cl.[6] G01R *29/24;* **G03G** *15/00*

U.S. Cl. 399—29 **16 Claims**

1. A measuring device for amount of charge of developer comprising:

an upper electrode;



a lower electrode provided under said upper electrode, said upper electrode and said lower electrode being provided in parallel so as to face each other;

wherein an upper surface of said lower electrode is covered with an electrically insulating film;

flying electric field voltage application means for applying a flying electric field voltage to said upper electrode, said flying electric field voltage generating an electric field which allows a developer to fly from said lower electrode to said upper electrode;

current detection means for detecting a current flowing in said upper electrode, and

arithmetic means for computing a total amount of charge of the developer adhering to said upper electrode based on a change in amount of current detected by said current detection means.

5,797,063

IMAGE FORMING APPARATUS AND CLEANING DEVICE FOR TRANSFER MATERIAL CONVEYOR BELT

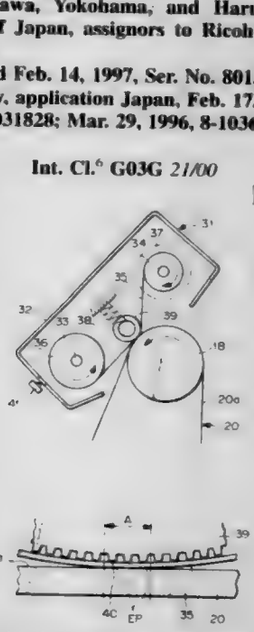
Nobuhiko Umezawa, Yokohama, and Harumitsu Mashiko, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 14, 1997, Ser. No. 801,121

Claims priority, application Japan, Feb. 17, 1996, 8-053906; Feb. 20, 1996, 8-031828; Mar. 29, 1996, 8-103694; Sep. 3, 1996, 8-252446

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—34 **19 Claims**



1. A cleaning device for cleaning a desired surface, comprising:

a webbing pressed against the desired surface and movable relative to the desired surface; and

a presser member for pressing said webbing against the desired surface with a contact surface of said presser member, wherein said presser member comprises a plurality of projections each extending in a direction perpendicular to a direction in which the desired surface and said webbing move relative to each other said projections including edge portions at ends of said projections contacting said webbing, and wherein at least two of said plurality of projections are arranged in said direction in a cleaning range, wherein said cleaning range is an area over which said projections press said webbing against the desired surface.

14. An image forming apparatus comprising:

a conveyor belt for conveying a recording medium to which a toner image is to be transferred from an image carrier, to an image transfer position facing a surface of said image carrier;

a cleaning device for cleaning a surface of said conveyor belt by pressing a webbing against said surface and based on relative movement of said surface and said webbing; and

control means for controlling a cleaning operation of said cleaning device in accordance with an operating condition of said image forming apparatus wherein said control means causes, at a time of recovery from an error, said webbing to contact said surface with a greater force than at a time of usual cleaning to occur during image formation.

5,797,064

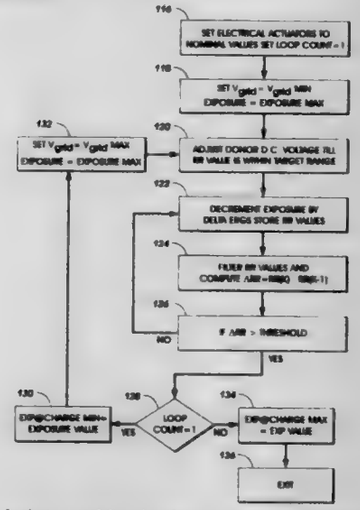
PSEUDO PHOTO INDUCED DISCHARGED CURVE GENERATOR FOR XEROGRAPHIC SETUP

Guru B. Raj, Fairport; Roger W. Budnik, Rochester, and James M. Pacer, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 9, 1997, Ser. No. 835,580

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—46 **17 Claims**



1. In a printing machine having a moving imaging surface, a sensor a projecting system for modulating a beam and exposing an image onto the imaging surface, a developer for application of toner to the image projected onto the imaging surface for transfer of the image to a medium, a method of generating a pseudo photo induced discharge curve within the machine for development control comprising the steps of;

setting a minimum photo induced discharge level and set machine to nominal operating points,

tabulating a set of exposure levels and corresponding sensor readings for minimum level,

setting a maximum photo induced discharge level and set machine to nominal operating points,

tabulating a set of exposure levels and corresponding sensor readings for maximum level,

calculating differences between successive sensor readings to determine curve slopes,

comparing slopes with stored thresholds to determine correct operating range for minimum and maximum charge levels, and

interpolating between the minimum and maximum charge levels to set optimum correlation between exposure and all charge levels.

5,797,065

ELECTROPHOTOGRAPHIC RECORDING APPARATUS

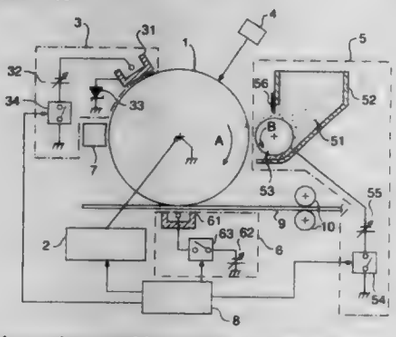
Seiji Arai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 643,096, May 29, 1996, abandoned, which is a continuation of Ser. No. 361,174, Dec. 21, 1994, abandoned, which is a continuation of Ser. No. 214,002, Mar. 15, 1994, abandoned, which is a continuation of Ser. No. 40,085, Mar. 30, 1993, abandoned, which is a continuation of Ser. No. 853,016, Mar. 18, 1992, abandoned, which is a continuation of Ser. No. 670,958, Mar. 18, 1991, abandoned. This application Sep. 29, 1997, Ser. No. 939,907

Claims priority, application Japan, Mar. 19, 1990, 2-66960; Aug. 20, 1990, 2-217218

Int. Cl.[6] G03G *21/14*

U.S. Cl. 399—46 **1 Claim**



1. An electrophotographic recording apparatus comprising:

photosensitive means including a rotatable drum and a driving motor to rotate the drum, the drum having a surface to which toner is attracted by a voltage charge on the surface that is positive in relation to a bias voltage charge on the toner;

charge means for uniformly charging the surface of the photosensitive means to a first predetermined voltage;

exposure means for exposing the surface of the photosensitive means to form an electrostatic latent image in at least two image charges on the surface of the photosensitive means, said image charges having relatively high and low voltages corresponding to white and black image areas, respectively, the high voltage of the image charges being lower than said first predetermined voltage;

developing means for applying toner onto the surface of the photosensitive means to develop the electrostatic latent image, said developing means including means for applying a bias voltage to the toner, said bias voltage being of a value intermediate the high and low voltages of said image charges;

transfer means for transferring the developed image to a transfer sheet;

means, including said charge means, for precharging the photosensitive means to at least said bias voltage for re-exposure after the developed image is transferred to a transfer sheet; and

a control unit operative to turn on the driving motor to rotate the drum three revolutions for each recording operation, the control unit (a) turning on the bias voltage a fixed time period following turning on of the charging means to rotate the drum so that the complete surface of the drum is rotated past the developing means during a first revolution, (b) turning on and off the exposure means and the transfer means during the second revolution, the turning off of the transfer means occurring at the beginning of a third revolution, and (c) turning off the driving motor, the charging means, and the bias voltage upon completion of the third revolution so that the entire surface of the drum is rotated past the developing means during the third revolution in a non-exposure condition.

5,797,066

LIGHT SOURCE DRIVE CONTROLLING DEVICE FOR USE IN IMAGE FORMING APPARATUS

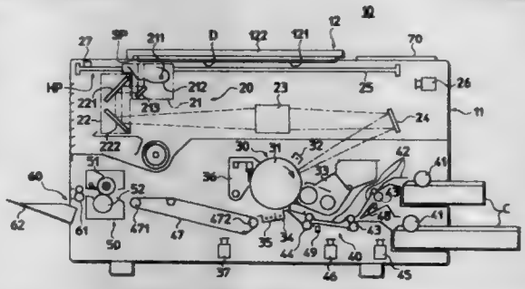
Norimasa Kishigami; Kotaro Kawasaki; Mitsuharu Yoshimoto, and Atsushi Yoshihara, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka-fu, Japan

Filed May 19, 1997, Ser. No. 858,313

Claims priority, application Japan, Jun. 3, 1996, 8-140460

Int. Cl.[6] G03G *15/04*

U.S. Cl. 399—51 **15 Claims**



1. A light source drive controlling device for use in an image forming apparatus comprising:

a light source for illuminating a surface of a document, the a light amount emitted from the light source being adjustable in accordance with a level of drive voltage supplied thereto;

light source driving means for supplying a drive voltage of a specified level, corresponding to a set level, to the light source;

scanning means for scanning an image of the document by moving the light source from a home position through an image start reading position to a return position whereat said light source has completed a scan of the document; and

drive voltage supply timing control means for controlling the light source driving means to vary a drive voltage supply start timing such that the drive voltage is applied to the light source in accordance with the set level of the drive voltage so that the light amount of the light source arrives at a predetermined maximum level when the light source is at a position in a range extending from a position between the home position and the image reading start position and a position at the image reading start position.

5,797,067

IMAGE FORMING APPARATUS WHICH DISPLAYS AN ACCUMULATED NUMBER OF TIMES IMAGE FORMATION HAS BEEN EXECUTED FOR EACH OF IMAGE FORMING MODES

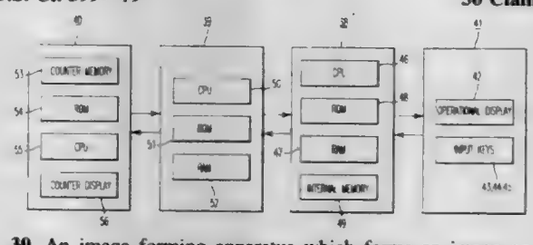
Yoshihiro Mitekura, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 28, 1996, Ser. No. 738,688

Claims priority, application Japan, Oct. 28, 1995, 7-303422

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—79 **30 Claims**



30. An image forming apparatus which forms an image on a sheet in accordance with an image forming mode selected from among a plurality of image forming modes, comprising:

an image forming mode input device for selecting an image forming mode to form an image on a sheet; and

a counter which counts and accumulates individually a number of times image formation has been executed for each of the plurality of image forming modes selected through said image forming mode input device, which stores the accumulated number of times image formation has been executed for each of the plurality of image forming modes individually in a memory provided in said counter and which receives a display signal for displaying the accumulated number of times image formation has been executed for the image forming mode selected through said image forming mode input device and said counter displays on a display provided in said counter the accumulated number of times image formation has been executed for the mode input device, which is stored in said memory of said counter, in accordance with said display signal for the corresponding image forming mode selected through the image forming mode input device.

5,797,068

COMPACT IMAGE FORMATION APPARATUS FACILITATING JAM REMOVAL

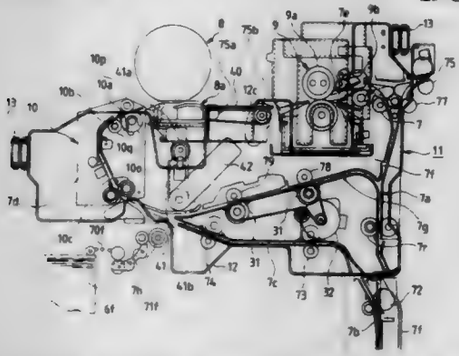
Naohito Otsuki; Kyoji Kamei; Akiyoshi Inoue; Kiyoshi Ishikawa; Shin Sakurai, and Takuo Matsumura, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1996, Ser. No. 706,252

Claims priority, application Japan, Sep. 5, 1995, 7-228294; Aug. 19, 1996, 8-217663

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—110 **29 Claims**



5. An image formation apparatus for transferring an image formed on a photosensitive body to a sheet for forming an image and discharging the sheet on which the image is formed to an outlet made in one side face of an apparatus main unit, the apparatus main unit having another side face in opposing relation to said one side face, said image formation apparatus comprising:

storage means for storing sheets;

taking-out means for taking out a sheet from said storage means in a direction toward said one side face;

first transport means for transporting the sheet taken out by said taking-out means in a direction toward said another side face of the apparatus main unit;

resist means for turning the sheet transported on said first transport means in a direction toward said one side face and positioning the sheet with respect to the photosensitive body; and

main transport means for transporting the sheet from said resist means to the outlet made in said one side face in order to perform transferring and discharging the sheet to said outlet.

5,797,069

DEVELOPING DEVICE FOR IMAGE FORMING APPARATUS

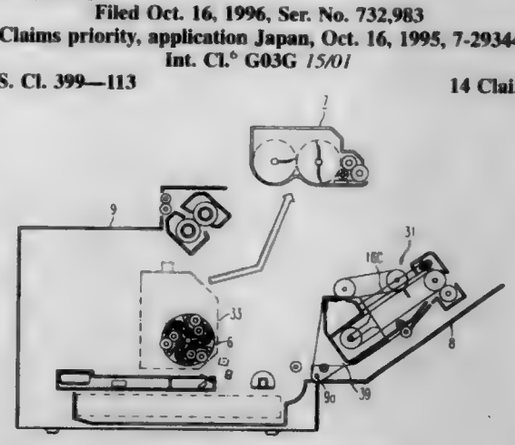
Noriyuki Kimura, Kawasaki; Hiroyuki Matsushiro, Yokohama; Tsuyoshi Deki, Koshigaya, and Takeshi Motohashi, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 16, 1996, Ser. No. 732,983

Claims priority, application Japan, Oct. 16, 1995, 7-293449

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—113 **14 Claims**



1. A color image forming apparatus comprising:

a image bearing means for bearing an electrostatic latent image thereon;

a first developing unit which is separately replaceable, for developing the electrostatic latent image, wherein said first developing unit is a black developing device; a second developing unit for developing the electrostatic latent image, including means for supplying thereto toner from outside of said second developing unit, wherein said second developing unit is a revolving developing unit having a yellow developing device, a magenta developing device and a cyan developing device and not including said black developing device; and

a removably mounted frame on which said first and second developing units are removably mounted.

5,797,070

IMAGE-FORMING APPARATUS FEATURING A PLURALITY OF IMAGE FORMING MEANS

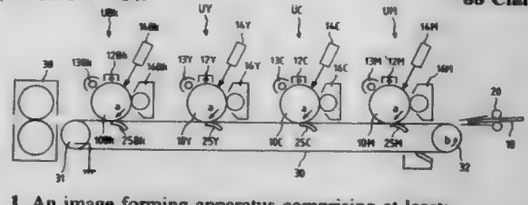
Kenichiro Waki, Kawasaki; Masahiro Itoh, Odawara; Hiroyuki Suzuki, Yokohama, and Ryo Inoue, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 558,185, Nov. 15, 1995, abandoned. This application Apr. 21, 1997, Ser. No. 845,285

Claims priority, application Japan, Nov. 17, 1994, 6-307095; Sep. 18, 1995, 7-238406

Int. Cl.[6] G03G *15/01;15/30*

U.S. Cl. 399—149 **88 Claims**



1. An image forming apparatus comprising at least:

a first image-forming unit comprising a first latent image-holding member for holding a first electrostatic latent image, a first latent image-forming means for forming the first electrostatic latent image on the first latent image-holding member, a first developing means for developing the first electrostatic latent image on the first latent image-holding member with a first toner to form a first toner image on the first latent image-holding member, and a first image-transfer means for transferring the first toner image from the first latent image-holding member onto an image-receiving member; and

a second image-forming unit comprising a second latent image-holding member for holding a second electrostatic latent image, a second latent image-forming means for forming a second electrostatic latent image on the second latent image-holding member, a second developing means for developing the second electrostatic latent image on the second latent image-holding member with a second toner to form a second toner image on the second latent image-holding member, and a second image-transfer means for transferring the second toner image from the second latent image-holding member onto the image-receiving member holding the first toner image having been formed thereon by the first image-forming unit, the second developing means also serving as a cleaning means for recovering the toner remaining on the second latent image-holding member after the image transfer to perform cleaning, wherein the second latent image-holding member has a surface having a contact angle for water of not less than 85°.

5,797,071

ELECTROPHOTOGRAPHIC APPARATUS

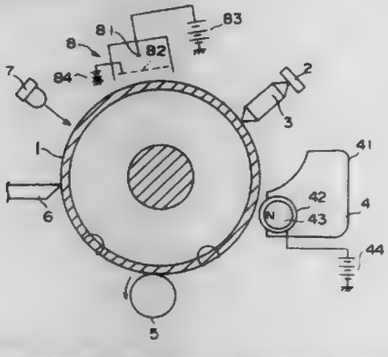
Yoshio Ozawa; Norio Tomiie; Hiroyoshi Tode, and Yukio Ikeda, all of Watarai-gun, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Nov. 26, 1996, Ser. No. 757,737

Claims priority, application Japan, Nov. 2, 1995, 7-334163; Nov. 29, 1995, 7-334114

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—159 **11 Claims**



1. An electrophotographic apparatus, in which a photo-sensitive drum having a photoconductive layer and a surface layer, said layers being laminated on a base, and a latent image formed on above photo-sensitive drum is developed by causing selective toner attachment, said electrophotographic apparatus comprising:

an electrophotographic photo-sensitive drum provided as said photo-sensitive drum with said surface layer thereof being represented by an elementary ratio composition formula ($a\text{-}Si_{1-x}C_x:H$), x being $0.95 \leqq x < 1$, the dynamic indentation hardness of said surface layer on the upper surface side thereof being 300 kgf/mm^2 or below, the hardness of said surface layer being higher on the inner side of said photoconductive layer than on the outer surface side; and

a developing unit using a developer including a toner and abrasive being caused to rub the surface of said photo-sensitive drum and recovered said developer in a developer vessel;

the temperature of said photo-sensitive drum surface being held approximately in a range of 0 to +10° C. with respect to the temperature of said developer vessel.

5,797,072

APPARATUS AND METHOD FOR CONTACT CHARGING AN AMORPHOUS SILICON PHOTOCONDUCTOR VIA A MULIPOLAR MAGNETIC BODY HAVING A MAGNETIC BRUSH LAYER

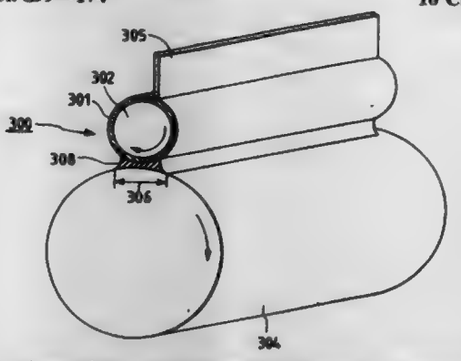
Toshiyuki Ehara, Yokohama, and Masaya Kawada, Nara, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1996, Ser. No. 698,798

Claims priority, application Japan, Aug. 21, 1995, 7-211575

Int. Cl.[6] G03G *15/02*

U.S. Cl. 399—174 **10 Claims**



1. An image-forming apparatus for forming an electrostatic latent image on a surface of a charging object by applying a voltage to a charging member comprising a cylindrical multipolar magnetic body and a brush layer formed from a magnetic powder on the peripheral surface of the multipolar magnetic body, and charging the surface of the charging object by rubbing the surface thereof with the surface of the brush layer by movement in a reverse direction, and forming an electrostatic latent image on the surface of the charging object, wherein the charging object is a photosensitive member having a photoconductive layer comprising a non-single-crystal material containing silicon atoms as a matrix and hydrogen and/or halogen atoms on an electroconductive support; the photoconductive layer contains hydrogen at a content ranging from 10 to 30 atomic %, and $Si—H_2/Si—H$ at a ratio ranging from 0.2 to 0.5, having density of state ranging from 1×10^{14} cm^{-3} to 1×10^{16} cm^{-3} and characteristic energy of the exponential tail ranging from 50 to 60 meV derived from subband-gap light absorption spectrum at least at a light introducing portion, and having a surface resistivity ranging from 1×10^{10} to 5×10^{15} Ωcm; the multipolar magnetic body has a magnetic force of not lower than 500 G; the magnetic powder has a resistivity ranging from 1×10^{4} to 1×10^{9} Ωcm and particle diameters ranging from 10 to 50 μm; the time of contact of a point on the charging object with the brush layer is not shorter than 10 msec; and the charging member and the charging object move at a relative moving speed in relation of $(a-b)/a\times100\%$ of not less than 110% where a is the moving speed of the charging object, b is the moving speed of the charging member, and the rotation direction of the charging object is taken to be positive.

5,797,073

TONER CONTAINER WITH BIASED CLOSURE

Robert D. Russell, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 13, 1997, Ser. No. 816,310

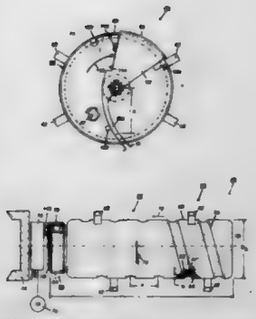
Int. Cl.[6] G03G *15/08*

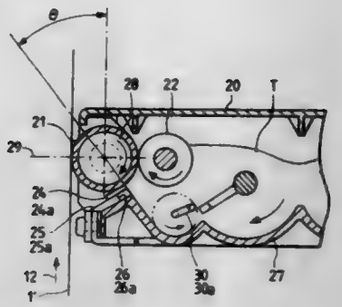
U.S. Cl. 399—260 **18 Claims**

1. A device for storing a supply of particles for use in a developer unit of an electrophotographic printing machine, the device cooperable with a mechanism to feed the particles from the device into the developer unit, the device comprising:

a container defining a chamber for storing particles therein, said container defining an aperture therein; and

a cover member operably associated with the container for selectively opening and closing the aperture, said cover mem-





ber including an urging member integral with said cover member for urging the cover member toward one of an open position of said cover member and a closed position of said cover member, the mechanism being connectable to said cover member.

5,797,074

IMAGE FORMING SYSTEM

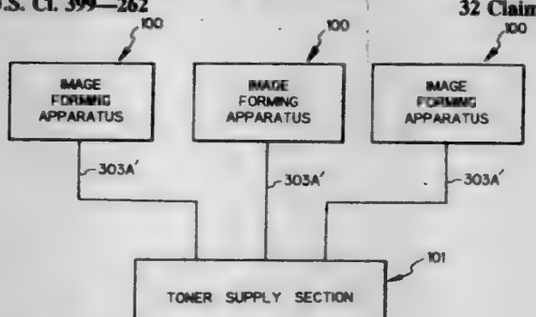
Nobuo Kasahara, Yokohama; Satoshi Muramatsu, and Hiroyuki Shibaki, both of Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 15, 1996, Ser. No. 632,119

Claims priority, application Japan, Apr. 14, 1995, 7-089697; Apr. 26, 1995, 7-101807; Aug. 7, 1995, 7-201022; Nov. 15, 1995, 7-296777; Mar. 26, 1996, 8-069909

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—262 **32 Claims**



1. An image forming system comprising:

a plurality of image forming apparatuses each for individually electrostatically completely forming a latent image representative of a document image on an image carrier, developing the latent image with a developer stored in a developing device, and transferring a resulting developed image to a recording medium; and

a single developer source for supplying the developer to developing devices of all of said plurality of image forming apparatuses.

5,797,075

IMAGE FORMING APPARATUS HAVING IMPROVED TONER CARRIER ARRANGEMENT

Masahiko Saito, Kitaibaraki; Toru Miyasaka; Kazushige Oonishi, both of Hitachi; Shoji Takeya, Tokai; Isamu Terashima, Hitachi; Tetsuro Akasaki, Hitachinaka, and Tadashi Okano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 11, 1997, Ser. No. 814,339

Claims priority, application Japan, Mar. 14, 1996, 8-057197

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—284 **8 Claims**

1. A developing apparatus which includes toner powder in the form of fine colored powder, a toner carrier, and a frictional controlling member for contacting said toner carrier under pressure to frictionally charge said toner powder and form a thin toner layer on said toner carrier, and wherein said toner carrier on which the thin toner layer is formed is rotated so as to transport the thin toner layer to a location where it may be transferred onto a toner image carrier on which an electrostatic latent image is formed to convert the electrostatic latent image into a visible image, said developing apparatus comprising: a toner supply roller disposed in rotating contact with said toner carrier at a side of said toner carrier, said frictional controlling member being provided at a position in contact with the toner carrier downstream of said toner supply roller with respect to a direction of rotation of said toner carrier; and a rotatable toner scraping member provided in a neighboring relationship below said toner supply roller and said frictional controlling member.

5,797,076

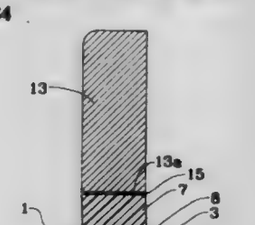
ABRASIVE SHIM COMPLIANT DOCTOR BLADE

Peter Wallace Bracken; Jeffery Richard Brener; Martin Victor Digirolamo; Samuel Edward Mullinix, Jr., all of Lexington; Donald Wayne Stafford, Richmond, and Peter Eric Wallen, Lexington, all of Ky., assignors to Lexmark International, Inc., Lexington, Ky.

Filed May 12, 1997, Ser. No. 854,399

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—284 **16 Claims**



1. A doctor blade for metering charged electrophotographic toner held on a developer roller by physically contacting a sector of said roller with a surface of said blade which is electrically charged, said blade comprising

a supporting member to position said blade adjacent to said roller,

a resilient layer attached to said supporting member,

a shim attached to said resilient layer on a first side

said shim being stiff in the process direction of said developer roller,

at least the outer surface on a side opposite said first side of said shim being abrasive and electrically conductive, and

an electrical conductor on said doctor blade in electrical contact with said outer surface of said shim.

5,797,077

DOUBLE-SIDED IMAGES FORMING APPARATUS AND METHOD USING THE SAME

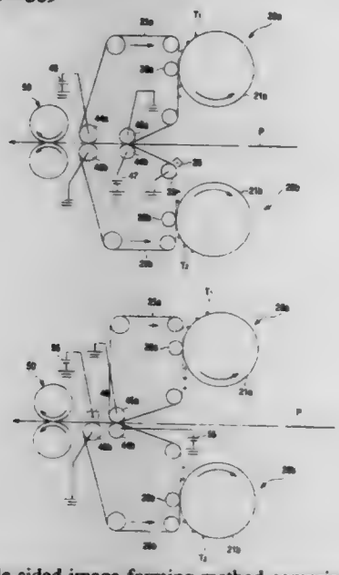
Ken Samizo; Kenichi Mishina; Mituo Yamamoto; Yutaka Yakabe; Toshikazu Kageyama, and Yoshiya Mashimo, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1997, Ser. No. 825,622

Claims priority, application Japan, Apr. 4, 1996, 8-108449; Feb. 6, 1997, 9-036907; Feb. 17, 1997, 9-048492

Int. Cl.[6] G03G *15/16;15/01*

U.S. Cl. 399—309 23 Claims



1. A double-sided image forming method comprising:

a first image primary transfer step for transferring a first image carried by a first image carrier to a first intermediate transfer member;

a second image primary transfer step for transferring a second image carried by a second image carrier to a second intermediate transfer member;

a first image secondary transfer step for retaining the recording material in a sucked way so as to correspond to the second image formed on the second intermediate transfer material and for secondarily transferring the first transfer image from the first intermediate transfer member to the side of the recording material facing the first intermediate transfer member, in the area where the first intermediate transfer material and the second intermediate transfer material come into contact with or in proximity to each other; and

a second image secondary transfer step for secondarily transferring the primarily transferred image from the second intermediate transfer member to the side of the recording material facing the second intermediate transfer member while the recording material is sucked and retained by the second intermediate transfer member after the first image secondary transfer step.

5,797,078

PHOTORECEPTOR COMET PREVENTION BRUSH

Douglas W. Sass, Ontario; Stephen T. Dunn, Webster, and Ronald E. Godlove, Bergen, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

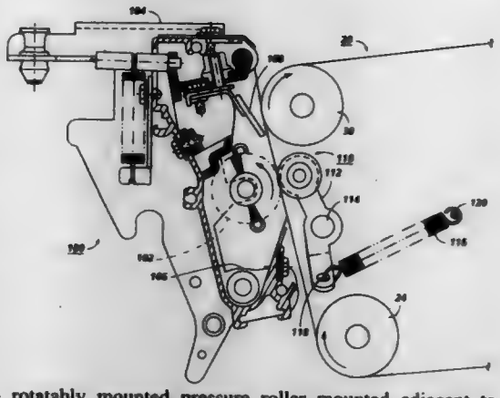
Filed Jul. 9, 1993, Ser. No. 88,146

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—357 2 Claims

1. An apparatus for cleaning debris from a movable photoreceptor belt having an outer surface and an inner surface, comprising:

a rotatably mounted cleaning roller adapted to remove debris adhering to the outer surface of the photoreceptor belt;



a rotatably mounted pressure roller mounted adjacent to the inner surface of the photoreceptor belt, said cleaning roller and said pressure roller defining a nip through which the photoreceptor belt moves;

means for continuously maintaining a substantially uniformly distributed contact pressure between said cleaning roller and the outer surface of the photoreceptor belt; and

a sensor for monitoring the contact pressure between said cleaning roller and the outer surface of the photoreceptor belt.

5,797,079

PRINTER MEANS FOR PRINTING FRONT AND/OR BACK SIDE OF A BAND-SHAPED RECORDING MEDIUM

Edmund Creutzmann, Mark Schwaben; Walter Kopp, Kirschenstrasse, and Heinz Herzog, München, all of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

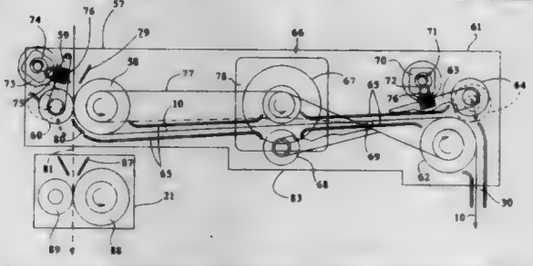
PCT No. PCT/DE95/00008, § 371 Date Apr. 7, 1997, § 102(e) Date Apr. 7, 1997, PCT Pub. No. WO96/11424, PCT Pub. Date Apr. 18, 1996

PCT Filed Jan. 4, 1995, Ser. No. 817,180

Claims priority, application Germany, Oct. 6, 1994, 44 35 797.4

Int. Cl.[6] G03G *21/00*

U.S. Cl. 399—384 19 Claims



1. A printer for optional one-sided or double-sided printing of a band-shaped recording medium, comprising:

an intermediate carrier with appertaining units that generate toner images, a transfer printing station transferring the toner images onto the recording medium and a fixing station, each having a usable width of a least twice a band width of a recording medium to be printed double-sided;

a return channel with conveyor means in order, after printing of a front side of the recording medium, to conduct the recording medium from the fixing station via a connecting channel to a turn-over means in which it is turned over and resupplied to the transfer printing station for printing a back side of the recording medium.

wherein the conveyor means comprise:

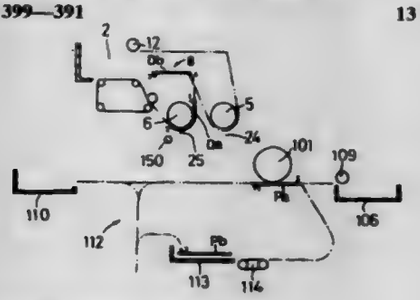
a controllable, motor-driven conveyor means that is arranged at an input side to the connecting channel that has at least one transport roller and a pressure drum unit swivellable against and away from the transport roller comprising at least one pressure roller with an allocated shunt that, in the opened swivelled condition, forms a through channel for a recording medium to be printed on only one side and, in the swivelled-in condition, conducts the recording medium to be printed double-sided around the transport roller into the connecting channel to the turn-over means.

5,797,080

COPYING MACHINE HAVING A MECHANISM FOR FEEDING RECORDING SHEETS IN SYNCHRONIZATION WITH THE IMAGE READING TIMING

Yuji Okamoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 27, 1997, Ser. No. 826,233
Claims priority, application Japan, Mar. 27, 1996, 8-071709
Int. Cl.[6] G03G *15/00*; B65H *7/04*
U.S. Cl. 399—391 **13 Claims**



9. A copying machine comprising:

document feed means for storing a plurality of document sheets on which an image has been drawn and continuously feeding the document sheets one by one to a predetermined image-reading position;

image-reading means for reading an image from a document sheet fed to the image-reading position;

at least one recording-sheet storage means for storing a plurality of recording sheets onto which an image is transferred;

specific-paper storage means for storing cover-paper sheets or laminated-paper sheets;

image transfer means for transferring onto a recording sheet an image read by the image-reading means;

a plurality of conveyance paths for conveying recording sheets and cover-paper sheets or laminated-paper sheets from the recording-sheet storage means and the specific-paper storage means to the image transfer means;

at least two first drive rollers for feeding the recording sheets stored in the recording-sheet storage means and the cover-paper sheets or laminated-paper sheets stored in the specific-paper storage means one by one to the conveyance paths;

a second drive roller for feeding to the image transfer means the recording sheet and the cover-paper sheet or laminated-paper sheet conveyed along the conveyance paths; and

control means for controlling timing at which the first drive rollers are driven, so that the second drive roller can be driven at a constant cycle time with respect to a plurality of recording sheets that pass the conveyance paths.

5,797,081

METHOD FOR RAPID STIFFENING OF EXTRUDATES

Kevin R. Brundage, Corning; Devi Chalasani, Painted Post, both of N.Y., and Ronald E. Johnson, Tioga, Pa., assignors to Corning Incorporated, Corning, N.Y.

Filed May 7, 1997, Ser. No. 852,765
Int. Cl.[6] B22F *3/20*; B29C *47/00*
U.S. Cl. 419—67 **9 Claims**

1. In a method of extruding a plasticized powder mixture having a thermally gellable binder carried in an aqueous vehicle, by passing the mixture through an extruder and then through a die to produce an extrudate,

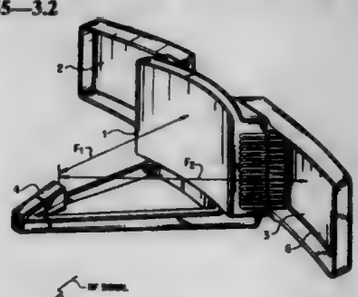
the improvement comprising the additional step of contacting the extrudate directly after it leaves the die with an agent for simultaneously lowering the gel point of the binder and dehydrating the extrudate, whereby the extrudate is stiffened in a shorter time than it would be, absent the additional step, the agent being selected from the group consisting of glycerin at a temperature of at least about 50° C., and a mixture of glycerin and ethylene glycol ranging in molecular weight from monomeric to no greater than about 400 at ambient temperature.

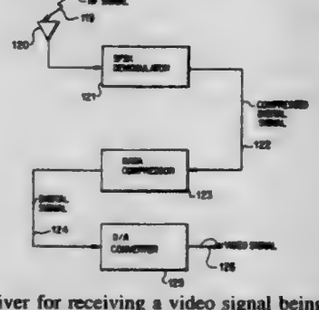
5,797,082

COMMUNICATION RECEIVER FOR RECEIVING SATELLITE BROADCASTS

Bruce B. Lusignan, Palo Alto, Calif., assignor to Terrastar, Inc., Chicago, Ill.

Division of Ser. No. 259,980, Jun. 17, 1994, abandoned. This application Jan. 9, 1997, Ser. No. 781,161
Int. Cl.[6] H04H *1/00*; H04B *1/06*; H01Q *13/00*; H03D *3/00*
U.S. Cl. 455—3.2 **20 Claims**





1. A receiver for receiving a video signal being broadcast via a satellite to a terrestrial antenna as a wideband power efficient signal, comprising:

a) a means for demodulating a received shaped frequency shift keyed signal being output from the terrestrial antenna into a received compressed digital signal, said demodulating means being coupled to the terrestrial antenna;

b) a means for decompressing the received compressed digital signal into a received digital signal, said decompressor means being coupled to the shaped frequency shift keyed demodulator; and

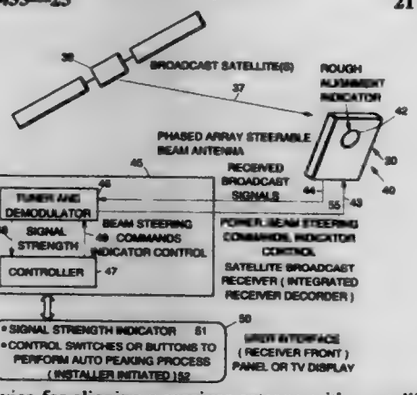
c) a means for converting the received digital signal into a signal resembling the video signal being broadcast from the satellite, said digital to analog converting means being coupled to the data decompressor.

5,797,083

SELF-ALIGNING SATELLITE RECEIVER ANTENNA

Paul R. Anderson, Hermosa Beach, Calif., assignor to Hughes Electronics Corporation, El Segundo, Calif.

Filed Dec. 22, 1995, Ser. No. 577,605
Int. Cl.[6] H04B 7/14
U.S. Cl. 455—25 21 Claims



7. A device for aligning a receiver antenna with a satellite, said device comprising:

an antenna that receives a signal from a satellite;

a receiver coupled to the antenna and for electronically aligning said antenna with said satellite after the antenna has been roughly aligned with the satellite and without requiring further physical movement of the antenna;

a rough alignment indicator in communication with said receiver and located in proximity to said antenna, said indicator generating a sensible signal of a first duration when said antenna is in rough alignment with the satellite; and

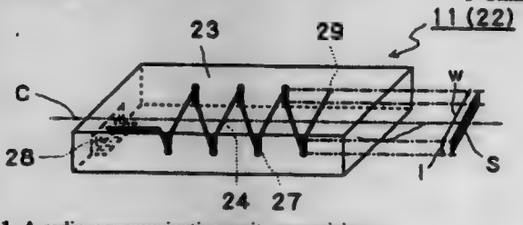
a user interface in communication with said receiver.

5,797,084

RADIO COMMUNICATION EQUIPMENT

Teruhisa Tsuru, Kameoka; Harufumi Mandai, Takatsuki; Koji Shiroki, and Kenji Asakura, both of Shiga-ken, all of Japan, assignors to Murata Manufacturing Co. Ltd, Kyoto, Japan

Filed Jun. 14, 1996, Ser. No. 664,139
Claims priority, application Japan, Jun. 15, 1995, 7-148930
Int. Cl.[6] H04B 1/38; H01Q 9/00
U.S. Cl. 455—73 5 Claims



1. A radio communication unit, comprising:

a first antenna contained within said unit and having a first frequency characteristic;

a first filter connected to said first antenna and having a pass bandwidth for passing a received signal; a receiving circuit connected to an output end of said first filter;

a second antenna contained within said unit and having a second frequency characteristic;

a second filter connected to said second antenna and having a pass bandwidth for passing a transmitted signal;

a transmitting circuit connected to an input end of said second filter; and

a control circuit for controlling operations of said receiving circuit and said transmitting circuit;

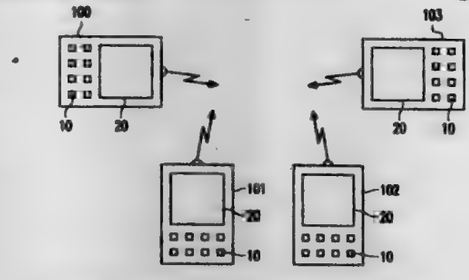
at least one of said first and second antennas being a chip antenna comprising a dielectric substrate having a plurality of dielectric layers stacked on top of each other, the stacked layers establishing a direction normal to the stacked layers, a spiral wound conductor disposed inside the dielectric substrate having a spiral axis extending perpendicular to the direction normal to the stacked layers, and a feeding terminal being connected to the spiral wound conductor.

5,797,085

WIRELESS COMMUNICATION SYSTEM FOR RELIABLE COMMUNICATION BETWEEN A GROUP OF APPARATUSES

Leonardus G.M. Beuk; Hans E.P. Köhler; Robertus C.J. Jansen, and Adrianus H. Van Gerwen, all of Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Apr. 24, 1996, Ser. No. 637,256
Claims priority, application European Pat. Off., Apr. 28, 1995, 95201102
Int. Cl.[6] H04B 1/40
U.S. Cl. 455—88 10 Claims



1. A wireless communication system comprising:

a sending apparatus; and

a receiving apparatus,

said sending apparatus comprising:

message sending means for transmitting a message frame, and acknowledge receiving means for receiving an acknowledgment frame,

said receiving apparatus comprising:

message receiving means for receiving a message frame, and acknowledge sending means for transmitting an acknowledgment frame upon said message receiving means correctly receiving a message frame,

said system comprising at least three apparatuses, each apparatus being a sending apparatus as well as a receiving apparatus, and

each apparatus further comprising:

detection means for detecting a transmission of a frame,

first timing means for setting a first timer at a predetermined first time upon said detection means detecting the ending of said transmission, and

second timing means for, upon said message receiving means correctly receiving a message frame, setting a second timer at a random time with a predetermined upper boundary, said predetermined upper boundary being smaller than said first time,

said message sending means being adapted to transmit a message frame when said first timer is expired and said detection means detect no transmission of another frame, and

said acknowledge sending means being adapted to transmit an acknowledge frame only if said second timer expires prior to said detection means detecting a transmission of another frame.

5,797,086

METHOD FOR TUNING CHANNELS IN A VOLTAGE SYNTHESIZER TUNING CIRCUIT

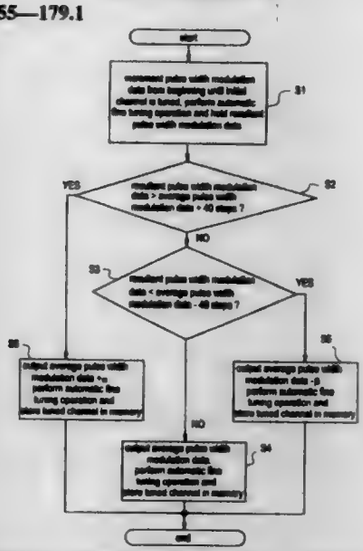
Il Goo Na, Kwangmyung, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Oct. 25, 1996, Ser. No. 738,067

Claims priority, application Rep. of Korea, Oct. 26, 1995, 95-37404

Int. Cl.[6] H04B *1/18*

U.S. Cl. 455—179.1 **3 Claims**



3. A method for tuning in to channels in a voltage synthesizer tuning circuit, comprising the steps of:

setting pulse width modulation data corresponding to an average error value of a variable capacitance diode;

tuning to an initial channel on the basis of an average value of said pulse width modulation data;

performing an automatic fine tuning operation while varying said pulse width modulation data to obtain resultant pulse width modulation data;

comparing said average value of said pulse width modulation data with an average value of said resultant pulse width modulation data to determine an error of said variable capacitance diode;

correcting said pulse width modulation data in accordance with a correction value corresponding to the error determined when said automatic fine tuning operation is performed;

outputting corrected pulse width modulation data to a tuner driver;

tuning to a subsequent channel on the basis of said corrected pulse width modulation data;

storing said pulse width modulation data and said corrected pulse width modulation data in a memory;

outputting said corrected width modulation data from said memory so that the subsequent channel can be tuned; and

displaying a frequency of the tuned channel on a screen.

5,797,087

METHOD AND APPARATUS FOR PERFORMING A PRESET LISTENING OPERATION FOR A RADIO BROADCAST

Hyo Chan Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

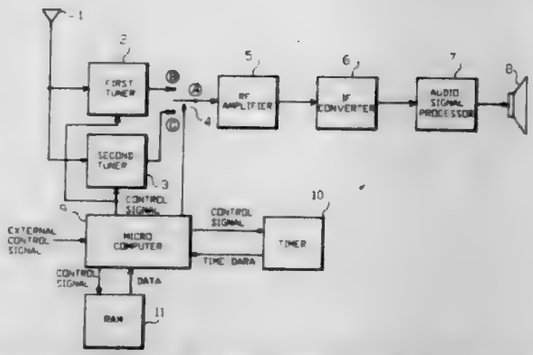
Filed Apr. 17, 1996, Ser. No. 633,443

Claims priority, application Rep. of Korea, May 18, 1995, 1995 12430

Int. Cl.[6] H04B *1/18*

U.S. Cl. 455—181.1 **6 Claims**

1. A method for performing a preset listening operation for at least one radio broadcast in an audio system having a microcomputer for controlling a first tuner, a second tuner, a random access memory (RAM), and a timer, the method comprising the steps of:



(a) storing data regarding at least one preset channel, including a preset listening start time and a preset listening end time associated with at least one preset broadcast program corresponding to said at least one preset channel, in said random access memory;

(b) tuning said first tuner to an initial channel to listen to a general broadcasting program, if a main power is turned on;

(c) determining whether a preset listening function has been selected;

(d) detecting said data from said random access memory if it is determined at said step (c) that the preset listening function has been selected;

(e) identifying a present time based on an output of said timer;

(f) determining whether said present time identified in step (e) is the same as said preset listening start time;

(g) turning off said first tuner, tuning said second tuner to said preset channel and outputting an audible signal which corresponds to said at least one preset broadcasting program of said preset channel, if it is determined at said step (f) that the present time is the same as said preset listening start time;

(h) identifying the present time based on said output of said timer;

(i) determining whether said present time checked in step (h) is the same as said preset listening end time; and

(j) turning off said second tuner, tuning said first tuner to said initial channel and outputting an audible signal which corresponds to said general broadcasting program of said initial channel, if it is determined at step (i) that the present time identified in step (h) is the same as said preset listening end time.

5,797,088

VEHICULAR AUDIO SYSTEM INCORPORATING DETACHABLE CELLULAR TELEPHONE

Ivano Stamegna, 18971 Glenmont, Irvine, Calif. 92715

Filed Oct. 30, 1995, Ser. No. 550,799

Int. Cl.[6] H04B *1/06*; H05K *11/02*

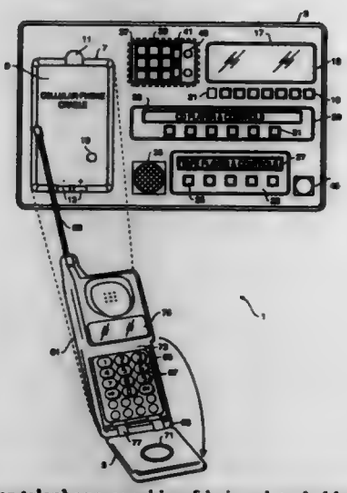
U.S. Cl. 455—345 **5 Claims**

1. A vehicular audio/cellular telephone system comprising:

a cellular telephone including a first antennae, a first power supply, a first speaker assembly, a microphone, a keypad, a transceiver for processing transmitted and received rf signals, and a first set of electrical contacts for receiving and transmitting signals to and from an audio system; and

an audio system including a second antennae for receiving rf signals, a second power supply, a receiver for processing received rf signals, a telephone cradle and a second set of electrical contacts for receiving and transmitting signals to and from said cellular telephone;

said telephone cradle configured to affix said cellular telephone including antennae, transceiver, first power supply, first speaker assembly, keypad, microphone, and first set of electrical contacts, to said audio system so as to permit said first set of electrical contacts to engage second set of electrical contacts; and



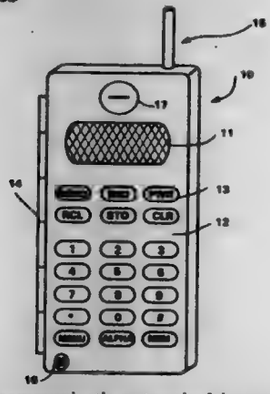
said cellular telephone capable of being detachably mounted to said telephone cradle of said audio system to permit the use of said cellular telephone at a location distant from said audio system.

5,797,089

PERSONAL COMMUNICATIONS TERMINAL HAVING SWITCHES WHICH INDEPENDENTLY ENERGIZE A MOBILE TELEPHONE AND A PERSONAL DIGITAL ASSISTANT

Nam D. Nguyen, Quebec, Canada, assignor to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Sep. 7, 1995, Ser. No. 524,867
Int. Cl.[6] H04M *11/00*
U.S. Cl. 455—463 **22 Claims**



1. A personal communications terminal in a case having a first half hingedly connected to a second half, said personal communications terminal operating in an open and a closed position, said personal communications terminal comprising:

mobile telephone means including:

a telephone display screen;

a keypad for entering instructions and data that are displayed on said telephone display screen; and

a telephone power switch that independently energizes said mobile telephone means;

personal digital assistant means electronically connected to said mobile telephone means, said personal digital assistant means comprising:

a first memory device for storing a first set of application software programs;

a second memory device for storing a first set of data;

a processor for performing operations with said first set of data utilizing said first set of application software programs; and

a personal digital assistant power switch that independently energizes said personal digital assistant means;

a power supply for providing electrical power to said mobile telephone means and said personal digital assistant means;

a modem for passing data between said personal digital assistant means and said mobile telephone means; and

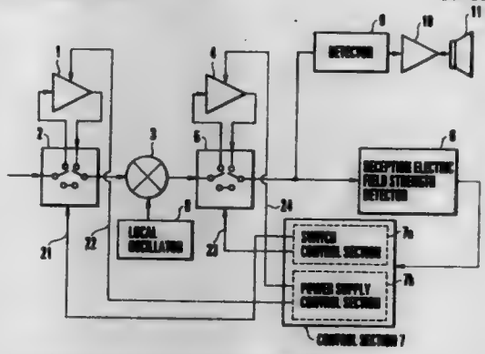
a mobile data interface for passing data between said personal digital assistant means and said mobile telephone means without utilizing said modem.

5,797,090

RADIO RECEIVING APPARATUS HAVING CURRENT CONSUMPTION REDUCING FUNCTION

Taisuke Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 27, 1996, Ser. No. 757,941
Claims priority, application Japan, Dec. 7, 1995, 7-318840
Int. Cl.[6] H04B *1/16*
U.S. Cl. 455—234.1 **10 Claims**



1. A radio receiving apparatus comprising:

a first amplifier which is connected in series to a signal line of a reception system for a radio signal and can be disconnected from the signal line; a second amplifier which is connected in series to the signal line on an output side of said first amplifier and can be disconnected from the signal line;

electric field level detection means which is connected to the signal line for detecting a reception electric field level of a radio signal; and

control means for ceasing to supply power to and disconnecter from the signal line said first and second amplifiers in accordance with the electric field level detected by said electric field level detection means.

5,797,091

PERSONAL COMMUNICATION SYSTEM AND METHOD OF USE

William E. Cline, and Richard Michael Crowson, both of Seattle, Wash., assignors to Xypoint Corporation, Seattle, Wash.

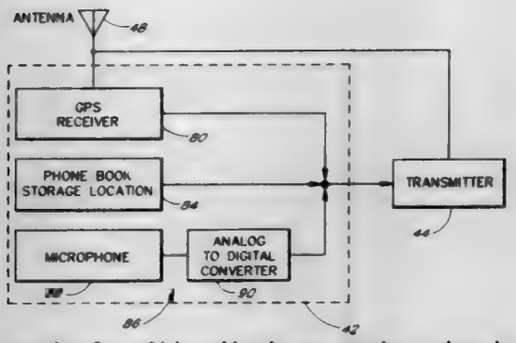
Filed Mar. 7, 1995, Ser. No. 399,725
Int. Cl.[6] H04Q *7/20*
U.S. Cl. 455—404 **19 Claims**

17. A personal emergency communicator which enables a user to inform a remote site of a present location of the user, comprising:

a housing sized to be personally portable;

a transmitter within said housing;

a position location circuit coupled to the transmitter to transmit user location data to the remote site, the position location circuit comprising a memory which stores a plurality of phone book entries entered by the user, and which stores site location data in association with the phone book entries; and



a user interface which enables the user to select a phone book entry, and to initiate a transmission of the site location data associated with the phone book entry to the remote site.

5,797,092

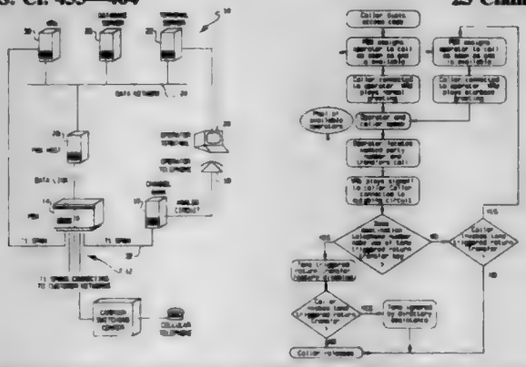
METHOD FOR MONITORING THE CONNECTION BETWEEN THE SUBSCRIBER AND THE DESTINATION TELEPHONE AND PROVIDING DIRECTORY ASSISTANCE UPON DETECTION OF PREDETERMINED TONE

Patrick M. Cox, Beaverton; Adrian P. Powell, Molalla; Paul W. Filliger, Silverton, and Michael A. Kepler, Aloha, all of Oreg., assignors to Metro One Telecommunications, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 498,900, Jul. 6, 1995, which is a continuation-in-part of Ser. No. 234,644, Apr. 28, 1994. This application Nov. 2, 1995, Ser. No. 552,222

Int. Cl.[6] H04Q *7/38*

U.S. Cl. 455—404 **23 Claims**



18. An enhanced method of providing telephone directory assistance service from a directory assistance center having a directory assistance switch comprising the steps:

receiving a customer call from a first external network switch from a customer telephone in a first external telephone network;

connecting the customer telephone through the first external network switch to the directory assistance switch over a first communication link established between the first external network switch and the directory assistance switch;

maintaining the connection from the customer telephone through the first external network switch to the directory assistance switch for the duration of the customer call;

connecting the customer telephone to a directory assistance operator;

transferring the customer call to a destination telephone in a second external telephone network through a second communication link established between the directory assistance switch and a second external network switch to establish a telephonic connection between the customer telephone and a destination telephone;

for the period before the telephonic connection is established until the customer telephone goes on-hook, including the period after the destination telephone goes on-hook, monitoring the connection between the customer telephone and the directory assistance switch with a DTMF receiver in the directory assistance switch for one or two predetermined DTMF tones issued by the customer;

detecting the one or two predetermined DTMF tones at the directory assistance switch; and

without the customer taking any further action, reconnecting the customer to a directory assistance operator upon the detection of the one or two predetermined DTMF tones.

5,797,093

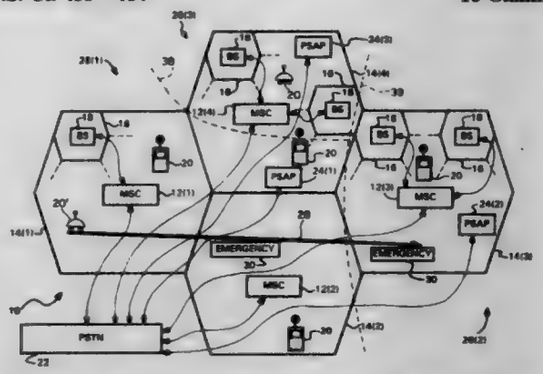
ROUTING OF AN EMERGENCY CELLULAR TELEPHONE CALL

Michel Houde, St. Laurent, Canada, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 30, 1996, Ser. No. 593,861

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 455—404 **10 Claims**



1. A cellular telephone system including a plurality of mobile switching centers, the mobile switching centers generating, to account for instances of mobile station handoff between mobile switching centers, a message identifying an emergency services processing center associated with a currently serving one of the mobile switching centers, the generated message being transmitted from the serving mobile switching center to a previously serving anchor one of the mobile switching centers for use by the anchor mobile switching center in routing an emergency services call made from the mobile station.

5,797,094

METHOD AND APPARATUS FOR SUPPORTING THE DELIVERY OF SHORT MESSAGE SERVICE MESSAGES TO SLEEPING MOBILE STATIONS IN A CELLULAR COMMUNICATIONS SYSTEM

Michel Houde, St. Laurent; Eric Turcotte, Verdun; Wayne Tom, St. Laurent, and Alain Boudreau, Le Gardeur, all of Canada, assignors to Telefonaktiebolaget L M Ericsson (publ), Stockholm, Sweden

Continuation of Ser. No. 447,401, May 23, 1995, abandoned. This application Jun. 26, 1997, Ser. No. 883,175

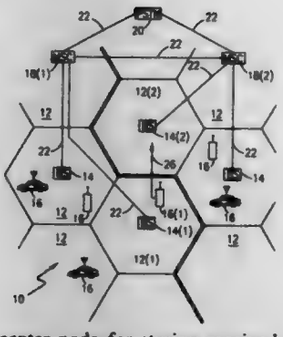
Int. Cl.[6] H04M *11/10*

U.S. Cl. 455—412 **19 Claims**

1. A radio communications system, comprising:

a plurality of mobile stations, each mobile station including means for temporarily placing the mobile station in a power conservation mode of operation wherein receipt of communications messages is not possible, and for generating a notification informing the system that the mobile station has terminated its power conservation mode of operation;

a communications network for delivering received communications messages to the plurality of mobile stations, said network including:



a message center node for storing received communications messages intended for delivery to the mobile stations;

another network node connected to the message center node for setting a message flag indicating the storage of a received communications message for a designated one of the mobile stations when delivery of the communications message to the designated mobile station by the communications network fails; and

means responsive to both the mobile station notification of the termination of the power conservation mode of operation in the designated mobile station and the setting of the message flag for retrieving and forwarding the stored communications message for delivery to the designated mobile station.

5,797,095

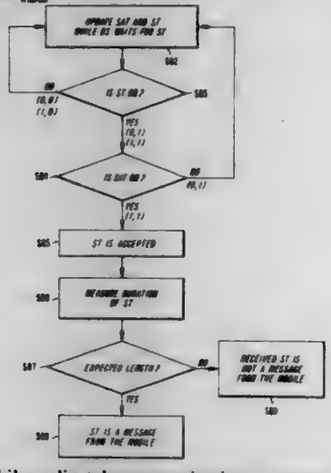
SUPERVISORY AUDIO TONE-SIGNALLING TONE(SAT-ST) HANDLING

Karl Fredrik Robert Gustafson, Stockholm, and Jan-Erik Lundberg, Sollentuna, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Dec. 15, 1995, Ser. No. 574,408

Int. Cl.[6] **H04Q** *7/20*

U.S. Cl. 455—422 **11 Claims**



1. In a mobile radio telecommunications system of the type in which analogously modulated information is transmitted between a base station and mobile stations, a method for supervising the quality of a connection between the base station and a mobile station and for confirming orders sent by the base station, comprising the steps of:

(a) transmitting a supervisory audio tone (SAT) [and at least one order] from a base station on a down-link;

(b) receiving said down-link transmitted SAT in a mobile station;

(c) transmitting said received SAT and a signalling tone (ST) from said mobile station to said base station on an up-link;

(d) receiving said up-link transmitted SAT and ST in said base station;

(e) determining whether said up-link transmitted SAT and ST are respectively on or off at a given instant wherein, when said received up-link SAT is determined to be off when said ST goes on, said ST is accepted if said received up-link SAT is subsequently determined to be on while said ST is still on.

5,797,096

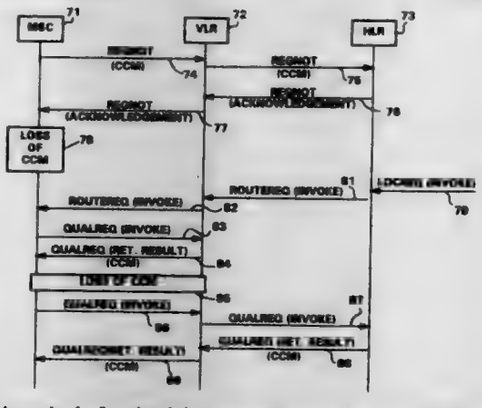
SYSTEM AND METHOD FOR MAINTAINING CONTROL CHANNEL MODE INFORMATION IN A CELLULAR TELECOMMUNICATIONS NETWORK

Francis Lupien, Montreal, and Francois Sawyer, St-Hubert, both of Canada, assignors to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Aug. 2, 1995, Ser. No. 510,558

Int. Cl.[6] **H04Q** *7/38*

U.S. Cl. 455—433 **12 Claims**



1. A method of maintaining control channel mode (CCM) status information for a mobile station in a cellular telecommunications network having a mobile switching center (MSC) and a home location register (HLR), said method comprising the steps of:

storing said CCM status information in said MSC, whenever said MS registers and whenever said MS changes control channel modes;

storing said CCM status information in said HLR, whenever said MS changes control channel modes;

determining whether said CCM status information has been lost by said MSC;

receiving an incoming call for said mobile station;

determining whether said incoming call is received after said CCM status information has been lost by said MSC; and

retrieving said CCM status information from said HLR upon determining that said incoming call is received after said CCM status information is lost by said MSC and before said CCM status information is restored to said MSC by a registration message from said mobile station.

5,797,097

METHOD AND APPARATUS FOR IDENTIFYING THE LOCATION OF A ROAMING PAGER

Peter Owen Roach, Jr., Atlanta, and Edward Irby Comer, Marietta, both of Ga., assignors to BellSouth Corporation, Atlanta, Ga.

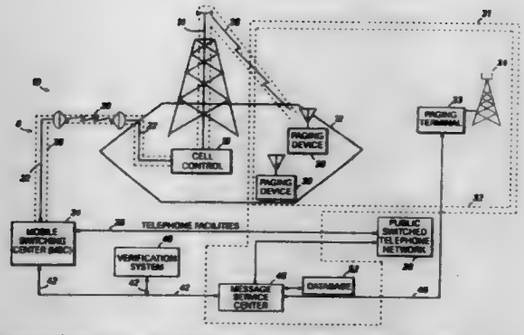
Filed Nov. 2, 1995, Ser. No. 551,952

Int. Cl.[6] **H04M** *11/00;* **H04B** *7/00*

U.S. Cl. 455—456 **38 Claims**

1. In a radiopaging system having a plurality of cellular paging devices and a plurality of service areas, a method for identifying in which one of the service areas a particular one of the cellular paging devices is located when the particular cellular paging device is moved from a first one of the service areas to a second one of the service areas, comprising the steps of:

determining at the particular cellular paging device that it has moved from the first service area to the second service area;



responsive to the determination by the cellular paging device that it has moved from the first service area to the second service area, transmitting via a cellular network control channel an identification signal from the particular cellular paging device to a cellular mobile radiotelephone (CMR) system having an array of cells, at least one of the cells of the CMR system overlapping with the second service area of the radiopaging system, the identification signal containing location data identifying the particular cellular paging device as the source of the identification signal and identifying the CMR system;

forwarding the location data from the CMR system to the radiopaging system; and

identifying the second service area as the location of the particular cellular paging device in response to processing the location data at the radiopaging system based on a mapping of the services areas of the radiopaging system to the array of cells of the CMR system.

5,797,098

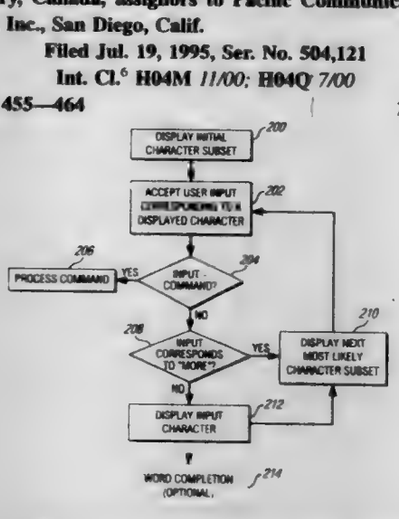
USER INTERFACE FOR CELLULAR TELEPHONE

Martin K. Schroeder, San Diego, Calif., and Duane Sharman, Calgary, Canada, assignors to Pacific Communication Sciences, Inc., San Diego, Calif.

Filed Jul. 19, 1995, Ser. No. 504,121

Int. Cl.[6] H04M *11/00*; H04Q *7/00*

U.S. Cl. 455—464 **11 Claims**



1. In a cellular telephone having an alphanumeric display and a keyboard having a plurality of programmable keys, a predictive keyboard input method comprising the steps of:

(a) in a text entry mode, displaying an initial character subset, comprising a plurality of characters on the display;

(b) accepting an input keystroke from the keyboard;

(c) if the input keystroke corresponds to one of the displayed plurality of characters, then:

(1) displaying that character as an input character on the display; and

(2) displaying a next character subset, comprising a plurality of characters, on the display, wherein the characters in the next character subset are determined to be the next most probable characters based on at least one preceding input character;

(d) matching each input character to a dictionary of candidate words stored within the cellular telephone to select at least one candidate word in the dictionary;

(e) displaying at least one selected candidate word on the display, each selected candidate word being visually associated with a corresponding one of the plurality of programmable keys;

(f) accepting a next input keystroke from the keyboard;

(g) if such next input keystroke corresponds to one of the plurality of programmable keys, then displaying the selected candidate word associated with such programmable key as text entry on the display, replacing immediately preceding displayed input characters used to select the selected candidate word; and

(h) otherwise continuing at step (c), wherein the initial character subset is statistically determined from sample text to be the most common initial characters of words appearing in such sample text and the initial character subset is periodically updated by analyzing the character frequencies of messages entered by a user over time.

5,797,099

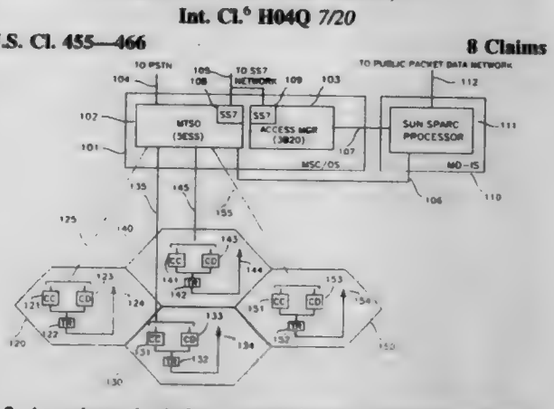
ENHANCED WIRELESS COMMUNICATION SYSTEM

Richard Paul Ejzak, Wheaton; James Stuart Peterson, and Robert Shaw Sellinger, both of Naperville, all of Ill., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 9, 1996, Ser. No. 599,571

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 455—466 **8 Claims**



2. An enhanced wireless communication system comprising a combined AMPS/CDPD facility for controlling one or more wireless base station cell sites comprising: an AMPS Access Manager **103**, a CDPD Data Network Processor **111**; and communication means **107** for providing bi-directional data communication between said Access Manager and said Data Network Processor;

wherein said Access Manager **103** comprises a memory for maintaining records of AMPS wireless channel assignments in cell sites served by said Access Manager; said CDPD Data Network Processor comprises: means for querying said channel assignment records **321** via said communication means and for assigning and releasing wireless channels for CDPD transmissions in said cell sites.

5,797,100

METHOD FOR SETTING UP A CALL CONNECTION FOR A GROUP CALL TO A GROUP OF MOBILE RADIO SUBSCRIBERS IN A MOBILE RADIO NETWORK

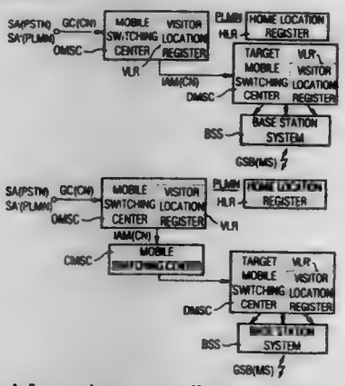
Harald Dettner, Kirchhain, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 16, 1996, Ser. No. 602,621

Claims priority, application Germany, Feb. 16, 1995, 195 05 270.6

Int. Cl.[6] H04Q *7/38;7/00*

U.S. Cl. 455—518 **8 Claims**



1. A method for setting up a call connection for a group call directed to a group of mobile radio subscribers of a mobile radio network comprising the steps of:

placing a call from a calling subscriber by entering a subscriber call number having symbols for identification of said call as a group call to a called group of subscribers;

receiving said subscriber call number by a mobile switching center of said mobile radio network and evaluating said symbols of said subscriber call number with regard to area information for identification of a local service area in which the subscribers of said called group are located and with reference to group information for identification of said called group; and

after evaluation of said subscriber call number, transmitting said area information and said group information to a target mobile switching center responsible for said called group in said service area, and setting up a call connection to each of the subscribers in said called group from said target mobile switching center using said area information and said group information.

5,797,101

RADIOTELEPHONE SUBSCRIBER UNIT HAVING A GENERIC PHONE NUMBER

Rashid Masood Osmani, Mundelein, and Michael P. Metroka, Algonquin, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1996, Ser. No. 594,218

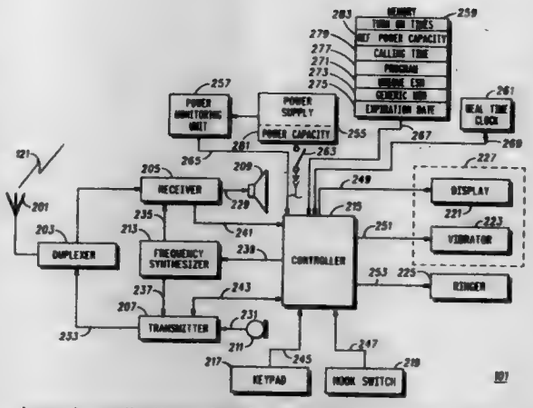
Int. Cl.[6] H04Q *7/20*

U.S. Cl. 455—551 **6 Claims**

1. A radiotelephone subscriber unit for use in a radiotelephone system by a subscriber, the radiotelephone subscriber unit comprising:

a memory unit having stored therein an identification sequence including a generic phone number and an electronic serial number, wherein the generic phone number is common to a plurality of radiotelephone subscriber units for use in the radiotelephone system by a plurality of subscribers who are members of a public community including members who do not personally know the subscriber, and wherein the electronic serial number is unique to the radiotelephone subscriber unit in the radiotelephone system; and

a transceiver operatively coupled to the memory unit, wherein the transceiver is permitted to place outgoing calls responsive to the identification sequence and is restricted from receiving incoming calls directed to the generic phone number, whereby an operator of a radiotelephone system permits the plurality of radiotelephone subscriber units to be distributed to the plurality of subscribers, who are members of the public community that do not require a radiotelephone subscriber unit that receives incoming calls directed to the generic phone number, without assigning each of the plurality of radiotelephone subscriber units one of a predetermined number of unique phone numbers.



5,797,102

ARRANGEMENT FOR ADAPTING THE SIGNAL LEVEL IN MOBILE PHONES

Jyrki S. Hallikainen, Tiedonkaari; Matti H. M. Kattilakoski, Kalikkakuja, and Pekka H. M. Korkeakangas, Kasarmintie, all of Finland, assignors to Nokia Mobile Phones Limited, Salo, Finland

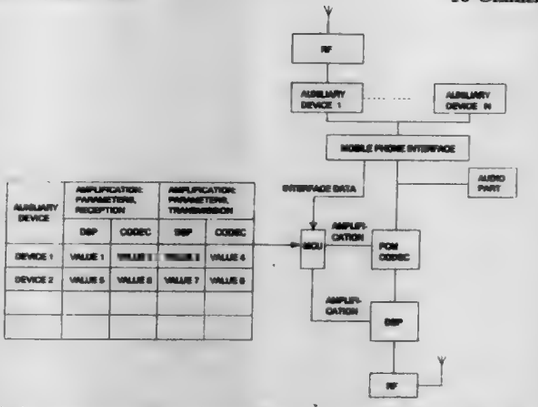
PCT No. PCT/FI95/00005, § 371 Date Sep. 10, 1996, § 102(e) Date Sep. 10, 1996, PCT Pub. No. WO95/19096, PCT Pub. Date Jul. 13, 1995

PCT Filed Jan. 5, 1995, Ser. No. 669,324

Claims priority, application Finland, Jan. 5, 1994, 940049

Int. Cl.[6] H04Q *7/32*

U.S. Cl. 455—557 **10 Claims**



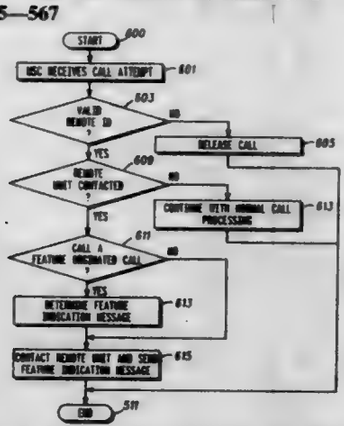
1. An arrangement for adapting the signal level in mobile phones according to the related auxiliary device connected, characterized in that the mobile phone is adapted to identify the type of auxiliary device respectively connected on the basis of a signal received from the auxiliary device, and adapted to adjust its internal signal levels to suitable levels according to the auxiliary device, and the mobile phone comprises memory means for storing signal level parameters related to the auxiliary devices.

5,797,103

METHOD AND APPARATUS FOR INFORMING A REMOTE UNIT OF A FEATURE-ORIGINATED CALL

Michael Duda, Naperville, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 14, 1996, Ser. No. 663,967
Int. Cl.[6] H04B *1/38*; H04M *3/42*
U.S. Cl. 455—567 **15 Claims**



1. A method for informing a remote unit of a feature-originated call in a communication system where there exist a plurality of types of feature-originated calls, wherein the feature-originated call is being placed to the remote unit in response to a utilized feature service, the method comprising the steps of:

determining, by wireless infrastructure equipment in response to the utilized feature service that the feature-originated call needs to be provided to the remote unit to produce a feature service determination;

determining an availability of the remote unit;

determining a feature indication message based on the feature service determination, wherein the feature indication message is utilized to provide the remote unit with an indication of a specific type of feature-originated call from the plurality of feature-originated calls that needs to be provided to the remote unit;

determining a time period to send the feature indication message to produce a time period determination; and

simultaneously sending the feature indication message along with the feature-originated call to the remote unit informing the remote unit of the feature-originated call, wherein the step of sending the message and the call is based on the feature service determination, the availability of the remote unit, and the time period determination.

5,797,104

Patent Not Issued For This Number

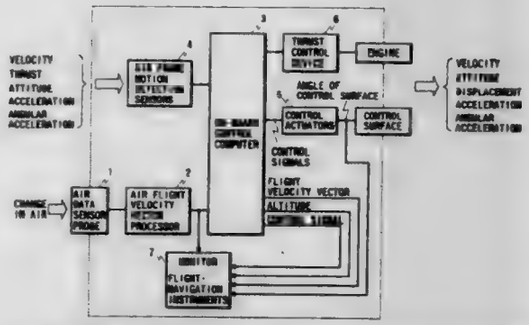
5,797,105

AIR ACTIVE CONTROL AIRCRAFT USING THREE DIMENSIONAL TRUE AIRSPEED DETECTION SYSTEM

Teruomi Nakaya, Machida; Osamu Okamoto, Higashi-Yamato; Naoaki Kuwano, Chofu; Seizo Suzuki, Mitaka; Shuichi Sasa, Hachioji; Hidehiko Nakayasu, Kashiwa, and Masakazu Sagisaka, Hino, all of Japan, assignors to National Aerospace Laboratory of Science & Technology, Tokyo, Japan

Continuation of Ser. No. 517,970, Aug. 22, 1995, abandoned. This application Nov. 20, 1997, Ser. No. 975,110
Claims priority, application Japan, Aug. 23, 1994, 6-219582
Int. Cl.[6] G06F *165/00*
U.S. Cl. 701—7 **7 Claims**

1. An air active control aircraft comprising:



a three-dimensional true airspeed detection system including an air data sensor probe consisting of a truncated pyramid-shape Pitot probe and an air flight velocity operation processor for generating an air flight velocity vector signal from air pressure information detected in the three dimensions by said air data sensor probe;

airframe motion detection sensors for detecting motion of an airframe; and

an on-board control computer for generating a flight control logic,

wherein said on-board control computer inputs said air flight velocity vector signal generated from said air flight velocity operation processor into a control-surface control system along with parallel inputs of airframe motion detection sensor signals generated from said airframe motion detection sensors to generate said flight control logic for carrying out the three-dimensional air flight stability control,

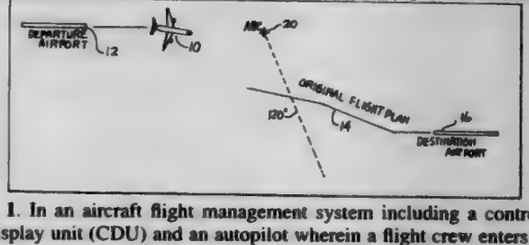
wherein said on-board control computer stores airframe data obtained by a wind tunnel test, aerodynamic data and engine data to form a data base, selects data of said data base by inference, table look-up and interpolation for every flight configuration of takeoff, cruising and landing based on said air flight velocity vector signal and said airframe motion detection sensor signals, and generates said flight control logic.

5,797,106

METHOD AND APPARATUS FOR AN IMPROVED FLIGHT MANAGEMENT SYSTEM PROVIDING FOR LINKING OF AN OUTBOUND COURSE LINE FROM A PREDETERMINED POSITION WITH AN EXISTING FLIGHT PLAN

Daniel J. Murray, Mill Creek; John C. Griffin, III, Tacoma; Bruce L. Turner, Lynnwood; Peter D. Gunn; Thomas E. Twiggs, both of Bellevue; Henry V. VonJouanne, Renton; George W. Schraw, Federal Way, and Ann M. Tracy, Everett, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 29, 1996, Ser. No. 625,672
Int. Cl.[6] G06F *165/00*
U.S. Cl. 701—11 **6 Claims**



1. In an aircraft flight management system including a control display unit (CDU) and an autopilot wherein a flight crew enters a predetermined flight plan and engages an autopilot which provides navigation control signals to fly the aircraft along said flight plan, an improvement allowing the flight crew to enter an outbound course line from a predetermined position, linking said outbound course line to the remaining flight plan, all without disengaging the autopilot, the improvement comprising:

data entry means for permitting the flight crew to enter said predetermined position and outbound course line; and

logic control means responsive to said data entry means to:

a) display said predetermined position and outbound course line on the CDU;

b) create a flight plan discontinuity between said course line and the remainder of said predetermined flight plan;

c) create a flight plan modified state reflecting said course line and said predetermined position;

d) permit the flight crew to accept said flight plan modified state and continue with e) below, otherwise permitting the flight crew to enter a new course in the CDU;

e) determine if said course line intersects the downstream flight leg of the predetermined flight plan and, if it does not, continuing with step h) below, otherwise

f) permit the flight crew to enter the endpoint of the downstream intersecting flight leg;

g) link said course line to said intersection with the downstream flight leg of the modified flight plan;

h) permit the flight crew to accept said modified flight plan, in which event proceeding to

i) generate guidance signals to direct the autopilot to fly the aircraft along said modified flight plan.

5,797,107

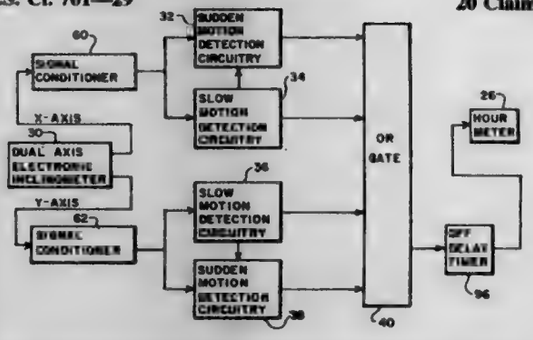
EQUIPMENT UTILIZATION DETECTOR

Eric A. Berg, 5550 Old William Penn Hwy., Apartment A-8, Export, Pa. 15632, and James Fillar, 528 Center New Texas Rd., Pittsburgh, Pa. 15239

Filed Oct. 4, 1996, Ser. No. 725,727

Int. Cl.[6] G04F *8/00*

U.S. Cl. 701—29 **20 Claims**



1. A utilization detector attachable to equipment for determining the utilization of the equipment, the utilization detector comprising:

a motion detector which generates an output signal upon a change of its position relative to a plane;

a motion analysis circuit responsive to the output signal from the motion detector and generating at least one of (i) a sudden motion output signal in response to a sudden motion detected by the motion detector, and (ii) a slow motion output signal in response to a slow motion detected by the motion detector; and

a time accumulator responsive to the slow motion output signal and/or the sudden motion output signal and recording an interval corresponding to a duration that the slow motion output signal and/or the sudden motion output signal is generated by the motion analysis circuit.

5,797,108

SLIP DETECTING DEVICE FOR MOTOR VEHICLE MOUNTED WITH AUTOMATIC TRANSMISSION

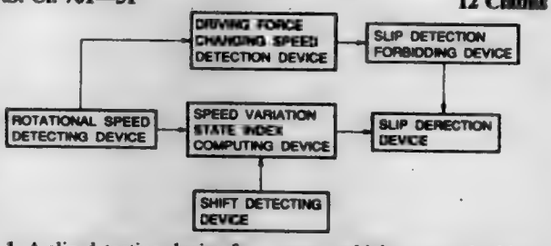
Hideaki Otsubo, and Yasunori Nakawaki, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 24, 1995, Ser. No. 518,981

Claims priority, application Japan, Sep. 1, 1994, 6-208587

Int. Cl.[6] B60K *28/16*

U.S. Cl. 701—51 **12 Claims**



1. A slip detecting device for a motor vehicle mounted with an automatic transmission, said motor vehicle having a driving system, comprising:

a rotational speed detecting means for detecting a rotational speed of a specific part in said driving system;

a shift detecting means for detecting a shift effected in said automatic transmission;

a speed variation state index computing means for computing an index of state of speed variation caused by the shift, based on said rotational speed of the specific part in the driving system detected by said rotational speed detecting means; and

a slip detection means for detecting occurrence of driving wheel slip according to the index of state of speed variation.

5,797,109

METHOD FOR DETERMINING THE GRADIENT OF A ROADWAY

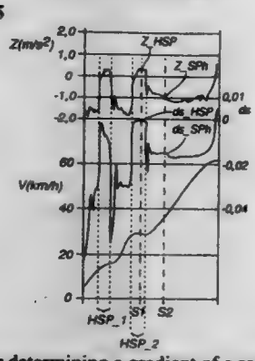
Ali Aminpour, Waiblingen, and Michael Reiner, Fellbach, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Dec. 7, 1995, Ser. No. 568,447

Claims priority, application Germany, Dec. 7, 1994, 44 43 522.3

Int. Cl.[6] G01C *9/06*

U.S. Cl. 701—65 **22 Claims**



1. A method for determining a gradient of a roadway upon which a vehicle is travelling in a travelling direction from measured signals fed to an evaluation unit, the method comprising the steps of:

detecting and feeding wheel speeds of at least one nondriven axle and at least one driven axle of the vehicle to the evaluation unit;

detecting a freely rolling state of the at least one driven axle in the evaluation unit;

identifying in the evaluation unit, when the freely rolling state is detected, a value of a speed difference ds_HSP between the wheel speed of said one driven axle and the wheel speed of said one non-driven axle, and a value of a braking operation;

detecting in the evaluation unit a drive state of a driven axle which is steady and is at a prescribed time interval from said freely rolling state of said at least one driven axle;

identifying in the evaluation unit, when the drive state is detected, a second value of the braking operation z_SPh and a second value of the speed difference ds_SPh between the wheel speed at said driven axle and said non-driven axle;

determining in the evaluation unit a gradient constant mk from said identified values ds_HSP, ds_SPh, z_HSP, z_SPh;

determining in the evaluation unit a gradient p of the roadway in the travelling direction when there are successive states of said driven axle which have been detected as steady, said gradient of the roadway in the travelling direction being determined from said gradient constant mk and present values of the braking operation z_SPh and the speed difference ds_SPh between the wheel speed at said driven axle and said non-driven axle; and

using said gradient of the roadway determined in the evaluation unit to control the vehicle.

5,797,110
ENGINE TORQUE CONTROL

Eugene R. Braun, Royal Oak; Daniel G. Smedley, Farmington Hills; Russell C. Holmes, Troy, and Thomas A. Gee, Allen Park, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 17, 1995, Ser. No. 560,458
Int. Cl.[6] G06F *19/00*; F16H *59/14*
U.S. Cl. 701—84 **38 Claims**



1. A method for controlling a vehicular powertrain system (**10**) comprising a fuel-controlled engine (**12**) drivingly connected to a vehicular drivetrain system (**11**) including a multiple-ratio, change-gear transmission (**14**) and a drive axle (**19**), said engine having a maximum output torque and an engine controller responsive to command signals to control fueling of the engine and, in at least one mode of operation, effective to limit engine output torque and said drivetrain having a predetermined maximum torque loading capacity, said drivetrain configured such that an expected torque loading on said drivetrain under a predetermined set of drivetrain high torque loading operating conditions and maximum engine output torque will exceed said predetermined maximum torque loading capacity, said method comprising

sensing the value of a control parameter indicative of drivetrain operating conditions;

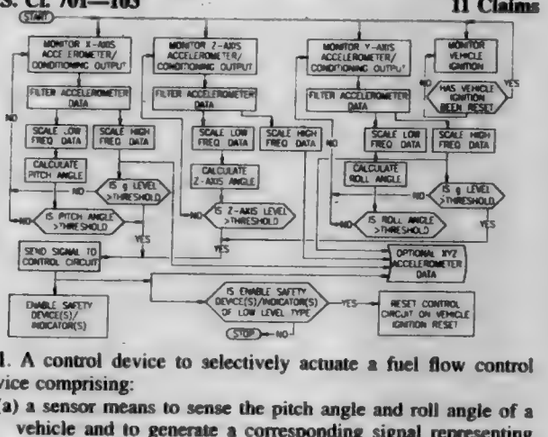
comparing the sensed value of said control parameter to a reference value corresponding to a value of said control parameter during drivetrain high torque loading operating conditions; and

if the sensed value of the control parameter is indicative of the existence of drivetrain high torque loading operating conditions, causing said engine controller to limit engine output torque to a value less than maximum engine output torque.

5,797,111
FUEL FLOW CONTROLLER

Peter Tancred Halasz, Brownsville, Tex., and Harald Snorre Husby, Lakeland, Fla., assignors to Breed Automotive Technology, Inc., Lakeland, Fla.

Continuation-in-part of Ser. No. 671,130, Jun. 24, 1996. This application May 13, 1997, Ser. No. 855,084
Int. Cl.[6] F02D *41/00*; F02M *23/00;25/00*
U.S. Cl. 701—103 **11 Claims**



1. A control device to selectively actuate a fuel flow control device comprising:

(a) a sensor means to sense the pitch angle and roll angle of a vehicle and to generate a corresponding signal representing each such angle;

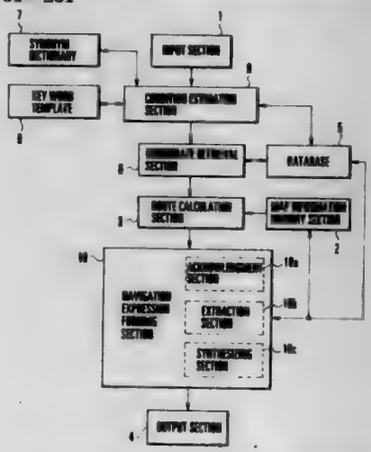
(b) a control means including circuitry to receive said signals and to generate a control signal when either said signal exceeds a predetermined value; and

(c) an actuator means including circuitry to receive said control signal and to generate an actuator signal in response thereto to actuate the fuel flow control device to prevent the flow of fuel from the fuel tank.

5,797,112
NAVIGATION APPARATUS USING A POSITION INDEX AND INFORMATION REPRESENTATIVE OF ROADS AND INSTITUTIONS

Takako Komatsu, and Kazunori Muraki, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 21, 1995, Ser. No. 531,444
Claims priority, application Japan, Sep. 21, 1994, 6-226410
Int. Cl.[6] G01C *21/00*; G01L *3/00*
U.S. Cl. 701—201 **7 Claims**



1. A moving object navigation apparatus comprising:

input means for inputting institution names indicating a present location of a moving object and a destination using a natural language:

memory means for storing a map including information representative of roads and institutions;

a database for storing relationships between institution names on the map and position indexes;

retrieval means for retrieving position indexes corresponding to institution names indicating the present location and the destination;

calculation means for obtaining a shortest route between the position indexes of the present location and the destination by referring to the map stored in said memory means; and

output means for outputting route information obtained by said calculation means to a user of the moving object,

wherein said memory means stores information representative of intersections and junctions as the information representative of roads and institutions,

wherein said output means outputs the route information obtained by said calculation means by using the information representative of intersections and junctions,

wherein said memory means further stores information associated with road features as the information representative of roads and institutions, the information associated with road features including information representative of inclinations and widths of roads,

wherein said calculation means extracts the information associated with roads from said memory means in accordance with route information obtained by said calculation means, and

wherein said output means outputs information associated with the road features together with route information.

5,797,113

METHOD AND SYSTEM FOR DETERMINING TRANSPORTATION ROUTE

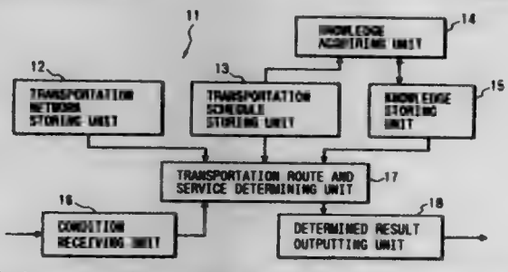
Nobuhiro Kambe, Tokyo, and Akihiro Abe, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 31, 1996, Ser. No. 594,736

Claims priority, application Japan, Feb. 28, 1995, 7-063485

Int. Cl.[6] G06F *19/00*; G01C *21/20*

U.S. Cl. 701—201 **15 Claims**



1. A transportation route determining method, comprising the steps of:

constructing a transportation network by arranging a plurality of collection/delivery base points for respectively collecting or delivering a transportation article, a plurality of relay base points for respectively relaying the transportation article to transport the transportation article from a collection/delivery base point to another collection/delivery base point and a plurality of relay transportation services for respectively executing the transportation of the transportation article from one collection/delivery base point or relay base point to another collection/delivery base point or relay base point;

hierarchically classifying the collection/delivery base points, the relay base points and the relay transportation services of the transportation network into pieces of transportation network information in a hierarchy structure;

preparing a plurality of transportation restrictions for article transportation in the transportation network;

preparing transportation rules determined according to experimental knowledge;

preparing a plurality of route rules determined according to business knowledge, each route rule indicating a relay route connecting three or more relay base points;

determining a transportation route from a transportation starting point selected from among the collection/delivery base points to a transportation arriving point selected from the collection/delivery base points according to the transportation network information on condition that the route rules, the transportation restrictions and the transportation rules are satisfied; and

outputting the transportation route.

5,797,114

METHOD AND APPARATUS FOR MAPPING OF SEMICONDUCTOR MATERIALS

John Roberts; Ian Leslie Freeston; Richard Charles Tozer, all of Sheffield; Anthony Charles Gervin, Leicester; Ian Christopher Mayes, Beds; Francois Jean Djamdji, Herts, and Stephen Richard Blight, Bucks, all of England, assignors to The University of Sheffield, Sheffield, and Bio-Rad Microscience Limited, Hemel Hempstead, both of United Kingdom

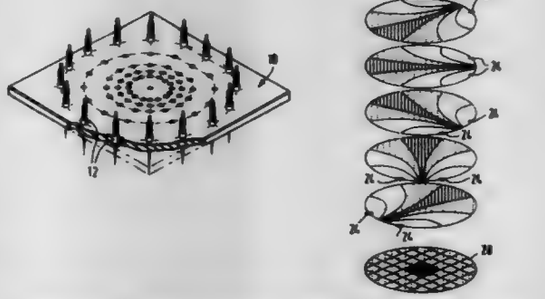
PCT No. PCT/GB94/00603, § 371 Date Jan. 26, 1996, § 102(e) Date Jan. 26, 1996, PCT Pub. No. WO94/22027, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 23, 1994, Ser. No. 525,767

Claims priority, application United Kingdom, Mar. 23, 1993, 9305964

Int. Cl.[6] G01R *31/26*

U.S. Cl. 702—57 **15 Claims**



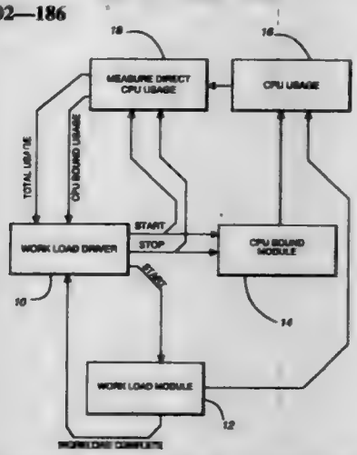
1. A method for mapping the resistivity of a quasi two dimensional semiconductor body said method comprising the steps of: placing an array of surface probes at spaced intervals on or near the semiconductor body at its periphery, causing currents to flow in the semiconductor body by successively energising different pairs of said probes and, for each such energisation of a pair of said probes. determining the effect of said energisation upon the potential distribution throughout the body by measuring the resulting potentials created at different regions around the entire periphery between each adjacent pair of the non-energised surface probes, generating data representing the correspondence between the measured potentials and potentials determined assuming the semiconductor body as a predetermined configuration, and mapping the resistivity of the semiconductor body using the generated data.

5,797,115

MEASURING DIRECT AND INDIRECT USAGE OF A CENTRAL PROCESSING UNIT

Billy Fuller, 8510 Sutterfield Dr., Colorado Springs, Colo. 80920

Filed Aug. 24, 1995, Ser. No. 518,668
Int. Cl.[6] G06F *19/00*
U.S. Cl. 702—186 **19 Claims**



6. In a computing system having a central processing unit, apparatus for measuring usage of the central processing unit (CPU) by a predetermined workload, said apparatus comprising:

a workload module for providing the predetermined workload, said workload having direct tasks and system overhead tasks, said direct tasks run on the CPU directly from the workload, said system overhead tasks run on the CPU to perform a computing system task;

a CPU bound module for providing CPU bound tasks that run on the CPU directly without any system overhead tasks;

a workload driver for issuing a start command to said workload module, said CPU bound module and a monitor module, said workload module running direct tasks and system overhead tasks on the CPU, said CPU bound module running CPU bound tasks on the CPU;

said workload module indicating workload complete when said predetermined workload has been completed;

said workload driver responsive to workload complete for issuing a stop command to said workload module and said monitor module;

said monitor module for measuring the direct CPU usage by the CPU bound module and the total usage of the CPU between the start command and the stop command from the workload driver; and

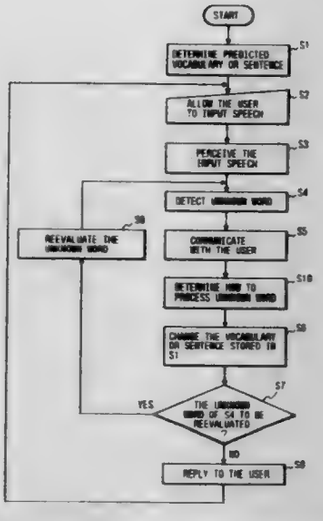
said workload driver responsive to the total usage and the direct CPU usage by the CPU bound module for measuring the CPU usage by the predetermined workload.

5,797,116

METHOD AND APPARATUS FOR RECOGNIZING PREVIOUSLY UNRECOGNIZED SPEECH BY REQUESTING A PREDICTED-CATEGORY-RELATED DOMAIN-DICTIONARY-LINKING WORD

Masayuki Yamada, Kawasaki; Yasunori Ohora, Yokohama, and Yasuhiro Komori, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 260,214, Jun. 14, 1994, abandoned. This application Jan. 21, 1997, Ser. No. 785,840
Claims priority, application Japan, Jun. 16, 1993, 5-144940
Int. Cl.[6] G10L *5/06*
U.S. Cl. 704—10 **30 Claims**



1. A voice communication method comprising the steps of:

inputting speech into an apparatus;

recognizing the input speech using a first dictionary;

predicting the category of an unrecognized word included in the input speech based on the recognition of the input speech in said recognition step;

outputting a question to be asked to an operator requesting the operator to input a word which is included in the first dictionary and which can specify a second dictionary for recognizing the unrecognized word, based on the predicted category; and

re-recognizing the unrecognized word with the second dictionary specified in response to the word inputted by the operator.

5,797,117

MONTH FIELD DIVISION MULTIPLEXING SOLUTION FOR YEAR 2000 COMPUTER DATE PROBLEM

Slavomir Gregovich, 1227 11th St., #B, Santa Monica, Calif. 90401

Filed May 24, 1997, Ser. No. 862,081
Int. Cl.[6] G06F *17/00*
U.S. Cl. 707—101 **8 Claims**

1. A method of handling dates of a six-digit computer date field, while keeping size and format of the six-digit computer date field, usable for an interim period of up to seven years including the year 2000, utilizing the presently unused capacity of a two-digit computer month field, the computer month field being a constituent part of said six-digit computer date field, comprising the steps of:

assigning an increasing sequence of non-repeating two-digit numbers greater than twelve in a one-to-one manner to months of said period of up to seven years, by using the two-digit numbers greater than twelve in lieu of standard month numbers of 01 through 12, by entering the sequence of two-digit numbers greater than twelve into said two-digit computer month field, and by storing the sequence of said two-digit numbers greater than twelve into computer media and into a computer memory;

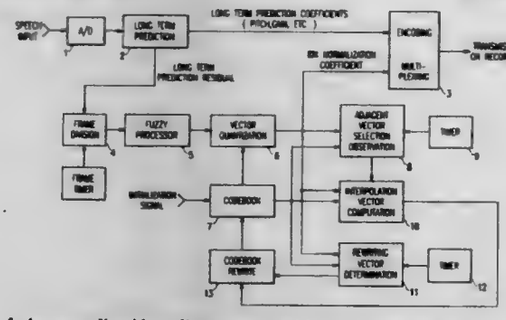
assigning an assigned two-digit number greater than twelve from the sequence to a date of said period, in accordance with the month and the year of said date of said period, and in accordance with assignment during said step of assigning in the one-to-one manner; and

storing said date of said period into the computer media and the computer memory, and entering said assigned two-digit number greater than twelve into said two-digit computer month field.

5,797,118
LEARNING VECTOR QUANTIZATION AND A TEMPORARY MEMORY SUCH THAT THE CODE BOOK CONTENTS ARE RENEWED WHEN A FIRST SPEAKER RETURNS

Akitoshi Saito, Shizuoka-ken, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 8, 1995, Ser. No. 512,311
Claims priority, application Japan, Aug. 9, 1994, 6-208010; Nov. 18, 1994, 6-309855
Int. Cl.[6] G10L *5/00; 1/06*
U.S. Cl. 704—222 **26 Claims**



4. An encoding/decoding system with vector quantization having an encoding apparatus and a decoding apparatus each having a codebook for storing various code vectors and index that determine the respective code vectors, the encoding apparatus using the codebook to compare a vector of an object signal to be quantized with each code vector in the codebook, selecting a code vector that matches most closely the vector of the object signal and outputting an index of the selected code vector, the decoding apparatus obtaining a code vector corresponding to the index obtained at the encoding apparatus side by referring to the codebook and decoding the quantized vector, further the encoding apparatus and the decoding apparatus each having a codebook rewriting device for renewing the content of the codebook based upon a result of matching between the vector to be quantized and the code vector, the system comprising:

a temporary memory connected to the codebook, wherein a content of the codebook is temporarily moved to the temporary memory when a first speaker changes to another, and wherein the content temporarily stored in the temporary memory is read out when the first speaker comes back;

an initialization codebook that stores initial contents of the codebook provided at either of the encoding apparatus and the decoding apparatus;

a characteristic extraction device provided at the encoding apparatus that extracts characteristic parameters of the object signal to be encoded; and

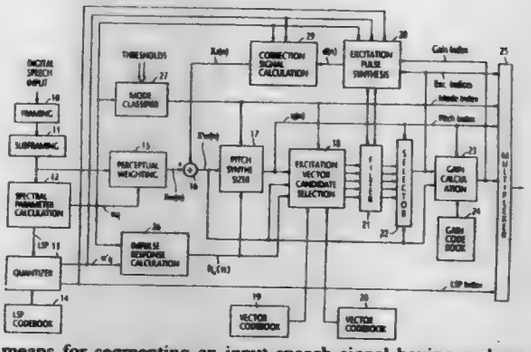
a characteristic change detection device provided at the encoding apparatus that detects at least a change in the characteristic parameters extracted by the characteristic extraction device,

wherein the codebook rewriting device initializes the contents of the codebook with the contents of the initialization codebook when the characteristic change detection device detects the changes in the characteristic parameters.

5,797,119
COMB FILTER SPEECH CODING WITH PRESELECTED EXCITATION CODE VECTORS

Kazunori Ozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 281,978, Jul. 29, 1994, abandoned. This application Feb. 3, 1997, Ser. No. 791,547
Claims priority, application Japan, Jul. 29, 1993, 5-187937
Int. Cl.[6] G10L *3/02*
U.S. Cl. 704—223 **27 Claims**



1. A speech encoder comprising:

means for segmenting an input speech signal having a characteristic spectral feature into speech samples at first intervals;

means for deriving a spectral parameter from said speech samples at second intervals longer than said first intervals, and wherein said spectral parameter represents said characteristic spectral feature;

means for weighting each of said speech samples with said spectral parameter for producing weighted speech samples;

means for determining a pitch period of said speech signal from said weighted speech samples;

excitation codebook means for storing excitation code vectors;

first selector means for selecting a predetermined number of excitation code vectors having smaller amounts of distortion, relative to other code vectors, as candidate code vectors from said excitation codebook means according to said pitch period;

a comb filter for filtering said candidate code vectors, said comb filter having a delay time set equal to said pitch period;

second selector means for selecting one of said comb filtered excitation code vectors so that the selected excitation code vector minimizes distortion;

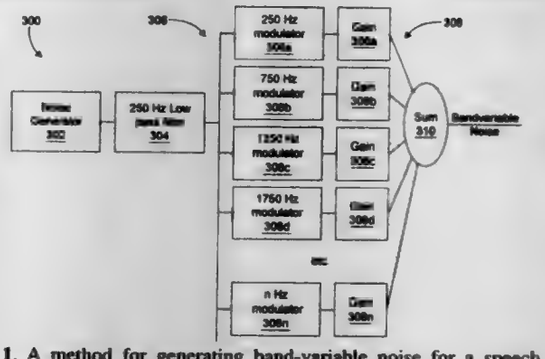
gain codebook means having a plurality of gain code vectors; and

gain calculator means, responsive to the comb filtered excitation code vector selected by the second selector means, for selecting one of said gain code vectors from said gain codebook means so that the selected gain code vector further minimizes distortion.

5,797,120
SYSTEM AND METHOD FOR GENERATING RE-CONFIGURABLE BAND LIMITED NOISE USING MODULATION

Mark A. Ireton, Trayis, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 4, 1996, Ser. No. 707,700
Int. Cl.[6] G10L *3/02*
U.S. Cl. 704—226 **35 Claims**



1. A method for generating band-variable noise for a speech production model, comprising the steps of:

generating a white noise signal;

filtering the white noise signal to produce a band-width limited white noise signal;

selectively modulating said band-width limited white noise signal in a plurality of different frequency ranges to produce a plurality of modulated bandwidth limited white noise signals, wherein said plurality of modulated bandwidth limited white noise signals occupies a predetermined contiguous frequency range; and

summing the plurality of modulated bandwidth limited white noise signals to produce a band-variable noise signal.

5,797,121

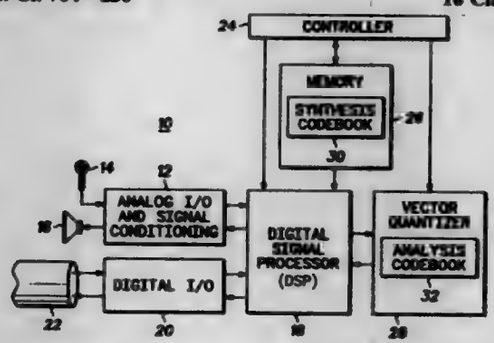
METHOD AND APPARATUS FOR IMPLEMENTING VECTOR QUANTIZATION OF SPEECH PARAMETERS

Bruce Alan Fette, Mesa, and Shirley Hsiao-Mei Lee, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1995, Ser. No. 578,818

Int. Cl.[6] G10L 9/00

U.S. Cl. 704—230 **16 Claims**



1. A method for vector quantization of speech parameters comprising the steps of;

forming at least two codebooks having a multiplicity of code vectors;

processing a voice signal in a plurality of speech parameters;

scalar quantizing each of said speech parameters to obtain a source vector of scalar quantized speech parameters; and

vector quantizing said source vector in response to said codebook;

said step of forming at least two codebooks including the step of providing a vector quantizer codebook which includes a plurality of scalar quantized speech parameters; and

said step of forming at least two codebooks including the step of providing a synthesis codebook, said synthesis codebook being configures so that each parameter therein has a corresponding parameter in said vector quantizer codebook, said synthesis codebook is configured so that each parameter therein is expressed as a high precision number compared to said scalar representation for said corresponding parameter in said vector quantizer codebook.

5,797,122

METHOD AND SYSTEM USING SEPARATE CONTEXT AND CONSTITUENT PROBABILITIES FOR SPEECH RECOGNITION IN LANGUAGES WITH COMPOUND WORDS

Marcus Spies, Heidelberg, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

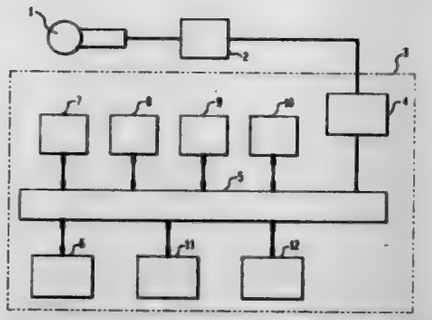
Filed Nov. 18, 1996, Ser. No. 737,840

Claims priority, application Germany, Mar. 20, 1995, 195 10 083.7

Int. Cl.[6] G10L 5/06

U.S. Cl. 704—255 **16 Claims**

1. A method for speech recognition in languages with compound words, comprising the following steps:



storing phonetic transcriptions of words and components of compound words in a first storage area,

calculating n-gram frequencies (language model) for the probability of a compound word within a sequence of N words with use of a previously processed body of text, and storing the frequencies in a second storage area;

recording and digitizing the acoustic speech signal and storing the digitized speech signal in a third storage area, wherein by means of signal processing based on the phonetic transcriptions, approximately determining the words and boundaries of compound words and deriving hypothetical sequences of words or candidates for compound words therefrom;

establishing separate processing paths for sequences of candidates for words and compound words;

statistically evaluating the processing paths by means of the n-gram frequencies, where likelihood profiles are generated from the sequence of n-gram frequencies of words or components of compound words of each processing path; and

fully evaluating the processing paths with regard to the goodness of acoustic fit and the statistical probability of the language model.

5,797,123

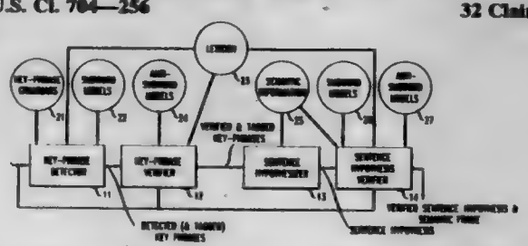
METHOD OF KEY-PHASE DETECTION AND VERIFICATION FOR FLEXIBLE SPEECH UNDERSTANDING

Wu Chou, Berkeley Heights; Biing-Hwang Juang, Warren, both of N.J.; Tatsuya Kawahara, Kyoto, Japan, and Chin-Hui Lee, New Providence, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 724,413, Oct. 1, 1996, abandoned. This application Dec. 20, 1996, Ser. No. 771,732

Int. Cl.[6] G10L 9/00

U.S. Cl. 704—256 **32 Claims**



1. A method for performing speech recognition of a spoken utterance comprising a plurality of words, the method comprising the steps of:

performing key-phrase detection based on one or more phrase sub-grammars to generate a plurality of detected key-phrases, each detected key-phrase comprising a sequence of one or more recognized words;

performing verification on one or more of said detected key-phrases by assigning confidence measures thereto and comparing said confidence measures to one or more threshold values, thereby generating a set of verified key-phrase candidates;

connecting the verified key-phrase candidates to generate one or more sentence hypotheses based upon predetermined semantic information; and

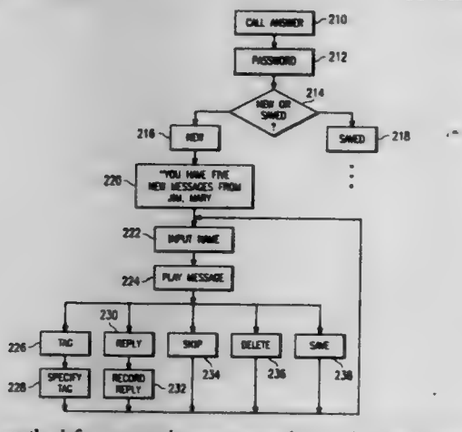
performing verification on one or more of said sentence hypotheses, thereby generating at least one verified sentence hypothesis.

5,797,124

VOICE-CONTROLLED VOICE MAIL HAVING RANDOM-ORDER MESSAGE RETRIEVAL BASED ON PLAYED SPOKEN IDENTIFIER LIST

James K. Walsh, and Marc A. Gardner, both of Plano, Tex., assignors to InterVoice Limited Partnership, Reno, Nev.

Filed May 30, 1996, Ser. No. 656,519
Int. Cl.[6] G10L *9/06*; H04M *1/64*
U.S. Cl. 704—275 **31 Claims**



30. A method for processing messages in a voice mail system, said method comprising the steps of:

obtaining a spoken identifier from a message-leaving party;

playing, upon request of said subscriber, a list of all spoken identifiers left by said message-leaving parties.

5,797,125

VOICE GUIDE SYSTEM INCLUDING PORTABLE TERMINAL UNITS AND CONTROL CENTER HAVING WRITE PROCESSOR

Tsutomu Hirohama, Tokyo, Japan, assignor to Videotron Corp., Tokyo, Japan

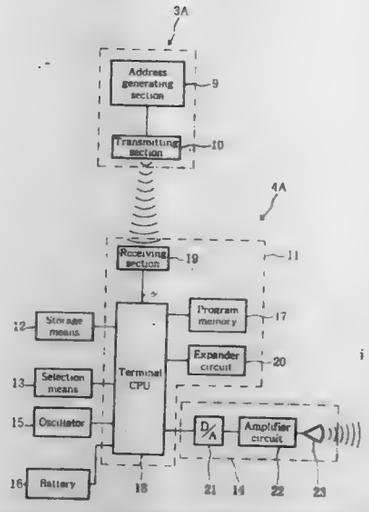
Filed Mar. 6, 1995, Ser. No. 399,340
Claims priority, application Japan, Mar. 28, 1994, 6-080909
Int. Cl.[6] G10L *5/02;9/00*; H04Q *7/00*
U.S. Cl. 704—277 **2 Claims**

1. A voice guide system comprising:

a plurality of identification code transmitting units respectively installed in a plurality of different guide areas and respectively transmitting a plurality of different identification codes;

a plurality of portable terminal units each comprising (a) a first storage means for storing plural pieces of guide information respectively associated with said plurality of different guide areas in any one of plural different languages, (b) a receiving means for receiving an identification code transmitted by any one of said plurality of transmitting units, (c) a selecting means for selecting one of said plural pieces of guide information stored in said storage means according to the identification code received by said receiving means, and (d) voice generating means for generating a voice corresponding to said one of said plural pieces of guide information selected by said selecting means; and

a control center comprising (a) a second storage means for storing said plural pieces of guide information in each of said plural different languages, and (b) a write processing means



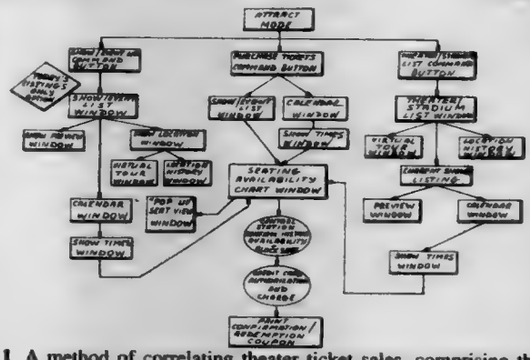
for selecting one of said plural different languages according to a user command and writing said plural pieces of guide information of the selected one of said plural different languages from said second storage means into said first storage means of any one of said plurality of terminal units.

5,797,126

AUTOMATIC THEATER TICKET CONCIERGE

Edward Heibling, 47 Annandale Rd., Commack, N.Y. 11725, and Andrew Glass, 26 Cedar Ridge La., Dix Hills, N.Y. 11746

Filed Feb. 16, 1996, Ser. No. 602,975
Int. Cl.[6] G06F *153/02*
U.S. Cl. 705—5 **17 Claims**



1. A method of correlating theater ticket sales, comprising the steps of:

(a) communicating to a multiplicity of vending kiosks information as to events and times for which seating is available at a plurality of performance locations;

(b) displaying information as to events at said vending kiosks;

(c) in response to selection of a particular event at one of said kiosks by a potential patron, displaying at least one scene exemplary of said particular event by accessing coded and digitalized live video;

(d) displaying at said one of said kiosks for said particular event at the respective performance location a respective seating plan indicating available seats;

(e) in response to selection of a potentially available seat at said one of said kiosks by said potential patron, displaying a view representing a view from the selected potentially available seat and accessed from coded and digitalized live video;

(f) charging a card presented by the patron for a selected seat;

(g) issuing to said patron at said one of said kiosks an information carrier representing a receipt for a charge made and a confirmed seat selection, authorizing admission of a bearer of said information carrier to said particular event; and

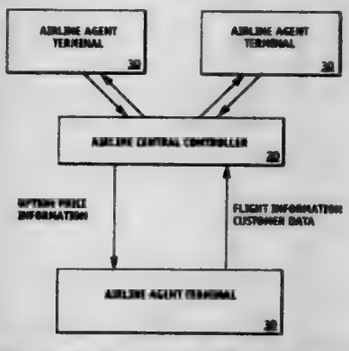
(h) displaying from live video which has been coded and digitalized, views of an area and street vicinity of a selected performance location, views of a marquis, box office, lobby, lounge and historical and architectural points of interest of a selected performance location enabling a potential patron to virtually tour said selected performance location.

5,797,127

METHOD, APPARATUS, AND PROGRAM FOR PRICING, SELLING, AND EXERCISING OPTIONS TO PURCHASE AIRLINE TICKETS

Jay S. Walker, Ridgefield; T. Scott Case, Darien; James A. Jorasch, Stamford, and Thomas M. Sparico, Riverside, all of Conn., assignors to Walker Asset Management Limited Partnership, Stamford, Conn.

Filed Dec. 31, 1996, Ser. No. 775,591
Int. Cl.[6] G06F *17/60*
U.S. Cl. 705—5 28 Claims



1. A data processing apparatus for determining a price of an option to purchase an airline ticket, comprising:

a central controller including a CPU and a memory operatively connected to said CPU;

at least one terminal, adapted for communicating with said central controller, for transmitting to said central controller option pricing information including departure location criteria, destination location criteria, and travel criteria;

said memory in said central controller containing a program, adapted to be executed by said CPU, for calculating a price of an option to purchase within a future period, for a particular ticket price, an airline ticket satisfying the departure location criteria, destination location criteria, and travel criteria;

wherein said central controller receives said criteria from said terminal and calculates the option price based upon the criteria.

5,797,128

SYSTEM AND METHOD FOR IMPLEMENTING A HIERARCHICAL POLICY FOR COMPUTER SYSTEM ADMINISTRATION

William C. Birnbaum, Colorado Springs, Colo., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

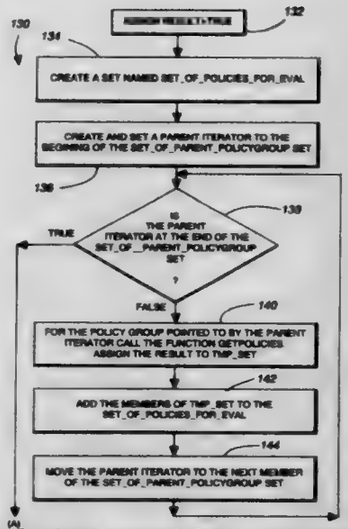
Continuation of Ser. No. 497,729, Jul. 3, 1995, abandoned. This application May 14, 1997, Ser. No. 856,038
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—5 51 Claims

22. A computer system capable of implementing a hierarchical policy administration, said computer system comprising:

at least one computer;

at least one database retained within a computer mass storage device operatively coupled to said computer, said database being capable of storing a number of policies having an associated policy class name and an associated policy attribute;

a user interface operatively coupled to said at least one computer, said user interface capable of allowing input of characteristics of an input managed object to said computer system, said input managed object having an associated input object class name and an associated input object attribute having a proposed value;



an associator operable in conjunction with said at least one computer and said database for organizing said policies into policy groups;

an iterator operable in conjunction with said at least one computer and said database for searching certain of said policy groups pertinent to said input managed object to determine policies thereof having a policy class name and policy attribute corresponding to said input object class name and input object attribute;

a matching subset of said policies from said policy groups returned by said iterator to said at least one computer which have a policy class name and policy attribute corresponding to said input object class name and input object attribute;

an analyzer operable in conjunction with said at least one computer for testing said proposed value of said input object attribute with respect to said matching subset of said policies; and

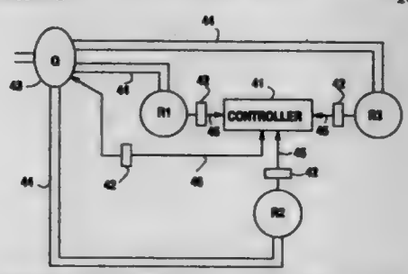
an input validator operable in conjunction with said at least one computer and said user interface and responsive to said analyzer, said input validator allowing entry of said proposed value of said input object attribute if said proposed value passes each of said policies in said matching subset of said policies.

5,797,129

PREDICTING RESOURCE USAGE IN A MULTIPLE TASK, MULTIPLE RESOURCE ENVIRONMENT

Darius Rohan, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 31, 1991, Ser. No. 785,836
Int. Cl.[6] G06F *163/00*
U.S. Cl. 705—8 16 Claims



1. A method for controlling usage of machines in a multi-task, multi-machine environment, comprising the steps of:

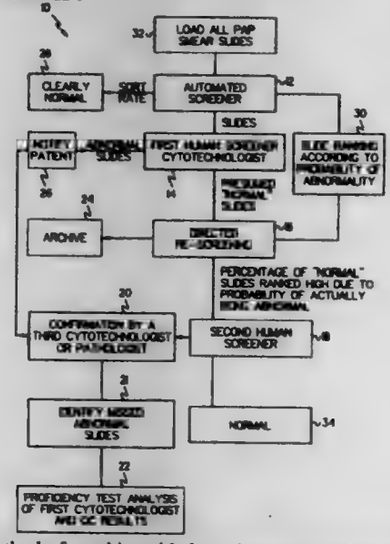
a) providing a counter/timer unit for determining arrival rates and process times for each machine;
b) providing and coupling a task queue to said machines and said counter/timer unit; said task queue receiving a flow of tasks;
c) providing and coupling a programmable controller to said task queue;
d) identifying at said controller at least two machine groups, wherein the members of each machine group are those machines capable of performing a certain task, and wherein at least one member of one of said machine groups is a shared machine capable of performing more than one task;
e) with respect to each machine group, generating in said controller a signal representing a group weight value that equals the total machine usage of that group based on arrival rates and process times from said counter/timer unit divided by the number of machines in that group;
f) with respect to each machine, generating in said controller a signal representing machine weight value that equals the sum of machine usage for all tasks for that machine;
g) with respect to each machine, generating in said controller an allocation value signal for each machine representing dividing said group weight value by said machine weight value;
h) with respect to each machine group, summing in said controller allocation value signals for each machine in said group and generating a signal representing a value approximating an effective number of machines in each machine group;
i) repeating said steps e thru h in said controller using the signal representing a value approximating an effective number of machines generated in step h instead of using the number of machines in each group to generate a signal representing said group weight value until a signal representing a final effective machine value approximating the effective number of machines for each group is generated; and
j) controlling flow of tasks at said task queue to said machines dynamically in response to said signal representing said final effective machine value for each group.

5,797,130

METHOD FOR TESTING PROFICIENCY IN SCREENING IMAGES OF BIOLOGICAL SLIDES

Alan Caril Nelson, Redmond, and Shih-Jong James Lee, Bellevue, both of Wash., assignors to NeoPath, Inc., Redmond, Wash.

Continuation of Ser. No. 153,293, Nov. 16, 1993, abandoned. This application Sep. 5, 1995, Ser. No. 526,138
Int. Cl.[6] G06F *159/00;17/60*
U.S. Cl. 705—11 **7 Claims**



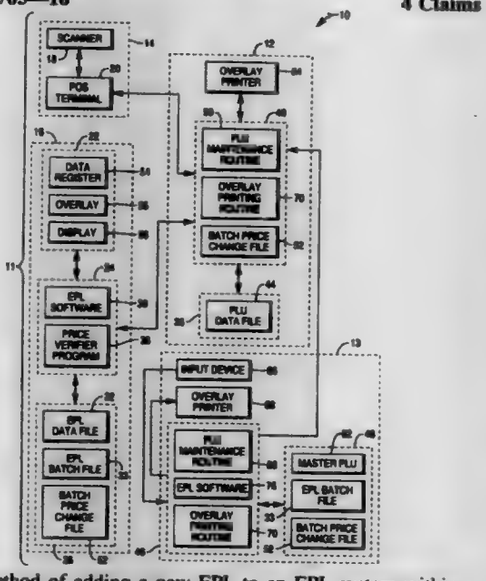
1. A method of machine aided continuous proficiency testing of human readers for biological slides, wherein the machine aided continuous proficiency testing occurs under normal working conditions of a first human reader and is based on substantially all biological slides inspected by the first human reader, comprising the steps of:
(a) loading a plurality of biological slides into an automated slide inspection screening device;
(b) screening out obviously normal slides with the automated slide inspection screening device to obtain first result slides comprising slides not screened out as obviously normal;
(c) inspecting the first result slides by the first human reader and designating presumed normal slides;
(d) obtaining a rank ordering of probability of abnormality of the presumed normal slides from the automated slide inspection screening device;
(e) inspecting by a second human reader a predetermined percentage of the presumed normal slides most likely to be abnormal based on the rank ordering; and
(f) proficiency testing the first human reader based on the presumed normal slides and compiling proficiency test results.

5,797,131

ELECTRONIC PRICE LABEL SUPPORT METHOD

John C. Goodwin, III, Suwanee, and Terry L. Zimmerman, Lawrenceville, both of Ga., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 21, 1995, Ser. No. 531,808
Int. Cl.[6] G06F *17/60*
U.S. Cl. 705—16 **4 Claims**



1. A method of adding a new EPL to an EPL system within a transaction establishment comprising the steps of:
creating a PLU batch file for adding a new item, which is associated with the new EPL, and a price for the new item to a PLU data file of the transaction establishment by a host computer;
creating an EPL batch file for adding a single temporary identification number for the new EPL to an EPL data file of the transaction establishment by the host computer;
sending the PLU batch file and the EPL batch file to the transaction establishment;
applying the PLU batch file to add the new item and its price to the PLU data file by a main computer;
modifying the EPL batch file to replace the temporary identification number with an actual identification number of the EPL by the main computer; and
applying the modified EPL batch file to add information about the new EPL by the main computer.

5,797,132

INFORMATION DISPLAY SYSTEM FOR DISPLAYING INFORMATION SUCH AS PRICING INFORMATION ON SHELVES CONTAINING RETAIL MERCHANDISE

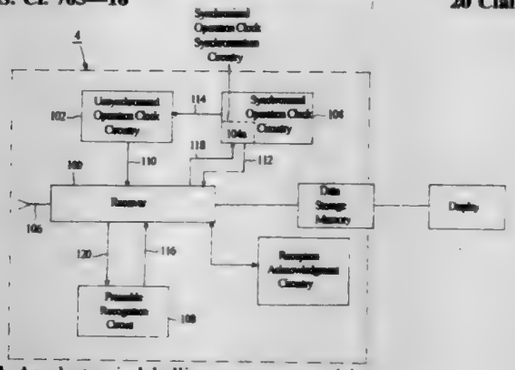
Richard Altwasser, Forst bei Bruchsal, Germany, assignor to Pricer AB, Uppsala, Sweden

Filed Nov. 1, 1995, Ser. No. 551,562

Claims priority, application Germany, Nov. 2, 1994, 44 39 074.2

Int. Cl.[6] G06F *17/60*

U.S. Cl. 705—16 **20 Claims**



1. An electronic labelling system comprising:

a computer,

a transceiver connected to said computer,

electronic tags preferably fixed to shelves,

said transceiver transmitting, by means of electromagnetic waves, communications frames to update said tags and signals to synchronize said tags,

said frames holding the specific address of a tag and the data to be displayed by that tag,

each of said tags comprising a receiver which is periodically activated to receive the communications frames,

said tags comprising devices for synchronizing said receivers to a transmission from said transceiver,

said synchronizing devices comprising means for receiving a synchronization signal from said transceiver and means for synchronizing operation of said receivers with said transceiver,

said synchronizing devices comprising means for transferring the synchronization signal received by said synchronization signal receiving means to said means for synchronizing operation of said receivers to synchronize said receivers with a communications frame transmitted from said transceiver, and

said means for synchronizing operation of said receivers comprising means for activating the receivers with information from a previously received synchronization signal received from said transceiver at the time when a present communications frame is being transmitted from the transceiver.

5,797,133

METHOD FOR AUTOMATICALLY DETERMINING THE APPROVAL STATUS OF A POTENTIAL BORROWER

Robert Mebane Jones, Atlanta, and Charles Frederick Goetz, Marietta, both of Ga., assignors to Strategic Solutions Group, Inc, Atlanta, Ga.

Continuation of Ser. No. 298,794, Aug. 31, 1994, abandoned. This application Feb. 3, 1997, Ser. No. 794,142

Int. Cl.[6] G06F *157/00*

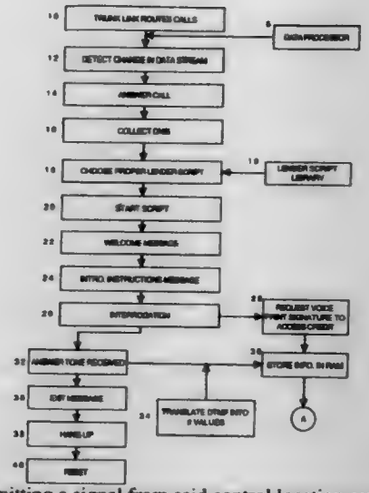
U.S. Cl. 705—38 **17 Claims**

1. A method for the automatic determination of the approval status of a caller who is a potential borrower for a loan using a data processing system, comprising the steps of:

(a) monitoring at least one data line at a central control location for an incoming call from the potential borrower;

(b) detecting said incoming call;

(c) establishing a communication link with said incoming call;



(d) transmitting a signal from said control location over said data line;

(e) presenting a set of questions to said caller, such that for each question presented, said caller can respond by entering tone-generated caller information on a standard touch tone keypad;

(f) receiving said tone-generated caller information at said data processing system;

(g) determining the accuracy of said caller's response to said set of questions;

(h) repeating a selected voice script message until accurate caller information is received;

(i) formulating an access code from said tone-generated caller information, said code operable for retrieving from a credit information source caller credit information;

(j) formulating a predetermined data profile of said caller that is different from said access code;

(k) accessing and retrieving said caller's credit information using said code;

(l) comparing and verifying said caller's profile to said caller's credit information thereby insuring informational integrity of retrieved data from said caller's credit information;

(m) interpreting said information at said control location;

(n) automatically determining at said control location the approval status of said caller according to criteria provided by a lender; and

(o) automatically transmitting information regarding the approval status from said control location to a remote location.

5,797,134

MOTOR VEHICLE MONITORING SYSTEM FOR DETERMINING A COST OF INSURANCE

Robert John McMillan, Tampa, Fla.; Alexander Dean Craig, Moreland Hills, Ohio, and John Patrick Heinen, Tampa, Fla., assignors to Progressive Casualty Insurance Company, Mayfield Village, Ohio

Filed Jan. 29, 1996, Ser. No. 592,958

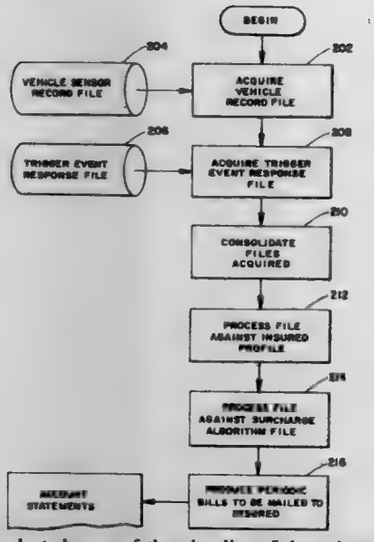
Int. Cl.[6] G06F *17/60*

U.S. Cl. 705—400 **26 Claims**

1. A method of determining a cost of automobile insurance for a selected period based upon monitoring, recording and communicating data representative of operator and vehicle driving characteristics during said period, whereby the cost is adjustable by relating the driving characteristics to predetermined safety standards, the method comprising:

determining an initial insured profile and a base cost of automobile insurance based on said insured profile;

monitoring a plurality of data elements representative of an operating state of a vehicle or an action of the operator during the selected period;



recording selected ones of the plurality of data elements when said ones are determined to have a preselected relationship to the safety standards;

consolidating said selected ones for identifying a surcharge or discount to be applied to the base cost; and,

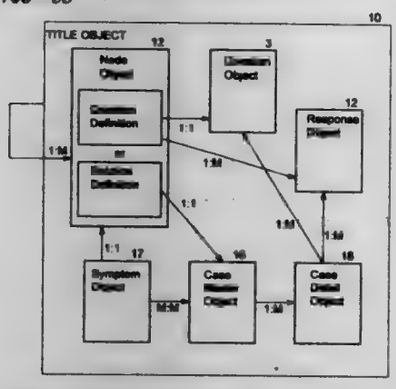
producing a final cost of automobile insurance for the selected period from the base cost and the surcharge or discount.

5,797,135

SOFTWARE STRUCTURE FOR DATA DELIVERY ON MULTIPLE ENGINES

Dennis Whalen, New Brighton; Jeffrey A. Pepper, Verona, and Rajiv Enand, Gibsonia, all of Pa., assignors to ServiceWare, Inc., Oakmont, Pa.

Filed May 1, 1996, Ser. No. 640,531
Int. Cl.[6] G06F *15/18*
U.S. Cl. 706—53 **3 Claims**



1. An object-oriented data structure stored on a computer-readable storage medium for operable interface with either of a case based reasoning system software engine and a tree-based expert system software engine, the data structure defining a knowledge base including a problem, a symptom of the problem, a solution to a problem, and a case in which the solution is the solution to the problem, said data structure comprising:

a first question object defining a first question;

a first response object defining a first answer;

a question node object;

a solution node object defining the case;

a case master object defining the problem, the solution, and the case; and

a symptom object defining the symptom and pointing to said case master object and to said solution node object,

said question node object pointing to said solution node object, said first question object, and said first response object and correlating said first question, said first response, and said solution node object, and

said solution node object pointing to said case master object,

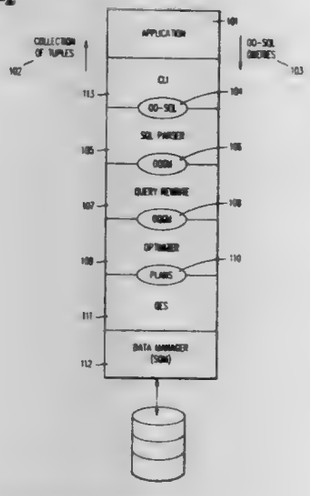
whereby said data structure is capable of use by the case based reasoning system software engine to establish the existence of the case, and thus that the solution is the solution to the problem, by identifying the symptom, matching the symptom to said symptom object, following said symptom object to said solution object, and following said solution object to said case master object, and further whereby said data structure is capable of use by the tree-based expert system software engine to establish the existence of the case by selecting said first question node object, following said first question node object to said first question object to pose said first question, matching a received answer to said first response object, following said first question node correlation of said first question, said first answer, and said solution node object to said solution node object, and following said solution node object to said case master object.

5,797,136

OPTIONAL QUANTIFIERS IN RELATIONAL AND OBJECT-ORIENTED VIEWS OF DATABASE SYSTEMS

Philip L. Boyer, and Gerald G. Kiernan, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1995, Ser. No. 539,561
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—2 **21 Claims**



10. A database system comprising:

means for providing a capability for a user to query, via a query, at least one subpart of a view;

means for providing a capability for said user to designate another part of the view as optional;

means enabling a behavior of a view to be dependent upon an element selected from the view by the query; and

means for changing a semantic of the view depending upon a different use of the view by the query.

5,797,137

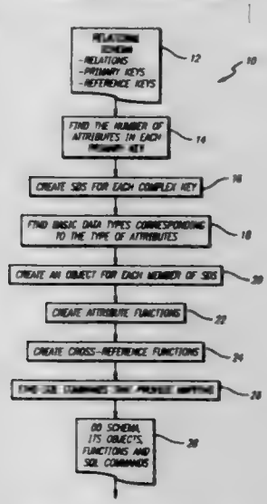
METHOD FOR CONVERTING A DATABASE SCHEMA IN RELATIONAL FORM TO A SCHEMA IN OBJECT-ORIENTED FORM

Forouzan Golshani, 5346 E. Royal Palm Rd., Paradise Valley, Ariz. 85253; Oris D. Friesen, 5136 E. LeMarche Ave., Scottsdale, Ariz. 85254-1667, and Thomas H. Howell, 8201 E. Del Cadena Dr., Scottsdale, Ariz. 85258

Filed Mar. 26, 1996, Ser. No. 624,722

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—4 **3 Claims**



1. A method residing in a computer system for converting a database schema in relational form including at least one relation, with each relation having attributes, one or more of said attributes functioning as a primary key of a given relation, and other attributes of the relation functioning as reference keys as needed, to an equivalent object-oriented schema in functional data model form; comprising the steps of:

a) receiving as an input the database schema in relational form including a list of the relations of the data base schema, and the attributes of each relation including its primary key and reference keys if any of said input database schema;

b) determining the maximum number of attributes comprising the primary key of each relation of the input schema;

c) creating a special data structure (SDS) for each primary key of each relation of the input schema based on the number of attributes of the primary key of each relation of the input schema, each SDS constituting an object in the equivalent schema;

d) converting each SDS to a complex object of the equivalent object-oriented schema;

e) identifying data types of each complex object of the equivalent schema;

f) producing for each complex object a set of functions that represent attributes of the complex object;

g) producing cross reference functions based on the SDS's produced in step c) for each relation and the reference keys thereof;

h) selecting appropriate SQL commands to provide a mapping between the input database schema in relational form to an equivalent object-oriented schema in functional data model form; and

i) producing as an output the equivalent object-oriented schema in functional data model form including names of objects and functions, and SQL commands.

5,797,138

BUFFER MANAGEMENT METHOD USING BUFFER LOCKING MECHANISM IN STORAGE SYSTEM FOR SUPPORTING MULTI-USER ENVIRONMENT

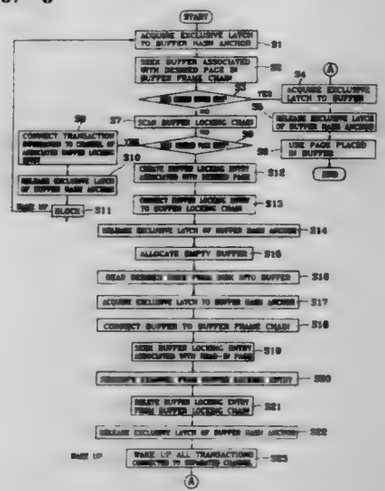
Soon-Young Park; Jin-Soo Lee; Dae-Young Hur, all of Yusong-ku, and Young-Chul Park, Book-ku, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Sep. 13, 1996, Ser. No. 712,596

Claims priority, application Rep. of Korea, Dec. 6, 1995, 1995 47072

Int. Cl.[6] G06F *12/00*

U.S. Cl. 707—8 **4 Claims**



1. A buffer management method for efficiently managing concurrent access of a number of users to the same page of a disk using a buffer management structure including buffer locking entries each used for a transaction, which currently executes a disk reading operation, to lock a desired page, a buffer locking chain adapted to maintain the buffer locking entries in the form of a list, a buffer frame chain provided with buffers for pages and a buffer hash anchor adapted to use an exclusive latch, thereby achieving an improvement in performance of a storage system, the method comprising the steps of:

(a) acquiring an exclusive latch to the buffer hash anchor by a transaction accessing to an optional page, and then determining whether or not a desired buffer associated with the page is included in the buffer frame chain;

(b) scanning the buffer locking chain only when it is determined at the step (a) that the buffer associated with the page is not included in the buffer frame chain, thereby determining whether or not a buffer locking entry associated with the page exists in the buffer locking chain;

(c) if it is determined at the step (a) that the buffer associated with the page is included in the buffer frame chain, then acquiring an exclusive latch to the buffer, releasing the exclusive latch of the buffer hash anchor, and using the page placed in the buffer;

(d) if it is determined at the step (b) that the buffer locking entry associated with the page exists in the buffer locking chain, then registering information about the transaction in a channel of the buffer locking entry, releasing the exclusive latch of the buffer hash anchor, and acquiring an exclusive latch to the buffer hash anchor after a predetermined blocking time elapses; and

(e) maintaining the page in a locked state only when it is determined at the step (b) that the buffer locking entry associated with the page does not exist in the buffer locking chain.

5,797,139

METHOD, MEMORY AND APPARATUS FOR DESIGNATING A FILE'S TYPE BY BUILDING UNIQUE ICON BORDERS

Hatim Yousef Amro, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1995, Ser. No. 572,476

Int. Cl.[6] **G06F** *17/30*

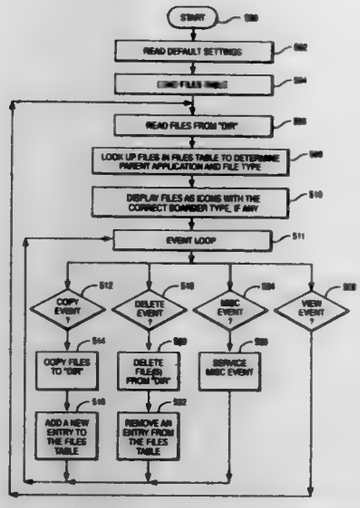
U.S. Cl. 707—100 **10 Claims**

1. A method for directing a computer system to display files using type identifiers and parent identifiers, comprising the steps of:

in response to a command from user controls to control a directory having files stored therein, locating in memory the type identifier for each file, wherein each type identifier identifies a type of the file from a table including: document-type files; executable-type files; and bitmap-type files;

in response to the command from user controls to control the directory having files stored therein, locating in memory a parent identifier for each file, wherein each parent identifier identifies a parent application of the file;

displaying each file as an icon of the parent application of each file; and



building a unique border around each icon using the type identifier for each file, thereby displaying each file according to the type of the file.

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98
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PATENTS

GRANTED August 18, 1998

ERRATA

Designs

For CLASS	See PATENT NO.
D012	D397,187

VOL
1
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ISS
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098
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DESIGNS

AUGUST 18, 1998

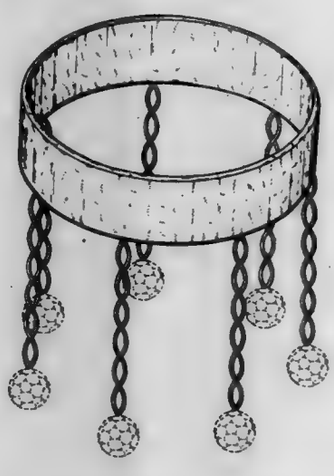
396,935
SANDWICH
Francesc Seuba Trullas, Igualada, Spain, assignor to Positron Investimentos E. Servicos Lda, Madeira, Portugal
Filed Sep. 24, 1996, Ser. No. 60,200
Claims priority, application Spain, Mar. 25, 1996, 137135
Term of patent 14 years
LOC (6) Cl. 01 - *01*
U.S. Cl. D1—101



396,936
WARMING GLOVE
Mats Liss-Daniels, Hovås Länsmansväg 21, S-436 50, Hovås, Sweden
Filed Apr. 21, 1997, Ser. No. 69,489
Claims priority, application Sweden, Oct. 21, 1996, 96-2197
Term of patent 14 years
LOC (6) Cl. 02 - *06*
U.S. Cl. D2—610



396,937
GARTER
John Wright, Jr., 4318 13th St., NE., Washington, D.C. 20017
Filed Jul. 17, 1996, Ser. No. 57,160
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—625



396,938
SEAT BELT COVER
Charles Bugatti, 17210 Palisades Cir., Pacific Palisades, Calif. 90272
Filed Jan. 10, 1997, Ser. No. 64,756
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—639



396,939

COMBINED BIB AND BOTTLE SUPPORT

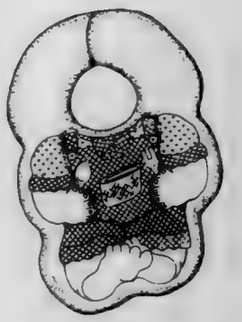
Elizabeth R. Cameron, 13145 Bromont Ave., Sylmar, Calif. 91342

Division of Ser. No. 40,186, Jun. 12, 1995. This application Apr. 7, 1997, Ser. No. 67,911

Term of patent 14 years

LOC (6) Cl. 02 - *02*

U.S. Cl. D2—863



396,940

VIKING HORN SHAPED HEADBAND

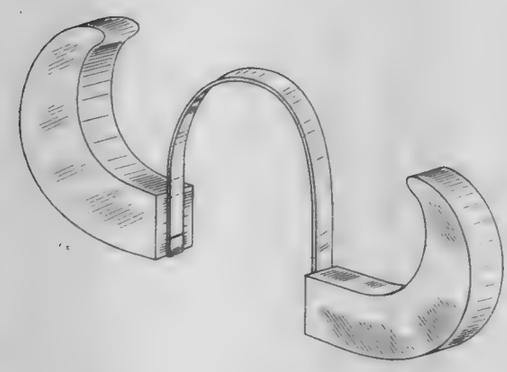
Glenn M. Clegg, 302 Jessica Dr., Garland, Tex. 75040

Filed Aug. 13, 1997, Ser. No. 74,937

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—869



396,941

CAP

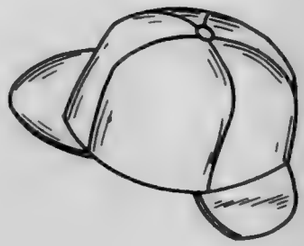
Michael Olajidé , 64 E. 34th St., New York, N.Y. 10016

Continuation of Ser. No. 832,757, Feb. 6, 1992, abandoned. This application Dec. 6, 1994, Ser. No. 31,793

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—882



396,942

SPLIT SPORT BASEBALL CAP

Anthony W. Toscani, 600 W. Silver Meadow, Midwest City, Okla. 73110

Filed Jan. 7, 1997, Ser. No. 64,628

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—882



396,943

SCULLY/BERET CAP

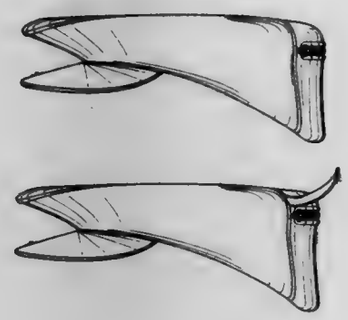
Philip G. Dunlavey, 11 Inman Hill Rd., Mendon, Mass. 01756

Filed Oct. 7, 1997, Ser. No. 78,098

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—882



396,944

HAT

Robert J. Harriman, 6538 Ferguson Pl., R.R. #1, 13B, C27, Peachland, British Columbia, Canada, V0H 1X0

Continuation of Ser. No. 25,984, Aug. 1, 1994, abandoned.

This application Apr. 16, 1996, Ser. No. 53,082

Claims priority, application Canada, Feb. 9, 1994, 1994-0225

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—884



396,945

CAP BILL AND INSERT

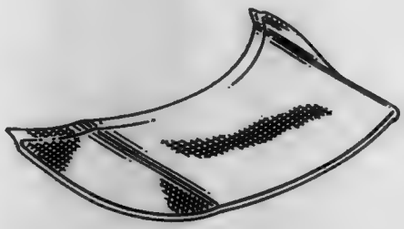
Curtis A. Glass, Wyomissing, Pa., assignor to Bollman Hat Company, Adamstown, Pa.

Filed Feb. 19, 1997, Ser. No. 66,944

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—893



396,946

SHOE

Marc R. Loverin, Arlington, Mass., assignor to SRL, Inc., Wilmington, Del.

Filed Feb. 10, 1997, Ser. No. 66,275

Term of patent 14 years

LOC (6) Cl. 02 - *04*

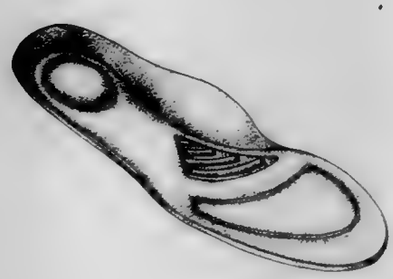
U.S. Cl. D2—912



396,947
FOOTWEAR SOLE
Ralph Serna, Long Beach, Calif., assignor to Vans, Inc., Santa Fe Springs, Calif.
Filed Jun. 6, 1997, Ser. No. 70,256
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—959



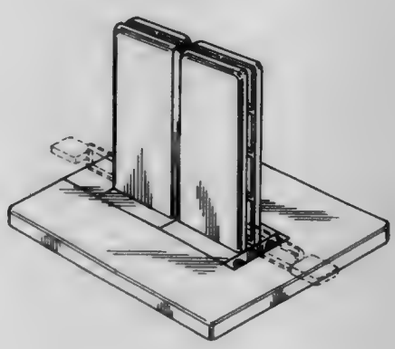
396,948
CONTOURED INSOLE
Donald G. Moore, Collierville, Tenn., and Julianne H. Hudgens, Marion, Ark., assignors to Schering-Plough HealthCare Products, Inc., Memphis, Tenn.
Filed Mar. 21, 1997, Ser. No. 69,062
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—961



396,949
SHOE SPIKE
Dale Bathum, 4610 E. Mercer Way, Mercer Island, Wash. 98040
Filed May 12, 1997, Ser. No. 70,581
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—962



396,950
BOW FORMING TOOL
John M. Werling, Las Vegas, Nev., assignor to Sandy M. Sandler, Henderson, Nev.
Filed Jun. 28, 1996, Ser. No. 58,300
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D3—26



396,951

CARRYING CASE

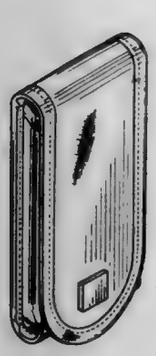
Sharon Huber, New York, N.Y., assignor to Personal Attitude, Inc., New York, N.Y.

Filed Jul. 21, 1997, Ser. No. 73,900

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—203



396,952

BACKPACK

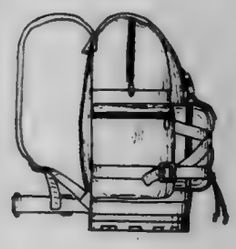
Angela W. Liu, 330 Fifth Ave., Suite 504, New York, N.Y. 10001

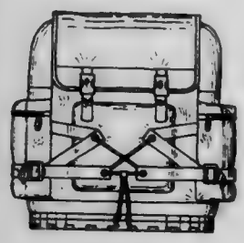
Filed Dec. 19, 1997, Ser. No. 81,098

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—216





396,953

GOLF CART ORGANIZER

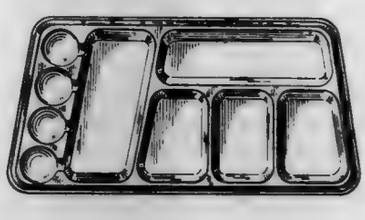
Charlotte M. Iversen, and Diana J. French, both of Fort Collins, Colo., assignors to Golf Cart Organizer, LLC., Ft. Collins, Colo.

Filed Dec. 5, 1996, Ser. No. 63,327

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—310





396,954

GOLF CART ORGANIZER

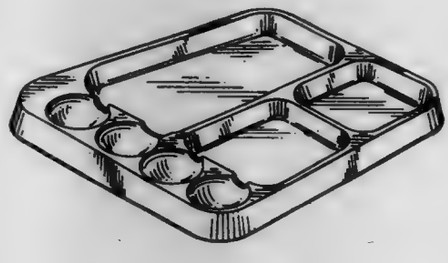
Charlotte M. Iversen, and William W. Iversen, both of Fort Collins, Colo., assignors to Golf Cart Organizer, LLC, Ft. Collins, Colo.

Filed Apr. 17, 1997, Ser. No. 69,745

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—313



396,955

GOLF CART ORGANIZER

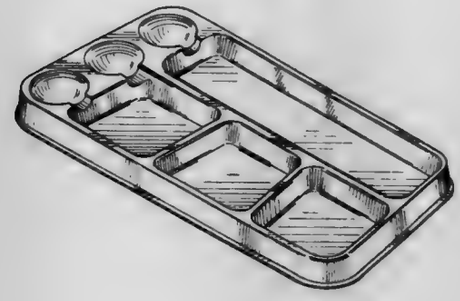
Charlotte M. Iversen, and William W. Iversen, both of Fort Collins, Colo., assignors to Golf Cart Organizer, LLC, Ft. Collins, Colo.

Filed Jun. 26, 1997, Ser. No. 72,857

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—313



396,956

GOLF CART ORGANIZER

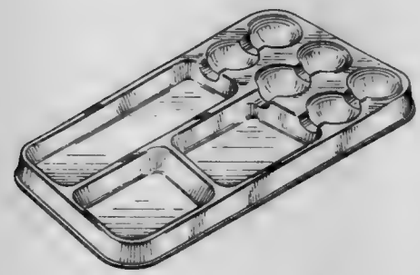
Charlotte M. Iversen, and William W. Iversen, both of Fort Collins, Colo., assignors to Golf Cart Organizer, LLC., Ft. Collins, Colo.

Filed Jun. 26, 1997, Ser. No. 72,858

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—313



396,957

HANDLE FOR AN ELECTRIC TOOTHBRUSH

Paula Andrea Allende, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1997, Ser. No. 76,288

Claims priority, application WIPO, Mar. 25, 1997, DMA/003 647

Term of patent 14 years

LOC (6) Cl. 04 - *02*

U.S. Cl. D4—101



396,958

REUSABLE WALL COVERING

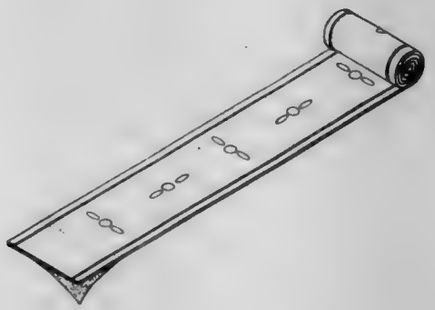
Gloria Welch, 1041 Woddbridge Dr., Lebanon, Mo. 65536

Filed Jun. 22, 1995, Ser. No. 40,638

Term of patent 14 years

LOC (6) Cl. 05 - *06*

U.S. Cl. D5—7



396,959
MIRROR, PICTURE AND HANGER DEVICE FOR A LOCKER
Stephen H. Wolff, New York, N.Y., assignor to Wolff Marketing Group, Inc., New York, N.Y.
Filed Jul. 14, 1997, Ser. No. 73,520
Term of patent 14 years
LOC (6) Cl. 06 - *07*
U.S. Cl. D6—301



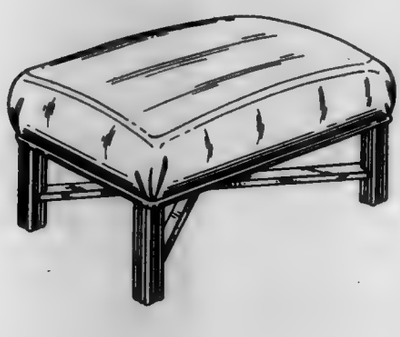
396,960
CHAIR
Peter Maly, Hamburg, Germany, assignor to Roset S.A., France
Filed May 20, 1997, Ser. No. 71,098
Claims priority, application WIPO, Jan. 9, 1997, DM/038 757
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



396,961
SEAT
Brian F. Donnelly, 1118 Salamanca Ct., Davis, Calif. 95616
Filed Jun. 20, 1997, Ser. No. 72,628
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



396,962
OTTOMAN
Sally Sirkin Lewis, 715 N. Canon Dr., Beverly Hills, Calif. 90210
Division of Ser. No. 60,288, Sep. 20, 1996. This application Sep. 30, 1997, Ser. No. 79,996
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—349

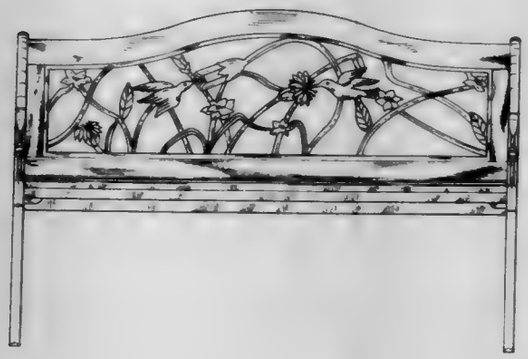


396,963

STYLIZED ARCH BENCH

Chary Jeng, La Mirada, Calif., assignor to Berkeley Products Inc., La Mirada, Calif.

Filed Jan. 24, 1997, Ser. No. 65,366
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—358

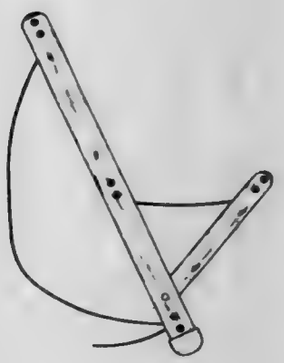


396,964

COMPACT PORTABLE OUTDOOR ALL-TERRAIN SEAT

James O. Mullins, Rte. 3, Box 100, Clay, W. Va. 25063

Filed Oct. 20, 1997, Ser. No. 78,142
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—368



396,965

CHAIR

Paolo Favaretto, Padua, Italy, assignor to Global Upholster Company, Downsview, Canada

Division of Ser. No. 55,978, Jun. 19, 1996. This application May 30, 1997, Ser. No. 72,214
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—372



396,966

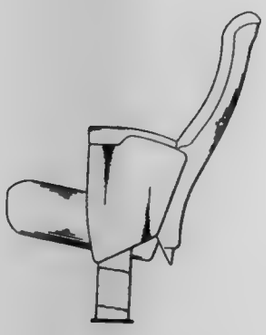
SEAT

Glendon Robert Good, 2000 Second St., Berkeley, Calif. 94710

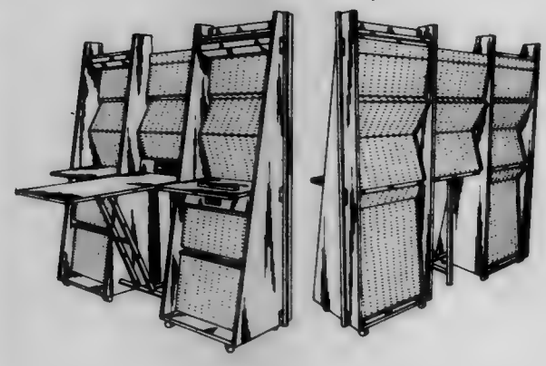
Filed Sep. 4, 1997, Ser. No. 76,249
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—374



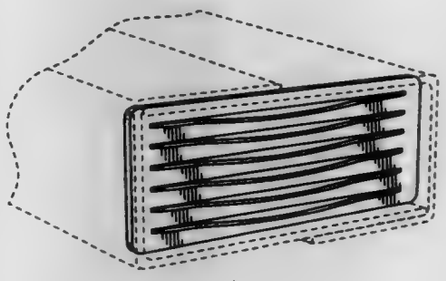
396,967
SEATING UNIT
Ryokichi Yamazaki, Tokyo, Japan, assignor to Kotobuki Corporation, Tokyo, Japan
Filed May 15, 1997, Ser. No. 70,774
Claims priority, application Japan, Nov. 18, 1996, 8-34574
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



396,968
DISPLAY STAND
Antonio Canton Gongora; Carlos Jesús Cruz Fernandez; José María Munagorri Enriquez, and Juan Carlos Rayo Ortigüela, all of Midrid, Spain, assignors to Telefonica de Espana, S.A., Madrid, Spain
Filed Nov. 21, 1996, Ser. No. 62,647
Claims priority, application Spain, May 21, 1996, 137532
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—396



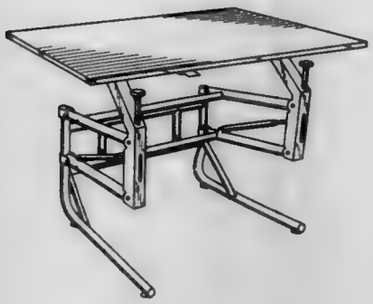
396,969
COMPACT DISK SHELF CASE SIDEWALL MEMBER
Marc Moor, Hilliard, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Filed Nov. 13, 1996, Ser. No. 62,326
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—407



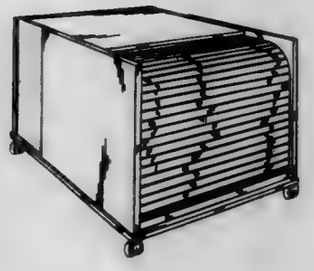
396,970
GROUND INSERTED HANGAR SUPPORT
Jimmy L. Grindstaff, 651 17th St. Dr., N.W., Hickory, N.C. 28601
Filed Mar. 22, 1996, Ser. No. 52,081
Term of patent 14 years
LOC (6) Cl. 06 - *05*
U.S. Cl. D6—417

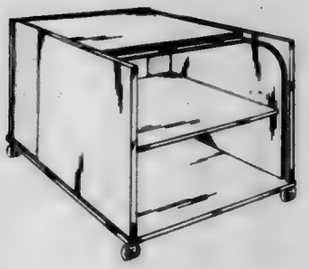


396,971
ADJUSTABLE TABLE
Jan-Aake Svensson, Hoenetorp, Vislanda, Sweden, 34030
Filed Apr. 10, 1997, Ser. No. 69,090
Claims priority, application Sweden, Oct. 14, 1996, 96-2132
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—429

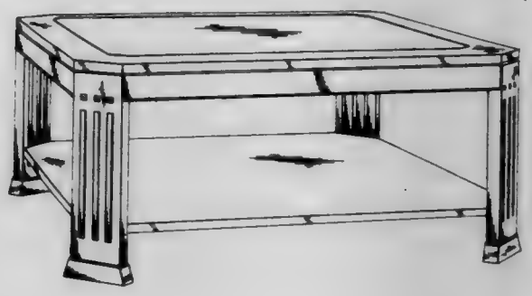


396,972
DESK CABINET FOR PERSONAL COMPUTER EQUIPMENT
Frederik Jacob Van De Oudeweetering, Naarden, Netherlands, assignor to Cascade Handelmij, B.V., Lelystad, Netherlands
Filed Dec. 19, 1996, Ser. No. 63,950
Claims priority, application Hague Agreement, Jun. 25, 1996, DM/036769
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—433





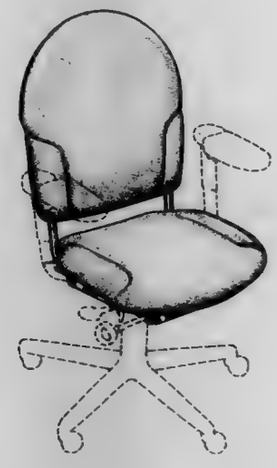
396,973
SQUARE COCKTAIL TABLE WITH INLAID STONE TOP
William E. De Blaay, Manlius, N.Y., assignor to L. & J. G. Stickley, Inc., Manlius, N.Y.
Filed Jan. 21, 1997, Ser. No. 65,124
The portion of the term of this patent subsequent to Aug. 11, 2012, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—477



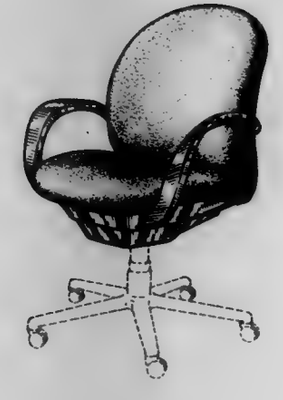
396,974
TABLE
Donato D'Urbino, and Paolo Lomazzi, both of Milan, Italy, assignors to Roset S.A., France
Filed May 20, 1997, Ser. No. 71,830
Claims priority, application WIPO, Jan. 9, 1997, DM/038 757
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—480



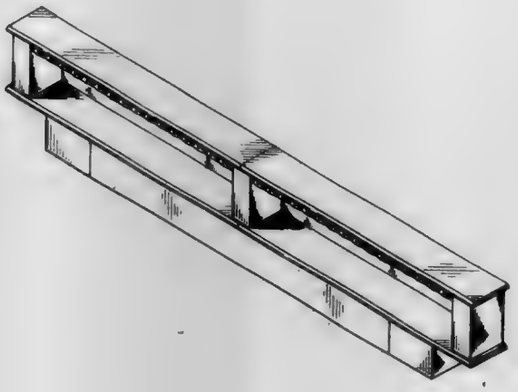
396,975
SEATING UNIT
Arnold B. Dammermann, 3075 Hayward Dr., SE., Grand Rapids, Mich. 49546, and Michael L. Deimen, 544 Hoover St., Burleson, Tex. 76028
Division of Ser. No. 60,459, Sep. 30, 1996, which is a continuation-in-part of Ser. No. 35,048, Feb. 17, 1995, Pat. No. Des. 383,322. This application Apr. 4, 1997, Ser. No. 68,905
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—500



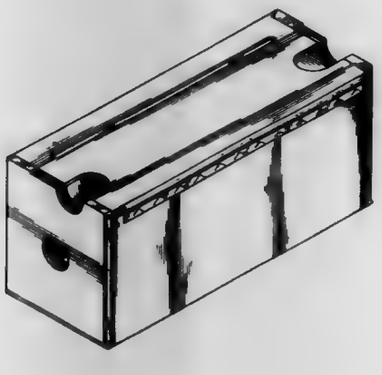
396,976
CHAIR
Jeffrey P. Cronk, Dallas, Tex., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Apr. 7, 1997, Ser. No. 70,858
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—500



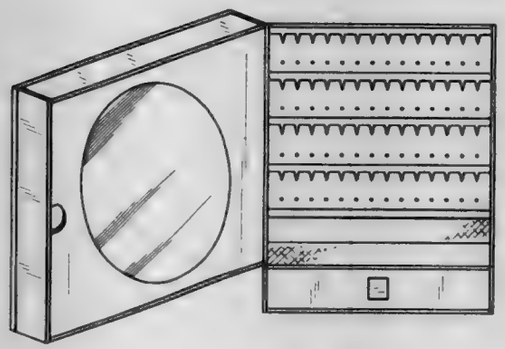
396,977
HEADBOARD
Ronald G. Wanek, Arcadia, and John J. Amell, La Crosse, both of Wis., assignors to Ashley Furniture Industries, Inc., Arcadia, Wis.
Division of Ser. No. 53,852, Apr. 26, 1996. This application Jan. 2, 1997, Ser. No. 64,484
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—505



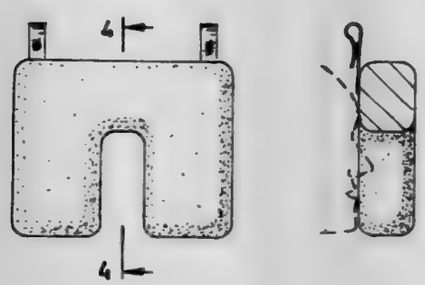
396,978
ROLL FILM DISPENSER
Ian R. Kaiser, La Canada, and Sean A. Neiberger, Malibu, both of Calif., assignors to Allen-Reed Company, Inc., Los Angeles, Calif.
Filed Apr. 23, 1997, Ser. No. 69,025
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—518



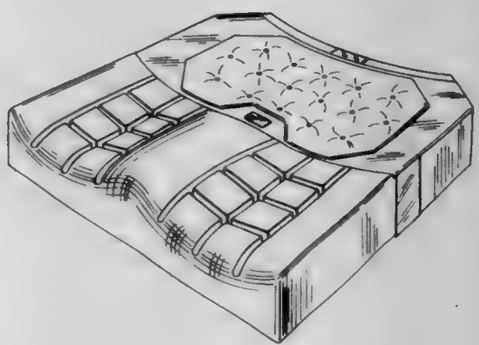
396,979
WALL MOUNTED JEWELRY CASE
Sandra K. Lawrence, 1489 Golf Course Rd., West Jefferson, N.C. 28694
Filed Jul. 24, 1997, Ser. No. 73,925
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—560



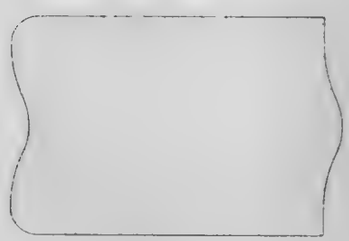
396,980
PILLOW
Louise Novros, 116 Seminole Way, Rochester, N.Y. 14618
Filed Jun. 18, 1997, Ser. No. 72,075
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601

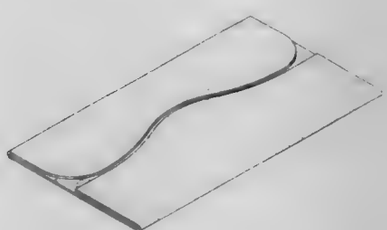


396,981
CUSHION
C A Laidlaw, Carmathen, Great Britain, assignor to Medical Support Systems Limited, United Kingdom
Filed Jul. 17, 1997, Ser. No. 73,810
Claims priority, application United Kingdom, Jun. 4, 1997, 2066266
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601

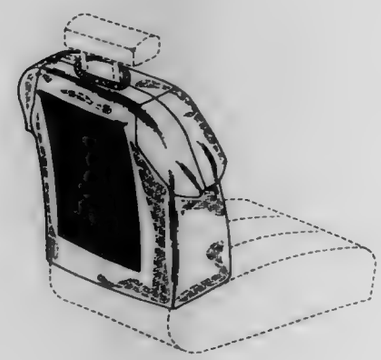


396,982
PRE-MOISTENED DISINFECTING TOWELLETTE
Rene Harris, 126 32 Monarch Ct., Lake Ridge, Va. 22192
Filed Apr. 10, 1997, Ser. No. 68,228
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—608

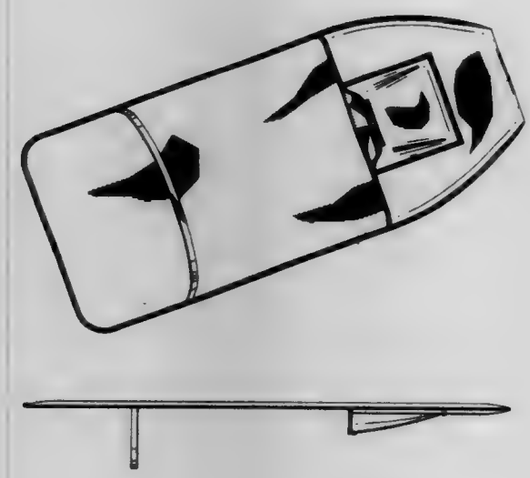




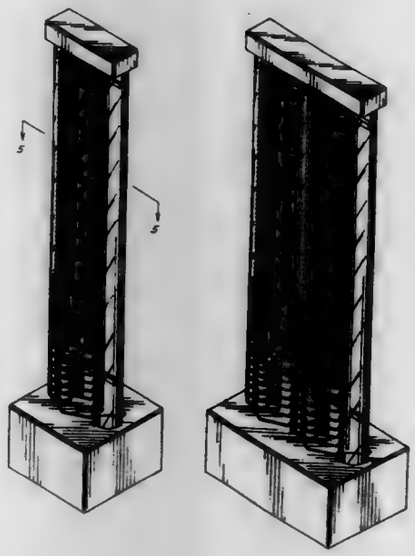
396,983
T-SHIRT CONFIGURED CAR SEAT COVER WITH MAGAZINE HOLDER
Joan Senica Taylor, P. O. Box 321, Railroad Flat, Calif. 95248
Filed Jul. 28, 1997, Ser. No. 74,078
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—611



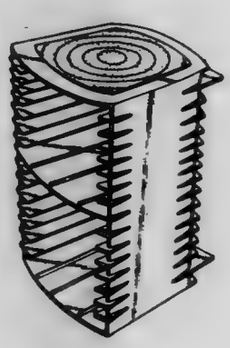
396,984
REMOVABLE VEHICLE SEAT COVER
Michael M. Harvey, and Vanessa H. Harvey, both of DeSoto, Tex., assignors to Foca Enterprises, Inc., DeSoto, Tex.
Filed Aug. 14, 1997, Ser. No. 75,386
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—611



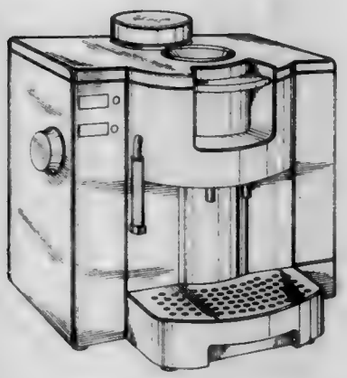
396,985
STORAGE RACK
Kenneth A. Burnett, Lincolnwood, Ill., assignor to Midwest Tropical, Inc., Lincolnwood, Ill.
Filed Jun. 27, 1997, Ser. No. 73,030
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—630



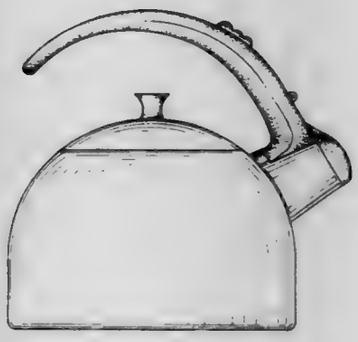
396,986
MEDIA STORAGE UNIT
Victor Robinson, Sacramento, Calif., and Curt Bingham, Salt Lake City, Utah, assignors to Kensington Microware Limited, San Mateo, Calif.
Filed Jun. 30, 1997, Ser. No. 73,105
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—630



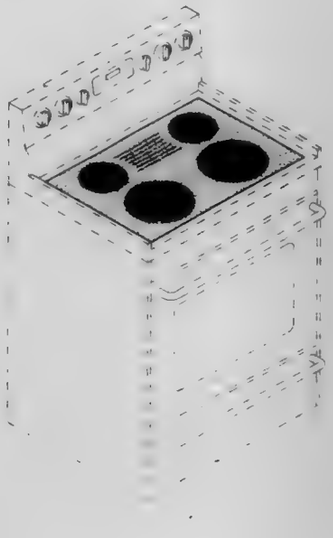
396,987
ESPRESSO MAKER
Florian Seiffert, Weisbaden, Germany, assignor to Robert Krups GmbH & Co. KG, Solingen, Germany
Filed Apr. 18, 1996, Ser. No. 53,291
Claims priority, application France, Oct. 18, 1995, 95 5614
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—309



396,988
KETTLE
Chang-Hsing Lien, Taipei, Taiwan, assignor to Action Overseas Co., Ltd., Taipei, Taiwan
Filed Jun. 16, 1997, Ser. No. 72,366
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—322



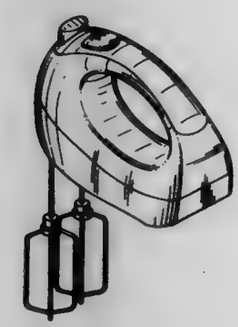
396,989
COOKTOP
Subhash R. Deo, Hendersonville; James E. Pryor, Clarksville, and Kurt F. Hafeken, Sr., Greenbrier, all of Tenn., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 21, 1997, Ser. No. 65,096
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—346



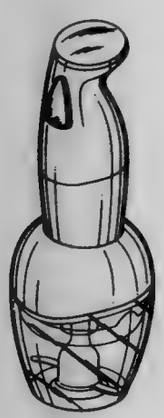
396,990
BLENDER
Bruno Leverrier, Lassay les Chateaux, France, assignor to Moulinex S.A., Paris, France
Filed Jun. 2, 1997, Ser. No. 71,558
Claims priority, application France, Dec. 2, 1996, 96/7055
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—378



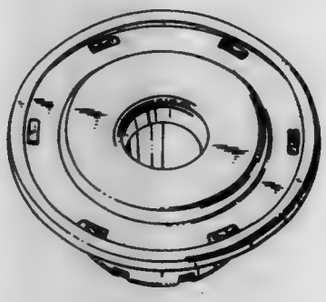
396,991
HAND MIXER
Thomas Lallemand, Paris, France, assignor to SEB, Selongey, France
Filed Jul. 17, 1997, Ser. No. 75,886
Claims priority, application France, Feb. 14, 1997, 97 0943
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—379



396,992
HAND HELD FOOD PROCESSOR
Thomas Lallemand, Paris, France, assignor to SEB, Selongey, France
Filed Sep. 18, 1997, Ser. No. 76,704
Claims priority, application France, Mar. 19, 1997, 97 1680
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—384



396,993
BLENDER LID
Robin W. Ruck, Southbury, and James F. Podpolucha, Ansonia, both of Conn., assignors to Waring Products Division/ Dynamics Corporation of America, New Hartford, Conn.
Filed Feb. 13, 1995, Ser. No. 34,838
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—391



396,994
LIGHTED TAP HANDLE
Joseph R. Carrino, 450 Old Chester Rd., Chester, N.J. 07930
Filed Oct. 22, 1997, Ser. No. 78,170
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—393



396,995

EMULSIFYER NOZZLE FOR AN ESPRESSO-MACHINE

Christof Miltenberger, Schmitten, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany

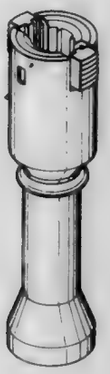
Filed Jan. 23, 1997, Ser. No. 65,472

Claims priority, application Germany, Jul. 24, 1996, M 96 06 313.0

Term of patent 14 years

LOC (6) Cl. 07 - *99*

U.S. Cl. D7—398



396,996

ACCESSORY FOR A FOOD PROCESSOR

Thomas Lallemand, Paris, France, assignor to SEB, Selongey, France

Filed Jul. 17, 1997, Ser. No. 73,791

Term of patent 14 years

LOC (6) Cl. 31 - *00*

U.S. Cl. D7—413



396,997

DRINKING CONTAINER

Bradley Nierenberg, Arlington, Va., and David Law, Shelbyville, Ind., assignors to Momentum Marketing, Lanham, Md.

Filed Jan. 13, 1997, Ser. No. 64,880

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D7—509



396,998

SALT AND PEPPER SHAKER

Beat Wietlisbach, Christchurch, New Zealand, assignor to Rocco Limited, Christchurch, New Zealand

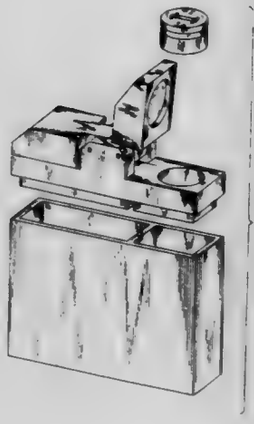
Filed Jul. 31, 1996, Ser. No. 57,791

Claims priority, application New Zealand, Feb. 29, 1996, 27422

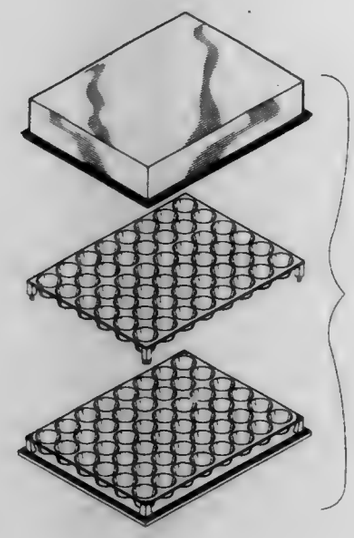
Term of patent 14 years

LOC (6) Cl. 07 - *06*

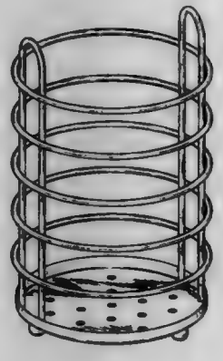
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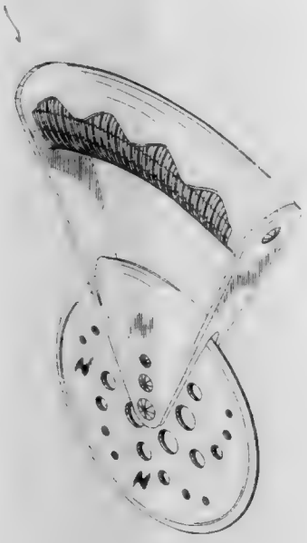
396,999
CAKE CARRIER
Diana S. Boothe, 1458 San Juline Cir., St. Augustine, Fla. 32095
Filed Oct. 14, 1997, Ser. No. 77,903
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D7—610



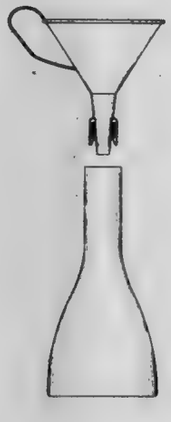
397,000
UTENSIL HOLDER
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139; Harold A. Goodman, Orange Village, and Brenda Kovach, Cleveland, both of Ohio, assignors to Sheldon H. Goodman, Solon, Ohio
Filed Oct. 8, 1997, Ser. No. 77,746
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D7—637



397,001
PIZZA CUTTER
Thomas Antista, 64 Lenox Pointe, Atlanta, Ga. 30324, and Thomas Fairclough, 1251 Annapolis Way, Grayson, Ga. 30221
Filed Jul. 24, 1997, Ser. No. 74,098
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—694



397,002
COMBINATION FUNNEL AND PLASTIC BAG STAND FOR HOME-MADE FROZEN FLAVORED DRINK POPSICLES
Sharon D. Smith, 85 Edgar St., Atlantic Beach, Fla. 32233
Filed Mar. 19, 1997, Ser. No. 68,050
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—700



397,003

Patent Not Issued For This Number

397,004

GARDEN SHOVEL

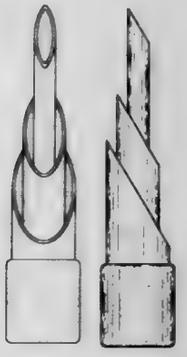
James W. McMaster, and Susan J. McMaster, both of 8873 Alabama St., Riverside, Calif. 92503

Filed Jul. 31, 1997, Ser. No. 74,490

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—10



397,005

COMPACT SNOW SHOVEL FOR VEHICLES

Stephen P. Whitehead, Elgin; Michael R. Vogler, and Torrence C. Anderson, both of Aurora, all of Ill., assignors to Suncast Corporation, Batavia, Ill.

Continuation of Ser. No. 58,146, Aug. 8, 1996, Pat. No. Des. 384,559, Ser. No. 58,148, Aug. 8, 1996, Pat. No. Des. 384,866, and Ser. No. 59,652, Aug. 15, 1996. This application Oct. 6, 1997, Ser. No. 77,637

Term of patent 14 years

LOC (6) Cl. 08 - *01*

U.S. Cl. D8—10



397,006

MAGNETIC RETRIEVAL TOOL

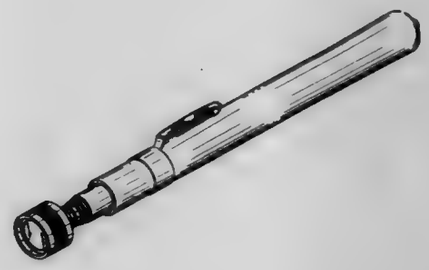
Edward S. Coleman, Jr., 116 Keeler Dr., Ridgefield, Conn. 06877, and Stanley Stromski, 860 Ostrander Ave., Riverhead, N.Y. 11901

Filed May 12, 1997, Ser. No. 70,614

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—14



397,007

LEVOROTATORY BRUSH CUTTING BLADE

Jeffrey L. Schultz, Box 9005, Ruth Ave., Rutland, Vt. 05701, and Edward J. Grossi, 35 Warner Ave., Proctor, Vt. 05765

Filed Mar. 13, 1997, Ser. No. 67,805

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—20



397,008

MIG WELDER

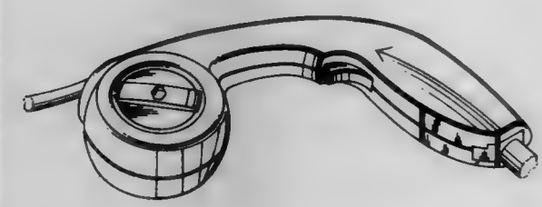
Jerome I. Rebold, Phoenix, Md., assignor to The Ready Welder Co., San Pedro, Calif.

Filed Apr. 3, 1997, Ser. No. 68,415

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D8—30



397,010

CORKSCREW

Friedrich Wilhelm Usbeck, Kleistweg 2, D-35039 Marburg, Germany

Filed Feb. 12, 1997, Ser. No. 66,455

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D8—42



397,009

CAN OPENER

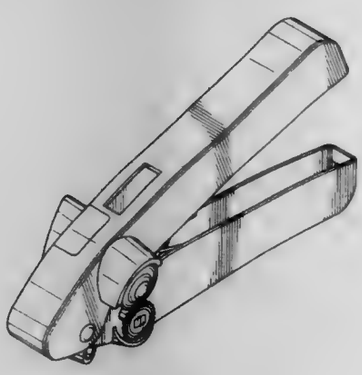
Chi Shun Hon, New Territories, Hong Kong, assignor to Sun Mei Industrial Limited, New Territories, Hong Kong

Filed Sep. 11, 1997, Ser. No. 76,461

Term of patent 14 years

LOC (6) Cl. 07 - *99*

U.S. Cl. D8—39



397,011

HYDRAULIC INSTALLATION TOOL

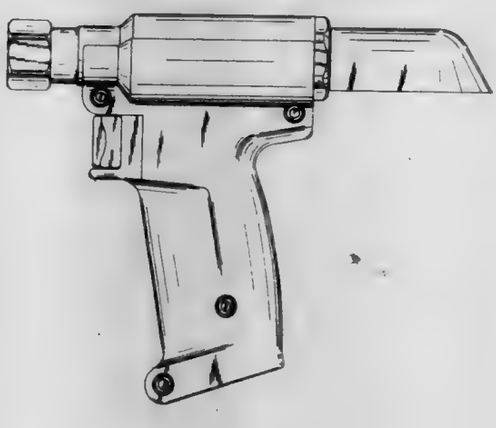
Hendrik E. Rosier, Port Ewen, N.Y., assignor to Huck International, Inc., Kingston, N.Y.

Filed Feb. 18, 1997, Ser. No. 66,599

Term of patent 14 years

LOC (6) Cl. 08 - *03*

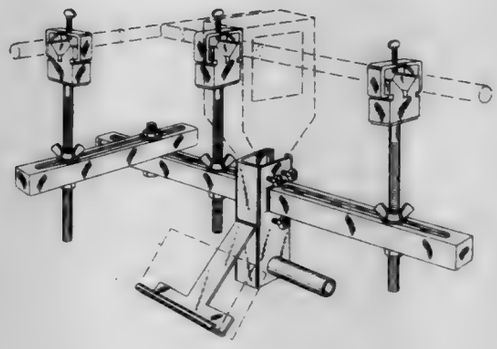
U.S. Cl. D8—68



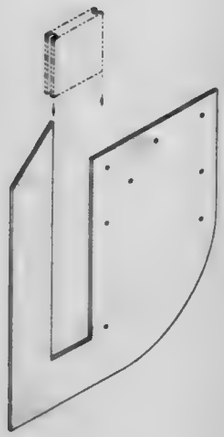
397,012
DIAMOND ABRASIVE SAW BLADE
Shuichi Hariu, Kanagawa, Japan, assignor to Sankyo Diamond Industrial Co., Ltd., Kanagawa, Japan
Filed Feb. 11, 1997, Ser. No. 67,277
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—70



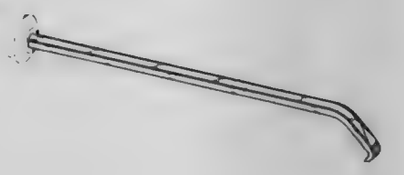
397,013
ORBITAL WELDING HEAD JIG
James L. Horne, P.O. Box 1035, Battleground, Wash. 98604
Filed Apr. 10, 1997, Ser. No. 69,385
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—71



397,014
FACIA RACK
Ricky Wilson, 1557 Hudson St. #10, Redwood City, Calif. 94061
Filed Oct. 22, 1997, Ser. No. 78,201
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—71



397,015
COMBINATION SKATE AND SKATEBOARD TOOL
Ian M. Hall, 212 Clinton St., and Scott Wilson, 1731 Foster Ct., both of Santa Cruz, Calif. 95062
Filed Mar. 18, 1997, Ser. No. 68,195
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—88



397,016

KNIFE

Dietmar Pohl, Leverkusen, Germany, assignor to Heinr. Boker GmbH & Company, Solingen, Germany

Filed Mar. 19, 1997, Ser. No. 68,184

The portion of the term of this patent subsequent to Jun. 3, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—99



397,017

FOLDING KNIFE WITH GROOVED HANDLE

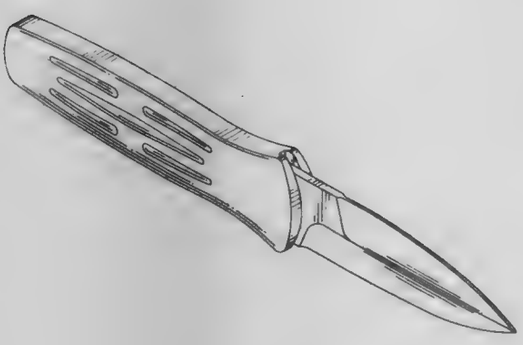
Melvin M. Pardue, Repton, Ala., assignor to Mentor Group, L.L.C., West Linn, Oreg.

Filed Jun. 20, 1997, Ser. No. 72,622

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—99



397,018

ERGONOMIC KNIFE HANDLE

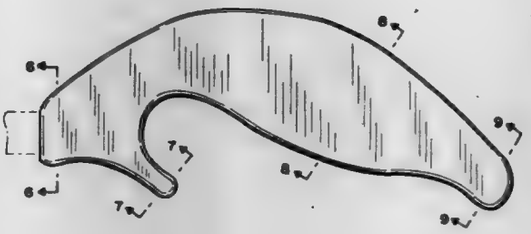
Harold D. Mosley, P.O. Box 106, Crawford, Miss. 39743

Filed Feb. 27, 1997, Ser. No. 67,077

Term of patent 14 years

LOC (6) Cl. 08 - *03*

U.S. Cl. D8—107



397,019

TOOL HANDLE

Glen Godt, P.O. Box 2, Fort Smith, N.W.T., Canada, X0E 0P0

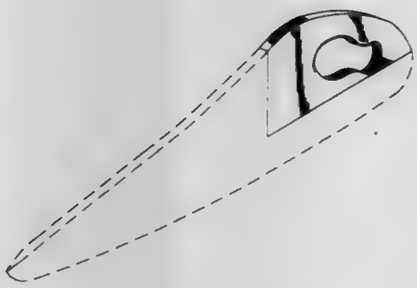
Division of Ser. No. 42,460, Aug. 10, 1995, Pat. No. Des. 385,472. This application Jun. 11, 1997, Ser. No. 72,000

Claims priority, application Canada, Feb. 13, 1995, 1995-0356

Term of patent 14 years

LOC (6) Cl. 08 - *06*

U.S. Cl. D8—107

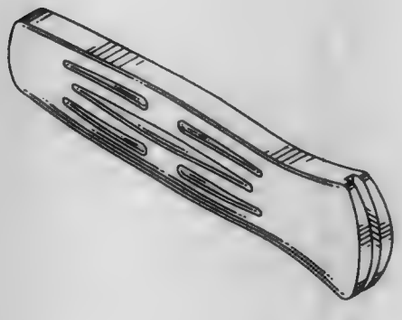


397,020

GROOVED KNIFE HANDLE

Melvin M. Pardue, Repton, Ala., assignor to Mentor Group, L.L.C., West Linn, Oreg.

Filed Jun. 20, 1997, Ser. No. 72,602
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—107

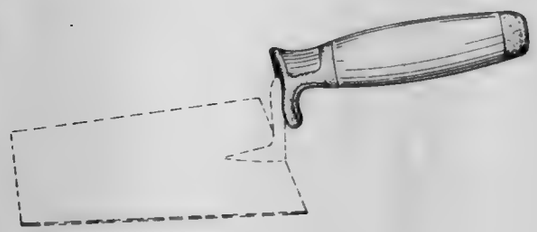


397,021

HANDLE

Johann Hörtnagl, Am Bichl, A-6166 Fulpmes, Austria

Filed Aug. 25, 1997, Ser. No. 75,792
Claims priority, application Austria, Jun. 9, 1997, 2193/97
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—107



397,022

KNOB

Gerald Caugh, Rockford; Kevin DeWald, Spring Lake, and Deborah Mattson, Plainwell, all of Mich., assignors to Belwith International, Grandville, Mich.

Division of Ser. No. 43,393, Sep. 1, 1995, Pat. No. Des. 377,445, which is a division of Ser. No. 15,019, Nov. 5, 1993, Pat. No. Des. 369,289. This application Aug. 8, 1996, Ser. No. 65,451
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—310

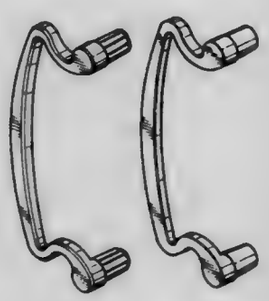


397,023

DOOR HANDLE

Edward J. Subliskey, Mountain Top, Pa., assignor to Reflectolite Products Company, Inc., Pacoima, Calif.

Filed Apr. 28, 1997, Ser. No. 70,083
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—319



397,024

SPRING/CAM LEVER FOR RETENTION PLATE USED IN A STERILIZATION CONTAINER

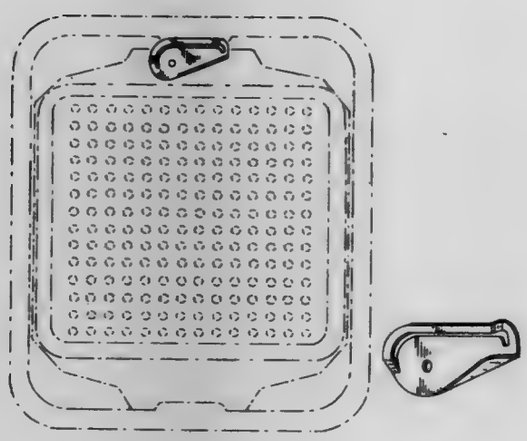
John W. Clelland, Sagamore Hills, Ohio, assignor to Allegiance Corporation, McGaw Park, Ill.

Filed Jun. 10, 1996, Ser. No. 55,660

Term of patent 14 years

LOC (6) Cl. 08 - *07*

U.S. Cl. D8—338



397,025

DEADBOLT LOCKING PLATE

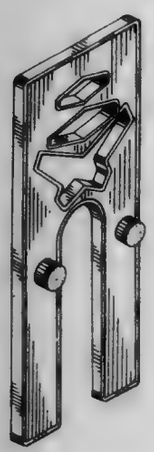
Marjan Kosi, Burnaby, Canada, assignor to Godfather's Coach and Limo Service Limited, Burnaby, Canada

Filed Sep. 25, 1996, Ser. No. 60,234

Term of patent 14 years

LOC (6) Cl. 08 - *07*

U.S. Cl. D8—343



397,026

LIGHTED COVER FOR CIRCULAR PADLOCKS

Robert Drake, 17918 Lull St., Reseda, Calif. 91335, assignor to Robert Drake, Reseda, Calif.

Filed Jan. 29, 1997, Ser. No. 65,574

Term of patent 14 years

LOC (6) Cl. 08 - *07*

U.S. Cl. D8—346



397,027

HOUSE KEY

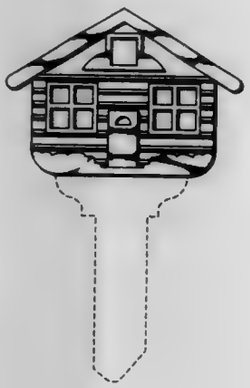
Jeremy Brown, 5810 Las Virgenes Rd., Calabassas, Calif. 91302

Filed Feb. 7, 1997, Ser. No. 66,230

Term of patent 14 years

LOC (6) Cl. 08 - *07*

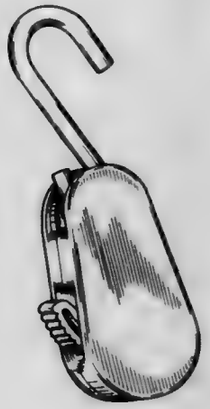
U.S. Cl. D8—348



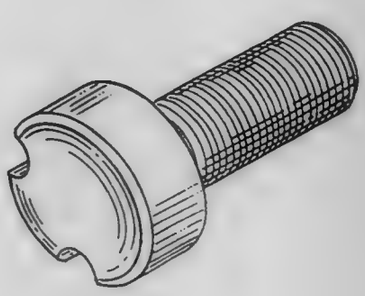
397,028
PULLEY BLOCK
Michael Duncyger, 811 W. 58th St., La, Calif. 90037
Filed May 22, 1997, Ser. No. 71,150
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—360



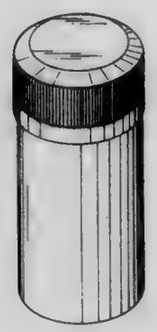
397,029
ROPE SECURING DEVICE FOR HOLDING A ROPE UNDER TENSION
James A. Preuss, 4032 Alex La., Carmichael, Calif. 95608
Continuation-in-part of Ser. No. 677,841, Jul. 10, 1996, abandoned. This application Mar. 21, 1997, Ser. No. 68,484
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—383



397,030
SUPPLEMENTAL RESTRAINT SYSTEM (SRS) ANTI-THEFT FASTENER
William R. Lawson, Glenside, Pa., assignor to R & B, Inc., Colmar, Pa.
Division of Ser. No. 51,953, Mar. 20, 1996. This application May 14, 1997, Ser. No. 70,936
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—387



397,031
TAMPER EVIDENT CLOSURE
Mark Richard Fricke, Lancaster, Pa., assignor to Kerr Group Inc., Pa.
Filed Mar. 7, 1997, Ser. No. 67,708
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—444

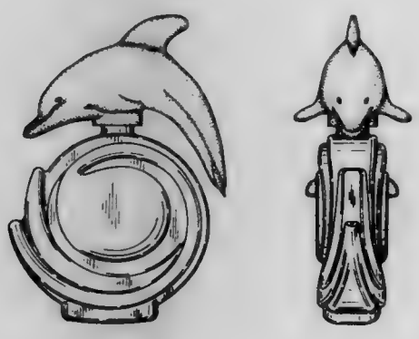


397,032

DOLPHIN CAP AND BOTTLE COMBINATION

Kathryn Hardy, 7151 W. Hwy. 98 Box 269, Panama City Beach, Fla. 32407

Filed Jun. 23, 1997, Ser. No. 72,678
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—310

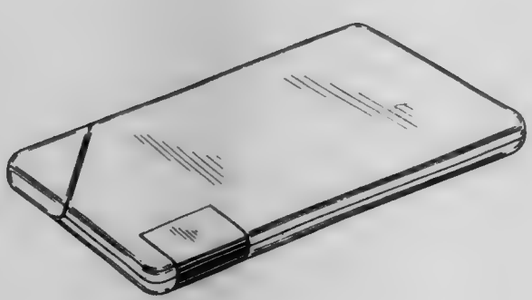


397,033

CONTAINER

Salvatore A. Puglisi, Wayne, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 25, 1996, Ser. No. 56,217
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—339

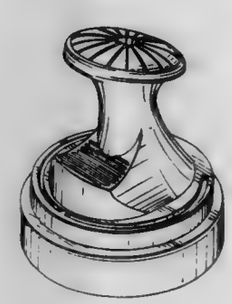


397,034

FOAM SPOUT

Franz Zimmerhackel, Hattersheim, Germany, assignor to Deutsche Prazisions-Ventil GmbH, Hattersheim, Germany

Filed Jun. 7, 1994, Ser. No. 24,062
Claims priority, application Germany, Dec. 9, 1993, DM/028 090
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448

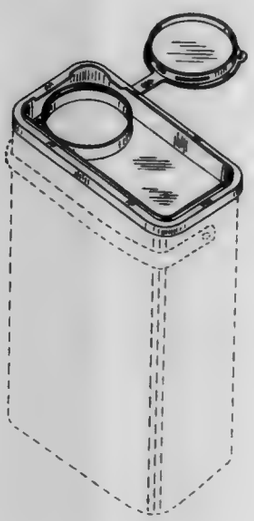


397,035

DISPENSER COVER

Christopher J. Young, Port Washington, N.Y., and Brooks R. Markert, Harwinton, Conn., assignors to C&N Packaging, Inc., Wyandanch, N.Y.

Filed Sep. 30, 1996, Ser. No. 60,524
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—449



397,036

BOTTLE

Paul Katakouzinos, Richmond Hill, Canada, assignor to Olympus Plastics, Richmond Hill, Canada

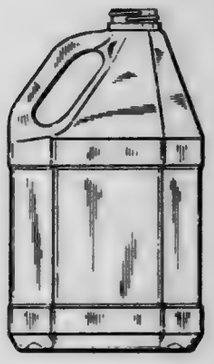
Filed Dec. 2, 1996, Ser. No. 62,906

Claims priority, application Canada, May 30, 1996, 1996-1255

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—520



397,037

COMBINED BOTTLE AND CAP

Philippe Negre, Versailles, France, assignor to Decoplast, S.A., La Roche sur Foron, France

Filed Oct. 21, 1997, Ser. No. 78,546

Claims priority, application France, Jul. 31, 1997, 974504

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—521



397,038

COMBINED BOTTLE AND CAP FOR STYLING GEL

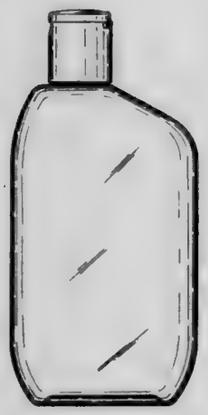
Joel Estrin; Alan Estrin; Steven Estrin, all of East Rockaway, and Ronald Estrin, Syosset, all of N.Y., assignors to Para Laboratories, Inc., Hempstead, N.Y.

Filed Oct. 14, 1997, Ser. No. 77,924

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—523



397,039

COMBINED LIQUID CONTAINER AND CAP

James Michael Francis Dickson, and John Muir Campbell, both of Denny, United Kingdom, assignors to James Dickson; John Campbell; William Robertson, and Gilmour Cuthbertson, all of United Kingdom

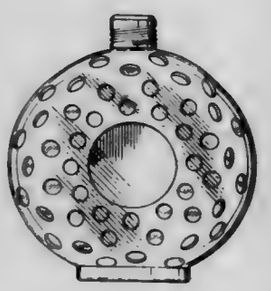
Filed Aug. 16, 1995, Ser. No. 42,652

Claims priority, application United Kingdom, Feb. 16, 1995, 2045300

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—544



397,040

COSMETIC CONTAINER

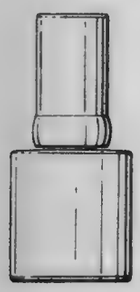
Dieter Gottlieb Bakic, Milan, Italy, assignor to The Project Consultancy Limited, West Sussex, England

Filed Jun. 18, 1997, Ser. No. 72,074

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—574



397,041

CAN CLOCK

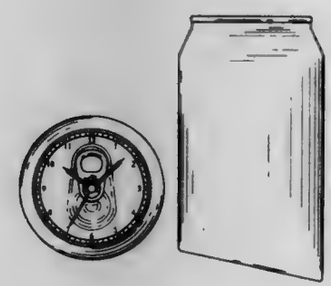
Larry Abels, Tulsa, Okla., assignor to Selco Custom Time Corp., Tulsa, Okla.

Filed Jul. 30, 1997, Ser. No. 74,215

Term of patent 14 years

LOC (6) Cl. 10 - *01*

U.S. Cl. D10—6



397,042

BEZEL AND CASING FOR A WATCH

Judith Reichel Riley, Goshen, Conn., assignor to Timex Corp, Middlebury, Conn.

Filed Jul. 18, 1997, Ser. No. 73,854

Term of patent 14 years

LOC (6) Cl. 10 - *02*

U.S. Cl. D10—30



397,043

THERMOCOUPLE ASSEMBLY

David H. Kasman, 19 Ridge Rd., Holliston, Mass. 01746

Filed May 7, 1997, Ser. No. 70,409

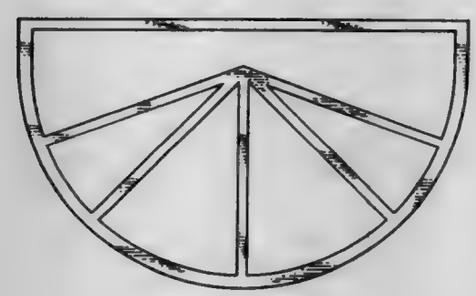
Term of patent 14 years

LOC (6) Cl. 10 - *04*

U.S. Cl. D10—52



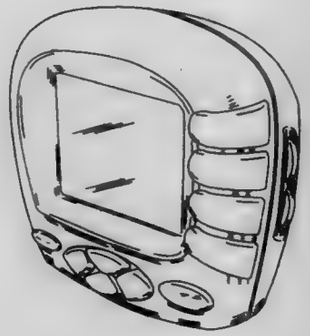
397,044
TEMPLATE FOR ENSURING ACCURATE PATIENT POSITIONING FOR UPRIGHT X-RAY EXAMINATIONS
Aaron T. Lee, 25 Castle Dr., Stillwater, N.Y. 12170
Filed Oct. 15, 1997, Ser. No. 78,012
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—64



397,045
MULTI-USE ELECTRONIC NAVIGATIONAL AID AND SCHEDULER
Gertrudys Almonte, 36 Attorney St. Apt. 2C, New York, N.Y. 10002
Filed Mar. 28, 1997, Ser. No. 69,320
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—65



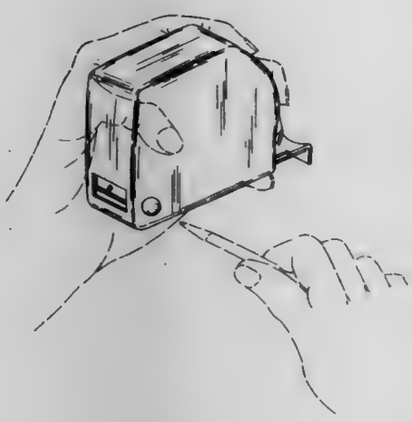
397,046
HOUSING FOR A VEHICLE NAVIGATION ASSISTANCE DEVICE
Hidekazu Oshizawa, Cupertino, Calif., assignor to Zexel Corporation, Tokyo, Japan
Filed Oct. 17, 1997, Ser. No. 78,084
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—65



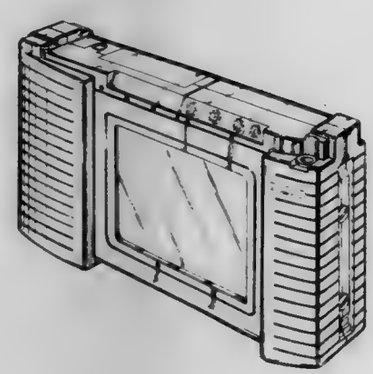
397,047
GOLF COURSE RANGE FINDER
Michael D. Plitman, 7601 Olympia North, Minneapolis, Minn. 55427
Filed Apr. 1, 1997, Ser. No. 71,823
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—70



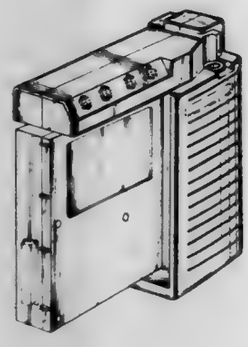
397,048
TAPE MEASURE WITH PENCIL SHARPENER
Jimmy L. Herndon, 206 Creamer Rd., Anderson, S.C. 29625
Filed Sep. 15, 1997, Ser. No. 76,658
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—72



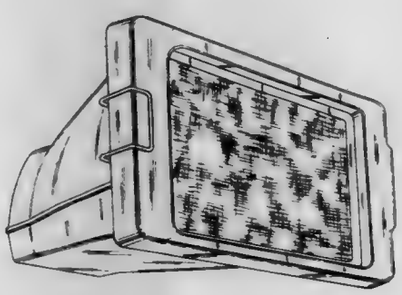
397,049
MODULAR TEST INSTRUMENT
Ali M. Mohammadian; James T. Clifford, both of Rockville, and Michael D. Hall, Poolesville, all of Md., assignors to Telecommunications Techniques Corporation, Gaithersburg, Md.
Filed Jun. 13, 1997, Ser. No. 72,040
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—78



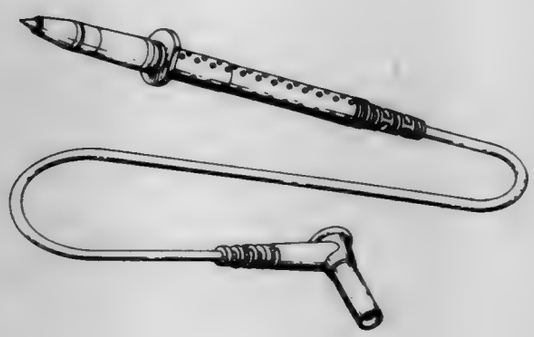
397,050
APPLICATION MODULE FOR MODULAR TEST INSTRUMENT
Ali M. Mohammadian; James T. Clifford, both of Rockville, and Michael D. Hall, Poolesville, all of Md., assignors to Telecommunications Techniques Corporation, Gaithersburg, Md.
Filed Jun. 13, 1997, Ser. No. 72,041
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—78



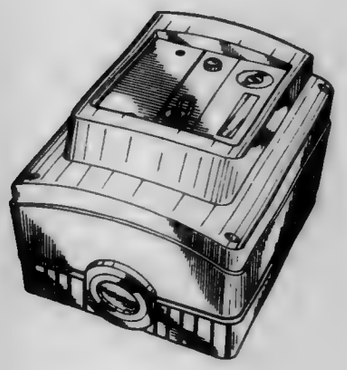
397,051
SCENT EVIDENCE PAD HOLDER
William D. Tolhurst, Lockport, N.Y., and Lawrence R. Harris, Newport Beach, Calif., assignors to Tolhurst Big "T" Enterprises, Newport Beach, Calif.
Filed Feb. 10, 1997, Ser. No. 66,288
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—80



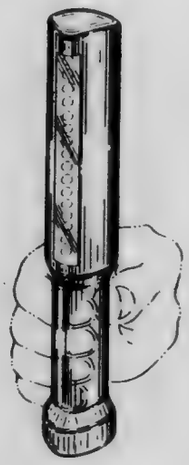
397,052
TEST LEAD
Daniel Arnoux; Axel Arnoux, and Claude Genter, all of Paris, France, assignors to Societe Chauvin Arnoux, Paris, France
Filed Apr. 8, 1997, Ser. No. 68,886
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—80



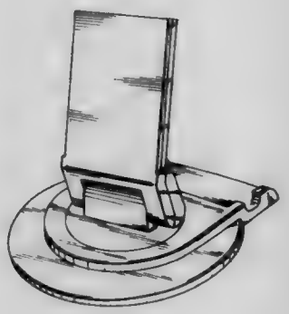
397,053
UTILITY METER
Tim Lloyd, Wokingham, United Kingdom, assignor to Schlumberger Industries, S.A., Montrouge, France
Filed Apr. 8, 1997, Ser. No. 70,018
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—99



397,054
MESSAGE LIGHT
Charles W. Brantley, 1438 N. Pine Hills Rd., Orlando, Fla. 32808, and Ken Ho, 43-47 Shan Mei Street, Fo Tan, N.T., Hong Kong
Filed Nov. 22, 1996, Ser. No. 63,031
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—109



397,055
LIQUID CRYSTAL DISPLAY BASE FOR CLOCKS OR CALENDARS
Yu-Hsin Cho, 3F, No.501, Chungkang Rd., Hsinchuang, Taipei Hsien, Taiwan
Filed Jun. 25, 1997, Ser. No. 72,929
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—122



397,056
CHAIN BRACELET STOCK
Alain-Dominique Perrin, Rueil Malmaison, and Jacques Diltoer, Villeneuve-la-Garenne, both of France, assignors to Cartier International B.V., Amsterdam, Netherlands
Filed Sep. 3, 1997, Ser. No. 75,608
Claims priority, application France, Mar. 4, 1997, 97 1311
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—25



397,057
RING
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Filed Nov. 25, 1996, Ser. No. 62,793
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—35



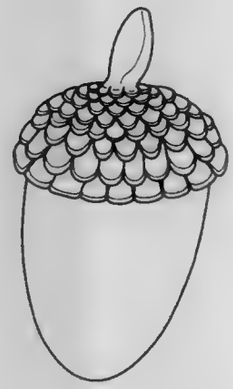
397,058
RING
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Filed Nov. 25, 1996, Ser. No. 62,797
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—35



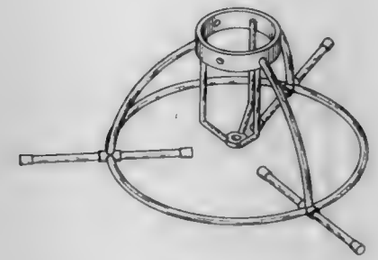
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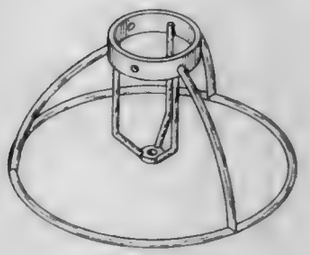
Patent Not Issued For This Number

397,060
ACORN ORNAMENT
John A. Mayer, P.O. Box 81, New Alexandria, Pa. 15670
Filed Mar. 3, 1997, Ser. No. 67,442
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—117

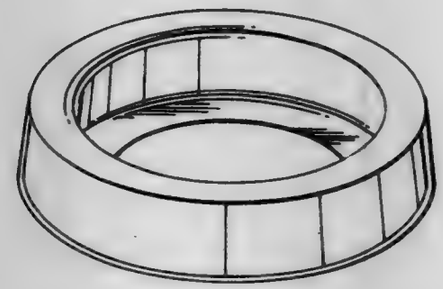


397,061
TREE STAND
Daniel L. Wright, Sausalito, Calif., assignor to Richmond Engineering, Sausalito, Calif.
Filed Oct. 14, 1997, Ser. No. 77,814
Term of patent 14 years
LOC (6) Cl. 11 - *05*
U.S. Cl. D11—130.1

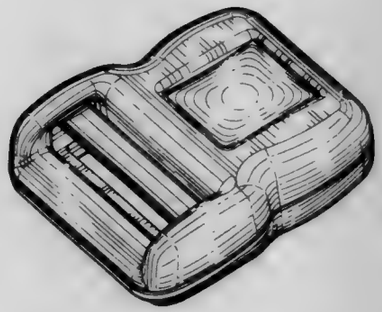




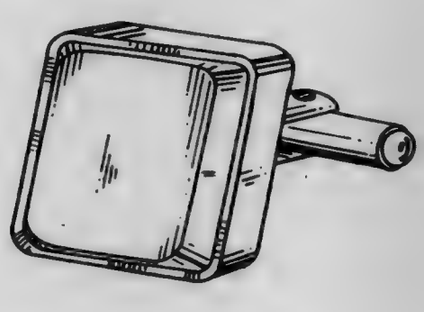
397,062
CONTAINER BASE
Geoff Hollington, London, England, assignor to Design Ideas, Ltd., Springfield, Ill.
Division of Ser. No. 48,611, Jan. 5, 1996, abandoned. This application Jun. 23, 1997, Ser. No. 72,586
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



397,063
BUCKLE WITH WEB ADJUSTER
Thomas P. Woellert, Indianapolis, and James R. Anthony, Carmel, both of Ind., assignors to Indiana Mills and Manufacturing, Inc, Westfield, Ind.
Filed Jun. 30, 1997, Ser. No. 72,807
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—216



397,064
CUFF LINK
Barbara Bosha Nelson, P.O. Box 496, Quakertown, N.J. 08868
Filed Sep. 27, 1995, Ser. No. 44,628
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—222

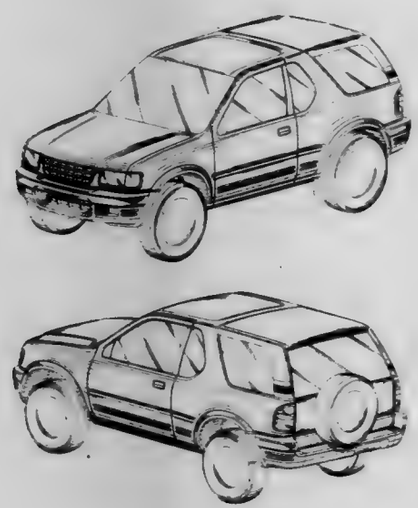


397,065

MOTOR VEHICLE

Takahiro Uematsu; Toru Takagi, and Akihiro Sugita, all of Kanagawa, Japan, assignors to Isuzu Motors Limited, Kanagawa, Japan

Filed Aug. 28, 1997, Ser. No. 75,320
Claims priority, application Japan, Mar. 5, 1997, 9-6269
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—91

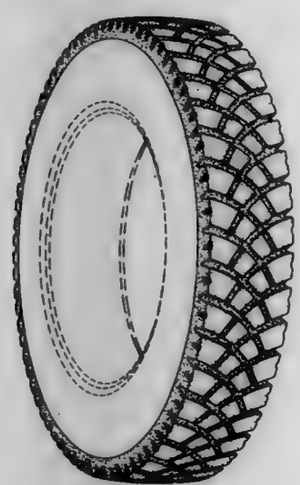


397,066

TIRE TREAD

Paul Phillip Grosskopf, Greenville, S.C., and Jean-Jacques Motta, Le Cendre, France, assignors to Michelin Recherche et Technique S.A., Granges-Paccot, Switzerland

Filed Sep. 13, 1996, Ser. No. 59,597
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—151

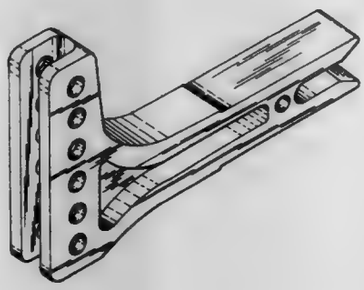


397,067

NOTCHED END HITCH BAR

Richard McCoy, Granger; Chad A. McCoige, Mishawaka, both of Ind.; Marvin L. Hanson, Vandalia, and Jon L. Krager, Cassopolis, both of Mich., assignors to Reese Products, Inc., Elkhart, Ind.

Filed Nov. 27, 1996, Ser. No. 62,891
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—162

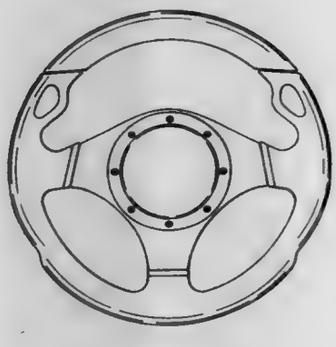


397,068

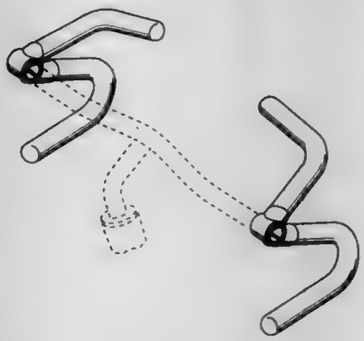
STEERING WHEEL WITH AIR BAG FOR MOTORVEHICLES

Marco Cattaneo, Pavia, Italy, assignor to Breed Automotive Technology, Inc., Lakeland, Fla.

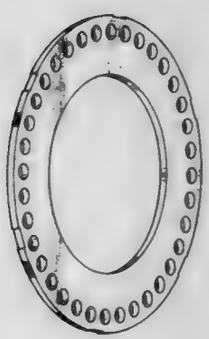
Filed Apr. 15, 1997, Ser. No. 70,880
Claims priority, application Italy, Oct. 15, 1996, MI9600591
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—176



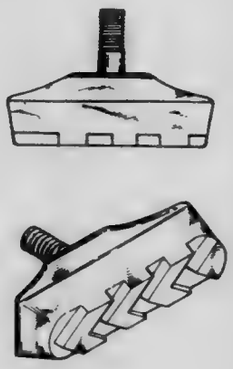
397,069
SET OF RACING DROP BAR ENDS FOR BICYCLES
Joel H. Newkirk, 345 25th St., Santa Monica, Calif. 90402
Filed Feb. 20, 1996, Ser. No. 53,349
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—178



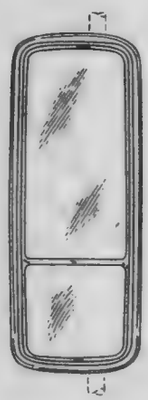
397,070
CLUTCH PLATE
Herbert Lester Adams, III, Waterford, Mich., assignor to SLP Engineering, Inc., Troy, Mich.
Filed Apr. 24, 1997, Ser. No. 69,908
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—180



397,071
BICYCLE BRAKE SHOE
Chin-Yung Hsueh, 430 Ping Ho Road Sec. 1, Tien Wei Hsiang, Changhua, Taiwan
Filed Jun. 10, 1997, Ser. No. 71,963
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—180



397,072
VEHICLE MIRROR
Ferdinand F. Heilhake, Beaverton; Mark S. Hurayt, Aloha, and Joachim Paschke, Portland, all of Oreg., assignors to Freightliner Corporation, Portland, Oreg.
Continuation of Ser. No. 53,272, Apr. 16, 1996, abandoned.
This application Oct. 18, 1996, Ser. No. 61,277
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—187



397,073

VISOR MIRROR WITH NOTEPAD AND PEN

Tong Wing Kui, c/o Chi Kuan Manufactory Limited, Flat A, 9/F, Chi Wan Industrial Building, 1-7 Kin Hon Street, Kwai Chung, Kowloon, Hong Kong

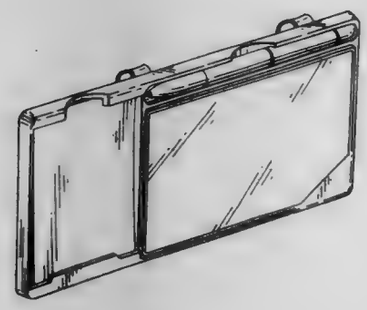
Filed Dec. 13, 1996, Ser. No. 63,733

Claims priority, application United Kingdom, Sep. 3, 1996, 2058984

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—191



397,074

TRIANGULAR EMBELLISHED LICENSE PLATE FRAME

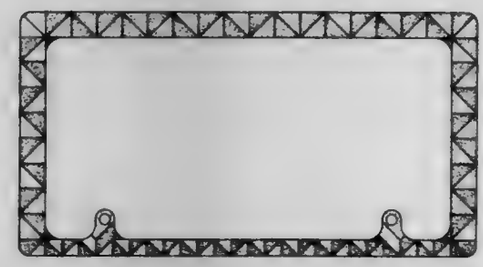
Calvin S. Wang, 14317 E. Don Julian Rd., Industry, Calif. 91746

Filed Jun. 13, 1997, Ser. No. 72,042

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—193



397,075

LICENSE PLATE FRAME

Paul E. Spencer, 6733 Northface La., Colorado Springs, Colo. 80919

Filed Nov. 17, 1997, Ser. No. 79,431

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—193



397,076

TANK CAP FOR MOTOR VEHICLES

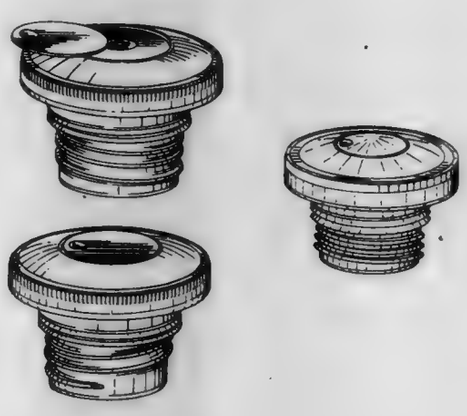
Ralph Seibert, Adalbert-Stifter-Strasse 1, D-35428 Langgöns, and Norbert Wolff, Junkernstrasse 2, D-35460 Staufenberg, both of Germany

Continuation-in-part of Ser. No. 43,907, Aug. 14, 1995, abandoned. This application Jan. 2, 1997, Ser. No. 64,462

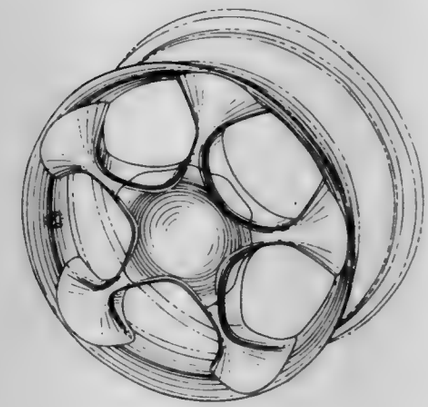
Term of patent 14 years

LOC (6) Cl. 12 - *16*

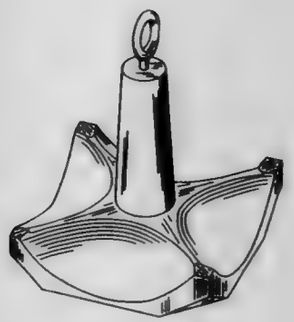
U.S. Cl. D12—197



397,077
VEHICLE-WHEEL FRONT FACE
Murray S. Cullen, Irvine, Calif., assignor to Mobile Hi-Tech Wheels, Torrance, Calif.
Filed Dec. 2, 1997, Ser. No. 80,176
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



397,078
ANCHOR
Jimmie Bartkus, 3672 Tallman, SE., Grand Rapids, Mich. 49508
Filed Mar. 11, 1997, Ser. No. 67,789
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—215



397,079
FIXING RAIL
Raymond Maxwell Woodgate, Victoria, Australia, assignor to Letteln Pty Ltd, Victoria, Australia
Filed Oct. 4, 1996, Ser. No. 60,735
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—223



397,080
HULL OF THE BOAT
Ocke Mannerfelt, Djursholm, Sweden, assignor to Aktiebolaget Volvo Penta, Gotenburg, Sweden
Filed May 21, 1997, Ser. No. 71,101
Claims priority, application Sweden, Nov. 22, 1996, 96-2487
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—314



397,081

BOAT CAP

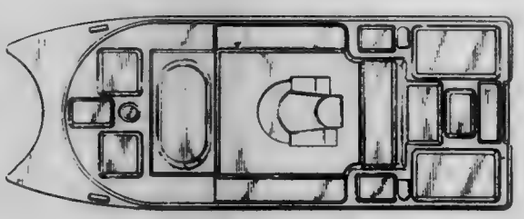
Joel W. Arvilla, 6203 James La., Naples, Fla. 33942

Filed Oct. 30, 1997, Ser. No. 78,627

Term of patent 14 years

LOC (6) Cl. 12 - *06*

U.S. Cl. D12—318



397,082

VEHICLE MOUNTED KENNEL

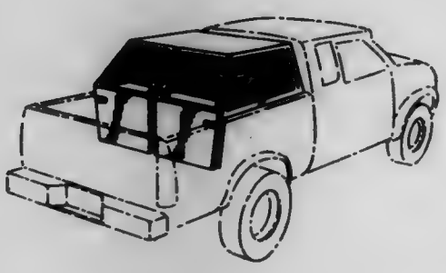
Brian S. Kunkel, 3660 Lancaster La. North, Apt. 25, Plymouth, Minn. 55441

Filed Apr. 5, 1996, Ser. No. 52,782

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—406



397,083

CONSOLE FOR VAN VEHICLES

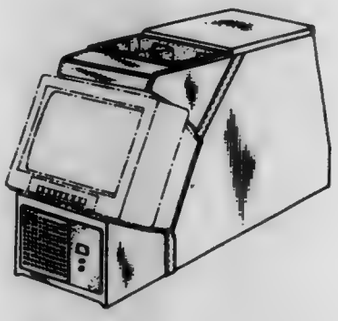
Daniel G. Smith, Grand Prairie, Tex., assignor to Texas Saddlebags, Inc., Arlington, Tex.

Filed Aug. 21, 1997, Ser. No. 75,470

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—419



397,084

MULTI-UNIT BATTERY CHARGER FOR A PORTABLE COMMUNICATION DEVICE

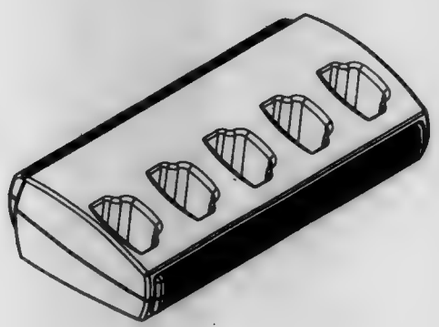
Craig F Siddoway, Davie, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 6, 1997, Ser. No. 70,342

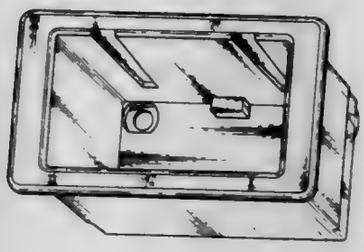
Term of patent 14 years

LOC (6) Cl. 13 - *02*

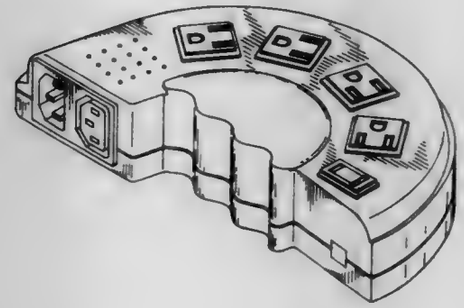
U.S. Cl. D13—107



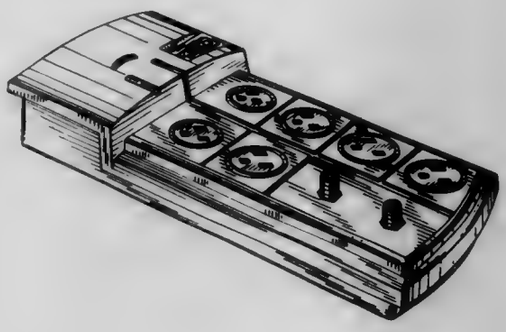
397,085
BATTERY CHARGER POCKET
Daniel J. Blase, Everett, Wash., assignor to Intermec Technologies Corporation, Everett, Wash.
Filed Apr. 28, 1997, Ser. No. 70,380
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—118



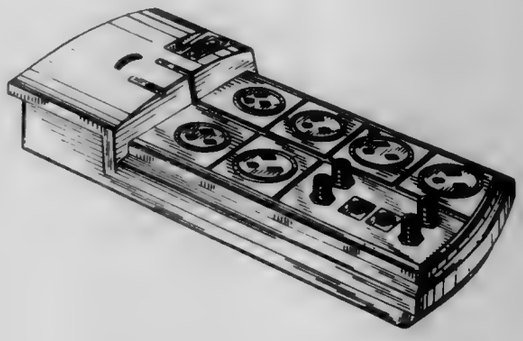
397,086
ELECTRICAL CONNECTOR
Kenny Lin, 7F, No. 11,Lane 93,Sec. 2,Tai-Lin Rd., Tai-Shan Hsiang,Taipei Hsien, Taiwan
Filed Apr. 11, 1997, Ser. No. 69,116
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—137.2



397,087
SURGE PROTECTOR
Leny Heung, and Samuel Cheung, both of Hong Kong, Hong Kong, assignors to Recoton Corporation, Lake Mary, Fla.
Filed Apr. 16, 1997, Ser. No. 69,734
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139.6



397,088
SURGE PROTECTOR
Leny Heung, and Samuel Cheung, both of Hong Kong, Hong Kong, assignors to Recoton Corporation, Lake Mary, Fla.
Filed Apr. 16, 1997, Ser. No. 69,736
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139.6



397,089

FUSED SAFETY POWER STRIP FOR CHRISTMAS TREE LIGHTS

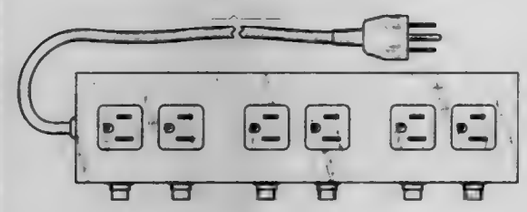
Richard Joseph Gargano, 445 S. Aspan St., Azusa, Calif. 91702

Filed Apr. 4, 1997, Ser. No. 69,690

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—139.8



397,090

COUPLING FLANGE FOR CONDUITS

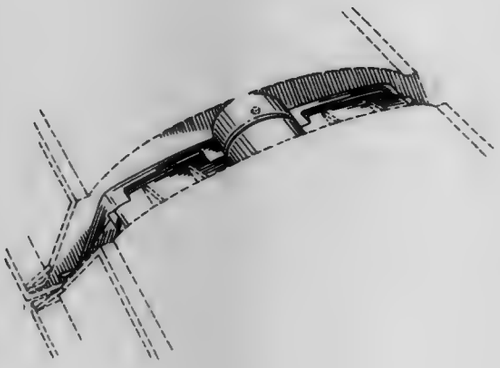
Terrance H. Gray, 28 Webber Ave., Bath, Me. 04530

Continuation-in-part of Ser. No. 320,496, Oct. 7, 1994, Pat. No. 5,498,104. This application Mar. 11, 1996, Ser. No. 51,471

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—155



397,091

BATTERY SWITCH

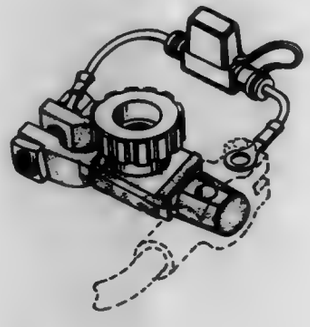
Steven E. Wirth, Bloomington, Minn., assignor to WirthCo Engineering, Inc., Bloomington, Minn.

Filed Aug. 7, 1997, Ser. No. 74,849

Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—158



397,092

INTEGRATED CIRCUIT PACKAGE

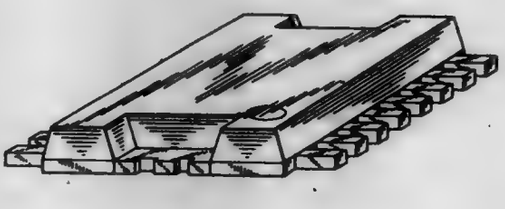
Yoshiaki Sano; Takashi Yoshida; Takahisa Kawai, and Masahisa Suzuki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 3, 1997, Ser. No. 64,520

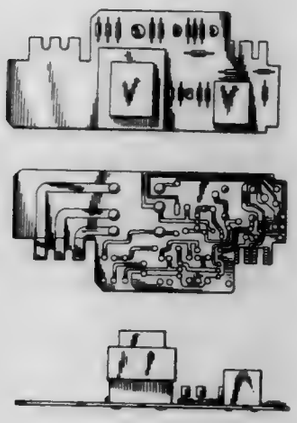
Term of patent 14 years

LOC (6) Cl. 13 - *03*

U.S. Cl. D13—182



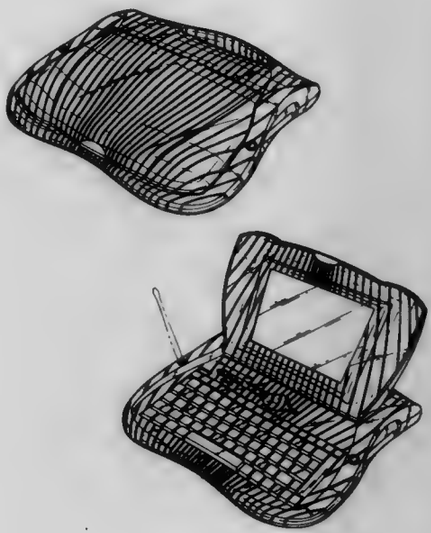
397,093
PRINTED CIRCUIT BOARD WITH MOUNTED COMPONENTS
Il Kim, 3400 Avenue of the Arts, A-115, Costa Mesa, Calif. 92626
Filed Jul. 30, 1997, Ser. No. 74,329
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—182



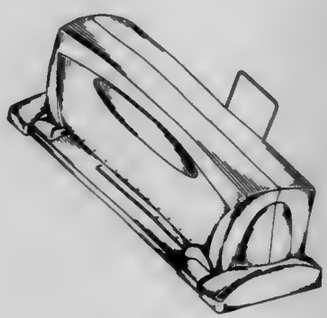
397,094
COMPUTER
Yashio Kishi; Toshio Horiki, and Takaharu Kabetani, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Aug. 27, 1997, Ser. No. 75,981
Claims priority, application Japan, Mar. 12, 1997, 9-7299
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



397,095
PORTABLE TERMINAL WITH RIB STRUCTURE
Thomas Meyerhoffer, 17 Liberty St., San Francisco, Calif. 94110
Filed Dec. 9, 1996, Ser. No. 63,458
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—106



397,096
PAPER DELIVERING SCANNER
Tony Chen, Taipei, and Thomas Chang, Hsin-Chu, both of Taiwan, assignors to Umax Data Systems Inc., Hsinchu, Taiwan
Filed May 13, 1997, Ser. No. 70,650
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—107



397,097

ELECTROL MAGNETIC INTERFERENCE SHIELD

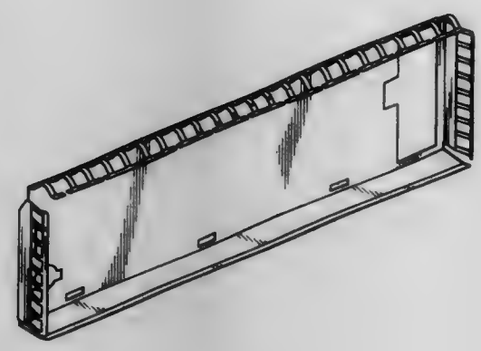
Mark P. McNally, 175 Guerrero St., San Francisco, Calif. 94103

Filed Dec. 11, 1995, Ser. No. 47,689

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



397,098

FACADE PANEL FOR A DISK DRIVE HOUSING

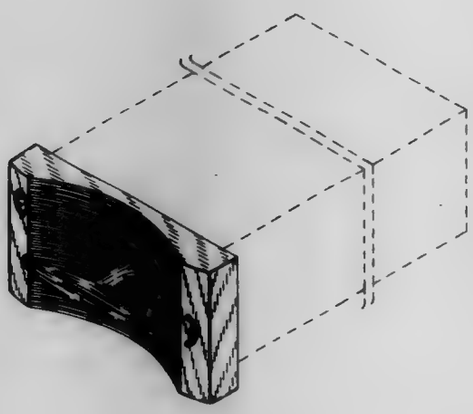
David Laituri, Palo Alto, and Gerome A. Haney, San Jose, both of Calif., assignors to StreamLogic Corporation, Menlo Park, Calif.

Filed Dec. 6, 1996, Ser. No. 65,446

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



397,099

OPTICAL DISK CARTRIDGE

Noriko Katayama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

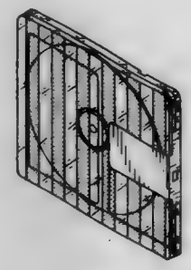
Filed Aug. 6, 1997, Ser. No. 74,592

Claims priority, application Japan, Jul. 2, 1997, 9-3423

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114



397,100

ICON FOR A DISPLAY SCREEN

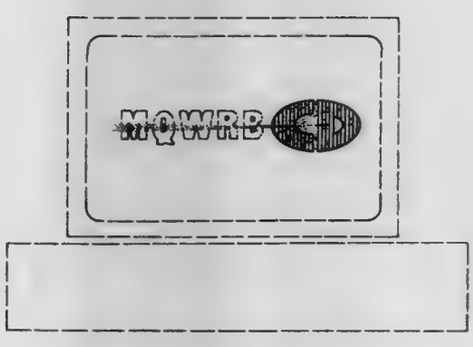
Doug Branstetter; Kent D. Stuckey, both of Columbus, and Dan Shultz, Worthington, all of Ohio, assignors to CompuServe Incorporated, Columbus, Ohio

Filed Sep. 26, 1994, Ser. No. 28,935

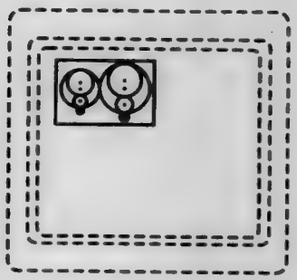
Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114.3



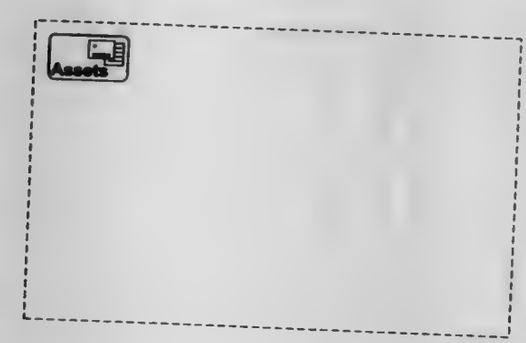
397,101
DISPLAY OBJECT FOR A DISPLAY SCREEN
Eric A. Bier, Mountain View, Calif., assignor to Xerox Corporation, Stamford, Conn.
Continuation-in-part of Ser. No. 95,598, Jul. 21, 1993, Pat. No. 5,581,670. This application Jan. 21, 1994, Ser. No. 17,824
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.3



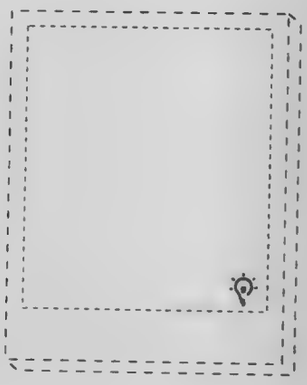
397,102

Patent Not Issued For This Number

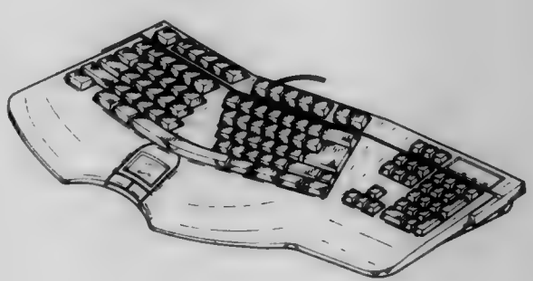
397,103
COMPUTER ICON FOR A DISPLAY SCREEN
Samir Arora, Redwood City, Calif., assignor to NetObjects, Inc., Redwood City, Calif.
Filed Jul. 29, 1996, Ser. No. 57,572
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.4



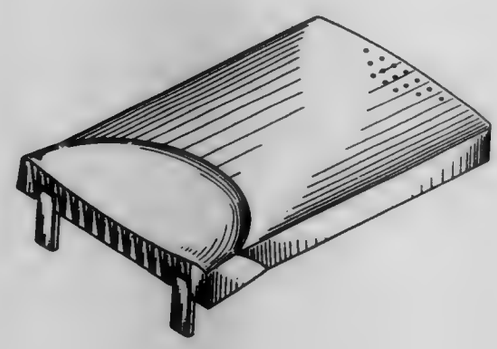
397,104
ICON FOR A DISPLAY SCREEN
Margery L. Boots, 920 Walnut St., San Carlos, Calif. 94070
Filed Oct. 22, 1992, Ser. No. 784
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.5



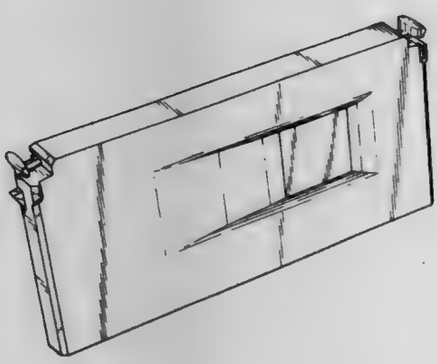
397,105
KEYBOARD
Frank Chen, Taipei, Taiwan, assignor to Silitek Corporation, Taipei, Taiwan
Filed Oct. 2, 1996, Ser. No. 60,606
The portion of the term of this patent subsequent to Dec. 2, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



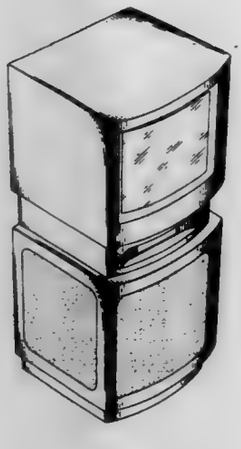
397,106
SLIDE SCANNER COVER
Thomas Chang, and Tony Chen, both of Hsinchu, Taiwan, assignors to UMAX Data Systems Inc., Hsinchu, Taiwan
Filed Nov. 8, 1996, Ser. No. 62,150
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—116



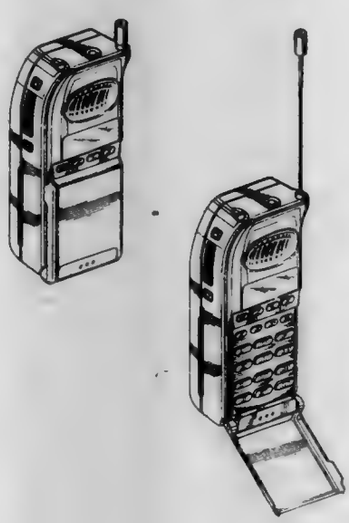
397,107
PROCESSOR CARD ASSEMBLY
Thomas S. Klinker, San Francisco, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Filed Oct. 29, 1996, Ser. No. 61,738
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D14—117



397,108
VIDEO PRESENTATION APPARATUS
Douglas Williams, P.O. Box 9508, Rancho Santa Fe, Calif. 92067
Filed Jun. 5, 1997, Ser. No. 72,311
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—133



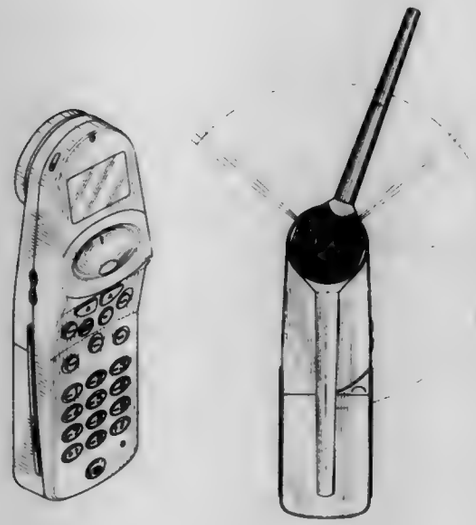
397,109
HANDHELD TWO-WAY RADIO WITH HINGED COVER
Jack K. Hockenberry, Albert Lea, and Kris J. Lambrecht, Burnsville, both of Minn., assignors to E. F. Johnson Company, Burnsville, Minn.
Continuation of Ser. No. 27,682, Aug. 26, 1994, abandoned. This application Aug. 25, 1995, Ser. No. 43,366
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—137



397,110
PORTABLE TELEPHONE

Eric C. Kulberg, San Diego, Calif.; Roy K. Fischer, Scottsdale, Ariz.; Randall K. Toltzman, Scottsdale, Ariz., and Randsom A. Brown, Scottsdale, Ariz., assignors to Qualcomm Incorporated, San Diego, Calif.

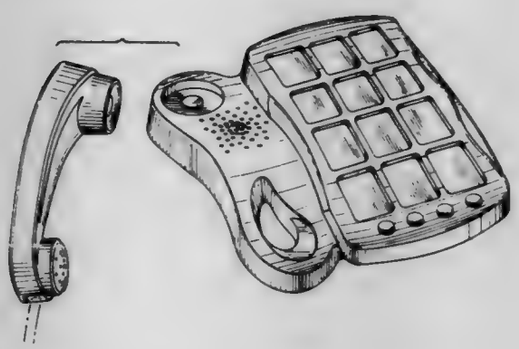
Filed Sep. 30, 1996, Ser. No. 60,498
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



397,111
TELEPHONE

Hajo Jelmer Prins, Delft, and René Johan van Geer, Rijswijk, both of Netherlands, assignors to Ditte N.V., Netherlands Antilles

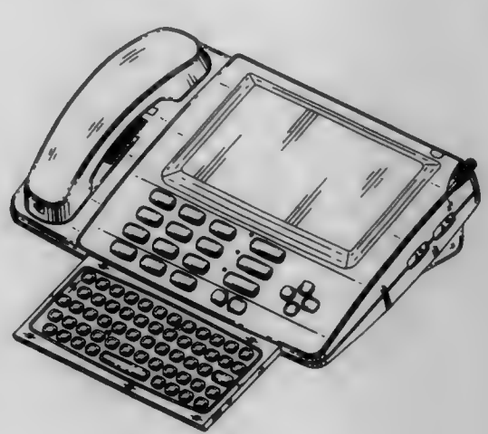
Filed Dec. 17, 1996, Ser. No. 63,857
Claims priority, application Netherlands, Jun. 19, 1996, 7201502
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—151



397,112
TELEPHONE SET

Paul G. Locklin, San Martin, Calif.; Michael P. Zambelli, Livingston, N.J.; James C. Patton, Salinas; Kathleen M. Hurley, Cupertino, both of Calif., and Steven M. Wheatley, Morristown, N.J., assignors to CIDCO Incorporated, Morgan Hill, Calif.

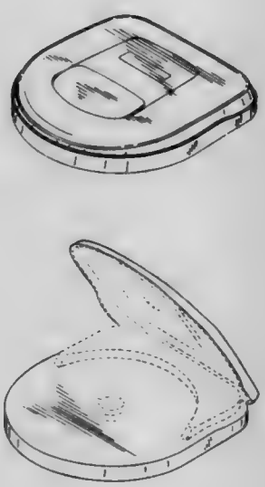
Filed Mar. 19, 1997, Ser. No. 68,548
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—151



397,113
DISC PLAYER

Satoshi Masamitsu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 28, 1997, Ser. No. 68,819
Claims priority, application Japan, Sep. 30, 1996, 8-29208
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—156



397,114

PAGER WITH BELT CLIP AND TOP DISPLAY

Tetsu Kataoka, Washington Township, N.J., and James Wicks, San Francisco, Calif., assignors to Sony Corporation of America, Park Ridge, N.J.

Filed Feb. 28, 1997, Ser. No. 67,115

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—191



397,115

SPEAKER

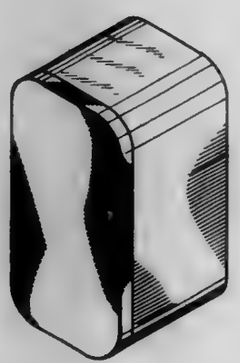
Alan Gremchuck, 2455 Vista Wood Cir., No. 22, Thousand Oaks, Calif. 91362

Filed Jan. 5, 1996, Ser. No. 48,614

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—214



397,116

SPEAKER BOX

Keizo Tatsumi, Hamamatsu, Japan, assignor to Yamaha Corporation, Shizuoka-ken, Japan

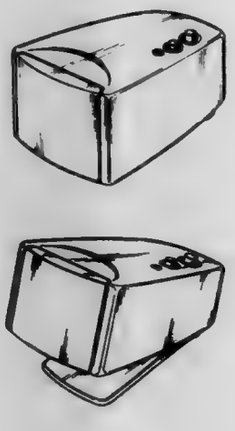
Filed Jul. 18, 1997, Ser. No. 74,307

Claims priority, application Japan, Jan. 23, 1997, 9-1510

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—214



397,117

AUDIO SPEAKER

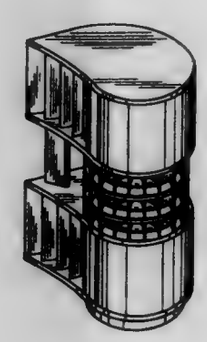
Philip K. Jones, Londonderry, N.H., assignor to Platinum Audio, Ltd., Bedford, N.H.

Filed Jan. 6, 1997, Ser. No. 64,589

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—216



397,118

COMBINED EXTERNAL DIRECTIONAL SOUND DOME REFLECTOR AND DEFLECTOR FOR MOTOR VEHICLE SPEAKER ENCLOSURE

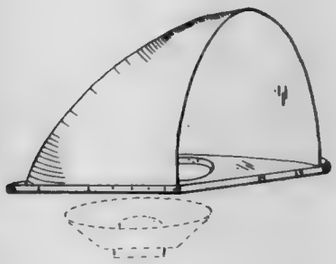
Stephen D. Keating, 2556 Liberty La. #15, Janesville, Wis. 53545

Filed Apr. 15, 1997, Ser. No. 69,431

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—221



397,119

MICROPHONE

Sarra Okon, Skokie, Ill., assignor to Shure Brothers Incorporated, Evanston, Ill.

Filed Aug. 19, 1997, Ser. No. 75,403

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—228



397,120

COMPUTER MULTIMEDIA DESKTOP MICROPHONE BASE

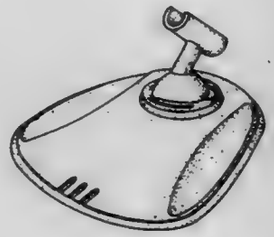
I-Chang Liou, 3F, No. 1-62, Lane 81, Yuan Dong St., Long Jin Hsian Taichung Hsien, Taiwan

Filed Apr. 25, 1997, Ser. No. 69,919

Term of patent 14 years

LOC (6) Cl. 14 - *01*

U.S. Cl. D14—229



397,121

RIDING MOWER BODY PORTION

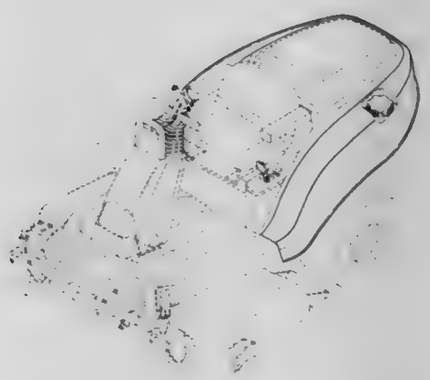
Kenneth R. Smith, Medina, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed May 21, 1997, Ser. No. 71,120

Term of patent 14 years

LOC (6) Cl. 15 - *03*

U.S. Cl. D15—15



397,122

PLANER

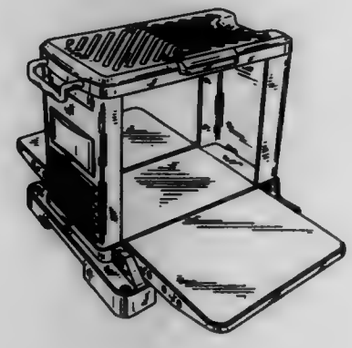
Robert P. Welsh, Hunt Valley, Md., assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 65,049, Jan. 17, 1997, which is a continuation of Ser. No. 62,168, Nov. 8, 1996, Pat. No. Des. 387,070. This application Dec. 15, 1997, Ser. No. 81,850

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—127



397,123

DENTAL HANDPIECE REPAIR PRESS

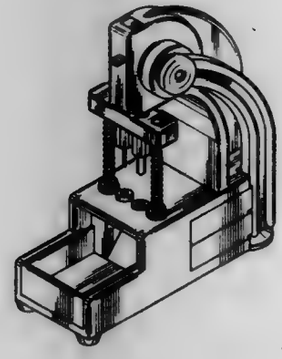
Henry R. Hardy, 923 Henderson St., Deltona, Fla. 32725

Filed May 12, 1997, Ser. No. 70,624

Term of patent 14 years

LOC (6) Cl. 15 - *09*

U.S. Cl. D15—128



397,124

TABLE FOR A SCROLL SAW

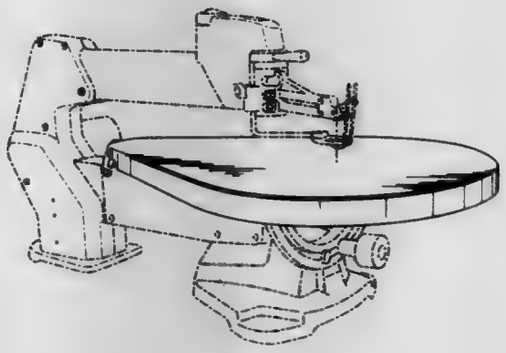
Robert P. Welsh, Hunt Valley, Md., assignor to Black & Decker Inc., Newark, Del.

Continuation of Ser. No. 62,012, Nov. 5, 1996, Continuation of Ser. No. 51,852, Mar. 1, 1996, abandoned. This application Jul. 16, 1997, Ser. No. 73,714

Term of patent 14 years

LOC (6) Cl. 05 - *09*

U.S. Cl. D15—133



397,125

TOOL HOLDING DEVICE

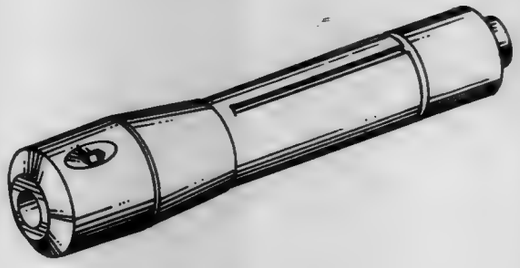
Marc H. Boisvert, 12 Willobrae Dr., Peabody, Mass. 01960

Filed Jun. 16, 1997, Ser. No. 72,412

Term of patent 14 years

LOC (6) Cl. 15 - *09*

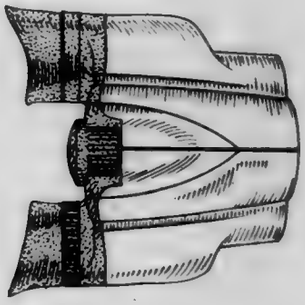
U.S. Cl. D15—140



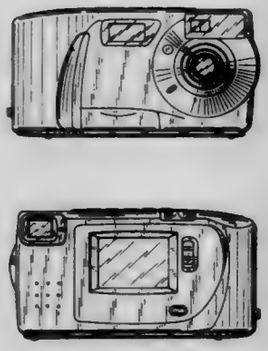
397,126
EYEWEAR LENS
James Hall, Lincoln, R.I.; Keith Fecteau, Wilbraham, Mass.; Raoul Desy, Sturbridge, Mass., and John Salce, Auburn, Mass., assignors to Cabot Safety Intermediate Corporation, Southbridge, Mass.
Filed May 2, 1996, Ser. No. 54,492
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—101



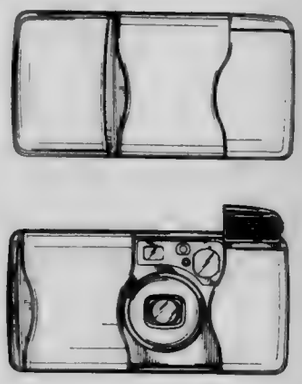
397,127
BINOCULARS
B. Jin Chang, 5521 Overbrook Dr., Ann Arbor, Mich. 48105
Filed Oct. 28, 1996, Ser. No. 61,609
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—133



397,128
ELECTRONIC STILL CAMERA EQUIPPED WITH A LIQUID CRYSTAL DISPLAY
Shinobu Sugioka, Warabi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 20, 1997, Ser. No. 79,735
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



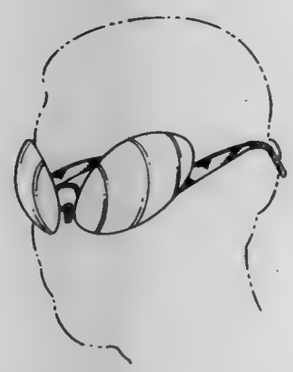
397,129
CAMERA
Taro Eto, Nagoya, and Fumitaka Io, Nara, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Jul. 8, 1996, Ser. No. 56,730
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—209



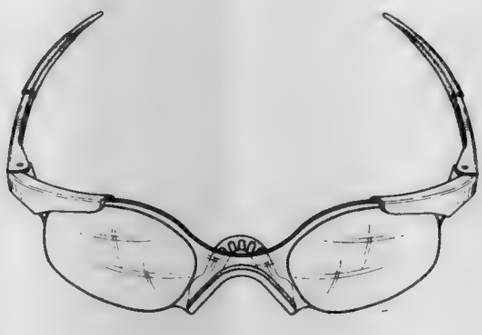
397,130
PHOTOGRAPHIC KIOSK
Gianfranco Tudico, Bourg les Valence, France, assignor to LPG Systems, France
Filed Sep. 23, 1996, Ser. No. 65,717
Claims priority, application WIPO, Mar. 22, 1996, DM/035910
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—215



397,131
SUNGLASSES
Jonathan A. Yudis, 2455 Cheremoya Ave., Los Angeles, Calif. 90068
Filed Jun. 12, 1997, Ser. No. 72,408
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—315



397,132
EYEGLASSES
Peter Yee, Irvine, Calif., assignor to Oakley, Inc., Foothill Ranch, Calif.
Division of Ser. No. 55,148, May 30, 1996, Pat. No. Des. 384,362. This application Aug. 12, 1997, Ser. No. 75,072
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—315



397,133
SUNGLASS
Jerome Jacques Marie Mage, Carlsbad, Calif., assignor to Spy Optic, Inc., Carlsbad, Calif.
Filed Dec. 19, 1996, Ser. No. 63,968
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—321



397,134

SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop Eyewear S.p.A., Pederobba, Italy

Filed May 16, 1997, Ser. No. 70,789

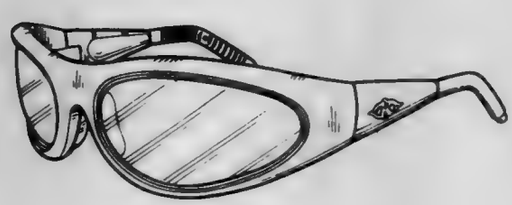
Claims priority, application Italy, Nov. 19, 1996, TV9600063

The portion of the term of this patent subsequent to Jul. 7, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



397,135

SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop Eyewear S.p.A., Pederobba, Italy

Filed May 16, 1997, Ser. No. 70,798

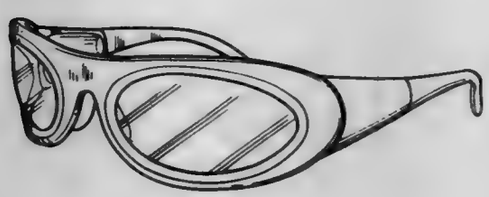
Claims priority, application Italy, Nov. 19, 1996, TV96 0 000063

The portion of the term of this patent subsequent to Feb. 10, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



397,136

SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop Eyewear S.p.A., Pederobba, Italy

Filed May 16, 1997, Ser. No. 70,958

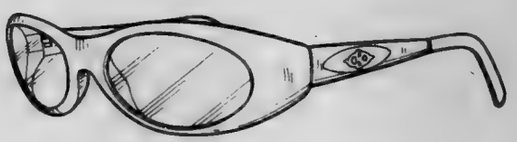
Claims priority, application Italy, Nov. 19, 1996, TV9600063

The portion of the term of this patent subsequent to Jul. 28, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



397,137

PAIR OF EYEWEAR TEMPLES

Aaron M. Markovitz; Jeffrey K. Raub, both of Rochester, N.Y., and Henri Brune, Lentilly, France, assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Division of Ser. No. 56,869, Jul. 10, 1996, abandoned. This application Dec. 2, 1996, Ser. No. 65,748

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—335



397,138

INTEGRATED POINT-OF-SALE SYSTEM

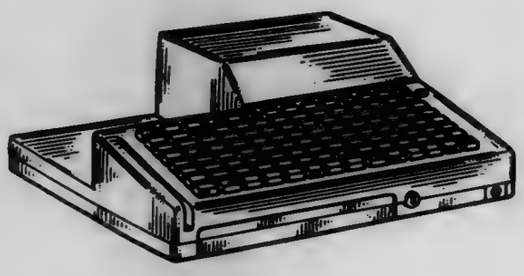
Tsung-Kan Cheng, Taipei, Taiwan, assignor to Mustek Corporation, Taipei Hsien, Taiwan

Filed Mar. 7, 1997, Ser. No. 67,673

Term of patent 14 years

LOC (6) Cl. 18 - *01*

U.S. Cl. D18—4



397,139

STAMP WITH REMOVABLE COVER

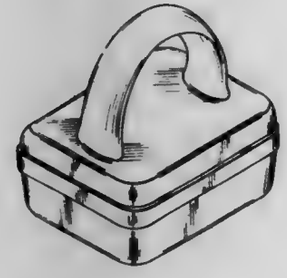
Hiroyuki Shiba, Tokyo, Japan, assignor to Data East Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1997, Ser. No. 74,270

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D18—15



397,140

IMAGE FORMING APPARATUS

Hideo Oshida, Iwatsuki, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

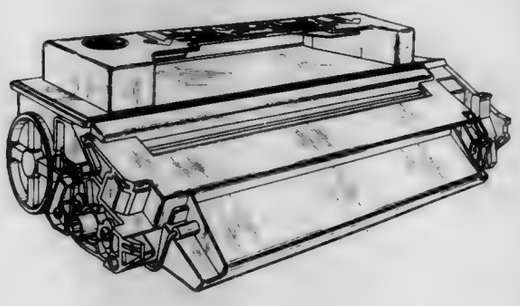
Filed Jan. 16, 1997, Ser. No. 65,012

Claims priority, application Japan, Jul. 29, 1996, 8-22461

Term of patent 14 years

LOC (6) Cl. 16 - *03*

U.S. Cl. D18—40



397,141

TONER SUPPLYING CARTRIDGE FOR AN IMAGE FORMING APPARATUS

Tsukasa Ichimaru, and Takeshi Konuma, both of Osaka, Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Mar. 3, 1997, Ser. No. 67,410

Claims priority, application Japan, Sep. 13, 1996, 8-27519

Term of patent 14 years

LOC (6) Cl. 16 - *03*

U.S. Cl. D18—43

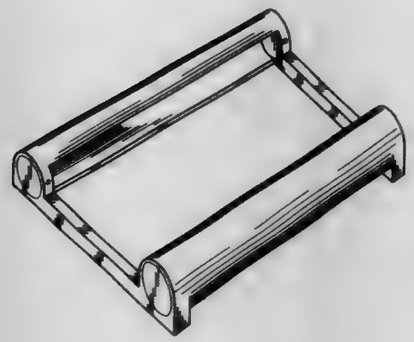


397,142

CASSETTE FOR THERMAL TRANSFER RIBBONS

Susan M. Hammill, Buffalo; James Ibarra, Williamsville; James Karlin, Fairport; Diane M. Kelly, Cambria, and William Montague, Williamsville, all of N.Y., assignors to Ilmak, Amherst, N.Y.

Filed Dec. 4, 1996, Ser. No. 63,291
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56

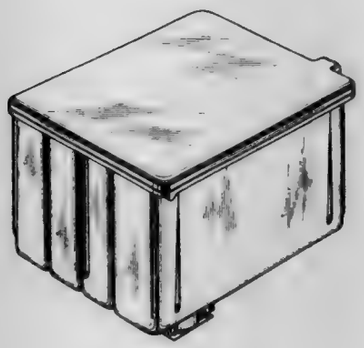


397,143

INK CARTRIDGE FOR PRINTER

Takao Kobayashi; Hideki Oikawa; Hisashi Miyazawa; Seiji Mochizuki; Minoru Usui; Takahiro Katakura; Norihiko Kurashima, and Nobuo Watanabe, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Sep. 9, 1997, Ser. No. 76,381
Claims priority, application Japan, Mar. 14, 1997, 9-7434
Term of patent 14 years
LOC (6) Cl. 18 - *02*
U.S. Cl. D18—56

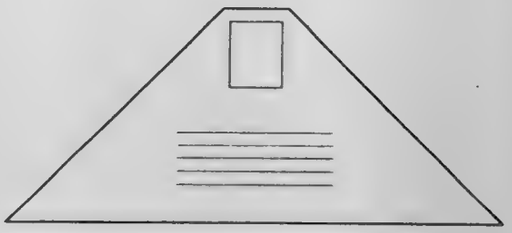


397,144

FRONT FACE OF AN ENVELOPE WITH TRAPEZOIDAL SHAPE

Keith E. Sylvester, 1006 Chinaberry Dr., Bryan, Tex. 77803

Filed Oct. 12, 1995, Ser. No. 45,188
Term of patent 14 years
LOC (6) Cl. 19 - *01*
U.S. Cl. D19—3



397,145

BANK CHECK

Sergei Lvovich Morozov, Moscow, Russian Federation, assignor to Kommerchesky Bank Sodeistvia Razvitiju Progressivnykh Teknology I Investitsy V Oblasti Elektroenergentiki, Bioteknologii, Meditsiny ("Elbim-Bank"), Russian Federation

Division of Ser. No. 38,377, May 4, 1995. This application Mar. 29, 1996, Ser. No. 52,675
Claims priority, application Russian Federation, Nov. 4, 1994, 94039853
Term of patent 14 years
LOC (6) Cl. 19 - *08*
U.S. Cl. D19—11



397,146

RING BINDER

Keung Chan, An Hsin, China, assignor to Leco Stationery Manufacturing Co., Ltd., Hong Kong, Hong Kong

Filed Sep. 18, 1996, Ser. No. 59,930

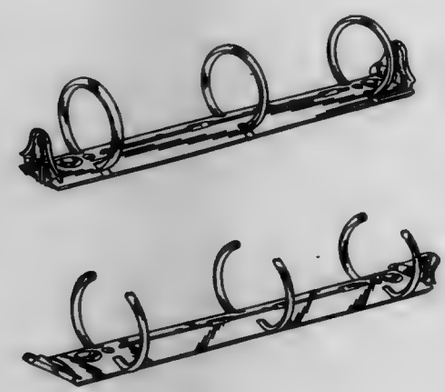
Claims priority, application United Kingdom, Jul. 23, 1996, 2057875

The portion of the term of this patent subsequent to Jan. 13, 2012, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 19 - *04*

U.S. Cl. D19—32



397,147

COMBINATION PEN AND KNIFE

Stephen A. Mackenzie, 32 Gafney Dr., Mississauga, Ontario, Canada, L5M 1E2

Filed Jan. 23, 1997, Ser. No. 65,188

Term of patent 14 years

LOC (6) Cl. 19 - *06*

U.S. Cl. D19—36



397,148

COMBINED WRITING INSTRUMENT AND POCKET HOLDER THEREFOR

S. Richard Luntz, 1801 E. 12th St., Cleveland, Ohio 44114

Filed Jun. 19, 1997, Ser. No. 72,563

Term of patent 14 years

LOC (6) Cl. 19 - *06*

U.S. Cl. D19—36



397,149

WRITING INSTRUMENT

Alain-Dominique Perrin, Rueil Malmaison, and Jacques Diltoer, Villeneuve-La-Garenne, both of France, assignors to Cartier International B.V., Amsterdam-C, Netherlands

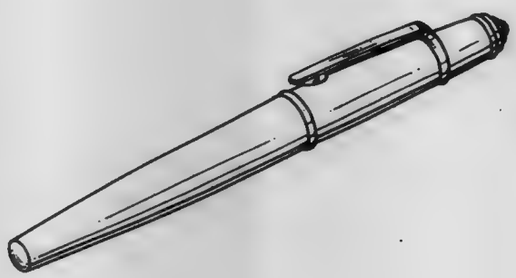
Filed Aug. 12, 1997, Ser. No. 75,224

Claims priority, application France, Feb. 12, 1997, 97 0814

Term of patent 14 years

LOC (6) Cl. 19 - *06*

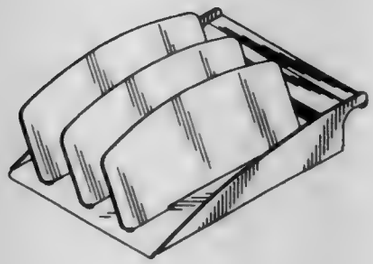
U.S. Cl. D19—51



397,150
WRITING INSTRUMENT
Hiromichi Izushima, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto-Fu, Japan
Filed Dec. 11, 1997, Ser. No. 80,519
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—51



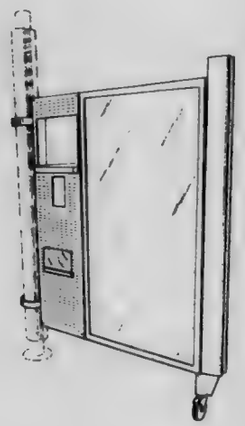
397,151
PAPER HOLDER TRAY
Craig H. Schultz, and Ogden R. Olson, both of Muscatine, Iowa, assignors to HON Technology Inc., Muscatine, Iowa
Filed Jun. 3, 1997, Ser. No. 71,587
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—90



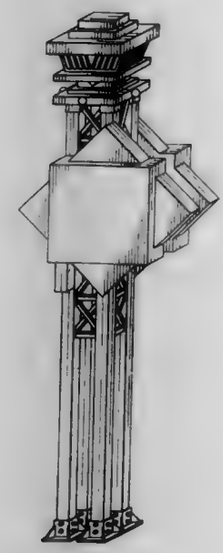
397,152
FORGET-ME-NOT SHOPPING AND ERRAND LIST WALL PLAQUE
Jean D. Weller, 1530 Grand St., Alameda, Calif. 94501
Filed Jan. 30, 1997, Ser. No. 65,608
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—18



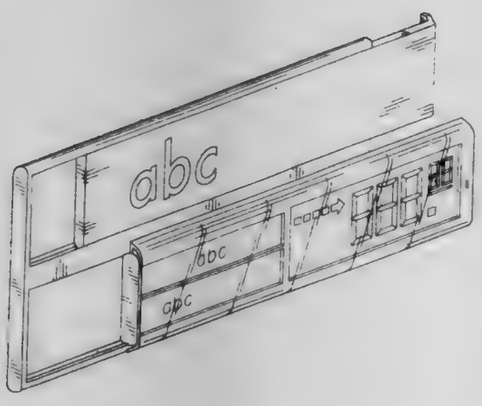
397,153
MOVABLE PANEL FOR ADVERTISING
Antonio Canton Gongora; Carlos Jesús Cruz Fernandez; José Maria Munagorri Enriquez, and Juan Carlos Rayo Ortigüela, all of Madrid, Spain, assignors to Telefonica de España, S.A., Madrid, Spain
Division of Ser. No. 62,708, Nov. 21, 1996. This application Jun. 24, 1997, Ser. No. 72,744
Claims priority, application Spain, May 22, 1996, 137548
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—41



397,154
HIGHWAY GUIDE MARKER
Shaughnessy Hart, Orlando, Fla., assignor to Osceola County, Florida, Kissimmee, Fla.
Filed Dec. 1, 1997, Ser. No. 80,276
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—41



397,155
ELECTRONIC INFORMATION DISPLAY DEVICE
Norbert Hetzer, Lobbach, Germany, assignor to Esselte Meto International GmbH, Heppenheim, Germany
Continuation of Ser. No. 513,431, Aug. 10, 1995, abandoned, and a continuation of Ser. No. 36,606, Feb. 13, 1995. This application Dec. 22, 1995, Ser. No. 48,232
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—43



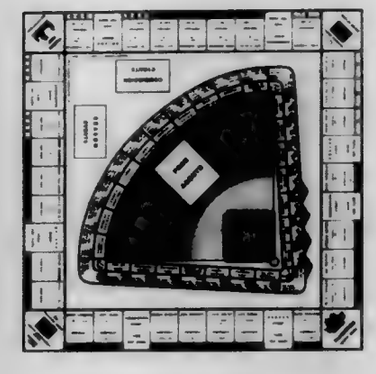
397,156
DART GAME TARGET
Paul F. Beall, Rockford, Ill., assignor to Abbacus, Inc., MacHesney Park, Ill.
Filed Aug. 4, 1995, Ser. No. 42,217
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—6



397,157
DART GAME TARGET
Paul F. Beall, Rockford, Ill., assignor to Abbacus, Inc., MacHesney Park, Ill.
Filed Aug. 4, 1995, Ser. No. 42,218
The portion of the term of this patent subsequent to Mar. 31, 2012, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—6



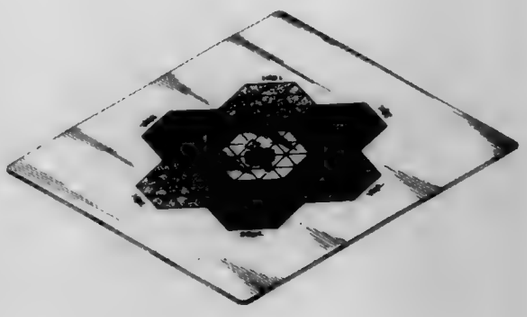
397,158
PLAYING SURFACE FOR A GAME BOARD
Mark A. Kingsley, and I. Steven Kingsley, both of 576 Northern Pkwy., Ridgewood, N.J. 07450
Filed Feb. 21, 1995, Ser. No. 35,152
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—28



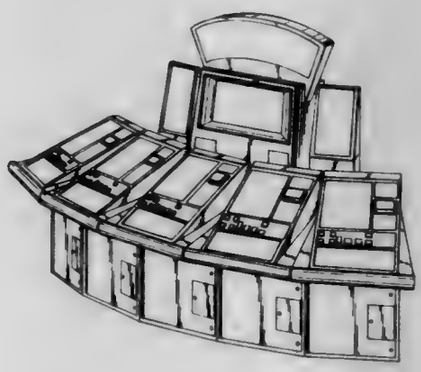
397,159
GAME BOARD
Paul Adrian Blacklock, 5639 Frank Kenny Road, Vars, Ontario, Canada, k0A 3H0
Filed Apr. 3, 1997, Ser. No. 69,904
Claims priority, application Canada, Oct. 3, 1996, 1996-2288
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—32



397,160
GAME BOARD
Masato Watanabe, 147-4, Arahata, Tokorozawa-shi, Saitama 359, Japan
Filed Dec. 27, 1996, Ser. No. 64,311
Claims priority, application Japan, Jun. 28, 1996, 8-19203
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—34



397,161
METAL BLACKJACK VIDEO APPARATUS
Cory J. Hanscom, New Hope, and Philip C. Dretzka, Minneapolis, both of Minn., assignors to Innovative Gaming Corporation of America, Reno, Nev.
Filed Jun. 5, 1996, Ser. No. 55,377
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—37



397,162

CONTROLLER FOR GAME MACHINE

Gunpei Yokoi; Hideo Nagata; Kenichi Sugino; Yuji Hori, and Norikatsu Furuta, all of Kyoto, Japan, assignors to Nintendo of America, Inc., Redmond, Wash.

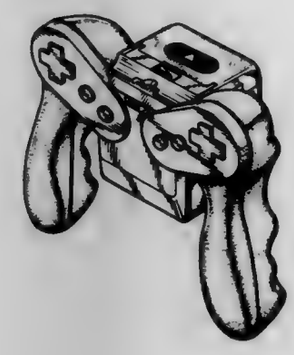
Filed May 1, 1995, Ser. No. 39,778

Claims priority, application Japan, Nov. 11, 1994, 6-34522; Nov. 11, 1994, 6-34525; Apr. 4, 1995, 7-9417

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—48



397,163

Patent Not Issued For This Number

397,164

CONTROLLER FOR COMPUTER GAME

Teiyu Goto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

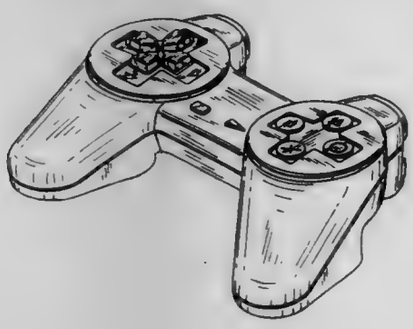
Division of Ser. No. 42,706, Jun. 16, 1995, Pat. No. Des. 382,603, which is a continuation-in-part of Ser. No. 30,017, Oct. 3, 1994, abandoned. This application May 23, 1997, Ser. No. 71,240

Claims priority, application Japan, Apr. 11, 1994, 6-9793; Dec. 16, 1994, 6-38241; Dec. 16, 1994, 6-38242; Dec. 16, 1994, 6-38243; Dec. 16, 1994, 6-38244; Dec. 16, 1994, 6-38245; Dec. 16, 1994, 6-38246; Dec. 16, 1994, 6-38247; Dec. 16, 1994, 6-38248; Dec. 16, 1994, 6-38249; Dec. 16, 1994, 6-38250

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—48



397,165

DECORATIVE HAND HELD TOY

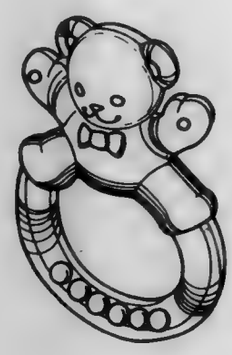
Wong Chung Lun, Kowloon Bay, Hong Kong, assignor to Fu Hong Industries, Ltd., Mongkok, Hong Kong

Division of Ser. No. 42,587, Aug. 14, 1995. This application Oct. 16, 1996, Ser. No. 61,122

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—65



397,166

BABY WALKER

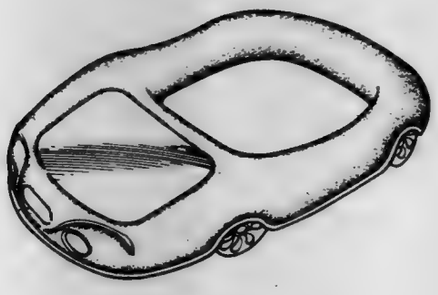
Jui Hsing Lai, No. 177, Li-Sing Road, Sung-Ming District, Kaoshiung, Taiwan

Filed May 28, 1997, Ser. No. 71,346

Term of patent 14 years

LOC (6) Cl. 21 - *01*

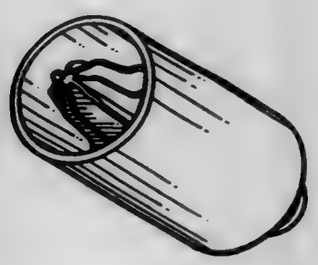
U.S. Cl. D21—78



397,167
BLUE THROATED MACAW JIGSAW PUZZLE SCULPTURE
Ofer Nissim, Pound Ridge, N.Y., and Suzanne Simpson, Greenwich, Conn., assignors to Knox Security Engineering Corporation, Stamford, Conn.
Filed May 14, 1996, Ser. No. 54,419
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



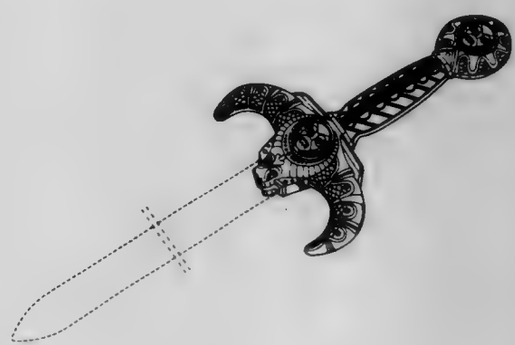
397,168
FORT CONNECTOR
Philip Laurier Poissant, 42 Manor Road West, Toronto, Ontario, Canada
Filed Jun. 21, 1996, Ser. No. 56,096
Claims priority, application Canada, Dec. 29, 1995, 1995-2933
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D21—108



397,169
RADIO REMOTE CONTROL UNIT
Nobumitsu Kanetsuna; Kazunori Fujita, and Masanao Endo, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan
Filed Nov. 12, 1996, Ser. No. 62,245
Claims priority, application Japan, May 9, 1996, 8-013168
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—141.1



397,170
TOY SWORD
Chung-Hing Choi, Kowloon, Hong Kong, assignor to Hing Fat Toys Manufacturer Limited, Hong Kong
Filed Jan. 2, 1998, Ser. No. 81,450
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—145



397,171

TOY SWORD

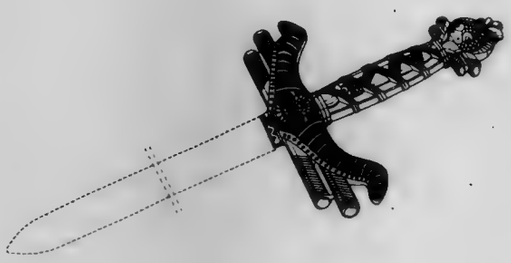
Chung-Hing Choi, Kowloon, Hong Kong, assignor to Hing Fat Toys Manufacturer Limited, Hong Kong, Hong Kong

Filed Jan. 2, 1998, Ser. No. 81,524

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—145



397,172

FASHION DOLL WITH SWIVEL NECK AND TWO FACES

Christine M. Turning, and Sheryl L. Oliver, both of 48 Virginia Ave. Unit 2, Danbury, Conn. 06810

Filed Apr. 17, 1997, Ser. No. 69,801

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—149



397,173

FACIAL EXERCISER

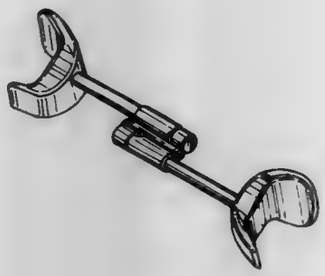
Drew Edell, Little Falls, N.J., assignor to CCA Industries, Inc., East Rutherford, N.J.

Filed May 30, 1997, Ser. No. 71,478

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—191



397,174

WEIGHT LIFTING BAR

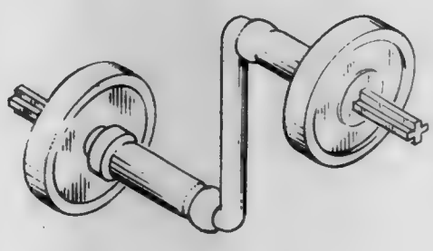
Martin L. Sandoval, 22213 Ibex Ave., Hawaiian Gardens, Calif. 90716

Filed Aug. 25, 1997, Ser. No. 76,133

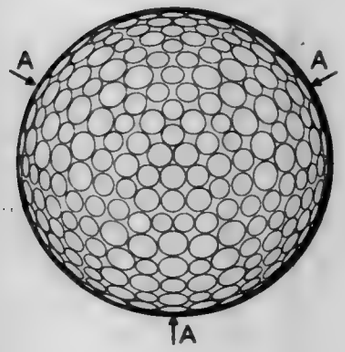
Term of patent 14 years

LOC (6) Cl. 21 - *02*

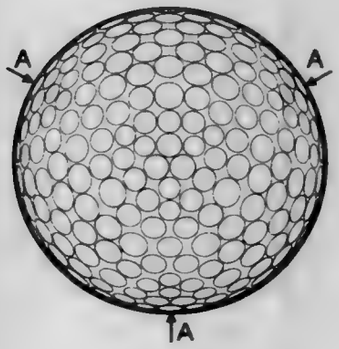
U.S. Cl. D21—197



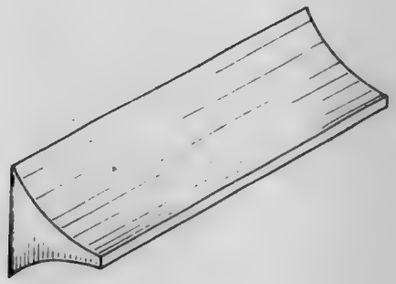
397,175
GOLF BALL
Richard R. Sanchez, Glendale, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Dec. 12, 1996, Ser. No. 63,672
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—205



397,176
GOLF BALL
Richard R. Sanchez, Glendale, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Dec. 12, 1996, Ser. No. 63,673
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—205



397,177
GOLF CLUB HEAD
Joseph L. Spano, 120 Fairview Dr., Madisonvile, La. 70447
Filed Jun. 11, 1997, Ser. No. 72,180
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—217



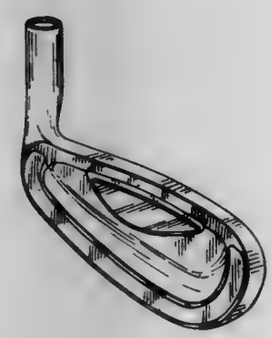
397,178
GOLF PUTTER HEAD
Fred Havens, Carlsbad, Calif., and Toru Ito, Paris, France, assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Filed Jan. 25, 1996, Ser. No. 49,445
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



397,179
GOLF PUTTER
James W. Johnson, Arvada, Colo., assignor to Inventive Golf Technology, LLC, Golden, Colo.
Filed Mar. 11, 1997, Ser. No. 67,756
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



397,180
GOLF CLUB HEAD
Kunihiko Takahashi, Musashino; Takao Horie, and Yutaka Oku, both of Higashikurume, all of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Sep. 11, 1996, Ser. No. 59,442
Claims priority, application Japan, Mar. 14, 1996, 8-7063
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—220



397,181
GOLF CLUB COVER CONFIGURED AS A SPORTS ITEM
Owen Craig Pollard, 2370 Brookhaven Pass, Vista, Calif. 92083
Division of Ser. No. 42,173, Aug. 2, 1995, abandoned. This application Aug. 28, 1997, Ser. No. 75,908
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



397,182
GOLF CLUB COVER CONFIGURED AS A SPORTS ITEM
Owen Craig Pollard, 2370 Brookhaven Pass, Vista, Calif. 92083
Division of Ser. No. 42,173, Aug. 2, 1995, abandoned. This application Aug. 28, 1997, Ser. No. 75,909
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



397,183
GOLF CLUB COVER CONFIGURED AS A SPORTS ITEM
Owen Craig Pollard, 2370 Brookhaven Pass, Vista, Calif. 92083
Division of Ser. No. 42,173, Aug. 2, 1995, abandoned. This application Aug. 28, 1997, Ser. No. 75,911
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



397,184
GOLF CLUB CONFIGURED AS A SPORTS ITEM
Owen Craig Pollard, 2370 Brookhaven Pass, Vista, Calif. 92083
Division of Ser. No. 42,173, Aug. 2, 1995, abandoned. This application Aug. 28, 1997, Ser. No. 75,912
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



397,185
GOLF CLUB COVER CONFIGURED AS A SPORTS ITEM
Owen Craig Pollard, 2370 Brookhaven Pass, Vista, Calif. 92083
Division of Ser. No. 42,173, Aug. 2, 1995, abandoned. This application Aug. 28, 1997, Ser. No. 75,913
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



397,186
GOLF CLUB COVER CONFIGURED AS A SPORTS ITEM
Owen Craig Pollard, 2370 Brookhaven Pass, Vista, Calif. 93083
Division of Ser. No. 42,173, Aug. 2, 1995, abandoned. This application Aug. 28, 1997, Ser. No. 75,914
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—221



397,187

HAND SWIMMING PADDLE

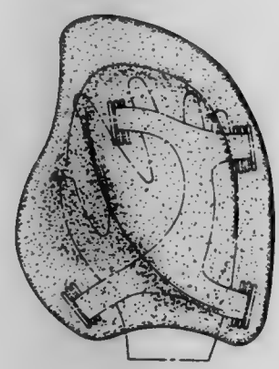
Paul A. Reeder, 1107 Firth Ave., Worthington, Ohio 43085

Filed Apr. 11, 1997, Ser. No. 69,174

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—239



397,188

CHILD'S PLAY STRUCTURE

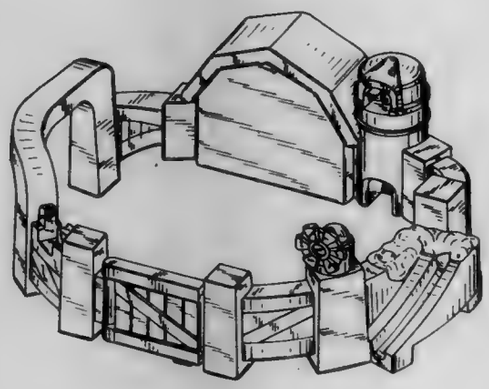
Jay M. Bro, Plano; Tony R. Maness, Lewisville, and Richard P. Machos, Coppell, all of Tex., assignors to Today's Kids, Inc., Booneville, Ark.

Filed Feb. 6, 1997, Ser. No. 66,065

Term of patent 14 years

LOC (6) Cl. 21 - *03*

U.S. Cl. D21—243



397,189

LUGGAGE CARRIER FOR BICYCLE

Johan Maria Alfons Pierret, and Karel Lydia Willem Pierret, both of Breughelstraat 48, B-2018 Antwerpen, Belgium

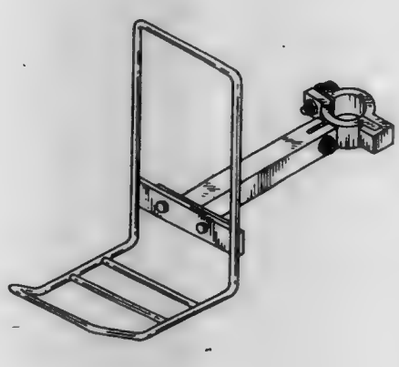
Filed May 22, 1997, Ser. No. 71,152

Claims priority, application Belgium, Nov. 27, 1996, 06005-01

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—408



397,190

SWORD HANDLE

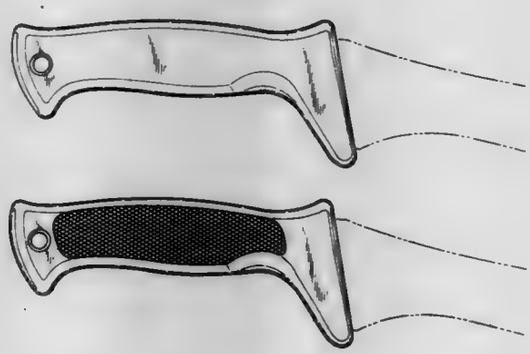
Shiraz Balolia, 1821 Valencia St., Bellingham, Wash. 98226

Filed Jun. 5, 1997, Ser. No. 70,255

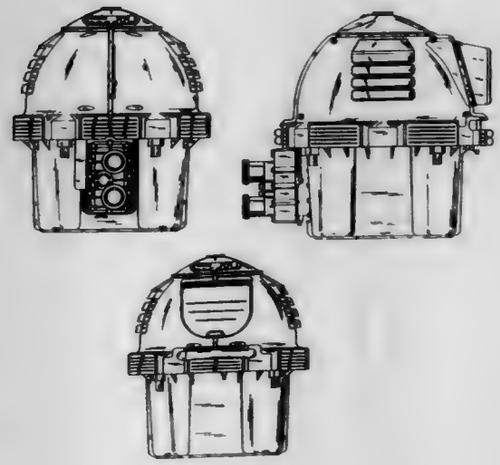
Term of patent 14 years

LOC (6) Cl. 22 - *02*

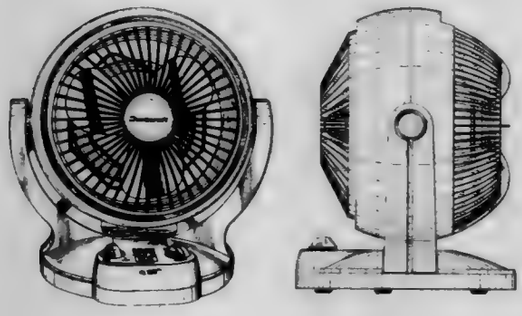
U.S. Cl. D22—118



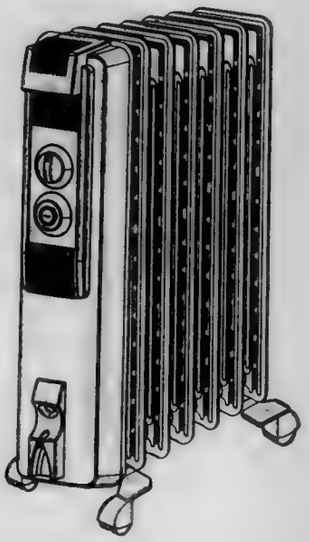
397,191
POOL AND SPA WATER HEATER
William M. Kralovec, Delavan, Wis., and Paul T. King, Chicago, Ill., assignors to Sta-Rite Industries, Inc., Delavan, Wis.
Filed Nov. 13, 1996, Ser. No. 62,318
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—316



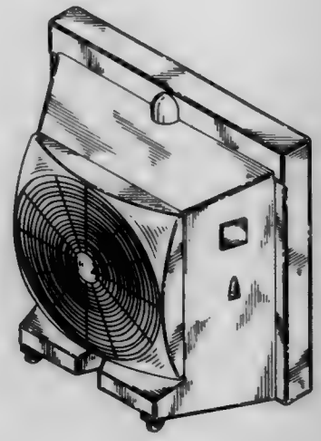
397,192
PORTABLE ELECTRIC FAN-HEATER
Bernard Chiu, Wellesley, Mass., and Jui-Shang Wang, Taipei, Taiwan, assignors to Honeywell Consumer Products, Inc., Southborough, Mass.
Filed Mar. 27, 1995, Ser. No. 36,772
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—328



397,193
PORTABLE ELECTRIC HEATER
Stephan Boyle, Belmont; Walter Birdsell, Shrewsbury; Steven L. Hecker, Waltham, and Kenneth David Harris, Jr., Cambridge, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Dec. 12, 1996, Ser. No. 63,642
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—330



397,194
EVAPORATIVE COOLER HOUSING
Connie J. Hebert, 2236 20th St., Lake Charles, La. 70601
Filed Aug. 26, 1997, Ser. No. 76,140
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—354



397,195

HUMIDIFIER

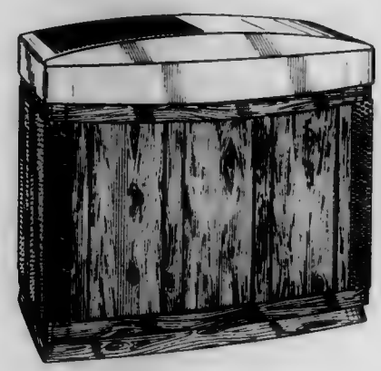
Diane Allen, Marlborough; Walter Birdsell; John Longan, both of Shrewsbury; Kenneth Ritsher, Watertown; Kenneth David Harris, Cambridge, and Stanley Gresens, Charlestown, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 12, 1996, Ser. No. 63,636

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—356



397,196

HUMIDIFIER

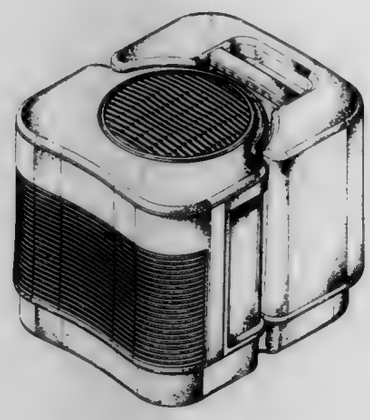
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.

Division of Ser. No. 64,680, Jan. 8, 1997. This application Nov. 18, 1997, Ser. No. 80,574

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—356



397,197

AIR CLEANER

Masafumi Ito, and Shigeru Hasegawa, both of Musashino, Japan, assignors to Teac Corporation, Tokyo, Japan

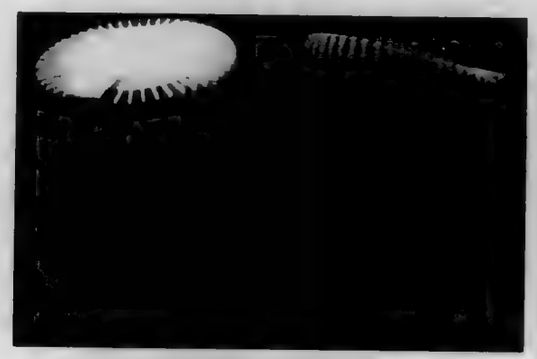
Filed Oct. 22, 1996, Ser. No. 60,645

Claims priority, application Japan, Apr. 24, 1996, 8-11966

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—364



397,198

AIR FRESHENER WITH JAR AND FABRIC

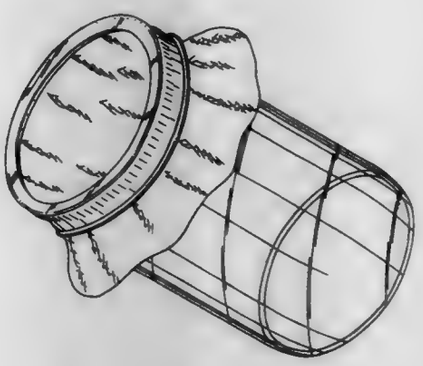
Cornelius J. Goeren, New Albany; Anne Peffer-Pitt, Columbus; Elizabeth Baude Johnson, Hilliard, and Carolyn R. Townsend, Westerville, all of Ohio, assignors to Bath & Body Works, Inc., Reynoldsburg, Ohio

Division of Ser. No. 45,245, Oct. 13, 1995, Pat. No. Des. 389,906. This application Feb. 20, 1997, Ser. No. 68,151

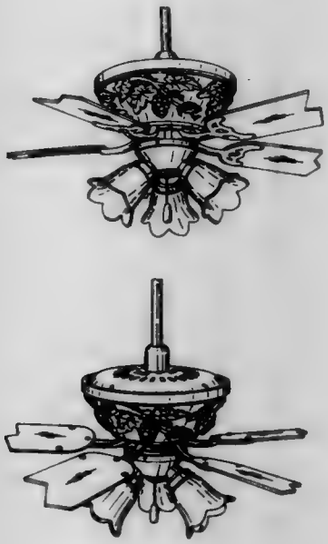
Term of patent 14 years

LOC (6) Cl. 23 - *04*

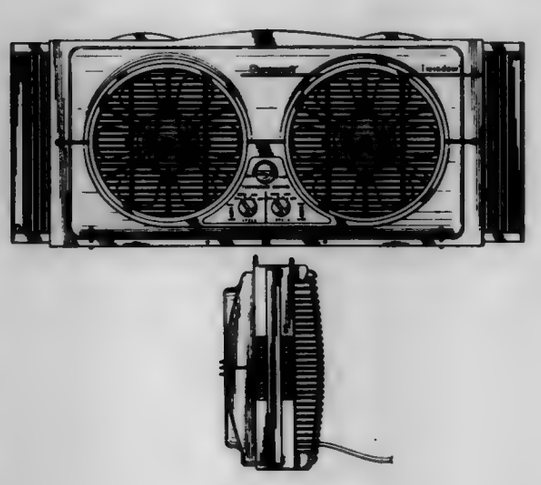
U.S. Cl. D23—367



397,199
COMBINED CEILING FAN AND LIGHT FIXTURE
Mark Pickett, Rancho Palos Verdes, Calif., assignor to Minka Lighting, Inc., Corona, Calif.
Filed Nov. 8, 1996, Ser. No. 62,158
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—377



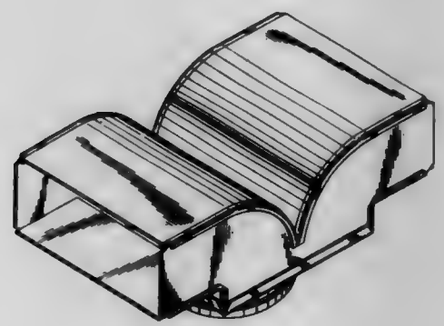
397,200
DUAL WINDOW FAN
Jui-Shang Wang, Taipei, Taiwan, and Robert L. Marvin, Jr., Farmington, Conn., assignors to Honeywell Consumer Products, Inc., Southborough, Mass.
Filed Jun. 20, 1994, Ser. No. 24,734
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—380



397,201
AIR FILTER GRILL
Glen W. Ediger, North Newton, and Gary P. Israel, Andover, both of Kans., assignors to Vornado Air Circulation Systems, Inc., Wichita, Kans.
Filed Aug. 11, 1997, Ser. No. 75,554
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—387



397,202
AIR CONDITIONER DUCT
Keith Clyde Saar, 295 Burson St., Williston, S.C. 29853
Filed Sep. 23, 1997, Ser. No. 76,964
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—393

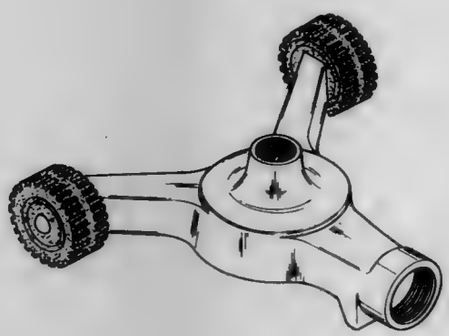


397,203

LAWN SPRINKLER

King-Yuan Wang, Changhua Hsien, Taiwan, assignor to Yuan Mei Corp., Changhua Hsien, Taiwan

Filed Jul. 30, 1997, Ser. No. 74,217
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—214

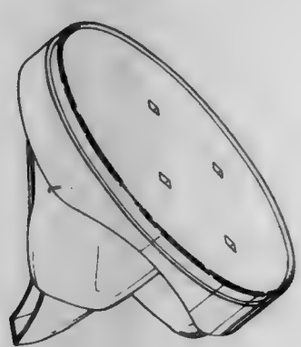


397,204

ADVERTISING CARRYING BODY FOR USE ON A FILLER GUN

Åyvind Alvern, Hjellestad, Norway, assignor to Alvern Norway, ASA, Norway

Filed May 12, 1997, Ser. No. 70,570
Claims priority, application Norway, Nov. 15, 1996, 960830
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—227

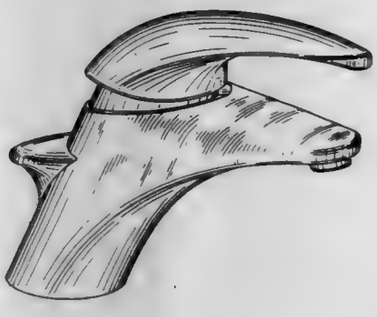


397,205

FAUCET

Francois Kergoet, Malakoff, France, assignor to Jacob Delafon, Paris, France

Filed Mar. 12, 1997, Ser. No. 67,803
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238

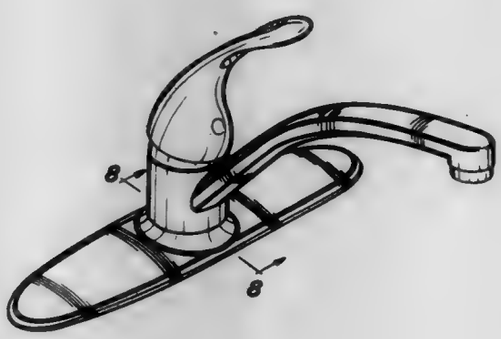


397,206

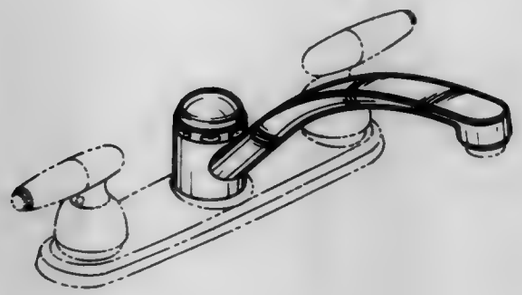
SINGLE HANDLE FAUCET

Judd A. Lord, Carmel, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.

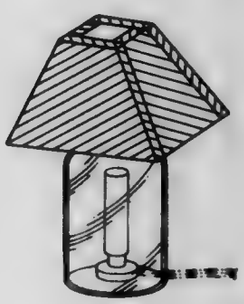
Filed Dec. 4, 1997, Ser. No. 80,558
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



397,207
FAUCET
Judd A. Lord, Carmel, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Dec. 22, 1997, Ser. No. 81,023
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—241

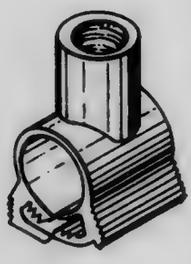


397,208
TABLE LAMP
Dan McCall, Sedalia, Mo., assignor to McCall's Country, Sedalia, Mo.
Filed Sep. 3, 1996, Ser. No. 59,104
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—104

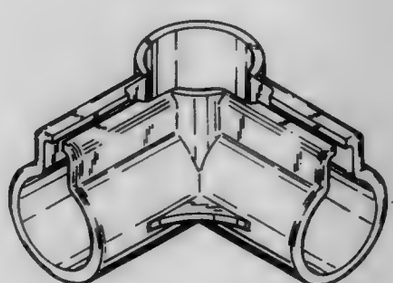


397,209
Patent Not Issued For This Number

397,210
TAPPING FIXTURE
Donald L. Evans, 1405 Huntington Cir., Reno, Nev. 89509
Filed Apr. 9, 1997, Ser. No. 68,452
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—262



397,211
JOINT FOR PIPE STRUCTURE
Seiji Hirano, and Asao Shoda, both of Shizuoka, Japan, assignors to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan
Filed Jan. 22, 1998, Ser. No. 82,434
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—262



397,212

JOINT FOR PIPE STRUCTURE

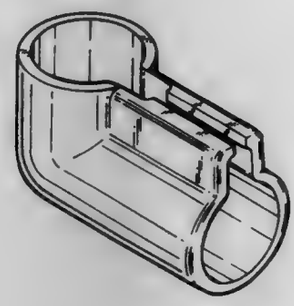
Seiji Hirano, and Asao Shoda, both of Shizuoka, Japan, assignors to Yazaki Industrial Chemical Co., Ltd., Shizuoka, Japan

Filed Jan. 22, 1998, Ser. No. 82,435

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—262



397,213

SINK

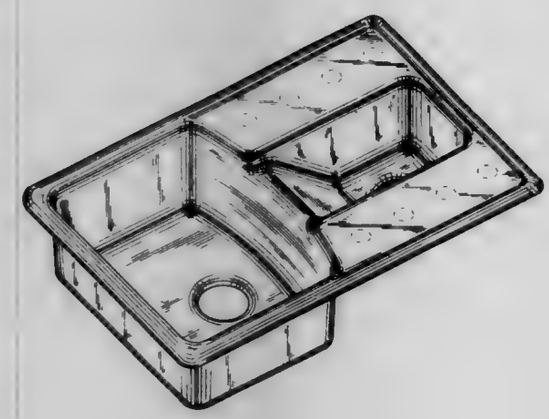
Thomas A. Bonnell, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Jan. 15, 1997, Ser. No. 65,005

Term of patent 14 years

LOC (6) Cl. 23 - *02*

U.S. Cl. D23—290



397,214

WATER CLOSET

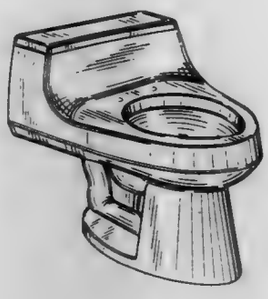
Richard L. Felker, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Apr. 2, 1997, Ser. No. 68,566

Term of patent 14 years

LOC (6) Cl. 23 - *02*

U.S. Cl. D23—301



397,215

FACE MASK WITHOUT INFLATABLE CUFF

Moshe Hoftman, Calabasas, Calif.

Filed Aug. 30, 1996, Ser. No. 59,058

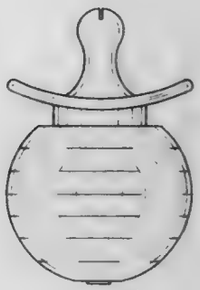
Term of patent 14 years

LOC (6) Cl. 29 - *02*

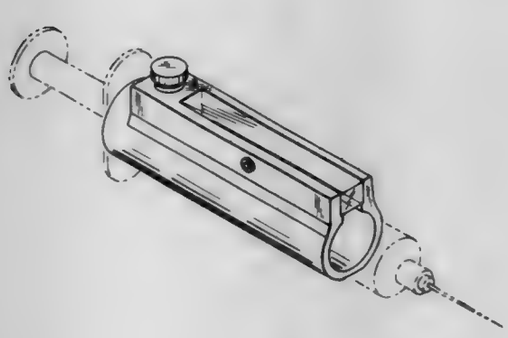
U.S. Cl. D24—110.4



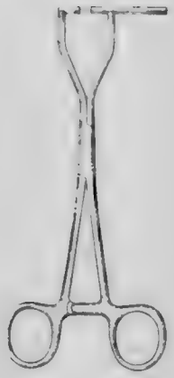
397,216
BABY MEDICATION DISPENSER
Guirlene Armand, 177 New York Ave., Westbury, N.Y. 11590
Filed Nov. 6, 1997, Ser. No. 79,974
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—117



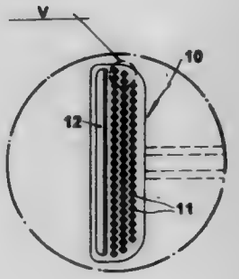
397,217
ISOTOPE SHIELD
Richard A. Brookfield, Largo, Fla., assignor to Sterex Corporation, Clearwater, Fla.
Filed Aug. 4, 1997, Ser. No. 74,391
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—130



397,218
SURGICAL SEPTAL PIERCING INSTRUMENT
Cliff Cadaver, 11628½ Ventura Blvd., Studio City, Calif. 91604
Filed May 28, 1996, Ser. No. 54,995
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—143



397,219
BRUSH HEAD FOR A TONGUE HYGIENE BRUSH
Fabio Eduardo Franca Rangel, Rua 3 de Abril No. 149, Jardim Leonidia, Jacarei, Estado de Sao Paulo, and Luiz Bellino Simionato, Rua Esperanca No. 227 apto 801, vila Ady-Anna, Sao Jose dos Campos, Estado de Sao Paulo, both of Brazil
Filed Jun. 10, 1997, Ser. No. 71,981
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—147



397,220

ORTHOPAEDIC ALIGNMENT TOOL

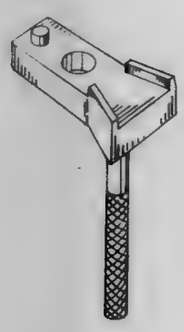
G. Kris Kumar, and David A. Mann, both of Warsaw, Ind., assignors to Zimmer, Inc., Warsaw, Ind.

Filed Mar. 28, 1996, Ser. No. 52,628

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—140



397,221

HEART RATE MONITOR

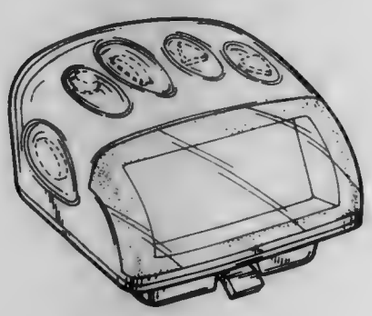
Mark B. Shaw, Fairfax, Va., assignor to Acumen, Inc., Sterling, Va.

Filed Dec. 24, 1996, Ser. No. 64,226

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—167



397,222

GAUNTLET FOR PREVENTION OF LYMPHEDEMA

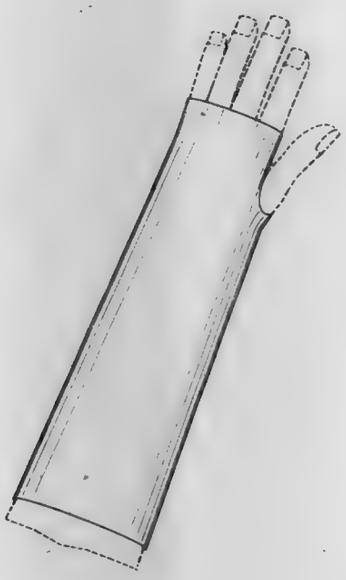
Joyce Humensky, 1502 Keever Ave., Pittsburgh, Pa. 15205

Filed May 15, 1997, Ser. No. 70,781

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—190



397,223

LAUNCHING IMPLEMENT FOR MEDICAL DEVICE USING ELECTROMAGNETIC WAVES TO PROMOTE BLOOD CIRCULATION

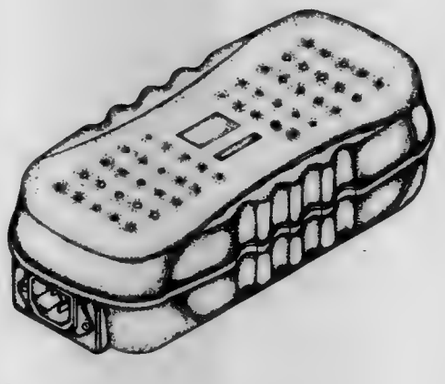
Mei-Tzu Yeh, 9F-2, 3, No. 366 Beei-Twen Road, Taichung, Taiwan

Filed Feb. 10, 1997, Ser. No. 66,291

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—200

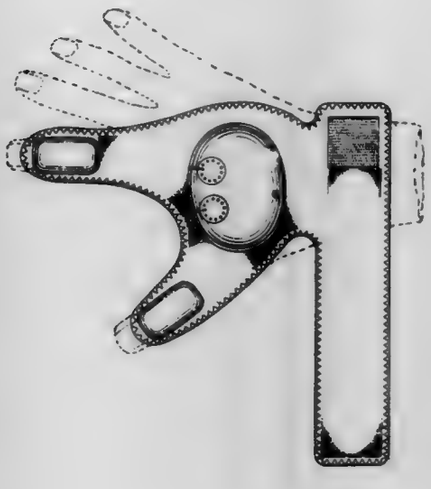


397,224

FINGER MASSAGER

Matt J. Wollman, North Hollywood, Calif., assignor to HWE, Inc., North Hollywood, Calif.

Filed Apr. 17, 1995, Ser. No. 37,560
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—214

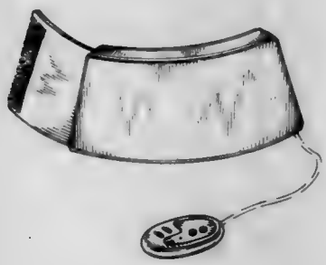


397,225

COMBINED LEG MASSAGER AND CONTROL

John D. Lange, Mentor; Frank Brichetto, South Russell, and Lawrence M. Pillion, University Heights, all of Ohio, assignors to Signature Brands, Inc., Glenwillow, Ohio

Filed Jan. 9, 1997, Ser. No. 64,705
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D24—215

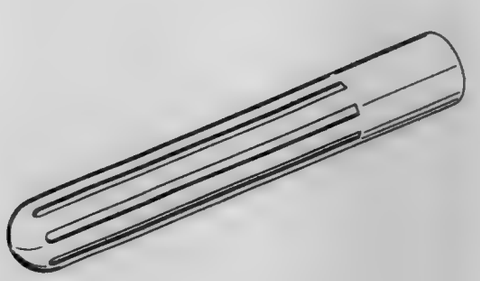


397,226

RIBBED COLLECTION TUBE

Karin E. Kelly, Hoboken, and Gary R. Henniger, Wayne, both of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 30, 1996, Ser. No. 60,543
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—224

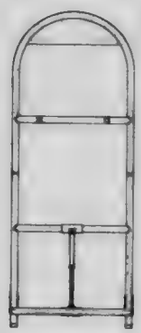


397,227

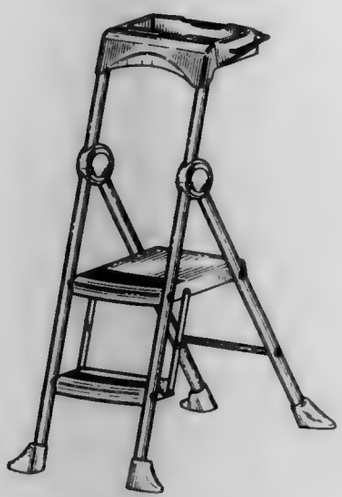
DEER MOUNT SUPPORT

Danny M. Bost, 7379 S. 175W, Portland, Ind. 47371

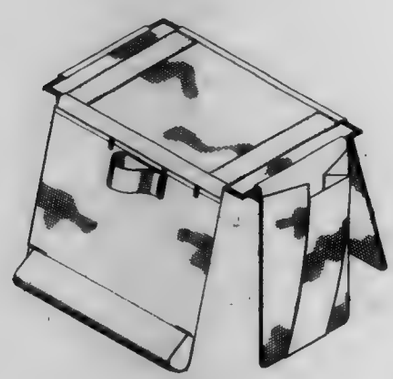
Filed Oct. 22, 1997, Ser. No. 78,144
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—62



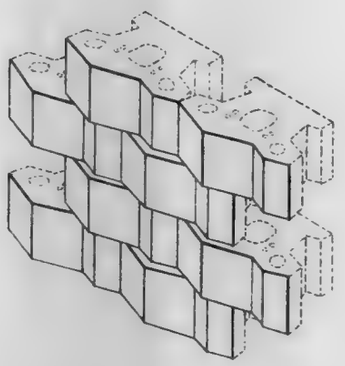
397,228
STEP LADDER
Randall Bell, River Forest; Walter Herbst, Lake Forest, both of Ill.; Eric C. Horne, and Edward E. Heald, both of Greenville, Pa., assignors to Werner Co., Greenville, Pa.
Filed Jun. 5, 1997, Ser. No. 71,723
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—65



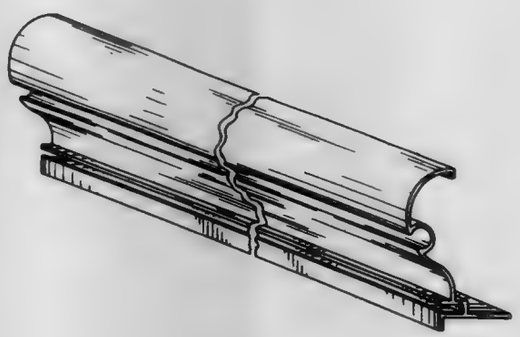
397,229
LADDER TOOL CADDY
Moira Winters, 3447 Douglas Dam Rd., Kodak, TN 37764, and Michael Hutton, both of Kodak, Tenn., assignors to Moira Winters, Kodak, Tenn.
Filed Aug. 14, 1997, Ser. No. 70,463
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—68



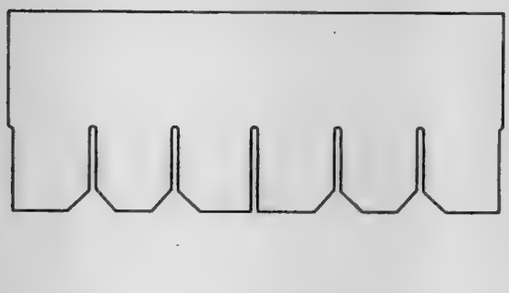
397,230
FRONT FACE OF A RETAINING WALL
Paul J. Forsberg, Wayzata, Minn., assignor to Keystone Retaining Wall Systems, Inc., Bloomington, Minn.
Division of Ser. No. 38,326, May 3, 1995, Pat. No. Des. 381,086. This application Oct. 22, 1996, Ser. No. 61,335
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—114



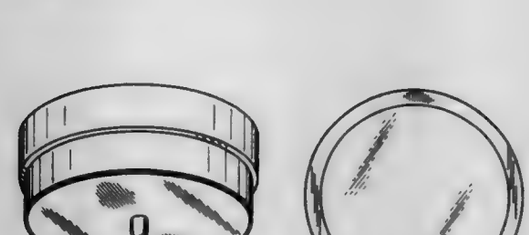
397,231
SWIMMING POOL COPING HAVING A FACIA WITH A COMPOUND CURVATURE
Timothy M. Saxer, Fort Wayne, Ind., assignor to Fort Wayne Pools, Inc., Fort Wayne, Ind.
Filed Sep. 16, 1997, Ser. No. 76,939
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—119



397,232
COMBINED TABBED ROOFING AND SIDING SHINGLE
Alfredo A. Bondoc, Somerset, and William R. Carroll, Sussex, both of N.J., assignors to Building Materials Corporation of America, Wayne, N.J.
Filed Jan. 23, 1997, Ser. No. 65,317
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—139



397,233
SOLAR-POWERED AREA LIGHT
Paul Stanley Bassford, Bend, Oreg., assignor to Startronics Solar Lighting II, Inc., Bend, Oreg.
Filed Feb. 3, 1997, Ser. No. 66,089
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—67



397,234
SPOTLIGHT
Ray Huang, Taipei, Taiwan, assignor to Razz Industrial Co., Ltd., Taipei, Taiwan
Filed Nov. 7, 1997, Ser. No. 79,039
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—63



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18th DAY OF AUGUST, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aaslyng, Dorrit A.: *See—*
Berka, Randy Michael; Brown, Stephen H.; Xu, Feng; Schneider, Palle; Oxenbøll, Karen M.; and Aaslyng, Dorrit A., 5,795,760, Cl. 435-189.000.

AB Electronik GmbH: *See—*
Pape, Peter, 5,796,247, Cl. 324-207.200.

AB Volvo: *See—*
Håkansson, Nils Olof, 5,794,589, Cl. 123-321.000.

ABB Power T&D Company, Inc.: *See—*
Calero, Fernando; and Udren, Eric, 5,796,629, Cl. 364-492.000.
Dickmander, David L., 5,796,259, Cl. 324-524.000.
Yang, Lifeng, 5,796,258, Cl. 324-522.000.

ABB Vetco Gray Inc.: *See—*
Galle, Gary L., 5,794,323, Cl. 29-464.000.

Abbott Laboratories: *See—*
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Nanami, Tomoyuki; Yamashita, Satoshi; Wright, Dennis M.; and Harris, Kendal R., 5,796,643, Cl. 364-724.011.
Allen, David A., to Huffy Corporation. Basketball goal rim for breakaway net attachment system and method of making same. 5,795,253, Cl. 473-489.000.
Allen, Jeffrey, to Energy Research Corporation. Fuel cell sub-assembly with a plurality of dimples. 5,795,665, Cl. 429-12.000.
Allen, John M. Protective cover for motorcycles and the like. 5,795,008, Cl. 296-98.000.
Allen, Robert H., to Metabolite Laboratories, Inc. Method for treatment and prevention of deficiencies of vitamins B_{12}, folic acid and B_6. 5,795,873, Cl. 514-52.000.
Allen, Roy D.; and Scholten, Frank, to Agfa Division, Bayer Corporation. Multi-beam scanner with acousto-optic element for scanning imaging surfaces. 5,796,511, Cl. 359-305.000.
AlliedSignal Inc.: *See*—
Lo, Pei-hwa; Halatyn, Peter; Geoca, Eric; and Archibald, James B., 5,795,988, Cl. 73-1.770.
Manire, Gregory B., 5,794,967, Cl. 280-728.300.
Allison, Earl Scott, to Tubular Textile LLC. Non-marking spreader for tubular knitted fabric. 5,794,317, Cl. 26-80.000.
Allison Engine Company, Inc.: *See*—
Razdan, Mohan K.; McLeroy, Jacob T.; and Smith, Duane A., 5,794,449, Cl. 60-737.000.
Allison, Matthew W.: *See*—
Black, William J.; Allison, Matthew W.; Baker, Melvin A.; and Van Riper, Gary L., 5,794,452, Cl. 62-73.000.
Almeda, T. Michael. Stretching and exercise device. 5,795,276, Cl. 482-142.000.
Alpha Enterprises, Inc.: *See*—
Weisburn, James T., 5,794,796, Cl. 211-40.000.
Yeager, Lawrence R.; Weisburn, James T.; Gallagher, Christopher G.; Marsilio, Ronald M; and Alford, William G., 5,794,464, Cl. 70-57.000.
Alps Electric Co., Ltd.: *See*—
Dobashi, Koichi; Owada, Isao; and Zama, Hiroyoshi, 5,794,530, Cl. 101-409.000.
Koike, Fumihito; and Hasegawa, Naoya, 5,795,663, Cl. 428-692.000.
Ohkita, Masao; and Sekiya, Harutaka, 5,796,547, Cl. 360-99.040.
Sato, Makoto; Suzuki, Shigetaka; Saito, Shuji; and Shigihara, Makoto, 5,796,371, Cl. 343-786.000.
Altera Corporation: *See*—
Pedersen, Bruce B., 5,796,267, Cl. 326-39.000.
Altmann, Bernhard: *See*—
Salmen, Michael; Lunk, Hans-Joachim; Gahn, Alfred-Georg; Altmann, Bernhard; and Fait, Martin, 5,795,366, Cl. 75-368.000.
Alton, Lawrence E.: *See*—
Sharma, Dinesh; Clark, Gordon R.; and Alton, Lawrence E., 5,796,566, Cl. 361-86.000.
Altwasser, Richard, to Pricer AB. Information display system for displaying information such as pricing information on shelves containing retail merchandise. 5,797,132, Cl. 705-16.000.
Aluminum Company of America: *See*—
Robinson, Edward C.; Bombalski, Robert E.; Levendusky, Thomas L.; Skiles, Jean Ann; Weaver, Mark L.; and Kotow, Nickolas C., 5,795,647, Cl. 428-329.000.
Alusuisse Technology & Management Ltd.: *See*—
Roulin, Monique; Gerber, Manfred; and Oster, Heinz, 5,794,781, Cl. 206-531.000.
Wisard, André; and Lohwasser, Wolfgang, 5,795,628, Cl. 427-566.000.
Alvarez, Jorge A.: *See*—
Wagner, Jennifer R.; Wagner, Moritz P.; Alvarez, Jorge A.; and Irving, David C., 5,795,532, Cl. 264-429.000.
ALZA Corporation: *See*—
Lee, Eun Soo; Bura, Scott A.; Yum, Su Il; Wong, Patrick S.-L.; and Theeuwes, Felix, 5,795,591, Cl. 424-473.000.
Alzheimer's Institute of America: *See*—
Mullan, Michael John, 5,795,963, Cl. 530-350.000.
Am-Safe, Inc.: *See*—
Carpenter, Christopher; Zollinger, Lindsay P.; Freeman, Michael J.; Warrick, James C.; and Hagan, Willard F., 5,794,878, Cl. 242-381.000.
Amada Metrecs Company, Limited: *See*—
Sugimoto, Mamoru; and Hayashi, Shiro, 5,794,486, Cl. 72-481.300.
Amelung, Rolf, to Heinrich Amelung GmbH. Storage container for vessels. 5,795,546, Cl. 422-102.000.
Amerace Corporation: *See*—
Siebens, Larry N., 5,795,180, Cl. 439-489.000.
American Cyanamid Company: *See*—
Simon, Werner, 5,795,878, Cl. 514-149.000.
American Mobility Ltd.: *See*—
Steinke, Richard A.; and Chrobak, Dennis S., 5,795,549, Cl. 422-172.000.
American Piledriving Equipment, Inc.: *See*—
White, John L., 5,794,716, Cl. 173-189.000.
American Standard Inc.: *See*—

Nikolayczik, Hans, 5,794,650, Cl. 137-454.200.

Amgen Inc.: *See—*
Bartley, Timothy D.; Bogenberger, Jakob M.; Bosselman, Robert A.; Hunt, Pamela; Kinstler, Olaf B.; and Samal, Babru B., 5,795,569, Cl. 424-85.100.

Amino, Yusuke: *See—*
Takemoto, Tadashi; Amino, Yusuke; and Nakamura, Ryoichiro, 5,795,612, Cl. 426-548.000.

Aminpour, Ali; and Reiner, Michael, to Mercedes-Benz AG. Method for determining the gradient of a roadway. 5,797,109, Cl. 701-65.000.

Amkor Technology, Inc.: *See—*
Glenn, Thomas P.; Hollaway, Roy D.; and Panczak, Anthony E., 5,796,163, Cl. 257-698.000.
Marrs, Robert C., 5,795,818, Cl. 438-612.000.

Amphenol-Tuchel Electronics GmbH: *See—*
Bleier, Robert, 5,796,085, Cl. 235-441.000.
Reichardt, Manfred; and Bleier, Robert, 5,796,093, Cl. 235-492.000.

Ampulski, Robert Stanley; Ostendorf, Ward William; and Polat, Osman, to Procter & Gamble Company, The. Method of making wet pressed tissue paper. 5,795,440, Cl. 162-117.000.

Amro, Hatim Yousef, to International Business Machines Corporation. Method, memory and apparatus for designating a file's type by building unique icon borders. 5,797,139, Cl. 707-100.000.

Amsted Industries Incorporated: *See—*
Pitchford, Terry L., 5,794,538, Cl. 105-218.100.

Amstutz, Gary Arthur; Bowersox, Stephen Scott; Gohil, Kishorchandra; Adriaenssens, Peter Isadore; and Kristipati, Ramasharma, to Neurex Corporation. Stable omega conopetide formulations. 5,795,864, Cl. 514-12.000.

Amtrol Inc.: *See—*
Mohn, Christopher Dandridge, 5,794,660, Cl. 137-614.200.

Amylin Pharmaceuticals Inc.: *See—*
Kolterman, Orville G.; and Rink, Timothy J., 5,795,861, Cl. 514-12.000.

An, Jigang; and Wu, Haifeng, to Tsinghua University. Gas ionization array detectors for radiography. 5,796,110, Cl. 250-385.100.

Anai, Koji: *See—*
Saito, Kazuo; Anai, Koji; Igarashi, Keiju; Nishikawa, Takeshi; Himeno, Ryoichi; and Yoguchi, Kazuhiro, 5,796,741, Cl. 370-439.000.

Analog Devices, Inc.: *See—*
Gorman, Christopher, 5,796,148, Cl. 257-379.000.
Kierse, Oliver J., 5,796,159, Cl. 257-668.000.

Analogic Corporation: *See—*
Gordon, Bernard M., 5,796,802, Cl. 378-8.000.
Marcovici, Sorin, 5,796,153, Cl. 257-446.000.

Anayama, Ushio: *See—*
Shidara, Shinichi; Takahashi, Yutaka; Tachibana, Hajime; Nakamura, Kiyoji; Anayama, Ushio; and Ishiwata, Noriyasu, 5,796,490, Cl. 358-296.000.

Anchor Wall Systems, Inc.: *See—*
Guth, Theodore E., 5,795,105, Cl. 405-284.000.

Anchors, J. Michael. Combination anorexiant drug therapy for obesity using phentermine and an SSRI drug. 5,795,895, Cl. 514-253.000.

Andersen, Gerald P. Rotary batting practice apparatus. 5,795,251, Cl. 473-427.000.

Andersen, Henrik Sune: *See—*
Andersen, Knud Erik; Olsen, Uffe Bang; Petersen, Hans; Grønvald, Frederik Christian; Sonnewald, Ursula; Jørgensen, Tine Krogh; and Andersen, Henrik Sune, 5,795,888, Cl. 514-225.200.

Andersen, Knud Erik; Olsen, Uffe Bang; Petersen, Hans; Grønvald, Frederik Christian; Sonnewald, Ursula; Jørgensen, Tine Krogh; and Andersen, Henrik Sune, to Novo Nordisk A/S. N-substituted azaheterocyclic carboxylic acids and esters thereof. 5,795,888, Cl. 514-225.200.

Andersen, Lene Nonboe: *See—*
Christgau, Stephan; Kofod, Lene Venke; Andersen, Lene Nonboe; Kauppinen, Sakari; Heldt-Hansen, Hans Peter; and Dalboege, Henrik, 5,795,764, Cl. 435-200.000.

Anderson, Benjamin A.; Hansen, Marvin M.; and Harn, Nancy K., to Eli Lilly and Company. Dihydro-2,3-benzodiazepine derivatives. 5,795,886, Cl. 514-220.000.

Anderson, Charles H., to Texas Instruments Incorporated. Illumination optics for spatial light modulator. 5,796,526, Cl. 359-671.000.

Anderson, Dirk N.: *See—*
Hsu, Wei-Yung; Anderson, Dirk N.; and Kraft, Robert, 5,796,151, Cl. 257-410.000.

Anderson, Dwight, to Oklahoma Gas & Electric Company. Animal guard applicator. 5,794,495, Cl. 81-53.100.

Anderson, Jan H.: *See—*
Grebnev, Andre V.; and Anderson, Jan H., 5,796,366, Cl. 342-448.000.

Anderson, Mark: *See—*
Zasloff, Michael; Shinnar, Ann; Kinney, William; Anderson, Mark; Williams, Jon; and McLane, Michael, 5,795,885, Cl. 514-182.000.

Anderson, Paul R., to Hughes Electronics Corporation. Self-aligning satellite receiver antenna. 5,797,083, Cl. 455-25.000.

Anderson, Stephen: *See—*
Powers, David B.; and Anderson, Stephen, 5,795,761, Cl. 435-190.000.

Anderson, Wayne. Driver tool with energy magnetizer/demagnetizer on tool handle. 5,794,497, Cl. 81-451.000.

Andersson, Christer, to Telefonaktiebolaget LM Ericsson. Device for antenna units. 5,796,367, Cl. 343-700.0MS.

Ando, Hiroyuki; Suzuki, Tatsuya; and Muroi, Takashi, to Olympus Optical Co., Ltd. Camera with hinged mounted lens barrier movable with movement of the lens. 5,797,047, Cl. 396-349.000.

Ando, Masamichi; and Abe, Shuichi, to Murata Manufacturing Co., Ltd. Dual TM-mode dielectric resonator apparatus equipped with window for electromagnetic field coupling, and band-pass filter apparatus equipped with the dielectric resonator apparatus. 5,796,318, Cl. 333-202.000.

Ando, Toshinori: *See—*
Nakanishi, Hiroshi; Saito, Norihisa; Ando, Toshinori; and Morinaga, Hisakazu, 5,796,507, Cl. 359-205.000.

Andow, Fumio: *See—*
Maeda, Takafumi; Yamakawa, Hiroshi; Andow, Fumio; Yamaura, Mitsuru; and Kurosawa, Yasuhiro, 5,796,630, Cl. 364-492.000.

Andrä, Wulf; and Mattheis, Roland, to Institut fuer Physikalische Hochtechnologie e.V.; and HL Planartechnik GmbH. Magnetoresistive angular position sensor and rotation speed sensor. 5,796,249, Cl. 324-207.210.

Andre Alain Tabourian: *See—*
Crawford, James A., 5,796,783, Cl. 375-298.000.

Andreev, Alexander E.: *See—*
Scepanovic, Ranko; Koford, James S.; Andreev, Alexander E.; and Pavisic, Ivan, 5,796,625, Cl. 364-491.000.

Andrew Corporation: *See—*
Harwath, Frank A., 5,795,188, Cl. 439-583.000.
Jobin, Michael J.; Grigoletti, Randall L.; Gentile, James R.; Nudd, Hugh R.; and Williamson, John, 5,794,897, Cl. 248-74.400.

Andrews, Lowell B. Apparatus for and method of testing an electrical ground fault circuit interrupt device. 5,796,636, Cl. 364-571.010.

Andrews, Roland E.: *See—*
Link, Garry N.; and Andrews, Roland E., 5,796,308, Cl. 330-284.000.

Andrus, Everett R., to Hermetic Switch, Inc. Reed switch having tritubular bars for surface mounting. 5,796,254, Cl. 324-419.000.

Angell, Adrian John Waynforth; Pauley, Joseph Adam, III; Gabriel, Steven Matthew; and Brown, Donald Ray, to Procter & Gamble Company, The. Detergent composition containing cylindrically-shaped bleach activator extrudates. 5,795,854, Cl. 510-312.000.

Angles, Manfred: *See—*
Pradel, Robert; and Angles, Manfred, 5,794,743, Cl. 188-322.160.

Angraphie Dimensional Systems, LLC: *See—*
Day, Maureen Meredith, 5,797,052, Cl. 396-330.000.

Annen, Ryoichi: *See—*
Setsumasa, Keiichi; and Annen, Ryoichi, 5,794,874, Cl. 242-346.100.

Anscher, Joseph, to National Molding Corp. Side-release buckle having improved locking feature. 5,794,316, Cl. 24-625.000.

Ansimag Inc.: *See—*
Klein, Manfred P., 5,796,349, Cl. 340-682.000.

Ansmann, Achim; Kawa, Rolf; Nitsche, Michael; and Gondek, Helga, to Henkel Kommanditgesellschaft auf Aktien. Emulsifiers. 5,795,978, Cl. 536-120.000.

Anton Hurtz GmbH & Co. KG: *See—*
Gronig, Hans-Ulrich; Kreuzer, Guido; and Napp, Eckhard, 5,794,528, Cl. 101-127.100.

Anton Steinecker Maschinenfabrik GmbH: *See—*
Stippler, Kurt; and Wasmuht, Klaus, 5,794,518, Cl. 99-277.200.

Anttila, Harri: *See—*
Ketonen, Ari; and Anttila, Harri, 5,794,746, Cl. 187-333.000.

Aoki, Hiromitsu: *See—*
Sano, Yoshikazu; Shigeta, Yoko; and Aoki, Hiromitsu, 5,796,154, Cl. 257-432.000.

Aoki, Takashi; Nagata, Mikito; and Tsukamoto, Hisashi, to Japan Storage Battery Co., Ltd. Positive electrode active material for lithium secondary battery method of producing. 5,795,558, Cl. 423-594.000.

Aonuma, Masashi: *See—*
Takahashi, Masatoshi; Asada, Nobuyoshi; Hashimoto, Hiroshi; and Aonuma, Masashi, 5,795,645, Cl. 428-216.000.

Aoyagi, Akihiko; Ohta, Mutsuro; Hashi, Nobuyuki; and Tsujino, Hitoshi, to International Business Machines Corporation. Transducer suspension system having bosses with different inner diameters, and equal outer diameters. 5,796,555, Cl. 360-104.000.

Aoyama, Akio, to NEC Corporation. Path-diversity CDMA reception by detecting lower-peak correlation sequence following removal of higher-peak sequences. 5,796,775, Cl. 375-208.000.

Aoyama, Tatsuya; Ito, Wataru; and Saotome, Shigeru, to Fuji Photo Film Co., Ltd. Gradation correcting method and apparatus. 5,796,865, Cl. 382-169.000.

Aoyama, Yasutada: *See—*
Takada, Hiroyuki; Hayashi, Koichi; Aoyama, Yasutada; Chaya, Norio; and Nishikawa, Hiroshi, 5,796,913, Cl. 386-125.000.

AP&T Tranemo AB: *See—*
Walkin, Bengt, 5,794,482, Cl. 72-350.000.

Apel, William A., to Lockheed Martin Idaho Technologies Company. Biofilter for removal of nitrogen oxides from contaminated gases under aerobic conditions. 5,795,751, Cl. 435-168.000.

Aplix, Inc.: *See—*
Billarant, Patrick J., 5,795,640, Cl. 428-100.000.

Aplus Integrated Circuits, Inc.: *See—*
Lee, Peter W.; Tsao, Hsing-Ya; and Hsu, Fu-Chang, 5,796,657, Cl. 365-185.110.

Apple Computer, Inc.: *See—*
Callahan, Sean M., 5,796,864, Cl. 382-166.000.
Hanif, Mohammad; and Yanagihara, Kazuhisa, 5,796,954, Cl. 395-200.610.

Lyon, Richard F., 5,796,863, Cl. 382-157.000.
Meredith, Scott E., 5,796,916, Cl. 395-2.670.
Morley, John E.; and Himelstein, Mark I., 5,796,989, Cl. 395-500.000.

Appleman, Kenneth H.: *See—*
Filepp, Robert; Appleman, Kenneth H.; Bidwell, Alexander W.; Wolf, Allan M.; Galambos, James A.; and Meo, Sam, 5,796,967, Cl. 395-339.000.

Applied Materials, Inc.: *See—*
Edelstein, Sergio; Chen, Steven A.; and Parkhe, Vijay D., 5,796,074, Cl. 219-390.000.
Guthrie, William L.; Cheng, Tsungnan; Ko, Sen-Hou; Lee, Harry Q.; Sherwood, Michael T.; and Shendon, Norm, 5,795,215, Cl. 451-286.000.
Moran, J. Christopher, 5,795,355, Cl. 29-25.010.

Applied Synergistics, Inc.: *See—*
Carter, Hudson R., 5,794,549, Cl. 110-347.000.

APTI Inc.: *See—*
Elliot, Paul G., 5,796,372, Cl. 343-797.000.

Aqua Marine Supply: *See—*
Hauck, Chester J., 5,794,919, Cl. 254-343.000.

Aquino, Christopher Joseph; Dezube, Milana; Sherrill, Ronald George; Sugg, Elizabeth Ellen; Szewczyk, Jerzy Ryszard; and Willson, Timothy Mark, to Glaxo Wellcome Inc. Method of inducing cholecystokinin agonist activity using 1,4- Benzodiazepine compounds. 5,795,887, Cl. 514-221.000.

Arai, Satoshi; Ito, Shinichi; Sakamoto, Hiroshi; Oi, Eisetsu; and Yotsumoto, Hiroki, to Agency of Industrial Science and Technology. Method and apparatus for sorting solids by airstream. 5,794,786, Cl. 209-29.000.

Arai, Seiji, to Kabushiki Kaisha Toshiba. Electrophotographic recording apparatus. 5,797,065, Cl. 399-46.000.

Arakawa, Kenichi; Kakizaki, Takao; and Omyo, Shinji, to Nippon Telegraph and Telephone Corporation; and Honda Giken Kogyo Kabushiki Kaisha. Method of detecting seam characteristic points. 5,796,610, Cl. 364-167.010.

Arakawa, Seiichi: *See—*
Katayama, Tsutomu; Arakawa, Seiichi; and Miyamoto, Akio, 5,795,931, Cl. 524-494.000.

Arakawa, Takashi; and Shiraishi, Kimio, to Nissan Motor Co., Ltd. Method of applying a paint protecting film to a vehicle body. 5,795,427, Cl. 156-256.000.

Araki, Hiroshi: *See—*
Kojima, Sadaaki; Araki, Hiroshi; and Kato, Satoru, 5,796,228, Cl. 318-605.000.

Araki, Kiyoshi; and Nishioka, Masao, to NGK Insulators, Ltd. Porous sintered lanthanum manganite bodies and method of manufacturing the same. 5,795,670, Cl. 429-40.000.

Araki, Takashi; Iwamoto, Hisashi; and Konishi, Yasuhiro, to Mitsubishi Denki Kabushiki Kaisha. Synchronous semiconductor memory device. 5,796,669, Cl. 365-222.000.

Araneo, Barbara A.: *See—*
Ricigliano, Joseph W.; and Araneo, Barbara A., 5,795,872, Cl. 514-44.000.

Arao, Masaki: *See—*
Maeda, Tadasu; Ota, Koji; Arao, Masaki; Sogou, Taiji; Nakajima, Hiroshi; Miyamoto, Norichika; Ishiguro, Susumu; and Hayashi, Motoji, 5,796,618, Cl. 364-474.240.

Araseki, Yoshiyuki; Kamada, Takenobu; and Kimura, Hitoshi, to Tohoku Ricoh Co., Ltd. Large capacity paper feeder for an image forming apparatus. 5,794,928, Cl. 271-9.080.

Arbiter, Nathaniel, to Coproco Development Corporation. Process for recovering copper from copper-containing material. 5,795,465, Cl. 209-166.000.

Arch Development Corporation: *See—*
Roizman, Bernard; and He, Bin, 5,795,713, Cl. 435-5.000.

Archer, William R.; Becerra, Roger C.; Beifus, Brian L.; Brattoli, Mark A.; Erdman, David M.; Jahns, Thomas M.; Kliman, Gerald B.; Soong, Wen Liang; Stephens, Charles M.; Benedict, Eric R.; and Degner, Michael W., to General Electric Company. Quadrature axis winding for sensorless rotor angular position control of single phase permanent magnet motor. 5,796,194, Cl. 310-68.00B.

Archibald, James B.: *See—*
Lo, Pei-hwa; Halatyn, Peter; Geoca, Eric; and Archibald, James B., 5,795,988, Cl. 73-1.770.

Archie, William C., Jr.: *See—*
Bell, Cynthia S.; Gresko, James; and Archie, William C., Jr., 5,797,056, Cl. 396-512.000.

Arens, Cornelis G.; and Meyer, William Anthony. Two piece punch for roll piercing materials. 5,794,502, Cl. 83-670.000.

Arimilli, Ravi Kumar; Dodson, John Steven; Guthrie, Guy Lynn; and Lewis, Jerry Don, to International Business Machines Corporation. Data processing system having demand based write through cache with enforced ordering. 5,796,979, Cl. 395-469.000.

Arimoto, Kazutami: *See—*
Tsuruda, Takahiro; and Arimoto, Kazutami, 5,796,664, Cl. 365-200.000.

Arimoto, Keigo; Kojima, Masayuki; Yamamoto, Takuya; and Negoro, Hisashi, to Noritsu Koki Co., Ltd. Automatic film development apparatus. 5,796,465, Cl. 355-27.000.

Aris Mardirossian, Inc.: *See—*
Mardirossian, Aris, 5,796,338, Cl. 340-568.000.

Ariyosi, Hiromi; and Ohta, Tameharu, to Denso Corporation. Amplification circuit using wire-bonding for adjusting amplification factor. 5,796,310, Cl. 330-307.000.

Armentrout, Charles J.; and Basinger, Thomas J., to Pilot Industries, Inc. X-ray source. 5,796,805, Cl. 378-136.000.

Armienes: *See—*
Pajonk, Gérard; Elaloui, Elimame; Begag, Redouane; Durant, Marcel; Chevalier, Bruno; Chevalier, Jean-Luc; and Achard, Patrick, 5,795,557, Cl. 423-338.000.

Armstrong, Bruce G.: *See—*
Vinn, Charles L.; and Armstrong, Bruce G., 5,796,303, Cl. 330-51.000.

Armstrong, Carl F.: *See—*
Cyman, Theodore F.; Schimminger, Edward W.; Rocco, Frank J.; Armstrong, Carl F.; and Mariani, Frank J., 5,796,411, Cl. 345-502.000.

Armstrong, James E.; and Hayes, Barney J., to Sundowner Offshore Services, Inc. Gumbo removal. 5,794,722, Cl. 175-66.000.

Army, U.S. Army Corps. of Engineers as represented by The Secretary of The: *See—*
Yankielun, Norbert E., 5,796,679, Cl. 367-99.000.

Arnold, Robert L., to Hand Tool Design Corporation. Pawl module for ratchet wrench. 5,794,496, Cl. 81-63.200.

Arnold, Ronald G.: *See—*
Johnson, David C.; Fuller, Douglas A.; Engelbrecht, Kenneth L.; Marlan, Gregory A.; Arnold, Ronald G.; and Fagerness, Gerald G., 5,796,972, Cl. 395-384.000.

Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., to Abbott Laboratories. Method of performing a process for determining an item of interest in a sample. 5,795,784, Cl. 436-50.000.

Aronzo, Ehud. Time scheduler particularly useful in tests. 5,796,681, Cl. 368-10.000.

Arthur, John E., III, to Lockleed Martin Corporation. Rugged, weather resistant parabolic dish. 5,796,368, Cl. 343-704.000.

Arthur, Richard L.: *See—*
Young, Joe A.; and Arthur, Richard L., 5,796,037, Cl. 174-50.000.

Artificial Parallax Electronics Corp.: *See—*
Ming-Yen, Lin, 5,796,373, Cl. 345-6.000.

Arvidsson, Thomas; and Rowland, Steve A. Radial and thrust bearing system. 5,795,073, Cl. 384-110.000.

Aryani, Shahryar: *See—*
Wik, Thomas R.; and Aryani, Shahryar, 5,796,650, Cl. 365-150.000.

Asada, Nobuyoshi: *See—*
Takahashi, Masatoshi; Asada, Nobuyoshi; Hashimoto, Hiroshi; and Aonuma, Masashi, 5,795,645, Cl. 428-216.000.

Asada, Soichiro: *See—*
Nakamura, Yuzuo; Kyomen, Masayuki; Asada, Soichiro; Matsunami, Toshiyuki; Suzuki, Hiroyuki; and Kawai, Satoru, 5,795,527, Cl. 264-267.000.

Asada, Tanehiko, to Tenryu Seikyo Kabushiki Kaisha. Disc cutter. 5,794,503, Cl. 83-835.000.

Asahi Glass Company Ltd.: *See—*
Ikeda, Katsuji; Hiratsuka, Kazuya; Morimoto, Takeshi; and Matsumoto, Shinji, 5,795,680, Cl. 429-245.000.
Takahashi, Kazuhiro; Hashimoto, Hideyuki; and Takeda, Hisashi, 5,795,421, Cl. 156-108.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Natori, Itaru, 5,795,945, Cl. 526-309.000.
Sugimoto, Kenshi; Suzuki, Shinji; and Ibuki, Ichiro, 5,795,950, Cl. 528-73.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Jyojiki, Masao, 5,796,421, Cl. 347-257.000.
Maruyama, Koichi, 5,796,520, Cl. 359-565.000.
Nomura, Hiroshi; Azegami, Kazuyoshi; and Sasaki, Takamitsu, 5,796,062, Cl. 219-69.110.
Sensui, Takayuki; Ito, Takayuki; Matsuo, Hirofumi; Nakamura, Satoru; Goto, Tatsuo; and Nakamura, Yasuo, 5,796,517, Cl. 359-426.000.

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Sensui, Takayuki; Ito, Takayuki; Matsuo, Hirofumi; Nakamura, Satoru; Goto, Tatsuo; and Nakamura, Yasuo, 5,796,517, Cl. 359-426.000.

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Ascik, Mark A., to Capo, Inc. Merchandise transport, storage and display apparatus and system. 5,794,782, Cl. 206-600.000.
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Füchsle, Dieter; Högg, Peter; Mantel, Lothar; and Schett, Georg, 5,796,060, Cl. 218-79.000.
Schwanda, Josef, 5,796,191, Cl. 310-58.000.
Asher, Donald I.: *See—*
Jackson, Dana B.; Asher, Donald I.; Halcomb, Ronald G.; and Vogt, John E., 5,795,426, Cl. 156-249.000.
Aspeby, Magnus: *See—*
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ASR Affiliates, Inc.: *See—*
Bloom, Ira Gary, 5,795,219, Cl. 454-49.000.
Astec International Limited: *See—*
Cross, David A., 5,796,595, Cl. 363-16.000.
Astra Aktiebolag: *See—*
Löfroth, Jan-Erik; and Ungell, Anna-Lena, 5,795,896, Cl. 514-256.000.
ATI Technologies, Inc.: *See—*
Bicevskis, Robert P.; Hartog, Adrian H.; Caruk, Gordon; and Alford, Michael A., 5,796,960, Cl. 395-286.000.
Atkin, Curtis L.: *See—*
Cole, Barry C.; Atkin, Curtis L.; and Knudtson, Kevin L., 5,795,974, Cl. 536-23.700.
Atkinson, James R.; and Balents, Barbara M., to Silicon Graphics, Incorporated. Volume-based free form deformation weighting. 5,796,400, Cl. 345-420.000.
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Roberts, Charles T., 5,794,698, Cl. 166-265.000.
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Atlantis Diagnostics International, L.L.C.: *See—*
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Atlas Copco Craelius AB: *See—*
Jonsson, Gunnar; and Nordqvist, Ulf, 5,795,079, Cl. 384-547.000.
Atmur, Steven Donald; and Strasser, Thomas Edward, to Northrop Grumman Corporation. Piston rings particularly suited for use with ceramic matrix composite pistons and cylinders. 5,794,943, Cl. 277-441.000.
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Breton, Lionel; Aubert, Lucien; Leclaire, Jacques; Martin, Richard; and De Lacharriere, Olivier, 5,795,574, Cl. 424-195.100.
Auburn University: *See—*
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Auchter, Jochen: *See—*
Strauss, Andreas; Auchter, Jochen; and Meyer, Johannes, 5,794,578, Cl. 123-90.170.
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Aujollet, Patrick; and Gautier, Guy-Marie, to Commissariat a l'Energie Atomique. Internal condenser vapor discharge system. 5,796,798, Cl. 376-283.000.
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Aura Systems, Inc.: *See—*
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Austin, Mark, to Austin, Mark. Method for creating patterns in cast materials. 5,795,513, Cl. 264-71.000.
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Schaldach, Kurt D., 5,794,324, Cl. 29-559.000.
Avanzino, Steven; Gupta, Subhash; Klein, Rich; Luning, Scott D.; and Lin, Ming-Ren, to Advanced Micro Devices, Inc. Self aligned via dual damascene. 5,795,823, Cl. 438-639.000.
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Avila, Steven J.: *See—*
Colligan, Kevin J.; and Avila, Steven J., 5,794,835, Cl. 228-2.100.
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Nakata, Yukihiko; Fujihara, Masaki; Date, Masahiro; Matsuo, Takuya; Ayukawa, Michiteru; and Itoga, Takashi, 5,796,116, Cl. 257-66.000.
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Nomura, Hiroshi; Azegami, Kazuyoshi; and Sasaki, Takamitsu, 5,796,062, Cl. 219-69.110.
Azuma, Yoshihiko. Sauna heater control. 5,796,076, Cl. 219-486.000.
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Bacchetta, Maurizio; Bacci, Laura; and Zanotti, Luca, to SGS-Thomson Microelectronics, S.r.l. Process for improving the interface union among dielectric materials in an integrated circuit manufacture. 5,795,821, Cl. 438-624.000.
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Bachhuber, Anton, to Siemens Aktiengesellschaft. Immobilizer and method for initializing the immobilizer. 5,796,329, Cl. 340-426.000.
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Schilling, Bernhard; Pfefferle, Walter; Bachmann, Bernd; Leuchtenberger, Wolfgang; and Deckwer, Wolf-Dieter, 5,795,732, Cl. 435-41.000.
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Badger, Algernon S.: *See—*
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Bae, Yong-Cheol: *See—*
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Baek, Nam-Dae, to SamSung Electronics Co., Ltd. Technique for controlling ring volume and selectively receiving messages by facsimile. 5,796,809, Cl. 379-100.060.
Baer, Kurt R.; Willford, George A.; and Zuehlke, Timothy R., to Dana Corporation. Clutch actuator. 5,794,752, Cl. 192-85.0CA.
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Bagshaw, Stephen A.: *See—*
Pinnavaia, Thomas J.; and Bagshaw, Stephen A., 5,795,559, Cl. 423-702.000.
Bahls, James W.; Denny, George S.; Hannan, Richard G.; Mansker, Janna L.; Naylor, Bruce E.; Paffendorf, Karen D.; Patterson, Betty J.; Stoob, Sandra L.; Tse, Judy Y.; and Vaktalagadda, Anu V., to International Business Machines Corporation. Shared queue structure for data integrity. 5,797,005, Cl. 395-680.000.
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Bailey, Ernest Lee: *See—*
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Baird, Henry Spalding, to Lucent Technologies Inc. Generation and use of defective images in image analysis. 5,796,410, Cl. 345-471.000.
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Baker Hughes Incorporated: *See—*
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Baker, Jay DeAvis: *See—*
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Baker, Melvin A.: *See—*
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Baker, Walter L.: *See—*
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Bakker, Lynn Alan; Ledeker, Chris Alan; Bailey, Ernest Lee; and Young, John Ray, to Scapa Group PLC. Roller apparatus. 5,794,758, Cl. 198-785.000.
Balakrishnan, Arun: *See—*
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Balasinski, Artur P.: *See—*
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Balgaard, Steven Patrick, to General Motors Corporation. Vehicle roof structure. 5,795,014, Cl. 276-210.000.
Ball Corporation: *See—*
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Ball, Geoffrey R.; and Katz, Bob H., to Symphonix Devices, Inc. Tinnitus masker for direct drive hearing devices. 5,795,287, Cl. 600-25.000.
Ball, James H.; and Byrne, Thomas R., to Orion Corporation. Tilt pad hydrodynamic bearing for rotating machinery. 5,795,076, Cl. 384-307.000.
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Banerjee, Shoibal, to Du Pont de Nemours, E. I., and Company. Fuel cell incorporating a reinforced membrane. 5,795,668, Cl. 429-33.000.
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Bardin, Roland; and Thevenet, Michel, to Look Fixations S.A. Longitudinally adjustable base for ski binding. 5,794,962, Cl. 280-607.000.
Barham, William L. Temperature-time-pressure detector. 5,795,065, Cl. 374-106.000.
Barlow, Dennis N., to Combustion Engineering, Inc. Pneumatic bark distributor for continuous ash discharge stokers. 5,794,548, Cl. 110-104.00R.
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Barnitz, James C.; Curley, Joseph M.; and Downey, David C., to Iolab Corporation. Vacuum system and a method of operating a vacuum system. 5,795,328, Cl. 604-67.000.
Barnwell, James W., to Flair Corporation. Apparatus and method for removing condensable material from a gas. 5,794,453, Cl. 62-79.000.
Barr, John E., to Aero Electric Connector System, Inc. Rectangular handmount connector. 5,795,175, Cl. 439-358.000.
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Bartley, Timothy D.; Bogenberger, Jakob M.; Bosselman, Robert A.; Hunt, Pamela; Kinstler, Olaf B.; and Samal, Babru B., to Amgen Inc. Monopegylated proteins that stimulate megakaryocyte growth and differentiation. 5,795,569, Cl. 424-85.100.
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Merkle, Hans Rupert; Durein, Alfons; Hansen, Hanspeter; and Jäger, Karl-Friedrich, 5,795,983, Cl. 544-11.000.
Niessner, Manfred; Grund, Norbert; Heide, Wilfried; and Hartmann, Heinrich, 5,795,926, Cl. 523-339.000.
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Basic Resources, Inc.: *See—*
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Baumann, Jörg: *See—*
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Bawtree, Bruce Allan; Trawin, Kevin James; and Pope, Jason Edward, to Innovative Therapy Aids Inc. Gait therapy aid. 5,795,269, Cl. 482-66.000.
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Kürschner, Stefan; Jentsch, Jörg-Dietrich; and Darius, Heinz-Gerd, 5,795,841, Cl. 502-325.000.
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Beasley, Denny Dee, to Delta Power Supply, Inc. Electronic ignition enhancing circuit having both fundamental and harmonic resonant circuits as well as a DC offset. 5,796,216, Cl. 315-307.000.

Beasley, William E., Jr.; Sarbell, John P.; and Moran, James W., to Sumitomo Electric Lightwave Corp. Method for midspan entry of optical ribbon fiber. 5,795,428, Cl. 156-344.000.

Beatrez, Alan A. Tree edging. 5,794,378, Cl. 47-25.000.

Beaulieu, Alain Bernard Marc; Epinat, Pierre; and Chapellier, Laurent, to Moulinex S. A. Process and device for controlling the power of a load via a phase adjustment system. 5,796,245, Cl. 323-322.000.

Becerra, Roger C.: *See*—
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Beck, Cathy J.: *See*—
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Fox, Frederick D.; Pearson, Douglas R.; Caine, Diane; Kenney, Andrew; Morris, Richard A.; Beck, Steve A.; Beck, Cathy J.; and Chu, Robert J., 5,796,932, Cl. 395-161.000.

Becker, Karl W. Abdomen-protective adapter for seat belts. 5,795,030, Cl. 297-488.000.

Beckstrom, John D. Anti-skid vehicle cargo bed insert. 5,795,006, Cl. 296-39.200.

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Erskine, Timothy J., 5,795,339, Cl. 604-264.000.
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Lahm, William J.; Stevens, Timothy A.; Tschumakow, Alexander G.; Wilkins, Leon M.; Janson, John M.; and Conley, Stephen C., 5,795,775, Cl. 435-297.500.
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BEHR GmbH & Co.: *See*—
Ghiani, Franco, 5,794,689, Cl. 165-140.000.
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Bhat, Rajaram; Caneau, Catherine; Koza, Mark A.; and Yoo, Sung Joo, 5,796,902, Cl. 385-122.000.
Ely, Thomas Chambers; and Smyk, Darek Andrew, 5,796,424, Cl. 348-15.000.
Greaney, Shaun J.; and Leland, Kenneth W., 5,796,729, Cl. 370-345.000.

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Roach, Peter Owen, Jr.; and Comer, Edward Irby, 5,797,097, Cl. 455-456.000.

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Berc, Lance M.; Ghemawat, Sanjay; Henzinger, Monika H.; Sites, Richard L.; Waldspurger, Carl A; and Weihl, William E., to Digital Equipment Corporation. High frequency sampling of processor performance counters. 5,796,939, Cl. 395-184.010.

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Berding, Keith R.; and Casey, Shawn, to Western Digital Corporation. Load beam assembly with separate spring and hinge functions. 5,796,554, Cl. 360-104.000.

Berenstein, Moshe. Therapeutic fingernail treatment device. 5,795,314, Cl. 601-166.000.

Bereyso, Steven: *See*—

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Berg, Eric A.; and Fillar, James. Equipment utilization detector. 5,797,107, Cl. 701-29.000.

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Bergmann, Horst, to Mercedes-Benz AG. Engine brake for a multicylinder diesel engine. 5,794,590, Cl. 123-321.000.

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Berlin, Stanley. Modular work evaluation apparatus. 5,795,310, Cl. 600-595.000.

Berman, Rachael; Shirron, Stephen F.; Hayes, Fidelma; Peterson, Kevin; and Ciaffi, Marco, to Digital Equipment Corporation. Method and apparatus for fault tolerant BIOS addressing. 5,797,023, Cl. 395-750.060.

Bernardini, Allen J., to Litton Systems, Inc. All plastic zero insertion force electrical connector. 5,795,171, Cl. 439-260.000.

Berry, Kenneth M.: *See—*
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Bersin, Richard L.: *See—*
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Berti, Dietmar, to TRW Occupant Restraint Systems GmbH. Method of and device for folding a gas bag of a vehicle occupant restraint system. 5,795,284, Cl. 493-405.000.

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Bertram, William K.; and Pease, Logan L., to International Game Technology. Reduced noise touch screen apparatus and method. 5,796,389, Cl. 345-173.000.

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Besaw, Larry G., to Servants, Inc., The. Corrugated Collapsible container pack. 5,794,542, Cl. 108-51.300.

Beshah, Paul T. Pet feeding station. 5,794,565, Cl. 119-61.000.

Besserer, Horst; and Deusing, Hans-Ulrich, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Device for securing and guiding cables and conduits in switchgear cubicles. 5,794,895, Cl. 248-73.000.

Bessho, Akira, to Pioneer Electronic Corporation. Optical pickup system for an optical disc player. 5,796,702, Cl. 369-112.000.

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Beyne, Eric: *See—*
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Bezzant, Daniel G.: *See—*
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Bhanot, Pradeep; and Jackson, Paul, to Oracle Corporation. Fault tolerant client server system. 5,796,934, Cl. 395-182.020.

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Bhat, Rajaram; Caneau, Catherine; Koza, Mark A.; and Yoo, Sung Joo, to Bell Communications Research, Inc. Coherent blue/green optical source and other structures utilizing non-linear optical waveguide with quasi-phase-matching grating. 5,796,902, Cl. 385-122.000.

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Brooks, Clint D.; Bhatia, Pramila; Kolasa, Teodozyj; Stewart, Andrew O.; Gunn, David E.; and Craig, Richard A., 5,795,900, Cl. 514-314.000.

Bhattacharya, Partha Pratim; Chung, Jen-Yao; Pirahesh, Mir Hamid; Selinger, Patricia G.; Viveros, Marisa S.; Wang, Yun; and Zaino, Lawrence Peter, to International Business Machines Corporation. Method of performing a parallel relational database query in a multiprocessor environment. 5,797,000, Cl. 395-602.000.

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Bice, Charles D., to Westinghouse Electric Corporation. Method and apparatus for diagnosing bearing insulation impedance of a rotating electrical apparatus. 5,796,262, Cl. 324-714.000.

Bicevskis, Robert P.; Hartog, Adrian H.; Caruk, Gordon; and Alford, Michael A., to ATI Technologies, Inc. Multi-media computer architecture. 5,796,960, Cl. 395-286.000.

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Biermaier, Hans. Method and device for cleaning endoscopes. 5,795,403, Cl. 134-22.120.

Bierre, Pierre; and Mickaels, Ronald A., to Becton Dickinson and Company. Gravitational attractor engine for adaptively autoclustering n-dimensional datastreams. 5,795,727, Cl. 435-7.240.

Big Dutchman, Inc.: *See—*
Hart, John F., 5,794,562, Cl. 119-52.400.

Bigler, Karen Robbins. Folding apparatus. 5,794,980, Cl. 281-2.000.

Bill, Frank N. Pipe laying robot apparatus and method for installing pipe. 5,795,101, Cl. 405-154.000.

Bill, Joseph A.; and Bledsoe, Robert L. Anchor bolt centering device. 5,794,394, Cl. 52-295.000.

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Billarant, Patrick J., to Aplix, Inc. Method of fabricating a fastener assembly for being molded into a foamed cushion. 5,795,640, Cl. 428-100.000.

Billings, Patricia; and Michalski, Susan, to Earth Products Limited. Lightweight roof tiles and method of production. 5,795,380, Cl. 106-675.000.

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Bingham, Gregory C.: *See—*
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Bio-Rad Microscience Limited: *See—*
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Bio-Technology General Corp.: *See—*
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Biometric Imaging, Inc.: *See—*
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Biosite Diagnostics Incorporated: *See—*
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Terrien, Pascal; Pedarre, Pierre; Sicoli, Bernadette; and Bioteau, Claude, 5,795,411, Cl. 148-325.000.

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Birnbaum, William C., to Sun Microsystems, Inc. System and method for implementing a hierarchical policy for computer system administration. 5,797,128, Cl. 707-5.000.

Birrer, Lukas: *See—*
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Birrittella, Mark S.; Kessler, Richard E.; Oberlin, Steven M.; Passint, Randal S.; and Thorson, Greg, to Cray Research, Inc. Networked multiprocessor system with global distributed memory and block transfer engine. 5,797,035, Cl. 395-855.000.

Bishop, Charles W.; Knutson, Joyce C.; and Valliere, Charles R., to Bone Care International, Inc. Method of treating prostatic diseases using delayed and/or sustained release vitamin D formulations. 5,795,882, Cl. 514-170.000.

Bittner, Klaus; Jansen, Walter K.M.; Mohr, Klaus-Peter; Wendel, Thomas; and Wietzoreck, Hardy, to Metallgesellschaft Aktiengesellschaft. Process for the phosphatising treatment of steel strip or sheet galvanized on one side or alloy galvanized on one side. 5,795,408, Cl. 148-262.000.

Bitto, Ennio: *See—*
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Black Bear Construction Company, Inc.: *See—*
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Black Diamond Equipment Ltd.: *See—*
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Black, William J.; Allison, Matthew W.; Baker, Melvin A.; and Van Riper, Gary L., to Scotsman Group, Inc. Hot gas bypass system for an icemaker. 5,794,452, Cl. 62-73.000.

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Blaetz, Ewald. Method of protecting an electrical connection and plug lock therefor. 5,795,176, Cl. 439-373.000.

Blainey, Robert James; Donawa, Christopher Michael; and McInnes, James Lawrence, to International Business Machines Corporation. Connectivity based program partitioning. 5,797,012, Cl. 395-705.000.

Blake, James A.; Lazzaro, Jamie E.; and Dobbs, James R., to General Electric Company. Glass to metal interface X-ray tube. 5,795,207, Cl. 445-28.000.

Blank, Roy Lonnie, to Richardson-Vicks Inc. Use of salicylic acid for regulating skin wrinkles and/or skin atrophy. 5,795,879, Cl. 514-159.000.

Blanton, Thomas N.: *See—*
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Blaylock Industries, Inc.: *See—*
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Bledsoe, Robert L.: *See—*
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Blohm + Voss Holding AG: *See—*
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Blond, Pierre: *See—*
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Bloom, Ira Gary, to ASR Affiliates, Inc. Nail polishing workstation with ventilation and carousel tray. 5,795,219, Cl. 454-49.000.

Blue Moon WW: *See—*
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Blumenstock, Andreas, to Robert Bosch GmbH. Method for checking the tightness of a tank system of a vehicle having an internal combustion engine. 5,794,599, Cl. 123-519.000.

Blythin, David J.: *See—*
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Board of Governors of Wayne State University: *See—*
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Board of Supervisors of Louisiana State University and Agricultural and Mechanical College: *See—*
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Board of Trustees operating Michigan State University: *See—*
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Bob McLeod Inc.: *See—*
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BOC Group Inc.: *See—*
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Naumovitz, Joseph P.; Straub, Joseph; and Wilson, Leighton B., 5,794,458, Cl. 62-647.000.
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BOC Group plc, The: *See—*
Garrett, Michael E.; and Lemcoff, Norberto, 5,795,370, Cl. 96-130.000.

Boccon-Gibod, Philippe, to Hewlett-Packard Company. Bus for connecting extension cards to a data processing system and test method. 5,797,032, Cl. 395-829.000.

Bock, Klaus: *See—*
Rao, Narasinga; Meldal, Morten; Bock, Klaus; and Hindsgaul, Ole, 5,795,958, Cl. 530-331.000.

Bocquillon, Pascal: *See—*
Suppa, Vito; Bocquillon, Pascal; Loubieres, Bernard; and Oddoart, Gilbert, 5,795,203, Cl. 441-1.000.

Bode, Hans; and Martin, Udo, to Emitec Gesellschaft fuer Emissionstechnologie mbH. Honeycomb body having microstructures in an intersecting configuration. 5,795,658, Cl. 428-593.000.

Boehringer Manneim GmbH: *See—*
Von Der Saal, Wolfgang; Heck, Reinhard; Kucznierz, Ralf; Leinert, Herbert; and Stegmeier, Karlheinz, 5,795,892, Cl. 514-247.000.

Boehringer Mannheim Corporation: *See—*
Eisenbeis, Scott J., 5,795,718, Cl. 435-6.000.

Boehringer Mannheim GmbH: *See—*
Boos, Karl-Siegfried; Seidel, Dietrich; Engel, Wolf-Dieter; and Kurrle-Weittenhiller, Angelika, 5,795,786, Cl. 436-71.000.

Boeing Company, The: *See—*
Colligan, Kevin J.; and Avila, Steven J., 5,794,835, Cl. 228-2.100.
Murray, Daniel J.; Griffin, John C., III; Turner, Bruce L.; Gunn, Peter D.; Twiggs, Thomas E.; VonJouanne, Henry V.; Schraw, George W.; and Tracy, Ann M., 5,797,106, Cl. 701-11.000.
Szupkay, Imre A., 5,794,434, Cl. 60-226.200.
Wampler, Robert R., 5,796,619, Cl. 364-474.370.

Boeing North American, Inc.: *See—*
Jackson, Dana B.; Asher, Donald I.; Halcomb, Ronald G.; and Vogt, John E., 5,795,426, Cl. 156-249.000.

Bofors AB: *See—*
Olofsson, Göran, 5,796,030, Cl. 102-424.000.

Bogel, Helmut: *See—*
Kaehler, Klaus; Klaas, Friedrich; and Bogel, Helmut, 5,794,398, Cl. 52-653.200.

Bogenberger, Jakob M.: *See—*
Bartley, Timothy D.; Bogenberger, Jakob M.; Bosselman, Robert A.; Hunt, Pamela; Kinstler, Olaf B.; and Samal, Babru B., 5,795,569, Cl. 424-85.100.

Bohlman, Walter; and Greeley, John, to Tracor Aerospace Electronic Systems, Inc. Variable impedance transmission line and high-power broadband reduced-size power divider/combiner employing same. 5,796,317, Cl. 333-127.000.

Boiocchi, Stefania: *See—*
Masini, Marco; Boiocchi, Stefania; and Botti, Edoardo, 5,796,302, Cl. 330-10.000.

Bois, Bernard; and Collas, Guy, to Moulinex S.A. Electrical cooking apparatus, in particular deep fat dryer. 5,794,522, Cl. 99-330.000.

Bolger, Richard P.: *See—*
Velan, G. Michael; Bolger, Richard P.; Dewey, George G.; and Wendling, E. Jonathan, 5,794,831, Cl. 227-2.000.

Bollig, Christoph; Bick, Werner; Dick, Jürgen; Jung, Bernd; and Perak, Daniel, to FEV Motorentechnik GmbH & Co. KG. Four-cylinder machine of the reciprocating piston type having balancing means. 5,794,493, Cl. 74-603.000.

Bolognesi, Davide: *See—*
Leonardi, Salvatore; and Bolognesi, Davide, 5,796,156, Cl. 257-494.000.

Bolt, Beranek and Newman Inc.: *See—*
Coleman, Ronald Bruce; Watters, Bill Gene; and Westerberg, Roy Allen, 5,796,849, Cl. 381-71.800.

Bombadier Inc.: *See—*
Bostelmann, Willy; Rioux, Roger; and Pion, Benoit, 5,794,574, Cl. 123-41.00E.

Bombalski, Robert E.: *See—*
Robinson, Edward C.; Bombalski, Robert E.; Levendusky, Thomas L.; Skiles, Jean Ann; Weaver, Mark L.; and Kotow, Nickolas C., 5,795,647, Cl. 428-329.000.

Bombardelli, Ezio; Curri, Sergio; Guglielmini, Giancarlo; Morazzoni, Paolo; and Polinelli, Walter, to Indena S.p.A. Topical medicament which increases the number of capillaries in damaged skin. 5,795,575, Cl. 424-195.100.

Bondinell, William E.; and Ku, Thomas Wen-Fu, to SmithKline Beecham Corporation. Fibrinogen receptor antagonists. 5,795,893, Cl. 514-252.000.

Bone Care International, Inc.: *See*—
Bishop, Charles W.; Knutson, Joyce C.; and Valliere, Charles R., 5,795,882, Cl. 514-170.000.

Bonella, Randy M.; and Melo, Maria L., to Compaq Computer Corporation. Bus master arbitration circuitry having improved prioritization. 5,797,020, Cl. 395-728.000.

Bonnet, Henri, to United Parcel Service of America, Inc. Apparatus and method of sorting objects. 5,794,790, Cl. 209-653.000.

Bookout, Russell, to Franklin Electric Co., Inc. Submersible motor sealing system. 5,796,197, Cl. 310-85.000.

Boon, Stephen W. Pressure-sensitive switch apparatus. 5,796,059, Cl. 200-85.00R.

Boos, Karl-Siegfried; Seidel, Dietrich; Engel, Wolf-Dieter; and Kurrle-Weittenhiller, Angelika, to Boehringer Mannheim GmbH. Process and reagent for the specific determination of LDL in serum samples. 5,795,786, Cl. 436-71.000.

Booty, Donald J., Jr., to Phorm Concept & Design, Inc. Guardlight. 5,795,054, Cl. 362-96.000.

Boron, Robert A., to Inventionworks, Inc. Gripping device. 5,795,002, Cl. 294-99.200.

Bosnar, Miro; and McNeill, J. Duncan. Time-domain electromagnetic geophysical mapping instruments. 5,796,253, Cl. 324-336.000.

Boss, Heinz: *See*—
Glanzmann, Alfred; and Boss, Heinz, 5,794,930, Cl. 271-277.000.

Bosselman, Robert A.: *See*—
Bartley, Timothy D.; Bogenberger, Jakob M.; Bosselman, Robert A.; Hunt, Pamela; Kinstler, Olaf B.; and Samal, Babru B., 5,795,569, Cl. 424-85.100.

Bosshart, Patrick W.: *See*—
Nasserbakht, Mitra; and Bosshart, Patrick W., 5,796,995, Cl. 395-558.000.

Bostelmann, Willy; Rioux, Roger; and Pion, Benoit, to Bombadier Inc. System for reversing 2 stroke engine. 5,794,574, Cl. 123-41.00E.

Boswell, Mark S.: *See*—
Taylor, James L.; Alanis, Johnny A.; and Boswell, Mark S., 5,794,756, Cl. 198-429.000.

Boswell, Richard S.; and Farraro, Thomas D., to Citgo Petroleum Corporation. Method of controlling the quench of coke in a coke drum. 5,795,445, Cl. 201-39.000.

Botti, Edoardo; and Mandrini, Tiziana, to SGS-Thomson Microelectronics S.r.l. Electronic circuit with protection against supply voltage overload. 5,796,567, Cl. 361-91.000.

Botti, Edoardo: *See*—
Masini, Marco; Boiocchi, Stefania; and Botti, Edoardo, 5,796,302, Cl. 330-10.000.

Bottomley, Gregory Edward, to Ericsson Inc. Method and apparatus for interference decorrelation in time and space. 5,796,788, Cl. 375-341.000.

Bottum, Edward W., Jr.; and Bottum, Edward W., Sr., to Refrigeration Research, Inc. Solar collector. 5,794,611, Cl. 126-661.000.

Bottum, Edward W., Sr.: *See*—
Bottum, Edward W., Jr.; and Bottum, Edward W., Sr., 5,794,611, Cl. 126-661.000.

Boudewijn, Alexander C., to Cordis Corporation. Catheter with filter and thrombus-discharge device. 5,795,322, Cl. 604-22.000.

Boudreau, Alain: *See*—
Houde, Michel; Turcotte, Eric; Tom, Wayne; and Boudreau, Alain, 5,797,094, Cl. 455-412.000.

Boutaghou, Zine-Eddine, to Seagate Technology, Inc. Flex on suspension design minimizing sensitivities to environmental stresses. 5,796,556, Cl. 360-104.000.

Boutet, John Claude, to Eastman Kodak Company. Use of a dichroic mirror antihalation layer for speed and sharpness boost. 5,795,708, Cl. 430-617.000.

Bovenberg, Roelof Ary Lans; Koekman, Bertus Pieter; Hoekema, Andreas; Van Der Laan, Jan Metske; Verweij, Jan; and De Vroom, Erik, to Gist-Brocades, B.V. Process for the efficient production of 7-ADCA via 3-(carboxyethylthio) propionyl-7-ADCA. 5,795,733, Cl. 435-51.000.

Bowden, Joseph H., Jr.; and Roedl, Lawrence J., to General Electric Company. Method for repairing a turbine engine member damaged tip. 5,794,338, Cl. 29-889.100.

Bowen, Dale Thomas: *See*—
Clapp, Timothy G.; Rust, Jon P.; Farrington, Carlos; and Bowen, Dale Thomas, 5,796,220, Cl. 318-51.000.

Bowers, Ned C. Adjustable quick connect fastener for accommodating panels of various thicknesses. 5,795,122, Cl. 411-551.000.

Bowersox, Stephen Scott: *See*—
Amstutz, Gary Arthur; Bowersox, Stephen Scott; Gohil, Kishorchandra; Adriaenssens, Peter Isadore; and Kristipati, Ramasharma, 5,795,864, Cl. 514-12.000.

Bowles, James E., to Advanced Micro Devices Inc. Reducing cache snooping overhead in a multilevel cache system with inclusion field in shared cache indicating state of data in lower level caches. 5,796,980, Cl. 395-471.000.

Boxenhorn, Burton: *See*—
Greiff, Paul; and Boxenhorn, Burton, 5,796,001, Cl. 73-504.160.

Boxman, Raymond L.: *See*—
Parkansky, Naum; Ben-shalom, Amir; Boxman, Raymond L.; Kaplan, Larisa; Goldsmith, Samuel; Yaloz, Hanan; and Nathan, Menachem, 5,795,631, Cl. 428-34.100.

Boyd, Donald L.; and Fields, William M. Sealing device for a twin wire dewatering apparatus. 5,795,442, Cl. 162-353.000.

Boyd, James P. Intraoral semi-custom discluder device and method. 5,795,150, Cl. 433-6.000.

Boydston, L. E. Bailey; and Wojdylak, George, to Double Eagle, Ltd., Inc. Portable air bag. 5,794,971, Cl. 280-733.000.

Boyer, Philip L.; and Kiernan, Gerald G., to International Business Machines Corporation. Optional quantifiers in relational and object-oriented views of database systems. 5,797,136, Cl. 707-2.000.

Boyer, Thomas W.: *See*—
Sitzberger, Carl R.; Hudson, Richard L.; and Boyer, Thomas W., 5,795,232, Cl. 464-73.000.

Boykin, David: *See*—
Dykstra, Christine C.; Boykin, David; and Tidwell, Richard R., 5,795,906, Cl. 514-394.000.

Bozada, Christopher A.: *See*—
Nakano, Kenichi; Bozada, Christopher A.; Quach, Tony K.; DeSalvo, Gregory C.; Via, G. David; Dettmer, Ross W.; Havasy, Charles K.; Sewell, James S.; Ebel, John L.; and Gillespie, James K., 5,796,131, Cl. 257-284.000.

Bracken, Peter Wallace; Brener, Jeffery Richard; Digirolamo, Martin Victor; Mullinix, Samuel Edward, Jr.; Stafford, Donald Wayne; and Wallen, Peter Eric, to Lexmark International, Inc. Abrasive shim compliant doctor blade. 5,797,076, Cl. 399-284.000.

Bracker AG: *See*—
Neff, Andreas, 5,794,426, Cl. 57-262.000.

Bradley, Matthews O.: *See*—
Shashoua, Victor E.; Swindell, Charles S.; Webb, Nigel L.; and Bradley, Matthews O., 5,795,909, Cl. 514-449.000.

Bradley, Monica; and Bradley, Ronald. Nursing bottle propping apparatus. 5,794,898, Cl. 248-102.000.

Bradley, Ronald: *See*—
Bradley, Monica; and Bradley, Ronald, 5,794,898, Cl. 248-102.000.

Brady, Jerry L.: *See*—
Wolflick, John R.; Cawvey, James L.; Brady, Jerry L.; Whitworth, John R.; and Hearn, David D., 5,794,697, Cl. 166-265.000.

Brailovski, Ilena: *See*—
Ben-Matitayhu, Ruth; Sverdlov, Boris; and Brailovski, Ilena, 5,795,395, Cl. 118-712.000.

Brajal, Américo; and Chouly, Antoine, to U.S. Philips Corporation. Digital transmission system comprising a receiver with cascaded equalizers. 5,796,814, Cl. 375-232.000.

Brand, Norbert: *See*—
Oberländer, Klaus; Brand, Norbert; and Belzner, Winfried, 5,794,403, Cl. 52-786.110.

Brandeis University: *See*—
Perlman, Daniel, 5,795,061, Cl. 366-130.000.

Brandt, Staffan G.: *See*—
Daugherty, David W., Jr.; and Brandt, Staffan G., 5,794,536, Cl. 105-3.000.

Branham, Douglas G., to New Holland North America Inc. Fuel tank assembly for skid steer loaders. 5,794,805, Cl. 220-86.200.

Branson Ultraschall Niederlassung der Emerson Technology GmbH & Co.: *See*—
Lotz, Wilfried; Priem, Heiko; and Reitmayer, Gerd, 5,795,419, Cl. 156-64.000.
Muhr, Emil, 5,795,437, Cl. 156-580.000.

Branton, Daniel: *See*—
Church, George; Deamer, David W.; Branton, Daniel; Baldarelli, Richard; and Kasianowicz, John, 5,795,782, Cl. 436-2.000.

Branton, Robert: *See*—
Bencheck, Michael; Branton, Robert; Brownmiller, Curtis; DeMoss, Mark; Landon, Steve; and Tran, Minh T., 5,796,723, Cl. 370-252.000.

Brattoli, Mark A.: *See*—
Archer, William R.; Becerra, Roger C.; Beifus, Brian L.; Brattoli, Mark A.; Erdman, David M.; Jahns, Thomas M.; Kliman, Gerald B.; Soong, Wen Liang; Stephens, Charles M.; Benedict, Eric R.; and Degner, Michael W., 5,796,194, Cl. 310-68.00B.

Bräuer, Wolfgang: *See*—
Heidingsfeld, Herbert; Bräuer, Wolfgang; Müller, Friedemann; and Meister, Willi, 5,795,948, Cl. 528-59.000.

Brault, Donald Armand; Cahill, Douglas Allan; Himmelwright, Richard Scott; and Taylor, Dene Harvey, to Rexam Graphics Incorporated. Ink jet imaging process and recording element for use therein. 5,795,425, Cl. 156-235.000.

Braun, Eugene R.; Smedley, Daniel G.; Holmes, Russell C.; and Gee, Thomas A., to Eaton Corporation. Engine torque control. 5,797,110, Cl. 701-84.000.

Braun, Günther: *See*—
Lack, Sabine; and Braun, Günther, 5,794,742, Cl. 188-321.110.

Bray, Donald J.: *See*—
Goel, Arvind; and Bray, Donald J., 5,795,648, Cl. 428-336.000.

Brayton, James M.: *See*—
Rhodehamel, Michael W.; Sarangdhar, Nitin V.; Merchant, Amit A.; Fisch, Matthew A.; and Brayton, James M., 5,797,026, Cl. 395-800.010.

Bredow, Wolfgang; Burchard, Thomas; and Haug, Thomas, to NBB Nachrichtentechnik GmbH & Co. KG. Multi-stage switch. 5,796,056, Cl. 200-5.00A.
Breed Automotive Technology, Inc.: *See*—
Halasz, Peter Tancred; and Husby, Harald Snorre. 5,797,111, Cl. 701-103.000.
Brener, Jeffery Richard: *See*—
Bracken, Peter Wallace; Brener, Jeffery Richard; Digirolamo, Martin Victor; Mullinix, Samuel Edward, Jr.; Stafford, Donald Wayne; and Wallen, Peter Eric. 5,797,076, Cl. 399-284.000.
Brenke, Horst, to Presl, Rudolf. Training apparatus. 5,795,272, Cl. 482-103.000.
Brennecke, Hermann; and Liere, Horst, to IRS Industrie Rationalisierungs-Systeme GmbH. Fire extinguishing device for an electrostatic coating facility. 5,794,704, Cl. 169-54.000.
Brenner, Michael B.; and Parker, Christina M., to Brigham & Women's Hospital, Inc. Integrin alpha subunit. 5,795,956, Cl. 530-326.000.
Brenner, Stanley S.; and Chase, Charles, to Leviton Manufacturing Co., Inc. Push-in lampholder mounting system. 5,795,059, Cl. 362-368.000.
Brenner, Tod H., to Den-Tal-Ez, Inc. Air driven low speed dental handpiece motors. 5,795,167, Cl. 433-100.000.
Breslin, Michael K., to Clean Environment Engineers. Ball check valve with offset open ball movement. 5,794,656, Cl. 137-533.110.
Breton, Lionel; Aubert, Lucien; Leclaire, Jacques; Martin, Richard; and De Lacharriere, Olivier, to Société l'Oréal S.A. Use of an extract from a non-photosynthetic filamentous bacterium and composition containing it. 5,795,574, Cl. 424-195.100.
Breu, Gunther: *See*—
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Brewer, Gerald K.: *See*—
Lundell, William G.; and Brewer, Gerald K., 5,796,325, Cl. 336-233.000.
Brezny, Rasto: *See*—
Friedman, Semyon D.; Sherwin, Martin B.; Brezny, Rasto; and Francis, Poovatholil F., 5,795,456, Cl. 204-471.000.
Brice, John L. Pressure regulated diverting apparatus and method for water conservation. 5,794,643, Cl. 137-14.000.
Bridges, Doye R., to Bioplexus Corporation. Apparatus for holding intestines out of an operative field. 5,795,290, Cl. 600-210.000.
Bridges, Mark; Hood, Graham Michael; and Gandy, Philip William Laurence, to EEV Limited. Apparatus to seal against leakage of high frequency radiation through a slot. 5,796,322, Cl. 333-248.000.
Brierton, Mark J.; Dolecek, Victor D.; Bilodeau, Leon E.; and Hempstead, Russell, to Cobe Laboratories, Inc. Extracorporeal blood processing methods and apparatus. 5,795,317, Cl. 604-5.000.
Brigati, Alessandro; Demange, Nicolas; Aulas, Maxence; and Guedj, Marc, to SGS-Thomson Microelectronics S.A. Selector switch circuit enabling the selective supply of voltages with different signs. 5,796,297, Cl. 327-546.000.
Briggs, Roger Robarts; and Leppanen, Jarmo Uolevi. Rock drill percussion mechanism. 5,794,717, Cl. 173-206.000.
Brigham & Women's Hospital, Inc.: *See*—
Brenner, Michael B.; and Parker, Christina M., 5,795,956, Cl. 530-326.000.
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Bristol-Myers Squibb Company: *See*—
Cederholm-Williams, Stewart A.; and Weis-Fogh, Ulla, 5,795,571, Cl. 424-94.640.
Cederholm-Williams, Stewart A.; and Weis-Fogh, Ulla, 5,795,780, Cl. 435-371.000.
Diegel, Michael L.; Linsley, Peter S.; Gilliland, Lisa K.; Moran, Patricia A.; Zarling, Joyce M.; and Ledbetter, Jeffrey A., 5,795,572, Cl. 424-135.100.
Holm, Niels Erik, 5,795,489, Cl. 210-782.000.
British Gas plc: *See*—
Tung, Ming-Biu, 5,795,144, Cl. 431-1.000.
British Technology Group Ltd.: *See*—
Pethig, Ronald; and Burt, Julian Paul Hillhouse, 5,795,457, Cl. 204-547.000.
British Telecommunication public limited Company: *See*—
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British Telecommunications PLC: *See*—
Poustie, Alistair J.; and Finlayson, Neil, 5,796,891, Cl. 385-28.000.
Brodel, John Frederick: *See*—
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Bromwell, Robert A.; Harris, Jack E.; Imboden, Alan M.; Sommer, Karl L.; and Witkowski, Thomas G., to Romeo-Rim, Inc. Container for bulk materials. 5,794,818, Cl. 222-105.000.
Brooker, Steven F.: *See*—
Spear, Kenneth J.; Brooker, Steven F.; Planthaber, Rudy F.; and Bennett, Eric D., 5,794,649, Cl. 137-355.270.
Brooks, Charles Alan: *See*—
Bunting, Richard Michael; Harris, David Isaac; Acampora, Alfonse Anthony; and Brooks, Charles Alan, 5,796,743, Cl. 370-474.000.
Brooks, Clint D.; Bhatia, Pramila; Kolasa, Teodozyj; Stewart, Andrew O.; Gunn, David E.; and Craig, Richard A., to Abbott Laboratories. Symmetrical bis-heteroaryl-methoxy-phenylalkyl carboxylates as inhibitors of leukotriene biosynthesis. 5,795,900, Cl. 514-314.000.
Brooks, Richard Phillip, to Tony Team Limited. Converging passage can crusher. 5,794,527, Cl. 100-151.000.
Brophy, Robert C., to Turfco Manufacturing, Incorporated. Triangular cross section trenching apparatus for edging. 5,794,708, Cl. 172-19.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Akahane, Kohichi; Kondo, Takashi; Shimizu, Masaki; Kurono, Yoshikazu; and Asano, Fumiaki, 5,794,554, Cl. 112-470.010.
Asano, Yuji, 5,796,494, Cl. 358-468.000.
Futamura, Masao, 5,794,553, Cl. 112-102.500.
Murai, Suzuyo; and Asano, Yuji, 5,796,493, Cl. 358-442.000.
Owaki, Ryoji, 5,794,552, Cl. 112-102.500.
Takada, Hiroyuki; Hayashi, Koichi; Aoyama, Yasutada; Chaya, Norio; and Nishikawa, Hiroshi, 5,796,913, Cl. 386-125.000.
Yamazaki, Hideto; Fujioka, Masaya; Kitahara, Takeo; Kato, Masahito; and Higashiyama, Shunichi, 5,795,375, Cl. 106-31.570.
Brouillet, Jean-Luc: *See*—
Bellet, Serge; Brouillet, Jean-Luc; and Bazzoni, Daniel, 5,796,006, Cl. 73-661.000.
Brovko, Oleg: *See*—
Nussbaum, Howard S.; Brovko, Oleg; and Dewolf, Douglas G., 5,796,779, Cl. 375-267.000.
Brow, Mary Ann D.: *See*—
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Brower, David Campbell; Myers, Robert Andrew; and Thomas, Jeff David, to International Business Machines Corporation. Pivoting roller for skewless document feed. 5,795,087, Cl. 400-636.000.
Brown, Andrew J., to R. H. Associates, Ltd. Racket handle. 5,795,254, Cl. 473-552.000.
Brown, Dennis. Finish dirt scraper. 5,794,714, Cl. 172-799.500.
Brown, Donald Ray: *See*—
Angell, Adrian John Waynforth; Pauley, Joseph Adam, III; Gabriel, Steven Matthew; and Brown, Donald Ray, 5,795,854, Cl. 510-312.000.
Brown, Joseph P.: *See*—
Fraden, Jacob; Brown, Joseph P.; Lackey, Robert P.; Howe, Randall R.; Bultges, Heinz; Debus, Wolfram; Bautz, Gunther; and Franke, Helmut, 5,795,067, Cl. 374-158.000.
Brown, Michael A., to Southpaw Enterprises, Inc. Apparatus for providing mobility and floatation-like effect to a seat or chair. 5,795,022, Cl. 297-314.000.
Brown, Paul A.; Bursten, Stuart L.; Rice, Glenn C.; and Singer, Jack W., to Cell Therapeutics, Inc. Method for treating diseases mediated by cellular proliferation in response to PDGF,EGF,FGF and VEGF. 5,795,898, Cl. 514-263.000.
Brown, Ralph W., to Time Warner Cable. Multiple run-time execution environment support in a set-top processor. 5,797,010, Cl. 395-712.000.
Brown, Stephen H.: *See*—
Berka, Randy Michael; Brown, Stephen H.; Xu, Feng; Schneider, Palle; Oxenbøll, Karen M.; and Aaslyng, Dorrit A., 5,795,760, Cl. 435-189.000.
Browning, Jeffrey; and Ware, Carl F., to Biogen, Inc.; and University of California. Lymphotoxin-beta and lymphotoxin-beta complexes. 5,795,964, Cl. 530-351.000.
Brownmiller, Curtis: *See*—
Bencheck, Michael; Branton, Robert; Brownmiller, Curtis; DeMoss, Mark; Landon, Steve; and Tran, Minh T., 5,796,723, Cl. 370-252.000.
Brueggmann, Gerd Ludwig, to SKF USA Inc. End face seal with sacrificial wear-in excluder. 5,794,940, Cl. 277-92.000.
Bruesselbach, Hans W.: *See*—
Gregor, Eduard; Chen, Tzeng S.; and Bruesselbach, Hans W., 5,796,770, Cl. 372-75.000.
Brummer, Charles W.: *See*—
Eaton, John W.; Schlesinger, Randall L.; Ikeda, Michael H.; Brummer, Charles W.; Pacheco, Xavier L.; Kevakian, Robert; and Espinosa, Ricardo G., 5,795,299, Cl. 600-459.000.
Brundage, Kevin R.; Chalasani, Devi; and Johnson, Ronald E., to Corning Incorporated. Method for rapid stiffening of extrudates. 5,797,081, Cl. 419-67.000.
Brunell, Robert; and Zdrok, Joseph, to Louis M. Gerson Co., Inc. Face mask and retainer. 5,794,617, Cl. 128-206.160.
Bruner, Jeffrey W.; and Stevenson, Peter E., to Tensar Corporation, The. Bonded composite knitted structural textiles. 5,795,835, Cl. 442-310.000.
Bruner, Roderick S. Combination water shoe and swim fin. 5,795,204, Cl. 441-61.000.
Brunner, Robert Frank, to Telefonaktiebolaget L M Ericsson. Reliable related billing ID information method for call delivery. 5,796,790, Cl. 379-59.000.
Bruntmyer, Joseph A., to Bruntmyer, Joseph A. Tilt walker sport board sport tilt walker board. 5,795,277, Cl. 482-146.000.
Bryan-Brown, Guy P.; McDonnell, Damien G.; Towler, Michael J.; and Bancroft, Martin S., to United Kingdom of Great Britain an Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Bistable nematic liquid crystal device with bigrating alignment layers and twist. 5,796,459, Cl. 349-132.000.
Bryant, Frank D., to Akona Adventure Gear. Baggage skid pad with actuatable drain. 5,794,747, Cl. 190-18.00R.
Bryars, John D., to Advanced Body Metrics Corporation. Heart pulse monitor. 5,795,300, Cl. 600-500.000.
Bticino S.p.A.: *See*—
Fabrizi, Fabrizio; and Pianezzola, Sergio, 5,796,061, Cl. 218-157.000.
BTR plc: *See*—

Denmark, Martin William; and Haseley, Phillip John, 5,794,647, Cl. 137-315.000.
BTU International, Inc.: *See*—
Orbeck, Gary A., 5,795,146, Cl. 432-176.000.
Bucaro, Laura J.: *See*—
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Kawakami, Soichiro; Mishina, Shinya; Kobayashi, Naoya; and Asao, Masaya, 5,795,679, Cl. 429-218.000.
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Ascik, Mark A., 5,794,782, Cl. 206-600.000.
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Carter, Hudson R., to Applied Synergistics, Inc. Combustion optimization system. 5,794,549, Cl. 110-347.000.

Carter, Mark C. Collapsible display table. 5,794,546, Cl. 108-115.000.

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Carter, Troy, to Intel Corporation. Die-level burn-in and test flipping tray. 5,794,783, Cl. 206-725.000.

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Casco Products Corporation: *See*—
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Case, T. Scott: *See*—
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Casey, Ernest D.: *See*—
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Yoshida, Tetsushi; Sato, Soichi; and Kikuchi, Zenta, 5,796,378, Cl. 345-88.000.

Casper, David P.: *See*—
Craig, William Michael; Casper, David P.; and Esveld, Hank, 5,795,602, Cl. 426-2.000.

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Lita, Mihai N., 5,796,941, Cl. 395-187.010.

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Berman, Rachael; Shirron, Stephen F.; Hayes, Fidelma; Peterson, Kevin; and Ciaffi, Marco, 5,797,023, Cl. 395-750.060.
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Hüsler, Rinaldo; Schwabe, Rudolf; and Luisoli, Reto, 5,795,985, Cl. 544-106.000.
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Circe Biomedical, Inc.: *See—*
Mullon, Claudy Jean-Paul; Cain, Shawn Paul; Perlman, Timothy Jon; Jauregui, Hugo O.; Naik, Sharda; Santangini, Henry A.; and Trenkler, Donna M., 5,795,711, Cl. 435-1.100.
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Ali, Mohammed, 5,795,319, Cl. 604-8.000.
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Ecclesine, Peter, 5,797,033, Cl. 395-842.000.
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CIS Bio International: *See—*
Livache, Thierry; Fouque, Brigitte; and Teoule, Robert, 5,795,715, Cl. 435-6.000.
Cisco Technology, Inc.: *See—*
Mazzola, Mario; Edsall, Tom; Prati, Massimo; and Cafiero, Luca, 5,796,732, Cl. 370-362.000.
Citgo Petroleum Corporation: *See—*
Boswell, Richard S.; and Farraro, Thomas D., 5,795,445, Cl. 201-39.000.
Citizen Watch Co., Ltd.: *See—*
Miyoshi, Kozo, 5,795,458, Cl. 205-124.000.
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Diekhans, Norbert, 5,795,221, Cl. 460-6.000.
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Clapham, Terrance N., to VISX, Incorporated. Laser refractive surgery station. 5,795,351, Cl. 606-4.000.

Clapp, Timothy G.; Rust, Jon P.; Farrington, Carlos; and Bowen, Dale Thomas, to North Carolina State University. Synchronous drive system for automated textile drafting system. 5,796,220, Cl. 318-51.000.

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Clark, James E.; and Merrill, David O., to Hewlett-Packard Company. Self-sealing fluid interconnect. 5,796,419, Cl. 347-85.000.

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Rahman, Mohamed M.; Leuthold, Hans; and Clark, Wesley, 5,795,074, Cl. 384-123.000.

Clausen, Glen C. Countermine breaching power blade. 5,794,709, Cl. 172-33.000.

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Breslin, Michael K., 5,794,656, Cl. 137-533.110.

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Ludwig, Craig S., 5,794,397, Cl. 52-506.080.

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Heisler, Daniel F.; Clements, Christopher J.; and Berry, Kenneth M., 5,795,517, Cl. 264-115.000.

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Demian, Hany W.; and Shalaby, Shalaby W., 5,795,922, Cl. 523-117.000.

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Laskowski, John S.; and Pintz, Adam, 5,796,620, Cl. 364-475.020.

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Ronconi, Giuseppe, 5,794,412, Cl. 53-466.000.

Cobe Laboratories, Inc.: *See*—
Brierton, Mark J.; Dolecek, Victor D.; Bilodeau, Leon E.; and Hempstead, Russell, 5,795,317, Cl. 604-5.000.

Cobian, Kenneth E.; Ebert, Michael J.; McIntyre, Peter B.; and Mayer, David W., to Medtronic, Inc. Coiled wire conductor insulation for biomedical lead. 5,796,044, Cl. 174-103.000.

Cobiski, Richard J., Jr.: *See*—
Wohlgemuth, Emanuel E.; and Cobiski, Richard J., Jr., 5,795,598, Cl. 425-525.000.

Cochavy, Baruch, to Intel Corporation. Method of efficiently sending packets onto a network by eliminating an interrupt. 5,797,039, Cl. 395-872.000.

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Cochran, Michael J.; and Readey, Peter Francis, 5,794,616, Cl. 128-205.110.

Cochran, Michael J.; and Readey, Peter Francis, to Cochran Consulting, Inc. Use of multiple gas blends with a dive computer. 5,794,616, Cl. 128-205.110.

Cochrane, John D., III. Catheter support cradle. 5,795,334, Cl. 604-174.000.

Coffey, Michael: *See*—
McLeish, Andrew; Cartilage, Roy; Coffey, Michael; and Prior, Michael, 5,795,359, Cl. 55-242.000.

Cognex Corporation: *See*—
Dutta-Choudhury, Paul, 5,796,868, Cl. 382-199.000.

Cohen, Elliot D. Offensive message interceptor for computers. 5,796,948, Cl. 395-200.360.

Cohen, Kenneth L.; and Hanlon, Dennis J. Apparatus with valve for treating incontinence. 5,795,288, Cl. 600-29.000.

Cohen, Martin D. Equestrian stirrup iron. 5,794,419, Cl. 54-47.000.

Cohen, Sheila M.; and Werrmann, Jeffrey G., to Merck & Co., Inc. Enhanced functional recovery of the heart by losartan treatment after an ischemic attach. 5,795,904, Cl. 514-381.000.

Cohen-Ravid, Moshe, to Ravco Innovations, Inc. Foldable security bar assembly. 5,794,677, Cl. 160-35.000.

Cohesive Technologies, Inc.: *See*—
Quinn, Hubert M.; Menapace, Rebecca A.; and Oberhauser, Charles J., 5,795,469, Cl. 210-198.200.

Colan, Peter V.; and Long, Randy J. Racking system for transporting a bicycle. 5,794,828, Cl. 224-530.000.

Cold Jet, Inc.: *See*—
Leon, Ross M., 5,795,214, Cl. 451-102.000.

Cole, Barry C.; Atkin, Curtis L.; and Knudtson, Kevin L., to University of Utah Research Foundation. *Mycoplasma arthritidis* superantigen. 5,795,974, Cl. 536-23.700.

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Denis, Jean-Pierre; Minicucci, Antonio; and Julemont, Michel, 5,795,853, Cl. 510-182.000.

Colineau, Joseph: *See*—
Maurice, François; Colineau, Joseph; Hanna, Charaf; and Sonrier, Michel, 5,796,710, Cl. 369-275.300.

Collas, Guy: *See*—
Bois, Bernard; and Collas, Guy, 5,794,522, Cl. 99-330.000.

Colligan, Kevin J.; and Avila, Steven J., to Boeing Company, The. Friction stir welding. 5,794,835, Cl. 228-2.100.

Collins, Cecil A.; Whalen, John F.; and Schmidt, Timothy J., Jr., to Fisher Dynamics Corporation. Clam-shell pivot assembly for a structures vehicle seat. 5,795,024, Cl. 297-361.100.

Collins, Joe H. Apparatus for on-loading and/or off-loading a vehicle on a vehicle carrier and releaseably latching the vehicle thereto. 5,795,115, Cl. 410-22.000.

Collins, Joyce E.; and Evans, Ethel. Curling iron organizer with temperature display. 5,794,799, Cl. 211-70.600.

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Colorado State University Research Foundation: *See*—
Tripp, Cynthia Ann; Wisnewski, Nancy; Grieve, Robert B.; and Frank, Glenn R., 5,795,768, Cl. 435-252.300.

Colvin, Alex David: *See*—
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Combs, Timothy F.; and Byrd, James O., to Research Products Manufacturing, Inc. Single station food product wrapping machine. 5,794,411, Cl. 53-466.000.

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Barlow, Dennis N., 5,794,548, Cl. 110-104.00R.

Comer, Edward Irby: *See*—
Roach, Peter Owen, Jr.; and Comer, Edward Irby, 5,797,097, Cl. 455-456.000.

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Aujollet, Patrick; and Gautier, Guy-Marie, 5,796,798, Cl. 376-283.000.
Caillat, Patrice; and Massit, Claude, 5,796,321, Cl. 333-246.000.
Ravetto, Michel; Chamonal, Jean-Paul; Marion, François; and Pomin, Jean-Louis, 5,794,331, Cl. 29-840.000.

Commonwealth Scientific and Industrial Research Organization: *See*—
Rippon, John Anthony, 5,795,354, Cl. 8-128.100.

Compaq Computer Corporation: *See*—
Bonella, Randy M.; and Melo, Maria L., 5,797,020, Cl. 395-728.000.
Markow, Mitchell A., 5,796,854, Cl. 381-188.000.
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Scott, Craig M.; Wang, Li Tung; Bennett, Arthur T.; and Nouri, Ahmad, 5,796,738, Cl. 370-401.000.
Sharma, Dinesh; Clark, Gordon R.; and Alton, Lawrence E., 5,796,566, Cl. 361-86.000.
Shipp, Ronald Anthony; Hecht, Stuart; and Harkin, Patrick Allen, 5,796,413, Cl. 345-522.000.
Tavallaei, Siamak; and Miller, Joseph P., 5,797,018, Cl. 395-726.000.
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CompuServe Incorporated: *See*—
MacNaughton, Bruce A.; and Turner, Leigh R., 5,796,393, Cl. 345-329.000.

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Mammone, Richard J., 5,796,859, Cl. 382-128.000.

Computer Associates International, Inc.: *See*—
Esbensen, Daniel, 5,796,942, Cl. 395-187.010.

Conard, William A.: *See*—
Sloan, James W.; Papciak, Charles; and Conard, William A., 5,794,804, Cl. 215-249.000.

Conbraco Industries, Inc.: *See*—
Funderburk, Robert Vernon; and Price, Timothy Duane, 5,794,655, Cl. 137-527.000.

Concept Packaging Limited: *See*—
Hallam, Derek, 5,794,842, Cl. 229-198.200.

Cone, George; Peart, Stephen; Robinson, Joel; and Williams, Wes, to Virtual Vision, Inc. Support for a head mounted display system. 5,796,374, Cl. 345-8.000.

Conley, Jeff A.: *See*—
Alberta, Jack B.; and Conley, Jeff A., 5,795,236, Cl. 473-129.000.

Conley, Stephen C.: *See*—
Lahm, William J.; Stevens, Timothy A.; Tschumakow, Alexander G.; Wilkins, Leon M.; Janson, John M.; and Conley, Stephen C., 5,795,775, Cl. 435-297.500.

Conley, Willard Earl; Fahey, James Thomas; Moreau, Wayne Martin; Sooriyakumaran, Ratnam; and Welsh, Kevin Michael, to International Business Machines Corporation. Making of microlithographic structures with an underlayer film containing a thermolyzed azide compound. 5,795,701, Cl. 430-325.000.

Conn, Robert O., Jr., to Xilinx, Inc. Method and apparatus for measuring localized temperatures and voltages on integrated circuits. 5,795,068, Cl. 374-170.000.

Connaught Laboratories Limited: *See*—
Sia, Charles D. Y.; Chong, Pele; and Klein, Michel H., 5,795,955, Cl. 530-324.000.

Conner, Timothy J.: *See*—
Poto, Edward M.; Strahs, Kenneth R.; Conner, Timothy J.; Delahanty, Francis T.; Moorman, Michael; and Wieck, Henry, 5,795,543, Cl. 422-82.050.

Connick, William Joseph, Jr.: *See*—
Yang, Shaw-Ming; Dowler, William Minor; Schaad, Norman Werth; and Connick, William Joseph, Jr., 5,795,845, Cl. 504-117.000.

Connor, John: *See*—

Adams, Robert D.; Connor, John; Koch, Garrett S.; and Ternullo, Luigi, Jr., 5,796,745, Cl. 371-21.100.

Conroy, Keith M.: *See—*
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Consolidated Process Machinery, Inc.: *See—*
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Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno: *See—*
Aiello, Natale, 5,796,292, Cl. 327-534.000.
Fallico, Giuseppe; and Zambrano, Raffaele, 5,796,157, Cl. 257-557.000.
Leonardi, Salvatore; and Bolognesi, Davide, 5,796,156, Cl. 257-494.000.
Matranga, Vincenzo; Giacalone, Biagio; and Abruzzese, Massimo, 5,796,917, Cl. 395-3.000.

Consultex Corporation: *See—*
Niemann, Frederic J.; and Otto, Wolfgang K. F., 5,795,391, Cl. 118-315.000.

Contico International, Inc.: *See—*
Foster, Donald D.; and Nelson, Philip L., 5,794,821, Cl. 222-321.900.
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Contreras, Richard A.: *See—*
Shih, Shih-Ming; Rae, James Wilson; Contreras, Richard A.; and Chern, Jenn-Gang, 5,796,358, Cl. 341-139.000.

Converse, George L.: *See—*
Dunbar, Donald K.; Miller, Marlen L.; and Converse, George L., 5,794,432, Cl. 60-204.000.

Convertino, Robert P. Washing and drying rack for reseable bags. 5,794,792, Cl. 211-12.000.

Cook, David T. Rotatably releasable wire reel caddy. 5,794,886, Cl. 242-594.300.

Cookson Matthey Ceramics PLC: *See—*
Pearce, Roy W. J.; and Smith, Nigel B., 5,795,940, Cl. 525-222.000.

Cooley, Craig H.: *See—*
Trujillo, William R.; Berzas, Sean K.; Cooley, Craig H.; and Hansen, Wayne R., 5,794,725, Cl. 175-339.000.

Cooper, Christopher J.: *See—*
Jones, Leo H., Jr.; and Cooper, Christopher J., 5,794,890, Cl. 244-163.000.

Cooper Industries, Inc.: *See—*
Gilliam, Edgar Thomas; and Blackman, William Cecil, 5,794,357, Cl. 33-767.000.

Coots, Wade: *See—*
Kalebjian, Christopher Joseph; Kerrigan, Catherine Ann; Sharples, Robert; Coots, Wade; and Wernholm, Thomas Daniel, 5,794,591, Cl. 123-337.000.

Coppedge, Donald L., to Protect-A-Child Pool Fence Systems. Safety latch for pool fence. 5,794,990, Cl. 292-153.000.

Coppens, Paul; and Hoes, Eric, to AGFA-Gevart, N.V. Imaging element for making an improved printing plate according to the silver salt diffusion transfer process. 5,795,697, Cl. 430-204.000.

Coppersmith, Don; Raghavan, Prabhakar; and Zimmerman, Thomas G., to International Business Machines Corporation. System and method for near-field human-body coupling for encrypted communication with identification cards. 5,796,827, Cl. 380-9.000.

Coproco Development Corporation: *See—*
Arbiter, Nathaniel, 5,795,465, Cl. 209-166.000.

Cor Therapeutics, Inc.: *See—*
Giese, Neill A.; and Lokker, Nathalie, 5,795,910, Cl. 514-450.000.
Scarborough, Robert M., 5,795,867, Cl. 514-16.000.
Scarborough, Robert M., 5,795,868, Cl. 514-16.000.
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Corba, Robert E.: *See—*
Gatzemeyer, John J.; Corba, Robert E.; Demarest, Scott W.; and Gerrits, Nicholas M., 5,796,914, Cl. 392-390.000.

Corbishley, Terrence Jeffrey. Marine and submarine apparatus. 5,795,102, Cl. 405-171.000.

Corby, Kenneth Dean; Foeller, David Edward; Carlile, Dana Andrew; Shmois, Jacob Michael; He, Fugui; and Mruczek, Stephen Albert, to Eastman Kodak Company. Apparatus for heating and venting a container. 5,795,552, Cl. 422-294.000.

Cordery, Robert A.; Lee, David K.; Pintsov, Leon A.; Ryan, Frederick W., Jr.; and Weiant, Monroe A., Jr., to Pitney Bowes Inc. Secure user certification for electronic commerce employing value metering system. 5,796,841, Cl. 380-55.000.

Cordis Corporation: *See—*
Boudewijn, Alexander C., 5,795,322, Cl. 604-22.000.

Core, William Roger. Ceiling fan with an air diffuser system. 5,795,220, Cl. 454-292.000.

Corella, Arthur P. Instrumentation, system, method and package for packaging flaccid filaments. 5,794,776, Cl. 206-388.000.

Corley, Neil C.: *See—*
Hillman, Jennifer L.; Tang, Y. Tom; and Corley, Neil C., 5,795,724, Cl. 435-6.000.

Corley, Scott; Carnahan, Michael; and Wennerstrom, Joel, to Century Products Company. Child's stroller with manually operable accessory latch assembly. 5,794,951, Cl. 280-30.000.

Cornell Research Foundation, Inc.: *See—*
Chiang, Hsiao-Dong; and Wang, Cheng-Shan, 5,796,628, Cl. 364-492.000.

Corning Incorporated: *See—*
Brundage, Kevin R.; Chalasani, Devi; and Johnson, Ronald E., 5,797,081, Cl. 419-67.000.

Cornish, Paul M.: *See—*
Faass, Jan J.; Cornish, Paul M.; and Moulton, David R., 5,795,258, Cl. 475-348.000.

Corpe, Edward J.; Duffey, Debbie; and Elliott, Jeffrey D., to Ford Global Technologies, Inc. Headliner assembly and locating method. 5,795,015, Cl. 296-214.000.

Corsaro, Luigi. Pizza box carrier. 5,794,999, Cl. 294-16.000.

Corsini, Raffaele; and Hiller, Dietmar, to Pirelli Cavi S.p.A. Rare-earth doped lithium niobate DBR laser. 5,796,764, Cl. 372-6.000.

Cosentino, Steven R.; and Higgins, David Edward, to ICI Americas Inc. Release film and method of making thereof. 5,795,649, Cl. 428-336.000.

Costello, Matthew W.; Carpenter, Dan B.; and McNabb, Gerald V. Telephone recycling system. 5,796,807, Cl. 379-67.000.

Cote, Kevin Lauren: *See—*
Curley, Richard Daniel; and Cote, Kevin Lauren, 5,794,929, Cl. 271-270.000.

Cottingham, Hugh V., to Becton Dickinson and Company. DNA microwell device and method. 5,795,748, Cl. 435-91.200.

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Counsell, Raymond E.; Meyer, Karen L.; Schwendner, Susan W.; and Haradahira, Terushi, to University of Michigan, The Board of Regents of the. Radioiodinated phospholipid ether analogues. 5,795,561, Cl. 424-1.770.

Courtaigne, Bertrand, to Blue Moon WW. Reguided connector box. 5,796,036, Cl. 174-50.000.

Courtonne, Véronique; Morin, Dominique; Lacombe, Jean-Claude; Carbonell, Jean-Pierre; and Rene, Didier, to Alcatel Espace. Orientable antenna with conservation of polarization axes. 5,796,370, Cl. 343-781.000.

Cox, Patrick M.; Powell, Adrian P.; Filliger, Paul W.; and Kepler, Michael A., to Metro One Telecommunications, Inc. Method for monitoring the connection between the subscriber and the destination telephone and providing directory assistance upon detection of predetermined tone. 5,797,092, Cl. 455-404.000.

Cox, Ronald Kendall: *See—*
McKague, Elbert Lee, Jr.; Cox, Ronald Kendall; and Phillips, John Edward, 5,795,094, Cl. 403-335.000.

Coyle, Roy Tom; and Ekelund, Jan Magnus, to Sandvik AB; and Advanced Industrial Materials. Manufacture of transition metal carbide nitride or carbonitride whiskers. 5,795,384, Cl. 117-87.000.

Coyote Enterprises, Inc.: *See—*
Fuller, Everett, 5,795,035, Cl. 301-37.320.

Crabtree, Larry W.; Rosette, Jack L.; and Webb, Samuel T., to Lin Pac, Inc. Non-reopening fastener for plastic packaging and method of forming same. 5,794,315, Cl. 24-587.000.

Cragg, Andrew H.; and Kagan, Jonathan, to Micro Therapeutics, Inc. Balloon catheter for occluding aneurysms of branch vessels. 5,795,331, Cl. 604-96.000.

Craig, Alexander Dean: *See—*
McMillan, Robert John; Craig, Alexander Dean; and Heinen, John Patrick, 5,797,134, Cl. 705-400.000.

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Weder, Donald E.; Straeter, Joseph G.; Straeter, William F.; Craig, Frank; King, Michael J.; and Funk, William C., 5,795,281, Cl. 493-154.000.

Craig, Richard A.: *See—*
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Craig, William Michael; Casper, David P.; and Esveld, Hank, to Cargill, Incorporated. Milk enhancer and milk feed composition. 5,795,602, Cl. 426-2.000.

Cram Australia Pty Ltd.: *See—*
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Cramer, Charles C.; and Cherney, Dale M., to Paper Converting Machine Company. Overload detector for servo driven machines. 5,796,221, Cl. 318-68.000.

Crandall, David L. Gun barrel stabilizer. 5,794,374, Cl. 42-97.000.

Crane Co.: *See—*
Reese, Robert John; and Fink, George Russell, 5,794,755, Cl. 194-348.000.

Craport, William N.; and Winters, Bruce C., to BellSouth Corporation. System and method for identifying the geographic region of a geographic area which contains a geographic zone associated with a location. 5,796,634, Cl. 364-559.000.

Crawford, James A., to Andre Alain Tabourian. Digital transmission system. 5,796,783, Cl. 375-298.000.

Crawford, Robert Dennis; and BeMent, Bradley Earl, to Ford Motor Company. Method and system for serially based host/peripheral communication. 5,797,038, Cl. 395-868.000.

Cray Research, Inc.: *See—*
Birrittella, Mark S.; Kessler, Richard E.; Oberlin, Steven M.; Passint, Randal S.; and Thorson, Greg, 5,797,035, Cl. 395-855.000.

CRC-Evans Pipeline International, Inc.: *See—*
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Jones, Richard L.; and Laing, Brian S., 5,796,069, Cl. 219-121.640.

Creanova AG: *See—*
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Creative Pathways, Inc.: *See—*

Rohrberg, Roderick G.; and Rohrberg, Timothy K., 5,794,645, Cl. 137-15.000.

Cree, Stephen H.; Wilson, Craig A.; and de Vries, Sjoerd A., to Dow Chemical Company, The. Crosslinkable bimodal polyolefin compositions. 5,795,941, Cl. 525-240.000.

Creesy, Robin C.; and Hempel, Conrad F., to Ford Global Technologies, Inc. Pivotable and rotatable door lock button assembly. 5,794,995, Cl. 292-348.000.

Creutzmann, Edmund; Kopp, Walter; and Herzog, Heinz, to Siemens Nixdorf Informationssysteme Aktiengesellschaft. Printer means for printing front and/or back side of a band-shaped recording medium. 5,797,079, Cl. 399-384.000.

Crews, George M.; and Shen, Ji, to Melamine Chemicals, Inc. Preparation of pigmented melamine-formaldehyde polymer beads. 5,795,507, Cl. 264-5.000.

Cripe, Larry Duane. Tethered ball practice device. 5,795,250, Cl. 473-426.000.

Cronce, Gary M.; Stapleton, Craig A.; and Prasatek, Craig R., to Advanced Accessory Systems LLC. Split stanchion article carrier. 5,794,826, Cl. 224-321.000.

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Crookham, Joe P., to Musco Corporation. Device and method to lift and manipulate poles which are mounted onto a base. 5,794,387, Cl. 52-122.100.

Cross, David A., to Astec International Limited. Interleaved continuous flyback power converter system. 5,796,595, Cl. 363-16.000.

Crothers, Robert Arnold: *See*—
Cottingham, Steven William; Spaulding, Frank Clyde; Davies, Maxwell Geoffrey; Pugh, Stanley James; and Crothers, Robert Arnold, 5,794,837, Cl. 228-37.000.

Crouch, Shirley Aline; Potter, James D.; and Waldron, Joan Phillips. Hearing aid telephone interconnect system. 5,796,821, Cl. 379-430.000.

Crowhurst, Paul E.; and Lekhtman, David, to Clairlon Inc. Fan air cleaner. 5,795,131, Cl. 416-146.00R.

Crowley, H. W., to Roll Systems, Inc. System for incorporation of post-production operations to a web output from an image transfer device. 5,794,830, Cl. 226-24.000.

Crowson, Richard Michael: *See*—
Clise, William E.; and Crowson, Richard Michael, 5,797,091, Cl. 455-404.000.

Crucet, Robert A. Outfield wall structure for a baseball playing field. 5,795,252, Cl. 473-434.000.

CSEM Centre Suisse D'Electronique et de Microtechnique SA: *See*—
Renaud, Philippe; Kloeck, Benjamin; and Falco, Lucien, 5,794,761, Cl. 200-181.000.

Csipkes, Andrei; Palmquist, John Mark; and White, Ian Arthur, to Lucent Technologies, Inc. Fiber optic connector with improved return loss performance. 5,796,894, Cl. 385-56.000.

CTES, L.C.: *See*—
Newman, Kenneth R.; Haver, Nelson A.; and Speller, David J., 5,794,703, Cl. 166-381.000.

Cucheran, John S.; Potter, Donald R.; and Rak, Artur K., to JAC Products, Inc. Vehicle article carrier. 5,794,827, Cl. 224-321.000.

Cucin, Robert L. Power-assisted liposuction instrument and cannula assembly therefor. 5,795,323, Cl. 604-22.000.

Cullis, Pieter R.: *See*—
Mayer, Lawrence D.; Bally, Marcel B.; Cullis, Pieter R.; Ginsberg, Richard S.; and Mitilenes, George N., 5,795,589, Cl. 424-450.000.

Cultor Ltd.: *See*—
Hyöky, Göran; Paananen, Hannu; Montén, Kaj-Erik; Heikkilä, Heikki; and Kuisma, Jarmo, 5,795,398, Cl. 127-46.100.

Culver, Larry G., to LCI International Inc. Road resurfacing system. 5,795,096, Cl. 404-90.000.

Cunningham, Michael Thomas; Rosero, Marcello; Buck, Jon; and Lugo, Mario R., to Oceaneering International, Inc. Subsea connection. 5,794,701, Cl. 166-341.000.

Cuomo, Jerome J.; and Yehoda, Joseph E., to International Business Machines Corporation. Method for polishing a diamond or carbon nitride film by reaction with oxygen transported to the film through a superionic conductor in contact with the film. 5,795,653, Cl. 428-408.000.

Curley, Joseph M.: *See*—
Barnitz, James C.; Curley, Joseph M.; and Downey, David C., 5,795,328, Cl. 604-67.000.

Curley, Richard Daniel; and Cote, Kevin Lauren, to Heidelberger Druckmaschinen AG; and Heidelberg Harris, Inc. Variable velocity profile deceleration device. 5,794,929, Cl. 271-270.000.

Curran, Kenneth J.; and Smith, Jay, III, to Smith Engineering. Positioning system using infrared radiation. 5,796,387, Cl. 345-158.000.

Curran, Kenneth J.: *See*—
Cartabiano, Michael C.; Curran, Kenneth J.; Dick, David J.; Gibbs, Douglas R.; Kirby, Morgan H.; May, Richard L.; Storer, William J. A.; and Ullman, Adam N., 5,796,354, Cl. 341-22.000.

Curri, Sergio: *See*—
Bombardelli, Ezio; Curri, Sergio; Guglielmini, Giancarlo; Morazzoni, Paolo; and Polinelli, Walter, 5,795,575, Cl. 424-195.100.

Custom Packaging Systems, Inc.: *See*—
LaFleur, Lee, 5,794,670, Cl. 141-314.000.

Cutler Manufacturing Corporation: *See*—
Jenkins, Kenneth W., 5,794,844, Cl. 232-25.000.

Cylink Corporation: *See*—
Chen, Lidong; and Williams, Charles S., 5,796,833, Cl. 380-25.000.

Cyman, Theodore F.; Schimminger, Edward W.; Rocco, Frank J.; Armstrong, Carl F.; and Mariani, Frank J., to Moore Business Forms, Inc. High resolution real time raster image processing system and method. 5,796,411, Cl. 345-502.000.

Cypress Semiconductor Corporation: *See*—
Rees, David Brian; and Steadman, Martin Jonathon, 5,796,289, Cl. 327-425.000.

Cytec Technology Corp.: *See*—
Waterman, Paul Sheldon, 5,795,499, Cl. 252-404.000.

Cytotherapeutics, Inc.: *See*—
Schinstine, Malcolm; Shoichet Molly S.; Gentile, Frank T.; Hammang, Joseph P.; Holland, Laura M.; Cain, Brian M.; Doherty, Edward J.; Winn, Shelley R.; and Aebischer, Patrick, 5,795,790, Cl. 435-382.000.

Czaja, Stash, to Nokia Mobile Phones Ltd. Methods and apparatus for performing rate determination with a variable rate viterbi decoder. 5,796,757, Cl. 371-46.000.

D & R Recyclers, Inc.: *See*—
Rutherford, Darrel, Sr., 5,794,861, Cl. 241-1.000.

Dade Behring Inc.: *See*—
Dietzen, Dennis Jerome, 5,795,789, Cl. 436-500.000.

Daewoo Electronics Co., Ltd.: *See*—
Ji, Byung-Lee; Kwon, Ki-Ha; and Sim, Yong-Won, 5,796,538, Cl. 360-71.000.
Joe, Yeo-Uk, 5,796,559, Cl. 360-108.000.
Lee, Sang-Moo, 5,795,045, Cl. 312-408.000.
Song, Won-Jin, 5,794,633, Cl. 134-53.000.

Daewoo Electronics, Ltd.: *See*—
Woo, Seong-Jae, 5,795,046, Cl. 353-69.000.

Dahlberg, James E.; Lyamichev, Victor I.; and Brow, Mary Ann D., to Third Wave Technologies, Inc. Synthesis-deficient thermostable DNA polymerase. 5,795,763, Cl. 435-194.000.

Dahlquist, John A.: *See*—
Belotserkovsky, Edward; and Dahlquist, John A., 5,795,394, Cl. 118-665.000.

Dai Nippon Printing Co., Ltd.: *See*—
Hirose, Keiji, 5,795,656, Cl. 428-484.000.

Daicel Chemical Industries, Ltd.: *See*—
Mutsuda, Mitsuteru, 5,795,935, Cl. 525-66.000.

Daigle, Robert V.: *See*—
John, Michael; and Daigle, Robert V., 5,794,543, Cl. 108-56.100.

Daigle, Ronald E., to Atlantis Diagnostics International, L.L.C. Ultrasonic diagnostic imaging system with personal computer architecture. 5,795,297, Cl. 600-447.000.

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Held, Manfred; and Kaltschmidt, Horst, 5,796,029, Cl. 102-213.000.

Daimler-Benz Aerospace Airbus GmbH: *See*—
Lutzer, Wilhelm, 5,794,888, Cl. 244-117.00A.
Schumacher, Markus; and Muin, Andrew, 5,795,018, Cl. 297-184.170.

Daimler-Benz AG: *See*—
Berger, Frank; and Schwarzkopf, Bernhard, 5,794,595, Cl. 123-470.000.
Nohr, Matthias; and Mehren, Herbert, 5,794,975, Cl. 280-753.000.

Daimler-Benz Aktiengesellschaft: *See*—
Lorenz, Helmut; Noreikat, Karl-Ernst; Klaiber, Thomas; Fleck, Wolfram; Sonntag, Josef; Hornburg, Gerald; and Gaulhofer, Andreas, 5,794,732, Cl. 180-65.300.

Dalal, Hormazdyar Minocher; and Fallon, Kenneth Michael, to International Business Machines Corporation. Direct chip attach circuit card. 5,796,591, Cl. 361-779.000.

Dalbard, Benoit, to Rockwell BCS-France. Sunvisor provided with means for automatically returning the panel to a stable position. 5,795,010, Cl. 296-97.130.

Dalboege, Henrik: *See*—
Christgau, Stephan; Kofod, Lene Venke; Andersen, Lene Nonboe; Kauppinen, Sakari; Heldt-Hansen, Hans Peter; and Dalboege, Henrik, 5,795,764, Cl. 435-200.000.

D'Alessio, Larry M.: *See*—
Romano, John F.; McVay, William Patrick; and D'Alessio, Larry M., 5,795,336, Cl. 604-192.000.

Dal Farra, David: *See*—
McClennon, Scott; Ding, Heping; and Dal Farra, David, 5,796,818, Cl. 379-390.000.

Dallman, Ernest R.; and Wehr, Franklin W., to Dallman Industrial Corporation. Modular transport system for an automatic teller machine. 5,794,547, Cl. 109-50.000.

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Dallman, Ernest R.; and Wehr, Franklin W., 5,794,547, Cl. 109-50.000.

Dallmann, Brian D., to Truth Hardware Corporation. Adjustable window hinge. 5,794,310, Cl. 16-362.000.

Dallmier, Anthony W.; and McCoy, William F., to Nalco Chemical Company. Process to manufacture stabilized alkali or alkaline earth metal hypobromite and uses thereof in water treatment to control microbial fouling. 5,795,487, Cl. 210-754.000.

Damasse, Jean-Michel; and Barbe, Jacques, to Usinor Sacilor (Societe Anonyme). Nozzle plant equipped with such a nozzle, for the continuous casting of metal products. 5,794,682, Cl. 164-437.000.

Dames, Andrew Nicholas, to Scientific Generics Limited. Plural rotary member position encoder having electromagnetically coupled resonant frequency multiplexed outputs for respectively associated rotatable members. 5,796,250, Cl. 324-207.220.

Damke, Roland; Gerresheim, Manfred; Nau, Robert; Winter, Hans-Joachim; and Lowenhaupt, Bernd, to SP Reifenwerke GmbH. Pneumatic vehicle tire having a breaker arrangement surrounded at least in its edge regions by at least one cover ply and method of making the same. 5,795,417, Cl. 152-527.000.

Dämmig, Joachim, to Rieter Ingolstadt Spinnereimaschinenbau AG. Device and process for linear measurement of fiber sliver thickness or mass. 5,796,635, Cl. 364-563.000.

Dana Corporation: *See*—
Baer, Kurt R.; Willford, George A.; and Zuehlke, Timothy R., 5,794,752, Cl. 192-85.0CA.
Lahrman, John C., 5,794,941, Cl. 277-175.000.
Lanier, Roland Vann, Jr.; and Rhyne, Gregory Keith, 5,795,361, Cl. 55-502.000.

Dandia, Sanjay: *See*—
Koc, Aydin; Steidl, Michael J.; and Dandia, Sanjay, 5,796,171, Cl. 257-786.000.

Danforth, Stephen C.: *See*—
Safari, Ahmad; Danforth, Stephen C.; Bandyopadhyay, Amit; Janas, Victor F.; and Panda, Rajesh Kumar, 5,796,207, Cl. 310-358.000.

Danfoss A/S: *See*—
Kristensen, Egon, 5,794,513, Cl. 92-57.000.

Dangelmaier, Peter; and Steiger, Martin, to Endress+Hauser Wetzer GmbH+Co. KG. Apparatus for taking a volume-adjustable sample from a moving fluid. 5,796,015, Cl. 73-863.560.

Daniels, Edward P., Jr.; and Woodman, Clare E., to Pitney Bowes Inc. Method of customizing application software in inserter systems. 5,797,015, Cl. 395-712.000.

Daoud, Bassel H., to Lucent Technologies Inc. Weatherproofing of electrical connections with terminals on outdoor panels. 5,796,039, Cl. 174-59.000.

Darden, Leigh Ann: *See*—
Komerath, Narayanan M.; Darden, Leigh Ann; Magill, John C.; and Peterson, Kevin G., 5,794,887, Cl. 244-75.00R.

Darius, Heinz-Gerd: *See*—
Kürschner, Stefan; Jentsch, Jörg-Dietrich; and Darius, Heinz-Gerd, 5,795,841, Cl. 502-325.000.

Dassler, Hans-Ulrich; Haas, Rüdiger; and Lang, Johann, to Steinheil Industrielle Messtechnik GMBH. Method and device for the measurement of off-center rotating components. 5,796,485, Cl. 356-373.000.

Dassoulas, Stephen C., to Black & Decker Inc. Saw blade clamping arrangement for a power tool. 5,794,352, Cl. 30-392.000.

Data General Corporation: *See*—
Goerke, Ulrich B.; and Pieper, Mark S., 5,796,242, Cl. 323-282.000.

Data Instruments, Inc.: *See*—
Panagotopulos, Louis J.; and Erichsen, Herman W., 5,796,007, Cl. 73-716.000.

Date, Masahiro: *See*—
Nakata, Yukihiko; Fujihara, Masaki; Date, Masahiro; Matsuo, Takuya; Ayukawa, Michiteru; and Itoga, Takashi, 5,796,116, Cl. 257-66.000.

Datta, Madhav; Kanarsky, Thomas Safron; Pike, Michael Barry; and Shenoy, Ravindra Vaman, to International Business Machines Corporation. Metallic interconnect pad, and integrated circuit structure using same, with reduced undercut. 5,796,168, Cl. 257-781.000.

Daugherty, David W., Jr.; and Brandt, Staffan G., to Westinghouse Air Brake Company. End design for a railway type freight car. 5,794,536, Cl. 105-3.000.

Daute, Peter; Gruetzmacher, Roland; Westfechtel, Alfred; and Mertscheit, Nicole, to Henkel Kommanditgesellschaft auf Aktien. Use of dimerdiol in polyurethane moldings. 5,795,949, Cl. 528-65.000.

Davey, Melville G. Oscillating blade razor. 5,794,342, Cl. 30-45.000.

Davies, Jonathan Michael Richard: *See*—
Kalindjian, Sarkis Barret; Steel, Katherine Isobel Mary; Pether, Michael John; Davies, Jonathan Michael Richard; Low, Caroline Minli Rachel; Hudson, Martin Lyn; Buck, Ildiko Maria; McDonald, Iain Mair; Dunstone, David John; and Tozer, Matthew John, 5,795,907, Cl. 514-397.000.

Davies, Maxwell Geoffrey: *See*—
Cottingham, Steven William; Spaulding, Frank Clyde; Davies, Maxwell Geoffrey; Pugh, Stanley James; and Crothers, Robert Arnold, 5,794,837, Cl. 228-37.000.

Davis, Derek L., to Intel Corporation. Apparatus and method for providing secured communications. 5,796,840, Cl. 380-50.000.

Davis, Owen; and Jain, Vidyut, to Dot Com Development, Inc. Method and apparatus for tracking client interaction with a network resource and creating client profiles and resource database. 5,796,952, Cl. 395-200.540.

Davis, Wayne S., to Whitaker Corporation, The. Connector on a battery. 5,795,181, Cl. 439-500.000.

Dawley, Douglas Joseph; Hearn, Michael Lee; and Dupuis, David William, to Heidelberger Druckmaschinen AG; and Heidelberg Harris, Inc. Compliant drive for printing presses. 5,794,529, Cl. 101-216.000.

Day, Maureen Meredith, to Angraphie Dimensional Systems, LLC. Three dimensional camera. 5,797,052, Cl. 396-330.000.

De Novo, Inc.: *See*—
Stang, Michael A.; Zeak, Jeffrey Alan; and Strouts, Brian Lee, 5,795,586, Cl. 424-441.000.

Deak, Bernard A. Ram feed ammo box. 5,794,606, Cl. 124-51.100.

Deamer, David W.: *See*—
Church, George; Deamer, David W.; Branton, Daniel; Baldarelli, Richard; and Kasianowicz, John, 5,795,782, Cl. 436-2.000.

Dean, James L.; and Hall, Rodney B. Plastic clip for downspout attachment to vinyl siding. 5,794,384, Cl. 52-16.000.

Dean, Richard D. Thermoplastic positioning sling and method of fabrication thereof. 5,794,628, Cl. 128-858.000.

Dean, Ronald P., to Hewlett-Packard Company. Heat sink device having radial heat and airflow paths. 5,794,685, Cl. 165-121.000.

DeAndrea, John J.; and Conroy, Keith M., to Technitrol, Inc. Data receiver having bias restoration. 5,796,781, Cl. 375-288.000.

Deane, Jacqueline Margaret, to Fujifilm Electronic Imaging Ltd. Image enhancement. 5,796,873, Cl. 382-254.000.

Dearnaley, Geoffrey, to Southwest Research Institute. Diamond-like carbon based electrocatalytic coating for fuel cell electrodes. 5,795,672, Cl. 429-42.000.

De Bouard, Dominique: *See*—
Sotom, Michel; Masetti, Francesco; De Bouard, Dominique; Gabriagues, Jean-Michel; and Chiaroni, Dominique, 5,796,501, Cl. 359-119.000.

Debus, Wolfram: *See*—
Fraden, Jacob; Brown, Joseph P.; Lackey, Robert P.; Howe, Randall R.; Bultges, Heinz; Debus, Wolfram; Bautz, Gunther; and Franke, Helmut, 5,795,067, Cl. 374-158.000.

Decker, Owen H.; Mountz, David A.; and Tarnoski, Charles P., to Morton International, Inc. Color stable wrinkle finish epoxy powder coating. 5,795,927, Cl. 523-401.000.

Deckwer, Wolf-Dieter: *See*—
Schilling, Bernhard; Pfefferle, Walter; Bachmann, Bernd; Leuchtenberger, Wolfgang; and Deckwer, Wolf-Dieter, 5,795,732, Cl. 435-41.000.

DeClerck, David M., to Tecumseh Products Company. Vertical shaft self-priming centrifugal pump. 5,795,127, Cl. 415-106.000.

Dedo Weigert Film GmbH: *See*—
Weigert, Dedo, 5,795,057, Cl. 362-268.000.

Deeb, Gerald S.; Krueger, Dennis L.; Menzies, Robert H.; Morris, Herbert W.; Hyde, Patrick D.; Lau, Felix P.; Pyun, Eumi; Tucker, Pamela S.; and Wong, Roy, to Minnesota Mining & Manufacturing Company. Adhesive tape and method of making. 5,795,834, Cl. 442-62.000.

de Ferra, Francesca: *See*—
Grandi, Guido; de Ferra, Francesca; and Rodriguez, Francesco, 5,795,738, Cl. 435-69.100.

Degani, Yinon; and Presby, Herman Melvin, to Lucent Technologies, Inc. Apparatus and methods for interconnecting arrays of optical transmission paths employing externally located connector pads. 5,796,900, Cl. 385-95.000.

Deghenghi, Romano. Polypeptide compounds containing D-2-alkyltryptophan capable of promoting the release of growth hormone. 5,795,957, Cl. 530-329.000.

Degner, Michael W.: *See*—
Archer, William R.; Becerra, Roger C.; Beifus, Brian L.; Brattoli, Mark A.; Erdman, David M.; Jahns, Thomas M.; Kliman, Gerald B.; Soong, Wen Liang; Stephens, Charles M.; Benedict, Eric R.; and Degner, Michael W., 5,796,194, Cl. 310-68.00B.

Degussa Aktiengesellschaft: *See*—
Oberländer, Klaus; Brand, Norbert; and Belzner, Winfried, 5,794,403, Cl. 52-786.110.
Schilling, Bernhard; Pfefferle, Walter; Bachmann, Bernd; Leuchtenberger, Wolfgang; and Deckwer, Wolf-Dieter, 5,795,732, Cl. 435-41.000.

Dehner, Leo G.: *See*—
Chen, Weizhong; Dehner, Leo G.; and Carsello, Stephen Rocco, 5,796,787, Cl. 375-326.000.

de Hond, Maurice, to Wegener Internet Projects BV. System for publishing and searching interests of individuals. 5,796,395, Cl. 345-331.000.

DEKA Products Limited Partnership: *See*—
Kamen, Dean L., 5,794,730, Cl. 180-7.100.

Deki, Tsuyoshi: *See*—
Kimura, Noriyuki; Matsushiro, Hiroyuki; Deki, Tsuyoshi; and Motohashi, Takeshi, 5,797,069, Cl. 399-113.000.

De Lacharriere, Olivier: *See*—
Breton, Lionel; Aubert, Lucien; Leclaire, Jacques; Martin, Richard; and De Lacharriere, Olivier, 5,795,574, Cl. 424-195.100.

Delahanty, Francis T.: *See*—
Poto, Edward M.; Strahs, Kenneth R.; Conner, Timothy J.; Delahanty, Francis T.; Moorman, Michael; and Wieck, Henry, 5,795,543, Cl. 422-82.050.

DeLair, Charles M.; and Cline, Russell B., to Raytheon Company. Proportional pneumatic fin actuator system without feedback control. 5,794,509, Cl. 91-376.00R.

Delarosa, Joseph C. Scented bubble wrap. 5,795,644, Cl. 428-178.000.

Delco Electronics Corporaiton: *See*—
Osborn, Douglas Bruce; Gose, Mark Wendell; and Dikeman, John Mark, 5,796,278, Cl. 327-108.000.

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Cottingham, Steven William; Spaulding, Frank Clyde; Davies, Maxwell Geoffrey; Pugh, Stanley James; and Crothers, Robert Arnold, 5,794,837, Cl. 228-37.000.
Kearney, Mark Billings; Koglin, Dennis Michael; and Osborn, Douglas Bruce, 5,796,298, Cl. 327-561.000.
Reed, Robert Harrison; Koglin, Dennis Michael; and Kearney, Mark Billings, 5,796,655, Cl. 365-185.220.
Ross, David Alan; Selby, Ronald Kenneth; Sylvester, Gail Monica; and Kruppa, Victor David, 5,796,324, Cl. 336-192.000.
Werbelow, Joel Martin; Singer, John Byron; and Kincaid, Kevin Dale, 5,796,177, Cl. 307-10.100.

De Leys, Robert; Vanderborght, Bart; Saman, Eric; and Van Heuverswyn, Hugo, to Innogenetics N.V. HIV-3 retrovirus antigen compositions. 5,795,743, Cl. 435-69.300.

Delgado, Miguel A.: *See*—
Vokoun, Edward R.; Delgado, Miguel A.; Carter, Gregory N.; Richardson, Brian D.; Dhar, Rajive; and Chambers, Elizabeth A., 5,795,815, Cl. 438-462.000.

Dell USA, L.P.: *See*—
Jones, Leroy, 5,796,578, Cl. 361-683.000.
Mills, R. Steven; and Smith, Randall T., 5,796,593, Cl. 361-801.000.
Pearce, John J.; and Witte, Kendall C., 5,796,984, Cl. 395-500.000.

Delmaire, Raymond, to GEC Alsthom Electromecanique S.A. Method of manufacturing and repairing a blade made of α-β titanium. 5,795,412, Cl. 148-524.000.

Delphi Automotive Ssystems Deutschland GmbH: *See*—
Wieclawski, Stanislaw Andrzej, 5,795,019, Cl. 297-216.120.

Delsing, Jerker. Method for measuring in a fluid with the aid of sing-around technique. 5,796,009, Cl. 73-861.280.

Delta International Machinery Corp.: *See*—
Garcia, Jaime E., 5,794,675, Cl. 144-117.100.

Delta Power Supply, Inc.: *See*—
Beasley, Denny Dee, 5,796,216, Cl. 315-307.000.

Demange, Nicolas: *See*—
Brigati, Alessandro; Demange, Nicolas; Aulas, Maxence; and Guedj, Marc, 5,796,297, Cl. 327-546.000.

Demarest, Scott W.: *See*—
Gatzemeyer, John J.; Corba, Robert E.; Demarest, Scott W.; and Gerrits, Nicholas M., 5,796,914, Cl. 392-390.000.

Demian, Hany W.; and Shalaby, Shalaby W., to Clemson University. Bone cement composistion containing microencapsulated radiopacifier and method of making same. 5,795,922, Cl. 523-117.000.

DeMoss, Mark: *See*—
Bencheck, Michael; Branton, Robert; Brownmiller, Curtis; DeMoss, Mark; Landon, Steve; and Tran, Minh T., 5,796,723, Cl. 370-252.000.

Dempewolf, Joseph R.; and Wade, Robert K., to LightPath Technologies, Inc. Quadaxial gradient index lens. 5,796,525, Cl. 359-653.000.

deMunnik, Mary. Cloth box sleeve and its method of construction. 5,795,282, Cl. 493-210.000.

Den-Tal-Ez, Inc.: *See*—
Brenner, Tod H., 5,795,167, Cl. 433-100.000.

DenBaars, Steven P.; Speck, James S.; Church, Charles H.; Wilson, Robert G.; and Zavada, John M., to University of California, The Regents of the; United States of America, Army; and Hughes Electronics. Miniature self-pumped monolithically integrated solid state laser. 5,796,771, Cl. 372-75.000.

DenBaars, Steven P.: *See*—
Mishra, Umesh Kumar; DenBaars, Steven P.; and Kapolnek, David Joseph, 5,795,798, Cl. 438-35.000.

Denis, Jean-Pierre; Minicucci, Antonio; and Julemont, Michel, to Colgate-Palmolive Company. Microemulsion or non-microemulsion glass cleaning compositions. 5,795,853, Cl. 510-182.000.

Denmark, Martin William; and Haseley, Phillip John, to BTR plc. Valve system. 5,794,647, Cl. 137-315.000.

Dennis, Mark S.: *See*—
Lazarus, Robert A.; and Dennis, Mark S., 5,795,954, Cl. 530-324.000.

Denny, George S.: *See*—
Bahls, James W.; Denny, George S.; Hannan, Richard G.; Mansker, Janna L.; Naylor, Bruce E.; Paffendorf, Karen D.; Patterson, Betty J.; Stoob, Sandra L.; Tse, Judy Y.; and Vakkalagadda, Anu V., 5,797,005, Cl. 395-680.000.

Denso Corporation: *See*—
Ariyosi, Hiromi; and Ohta, Tameharu, 5,796,310, Cl. 330-307.000.
Ishino, Hirotugu; and Kurahashi, Akira, 5,796,336, Cl. 340-566.000.
Ito, Koichi; Okumura, Yoshihiko; and Inoue, Yoshimitsu, 5,794,845, Cl. 237-12.30B.

Denyo Kabushiki Kaisha: *See*—
Takeda, Masanobu; Mizuno, Yasumasa; Tetsui, Shunichi; and Yamamoto, Hirotaka, 5,796,190, Cl. 310-58.000.

Dergachey, Alex: *See*—
Mirov, Sergey; and Dergachey, Alex, 5,796,762, Cl. 372-5.000.

Derickson, Dennis; and Jungerman, Roger Lee, to Hewlett-Packard Company. Signal monitoring apparatus for wavelength division multiplexed optical telecommunication networks. 5,796,479, Cl. 356-326.000.

Derocher, Michael D.: *See*—
Podwalny, Sergey Gary; Derocher, Michael D.; Hickman, Scott N.; and Hippen, Jan, 5,796,575, Cl. 361-681.000.

DESA International: *See*—
Manning, John S.; Hollis, Christopher P.; Jacobs, James L.; and Pratt, Ralph E., 5,795,145, Cl. 431-280.000.

DeSalvo, Gregory C.: *See*—
Nakano, Kenichi; Bozada, Christopher A.; Quach, Tony K.; DeSalvo, Gregory C.; Via, G. David; Dettmer, Ross W.; Havasy, Charles K.; Sewell, James S.; Ebel, John L.; and Gillespie, James K., 5,796,131, Cl. 257-284.000.

Désaubry, Laurent: *See*—
Johnson, Roger A.; Désaubry, Laurent; and Shoshani, Ilana, 5,795,756, Cl. 435-183.000.

De Schepper, Luc: *See*—
Christiaens, Filip; Tielemans, Luc; De Schepper, Luc; and Beyne, Eric, 5,795,063, Cl. 374-43.000.

DeSchepper, Todd J.: *See*—
Reif, James R.; Collins, Michael J.; and DeSchepper, Todd J., 5,796,992, Cl. 395-555.000.

DeSmet, Charles: *See*—
DeSmet, Charles R.; and Williams, Robert C., III, 5,794,653, Cl. 137-486.000.

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Despain, Jeffrey L.: *See*—
Hamner, John F.; Janich, Sandra; Despain, Jeffrey L.; Niemann, Katherine D.; Sevy, Brian D.; Tran, Dzung D.; and Welch, Frank K., 5,796,951, Cl. 395-200.530.

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Lewis, Adrian; Gifford, James K.; Begur, Sridhar; Spencer, Donald J.; Kilbourn, Thomas E.; and Gochnauer, Daniel B., 5,797,043, Cl. 395-876.000.

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Gordon, Robert B.; Doak, Robert C.; and Shields, James L., 5,796,315, Cl. 333-24.00C.

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Abukawa, Fumitaka; Goi, Hitoshi; Watanabe, Masahiko; Kurasawa, Shin; and Kamisugi, Hirofumi, 5,795,538, Cl. 266-46.000.
Kawamura, Toshiyuki; Goi, Hitoshi; and Abukawa, Fumitaka, 5,795,406, Cl. 148-216.000.

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Sun, Hun H.; Qiao, Wen Wei; Chey, William Y.; and Lee, Kae Yol, 5,795,304, Cl. 600-546.000.

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Duhe, Jerry R. Protective grounding electrical receptacle with repositional plug acceptors. 5,795,168, Cl. 439-188.000.

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Dunstone, David John: *See*—
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Dupuis, David William: *See*—
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Dura Automotive Systems, Inc.: *See*—
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Morrel-Samuels, Palmer, 5,795,155, Cl. 434-107.000.
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Kim, Dong Won; Ryu, Won; and Kim, Dae Ung, 5,796,739, Cl. 370-401.000.
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Lorek, Serge, 5,795,939, Cl. 525-199.000.
Elger, Walter; Beier, Sybille; Kosub, Beate; Faehnrich, Marianne; Chwalisz, Krzysztof; Hasan, Syed Hamiduddin; and Potts, Gordon Oliver, to Shering Aktiengesellschaft. Combined use of an antigestagen and a progesterone synthesis inhibitor of the trilostane and erostane type. 5,795,881, Cl. 514-170.000.
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Ellison-Taylor, Ian, to Microsoft Corporation. Method and system for aligning windows on a computer screen. 5,796,402, Cl. 345-342.000.

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Ikeda, Katsuji; Hiratsuka, Kazuya; Morimoto, Takeshi; and Matsumoto, Shinji, 5,795,680, Cl. 429-245.000.

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Kikinis, Dan, 5,797,036, Cl. 395-858.000.

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Endo, Kazuhiko, to NEC Corporation. Method for preparing a fluoro-containing polyimide film. 5,795,655, Cl. 428-458.000.

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Hassan, Amer; Ramesh, Rajaram; Reinhold, Stanley L.; Massengill, Larry W.; and Wang, Yi-Pin Eric, 5,796,726, Cl. 370-322.000.
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Etap Yachting N.V.: *See*—
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Eteve, Martine; and Hansenne, Isabelle, to L'Oreal. Screening cosmetic composition containing a mixture of 1,4-benzenedi (3-methylidene-10-camphosulfonic) acid, partially or completely neutralized, and metal oxide nanopigments. 5,795,565, Cl. 424-60.000.

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Ethicon, Inc.: *See—*
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Evans, Steven; Harrison, Daniel J.; McInerney, Elizabeth; Spaulding, Kevin E.; and Weber, Helmut, to Eastman Kodak Company. Dye sets for thermal imaging having improved color gamut. 5,795,844, Cl. 503-227.000.
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Exar Corporation: *See—*
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Ezio, Bartocci. Device and method for the sterilization of compressed air for medical use. 5,795,371, Cl. 96-175.000.
Faass, Jan J.; Cornish, Paul M.; and Moulton, David R., to Torrington Company, The. Planet washer. 5,795,258, Cl. 475-348.000.
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Facchina, Joan E. Free standing fireplace. 5,794,610, Cl. 126-512.000.
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Friedman, Semyon D.; Sherwin, Martin B.; Brezny, Rasto; and Francis, Poovatholil F., to Engelhard Corporation. Multi-layer non-identical catalyst on metal substrate by electrophoretic deposition. 5,795,456, Cl. 204-471.000.

Friel, Daniel D.: *See*—
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,796,239, Cl. 320-107.000.

Fries, Donald Merlin, deceased (by Sharon Fries, administratrix): *See*—
Alberts, Joseph Richard; Drezdzon, Edward Anthony, II; Fries, Donald Merlin, deceased; Konetzke, Richard Mark; Kvitek, Thomas Theodore; Muhlebach, Michael Joseph; Nelson, Michael Joseph; Rabe, Gerald Leigh; Ribble, Brendon Frank; Roth, James Frederick; and Wittmann, Jon Mark, 5,794,269, Cl. 2-227.000.

Fries, Romuald: *See*—
Friese, Karl-Hermann; Weyl, Helmut; Fries, Romuald; Wiedenmann, Hans-Martin; and Hans, Anton, 5,795,454, Cl. 204-424.000.

Fries, Sharon, administratrix: *See*—
Alberts, Joseph Richard; Drezdzon, Edward Anthony, II; Fries, Donald Merlin, deceased; Konetzke, Richard Mark; Kvitek, Thomas Theodore; Muhlebach, Michael Joseph; Nelson, Michael Joseph; Rabe, Gerald Leigh; Ribble, Brendon Frank; Roth, James Frederick; and Wittmann, Jon Mark, 5,794,269, Cl. 2-227.000.

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Friesen, Oris D.: *See*—
Golshani, Forouzan; Friesen, Oris D.; and Howell, Thomas H., 5,797,137, Cl. 707-4.000.

Frim International, Inc.: *See*—
Vogt, Robert C.; and Trenkle, John M., 5,796,861, Cl. 382-128.000.

Fritchie, Patrick P.: *See*—
Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., 5,795,784, Cl. 436-50.000.

Fritz, Stefan: *See*—

Fügel, Dietmar; Fritz, Stefan; and Wanner, Martin, 5,794,298, Cl. 15-53.200.

Frizzell, Dean L.; and Silva, Robert John. Apparatus for threading a worm onto a multi-prong fish hook. 5,794,376, Cl. 43-43.150.

Froelich, Thomas J.: *See*—
Fleming, Dale M.; Simmons, Kevin L.; Froelich, Thomas J.; and Carter, Gregory L., 5,796,108, Cl. 250-368.000.

Frolow, Jack L. Flex meter for sports game implements. 5,796,005, Cl. 73-651.000.

Frotscher, Gerd: *See*—
Domian, Hans-Jörg; Dreibholz, Ralf; Frotscher, Gerd; and Schober, Thomas, 5,795,265, Cl. 477-143.000.

Frye, Gregory C.: *See*—
Pfeifer, Kent B.; Hoyt, Andrea E.; and Frye, Gregory C., 5,795,993, Cl. 73-24.010.

Fuchs, Rudolf: *See*—
Ottenwaelder, Adalbert; Machnig, Manfred; Kullick, Dieter; and Fuchs, Rudolf, 5,796,078, Cl. 219-639.000.

Füchsle, Dieter; Högg, Peter; Mantel, Lothar; and Schett, Georg, to Asea Brown Boveri AG. Gas insulated switchgear with grounding and disconnecting switches. 5,796,060, Cl. 218-79.000.

Füchter, Norbert; and Hofele, Franz-Xaver. Method of determining the velocity of a radar target. 5,796,364, Cl. 342-99.000.

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Kawamoto, Fumio, 5,795,705, Cl. 430-501.000.

Fuji Electric Co., Ltd.: *See*—
Kishiro, Masami; and Yao, Hironobu, 5,796,010, Cl. 73-861.357.
Ogasawara, Makoto, 5,794,763, Cl. 200-401.000.
Tsuji, Nobuhiko; Kaiho, Naoki; and Sano, Yasukazu, 5,796,890, Cl. 385-24.000.

Fuji Photo Film Co., Ltd.: *See*—
Adegawa, Yutaka; and Shiratsuchi, Kentáro, 5,795,709, Cl. 430-627.000.
Akao, Mutsuo; Nishimura, Tetsuo; and Sashihara, Kenji, 5,794,777, Cl. 206-409.000.
Aoyama, Tatsuya; Ito, Wataru; and Saotome, Shigeru, 5,796,865, Cl. 382-169.000.
Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, 5,795,646, Cl. 428-323.000.
Hodosawa, Yoshihito; Nagano, Hideo; and Saito, Hirokazu, 5,795,506, Cl. 264-4.100.
Ihama, Mikio, 5,795,706, Cl. 430-506.000.
Ishikawa, Takatoshi, 5,795,703, Cl. 430-393.000.
Miyaji, Kazuo, 5,795,081, Cl. 400-120.070.
Shidara, Shinichi; Takahashi, Yutaka; Tachibana, Hajime; Nakamura, Kiyoji; Anayama, Ushio; and Ishiwata, Noriyasu, 5,796,490, Cl. 358-296.000.
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Takahashi, Masatoshi; Asada, Nobuyoshi; Hashimoto, Hiroshi; and Aonuma, Masashi, 5,795,645, Cl. 428-216.000.
Takano, Shigeyuki; Okuma, Akira; and Suzuki, Yasuhito, 5,794,869, Cl. 242-331.500.
Takeo, Hideya, 5,796,870, Cl. 382-232.000.
Yoshizawa, Seiichi; Takegawa, Yoko; Sugiyama, Akira; Suzuki, Motoi; and Nozawa, Ryoei, 5,797,059, Cl. 396-626.000.

Fuji Photo Film Co.,Ltd.: *See*—
Nakamura, Takashi; Iwano, Haruhiko; and Matsuo, Koji, 5,795,485, Cl. 210-714.000.

Fuji Photo Optical Co., Ltd.: *See*—
Takano, Shigeyuki; Okuma, Akira; and Suzuki, Yasuhito, 5,794,869, Cl. 242-331.500.

Fuji Xerox Co., Ltd.: *See*—
Otsuki, Naohito; Kamei, Kyoji; Inoue, Akiyoshi; Ishikawa, Kiyoshi; Sakurai, Shin; and Matsumura, Takuo, 5,797,068, Cl. 399-110.000.
Samizo, Ken; Mishina, Kenichi; Yamamoto, Mituo; Yakabe, Yutaka; Kageyama, Toshikazu; and Mashimo, Yoshiya, 5,797,077, Cl. 399-309.000.
Takegawa, Ichiro; Nukada, Hidemi; Yamamoto, Hiroshi; Goshima, Koji; and Kimura, Takaaki, 5,795,690, Cl. 430-58.000.
Tsuji, Masato; Seki, Masao; Leng, Svay; Aikawa, Koji; Shinohara, Koichiro; and Nakaya, Fumio, 5,796,869, Cl. 382-203.000.

Fujifilm Electronic Imaging Ltd.: *See*—
Deane, Jacqueline Margaret, 5,796,873, Cl. 382-254.000.

Fujihara, Masaki: *See*—
Nakata, Yukihiko; Fujihara, Masaki; Date, Masahiro; Matsuo, Takuya; Ayukawa, Michiteru; and Itoga, Takashi, 5,796,116, Cl. 257-66.000.

Fujii, Eiji: *See*—
Nagano, Yoshihisa; Fujii, Eiji; Nasu, Toru; and Matsuda, Akihiro, 5,795,794, Cl. 437-60.000.

Fujii, Tomoyuki: *See*—
Ushikoshi, Ryusuke; Tsuruta, Hideyoshi; and Fujii, Tomoyuki, 5,794,838, Cl. 228-121.000.

Fujii, Toshiya: *See*—
Wicks, James E.; Mugura, Kazuto; and Fujii, Toshiya, 5,796,394, Cl. 345-329.000.

Fujikawa, Misao; and Otowa, Hirotsugu, to Sodick Co., Ltd. Injection method of preplasticization injection molding machine. 5,795,509, Cl. 264-40.100.

Fujikura Ltd.: *See*—
Furukawa, Tohru; Nomura, Yoshikazu; Furukawa, Hiroshi; Nakao, Naoki; and Tomita, Nobuo, 5,796,888, Cl. 385-22.000.

Fujimori, Koichi: *See*—
Suzuki, Norio; Fujimori, Koichi; Hasegawa, Yusuke; Munakata, Hiroki; Akazaki, Shusuke; and Yoshizaki, Masuhiro, 5,794,604, Cl. 123-673.000.

Fujimura, Shuzo: *See*—
Hayami, Yuka; Suzuki, Miki T.; Ogawa, Hiroki; Fujimura, Shuzo; Mori, Haruhisa; and Okui, Yoshiko, 5,795,494, Cl. 216-83.000.

Fujinami, Yasushi: *See*—
Kawamura, Makoto; Shimizu, Yoshinori; and Fujinami, Yasushi, 5,796,871, Cl. 382-236.000.

Fujio, Mitsuhiko: *See*—
Iizuka, Kunihiko; Fujio, Mitsuhiko; Matsui, Hirofumi; and Miyamoto, Masayuki, 5,796,647, Cl. 364-807.000.

Fujioka, Masanori; Sakata, Teruaki; and Dilao, Carmelo Osmeña, to Mitsubishi Jukogyo Kabushiki Kaisha. Gas turbine fuel heating apparatus. 5,794,448, Cl. 60-736.000.

Fujioka, Masaya: *See*—
Yamazaki, Hideto; Fujioka, Masaya; Kitahara, Takeo; Kato, Masahito; and Higashiyama, Shunichi, 5,795,375, Cl. 106-31.570.

Fujioka, Shuzo, to Mitsubishi Electric Semiconductor Software Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Communication apparatus. 5,796,943, Cl. 395-188.010.

Fujisaki, Tomohiro: *See*—
Sei, Toshikazu; and Fujisaki, Tomohiro, 5,796,299, Cl. 327-565.000.

Fujita, Takehito: *See*—
Nakae, Takahiko; Kato, Masashi; Fujita, Takehito; Kawabata, Kazuhito; and Ohno, Hiroyuki, 5,795,890, Cl. 514-235.500.

Fujita, Yoshihide: *See*—
Taguchi, Masakazu; Matsuura, Michio; Fujita, Yoshihide; and Itakura, Akihiro, 5,796,693, Cl. 369-59.000.

Fujitsu Limited: *See*—
Enomoto, Hiromi; Miwa, Hirokazu; and Isogai, Hiroyuki, 5,796,379, Cl. 345-89.000.
Hasebe, Takayuki; Akiyama, Ryota; and Yoshioka, Makoto, 5,796,824, Cl. 380-4.000.
Hayami, Yuka; Suzuki, Miki T.; Ogawa, Hiroki; Fujimura, Shuzo; Mori, Haruhisa; and Okui, Yoshiko, 5,795,494, Cl. 216-83.000.
Izawa, Naoyuki; and Murayama, Masami, 5,796,734, Cl. 370-394.000.
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Koike, Yoshio; Kamada, Tsuyoshi; Tsuyuki, Syun; Furukawa, Noriaki; Masuda, Shigeru; Murata, Satoshi; Hasegawa, Tadashi; Sasabayashi, Takashi; Tanuma, Seiji; Mayama, Takatoshi; and Ohmuro, Katufumi, 5,796,458, Cl. 349-126.000.
Masaki, Takashi; Yanagi, Shigenori; and Fujiwara, Toru, 5,796,697, Cl. 369-75.200.
Moribe, Mineo; Maeda, Miyozo; Satoh, Susumu; and Miyabe, Kyoko, 5,796,712, Cl. 369-275.400.
Naganuma, Norihisa; and Noda, Hideki, 5,796,887, Cl. 385-18.000.
Nakamura, Yoichi, 5,797,040, Cl. 395-872.000.
Nanba, Yoshiyuki; and Moritsugu, Masaharu, 5,796,704, Cl. 369-116.000.
Nishihara, Tokihiro; Matsuda, Takashi; Uchishiba, Hidema; Ikata, Osamu; Satoh, Yoshio; and Komenou, Kazunari, 5,796,205, Cl. 310-313.00R.
Okada, Yoshiyuki; and Satoh, Noriko, 5,796,356, Cl. 341-51.000.
Rokugawa, Hiroyuki, 5,796,792, Cl. 375-354.000.
Sasamoto, Tatsuro; and Watanabe, Hideyuki, 5,796,546, Cl. 360-78.040.
Shimizu, Seiya, 5,796,991, Cl. 395-500.000.
Shinbashi, Masahiro; and Wakabayashi, Takashi, 5,796,717, Cl. 370-216.000.
Taguchi, Masakazu; Matsuura, Michio; Fujita, Yoshihide; and Itakura, Akihiro, 5,796,693, Cl. 369-59.000.
Takahashi, Souichi; and Yasutaka, Satoshi, 5,796,955, Cl. 395-200.620.
Takizawa, Hideaki; and Hayashi, Shougo, 5,795,686, Cl. 430-5.000.
Temma, Shoji; and Funaki, Jun, 5,796,996, Cl. 395-566.000.
Yabuki, Tsutomu, 5,796,351, Cl. 340-625.690.
Yoshida, Toshiyuki; Kajiwara, Takaharu; Murata, Yushi; Sase, Naoki; and Hirome, Masashi, 5,796,720, Cl. 370-245.000.
Yuta, Kohtaro, 5,796,632, Cl. 364-496.000.

Fujiu, Takamitsu; Watanabe, Shunji; Sango, Yoshinori; and Nomura, Tatsushi, to Nikon Corporation. Vibration angular-velocity sensor and process for producing it. 5,796,000, Cl. 73-504.150.

Fujiwara, Hisao: *See*—
Okumura, Haruhiko; Fujiwara, Hisao; Itoh, Goh; and Kinno, Akira, 5,796,447, Cl. 349-33.000.

Fujiwara, Toru: *See*—
Masaki, Takashi; Yanagi, Shigenori; and Fujiwara, Toru, 5,796,697, Cl. 369-75.200.

Fujiwara, Yoshitsugu; Okuse, Hirotsugu; and Noguchi, Masahiro, to Koyo Seiko Co., Ltd. Needle bearing retainer and a needle bearing. 5,795,080, Cl. 384-580.000.

Fujiyoshi, Daisuke: *See*—
Fujiyoshi, Kageakira; Fujiyoshi, Daisuke; and Fujiyoshi, Takamichi, 5,796,065, Cl. 219-78.020.

Fujiyoshi, Kageakira; Fujiyoshi, Daisuke; and Fujiyoshi, Takamichi, to Jasty R & D Inc. Apparatus for producing contact/connection member for electric and electronic parts. 5,796,065, Cl. 219-78.020.

Fujiyoshi, Takamichi: *See*—

Fujiyoshi, Kageakira; Fujiyoshi, Daisuke; and Fujiyoshi, Takamichi, 5,796,065, Cl. 219-78.020.

Fuju Photo Film Co., Ltd.: *See*—
Hirai, Kikuo; and Makino, Yoshihiko, 5,795,791, Cl. 436-501.000.

Fukase, Kenji, to Sanyo Electric Co., Ltd. Semiconductor device. 5,796,139, Cl. 257-315.000.

Fuke, Hiromi: *See*—
Saito, Kazuhiro; Kamiguchi, Yuzo; Iwasaki, Hitoshi; Hashimoto, Susumu; Fuke, Hiromi; and Funayama, Tomomi, 5,796,560, Cl. 360-113.000.

Fukuda, Kazuichi, to Shoyo Engineering Co., Ltd.; and Kyushu Hasec Co., Ltd. Flexible shaft coupling. 5,795,231, Cl. 464-65.000.

Fukuda, Shigeo: *See*—
Itoh, Masayasu; Fukuda, Shigeo; Kawakami, Yoshihisa; Matsubara, Yoshiro; Kawamura, Yasushi; Masuoka, Shigeru; and Honda, Yoshihiro, 5,795,374, Cl. 106-16.000.

Fukui, Kouki, to Totaku Industries, Inc. Heat insulating noise reducing duct. 5,795,634, Cl. 428-36.100.

Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Internal combustion engine controller. 5,794,592, Cl. 123-414.000.

Fukumura, Tikashi; Iwata, Masuo; Narita, Noriaki; Inoue, Kouji; Tanaka, Masaya; Seki, Mika; and Takahashi, Ryoji, to Chisso Corporation. Water insoluble ammonium polyphosphate powder for flame-retardant thermoplastic polymer composition. 5,795,930, Cl. 524-100.000.

Fukushima, Hidetada: *See*—
Ozawa, Godo; Fukushima, Hidetada; Nishiyama, Toshihiko; Hukui, Akihumi; and Shinohara, Masaki, 5,795,137, Cl. 417-362.000.

Fukushima, Shigeru: *See*—
Nakayama, Tomoko; Tada, Jun; Fukushima, Shigeru; and Ohashi, Tetsuo, 5,795,717, Cl. 435-6.000.

Fukushima, Shinichi: *See*—
Tsukamoto, Junichi; Goto, Koichi; and Fukushima, Shinichi, 5,796,828, Cl. 380-10.000.

Fukuzo, Yukio: *See*—
Saeki, Takanori; and Fukuzo, Yukio, 5,796,281, Cl. 327-206.000.

Fulford, H. Jim, Jr.; Gardner, Mark I.; and Wristers, Derick J., to Advanced Micro Devices, Inc. Trench transistor in combination with trench array. 5,796,143, Cl. 257-330.000.

Fulford, H. Jim, Jr.: *See*—
Gardner, Mark I.; Fulford, H. Jim, Jr.; and Ghneim, Said N., 5,795,809, Cl. 438-402.000.

Fuller, Billy, Measuring direct and indirect usage of a central processing unit. 5,797,115, Cl. 702-186.000.

Fuller, Douglas A.: *See*—
Johnson, David C.; Fuller, Douglas A.; Engelbrecht, Kenneth L.; Marlan, Gregory A.; Arnold, Ronald G.; and Fagerness, Gerald G., 5,796,972, Cl. 395-384.000.

Fuller, Edward N.; Linker, Herbert L., Jr.; Sivulka, Gerald M.; and Tackett, Wendell D., to Kelsey-Hayes Company. Hydraulic valve control unit for vehicular anti-lock brake and traction control systems. 5,795,038, Cl. 303-119.200.

Fuller, Everett, to Coyote Enterprises, Inc. Wheel cover simulating cast aluminum wheel. 5,795,035, Cl. 301-37.320.

Fuller, Mark, to 3Com Corporation. Method and apparatus for linking computer aided design databases with numerical control machine database. 5,796,986, Cl. 395-500.000.

Funaki, Jun: *See*—
Temma, Shoji; and Funaki, Jun, 5,796,996, Cl. 395-566.000.

Funayama, Tomomi: *See*—
Saito, Kazuhiro; Kamiguchi, Yuzo; Iwasaki, Hitoshi; Hashimoto, Susumu; Fuke, Hiromi; and Funayama, Tomomi, 5,796,560, Cl. 360-113.000.

Funderburk, Robert Vernon; and Price, Timothy Duane, to Conbraco Industries, Inc. Swing-type check valve assembly having an integrated valve seat and valve housing cover. 5,794,655, Cl. 137-527.000.

Funk, William C.: *See*—
Weder, Donald E.; Straeter, Joseph G.; Straeter, William F.; Craig, Frank; King, Michael J.; and Funk, William C., 5,795,281, Cl. 493-154.000.

Furlani, Edward P.: *See*—
Chatterjee, Dilip K.; Furlani, Edward P.; and Ghosh, Syamal K., 5,795,422, Cl. 156-89.120.

Furuhata, Fujio: *See*—
Wang, Laiqiang; and Furuhata, Fujio, 5,796,876, Cl. 382-270.000.

Furuichi, Kiyoshi: *See*—
Tomita, Motowo; Sugita, Yuji; Takemoto, Toshiyuki; Furuichi, Kiyoshi; Takayama, Makoto; Yasukawa, Ko; Ito, Katsuhisa; Yamaji, Noboru; and Yano, Shinya, 5,795,736, Cl. 435-65.100.

Furukawa, Hiroshi: *See*—
Furukawa, Tohru; Nomura, Yoshikazu; Furukawa, Hiroshi; Nakao, Naoki; and Tomita, Nobuo, 5,796,888, Cl. 385-22.000.

Furukawa, Junichi; and Tateishi, Kiyoshi, to Pioneer Electronic Corporation. Spindle servo system for adjusting rotational speed in optical disk player. 5,796,691, Cl. 369-50.000.

Furukawa, Noriaki: *See*—
Koike, Yoshio; Kamada, Tsuyoshi; Tsuyuki, Syun; Furukawa, Noriaki; Masuda, Shigeru; Murata, Satoshi; Hasegawa, Tadashi; Sasabayashi, Takashi; Tanuma, Seiji; Mayama, Takatoshi; and Ohmuro, Katufumi, 5,796,458, Cl. 349-126.000.

Furukawa, Tohru; Nomura, Yoshikazu; Furukawa, Hiroshi; Nakao, Naoki; and Tomita, Nobuo, to Fujikura Ltd.; and Nippon Telegraph and Telephone Corporation. Optical switch apparatus. 5,796,888, Cl. 385-22.000.

Furumoto, Koji: *See*—
Itoh, Hisahiro; Itoh, Tomoyuki; Furumoto, Koji; and Yoshikawa, Shinji, 5,796,175, Cl. 307-10.100.

Furusawa, Masako: *See*—
Matsumoto, Toru; Furusawa, Masako; Ito, Narushi; and Nakamoto, Shinya, 5,795,774, Cl. 435-287.900.

Furuta, Yutaka: *See*—
Kubouchi, Kenji; Furuta, Yutaka; and Geshi, Kazuyuki, 5,794,945, Cl. 277-593.000.

Furutani, Kiyohiro; and Ozaki, Hideyuki, to Mitsubishi Denki Kabushiki Kaisha. Output driver circuit for suppressing noise generation and integrated circuit device for burn-in test. 5,796,287, Cl. 327-374.000.

Fuse, Hidefumi, to Toyota Jidosha Kabushiki Kaisha. Automobile screen control apparatus. 5,796,350, Cl. 340-815.750.

Fuse, Shouhei: *See*—
Komatsu, Toshihiro; Matsushima, Hitoshi; Hatada, Toshio; Iwai, Susumu; Homma, Tetsuro; Kondo, Yoshihiro; Fuse, Shouhei; Yamada, Hiroshi; Morita, Kazuo; Ito, Hiroshi; Iida, Akiyoshi; Kumagai, Kenta; and Shimode, Shinichi, 5,796,580, Cl. 361-687.000.

Futagawa, Osamu: *See*—
Gomi, Shingo; Kitami, Hirokazu; Endo, Takashi; Matsuoka, Kenichi; Ichinose, Kimihiro; Futagawa, Osamu; Kobayashi, Seiji; and Kobayashi, Kazuhide, 5,796,012, Cl. 73-861.357.

Futamura, Masao, to Brother Kogyo Kabushiki Kaisha. Embroidery data processing apparatus. 5,794,553, Cl. 112-102.500.

G.D.S. Co., Ltd.: *See*—
Nagazumi, Yasuo, 5,796,646, Cl. 364-807.000.

G.D Societa' per Azioni: *See*—
Draghetti, Fiorenzo, 5,794,413, Cl. 53-466.000.
Mengoli, Fausto; and Draghetti, Fiorenzo, 5,794,630, Cl. 131-84.100.

Gabel, Howard; and Tapphorn, Ralph M., to Innovative Technology Inc. Coating or ablation with a debris recovery attachment. 5,795,626, Cl. 427-458.000.

Gaber, Richard F., to Northwestern University. Genetically engineered eukaryotic organism capable of detecting the expression of heterologous ion channels and method to use the same. 5,795,770, Cl. 435-254.200.

Gaborski, Roger Stephen: *See*—
Pawlicki, Thaddeus Francis; Gaborski, Roger Stephen; and Senn, Robert Allen, 5,796,862, Cl. 382-132.000.

Gabriagues, Jean-Michel: *See*—
Sotom, Michel; Masetti, Francesco; De Bouard, Dominique; Gabriagues, Jean-Michel; and Chiaroni, Dominique, 5,796,501, Cl. 359-119.000.

Gabriel, Steven Matthew: *See*—
Angell, Adrian John Waynforth; Pauley, Joseph Adam, III; Gabriel, Steven Matthew; and Brown, Donald Ray, 5,795,854, Cl. 510-312.000.

Gaerlan, Doroteo C. Oil tanker and method for recovering oil from submerged oil tanker. 5,795,103, Cl. 405-188.000.

Gage, Edward Charles; and Victora, Randall Harry, to Eastman Kodak Company. Optical drive apparatus for use with a multilayer optical data storage device. 5,796,688, Cl. 369-44.340.

Gahn, Alfred-Georg: *See*—
Salmen, Michael; Lunk, Hans-Joachim; Gahn, Alfred-Georg; Altmann, Bernhard; and Fait, Martin, 5,795,366, Cl. 75-368.000.

Gaillard, Claude: *See*—
Chapelle, Philip; Gaillard, Claude; Jimonet, Patrick; Louvel, Erik; Martinet, Michel; Mignani, Serge; and Sanderink, Gérard, 5,795,903, Cl. 514-367.000.

Galakhin, Konstantin Alexandrovich: *See*—
Suslov, Eugene Ivanovich; Galakhin, Konstantin Alexandrovich; Vladimirov, Vitaly Alexandrovich; and Novik, Matveeevich Anatoly, 5,795,785, Cl. 436-64.000.

Galambos, James A.: *See*—
Filepp, Robert; Appleman, Kenneth H.; Bidwell, Alexander W.; Wolf, Allan M.; Galambos, James A.; and Meo, Sam, 5,796,967, Cl. 395-339.000.

Galanski, Norman D. Truck lighting system. 5,795,051, Cl. 362-80.000.

Gale, Geoffrey N.; Glover, Richard J.; and Lischynsky, Steve J., to Northern Telecom Limited. Circuit pack and environmental protection assembly. 5,796,583, Cl. 361-704.000.

Galison, William A.: *See*—
Leventis, Nicholas; and Galison, William A., 5,796,345, Cl. 340-604.000.

Gallagher, Brendan Francis, to Imperial Chemical Industries PLC. Thermal transfer ribbon cassette. 5,795,083, Cl. 400-207.000.

Gallagher, Christopher G.: *See*—
Yeager, Lawrence R.; Weisburn, James T.; Gallagher, Christopher G.; Marsilio, Ronald M; and Alford, William G., 5,794,464, Cl. 70-57.000.

Galle, Gary L., to ABB Vetco Gray Inc. Non-orienting multiple bore hub. 5,794,323, Cl. 29-464.000.

Galletti, Joseph, to Remote Products Inc. Remote start/stop system for magneto ignition engines. 5,794,580, Cl. 123-179.200.

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Gamblin, Alan; and Hewett, Richard Henry, to Rhone-Poulenc Agriculture Limited. Herbicidal compositions. 5,795,846, Cl. 504-128.000.

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Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., 5,795,784, Cl. 436-50.000.

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Lott, Stephen E.; Gardner, Timothy J.; McLaughlin, Linda I.; Oelfke, John B.; and Matlock, Charlene A., 5,795,553, Cl. 423-213.200.

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Vrionis, Nick, 5,796,234, Cl. 318-751.000.

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Nickum, Larry A., 5,794,355, Cl. 33-366.000.

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Knoll, Konrad; Loth, Wolfgang; Fischer, Wolfgang; and Gausepohl, Hermann, 5,795,938, Cl. 525-98.000.

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Gazonas, George A. Liquid gun propellant stimulation. 5,796,027, Cl. 86-20.150.

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Delmaire, Raymond, 5,795,412, Cl. 148-524.000.

Gee, Thomas A.: *See*—
Braun, Eugene R.; Smedley, Daniel G.; Holmes, Russell C.; and Gee, Thomas A., 5,797,110, Cl. 701-84.000.

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Motsiff, William Thomas; Geffken, Robert Michael; and Uttecht, Ronald Robert, 5,795,819, Cl. 438-618.000.

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Hotea, Gheorghe; Trajkov, Mile; and Gehrke, Horst, 5,795,196, Cl. 439-850.000.

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Enderlein, Robby; Robu, Johann; and Geiger, Hansjörg, 5,794,534, Cl. 104-88.00R.

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Hill, Karlheinz; Igelmund, Sigrid; Stedry, Bernd; Geke, Juergen; Wilde, Andreas; and Kuester, Harald, 5,795,372, Cl. 106-14.410.

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Abramson, Richard D.; and Gelfand, David H., 5,795,762, Cl. 435-194.000.

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Paradinas, Pierre; and Vandewalle, Jean-Jacques, 5,796,831, Cl. 380-24.000.

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Aggarwal, Bharat B.; Palladino, Michael A.; and Shalaby, Mohamed R., 5,795,967, Cl. 530-388.230.
Goeddel, David V.; and Heyneker, Herbert L., 5,795,745, Cl. 435-69.400.

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Jones, Trevor, 5,796,956, Cl. 395-200.630.

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Nerone, Louis R., 5,796,214, Cl. 315-209.00R.

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Archer, William R.; Becerra, Roger C.; Beifus, Brian L.; Brattoli, Mark A.; Erdman, David M.; Jahns, Thomas M.; Kliman, Gerald B.; Soong, Wen Liang; Stephens, Charles M.; Benedict, Eric R.; and Degner, Michael W., 5,796,194, Cl. 310-68.00B.
Blake, James A.; Lazzaro, Jamie E.; and Dobbs, James R., 5,795,207, Cl. 445-28.000.
Bowden, Joseph H., Jr.; and Roedl, Lawrence J., 5,794,338, Cl. 29-889.100.
Bunting, Richard Michael; Harris, David Isaac; Acampora, Alfonse Anthony; and Brooks, Charles Alan, 5,796,743, Cl. 370-474.000.
Fallas, Thomas Theodore, 5,796,797, Cl. 376-260.000.
Girach, Mahomed Hanif, 5,796,208, Cl. 313-493.000.
Gorman, Mark D., 5,795,413, Cl. 148-671.000.
Herron, William Lee; Miller, Frederick Martin; and Klump, William Gary, 5,796,202, Cl. 310-217.000.
Manning, Michael Patrick; and Lembke, Robert Timothy, 5,796,189, Cl. 310-54.000.

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Seed, Brian; and Haas, Jurgen, 5,795,737, Cl. 435-69.100.

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Miller, Ronald T., 5,794,651, Cl. 137-454.500.

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Robbins, Clyde; Maraska, John F.; Kamieniecki, John; Palmer, Douglas W.; and Nasuti, Tony, 5,796,423, Cl. 348-10.000.

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Balgaard, Steven Patrick, 5,795,014, Cl. 276-210.000.
Jennings, Kurt Lynn; and Wassam, John Fred, 5,796,895, Cl. 385-50.000.
Niederman, Robert Raymond; and Webber, James Lloyd, 5,794,974, Cl. 280-743.100.
Robinson, Timothy Alan, 5,795,262, Cl. 477-92.000.

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Norris, Joseph P., 5,796,733, Cl. 370-366.000.

Genesis Research Corporation: *See*—
Kindig, James Kelly, 5,794,791, Cl. 209-727.000.

Genetech, Inc.: *See*—
Lazarus, Robert A.; and Dennis, Mark S., 5,795,954, Cl. 530-324.000.

Geng, Quain: *See*—
Nakayama, Izumi; Masuda, Yukio; Bersin, Richard L.; Xu, Han; and Geng, Quain, 5,795,831, Cl. 438-714.000.

Genter, Peter: *See*—

Stamm, Uwe; Lokai, Peter; Genter, Peter; and Klaft, Ingo, 5,796,513, Cl. 359-330.000.

Gentile, Frank T.: *See*—
Schinstine, Malcolm; Shoichet, Molly S.; Gentile, Frank T.; Hammang, Joseph P.; Holland, Laura M.; Cain, Brian M.; Doherty, Edward J.; Winn, Shelley R.; and Aebischer, Patrick, 5,795,790, Cl. 435-382.000.

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Parks, Claude Phillip, 5,795,934, Cl. 525-54.300.

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Dykstra, Christine C.; Boykin, David; and Tidwell, Richard R., 5,795,906, Cl. 514-394.000.

Georgia Tech Research Corporation: *See*—
Summers, Christopher J.; and Wagner, Brent K., 5,796,120, Cl. 257-30.000.

Georgiadis, Leonidas: *See*—
Peris, Vinod Gerard John; Georgiadis, Leonidas; Guerin, Roch Andre; and Varma, Subir, 5,796,719, Cl. 370-231.000.

Gerard, Dominique: *See*—
Salvador, Yvan; Gerard, Dominique; and Huet, Eric, 5,795,365, Cl. 65-443.000.

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Roulin, Monique; Gerber, Manfred; and Oster, Heinz, 5,794,781, Cl. 206-531.000.

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Gerome Manufacturing Company, Inc.: *See*—
Stoyko, Michael T., 5,796,033, Cl. 174-35.00C.

Gerresheim, Manfred: *See*—
Damke, Roland; Gerresheim, Manfred; Nau, Robert; Winter, Hans-Joachim; and Lowenhaupt, Bernd, 5,795,417, Cl. 152-527.000.

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Gatzemeyer, John J.; Corba, Robert E.; Demarest, Scott W.; and Gerrits, Nicholas M., 5,796,914, Cl. 392-390.000.

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Moyer, Kenneth H.; Geveke, David J.; Parr, Thomas R.; and Roaper, Robert B., 5,796,018, Cl. 75-230.000.

Gheith, Ahmed Mohammed, to International Business Machines Corporation. Method for reducing processor cycles used for global offset table address computation in a position independent shared library. 5,797,014, Cl. 395-710.000.

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Berc, Lance M.; Ghemawat, Sanjay; Henzinger, Monika H.; Sites, Richard L.; Waldspurger, Carl A; and Weihl, William E., 5,796,939, Cl. 395-184.010.

Ghiani, Franco, to BEHR GmbH & Co. Radiator for a motor vehicle. 5,794,689, Cl. 165-140.000.

Ghneim, Said N.: *See*—
Gardner, Mark I.; Fulford, H. Jim, Jr.; and Ghneim, Said N., 5,795,809, Cl. 438-402.000.

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Chatterjee, Dilip K.; Ghosh, Syamal K.; and Blanton, Thomas N., 5,795,362, Cl. 65-17.300.
Chatterjee, Dilip K.; Furlani, Edward P.; and Ghosh, Syamal K., 5,795,422, Cl. 156-89.120.

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Matranga, Vincenzo; Giacalone, Biagio; and Abruzzese, Massimo, 5,796,917, Cl. 395-3.000.

Giacalone, Glenn Peter: *See*—
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Scanlon, John J.; Herring, Jay J.; and Giannetta, Richard W., 5,795,358, Cl. 55-320.000.

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Cartabiano, Michael C.; Curran, Kenneth J.; Dick, David J.; Gibbs, Douglas R.; Kirby, Morgan H.; May, Richard L.; Storer, William J. A.; and Ullman, Adam N., 5,796,354, Cl. 341-22.000.

Gibson, Gary A.: *See*—
Popescu, Valeri; Schultz, Merle A.; Gibson, Gary A.; Spracklen, John E.; and Lightner, Bruce D., 5,797,025, Cl. 395-800.000.

Gibson, Jim: *See*—
Clonch, David M.; Gibson, Jim; and Looney, Jeff, 5,794,721, Cl. 175-45.000.

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Giese, Neill A.; and Lokker, Nathalie, to Cor Therapeutics, Inc. Method and compositions for inhibiting protein kinases. 5,795,910, Cl. 514-450.000.

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Schwenk, Gerhard; Scholz, Ulrich; Magg, Ulrich; and Leist, Johannes, 5,795,379, Cl. 106-499.000.

Gifford, James K.: *See*—
Lewis, Adrian; Gifford, James K.; Begur, Sridhar; Spencer, Donald J.; Kilbourn, Thomas E.; and Gochnauer, Daniel B., 5,797,043, Cl. 395-876.000.

Giglio, James A. Golf accessory caddy. 5,795,248, Cl. 473-406.000.

Gijsen, Harrie J. M.: *See*—
Wong, Chi-Huey; and Gijsen, Harrie J. M., 5,795,749, Cl. 435-105.000.

Gilbarco Inc.: *See*—
Payne, Edward A.; Hartsell, Hal C., Jr.; and Baker, Walter L., 5,794,667, Cl. 141-128.000.

Gilbertson, Scott A.: *See*—
Kester, Steven A.; Gilbertson, Scott A.; McIntire, John W.; and Palmer, Ralph P., 5,794,472, Cl. 70-472.000.

Gilder, Bernard, to Gillette Company, The. Razors. 5,794,354, Cl. 30-530.000.

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Gillespie, George, to Outboard Marine Corporation. Stratified combustion chamber for a cross-scavenged, two stroke, internal combustion engine. 5,794,584, Cl. 123-257.000.

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Nakano, Kenichi; Bozada, Christopher A.; Quach, Tony K.; DeSalvo, Gregory C.; Via, G. David; Dettmer, Ross W.; Havasy, Charles K.; Sewell, James S.; Ebel, John L.; and Gillespie, James K., 5,796,131, Cl. 257-284.000.

Gillette Company, The: *See*—
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Lee, Alejandro; Carson, William C., III; and Kohring, Douglas R., 5,794,343, Cl. 30-50.000.

Gilliam, Edgar Thomas; and Blackman, William Cecil, to Cooper Industries, Inc. One piece compound lock for tape measure. 5,794,357, Cl. 33-767.000.

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Diegel, Michael L.; Linsley, Peter S.; Gilliland, Lisa K.; Moran, Patricia A.; Zarling, Joyce M.; and Ledbetter, Jeffrey A., 5,795,572, Cl. 424-135.100.

Gillingham, Peter B.: *See*—
Foss, Richard C.; Gillingham, Peter B.; and Allan, Graham, 5,796,673, Cl. 365-233.000.

Gilmartin, Markas A. T. Electrodes and metallo isoindole ringed compounds. 5,795,453, Cl. 204-403.000.

Ginsberg, Richard S.: *See*—
Mayer, Lawrence D.; Bally, Marcel B.; Cullis, Pieter R.; Ginsberg, Richard S.; and Mitilenes, George N., 5,795,589, Cl. 424-450.000.

Giovannone, Anthony; and Mitchell, David, to Sencorp Systems, Inc. Method of thermoforming plastic articles. 5,795,535, Cl. 264-551.000.

Girach, Mahomed Hanif, to General Electric Company. Electrodeless fluorescent lamp with one-piece electrically insulative. 5,796,208, Cl. 313-493.000.

Girard, Francois, to Salomon S.A. Binding device and a binding device/boot assembly. 5,794,963, Cl. 240-615.000.

Girard, Marc: *See*—
Kieny, Marie-Paule; Rautmann, Guy; Lecocq, Jean-Pierre; Hobson, Simon Wain; Girard, Marc; and Montagnier, Luc, 5,795,577, Cl. 424-208.100.

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Magnet, Didier; Garnier, Emmanuel; Saulnier, Bernard; and Girault, Jean-Louis, 5,794,457, Cl. 62-643.000.

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Bovenberg, Roelof Ary Lans; Koekman, Bertus Pieter; Hoekema, Andreas; Van Der Laan, Jan Metske; Verweij, Jan; and De Vroom, Erik, 5,795,733, Cl. 435-51.000.

Gitis, Norm; Levinson, Leo; Dorfman, Vlad; and Vinogradov, Michael, to Center for TriBology, Inc. Method and apparatus for measuring friction and wear characteristics of materials. 5,795,990, Cl. 73-9.000.

Gittins, Arthur J.; Adamson, Richard H.; and Wanner, Lawrence J. Vehicle steering offset monitor. 5,795,997, Cl. 73-118.100.

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Glanzmann, Alfred; and Boss, Heinz, to Grapha-Holding AG. Apparatus for feeding the gathering segment of a gather-stitcher. 5,794,930, Cl. 271-277.000.

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Helbling, Edward; and Glass, Andrew, 5,797,126, Cl. 705-5.000.

Glassmaster Controls Co., Inc.: *See*—
Trewhella, Stephen W., Jr.; and Greene, James B., 5,795,044, Cl. 312-333.000.

Glatt, Marc J. Accessory device for a dental articulator and method for use in fabricating dental prosthetics. 5,795,152, Cl. 433-60.000.

Glaxo Group Limited: *See*—
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York, Peter; and Hanna, Mazen, 5,795,594, Cl. 424-489.000.

Glaxo Wellcome Inc.: *See*—
Aquino, Christopher Joseph; Dezube, Milana; Sherrill, Ronald George; Sugg, Elizabeth Ellen; Szewczyk, Jerzy Ryszard; and Willson, Timothy Mark, 5,795,887, Cl. 514-221.000.

Gleckman, Philip L., to In Focus Systems, Inc. Image projection system. 5,795,049, Cl. 353-122.000.

Glehr, Manfred, to Siemens Aktiengesellschaft. Device for transmitting data or energy. 5,796,180, Cl. 307-10.500.

Glenn, Blake H.: *See*—
Kiefer, Jesse J.; and Glenn, Blake H., 5,795,590, Cl. 424-451.000.

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Glessner, Bertram: *See*—
Hoffart, Michael; Rosenkranz, Jürgen; Bartling, Franz-Peter; Glessner, Bertram; and Lysson, Hans-Jürgen, 5,796,905, Cl. 385-128.000.

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Glover, Richard J.: *See*—
Gale, Geoffrey N.; Glover, Richard J.; and Lischynsky, Steve J., 5,796,583, Cl. 361-704.000.

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Glycomed Incorporated: *See*—
Holme, Kevin R.; Shaklee, Patrick N.; and Ishihara, Masayuki, 5,795,875, Cl. 514-56.000.

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Gochi, Hidenobu: *See*—
Nagata, Noriharu; and Gochi, Hidenobu, 5,796,092, Cl. 235-492.000.

Gochnauer, Daniel B.: *See*—
Lewis, Adrian; Gifford, James K.; Begur, Sridhar; Spencer, Donald J.; Kilbourn, Thomas E.; and Gochnauer, Daniel B., 5,797,043, Cl. 395-876.000.

Gockel, Thomas R.; Olson, Lorin; Ryle, Lynn; and Whitelaw, Brett A., to Ontrak Systems, Inc. Containment apparatus. 5,794,299, Cl. 15-77.000.

Goda, Noriyoshi; Maruyama, Fuminobu; and Suzuki, Masayuki, to Hitachi, Ltd. Magnetic disk apparatus for a magnetic disk having projections provided thereon. 5,796,539, Cl. 360-73.030.

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Kress, Dieter; and Häberle, Friedrich, 5,795,111, Cl. 408-224.000.

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Jackson, Dana B.; Asher, Donald I.; Halcomb, Ronald G.; and Vogt, John E., 5,795,426, Cl. 156-249.000.

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Chatterji, Jiten; King, Bobby J.; Totten, Patty L.; and Onan, David D., 5,795,924, Cl. 523-130.000.

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Hammett, Robert C.; Patel, Bhanubhai H.; Welch, William R.; and Churchman, Ronald K., 5,794,699, Cl. 166-332.200.

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Johnson, Kevin M., 5,795,062, Cl. 366-136.000.

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Schinstine, Malcolm; Shoichet, Molly S.; Gentile, Frank T.; Hammang, Joseph P.; Holland, Laura M.; Cain, Brian M.; Doherty, Edward J.; Winn, Shelley R.; and Aebischer, Patrick, 5,795,790, Cl. 435-382.000.

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Merkle, Hans Rupert; Durein, Alfons; Hansen, Hanspeter; and Jäger, Karl-Friedrich, 5,795,983, Cl. 544-11.000.

Hansen, Marvin M.: *See*—
Anderson, Benjamin A.; Hansen, Marvin M.; and Harn, Nancy K., 5,795,886, Cl. 514-220.000.

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Hansenne, Isabelle: *See*—
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Hara, Seinosuke; Hayashi, Nobutaka; Tsuruta, Seiji; and Sawada, Takanori, to Unisia Jecs Corporation. Engine cylinder valve controlling apparatus. 5,794,576, Cl. 123-90.160.

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Counsell, Raymond E.; Meyer, Karen L.; Schwendner, Susan W.; and Haradahira, Terushi, 5,795,561, Cl. 424-1.770.

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Newby, Charles F.; and Harding, Michael V., 5,796,829, Cl. 380-21.000.

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Hards, Graham A.: *See*—
Wilkinson, David; Voss, Henry H.; Prater, Keith B.; Hards, Graham A.; Ralph, Thomas R.; and Thompsett, David, 5,795,669, Cl. 429-40.000.

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Harmer, Roland: *See*—
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Harn, Nancy K.: *See*—
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Greenberg, Harold H., 5,794,921, Cl. 256-19.000.

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Dragner, Louis R.; Harper, Douglas W.; and Thompson, Nolan H., 5,795,932, Cl. 524-276.000.

Harper, Robert I. Method and apparatus for wrapping spherical objects. 5,794,410, Cl. 53-463.000.

Harries, David Anthony, to Kongsberg Techmatic UK Limited. Actuation systems and mechanisms. 5,795,263, Cl. 477-113.000.

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Fallandy, Michael M., 5,794,325, Cl. 29-566.400.
Hyland, David C., 5,796,920, Cl. 395-22.000.

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Bunting, Richard Michael; Harris, David Isaac; Acampora, Alfonse Anthony; and Brooks, Charles Alan, 5,796,743, Cl. 370-474.000.

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Bromwell, Robert A.; Harris, Jack E.; Imboden, Alan M.; Sommer, Karl L.; and Witkowski, Thomas G., 5,794,818, Cl. 222-105.000.

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Nanami, Tomoyuki; Yamashita, Satoshi; Wright, Dennis M.; and Harris, Kendal R., 5,796,643, Cl. 364-724.011.

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Yoshimi, Naoto; Kubota, Takahiro; Ishiyama, Takashi; Yamashita, Masaaki; and Haruta, Yasuhiko, 5,795,660, Cl. 428-626.000.

Harwath, Frank A., to Andrew Corporation. Connector kit for a coaxial cable, method of attachment and the resulting assembly. 5,795,188, Cl. 439-583.000.

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Elger, Walter; Beier, Sybille; Kosub, Beate; Faehnrich, Marianne; Chwalisz, Krzysztof; Hasan, Syed Hamiduddin; and Potts, Gordon Oliver, 5,795,881, Cl. 514-170.000.

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Hasegawa, Yusuke: *See*—
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Haseley, Phillip John: *See*—
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Aoyagi, Akihiko; Ohta, Mutsuro; Hashi, Nobuyuki; and Tsujino, Hitoshi, 5,796,555, Cl. 360-104.000.

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Hashimoto, Jun: *See*—
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Hashimoto, Shin: *See*—
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Nonomura, Itaru; Hashimoto, Shinichi; Kimura, Yuuji; Yamada, Takahiro; and Tanaka, Kazuaki, 5,796,435, Cl. 348-405.000.

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Hasuda, Masanori: *See—*
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Hata, Jiro: *See—*
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Hatada, Kenzo: *See—*
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Hatada, Toshio: *See—*
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Hauck, Chester J., to Aqua Marine Supply. Compact power hoist. 5,794,919, Cl. 254-343.000.

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Bredow, Wolfgang; Burchard, Thomas; and Haug, Thomas, 5,796,056, Cl. 200-5.00A.

Hauner, Franz, to Siemens Aktiengesellschaft. Silver-based contact material, use of such a contact material, in switchgear for power engineering applications and method of manufacturing the contact material. 5,796,017, Cl. 75-232.000.

Haushalter, David L.: *See—*
Haushalter, Mark F.; and Haushalter, David L., 5,794,483, Cl. 172-379.600.

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Haver, Nelson A.: *See—*
Newman, Kenneth R.; Haver, Nelson A.; and Speller, David J., 5,794,703, Cl. 166-381.000.

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Heering, Jürgen; Köhnen, Klaus; Havlik, Michael; and Knorth, Hermann, 5,794,688, Cl. 165-134.100.

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Reilly, David M.; Havrilla, Joseph B.; Gelblum, Eugene A.; and Kazousky, Daniel, 5,795,333, Cl. 604-154.000.

Haworth, Inc.: *See—*
Dral, Joel; and Wilkerson, Larry, 5,795,026, Cl. 297-411.360.

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Ring, Michael E.; Natschke, Scott L.; and Hawryszkow, Michael G., 5,794,739, Cl. 188-153.00R.

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Hayami, Yuka; Suzuki, Miki T.; Ogawa, Hiroki; Fujimura, Shuzo; Mori, Haruhisa; and Okui, Yoshiko, to Fujitsu Limited. Semiconductor substrate cleaning method and semiconductor device fabrication method. 5,795,494, Cl. 216-83.000.

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Hayashi, Hideki: *See—*
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Hayashi, Masako: *See—*
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Hayashi, Mayumi: *See—*
Yamazaki, Hiroshi; Tamura, Kishio; and Hayashi, Mayumi, 5,795,691, Cl. 430-106.600.

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Maeda, Tadasu; Ota, Koji; Arao, Masaki; Sogou, Taiji; Nakajima, Hiroshi; Miyamoto, Norichika; Ishiguro, Susumu; and Hayashi, Motoji, 5,796,618, Cl. 364-474.240.

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Berman, Rachael; Shirron, Stephen F.; Hayes, Fidelma; Peterson, Kevin; and Ciaffi, Marco, 5,797,023, Cl. 395-750.060.

Hazama, Akihito, to Keyence Corporation. Noncoaxial bar code reader operable without condenser lens. 5,796,087, Cl. 235-462.000.

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Roizman, Bernard; and He, Bin, 5,795,713, Cl. 435-5.000.

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Corby, Kenneth Dean; Foeller, David Edward; Carlile, Dana Andrew; Shmois, Jacob Michael; He, Fugui; and Mruczek, Stephen Albert, 5,795,552, Cl. 422-294.000.

He, Mengtao; Fair, Michael; and Massaro, Michael, to Lever Brothers Company, Division of Conopco, Inc. Bar composition comprising nonionic polymeric surfacing as mildness enhancement agents. 5,795,852, Cl. 510-151.000.

He, Xiaohua George: *See—*
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Health Research Incorporated: *See—*
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Hearn, David D.: *See—*
Wolflick, John R.; Cawvey, James L.; Brady, Jerry L.; Whitworth, John R.; and Hearn, David D., 5,794,697, Cl. 166-265.000.

Hearn, Michael Lee: *See—*
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Heartport, Inc.: *See—*
Valley, Kirsten L.; Snow, David W.; Fan, Sylvia W.; and Mueller, Richard L., Jr., 5,795,325, Cl. 604-53.000.

Hecht, Stuart: *See—*
Shipp, Ronald Anthony; Hecht, Stuart; and Harkin, Patrick Allen, 5,796,413, Cl. 345-522.000.

Heck, Reinhard: *See—*
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Heering, Jürgen; Köhnen, Klaus; Havlik, Michael; and Knorth, Hermann, to MAN Gutehoffnungshütte Aktiengesellschaft. Heat insulation and corrosion protection of the inner vessel wall of a heat exchanger. 5,794,688, Cl. 165-134.100.

Heerman, Douglas A., to Transcrypt International, Inc. Method and apparatus for performing frequency spectrum inversion. 5,796,838, Cl. 380-38.000.

Hefford, David V., to U.S. Philips Corporation. Water heating vessel. 5,794,520, Cl. 99-323.300.

Hefling, Dennis V., to Rawlings Sporting Goods Company, Inc. Protective joint guard. 5,794,261, Cl. 2-16.000.

Hegg, Jeff, to Honeywell Inc. Rate mode hand controller with force reflection. 5,796,927, Cl. 395-95.000.

Hegi, Yasuhiro, to Kabushiki Kaisha Toshiba. Semiconductor memory device. 5,796,659, Cl. 365-189.040.

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Heidelberg Harris, Inc.: *See—*
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Heidingsfeld, Herbert; Bräuer, Wolfgang; Müller, Friedemann; and Meister, Willi, to Bayer Aktiengesellschaft. Multistage process for production of thermoplastic polyurethane elastomers. 5,795,948, Cl. 528-59.000.

Heikkilä, Heikki: *See*—
Hyöky, Göran; Paananen, Hannu; Montén, Kaj-Erik; Heikkilä, Heikki; and Kuisma, Jarmo, 5,795,398, Cl. 127-46.100.

Heikrodt, Klaus: *See*—
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Heilinger, Peter: *See*—
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Heilman, Robin L.; and Melber, Joseph G., Jr., to Bell & Howell Mail Processing Systems. Guide apparatus and method for selectively guiding sheets into a predetermined path. 5,794,931, Cl. 271-303.000.

Heilmann, Peter: *See*—
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Heimbuch, Scott D.: *See*—
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Hein, Jerrel P.: *See*—
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Heining, Joern, to Siemens Aktiengesellschaft. Method for triggering a final control element. 5,796,230, Cl. 318-599.000.

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Hanlon, Edite M.; Heinsius, Steven T.; Natarajan, Mrinalini; Rule, Antoinette; Sarju, Tejanand; and Walden, Gary D., 5,796,812, Cl. 379-212.000.

Heisler, Daniel F.; Clements, Christopher J.; and Berry, Kenneth M., to Owens-Corning Canada. Collection and deposition of chopped fibrous strands for formation into non-woven webs of bonded chopped fibers. 5,795,517, Cl. 264-115.000.

Heitmann, Arnold: *See*—
Selfors, Brian J.; and Heitmann, Arnold, 5,796,173, Cl. 290-52.000.

Helbling, Edward; and Glass, Andrew. Automatic theater ticket concierge. 5,797,126, Cl. 705-5.000.

Held, Manfred; and Kaltschmidt, Horst, to Daimler-Benz Aerospace AG. Proximity fuse/time fuse for missiles. 5,796,029, Cl. 102-213.000.

Heldt-Hansen, Hans Peter: *See*—
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Helios Research Corporation: *See*—
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Hella KG Hueck & Co.: *See*—
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Heller, Kenneth G. Simultaneous left turn vehicular intersection. 5,795,095, Cl. 404-1.000.

Helling, Günter: *See*—
Wagner, Klaus; Helling, Günter; Groth, Torsten; and Joentgen, Winfried, 5,795,707, Cl. 430-569.000.

Hellmuth, Obata & Kassabaum, Inc.: *See*—
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Hellmuth, Thomas; Kaschke, Michael; Moore, John C.; and Unold, Gerhard, to Carl Zeiss, Inc. Oct-assisted surgical microscope with multi-coordinate manipulator. 5,795,295, Cl. 600-407.000.

Helmsderfer, John A., to McGuire Manufacturing Co., Inc. Cover assembly and method for covering undersink piping. 5,795,623, Cl. 427-388.100.

Helton, Roy L., Jr.: *See*—
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Hempel, Conrad F.: *See*—
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Hendee, Charles C.: *See*—
Ott, Michael Anthony; Hendee, Alfred W.; and Hendee, Charles C., 5,794,539, Cl. 105-377.080.

Hendee Enterprises, Inc.: *See*—
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Henderson, Douglas Ray: *See*—
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Hendrickx, Freddy: *See*—
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Henf, George. High efficiency compact antenna assembly. 5,796,369, Cl. 343-752.000.

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Henkel Kommanditgesellschaft auf Aktien: *See*—
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Daute, Peter; Gruetzmacher, Roland; Westfechtel, Alfred; and Mertscheit, Nicole, 5,795,949, Cl. 528-65.000.
Hill, Karlheinz; Igelmund, Sigrid; Stedry, Bernd; Geke, Juergen; Wilde, Andreas; and Kuester, Harald, 5,795,372, Cl. 106-14.410.

Henry, Eric F.; and Lewis, Jonathan D., to HMG Worldwide In-Store Marketing, Inc. Shelf bracket for use with a grooved shelf. 5,794,902, Cl. 248-250.000.

Henry, Scottlan: *See*—
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Henshaw, Susan F.; and Redpath, Sarah D., to International Business Machines Corp. Method and system for presenting contents of a container object within a graphical user interface in a data processing system. 5,796,383, Cl. 345-112.000.

Hensley, Carroll G. Scuttle for pouring pelletized wood fuel. 5,794,810, Cl. 220-408.000.

Henzinger, Monika H.: *See*—
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Lapré, John Arthur; McNabola, William Thomas; Veenstra, Jan; and De Vries, Hielke Tjeerd, 5,795,606, Cl. 426-302.000.

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Herlihy, Walter C., Jr.: *See*—
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Herman, Peter K.; and Pardue, Byron A., to Fleetguard, Inc. Self-driven, cone-stack type centrifuge. 5,795,477, Cl. 210-360.100.

Hermanns, Ferdinand-Josef; Zitzen, Wilhelm; and Wirtz, Ulrich, to W. Schlafhorst AG & Co. Device for winding of yarn packages. 5,794,867, Cl. 242-18.0DD.

Hermetic Switch, Inc.: *See*—
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Hersch, Roger D.; Betrisey, Claude; and Bur, Justin, to Ecole Polytechnique Fédérale de Lausanne. Method for producing contrast-controlled grayscale characters. 5,796,409, Cl. 345-468.000.

Herzinger, Craig M.; and Johs, Blaine D., to J. A. Woollam Co. Inc. Dielectric function parametric model, and method of use. 5,796,983, Cl. 395-500.000.

Herzog, Heinz: *See*—
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Hesch, Rolf-Dieter; Oettel, Michael; Droescher, Peter; Schwarz, Sigfrid; Menzenbach, Bernd; Römer, Wolfgang; Kaufmann, Günter; and Schröder, Jens, to Jenapharm GmbH. Androgens and anabolic agents. 5,795,883, Cl. 514-172.000.

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Heuver, Bradley Ronald; and Martin, Dale Eltinge, to Ford Global Technologies, Inc. Park lock mechanism for an automatic transmission. 5,794,748, Cl. 192-4.00A.
Hewett, Douglas E.; Pier, Richard M.; Gould, Thomas A.; and Phelps, Robert Nolen, to Siemens Medical Systems, Inc. Video format conversion process and apparatus. 5,796,439, Cl. 348-459.000.
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Lavash, Bruce William; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, 5,795,349, Cl. 604-387.000.
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Madaraishi, Takashi; Nakao, Tomoaki; and Tanaka, Ryoji, 5,796,615, Cl. 364-468.160.

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Oki, Yasuhiro; and Hisanaga, Shigeru, 5,795,141, Cl. 418-55.300.

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Augenbraun, Joseph Ellis; Pearlstein, Larry Alan; and Plotnick, Michael Allen, 5,797,001, Cl. 395-609.000.

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Ouchi, Genjiro; Akinaga, Nobuhiko; and Ogata, Kazuyuki, 5,796,577, Cl. 361-68.100.

Hitachi Instruments: *See*—
Palermo, Stephen, 5,796,100, Cl. 250-292.000.

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Goda, Noriyoshi; Maruyama, Fuminobu; and Suzuki, Masayuki, 5,796,539, Cl. 360-73.030.
Katoh, Minoru; Itoh, Kenji; and Ohtsubo, Hiroyasu, 5,796,430, Cl. 348-246.000.
Komatsu, Toshihiro; Matsushima, Hitoshi; Hatada, Toshio; Iwai, Susumu; Homma, Tetsuro; Kondo, Yoshihiro; Fuse, Shouhei; Yamada, Hiroshi; Morita, Kazuo; Ito, Hiroshi; Iida, Akiyoshi; Kumagai, Kenta; and Shimode, Shinichi, 5,796,580, Cl. 361-687.000.
Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, 5,795,832, Cl. 438-714.000.
Matsumoto, Kiyoshi; Yagawa, Yuichi; and Senda, Kazuto, 5,796,428, Cl. 348-231.000.
Nonomura, Itaru; Hashimoto, Shinichi; Kimura, Yuuji; Yamada, Takahiro; and Tanaka, Kazuaki, 5,796,435, Cl. 348-405.000.
Saito, Masahiko; Miyasaka, Toru; Oonishi, Kazushige; Takeya, Shoji; Terashima, Isamu; Akasaki, Tetsuro; and Okano, Tadashi, 5,797,075, Cl. 399-284.000.
Shintani, Toshimichi; Imura, Ryo; Nakamura, Kimio; and Hosaka, Sumio, 5,796,706, Cl. 369-126.000.
Utamura, Motoaki; Hoizumi, Shinichi; Takeda, Yasushi; Sasaki, Toshihiko; Komatsu, Hideaki; Kirikami, Seiichi; Suzumura, Takeshi; Sasada, Tetsuo; Ikeguchi, Takashi; and Sugita, Shigehisa, 5,794,431, Cl. 60-39.030.
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Yasue, Toshikazu; Higuchi, Hidemitsu; Shimamoto, Yukio; and Horimoto, Toru, 5,797,041, Cl. 395-872.000.
Yoshioka, Shinichi; Kawasaki, Ikuya; Narita, Susumu; and Tamaki, Saneaki, 5,796,978, Cl. 395-416.000.

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Habermayr, Erwin; Huebner, Christian; Hofmeister, Juergen; Horak, Dieter; Pichl, Werner; and Schmitt, Wolfgang, 5,796,987, Cl. 395-500.000.

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Ayasli, Yalcin; and Katzin, Peter, 5,796,362, Cl. 342-6.000.

HL Planartechnik GmbH: *See*—
Andrä, Wulf; and Mattheis, Roland, 5,796,249, Cl. 324-207.210.

HMG Worldwide In-Store Marketing, Inc.: *See*—
Henry, Eric F.; and Lewis, Jonathan D., 5,794,902, Cl. 248-250.000.

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McGraw, Mark T.; Griswold, Bradley L.; Ho, Chung W.; Min, Byoung-Youl; Grove, Michael I.; and Robinette, William C., Jr., 5,796,164, Cl. 257-723.000.

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O'Loughlin, John P.; and Hocking, James R., 5,794,973, Cl. 280-737.000.

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Jansen, Rolf-Michael; Zimmermann, Andreas; Jacquinot, Eric; and Smith, Douglas, 5,795,556, Cl. 423-338.000.

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Harada, Takamasa; Yamaguchi, Hidemasa; Nozawa, Fumie; Ubukata, Masami; and Itoh, Haruhiko, 5,795,629, Cl. 428-1.000.
Kampe, Klaus-Dieter; Granzer, Ernold; Leineweber, Michael; and Hüttinger, Manfred, 5,795,899, Cl. 514-275.000.

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Wright, Paul S.; and Busch, Steven J., 5,795,876, Cl. 514-63.000.

Hoekema, Andreas: *See*—
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Hoffart, Michael; Rosenkranz, Jürgen; Bartling, Franz-Peter; Glessner, Bertram; and Lysson, Hans-Jürgen, to Kabel Rheydt Aktiengesellschaft. Optical fiber with a color marking. 5,796,905, Cl. 385-128.000.

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Dussia, Ralph J., Jr.; Roberts, Gerald E.; Hoffman, Margaret A.; Calvert, William A., Jr.; Dutkievic, Duane T.; West, Charles R.; and Thayer, Adam E., 5,795,028, Cl. 297-440.140.

Hofmann, James J.: *See*—
Cathey, David A.; Watkins, Charles M.; Stansbury, Darryl M.; Hofmann, James J.; Rasmussen, Robert T.; and Chadha, Surjit S., 5,795,206, Cl. 445-24.000.

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Habermayr, Erwin; Huebner, Christian; Hofmeister, Juergen; Horak, Dieter; Pichl, Werner; and Schmitt, Wolfgang, 5,796,987, Cl. 395-500.000.

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Hogarth, Wayne E.: *See*—
Basso, Robert J., Jr.; and Hogarth, Wayne E., 5,795,524, Cl. 264-221.000.

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Rondeau, Michael N.; Doiron, Timothy J.; Roderique, William J.; and Hoge, Philip M., 5,796,728, Cl. 370-338.000.

Högg, Peter: *See*—
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Muta, Kouichi, 5,794,297, Cl. 15-42.000.

Holder, John D., to MEMC Electrical Materials, Inc. SIO probe for real-time monitoring and control of oxygen during czochralski growth of single crystal silicon. 5,795,381, Cl. 117-14.000.

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Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., 5,795,784, Cl. 436-50.000.

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Holland, Laura M.: *See*—
Schinstine, Malcolm; Shoichet, Molly S.; Gentile, Frank T.; Hammang, Joseph P.; Holland, Laura M.; Cain, Brian M.; Doherty, Edward J.; Winn, Shelley R.; and Aebischer, Patrick, 5,795,790, Cl. 435-382.000.

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Adams, James S.; Moore, Donald W.; Huntington, James C.; and Holland, Richard C., 5,796,403, Cl. 345-343.000.

Hollaway, Roy D.: *See*—
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Hollenberg, David Henry: *See*—
Tanner, James Jay; and Hollenberg, David Henry, 5,795,377, Cl. 106-164.400.

Hollis, Christopher P.: *See*—
Manning, John S.; Hollis, Christopher P.; Jacobs, James L.; and Pratt, Ralph E., 5,795,145, Cl. 431-280.000.

Hollis, Gregory F.: *See*—
Ludmerer, Steven; Hollis, Gregory F.; Benincasa, Diana; and Mark, George E., III, 5,795,754, Cl. 435-172.300.

Holloman, Charles J., to Trans-Lux Corporation. Video display using field emission technology. 5,796,375, Cl. 345-74.000.

Holloway, David Edward, to Charles Machine Works, Inc., The. Ground boring apparatus. 5,794,719, Cl. 175-21.000.

Holm, Niels Erik, to Bristol-Myers Squibb Company. Centrifugal filtration method. 5,795,489, Cl. 210-782.000.

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Nachman, Ronald J.; Teal, Peter E. A.; and Holman, Grant Mark, 5,795,857, Cl. 514-2.000.

Holme, Kevin R.; Shaklee, Patrick N.; and Ishihara, Masayuki, to Glycomed Incorporated. Therapeutic methods of using O-desulfated heparin derivatives. 5,795,875, Cl. 514-56.000.

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Braun, Eugene R.; Smedley, Daniel G.; Holmes, Russell C.; and Gee, Thomas A., 5,797,110, Cl. 701-84.000.

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Horne, Stephen C.; Klein, Richard K.; Selcuk, Asim A.; Kepler, Nicholas John; Spence, Christopher A.; Lee, Raymond T.; and Holst, John C., 5,796,651, Cl. 365-156.000.

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Cho, Ok-Kyung; and Holzgreve, Birgit, 5,795,305, Cl. 600-549.000.

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Komatsu, Toshihiro; Matsushima, Hitoshi; Hatada, Toshio; Iwai, Susumu; Homma, Tetsuro; Kondo, Yoshihiro; Fuse, Shouhei; Yamada, Hiroshi; Morita, Kazuo; Ito, Hiroshi; Iida, Akiyoshi; Kumagai, Kenta; and Shimode, Shinichi, 5,796,580, Cl. 361-687.000.

Hon Hai Precision Inc. Co., Ltd.: *See*—
Pan, Hua-Tseng; Chen, Chu-Mei; and Hon, Ming-Yow, 5,795,184, Cl. 439-541.500.

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Pan, Hua-Tseng; Chen, Chu-Mei; and Hon, Ming-Yow, 5,795,184, Cl. 439-541.500.

Honaga, Kazuhiro, to Suzuki Motor Corporation. Vehicle anti-theft device with low voltage compensation and a rolling code. 5,796,179, Cl. 307-10.500.

Honcu, Valdemar: *See*—
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Arakawa, Kenichi; Kakizaki, Takao; and Omyo, Shinji, 5,796,610, Cl. 364-167.010.
Hasegawa, Koichi; Yamamoto, Yoshinori; and Iwahashi, Toru, 5,795,266, Cl. 477-169.000.
Hayashi, Kiyotaka; Ito, Hisahiro; Itoh, Tomoyuki; and Hoshi, Naofumi, 5,796,224, Cl. 318-139.000.
Itoh, Hisahiro; Itoh, Tomoyuki; Furumoto, Koji; and Yoshikawa, Shinji, 5,796,175, Cl. 307-10.100.
Kasuga, Tatsuo; and Higuchi, Eisei, 5,794,979, Cl. 280-834.000.
Kayumi, Tetsuya, 5,795,023, Cl. 297-331.000.
Keller, James; Spataro, Anthony; and White, Allen, 5,795,013, Cl. 296-188.000.
Miyakawa, Taro, 5,796,195, Cl. 310-68.00B.
Murata, Nagatoshi; and Masaki, Takeshi, 5,796,473, Cl. 356-121.000.
Sugino, Mitsutaka; Kodaira, Tadao; and Onodera, Tugio, 5,796,198, Cl. 310-89.000.
Suzuki, Norio; Fujimori, Koichi; Hasegawa, Yusuke; Munakata, Hiroki; Akazaki, Shusuke; and Yoshizaki, Masuhiro, 5,794,604, Cl. 123-673.000.
Takada, Kazutoshi, 5,795,256, Cl. 474-37.000.
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Honda, Hitoshi: *See*—
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Honda, Yoshihiro: *See*—
Itoh, Masayasu; Fukuda, Shigeo; Kawakami, Yoshihisa; Matsubara, Yoshiro; Kawamura, Yasushi; Masuoka, Shigeru; and Honda, Yoshihiro, 5,795,374, Cl. 106-16.000.

Honeywell Inc.: *See*—
Agan, Tom A., 5,796,260, Cl. 324-537.000.
Hegg, Jeff, 5,796,927, Cl. 395-95.000.

Honeywell-Measurex: *See*—
Belotserkovsky, Edward; and Dahlquist, John A., 5,795,394, Cl. 118-665.000.

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Tao, Kuoting Mike; and He, Xiaohua George, 5,796,609, Cl. 364-164.000.

Hong, Gary: *See*—
Lin, Ruei-Ling; Hsu, Ching-Hsiang; and Hong, Gary, 5,796,141, Cl. 257-316.000.
Lin, Ruei-Ling; Hsu, Ching-Hsiang; and Hong, Gary, 5,796,142, Cl. 257-316.000.

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Fang, Ming; Ma, Jian Xin; and Lau, Ngai Ting, 5,795,554, Cl. 423-263.000.

Hong, Song-Cheol; and Ha, Doo-Young, to Korea Advanced Institute of Science and Technanology. Optical coupler 2×2 optical switch and method for optical switching therewith. 5,796,886, Cl. 385-21.000.

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Hood, Graham Michael: *See*—
Bridges, Mark; Hood, Graham Michael; and Gandy, Philip William Laurence, 5,796,322, Cl. 333-248.000.

Hooper, Jeffrey D.: *See*—
Earley, James N.; Hooper, Jeffrey D.; Stigall, Billy H.; and Stinson, John S., 5,794,446, Cl. 60-646.000.

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Hopson, Mark G.; and Roland, Scott C., to Thomas & Betts Corporation. Electrical connector having improved contact retention means. 5,794,336, Cl. 29-882.000.

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Habermayr, Erwin; Huebner, Christian; Hofmeister, Juergen; Horak, Dieter; Pichl, Werner; and Schmitt, Wolfgang, 5,796,987, Cl. 395-500.000.

Horiba, Ltd.: *See*—
Igushi, Tatsuo, 5,796,480, Cl. 356-336.000.
Kanzaki, Toyoki; and Kinoshita, Dainichiro, 5,796,475, Cl. 356-237.000.

Horimoto, Toru: *See*—
Yasue, Toshikazu; Higuchi, Hidemitsu; Shimamoto, Yukio; and Horimoto, Toru, 5,797,041, Cl. 395-872.000.

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Moore, Timothy F., 5,796,959, Cl. 375-206.000.
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Peris, Vinod Gerard John; Georgiadis, Leonidas; Guerin, Roch Andre; and Varma, Subir, 5,796,719, Cl. 370-231.000.
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Alderson, Graham Richard, 5,796,399, Cl. 345-339.000.
Amro, Hatim Yousef, 5,797,139, Cl. 707-100.000.
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Campbell, Jeffrey Scott, 5,796,050, Cl. 174-255.000.

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Yamamoto, Tetsuya, 5,795,007, Cl. 296-39.200.

Itakura, Akihiro: *See*—
Taguchi, Masakazu; Matsuura, Michio; Fujita, Yoshihide; and Itakura, Akihiro, 5,796,693, Cl. 369-59.000.

Itex Environmental Services, Inc.: *See*—
Toor, Irfan A., 5,794,862, Cl. 241-21.000.

Ito, Daryl K.: *See*—
Hamden, Eric F.; and Ito, Daryl K., 5,795,405, Cl. 134-25.400.

Ito, Hiroshi: *See*—
Komatsu, Toshihiro; Matsushima, Hitoshi; Hatada, Toshio; Iwai, Susumu, Homma, Tetsuro; Kondo, Yoshihiro; Fuse, Shouhei; Yamada, Hiroshi; Morita, Kazuo; Ito, Hiroshi; Iida, Akiyoshi; Kumagai, Kenta; and Shimode, Shinichi, 5,796,580, Cl. 361-687.000.

Ito, Hisahiro: *See*—
Hayashi, Kiyotaka; Ito, Hisahiro; Itoh, Tomoyuki; and Hoshi, Naofumi, 5,796,224, Cl. 318-139.000.

Ito, Katsuhisa: *See*—
Tomita, Motowo; Sugita, Yuji; Takemoto, Toshiyuki; Furuichi, Kiyoshi; Takayama, Makoto; Yasukawa, Ko; Ito, Katsuhisa; Yamaji, Noboru; and Yano, Shinya, 5,795,736, Cl. 435-65.100.

Ito, Koichi; Okumura, Yoshihiko; and Inoue, Yoshimitsu, to Denso Corporation. Flow control device and hot-water type heating apparatus employing the same. 5,794,845, Cl. 237-12.30B.

Ito, Makoto: *See*—
Izu, Hiroyuki; Kurome, Yoko; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,795,765, Cl. 435-200.000.

Ito, Narushi: *See*—
Matsumoto, Toru; Furusawa, Masako; Ito, Narushi; and Nakamoto, Shinya, 5,795,774, Cl. 435-287.900.

Ito, Shinichi: *See*—
Arai, Satoshi; Ito, Shinichi; Sakamoto, Hiroshi; Oi, Eisetsu; and Yotsumoto, Hiroki, 5,794,786, Cl. 209-29.000.

Ito, Takashi: *See*—
Uchikoba, Fumio; Nakajima, Shigeyuki; Ito, Takashi; Miura, Taro; Kobayashi, Makoto; Kurahashi, Takahide; and Iijima, Yasushi, 5,796,323, Cl. 333-260.000.

Ito, Takayuki: *See*—
Sensui, Takayuki; Ito, Takayuki; Matsuo, Hirofumi; Nakamura, Satoru; Goto, Tatsuo; and Nakamura, Yasuo, 5,796,517, Cl. 359-426.000.

Ito, Wataru: *See*—
Aoyama, Tatsuya; Ito, Wataru; and Saotome, Shigeru, 5,796,865, Cl. 382-169.000.

Itoga, Takashi: *See*—
Nakata, Yukihiko; Fujihara, Masaki; Date, Masahiro; Matsuo, Takuya; Ayukawa, Michiteru; and Itoga, Takashi, 5,796,116, Cl. 257-66.000.

Itoh, Goh: *See*—
Okumura, Haruhiko; Fujiwara, Hisao; Itoh, Goh; and Kinno, Akira, 5,796,447, Cl. 349-33.000.

Itoh, Haruhiko: *See*—
Harada, Takamasa; Yamaguchi, Hidemasa; Nozawa, Fumie; Ubukata, Masami; and Itoh, Haruhiko, 5,795,629, Cl. 428-1.000.

Itoh, Hisahiro; Itoh, Tomoyuki; Furumoto, Koji; and Yoshikawa, Shinji, to Honda Giken Kogyo Kabushiki Kaisha. Power supply control device for electric vehicle. 5,796,175, Cl. 307-10.100.

Itoh, Kenji: *See*—
Katoh, Minoru; Itoh, Kenji; and Ohtsubo, Hiroyasu, 5,796,430, Cl. 348-246.000.

Itoh, Masahiro: *See*—
Waki, Kenichiro; Itoh, Masahiro; Suzuki, Hiroyuki; and Inoue, Ryo, 5,797,070, Cl. 399-149.000.

Itoh, Masayasu; Fukuda, Shigeo; Kawakami, Yoshihisa; Matsubara, Yoshiro; Kawamura, Yasushi; Masuoka, Shigeru; and Honda, Yoshihiro, to NOF Corporation. Coating composition. 5,795,374, Cl. 106-16.000.

Itoh, Seiga: *See*—
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,795,968, Cl. 530-402.000.

Itoh, Takashi; Saitoh, Hiroyuki; Kinami, Haruyuki; Konaka, Toshinori; and Murai, Tsuyoshi, to M. Setek Co., Ltd. Method for scrubbing substrate. 5,795,401, Cl. 134-6.000.

Itoh, Tomoyuki: *See*—
Hayashi, Kiyotaka; Ito, Hisahiro; Itoh, Tomoyuki; and Hoshi, Naofumi, 5,796,224, Cl. 318-139.000.
Itoh, Hisahiro; Itoh, Tomoyuki; Furumoto, Koji; and Yoshikawa, Shinji, 5,796,175, Cl. 307-10.100.

ITT Automotive Electrical Systems, Inc.: *See*—
Kikly, Ned L., 5,794,326, Cl. 29-596.000.

ITT Automotive Europe GmbH: *See*—
Fennel, Helmut; Ehmer, Norbert; Kolbe, Alexander; Schmidt, Robert; and Proger, Thomas, 5,795,039, Cl. 303-122.050.

ITT Corporation: *See*—
Palmer, Gary L., 5,796,516, Cl. 359-399.000.

Itzhak, Roni. Cleanable observation cage for reptiles especially snakes. 5,794,567, Cl. 119-416.000.

Iwahashi, Toru: *See*—
Hasegawa, Koichi; Yamamoto, Yoshinori; and Iwahashi, Toru, 5,795,266, Cl. 477-169.000.

Iwai, Susumu: *See*—
Komatsu, Toshihiro; Matsushima, Hitoshi; Hatada, Toshio; Iwai, Susumu; Homma, Tetsuro; Kondo, Yoshihiro; Fuse, Shouhei; Yamada, Hiroshi; Morita, Kazuo; Ito, Hiroshi; Iida, Akiyoshi; Kumagai, Kenta; and Shimode, Shinichi, 5,796,580, Cl. 361-687.000.

Iwakuni, Hideharu: *See*—
Takami, Akihide; Iwakuni, Hideharu; Kyogoku, Makoto; and Murakami, Hiroshi, 5,795,840, Cl. 502-327.000.

Iwami, Satoshi: *See*—
Yokota, Masatoshi; Moriyama, Keiji; and Iwami, Satoshi, 5,795,247, Cl. 473-374.000.

Iwami, Tomoyuki; and Narita, Izuru, to International Business Machines Corporation. Switching regulator, an information processing apparatus and a control method for the same. 5,796,982, Cl. 395-500.000.

Iwamoto, Hisashi: *See*—
Araki, Takashi; Iwamoto, Hisashi; and Konishi, Yasuhiro, 5,796,669, Cl. 365-222.000.

Iwanaga, Sadaaki; Muta, Tatsushi; Seki, Noriaki; and Oda, Toshio, to Seikagaku Kogyo Kabushiki Kaisha (Seikagaku Corporation). Horseshoe crab amebocyte lysate factor G subunit A. 5,795,962, Cl. 530-350.000.

Iwano, Haruhiko: *See*—
Nakamura, Takashi; Iwano, Haruhiko; and Matsuo, Koji, 5,795,485, Cl. 210-714.000.

Iwano, Kenji; and Shiomi, Yoshinori, to Matsushita Electric Industrial Co., Ltd. Tape cassette having locking front cover with ribs or projection. 5,796,563, Cl. 360-132.000.

Iwano, Tsuneaki: *See*—
Shioi, Masahiro; Makiyama, Takeshi; Hibi, Keiichi; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakamura, Osamu; Kanada, Youji; Kura, Tsuneko; and Oshima, Takashi, 5,796,436, Cl. 348-409.000.

Iwasaki, Atsushi: *See*—
Okamoto, Hideo; Uesugi, Toshiharu; Iwasaki, Atsushi; and Oda, Tetsuhiro, 5,795,383, Cl. 117-30.000.

Iwasaki, Hitoshi: *See*—
Saito, Kazuhiro; Kamiguchi, Yuzo; Iwasaki, Hitoshi; Hashimoto, Susumu; Fuke, Hiromi; and Funayama, Tomomi, 5,796,560, Cl. 360-113.000.

Iwasaki, Manabu; Tsuboyama, Akira; Katakura, Kazunori; and Mizutani, Hidemasa, to Canon Kabushiki Kaisha. Driving methods for liquid crystal devices and liquid crystal apparatus. 5,796,381, Cl. 345-101.000.
Iwasaki, Yasunori, to Nippon Zeon Co., Ltd. Oil hose. 5,795,635, Cl. 428-36.300.
Iwasawa, Seiji: *See*—
Kasajima, Kimihisa; and Iwasawa, Seiji, 5,794,741, Cl. 188-321.110.
Iwata, Masuo: *See*—
Fukumura, Tikashi; Iwata, Masuo; Narita, Noriaki; Inoue, Kouji; Tanaka, Masaya; Seki, Mika; and Takahashi, Ryoji, 5,795,930, Cl. 524-100.000.
Iwinski, Steven R., to Kennecott Greens Creek Mining Company. Retarding the leaching of metal values from waste rock. 5,795,620, Cl. 427-136.000.
Izawa, Makoto: *See*—
Nanba, Katsuhiro; Yagoto, Mitsutoshi; Ishiyama, Masamitsu; Izawa, Makoto; Kitaoka, Toshio; and Matsumoto, Yasuhiro, 5,796,186, Cl. 310-14.000.
Izawa, Naoyuki; and Murayama, Masami, to Fujitsu Limited. Simultaneously-occuring message control device in a communications system where a message is transmitted using a plurality of data units. 5,796,734, Cl. 370-394.000.
Izu, Hiroyuki; Kurome, Yoko; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, to Takara Shuzo Co., Ltd. Gene encoding endoglycoceramidase. 5,795,765, Cl. 435-200.000.
Izumi, Yoshiya: *See*—
Izu, Hiroyuki; Kurome, Yoko; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,795,765, Cl. 435-200.000.
J. A. Woollam Co. Inc.: *See*—
Herzinger, Craig M.; and Johs, Blaine D., 5,796,983, Cl. 395-500.000.
J.E. Thomas-Specialties Limited: *See*—
Romerein, Robert L., 5,796,316, Cl. 333-100.000.
J. Eberspächer GmbH & Co.: *See*—
Steiert, Edwin, 5,796,332, Cl. 340-438.000.
J. L. Clark, Inc.: *See*—
Baerenwald, Philip M., 5,794,814, Cl. 220-685.000.
J. Wagner GmbH: *See*—
Kuhni, Rudolf; and Gebauer, Gerhard, 5,796,184, Cl. 307-118.000.
JAC Products, Inc.: *See*—
Cucheran, John S.; Potter, Donald R.; and Rak, Artur K., 5,794,827, Cl. 224-321.000.
Jack Kennedy Metal Products & Buildings, Inc.: *See*—
Kennedy, William R.; and Kennedy, John M., 5,795,367, Cl. 95-3.000.
Jäckel, Johann, to LuK Lamellen und Kupplungsbau GmbH. Torque transmitting apparatus. 5,794,750, Cl. 192-70.170.
Jackman, Robert. Apparatus for controlling water seepage at a structural interface. 5,794,388, Cl. 52-169.500.
Jackson, Dana B.; Asher, Donald I.; Halcomb, Ronald G.; and Vogt, John E., to Boeing North American, Inc. Method and apparatus for effecting continuous multi-directional laminating. 5,795,426, Cl. 156-249.000.
Jackson, Jenny. Photograph log. 5,795,090, Cl. 402-79.000.
Jackson, Paul: *See*—
Bhanot, Pradeep; and Jackson, Paul, 5,796,934, Cl. 395-182.020.
Jackson, Paul F.; Slusher, Barbara S.; Tays, Kevin L.; and Maclin, Keith M., to Guilford Pharmaceuticals Inc. Inhibitors of NAALADase enzyme activity. 5,795,877, Cl. 514-75.000.
Jackson, Ronald A., to Barringer Instruments Ltd. Pressure based calibration correction of an ion mobility spectrometer. 5,796,099, Cl. 250-286.000.
Jacob, David E., to LAM Research Corporation. Apparatus method for determining the presence or absence of a wafer on a wafer holder. 5,796,486, Cl. 356-375.000.
Jacob, Elijah, to Modern Technology Inventions. Polarity independent battery jumper cables or charger with automatic polarity detector and built-in automatic safety features. 5,795,182, Cl. 439-504.000.
Jacob GmbH Elektrotechnische Fabrik: *See*—
Feketitsch, Herbert, 5,796,040, Cl. 174-65.0SS.
Jacobs, James L.: *See*—
Manning, John S.; Hollis, Christopher P.; Jacobs, James L.; and Pratt, Ralph E., 5,795,145, Cl. 431-280.000.
Jacobs, Katherine: *See*—
Tofighi, Aliassghar; Vasconcellos, Alfred V.; Jacobs, Katherine; and Chakravarthy, Pramod, 5,795,330, Cl. 604-82.000.
Jacobs, Stephen David; Kordonski, William; Prokhorov, Igor Victorovich; Golini, Donald; Gorodkin, Gennadii Rafailovich; and Strafford, Tvasta David, to Byelocorp Scientific, Inc.; and University of Rochester. Deterministic magnetorheological finishing. 5,795,212, Cl. 451-36.000.
Jacoby, John. Stacked fin heat sink construction and method of manufacturing the same. 5,794,684, Cl. 165-80.300.
Jacquinot, Eric: *See*—
Jansen, Rolf-Michael; Zimmermann, Andreas; Jacquinot, Eric; and Smith, Douglas, 5,795,556, Cl. 423-338.000.
Jaddou, John Yas, to Ford Global Technologies, Inc. Universally making waved parts. 5,794,484, Cl. 72-414.000.
Jaepel, Dieter: *See*—
Harrison, Colin George; and Jaepel, Dieter, 5,796,727, Cl. 370-338.000.
Jagenberg Aktiengesellschaft: *See*—
Urban, Ernst-Günther, 5,795,432, Cl. 156-446.000.
Jäger, Karl-Friedrich: *See*—
Merkle, Hans Rupert; Durein, Alfons; Hansen, Hanspeter; and Jäger, Karl-Friedrich, 5,795,983, Cl. 544-11.000.
Jagers, Richard C.: *See*—
Burgess, Gregory M.; Endicott, David B.; Camarro, Thomas; and Jagers, Richard C., 5,796,633, Cl. 364-551.010.
Jahnes, Christopher Vincent: *See*—
Agnello, Paul David; Cabral, Cyril, Jr.; Grill, Alfred; Jahnes, Christopher Vincent; Licata, Thomas John; and Roy, Ronnen Andrew, 5,796,166, Cl. 257-751.000.
Jahns, Thomas M.: *See*—
Archer, William R.; Becerra, Roger C.; Beifus, Brian L.; Brattoli, Mark A.; Erdman, David M.; Jahns, Thomas M.; Kliman, Gerald B.; Soong, Wen Liang; Stephens, Charles M.; Benedict, Eric R.; and Degner, Michael W., 5,796,194, Cl. 310-68.00B.
Jain, Vidyut: *See*—
Davis, Owen; and Jain, Vidyut, 5,796,952, Cl. 395-200.540.
James Black Foundation Limited: *See*—
Kalindjian, Sarkis Barret; Steel, Katherine Isobel Mary; Pether, Michael John; Davies, Jonathan Michael Richard; Low, Caroline Minli Rachel; Hudson, Martin Lyn; Buck, Ildiko Maria; McDonald, Iain Mair; Dunstone, David John; and Tozer, Matthew John, 5,795,907, Cl. 514-397.000.
James, Thomas: *See*—
Pearson, Thomas E.; and James, Thomas, 5,794,339, Cl. 29-889.500.
JAMI, Inc.: *See*—
McDaniel, Randall D.; and White, Gergory J., 5,794,545, Cl. 108-64.000.
Janas, Victor F.: *See*—
Safari, Ahmad; Danforth, Stephen C.; Bandyopadhyay, Amit; Janas, Victor F.; and Panda, Rajesh Kumar, 5,796,207, Cl. 310-358.000.
Janecke, Daniel P.: *See*—
Steeby, Jon A.; and Janecke, Daniel P., 5,795,264, Cl. 477-124.000.
Jang, Jung-Woo. Quick assembly tent framework. 5,794,640, Cl. 135-131.000.
Jang, Seong Jun, to Hyundai Electrics Industries Co., Ltd. Synchronous memory device having dual input registers of pipeline structure in data path. 5,796,675, Cl. 365-230.080.
Jang, Yong Bae: *See*—
Kim, Myung Bae; and Jang, Yong Bae, 5,794,705, Cl. 169-61.000.
Janich, Sandra: *See*—
Hamner, John F.; Janich, Sandra; Despain, Jeffrey L.; Niemann, Katherine D.; Sevy, Brian D.; Tran, Dzung D.; and Welch, Frank K., 5,796,951, Cl. 395-200.530.
Janik, Leon P.; and Williams, Michael J., to Stanadyne Automotive Corp. Fuel circuit and circulation method for fuel injection system. 5,794,598, Cl. 123-514.000.
Janmaat, Ronaldus Gerardus Johannes: *See*—
Sips, Johan Willem; Melisse, Alfonsius Antonius Johannes; Kuisch, Eric Bryan; and Janmaat, Ronaldus Gerardus Johannes, 5,796,950, Cl. 395-200.480.
Jannetta, Thomas J.: *See*—
Peters, Fred H.; and Jannetta, Thomas J., 5,794,453, Cl. 60-226.200.
Jansen, Robertus C.J.: *See*—
Beuk, Leonardus G.M.; Köhler, Hans E.P.; Jansen, Robertus C.J.; and Van Gerwen, Adrianus H., 5,797,085, Cl. 455-88.000.
Jansen, Rolf-Michael; Zimmermann, Andreas; Jacquinot, Eric; and Smith, Douglas, to Hoechst AG. Xerogels and process for their preparation. 5,795,556, Cl. 423-338.000.
Jansen, Ronald: *See*—
Van Kempen, Herman; Abraham, Daniel Lee; Prins, Menno W. J.; Jansen, Ronald; and van der Wielen, Maurice C. M. M., 5,796,102, Cl. 250-306.000.
Jansen, Walter K.M.: *See*—
Bittner, Klaus; Jansen, Walter K.M.; Mohr, Klaus-Peter; Wendel, Thomas; and Wietzoreck, Hardy, 5,795,408, Cl. 148-262.000.
Janson, John M.: *See*—
Lahm, William J.; Stevens, Timothy A.; Tschumakow, Alexander G.; Wilkins, Leon M.; Janson, John M.; and Conley, Stephen C., 5,795,775, Cl. 435-297.500.
Janssen, Bernardus J. W.; Kroon, Gijsbert; Kruythoff, Dirk; and Salomons, Willemina G., to Hercules Incorporated. Cellulose ethers in emulsion polymerization dispersions. 5,795,928, Cl. 524-48.000.
Jao, Edwin: *See*—
Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,795,874, Cl. 514-54.000.
Japan Aviation Electronics Industry Limited: *See*—
Ono, Michitaka, 5,795,190, Cl. 439-607.000.
Saito, Kazuki; Sekiguchi, Sunao; and Ishida, Hisashi, 5,795,174, Cl. 439-310.000.
Japan Storage Battery Co., Ltd.: *See*—
Aoki, Takashi; Nagata, Mikito; and Tsukamoto, Hisashi, 5,795,558, Cl. 423-594.000.
Jarl, Per, to Pacesetter AB. Electrode connector jack for an implantable medical electrical stimulator. 5,795,165, Cl. 439-86.000.
Jaso, Mark Anthony: *See*—
Gambino, Jeffrey Peter; Jaso, Mark Anthony; and Nesbit, Larry Allan, 5,795,826, Cl. 438-692.000.
Jasty R & D Inc.: *See*—
Fujiyoshi, Kageakira; Fujiyoshi, Daisuke; and Fujiyoshi, Takamichi, 5,796,065, Cl. 219-78.020.
Jauregui, Hugo O.: *See*—

Mullon, Claudy Jean-Paul; Cain, Shawn Paul; Perlman, Timothy Jon; Jauregui, Hugo O.; Naik, Sharda; Santangini, Henry A.; and Trenkler, Donna M., 5,795,711, Cl. 435-1.100.

Jaworski, Kevin J.; and Luzsicza, Steven, to Pullman Company, The. Internally sealed pivotal joint assembly. 5,795,092, Cl. 403-56.000.

Jayasena, Sumedha D.: *See*—
Rabin, Ross S.; Jayasena, Sumedha D.; and Gold, Larry, 5,795,721, Cl. 435-6.000.

Jeffrey, Scott R.: *See*—
Read, Karen A.; Trogdon, David E.; Thorpe, Thurman C.; Ronsick, Christopher S.; and Jeffrey, Scott R., 5,795,773, Cl. 45-287.500.

Jenapharm GmbH: *See*—
Hesch, Rolf-Dieter; Oettel, Michael; Droescher, Peter; Schwarz, Sigfrid; Menzenbach, Bernd; Römer, Wolfgang; Kaufmann, Günter; and Schröder, Jens, 5,795,883, Cl. 514-172.000.

Jenkins, Kenneth W., to Cutler Manufacturing Corporation. Multi-point locking system. 5,794,844, Cl. 232-25.000.

Jenkins, Peter Joel: *See*—
Fifield, John Atkinson; Giacalone, Glenn Peter; and Jenkins, Peter Joel, 5,796,270, Cl. 326-86.000.

Jenkins, Stuart E.; Schmidt, K. Michael, deceased (by Barbara A. Schmidt, legal representative); and Le, Tuan N., to Energaire Corporation. Sole and heel structure with peripheral fluid filled pockets. 5,794,359, Cl. 36-28.000.

Jennings, Andrew A.: *See*—
Gantenbein, Rob A.; and Jennings, Andrew A., 5,795,205, Cl. 441-75.000.

Jennings, Harold J.; and Kasper, Dennis L., to National Research Council of Canada; and Brigham and Women's Hospital, Inc. Group B streptococcus type V polysaccharide-protein conjugate vaccines. 5,795,580, Cl. 424-244.100.

Jennings, Kurt Lynn; and Wassam, John Fred, to General Motors Corporation. Fiber optic lighting-inline connector. 5,796,895, Cl. 385-56.000.

Jennings, William Edward; Manchester, Dennis Palmer; King, Edward E.; and Barclay, David A., to CEM Corporation. Microwave apparatus for controlling power levels in individual multiple cells. 5,796,080, Cl. 219-697.000.

Jenq, Jason: *See*—
Wu, Der-Yuan; and Jenq, Jason, 5,795,805, Cl. 438-253.000.

Jenq, J.S. Jason, to United Microelectronics Corporation. Method of fabricating a stack/trench capacitor for a dynamic random access memory (DRAM). 5,795,804, Cl. 438-244.000.

Jentsch, Jörg-Dietrich: *See*—
Kürschner, Stefan; Jentsch, Jörg-Dietrich; and Darius, Heinz-Gerd, 5,795,841, Cl. 502-325.000.

Jentzsch, Horst; and Schuppler, Berthold. Hose winding apparatus. 5,794,648, Cl. 137-355.230.

Jeon, Young Jin; Choi, Sang Soo; Chung, Hai Bin; Lee, Jong Hyun; and Yoo, Hyung Joun, to Electronics and Telecommunications Research Institute. X-ray mask structure for reducing the distortion of a mask. 5,796,804, Cl. 378-35.000.

Jeong, Chang-rock. Vessel for containing liquid. 5,794,824, Cl. 222-468.000.

Jeong, Mun-Mo: *See*—
Ko, Sang-Gi; and Jeong, Mun-Mo, 5,795,802, Cl. 438-227.000.

Jereb, Eric A. Spring compression tool and method. 5,794,321, Cl. 29-225.000.

Jetec Company: *See*—
Yie, Gene G., 5,794,854, Cl. 239-242.000.

Ji, Byung-Lee; Kwon, Ki-Ha; and Sim, Yong-Won, to Daewoo Electronics Co., Ltd. Multi-deck video cassette recorder system. 5,796,538, Cl. 360-71.000.

Jiang, Shao-Kun, to Samsung Electronics Company, Ltd. Floating-point multiply-and-accumulate unit with classes for alignment and normalization. 5,796,644, Cl. 364-748.070.

Jiang, Wenbin: *See*—
Ramdani, Jamal; Lebby, Michael S.; and Jiang, Wenbin, 5,796,769, Cl. 372-45.000.

Jidosha Kiki Co., Ltd.: *See*—
Inoue, Hidefumi; and Saito, Naohito, 5,794,506, Cl. 91-369.200.

Jim Woods: *See*—
Woods, Jim; and Todd, Dan, 5,795,270, Cl. 482-72.000.

Jimonet, Patrick: *See*—
Chapelle, Philip; Gaillard, Claude; Jimonet, Patrick; Louvel, Erik; Martinet, Michel; Mignani, Serge; and Sanderink, Gérard, 5,795,903, Cl. 514-367.000.

Jin, Rui; Zhao, Kesen; Liu, Jun; Jin, Yan; Lei, Qin; and Li, Xinnong, to Wonder & Bioenergy Hi-Tech International, Inc. Medical non-woven fabrics containing inorganic oxides complex powder. 5,795,836, Cl. 442-417.000.

Jin, Sun Ik, to Samsung Electronics Co., Ltd. Reciprocating compressor having crankshaft with lubrication-conducting grooves on an outer periphery thereof. 5,795,140, Cl. 417-372.000.

Jin, Sungho: *See*—
Graebner, John Edwin; Jin, Sungho; Kochanski, Gregory Peter; and Zhu, Wei, 5,796,211, Cl. 315-3.500.

Jin, Yan: *See*—
Jin, Rui; Zhao, Kesen; Liu, Jun; Jin, Yan; Lei, Qin; and Li, Xinnong, 5,795,836, Cl. 442-417.000.

Jintec Corporation: *See*—
Utsumi, Katsunori, 5,796,816, Cl. 379-381.000.

Jo, Hyun-min: *See*—
Kim, Yong-ho; Lee, Young-sik; and Jo, Hyun-min, 5,796,277, Cl. 327-108.000.

Jo, Sung-O, to Samsung Electronics Co., Ltd. Optimum fuzzy method for controlling a rice cooker. 5,796,077, Cl. 219-497.000.

Jobin, Michael J.; Grigoletti, Randall L.; Gentile, James R.; Nudd, Hugh R.; and Williamson, John, to Andrew Corporation. Transmission line hanger, a method of attaching the hanger and the resulting assembly. 5,794,897, Cl. 248-74.400.

Joe, Yeo-Uk, to Daewoo Electronics Co., Ltd. Signal transmitting device with an optical coupler for use in a head drum assembly. 5,796,559, Cl. 360-108.000.

Joentgen, Winfried: *See*—
Wagner, Klaus; Helling, Günter; Groth, Torsten; and Joentgen, Winfried, 5,795,707, Cl. 430-569.000.

John, Michael; and Daigle, Robert V., to Johnson & Ruddick, Ltd. Modular pallet system. 5,794,543, Cl. 108-56.100.

Johns, Allan Thomas, to University of Bath, The. Detecting faults in power lines. 5,796,257, Cl. 324-520.000.

Johnsen, Tyrone Arthur; Spierling, Todd Alan; and Carter, Harry Raymond, Jr., to Sundstrand Corporation. Adaptable rotating rectifier and suppression resistor assembly for two-pole, wound rotor of dynamoelectric machine. 5,796,196, Cl. 310-68.00D.

Johnson & Johnson Medical, Inc.: *See*—
Mathieu, Julien C., 5,795,521, Cl. 264-163.000.

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Herzinger, Craig M.; and Johs, Blaine D., 5,796,983, Cl. 395-500.000.

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Gauthier, Forrest P.; and Jovic, Dimitrije L., 5,796,930, Cl. 395-116.000.

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Chou, Wu; Juang, Biing-Hwang; Kawahara, Tatsuya; and Lee, Chin-Hui, 5,797,123, Cl. 704-256.000.

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Sonnemann, Guenter; Sierakowski, Mirko; and Junghans, Rainer, 5,794,575, Cl. 123-41.080.

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Svensson, John E.; Grande, Dodd H.; Grande, Hans D.; and Min, Shin B., 5,794,950, Cl. 280-11.200.

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Hoffart, Michael; Rosenkranz, Jürgen; Bartling, Franz-Peter; Glessner, Bertram; and Lysson, Hans-Jürgen, 5,796,905, Cl. 385-128.000.

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Hasegawa, Makoto; Sanda, Atsuo; and Nomura, Haruhiko, 5,795,399, Cl. 134-1.300.
Hegi, Yasuhiro, 5,796,659, Cl. 365-189.040.
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Kozono, Hiroyuki, 5,796,160, Cl. 257-675.000.
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Ohkawa, Hideki; Matsubara, Motonari; Yoshimaru, Tomohisa; Yoshida, Nobuhisa; and Koyahara, Satoru, 5,796,708, Cl. 369-283.000.
Okumura, Haruhiko; Fujiwara, Hisao; Itoh, Goh; and Kinno, Akira, 5,796,447, Cl. 349-33.000.
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Tanabe, Ken; and Nukui, Tadashi, 5,796,301, Cl. 330-9.000.
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Kadosh, Daniel: *See*—
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Kahlert, Hans-Jürgen; and Burghardt, Berthold, to Microlas Lasersystm GmbH. Optical apparatus for the homogenisation of laser radiation and the generation of several lighting fields. 5,796,521, Cl. 359-619.000.

Kahne, Suzanne Walker, to Trustees of Princeton University. Compositions and methods for cell transformation. 5,795,870, Cl. 514-26.000.

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Kalachev, Ivan Fedorovich: *See*—
Green, Herbert J.; Butler, Major G.; Tahautdinov, Shafagat Fahrazovich; Syrtlanov, Ampir Shaibakovich; Zagirov, Magsum Mudarisovich; Kalachev, Ivan Fedorovich; and Voider, Alexander Leongardovich, 5,794,982, Cl. 285-55.000.

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Weinheimer, Alois; and Uhlmann, Dieter, 5,794,779, Cl. 206-443.000.

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Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; Shimmura, Tomoyuki; Toyosawa, Yoshiya; Kurashina, Hiroyasu; and Hosokawa, Takeshi, 5,795,086, Cl. 400-615.200.

Kamei, Kyoji: *See*—
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Kamikawa, Yoshinori: *See*—
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Kamisugi, Hirofumi: *See*—
Abukawa, Fumitaka; Goi, Hitoshi; Watanabe, Masahiko; Kurasawa, Shin; and Kamisugi, Hirofumi, 5,795,538, Cl. 266-46.000.

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Kampe, Klaus-Dieter; Granzer, Ernold; Leineweber, Michael; and Hüttinger, Manfred, to Hoechst Aktiengesellschaft. Soluble salts of 4-amino-2-(4,4-dimethylimidazolidin-2-on-1-yl) pyrimidine-5-carboxylic acid N-methyl-N-(3-trifluoromethylphenyl)-amide, a process for the preparation thereof, the use thereof as pharmaceuticals and starting materials. 5,795,899, Cl. 514-275.000.

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Kanarsky, Thomas Safron: *See*—
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Kanaya, Miharu: *See*—
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Kanayama, Ryoji: *See*—
Oda, Shigeo; Matsui, Kazuharu; Kanayama, Ryoji; Mori, Kuniyasu; Sugimoto, Kazuo; and Kaneto, Kimikazu, 5,794,681, Cl. 164-195.000.

Kanazawa, Kunihiko: *See*—
Yoshikawa, Noriyuki; Kanazawa, Kunihiko; Makioka, Satoshi; and Tateoka, Kazuki, 5,796,165, Cl. 257-728.000.

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Kanda, Toshiyuki; Takabayashi, Hiroshi; and Onitsuka, Yoshihiro, to Canon Kabushiki Kaisha. Illumination device and liquid crystal display apparatus including same. 5,796,450, Cl. 349-64.000.

Kanebo Ltd.: *See*—
Hirayama, Ryoichi; Tsukida, Takahiro; Yamamoto, Minoru; Ikeda, Shoji; Sakamoto, Fumio; Obata, Yuji; and Matsuo, Konomi, 5,795,891, Cl. 514-238.200.

Kaneda, Naoya; and Ichinose, Harunobu, to Canon Kabushiki Kaisha. Light beam deflection unit. 5,796,531, Cl. 359-832.000.

Kaneto, Kimikazu: *See*—
Oda, Shigeo; Matsui, Kazuharu; Kanayama, Ryoji; Mori, Kuniyasu; Sugimoto, Kazuo; and Kaneto, Kimikazu, 5,794,681, Cl. 164-195.000.

Kang, Chang-Seok: *See*—
Kwon, Kee-Won; and Kang, Chang-Seok, 5,796,133, Cl. 257-295.000.

Kang, Chung S.: *See*—
Cho, Suh H.; Kim, Il Y.; Kang, Chung S.; Jung, Chang B.; Lee, Hae J.; Jung, Il Y.; and Kim, Chang G., 5,795,516, Cl. 264-103.000.

Kang, Sung-Mo Steve; Duvvury, Charvaka; Diaz, Carlos Hernando; and Ramaswamy, Sridhar, to University of Illinois, The Board of Trustees of the; Texas Instruments Incorporated; and Hewlett-Packard Company. Methods, apparatus and computer program products for synthesizing integrated circuits with electrostatic discharge capability and connecting ground rules faults therein. 5,796,638, Cl. 364-578.000.

Kang, Yong Soo; Jung, Bumsuk; and Kim, Un Young, to Korea Institute of Science and Technology. Polymeric dope solution for use in the preparation of an integrally skinned asymmetric membrane. 5,795,920, Cl. 521-64.000.

Kann, Michael: *See*—
Liou, Nick; and Kann, Michael, 5,795,012, Cl. 296-136.000.

Kanno, Makoto: *See*—
Kamiyama, Kinya; Moriizumi, Koichi; Kanno, Makoto; and Taoka, Hironobu, 5,796,408, Cl. 345-441.000.

Kanno, Naotaka, to NEC Corporation. Disc controller with improved data sync and re-sync mark detection. 5,796,690, Cl. 369-48.000.

Kano, Haruhiko, to Murata Manufacturing Co., Ltd. Electrically-conductive composition. 5,795,501, Cl. 252-514.000.

Kanoh, Hiroshi: *See*—
Mizobata, Eishi; Ikeno, Hidenori; and Kanoh, Hiroshi, 5,796,455, Cl. 349-116.000.

Kansai Paint Co., Ltd.: *See*—
Yoshimi, Naoto; Kubota, Takahiro; Ishiyama, Takashi; Yamashita, Masaaki; and Haruta, Yasuhiko, 5,795,660, Cl. 428-626.000.

Kanzaki Kokyukoki Mfg. Co., Ltd.: *See*—
Shimizu, Hiroaki, 5,794,443, Cl. 60-456.000.

Kanzaki, Toyoki; and Kinoshita, Dainichiro, to Horiba, Ltd. Signal process method and apparatus for defect inspection. 5,796,475, Cl. 356-237.000.

Kao Corporation: *See*—
Hatano, Koichi; Yamashita, Hiroyuki; Sakaue, Masaaki; Toyoda, Koji; and Yamada, Yasuji, 5,795,856, Cl. 510-444.000.
Ishikawa, Akira; Nakayama, Hidehiko; and Yamashita, Kazutaka, 5,795,642, Cl. 428-141.000.
Kitaori, Noriyuki; Yoshida, Osamu; Mizunoya, Hirohide; Wakabayashi, Shigemi; and Shiga, Akira, 5,796,533, Cl. 360-17.000.

Kaplan, Larisa: *See*—
Parkansky, Naum; Ben-shalom, Amir; Boxman, Raymond L.; Kaplan, Larisa; Goldsmith, Samuel; Yaloz, Hanan; and Nathan, Menachem, 5,795,631, Cl. 428-34.100.

Kaplinsky, Cecil H. Programmable logic device with partial switch matrix and bypass mechanism. 5,796,268, Cl. 326-39.000.

Kapolnek, David Joseph: *See*—
Mishra, Umesh Kumar; DenBaars, Steven P.; and Kapolnek, David Joseph, 5,795,798, Cl. 438-35.000.

Kapsa, Hans-Martin: *See*—
Halm, Hans; Werhahn, Wilhelm; Eichler, Klaus; and Kapsa, Hans-Martin, 5,795,436, Cl. 156-579.000.

Kara, Salim G.: *See*—
Whitney, Jonathan W.; Gressett, David M.; and Kara, Salim G., 5,796,834, Cl. 380-25.000.

Karger, Paul Ashley: *See*—
Johnson, Donald Byron; Karger, Paul Ashley; Kaufman, Charles William, Jr.; Matyas, Stephen Michael, Jr.; Safford, David Robert; Yung, Marcel Mordechay; and Zunic, Nevenko, 5,796,830, Cl. 380-21.000.

Kari, John: *See*—
Workman, Kurt; Sasaki, Steven; O'Neel, John; and Kari, John, 5,794,272, Cl. 2-421.000.

Karino, Isamu: *See*—
Mitumoto, Seiichi; Maejima, Shigeto; Masuda, Takashi; and Karino, Isamu, 5,795,919, Cl. 521-28.000.

Karlsberger, Mark A. Electrical plug. 5,795,195, Cl. 439-783.000.

Karni, Jacob; Ries, Harald; Segal, Akiba; Krupkin, Vladimir; and Yogev, Amnon, to Yeda Research And Development Co. Ltd. Delivery of radiation from a first transparent medium to a second transparent medium having a lower refraction index. 5,796,892, Cl. 385-38.000.

Karp, James B. Welding gun spatter shield. 5,796,070, Cl. 219-137.430.

Karpinski, Joseph M.: *See*—
Christensen, Siegfried B., IV; and Karpinski, Joseph M., 5,795,918, Cl. 514-709.000.

Kasahara, Nobuo; Muramatsu, Satoshi; and Shibaki, Hiroyuki, to Ricoh Company, Ltd. Image forming system. 5,797,074, Cl. 399-262.000.

Kasai, Yoshikuni: *See*—
Suenaga, Kiyoshi; and Kasai, Yoshikuni, 5,795,130, Cl. 416-95.000.

Kasajima, Kimihisa; and Iwasawa, Seiji, to Nissan Motor Co., Ltd.; and Keiaisha Seisakuso Co., Ltd. Installation ring for mounting pressurized fluid buffer device and fabrication method therefor. 5,794,741, Cl. 188-321.110.

Kasbohm, Michael J., to Chasin, Lawrence C. Portable exercise pulley belt apparatus. 5,795,274, Cl. 482-115.000.

Kaschke, Michael: *See*—
Hellmuth, Thomas; Kaschke, Michael; Moore, John C.; and Unold, Gerhard, 5,795,295, Cl. 600-407.000.

Kashima, Nobukazu: *See*—
Taniguchi, Tadatsugu; Muramatsu, Masami; Sugano, Haruo; Matsui, Hiroshi; and Kashima, Nobukazu, 5,795,769, Cl. 435-252.300.
Taniguchi, Tadatsugu; Muramatsu, Masami; Sugano, Haruo; Matsui, Hiroshi; Kashima, Nobukazu; and Hamuro, Junji, 5,795,777, Cl. 435-325.000.

Kashishian, Adam: *See*—
Lockerbie, Robert Owen; and Kashishian, Adam, 5,795,735, Cl. 435-69.100.

Kashiyama, Motohisa: *See*—
Tsuji, Masanori; and Kashiyama, Motohisa, 5,795,197, Cl. 439-884.000.

Kasianowicz, John: *See*—
Church, George; Deamer, David W.; Branton, Daniel; Baldarelli, Richard; and Kasianowicz, John, 5,795,782, Cl. 436-2.000.

Kasica, James J.: *See*—
Shi, Yong-Cheng; Eden, James L.; and Kasica, James J., 5,795,397, Cl. 127-29.000.

Kasper, Dennis L.: *See*—
Jennings, Harold J.; and Kasper, Dennis L., 5,795,580, Cl. 424-244.100.

Kasuga, Tatsuo; and Higuchi, Eisei, to Honda Giken Kogyo Kabushiki Kaisha. Method and structure for mounting a fuel tank. 5,794,979, Cl. 280-834.000.

Katagiri, Masayuki: *See*—
Sakashita, Hiroshi; and Katagiri, Masayuki, 5,796,200, Cl. 310-156.000.

Katakura, Kazunori: *See*—
Iwasaki, Manabu; Tsuboyama, Akira; Katakura, Kazunori; and Mizutani, Hidemasa, 5,796,381, Cl. 345-101.000.

Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; Tajima, Yoshio; and Matsuura, Kazuo, to Nippon Oil Co., Ltd. Catalyst components for polymerization of olefins. 5,795,839, Cl. 502-126.000.

Katayama, Tsutomu; Arakawa, Seiichi; and Miyamoto, Akio, to UBE Industries, Ltd. Injection welding material. 5,795,931, Cl. 524-494.000.

Katchmar, Roman, to Northern Telecom Limited. Printed circuit board and heat sink arrangement. 5,796,582, Cl. 361-704.000.

Kato, Akira: *See*—
Yamamoto, Hiroshi; and Kato, Akira, 5,794,332, Cl. 29-863.000.

Kato, Hidenobu: *See*—
Matsuda, Yoshio; Kato, Hidenobu; and Ikeguchi, Yoshito, 5,794,460, Cl. 66-193.000.

Kato, Ichiro, to Canon Kabushiki Kaisha. Spread spectrum communication apparatus with conversion of input patterns to uniform spectral patterns. 5,796,774, Cl. 375-206.000.

Kato, Ikunoshin: *See*—
Izu, Hiroyuki; Kurome, Yoko; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,795,765, Cl. 435-200.000.

Kato, Keigo: *See*—
Yanagawa, Yuji; Kato, Keigo; Muta, Koichiro; Ikihara, Tadao; and Tanaka, Tamon, 5,794,666, Cl. 141-18.000.

Kato, Kenji: *See*—
Saito, Yutaka; Shinogi, Masataka; and Kato, Kenji, 5,796,240, Cl. 322-10.000.

Kato, Masahiko, to Sanshin Kogyo Kabushiki Kaisha. Fuel control for marine engine. 5,794,605, Cl. 123-688.000.

Kato, Masahito: *See*—
Yamazaki, Hideto; Fujioka, Masaya; Kitahara, Takeo; Kato, Masahito; and Higashiyama, Shunichi, 5,795,375, Cl. 106-31.570.

Kato, Masashi: *See*—
Nakae, Takahiko; Kato, Masashi; Fujita, Takehito; Kawabata, Kazuhito; and Ohno, Hiroyuki, 5,795,890, Cl. 514-235.500.

Kato, Satoru: *See*—
Kojima, Sadaaki; Araki, Hiroshi; and Kato, Satoru, 5,796,228, Cl. 318-605.000.

Kato, Shigeki: *See*—
Ueda, Shinji; Kadowaki, Hidejiro; Takamiya, Makoto; and Kato, Shigeki, 5,796,470, Cl. 356-28.500.

Kato, Shigeru, to Olympus Optical Co., Ltd. Real image mode variable magnification finder optical system. 5,796,518, Cl. 359-432.000.

Kato, Shinichi; Nimura, Mitsuhiro; Hanasaki, Masaharu; and Nanba, Akimasa, to Aisin AW Co., Ltd. Navigation system for vehicles including present position calculating means. 5,796,613, Cl. 364-449.800.

Kato, Yasuhiko: *See*—
Minamino, Katsuki; Watari, Masao; Tanaka, Miyuki; Ishii, Kazuo; Kato, Yasuhiko; Ogawa, Hiroaki; Omote, Masanori; Watanabe, Kazuo; and Honda, Hitoshi, 5,796,921, Cl. 395-22.000.

Kato, Yoshiaki, to Advantest Corp. High speed test pattern transfer apparatus for semiconductor test system. 5,796,753, Cl. 371-27.100.

Katoh, Minoru; Itoh, Kenji; and Ohtsubo, Hiroyasu, to Hitachi, Ltd. Video camera with a function to correct defective pixels of solid state image pickup device and method of correcting defective pixels of solid state image pickup device. 5,796,430, Cl. 348-246.000.

Katsunuma, Atsushi, to Nikon Corporation. Catadioptric optical system. 5,796,515, Cl. 359-364.000.

Katsuta, Yasushi: *See*—
Takami, Norio; Ohsaki, Takahisa; Tamaki, Toshio; Nakajima, Hideyuki; and Katsuta, Yasushi, 5,795,678, Cl. 429-218.000.

Katsuyama, Akira: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Sugiyama, Koichi; Sato, Makoto; Kotabe, Noriko; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,796,352, Cl. 340-825.240.

Kattilakoski, Matti H. M.: *See*—
Hallikainen, Jyrki S.; Kattilakoski, Matti H. M.; and Korkeakangas, Pekka H. M., 5,797,102, Cl. 455-557.000.

Katz, Bob H.: *See*—
Ball, Geoffrey R.; and Katz, Bob H., 5,795,287, Cl. 600-25.000.

Katzin, Lawrence F. Actively overridable passenger constraint system. 5,794,972, Cl. 280-735.000.

Katzin, Peter: *See*—
Ayasli, Yalcin; and Katzin, Peter, 5,796,362, Cl. 342-6.000.

Katzmaier, Wolfgang: *See*—
Wernz, Albert; and Katzmaier, Wolfgang, 5,794,320, Cl. 29-1.230.

Kaufman, Charles W.: *See—*
Perlman, Radia Joy; Kirby, Alan J.; Backes, Floyd J.; and Kaufman, Charles W., 5,796,740, Cl. 370-401.000.

Kaufman, Charles William, Jr.: *See—*
Johnson, Donald Byron; Karger, Paul Ashley; Kaufman, Charles William, Jr.; Matyas, Stephen Michael, Jr.; Safford, David Robert; Yung, Marcel Mordechay; and Zunic, Nevenko, 5,796,830, Cl. 380-21.000.

Kaufmann, Günter: *See—*
Hesch, Rolf-Dieter; Oettel, Michael; Droescher, Peter; Schwarz, Sigfrid; Menzenbach, Bernd; Römer, Wolfgang; Kaufmann, Günter; and Schröder, Jens, 5,795,883, Cl. 514-172.000.

Kauppinen, Sakari: *See—*
Christgau, Stephan; Kofod, Lene Venke; Andersen, Lene Nonboe; Kauppinen, Sakari; Heldt-Hansen, Hans Peter; and Dalboege, Henrik, 5,795,764, Cl. 435-200.000.

Kawa, Rolf: *See—*
Ansmann, Achim; Kawa, Rolf; Nitsche, Michael; and Gondek, Helga, 5,795,978, Cl. 536-120.000.

Kawabata, Kazuhito: *See—*
Nakae, Takahiko; Kato, Masashi; Fujita, Takehito; Kawabata, Kazuhito; and Ohno, Hiroyuki, 5,795,890, Cl. 514-235.500.

Kawabata, Takashi: *See—*
Matsuyama, Shinichi; and Kawabata, Takashi, 5,796,095, Cl. 250-208.100.

Kawachi, Takanori: *See—*
Nirasawa, Hitoshi; Kawachi, Takanori; Ogawa, Takashi; and Murata, Kenji, 5,795,671, Cl. 429-41.000.

Kawada, Masaya: *See—*
Ehara, Toshiyuki; and Kawada, Masaya, 5,797,072, Cl. 399-174.000.

Kawaguchi, Akemi: *See—*
Endo, Masayuki; Kawaguchi, Akemi; Nishio, Mikio; and Hashimoto, Shin, 5,795,828, Cl. 438-678.000.

Kawahara, Norihiro: *See—*
Nakayama, Tadayoshi; and Kawahara, Norihiro, 5,796,878, Cl. 382-300.000.

Kawahara, Tatsuya: *See—*
Chou, Wu; Juang, Biing-Hwang; Kawahara, Tatsuya; and Lee, Chin-Hui, 5,797,123, Cl. 704-256.000.

Kawai, Noriko: *See—*
Lavash, Bruce Wiliam; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, 5,795,349, Cl. 604-387.000.

Kawai, Satoru: *See—*
Nakamura, Yuzuo; Kyomen, Masayuki; Asada, Soichiro; Matsunami, Toshiyuki; Suzuki, Hiroyuki; and Kawai, Satoru, 5,795,527, Cl. 264-267.000.

Kawai, Wakahiro, to Omron Corporation. Thin film capacitor and hybrid circuit board and methods of producing same. 5,796,572, Cl. 361-313.000.

Kawajiri, Shinobu; Koubara, Shinji; and Sunaga, Kouhei, to Mitsubishi Denki Kabushiki Kaisha. Rear projection television utilizing two separate housings for easy transportation. 5,796,443, Cl. 348-839.000.

Kawakami, Soichiro; Mishina, Shinya; Kobayashi, Naoya; and Asao, Masaya, to Canon Kabushiki Kaisha. Lithium secondary cell with an alloyed metallic powder containing electrode. 5,795,679, Cl. 429-218.000.

Kawakami, Yoshihisa: *See—*
Itoh, Masayasu; Fukuda, Shigeo; Kawakami, Yoshihisa; Matsubara, Yoshiro; Kawamura, Yasushi; Masuoka, Shigeru; and Honda, Yoshihiro, 5,795,374, Cl. 106-16.000.

Kawakubo, Takashi; and Abe, Kazuhide, to Kabushiki Kaisha Toshiba. Nonvolatile semiconductor memory device and method for manufacturing same. 5,796,648, Cl. 365-145.000.

Kawamoto, Fumio, to Fugi Photo Film Co., Ltd. Method for preparing photosensitive film, photographic photosensitive film, and photographic cartridge. 5,795,705, Cl. 430-501.000.

Kawamura, Akihisa: *See—*
Serikawa, Mitsuhiko; Tagami, Ryou; Kawamura, Akihisa; Matsumoto, Masaharu; Oda, Mikio; and Numazu, Hiroko, 5,796,845, Cl. 381-18.000.

Kawamura, Akio: *See—*
Takamura, Yoshiji; Kawamura, Akio; and Iguchi, Katsuji, 5,795,803, Cl. 438-228.000.

Kawamura, Hisato: *See—*
Ikeda, Hayato; Yokoi, Masanobu; Michiyuki, Hiromi; Kawamura, Hisato; Satoh, Hirofumi; and Shintoku, Noriyuki, 5,795,139, Cl. 417-269.000.

Kawamura, Katsunori: *See—*
Koishi, Toshio; Kawamura, Katsunori; and Minegishi, Seiiti, 5,795,654, Cl. 428-421.000.

Kawamura, Makoto; Shimizu, Yoshinori; and Fujinami, Yasushi, to Sony Corporation. Method and apparatus for reproducing encoded data. 5,796,871, Cl. 382-236.000.

Kawamura, Toshiyuki; Goi, Hitoshi; and Abukawa, Fumitaka, to Dowa Mining Co., Ltd. Cementation method of metals. 5,795,406, Cl. 148-216.000.

Kawamura, Yasushi: *See—*
Itoh, Masayasu; Fukuda, Shigeo; Kawakami, Yoshihisa; Matsubara, Yoshiro; Kawamura, Yasushi; Masuoka, Shigeru; and Honda, Yoshihiro, 5,795,374, Cl. 106-16.000.

Kawan, Joseph C., to Transaction Technology, Inc. Wireless transaction and information system. 5,796,832, Cl. 380-24.000.

Kawasaki, Ikuya: *See—*
Yoshioka, Shinichi; Kawasaki, Ikuya; Narita, Susumu; and Tamaki, Saneaki, 5,796,978, Cl. 395-416.000.

Kawasaki, Kotaro: *See—*
Kishigami, Norimasa; Kawasaki, Kotaro; Yoshimoto, Mitsuharu; and Yoshihara, Atsushi, 5,797,066, Cl. 399-51.000.

Kawasaki, Osamu, to Matsushita Electric Industrial Co., Ltd. Inverter power source apparatus using a piezoelectric transformer. 5,796,213, Cl. 315-209.00R.

Kayumi, Tetsuya, to Honda Giken Kogyo Kabushiki Kaisha. Headrest storage mechanism for motor vehicle seat. 5,795,023, Cl. 297-331.000.

Kazousky, Daniel: *See—*
Reilly, David M.; Havrilla, Joseph B.; Gelblum, Eugene A.; and Kazousky, Daniel, 5,795,333, Cl. 604-154.000.

Kearney, Mark Billings; Koglin, Dennis Michael; and Osborn, Douglas Bruce, to Delco Electronics Corporation. Integrated transducer amplifier with zener-zap programming. 5,796,298, Cl. 327-561.000.

Kearney, Mark Billings: *See—*
Reed, Robert Harrison; Koglin, Dennis Michael; and Kearney, Mark Billings, 5,796,655, Cl. 365-185.220.

Keiaisha Seisakuso Co., Ltd.: *See—*
Kasajima, Kimihisa; and Iwasawa, Seiji, 5,794,741, Cl. 188-321.110.

Keim, Walter, to Grosse Webereimaschinen GmbH. Jacquard machine hook selecting device driven by a bistable element. 5,794,665, Cl. 139-455.000.

Keita, Mamadi; and Bitto, Ennio, to Endress + Hauser Flowtech AG. Coriolis-type mass flow sensor. 5,796,011, Cl. 73-861.357.

Kelebek, Sadan; Wells, Peter F.; Fekete, Simon O.; Burrows, Michael J.; and Suarez, Daniel F., to Falconbridge Limited. Process for improved separation of sulphide minerals or middlings associated with pyrrhotite. 5,795,466, Cl. 209-166.000.

Keller, Edward M.: *See—*
Bukhman, Yefim; and Keller, Edward M., 5,795,493, Cl. 216-59.000.

Keller, James; Spataro, Anthony; and White, Allen, to Honda Giken Kogyo Kabushiki Kaisha. Energy absorbing trim, and methods of constructing and utilizing same. 5,795,013, Cl. 296-188.000.

Keller, James J. Multiple color offset rotary printing press with horizontal slide access. 5,794,531, Cl. 101-479.000.

Keller, Janet T.; Wilson, Kenneth D.; Calhoun, Clyde D.; and Meixner, Larry A., to Minnesota Mining and Manufacturing Company. Positionable and repositionable adhesive article. 5,795,636, Cl. 428-40.100.

Kelley, Drew; and Skerker, Robert B., to Robinson Knife Manufacturing Company, Inc. Potato and vegetable peeler. 5,794,349, Cl. 30-279.600.

Kelly, Stephen J., to Norand Corporation. Rechargeable battery system having intelligent temperature control. 5,795,664, Cl. 429-7.000.

Kelsey-Hayes Company: *See—*
Fuller, Edward N.; Linker, Herbert L., Jr.; Sivulka, Gerald M.; and Tackett, Wendell D., 5,795,038, Cl. 303-119.200.

Kemin Industries, Inc.: *See—*
Nelson, Christopher E.; and Catron, Douglas Howard, 5,795,615, Cl. 426-648.000.

Kemink, Randall Gail: *See—*
Harris, Willard Stephen; Kemink, Randall Gail; McClafferty, William David; and Schmidt, Roger Ray, 5,794,454, Cl. 62-259.200.

Kemker, Uwe; Dörner, Stefan; and Lapp, Oliver, to Vorwerk & Co. Interholding GmbH. Food processor with a mixing vessel and a drive mechanism for an agitator in the mixing vessel. 5,794,524, Cl. 99-348.000.

Kemper, Oliver: *See—*
Wallach, David; Kemper, Oliver; and Kuhnert, Peter, 5,795,975, Cl. 536-24.100.

Kemper, Yves J. Controlled force actuator system. 5,794,753, Cl. 192-89.250.

Kendall Company, The: *See—*
Dye, John F., 5,795,312, Cl. 601-151.000.

Kennecott Greens Creek Mining Company: *See—*
Iwinski, Steven R., 5,795,620, Cl. 427-136.000.

Kennedy, John M.: *See—*
Kennedy, William R.; and Kennedy, John M., 5,795,367, Cl. 95-3.000.

Kennedy, William R.; and Kennedy, John M., to Jack Kennedy Metal Products & Buildings, Inc. Method of and apparatus for reducing sulfur in combustion gases. 5,795,367, Cl. 95-3.000.

Kenneth, Alexander R.; and Stewart, Mark J., to NCR Corporation. Self-service terminal capable of detecting fraudulent use of an integrated circuit card. 5,796,083, Cl. 255-380.000.

Kenney, Andrew: *See—*
Fox, Frederick D.; Pearson, Douglas R.; Caine, Diane; Kenney, Andrew; Morris, Richard A.; Beck, Steve A.; Beck, Cathy J.; and Chu, Robert J., 5,796,932, Cl. 395-161.000.

Kensok, Stephen B.; and Pyfer, Kimberly L. Insect catching tool. 5,794,377, Cl. 43-134.000.

Kepler, Michael A.: *See—*
Cox, Patrick M.; Powell, Adrian P.; Filliger, Paul W.; and Kepler, Michael A., 5,797,092, Cl. 455-404.000.

Kepler, Nicholas John: *See—*
Horne, Stephen C.; Klein, Richard K.; Selcuk, Asim A.; Kepler, Nicholas John; Spence, Christopher A.; Lee, Raymond T.; and Holst, John C., 5,796,651, Cl. 365-156.000.

Kepler, Nick, to Advanced Micro Devices. Method for simplifying the manufacture of an interlayer dielectric stack. 5,795,820, Cl. 438-624.000.

Kerendian, Hormoz, to Sanford Acquisition Company. Piston for torque transmitting systems. 5,794,751, Cl. 192-85.0AA.

Kern, Alan; Henry, Scottlan; and Johnson, Chris, to Rehrig International, Inc. Support assembly for a plastic basket of a shopping cart. 5,794,952, Cl. 280-33.991.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Bacher, Walter; Bley, Peter; and Harmening, Michael, 5,795,519, Cl. 264-139.000.

Kerrigan, Catherine Ann: *See*—
Kalebjian, Christopher Joseph; Kerrigan, Catherine Ann; Sharples, Robert; Coots, Wade; and Wernholm, Thomas Daniel, 5,794,591, Cl. 123-337.000.

Kessler, Richard E.: *See*—
Birrittella, Mark S.; Kessler, Richard E.; Oberlin, Steven M.; Passint, Randal S.; and Thorson, Greg, 5,797,035, Cl. 395-855.000.

Kester, Steven A.; Gilbertson, Scott A.; McIntire, John W.; and Palmer, Ralph P., to Best Lock Corporation. Disconnecting drive mechanism for cylindrical lockset. 5,794,472, Cl. 70-472.000.

Ketonen, Ari; and Anttila, Harri, to Kone Oy. Door sill arrangement in an elevator car. 5,794,746, Cl. 187-333.000.

Keum, Dong Yeal; Park, Cheol Soo; and Ryou, Eui Kyu, to Hyundai Electronics Industries Co., Ltd. Dynamic random access memory capacitor and method for fabricating the same. 5,796,649, Cl. 365-149.000.

Keun, Oh Kwang; Woo, Lee Cheol; Joong, Jeon Yeong; and Heung, Lee Jae, to Cheil Jedang Corporation. Method and system for the treatment of livestock wastewater. 5,795,480, Cl. 210-611.000.

Kevakian, Robert: *See*—
Eaton, John W.; Schlesinger, Randall L.; Ikeda, Michael H.; Brummer, Charles W.; Pacheco, Xavier L.; Kevakian, Robert; and Espinosa, Ricardo G., 5,795,299, Cl. 600-459.000.

Key Buddy, Inc.: *See*—
Skeffington, Cheryl J.; and Walker, Kathy S., 5,794,768, Cl. 206-38.100.

Key Systems, Inc.: *See*—
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Kitagawa, Mitsuhiko: *See*—
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Klein, Dean A., to Micron Electronics, Inc. Assembly aid for mounting packaged integrated circuit devices to printed circuit boards. 5,796,590, Cl. 361-774.000.
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Gomi, Shingo; Kitami, Hirokazu; Endo, Takashi; Matsuoka, Kenichi; Ichinose, Kimihiro; Futagawa, Osamu; Kobayashi, Seiji; and Kobayashi, Kazuhide, 5,796,012, Cl. 73-861.357.
Kobayashi, Makoto: *See*—
Uchikoba, Fumio; Nakajima, Shigeyuki; Ito, Takashi; Miura, Taro; Kobayashi, Makoto; Kurahashi, Takahide; and Iijima, Yasushi, 5,796,323, Cl. 333-260.000.
Kobayashi, Masakazu: *See*—
Tanabe, Masahito; Wakiya, Kazumasa; Kobayashi, Masakazu; and Nakayama, Toshimasa, 5,795,702, Cl. 430-331.000.
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Kawakami, Soichiro; Mishina, Shinya; Kobayashi, Naoya; and Asao, Masaya, 5,795,679, Cl. 429-218.000.
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Kobe Alcoa Transportation Products Ltd.: *See*—
Maezono, Shunichiro; Tawara, Makoto; and Toyose, Kikuo, 5,795,662, Cl. 428-650.000.
Kobussen, Petrus Johannes: *See*—
Morgan, Trevor Francis; Frame, Gordon; and Kobussen, Petrus Johannes, 5,795,605, Cl. 426-277.000.
Koc, Aydin; Steidl, Michael J.; and Dandia, Sanjay, to LSI Logic Corporation. Progressive staggered bonding pads. 5,796,171, Cl. 257-786.000.
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Grubba, William E., 5,795,929, Cl. 524-60.000.
Koch, Franz: *See*—
Fahl, Ernst-Leo; Haas, Albert; and Koch, Franz, 5,794,734, Cl. 180-165.000.
Koch, Garrett S.: *See*—
Adams, Robert D.; Connor, John; Koch, Garrett S.; and Ternullo, Luigi, Jr., 5,796,745, Cl. 371-21.100.
Kochanski, Gregory Peter: *See*—
Graebner, John Edwin; Jin, Sungho; Kochanski, Gregory Peter; and Zhu, Wei, 5,796,211, Cl. 315-3.500.
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Koekman, Bertus Pieter: *See*—
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Koenig & Bauer-Albert Aktiengesellschaft: *See*—
Röder, Klaus Walter; and Trutschel, Hartwig Horst, 5,795,638, Cl. 428-57.000.
Koenzen, Ralf, to ELSA GmbH. ISDN adapter card for a computer. 5,796,958, Cl. 395-200.800.
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Christgau, Stephan; Kofod, Lene Venke; Andersen, Lene Nonboe; Kauppinen, Sakari; Heldt-Hansen, Hans Peter; and Dalboege, Henrik, 5,795,764, Cl. 435-200.000.
Koford, James S.: *See*—
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Kofune, Hideki: *See*—
Kwon, Joong-Yeol; and Kofune, Hideki, 5,796,218, Cl. 315-411.000.
Koga, Hiroki, to NEC Corporation. Semiconductor device with buried wiring layer and fabrication process thereof. 5,796,167, Cl. 257-758.000.
Koglin, Dennis Michael: *See*—
Kearney, Mark Billings; Koglin, Dennis Michael; and Osborn, Douglas Bruce, 5,796,298, Cl. 327-561.000.
Reed, Robert Harrison; Koglin, Dennis Michael; and Kearney, Mark Billings, 5,796,655, Cl. 365-185.220.
Kohl, Karin: *See*—
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Köhler, Hans E.P.: *See*—
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Köhnen, Klaus: *See*—
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Kohring, Douglas R.: *See*—
Lee, Alejandro; Carson, William C., III; and Kohring, Douglas R., 5,794,343, Cl. 30-50.000.
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Koishi, Toshio; Kawamura, Katsunori; and Minegishi, Seiiti, to Central Glass Company, Ltd. Adhesive for bonding together polyvinylidene fluoride resin and substrate. 5,795,654, Cl. 428-421.000.
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Arimoto, Keigo; Kojima, Masayuki; Yamamoto, Takuya; and Negoro, Hisashi, 5,796,465, Cl. 355-27.000.

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Kinoshita, Haruhisa; Matsumoto, Osamu; and Sakuma, Harunobu, 5,795,452, Cl. 204-298.370.

Kolasa, Teodozyj: *See*—
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Kolbe, Alexander: *See*—
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Köll, Berndt: *See*—
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Cho, Suh H.; Kim, Il Y.; Kang, Chung S.; Jung, Chang B.; Lee, Hae J.; Jung, Il Y.; and Kim, Chang G., 5,795,516, Cl. 264-103.000.

Kolterman, Orville G.; and Rink, Timothy J., to Amylin Pharmaceuticals Inc. Methods for regulating gastrointestinal motility. 5,795,861, Cl. 514-12.000.

Komatsu, Hideaki: *See*—
Utamura, Motoaki; Hoizumi, Shinichi; Takeda, Yasushi; Sasaki, Toshihiko; Komatsu, Hideaki; Kirikami, Seiichi; Suzumura, Takeshi; Sasada, Tetsuo; Ikeguchi, Takashi; and Sugita, Shigehisa, 5,794,431, Cl. 60-39.030.

Komatsu, Keiro: *See*—
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Komatsu Ltd.: *See*—
Ozawa, Godo; Fukushima, Hidetada; Nishiyama, Toshihiko; Hukui, Akihumi; and Shinohara, Masaki, 5,795,137, Cl. 417-362.000.
Takano, Toshiro; Netsu, Yoichi; and Akashi, Mitsumasa, 5,794,510, Cl. 91-517.000.

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Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,795,968, Cl. 530-402.000.

Komenou, Kazunari: *See*—
Nishihara, Tokihiro; Matsuda, Takashi; Uchishiba, Hidema; Ikata, Osamu; Satoh, Yoshio; and Komenou, Kazunari, 5,796,205, Cl. 310-313.00R.

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Yamada, Masayuki; Ohora, Yasunori; and Komori, Yasuhiro, 5,797,116, Cl. 704-10.000.

Konaka, Toshinori: *See*—
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Konan Electric Co., Ltd.: *See*—
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Kondo, Yoshihiro: *See*—
Komatsu, Toshihiro; Matsushima, Hitoshi; Hatada, Toshio; Iwai, Susumu; Homma, Tetsuro; Kondo, Yoshihiro; Fuse, Shouhei; Yamada, Hiroshi; Morita, Kazuo; Ito, Hiroshi; Iida, Akiyoshi; Kumagai, Kenta; and Shimode, Shinichi, 5,796,580, Cl. 361-687.000.

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Kongsberg Techmatic UK Limited: *See*—
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Konica Corporation: *See*—
Yamazaki, Hiroshi; Tamura, Kishio; and Hayashi, Mayumi, 5,795,691, Cl. 430-106.600.

Koninklijke PTT Nederland N.V.: *See*—
Sips, Johan Willem; Melisse, Alfonsius Antonius Johannes; Kuisch, Eric Bryan; and Janmaat, Ronaldus Gerardus Johannes, 5,796,950, Cl. 395-200.480.

Konishi, Keiichi: *See*—
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Konishi, Yasuhiro: *See*—
Araki, Takashi; Iwamoto, Hisashi; and Konishi, Yasuhiro, 5,796,669, Cl. 365-222.000.

Konno, Mitoshi; Nakae, Takahiko; and Hamanaka, Nobuyuki, to Ono Pharmaceutical Co., Ltd. Phenylalkan(en)oic acid. 5,795,914, Cl. 514-562.000.

Kono, Hiromi: *See*—
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Kopp, Walter: *See*—
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Korea Advanced Institute of Science and Techanology: *See*—
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Korea Institute of Machinery and Metals: *See*—
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Korea Institute of Science and Technology: *See*—
Kang, Yong Soo; Jung, Bumsuk; and Kim, Un Young, 5,795,920, Cl. 521-64.000.
Kim, Chung Yup; Lee, Jun Young; and Kim, Dong Young, 5,795,953, Cl. 528-423.000.
Kim, Tae Song; Jung, Hyung Jin; Kim, Do Kyung; and Kim, Yoon Chang, 5,796,079, Cl. 219-678.000.

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Kim, Dong Won; Ryu, Won; and Kim, Dae Ung, 5,796,739, Cl. 370-401.000.

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Korkeakangas, Pekka H. M.: *See*—
Hallikainen, Jyrki S.; Kattilakoski, Matti H. M.; and Korkeakangas, Pekka H. M., 5,797,102, Cl. 455-557.000.

Korniski, Thomas John: *See*—
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Koros, Gabriel: *See*—
Koros, Tibor; and Koros, Gabriel, 5,795,291, Cl. 600-232.000.

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Johnson, David W.; Goldsworthy, W. Brandt; and Korzeniowski, George, 5,795,424, Cl. 156-166.000.

Koschitzky, Henry, to Iko Industries Ltd. Method and apparatus for applying surfacing material to shingles. 5,795,389, Cl. 118-308.000.

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Kostek, Sergio; Chang, Shu-Kong; McDaniel, Gordon; Plona, Thomas; Randall, Curtis; Masson, Jean-Pierre; Mayes, James C.; and Hsu, Kai, to Schlumberger Technology Corporation. Method of sonic logging while drilling a borehole traversing an earth formation. 5,796,677, Cl. 367-25.000.

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Kotabe, Noriko: *See*—
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Muraji, Tsutomu; Kuzumoto, Keiichi; Hirotsune, Satoshi; and Kotaka, Mitsuru, 5,796,437, Cl. 348-452.000.

Kotecki, David E.; and Ma, William H., to International Business Machines Corporation. Overhanging separator for self-defining stacked capacitor. 5,796,573, Cl. 361-321.500.

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Robinson, Edward C.; Bombalski, Robert E.; Levendusky, Thomas L.; Skiles, Jean Ann; Weaver, Mark L.; and Kotow, Nickolas C., 5,795,647, Cl. 428-329.000.

Kottal, Peter C.: *See*—
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Kötter, Wilfried: *See*—
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Ohkawa, Hideki; Matsubara, Motonari; Yoshimaru, Tomohisa; Yoshida, Nobuhisa; and Koyahara, Satoru, 5,796,708, Cl. 369-283.000.
Koyama, Kiyomi: *See*—
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Koyfman, Ilya S.: *See*—
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Koyo Seiko Co., Ltd.: *See*—
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Koza, Mark A.: *See*—
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Krishnamurthy, Ramanathapur G.; and Witte, Vernon C., 5,795,614, Cl. 426-613.000.
Kraft, Klaus: *See*—
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Krake, Christopher P. Fence post and rail connector. 5,795,503, Cl. 256-65.000.
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Hogan, Neville; and Krebs, Hermano Igo, 5,794,621, Cl. 128-653.100.
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Kruppa, Victor David: *See*—
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Kubica, Eric Gregory. Method of constructing and designing fuzzy controllers. 5,796,919, Cl. 395-3.000.
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Kuester, Harald: *See*—
Hill, Karlheinz; Igelmund, Sigrid; Stedry, Bernd; Geke, Juergen; Wilde, Andreas; and Kuester, Harald, 5,795,372, Cl. 106-14.410.
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Ermacora, Rino; Walch, Martin; Wattron, Bernard; and Wilhelm, Joel, 5,794,424, Cl. 56-15.100.
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Kuisma, Jarmo: *See*—
Hyöky, Göran; Paananen, Hannu; Montén, Kaj-Erik; Heikkilä, Heikki; and Kuisma, Jarmo, 5,795,398, Cl. 127-46.100.
Kujawski, Joseph M.: *See*—
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Kunde, Klaus, to Bayer Aktiengesellschaft. Aminomethylnaphthalenecarboxlic acid dyestuffs. 5,795,971, Cl. 534-637.000.

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Kuntz, William, to Eagle Inventors, LLC. Drying device. 5,794,797, Cl. 211-41.300.

Kura, Tsuneko: *See—*
Shioi, Masahiro; Makiyama, Takeshi; Hibi, Keiichi; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakamura, Osamu; Kanada, Youji; Kura, Tsuneko; and Oshima, Takashi, 5,796,436, Cl. 348-409.000.

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Kurasawa, Shin: *See—*
Abukawa, Fumitaka; Goi, Hitoshi; Watanabe, Masahiko; Kurasawa, Shin; and Kamisugi, Hirofumi, 5,795,538, Cl. 266-46.000.

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Kurata, Masaaki: *See—*
Shigematsu, Hiroyuki; Nakamura, Yutaka; Sakamoto, Munenori; Nagasawa, Hiroyuki; Nakao, Hiroshi; Nakajima, Yasuhiro; and Kurata, Masaaki, 5,796,406, Cl. 345-358.000.

Kurelek, John, to Tigercat Industries Inc. Tree felling disc saw held with large accumulation area. 5,794,674, Cl. 144-34.100.

Kurematsu, Katsumi, to Canon Kabushiki Kaisha. Liquid crystal apparatus and method of driving same. 5,796,380, Cl. 345-96.000.

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Hattori, Jun; Kurisu, Toru; and Abe, Shin, 5,796,320, Cl. 333-219.100.

Kurker, Christopher M., to Symbios, Inc. Receiver circuit having adaptive equalizer with characteristics determined by signal envelope measurement and method therefor. 5,796,778, Cl. 375-229.000.

Kurome, Yoko: *See—*
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Kurono, Yoshikazu: *See—*
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Kurosawa, Yasuhiro: *See—*
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Kurrle-Weittenhiller, Angelika: *See—*
Boos, Karl-Siegfried; Seidel, Dietrich; Engel, Wolf-Dieter; and Kurrle-Weittenhiller, Angelika, 5,795,786, Cl. 436-71.000.

Kürschner, Stefan; Jentsch, Jörg-Dietrich; and Darius, Heinz-Gerd, to Bayer Aktiengesellschaft. Process for producing coated, nonporous support materials. 5,795,841, Cl. 502-325.000.

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Tanaka, Shigeo; Yamazaki, Hiroshi; Sugiyama, Koichi; Sato, Makoto; Kotabe, Noriko; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,796,352, Cl. 340-825.240.

Kusano, Fumio, to Sharp Kabushiki Kaisha. Information processing device with input data sharing among several applications. 5,796,397, Cl. 345-339.000.

Kusano, Hiroko: *See—*
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Kusase, Shin: *See—*
Kamitani, Kiyoaki; Shichijyo, Akiya; Kusase, Shin; Mitani, Kenzo; and Ishikawa, Hiroaki, 5,796,201, Cl. 310-194.000.

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Kushihara, Hiroshi, to Tamagawa Seiki Kabushiki Kaisha. Digital angle detecting method. 5,796,357, Cl. 341-116.000.

Kushner, Philip Marshall; Rasmussen, Kenn; and Ørhrwald, Niels, to Interlego AG. Toy building set and building elements therefor. 5,795,210, Cl. 446-128.000.

Kutsuna, Eiji: *See—*
Suzuki, Yoshihiro; Kutsuna, Eiji; Nozaki, Hiroshi; and Mori, Shigeo, 5,796,048, Cl. 174-141.00C.

Kutzner, Andrew F. Beverage cooler for automobile. 5,794,683, Cl. 165-41.000.

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Nakaya, Teruomi; Okamoto, Osamu; Kuwano, Naoaki; Suzuki, Seizo; Sasa, Shuichi; Nakayasu, Hidehiko; and Sagisaka, Masakazu, 5,797,105, Cl. 701-7.000.

Kuzumoto, Keiichi: *See—*
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Kvaerner FSSL Limited: *See—*
Seaton, Russell; and Howe, Philip Michael, 5,795,093, Cl. 403-322.000.

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Kvitek, Thomas Theodore: *See—*
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Kwang, Ricky Pang Kim, to Madeira Asia Pte. Ltd. Process for providing an article with a machine-made embroidery pattern in relief. 5,794,555, Cl. 112-475.220.

Kwon, Joong-Yeol; and Kofune, Hideki, to SamSung Electronics Co., Ltd. High voltage stabilizing circuit. 5,796,218, Cl. 315-411.000.

Kwon, Kee-Won; and Kang, Chang-Seok, to Samsung Electronics Co., Ltd. Semiconductor device capacitor having lower electrodes separated by low dielectric spacer material. 5,796,133, Cl. 257-295.000.

Kwon, Ki-Ha: *See—*
Ji, Byung-Lee; Kwon, Ki-Ha; and Sim, Yong-Won, 5,796,538, Cl. 360-71.000.

Kwong, Manlik, to Hewlett-Packard Company. Method and system for the fast determination of EKG waveform morphology. 5,794,624, Cl. 128-702.000.

Kwong, Manpo: *See—*
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Kyle, Jimmie R.; Spolter, Leonard; and Villagran, Marcus, to International Remote Imaging Systems, Inc. Control solutions and a method of use therefor. 5,795,783, Cl. 436-8.000.

Kyocera Corporation: *See—*
Ozawa, Yoshio; Tomiie, Norio; Tode, Hiroyoshi; and Ikeda, Yukio, 5,797,071, Cl. 399-159.000.
Terashi, Yoshitake; Shigehisa, Takashi; Akiyama, Masahide; and Yamashita, Shoji, 5,795,502, Cl. 252-521.100.

Kyodo, Yasumasa, to Sony Corporation. Rotation position detecting device and motor device. 5,796,231, Cl. 318-608.000.

Kyogoku, Makoto: *See—*
Takami, Akihide; Iwakuni, Hideharu; Kyogoku, Makoto; and Murakami, Hiroshi, 5,795,840, Cl. 502-327.000.

Kyomen, Masayuki: *See—*
Nakamura, Yuzuo; Kyomen, Masayuki; Asada, Soichiro; Matsunami, Toshiyuki; Suzuki, Hiroyuki; and Kawai, Satoru, 5,795,527, Cl. 264-267.000.

Kyoto Dai-Ichi Kagaku Co., Ltd.: *See—*
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Kyoto Daiichi Kagaku Co., Ltd.: *See—*
Xu, Kexin; Naka, Michio; and Suzuki, Norihito, 5,796,482, Cl. 356-349.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,795,968, Cl. 530-402.000.

Kyushu Hasec Co., Ltd.: *See—*
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La-Z-Boy Incorporated: *See—*
Dussia, Ralph J., Jr.; Roberts, Gerald E.; Hoffman, Margaret A.; Calvert, William A., Jr.; Dutkievic, Duane T.; West, Charles R.; and Thayer, Adam E., 5,795,028, Cl. 297-440.140.

Labinski, Ronald J., to Hellmuth, Obata & Kassabaum, Inc. Reconfigurable seating system for multi-purpose stadium. 5,794,383, Cl. 52-9.000.

Labonville, Gerard J.: *See—*
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Laboratoire L. Lafon: *See—*
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Laboratoire Theramex SA: *See—*
Bucourt, Robert; Piasco, Alain; and Tchernatinsky, Claude, 5,795,884, Cl. 514-178.000.

Lack, Sabine; and Braun, Günther, to Fichtel & Sachs AG. Vibration damper with a knuckle eye for a motor vehicle and a knuckle eye for a vibration damper for a motor vehicle. 5,794,742, Cl. 188-321.110.

Lackey, Robert P.: *See—*
Fraden, Jacob; Brown, Joseph P.; Lackey, Robert P.; Howe, Randall R.; Bultges, Heinz; Debus, Wolfram; Bautz, Gunther; and Franke, Helmut, 5,795,067, Cl. 374-158.000.

Lacombe, Jean-Claude: *See—*
Courtonne, Véronique; Morin, Dominique; Lacombe, Jean-Claude; Carbonell, Jean-Pierre; and Rene, Didier, 5,796,370, Cl. 343-781.000.

Lacroix, Jean-Michel; and Dunn, James M., to Visible Genetics Inc. Method and kit for quantitation and nucleic acid sequencing of nucleic acid analytes in a sample. 5,795,722, Cl. 435-6.000.
Ladner, Robert Charles: *See*—
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Laerdal Medical Corporation: *See*—
Traut, James R.; Phillips, Sean L.; and Row, Gordon D., 5,795,315, Cl. 602-18.000.
LaFleur, Lee, to Custom Packaging Systems, Inc. Tank liner and method of installation. 5,794,670, Cl. 141-314.000.
Lahm, William J.; Stevens, Timothy A.; Tschumakow, Alexander G.; Wilkins, Leon M.; Janson, John M.; and Conley, Stephen C., to Becton Dickinson and Company. Culture vessel and assembly. 5,795,775, Cl. 435-297.500.
Lahrman, John C., to Dana Corporation. Piston ring assembly. 5,794,941, Cl. 277-175.000.
Lai, Konrad: *See*—
Sarangdhar, Nitin V.; Singh, Gurbir; Lai, Konrad; Pawlowski, Stephen S.; MacWilliams, Peter D.; and Rhodehamel, Michael W., 5,796,977, Cl. 395-406.000.
Lai, Robert. Pallet stretch wrapping machine. 5,794,418, Cl. 53-556.000.
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L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
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Lam Research Corporation: *See*—
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Jacob, David E., 5,796,486, Cl. 356-375.000.
Lamance, David S.: *See*—
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Lambda Physik Gesellschaft zur Herstellung von Lasern MgH: *See*—
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Lambert, William R., to Lucent Technologies, Inc. RF flex circuit transmission line and interconnection method. 5,795,162, Cl. 439-63.000.
Lambrecht, Andy: *See*—
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Lamparter, Ronald C., to Transpec Inc. Illuminated pivotal sign assembly. 5,796,331, Cl. 340-433.000.
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Landon, Steve: *See*—
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Landry, Phillip: *See*—
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Lane, Stephen J.: *See*—
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Lang, Johann: *See*—
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Lang, Volker. Microcatheter set. 5,795,340, Cl. 604-283.000.
Langenberg, Hans; and Klante, Hansjorg, to Blohm + Voss Holding AG. Propeller drive for watercraft. 5,795,199, Cl. 440-79.000.
Langlie, Ronald H., to North Central Plastics. Bag re-rolling apparatus. 5,794,870, Cl. 242-538.200.
Lanier, Roland Vann, Jr.; and Rhyne, Gregory Keith, to Dana Corporation. Filter configuration. 5,795,361, Cl. 55-502.000.
Lapierre, Clément. Carrying and handling tool for construction boards. 5,794,998, Cl. 294-15.000.
LaPlante, Mark Joseph; Lombardi, Thomas Edward; Long, David Clifford; Nenadic, Anton; and Piciacchio, Alan, to International Business Machines Corporation. Stressed burnisher. 5,795,217, Cl. 451-313.000.
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Lapré, John Arthur; McNabola, William Thomas; Veenstra, Jan; and De Vries, Hielke Tjeerd, to Hercules Incorporated. Method for preparing a coated food. 5,795,606, Cl. 426-302.000.
Larkin, Bryan James. Contra-rotating rotor unit. 5,795,200, Cl. 440-81.000.
Larson, Gerald L.; Steinmetz, James R.; and Zazyczny, Joel M., to Huls America Inc. Preparation of waterborne silane/titanium chelates composition. 5,796,117, Cl. 252-182.140.
Larson, Kenneth Warren; Soren, Leonid; and Williams, Daniel L., to Motorola, Inc. Portable electronic device having a rotatable earpiece. 5,796,822, Cl. 379-433.000.
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Lastinger, E. Robert, Jr.: *See*—
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Latour, Lawrence L.: *See*—
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Lau, Felix P.: *See*—
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Lau, Ngai Ting: *See*—
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Lauffer, John M.; and Papathomas, Konstantinos, to International Business Machines Corporation. Printed circut board with embedded decoupling capacitance and method for producing same. 5,796,587, Cl. 361-763.000.
Laurent, Philippe, to Laboratoire L. Lafon. Use of (α-aminomethyl-3,4-dichlorobenzyl) thioacetamide derivatives for inhibiting dopamine reutake and new compounds for this use. 5,795,915, Cl. 514-567.000.
Lavash, Bruce Wiliam; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, to Procter & Gamble Company, The. Absorbent articles having panty covering components that naturally wrap the sides of panties. 5,795,349, Cl. 604-387.000.
Law, Kock-Yee; Tarnawskyj, Ihor W.; Mammino, Joseph; Abkowitz, Martin A.; and Knier, Frederick E., Jr., to Xerox Corporation. Electrically conductive coatings comprising fluorinated carbon filled fluoroelastomer. 5,795,500, Cl. 252-511.000.
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Lawlor, Elizabeth Jane: *See*—
Gentry, Daniel Robert; Greenwood, Rebecca Claire; and Lawlor, Elizabeth Jane, 5,795,758, Cl. 435-183.000.
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Lawrence, William R., to California Lightwave Laboratories, Inc. Chemical sensor and method. 5,796,097, Cl. 250-229.000.
Lawther, Joel S.; and Lyon, Ralph M., to Eastman Kodak Company. One-time-use camera with throw-away foldable carrier for flat battery. 5,797,044, Cl. 396-6.000.
Layton, Michael R., to BEI-Systron Donner. Rotation rate sensor with optical sensing device. 5,796,002, Cl. 73-504.160.
Lazarus, Robert A.; and Dennis, Mark S., to Genetech, Inc. Factor VIIa inhibitors from Kunitz domain proteins. 5,795,954, Cl. 530-324.000.
Lazzaro, Jamie E.: *See*—
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LCI International Inc.: *See*—
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Leclaire, Jacques: *See*—
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Ledeker, Chris Alan: *See*—
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Ledford, Bobie C. Precision cone-overspray protector. 5,794,855, Cl. 239-288.000.
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Lee, Chwan-Ying: *See*—
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Lee, Dai Ki: *See*—
Kim, Kwang Jo; Lee, Sang Jin; Park, Sang Joon; Goh, Seung Cheol; and Lee, Dai Ki, 5,796,837, Cl. 380-28.000.

Lee, David K.: *See*—
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Maraska, John F.: *See—*
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Marks, Donald C. Elongated fluid filtering assembly to prevent contamination from unwanted foreign matter and zebra mussels. 5,795,473, Cl. 210-232.000.
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Marom, Emanuel, to Symbol Technologies, Inc. Bar code scanner with simplified auto-focus capability. 5,796,089, Cl. 235-472.000.
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Martin, William Wesley, to QVP Pty Ltd. Positive displacement pump apparatus. 5,795,143, Cl. 418-227.000.
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Matsumoto, Shuichi: *See*—
Nishi, Noriaki; Saito, Kimihiro; Matsumoto, Shuichi; and Hattori, Masato, 5,796,701, Cl. 369-110.000.
Matsumoto, Tetsuhiro: *See*—
Tsutsui, Toshiyuki; Yoshitsugu, Ken; Ohgizawa, Masaaki; Matsumoto, Tetsuhiro; and Imuta, Junichi, 5,795,838, Cl. 502-103.000.
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Matsumoto, Yasuhiro: *See*—
Nanba, Katsuhiro; Yagoto, Mitsutoshi; Ishiyama, Masamitsu; Izawa, Makoto; Kitaoka, Toshio; and Matsumoto, Yasuhiro, 5,796,186, Cl. 310-14.000.
Matsumura, Takuo: *See*—
Otsuki, Naohito; Kamei, Kyoji; Inoue, Akiyoshi; Ishikawa, Kiyoshi; Sakurai, Shin; and Matsumura, Takuo, 5,797,068, Cl. 399-110.000.
Matsunaga, Shinichi: *See*—
Tanahashi, Toshio; Sanada, Masakatsu; Domyo, Hiroyuki; Hirayama, Hiroshi; Sobue, Kazuaki; Higashi, Tsuneo; Yokota, Koji; Sobukawa, Hideo; Suzuki, Tadashi; and Matsunaga, Shinichi, 5,795,992, Cl. 73-23.310.
Matsunami, Toshiyuki: *See*—
Nakamura, Yuzuo; Kyomen, Masayuki; Asada, Soichiro; Matsunami, Toshiyuki; Suzuki, Hiroyuki; and Kawai, Satoru, 5,795,527, Cl. 264-267.000.
Matsuo, Hirofumi: *See*—
Sensui, Takayuki; Ito, Takayuki; Matsuo, Hirofumi; Nakamura, Satoru; Goto, Tatsuo; and Nakamura, Yasuo, 5,796,517, Cl. 359-426.000.
Matsuo, Koji: *See*—
Nakamura, Takashi; Iwano, Haruhiko; and Matsuo, Koji, 5,795,485, Cl. 210-714.000.
Matsuo, Konomi: *See*—
Hirayama, Ryoichi; Tsukida, Takahiro; Yamamoto, Minoru; Ikeda, Shoji; Sakamoto, Fumio; Obata, Yuji; and Matsuo, Konomi, 5,795,891, Cl. 514-238.200.
Matsuo, Takuya: *See*—
Nakata, Yukihiko; Fujihara, Masaki; Date, Masahiro; Matsuo, Takuya; Ayukawa, Michiteru; and Itoga, Takashi, 5,796,116, Cl. 257-66.000.
Matsuoka, Fumio; Murase, Shigemitsu; Nagaoka, Koichi; and Nishimura, Hiroshi, to Unitika, Ltd. Filament having plexifilamentary structure, nonwoven fabric comprising said filament and their production. 5,795,651, Cl. 428-364.000.
Matsuoka, Kenichi: *See*—
Gomi, Shingo; Kitami, Hirokazu; Endo, Takashi; Matsuoka, Kenichi; Ichinose, Kimihiro; Futagawa, Osamu; Kobayashi, Seiji; and Kobayashi, Kazuhide, 5,796,012, Cl. 73-861.357.
Matsushima, Hitoshi: *See*—
Komatsu, Toshihiro; Matsushima, Hitoshi; Hatada, Toshio; Iwai, Susumu; Homma, Tetsuro; Kondo, Yoshihiro; Fuse, Shouhei; Yamada, Hiroshi; Morita, Kazuo; Ito, Hiroshi; Iida, Akiyoshi; Kumagai, Kenta; and Shimode, Shinichi, 5,796,580, Cl. 361-687.000.
Matsushiro, Hiroyuki: *See*—
Kimura, Noriyuki; Matsushiro, Hiroyuki; Deki, Tsuyoshi; and Motohashi, Takeshi, 5,797,069, Cl. 399-113.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Aimi, Mitsuo; and Nishida, Masayoshi, 5,796,058, Cl. 200-16.00D.
Chino, Toyoji; Matsuda, Kenichi; Yoshida, Takayuki; and Hatada, Kenzo, 5,796,714, Cl. 372-50.000.
Endo, Masayuki; Kawaguchi, Akemi; Nishio, Mikio; and Hashimoto, Shin, 5,795,828, Cl. 438-678.000.
Ishida, Takashi; Yoshida, Yasuhiro; and Oka, Hideyuki, 5,796,949, Cl. 395-200.470.
Iwano, Kenji; and Shiomi, Yoshinori, 5,796,563, Cl. 360-132.000.
Kaihotsu, Yuji; Chiba, Toshikazu; and Yamada, Katsushi, 5,796,847, Cl. 381-57.000.
Kambe, Nobuhiro; and Abe, Akihiro, 5,797,113, Cl. 701-201.000.
Kawasaki, Osamu, 5,796,213, Cl. 315-209.00R.
Muraji, Tsutomu; Kuzumoto, Keiichi; Hirotsune, Satoshi; and Kotaka, Mitsuru, 5,796,437, Cl. 348-452.000.
Nakao, Kenji; Yamamoto, Masao; and Uemura, Tsuyoshi, 5,796,453, Cl. 349-86.000.
Ookawa, Eiichi; Nishida, Hiroto; Suzuki, Takashi; Watanabe, Hitoshi; and Sasaki, Toshiaki, 5,796,698, Cl. 369-77.200.
Sakurai, Yasuhiro; and Kamo, Osamu, 5,796,866, Cl. 382-187.000.
Sannohe, Shinya; and Miyatake, Yoshito, 5,795,047, Cl. 353-81.000.
Serikawa, Mitsuhiko; Tagami, Ryou; Kawamura, Akihisa; Matsumoto, Masaharu; Oda, Mikio; and Numazu, Hiroko, 5,796,845, Cl. 381-18.000.
Toyomura, Yuuji; and Abe, Toshihumi, 5,796,928, Cl. 395-106.000.
Matsushita Electric Industrisl Co., Ltd.: *See*—
Higaki, Nobuo; Tominaga, Nobuki; Miyaji, Shinya; and Takayama, Shuichi, 5,796,970, Cl. 395-376.000.
Matsushita Electronics Corporation: *See*—
Nagano, Yoshihisa; Fujii, Eiji; Nasu, Toru; and Matsuda, Akihiro, 5,795,794, Cl. 437-60.000.
Sano, Yoshikazu; Shigeta, Yoko; and Aoki, Hiromitsu, 5,796,154, Cl. 257-432.000.
Yoshikawa, Noriyuki; Kanazawa, Kunihiko; Makioka, Satoshi; and Tateoka, Kazuki, 5,796,165, Cl. 257-728.000.
Matsushita, Noriyuki: *See*—
Kimura, Yuji; Atsumi, Kinya; Abe, Katsunori; Matsushita, Noriyuki; Mizutani, Michiyo; and Toyama, Tetsuo, 5,794,839, Cl. 228-123.100.
Matsuura, Kazuo: *See*—
Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; Tajima, Yoshio; and Matsuura, Kazuo, 5,795,839, Cl. 502-126.000.
Matsuura, Michio: *See*—
Taguchi, Masakazu; Matsuura, Michio; Fujita, Yoshihide; and Itakura, Akihiro, 5,796,693, Cl. 369-59.000.
Matsuura, Yoshiaki, to Sharp Kabushiki Kaisha. Signal transition detection circuit. 5,796,674, Cl. 365-233.500.
Matsuyama, Kazuhiro: *See*—
Sakai, Takashi; Nishiyama, Haruo; and Matsuyama, Kazuhiro, 5,796,103, Cl. 250-326.000.
Matsuyama, Shinichi; and Kawabata, Takashi, to Canon Kabushiki Kaisha. Optical apparatus having an area sensor with a coarse picture element pitch and fine picture element pitch. 5,796,095, Cl. 250-208.100.
Mattes, Michael F.; Seefeldt, James D.; and Rozgo, Paul B., to SSI Technologies, Inc. Temperature sensor and method. 5,795,069, Cl. 374-183.000.
Mattes, Michael F.; and Seefeldt, James D., to SSI Technologies, Inc. Method and apparatus for compensating for temperature fluctuations in the input to a gain circuit. 5,796,291, Cl. 327-513.000.
Mattheis, Roland: *See*—
Andrä, Wulf; and Mattheis, Roland, 5,796,249, Cl. 324-207.210.
Mattis, Donald J.; and El-Haj, Ali, to Casco Products Corporation. Connector receptable construction for electric cigar lighters. 5,796,073, Cl. 219-265.000.
Maturaporn, Thawatchai, to Thai Hospital Products Co. Ltd. Eyeglass protector. 5,796,460, Cl. 351-86.000.
Matyas, Stephen Michael, Jr.: *See*—
Johnson, Donald Byron; Karger, Paul Ashley; Kaufman, Charles William, Jr.; Matyas, Stephen Michael, Jr.; Safford, David Robert; Yung, Marcel Mordechay; and Zunic, Nevenko, 5,796,830, Cl. 380-21.000.
Matz, Warren W. Closed container inspection and treatment apparatus. 5,795,544, Cl. 422-83.000.
Mauri, Danielle, to International Business Machines Corporation. Self-biased spin valve sensor. 5,796,561, Cl. 360-113.000.
Maurice, François; Colineau, Joseph; Hanna, Charaf; and Sonrier, Michel, to Thomson-CSF; and Thomson Consumer Electronics. Information recording medium encoded to enable track following and method of recording. 5,796,710, Cl. 369-275.300.
Mauzac, Olivier: *See*—
Gassies, Christophe; Mauzac, Olivier; and Philippe, Eric, 5,794,532, Cl. 101-493.000.
Maxtor Corporation: *See*—
McMurtrey, David S., 5,796,544, Cl. 360-77.070.
Maxwell, Grant D. Lightweight adjustable track "power dozer". 5,794,710, Cl. 172-33.000.
May, Richard L.: *See*—
Cartabiano, Michael C.; Curran, Kenneth J.; Dick, David J.; Gibbs, Douglas R.; Kirby, Morgan H.; May, Richard L.; Storer, William J. A.; and Ullman, Adam N., 5,796,354, Cl. 341-22.000.
Mayama, Takatoshi: *See*—
Koike, Yoshio; Kamada, Tsuyoshi; Tsuyuki, Syun; Furukawa, Noriaki; Masuda, Shigeru; Murata, Satoshi; Hasegawa, Tadashi; Sasabayashi, Takashi; Tanuma, Seiji; Mayama, Takatoshi; and Ohmuro, Katufumi, 5,796,458, Cl. 349-126.000.
Mayberry, Mike: *See*—
Shahriari, Navid; Mayberry, Mike; and Barabi, Nasser, 5,795,172, Cl. 439-260.000.
Mayer, David W.: *See*—
Cobian, Kenneth E.; Ebert, Michael J.; McIntyre, Peter B.; and Mayer, David W., 5,796,044, Cl. 174-103.000.
Mayer, Katherine Louise: *See*—
Lavash, Bruce Wiliam; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, 5,795,349, Cl. 604-387.000.

Mayer, Lawrence D.; Bally, Marcel B.; Cullis, Pieter R.; Ginsberg, Richard S.; and Mitilenes, George N., to Liposome Company, Inc., The. Liposomal antineoplastic agent compositions. 5,795,589, Cl. 424-450.000.

Mayes, Ian Christopher: *See*—
Roberts, John; Freeston, Ian Leslie; Tozer, Richard Charles; Gorvin, Anthony Charles; Mayes, Ian Christopher; Djamdji, Francois Jean; and Blight, Stephen Richard, 5,797,114, Cl. 702-57.000.

Mayes, James C.: *See*—
Kostek, Sergio; Chang, Shu-Kong; McDaniel, Gordon; Plona, Thomas; Randall, Curtis; Masson, Jean-Pierre; Mayes, James C.; and Hsu, Kai, 5,796,677, Cl. 367-25.000.

Mayr, Alfred: *See*—
Höfner, Hermann; and Mayr, Alfred, 5,794,938, Cl. 277-53.000.

Mazdą Motor Corporation: *See*—
Takami, Akihide; Iwakuni, Hideharu; Kyogoku, Makoto; and Murakami, Hiroshi, 5,795,840, Cl. 502-327.000.

Mazurkiewicz, Theodore: *See*—
Errico, James H.; and Mazurkiewicz, Theodore, 5,796,924, Cl. 395-23.000.

Mazzola, Mario; Edsall, Tom; Prati, Massimo; and Cafiero, Luca, to Cisco Technology, Inc. Architecture for an expandable transaction-based switching bus. 5,796,732, Cl. 370-362.000.,

McAlpin, James John: *See*—
Agarwal, Pawan Kumar; Mehta, Aspy Keki; Chow, Wai Yan; and McAlpin, James John, 5,795,946, Cl. 526-348.100.

Mcaneney, T. Brian: *See*—
Malhotra, Shadi L.; Mcaneney, T. Brian; Sharp, James H.; and Naik, Kirit N., 5,795,695, Cl. 430-120.000.

McArthur, William Allan; Stropkay, Scott Edward; and Tanner, Marc Walter, to Becton Dickinson and Company. Iontophoretic drug delivery system, including removable controller. 5,795,321, Cl. 604-20.000.

McCarley, Stella A.; and Fisher, Steven J., to McCarley, Stella A. Monitoring system for animals. 5,794,625, Cl. 128-736.000.

McCarthy, James R.; Xie, Yun Feng; Whitten, Jeffrey P.; Webb, Thomas R.; Chen, Chen; and Ramphal, John Y., to Neurocrine Biosciences, Inc. CRF receptor antagonists and methods relating thereto. 5,795,905, Cl. 514-383.000.

McClafferty, William David: *See*—
Harris, Willard Stephen; Kemink, Randall Gail; McClafferty, William David; and Schmidt, Roger Ray, 5,794,454, Cl. 62-259.200.

McClary, James S.: *See*—
Wash, Richard L.; and McClary, James S., 5,796,346, Cl. 340-635.000.

McClean, Patricia: *See*—
Silkoff, Philip; and McClean, Patricia, 5,795,787, Cl. 436-116.000.

McClennon, Scott; Ding, Heping; and Dal Farra, David, to Northern Telecom Limited. Dynamic optimization of handsfree microphone gain. 5,796,818, Cl. 379-390.000.

McClung, Guy L., III: *See*—
Gamper, Joseph W.; Smith, James W.; and McClung, Guy L., III, 5,794,314, Cl. 24-517.000.

McCool, Mark K.: *See*—
Wirth, John, Jr.; Sanger, Jay L.; and McCool, Mark K., 5,795,110, Cl. 408-110.000.

McCormick, Francis P.; Innis, Michael A.; and Ringold, Gordon M., to Berlex Laboratories, Inc.; and Leland Stanford Junior University. Human interferon-β (IFN-β) produced in Chinese hamster ovary (CHO) cells. 5,795,779, Cl. 435-360.000.

McCormick, Kevin D.: *See*—
Shue, Ho-Jane; Shih, Neng-Yang; Blythin, David J.; Chen, Xiao; Tom, Wing C.; Piwinski, John J.; and McCormick, Kevin D., 5,795,894, Cl. 514-253.000.

McCoy, Jimmy D.: *See*—
Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., 5,795,784, Cl. 436-50.000.

McCoy, William F.: *See*—
Dallmier, Anthony W.; and McCoy, William F., 5,795,487, Cl. 210-754.000.

McCracken, Robert E.; and Watson, James B., to Waxing Corporation of America, Inc. Power tool. 5,794,300, Cl. 15-97.100.

McDaid, Cornelius, to Kryptonite Corporation. Tamper-proof attachment for cable locks and the like. 5,794,463, Cl. 70-18.000.

McDaniel, Gordon: *See*—
Kostek, Sergio; Chang, Shu-Kong; McDaniel, Gordon; Plona, Thomas; Randall, Curtis; Masson, Jean-Pierre; Mayes, James C.; and Hsu, Kai, 5,796,677, Cl. 367-25.000.

McDaniel, Randall D.; and White, Gergory J., to JAMI, Inc. Linkable modular table system. 5,794,545, Cl. 108-64.000.

McDermott Technology, Inc.: *See*—
Madden, Deborah A.; and Farthing, George A., 5,795,548, Cl. 422-171.000.

McDonald, Iain Mair: *See*—
Kalindjian, Sarkis Barret; Steel, Katherine Isobel Mary; Pether, Michael John; Davies, Jonathan Michael Richard; Low, Caroline Minli Rachel; Hudson, Martin Lyn; Buck, Ildiko Maria; McDonald, Iain Mair; Dunstone, David John; and Tozer, Matthew John, 5,795,907, Cl. 514-397.000.

McDonnal, William D.; Lohstroh, Shawn; and Grawrock, David, to Symantec Corporation. System for automatic decryption of file data on a per-use basis and automatic re-encryption within context of multi-threaded operating system under which applications run in real-time. 5,796,825, Cl. 380-4.000.

McDonnell, Damien G.: *See*—
Bryan-Brown, Guy P.; McDonnell, Damien G.; Towler, Michael J.; and Bancroft, Martin S., 5,796,459, Cl. 349-132.000.

McDowell, Kenneth O., to Dresser Industries. Rotary rock bit with infiltrated bearings. 5,794,726, Cl. 175-371.000.

McFarlen, John D., to Gateway Technologies, Inc. Three way call detection. 5,796,811, Cl. 379-189.000.

McGowan, Donald A.: *See*—
Lee, John W.; McGowan, Donald A.; Mischke, Mark R.; Ramos, Socorro M.; and Telfer, Stephen J., 5,795,981, Cl. 540-1.000.

McGowan, Ricky Dean. Electronic controlled, spark free booster cable system. 5,796,255, Cl. 324-429.000.

McGraw, Mark T.; Griswold, Bradley L.; Ho, Chung W.; Min, Byoung-Youl; Grove, Michael I.; and Robinette, William C., Jr., to MicroModule Systems, Inc. Packaging and interconnect system for integrated circuits. 5,796,164, Cl. 257-723.000.

McGuire Manufacturing Co., Inc.: *See*—
Helmsderfer, John A., 5,795,623, Cl. 427-388.100.

MCI Communications Corporation: *See*—
Bencheck, Michael; Branton, Robert; Brownmiller, Curtis; DeMoss, Mark; Landon, Steve; and Tran, Minh T., 5,796,723, Cl. 370-252.000.
Caterisano, Terry A., 5,796,718, Cl. 370-217.000.
Wingo, Dale T., 5,796,884, Cl. 385-16.000.
Zey, David A., 5,796,953, Cl. 395-200.570.

MCI Corporation: *See*—
Butts, James M., 5,794,759, Cl. 200-43.190.

McInerney, Elizabeth: *See*—
Evans, Steven; Harrison, Daniel J.; McInerney, Elizabeth; Spaulding, Kevin E.; and Weber, Helmut, 5,795,844, Cl. 503-227.000.

McInnes, James Lawrence: *See*—
Blainey, Robert James; Donawa, Christopher Michael; and McInnes, James Lawrence, 5,797,012, Cl. 395-705.000.

McIntire, John W.: *See*—
Kester, Steven A.; Gilbertson, Scott A.; McIntire, John W.; and Palmer, Ralph P., 5,794,472, Cl. 70-472.000.

McIntyre, Dale Frederick; and Lee, J. Kelly, to Eastman Kodak Company. Non-photographic strip having a base layer similar to a photographic filmstrip and a magnetic recording layer. 5,797,051, Cl. 396-319.000.

McIntyre, Peter B.: *See*—
Cobian, Kenneth E.; Ebert, Michael J.; McIntyre, Peter B.; and Mayer, David W., 5,796,044, Cl. 174-103.000.

McKague, Elbert Lee, Jr.; Cox, Ronald Kendall; and Phillips, John Edward, to Lockheed Martin Corporation. Composite metallic tension fitting. 5,795,094, Cl. 403-335.000.

McKay, Jack A.: *See*—
Wilkerson, Thomas D.; and McKay, Jack A., 5,796,471, Cl. 356-28.500.

McKay, Jerry H. Wooden vase for holding cut flowers. 5,794,379, Cl. 47-41.010.

McKenzie, Rodney Stuart; and Dopp, Robert B., to Rayovac Corporation. Metal-air cathode can, and electrochemical cell made therewith. 5,795,667, Cl. 429-27.000.

McKinley Group, The: *See*—
Smith, Jerry R., 5,794,461, Cl. 70-16.000.

McLane, Michael: *See*—
Zasloff, Michael; Shinnar, Ann; Kinney, William; Anderson, Mark; Williams, Jon; and McLane, Michael, 5,795,885, Cl. 514-182.000.

McLaughlin, David Francis; and Ulerich, Nancy Hamp. Conversion of contaminated sediments into useful products by plasma melting. 5,795,285, Cl. 588-256.000.

McLaughlin, Linda I.: *See*—
Lott, Stephen E.; Gardner, Timothy J.; McLaughlin, Linda I.; Oelfke, John B.; and Matlock, Charlene A., 5,795,553, Cl. 423-213.200.

McLeish, Andrew; Cartilage, Roy; Coffey, Michael; and Prior, Michael, to Hosokawa Micron Limited. Apparatus for separating particulate and/or powdery material from an entraining gas. 5,795,359, Cl. 55-242.000.

McLeod, Robert H., to Bob McLeod Inc. Mobile harvester for chaff, grain, grain leavings and weed seeds. 5,794,423, Cl. 56-14.600.

McLeod, Robert H., to Bob McLeod Inc. McLeod yard plant. 5,795,222, Cl. 460-97.000.

McLeroy, Jacob T.: *See*—
Razdan, Mohan K.; McLeroy, Jacob T.; and Smith, Duane A., 5,794,449, Cl. 60-737.000.

McMarr, Patrick: *See*—
Hughes, Harold; and McMarr, Patrick, 5,795,813, Cl. 438-423.000.

McMillan, Robert John; Craig, Alexander Dean; and Heinen, John Patrick, to Progressive Casualty Insurance Company. Motor vehicle monitoring system for determining a cost of insurance. 5,797,134, Cl. 705-400.000.

McMordie, Bruce G.: *See*—
Meelu, Mehar C.; Jones, Alan T.; and McMordie, Bruce G., 5,795,659, Cl. 428-610.000.

McMurtrey, David S., to Maxtor Corporation. Disk drive system which uses a common DAC for digital positioning control and analog positioning control. 5,796,544, Cl. 360-77.070.

McNabb, Gerald V.: *See*—
Costello, Matthew W.; Carpenter, Dan B.; and McNabb, Gerald V., 5,796,807, Cl. 379-67.000.

McNabola, William Thomas: *See—*
Lapré, John Arthur; McNabola, William Thomas; Veenstra, Jan; and De Vries, Hielke Tjeerd, 5,795,606, Cl. 426-302.000.

McNeill, J. Duncan: *See—*
Bosnar, Miro; and McNeill, J. Duncan, 5,796,253, Cl. 324-336.000.

McPhail, James D.: *See—*
Hagenbuch, LeRoy G.; Adams, Jamie L.; and McPhail, James D., 5,795,031, Cl. 298-17.600.

McPherson, Paul H.: *See—*
Buechler, Kenneth F.; and McPherson, Paul H., 5,795,725, Cl. 435-7.100.

McVay, William Patrick: *See—*
Romano, John F.; McVay, William Patrick; and D'Alessio, Larry M., 5,795,336, Cl. 604-192.000.

Meadows, Roger D.: *See—*
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MECO Corporation: *See—*
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Medical Specialties, Inc.: *See—*
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Medrad, Inc.: *See—*
Reilly, David M.; Havrilla, Joseph B.; Gelblum, Eugene A.; and Kazousky, Daniel, 5,795,333, Cl. 604-154.000.

Medtronic, Inc.: *See—*
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Meelu, Mehar C.; Jones, Alan T.; and McMordie, Bruce G., to International Inc.; and Rolls-Royce, Inc, plc. Aluminide-silicide coatings coated products. 5,795,659, Cl. 428-610.000.

Mega Chips Corporation: *See—*
Asakawa, Toshifumi; Shindo, Masahiro; Yoshimizu, Toshikazu; and Ueyama, Sumiyoshi, 5,795,385, Cl. 117-104.000.

Megapulse, Incorporated: *See—*
Grebnev, Andre V.; and Anderson, Jan H., 5,796,366, Cl. 342-448.000.

Meglino, Don A.; and Meglino, James V. Fence slats with locking portions. 5,794,922, Cl. 256-34.000.

Meglino, James V.: *See—*
Meglino, Don A.; and Meglino, James V., 5,794,922, Cl. 256-34.000.

Mehnert, Gottfried. Method and device for the manufacturing of hollow articles made from thermoplastic material by blow moulding. 5,795,533, Cl. 264-529.000.

Mehren, Herbert: *See—*
Nohr, Matthias; and Mehren, Herbert, 5,794,975, Cl. 280-753.000.

Mehta, Aspy Keki: *See—*
Agarwal, Pawan Kumar; Mehta, Aspy Keki; Chow, Wai Yan; and McAlpin, James John, 5,795,946, Cl. 526-348.100.

Mehta, Sunil; Ishida, Emi; and Li, Xiao-Yu, to Advanced Micro Devices, Inc. Methdd for annealing damaged semiconductor regions allowing for enhanced oxide growth. 5,795,627, Cl. 427-526.000.

Meikle, Scott G., to Micron Technology, Inc. Method of chemical mechanical polishing for dielectric layers. 5,795,495, Cl. 216-88.000.

Meikle, Scott G.: *See—*
Doan, Trung Tri; and Meikle, Scott G., 5,795,218, Cl. 451-526.000.

Meiri, Abraham Zvi: *See—*
Nagli, Lev; and Meiri, Abraham Zvi, 5,796,113, Cl. 250-483.100.

Meister, Willi: *See—*
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Meixler, Lewis D. Self contained child resistant electrical plug safety lock. 5,795,166, Cl. 439-134.000.

Meixner, Larry A.: *See—*
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Mekdhanasarn, Boonmi; Lo, Randy Hsiao-Yu; Ichikawa, Steve M.; and Ahmed, Abdul Rahim, to National Semiconductor Corporation. Electrostatic discharge protection package. 5,796,570, Cl. 361-126.000.

Melamine Chemicals, Inc.: *See—*
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Melber, Joseph G., Jr.: *See—*
Heilman, Robin L.; and Melber, Joseph G., Jr., 5,794,931, Cl. 271-303.000.

Meldal, Morten: *See—*
Rao, Narasinga; Meldal, Morten; Bock, Klaus; and Hindsgaul, Ole, 5,795,958, Cl. 530-331.000.

Melisse, Alfonsius Antonius Johannes: *See—*
Sips, Johan Willem; Melisse, Alfonsius Antonius Johannes; Kuisch, Eric Bryan; and Janmaat, Ronaldus Gerardus Johannes, 5,796,950, Cl. 395-200.480.

Mellado, Augusto Guilabert; Vale Porben, José Antonio; and Gonzalez Martinez, Jorge, to Alcatel NV. Multiline PCM interface for signal processing. 5,796,731, Cl. 370-362.000.

Melo, Maria L.: *See—*
Bonella, Randy M.; and Melo, Maria L., 5,797,020, Cl. 395-728.000.

Melvin, Michael Peter, to Lucas Industries public limited company. Clamping sleeve for pressure hoses. 5,794,983, Cl. 285-55.000.

MEMC Electrical Materials, Inc.: *See—*
Holder, John D., 5,795,381, Cl. 117-14.000.

Menapace, Rebecca A.: *See—*
Quinn, Hubert M.; Menapace, Rebecca A.; and Oberhauser, Charles J., 5,795,469, Cl. 210-198.200.

Mendon, Stephen P., to Avibank Mfg., Inc. Trailer for a wheelchair. 5,794,957, Cl. 280-204.000.

Menezes, Edgar V.: *See—*
Roffman, Jeffrey H.; and Menezes, Edgar V., 5,796,462, Cl. 351-161.000.

Mengoli, Fausto; and Draghetti, Fiorenzo, to G.D Societa' Per Azioni. Unit for simultaneously forming two layers of tobacco. 5,794,630, Cl. 131-84.100.

Menke, Manfred, to Siemens Aktiengesellschaft. Method for ranking membership function values of linguistic input values in a fuzzy logic processor and arrangement for the implementation thereof. 5,796,918, Cl. 395-3.000.

Menon, Jai Prakash: *See—*
Lipscomb, James Sargent; Menon, Jai Prakash; Rossignac, Jaroslaw Roman; and Wolfe, Robert Howard, 5,796,386, Cl. 345-156.000.

Menzenbach, Bernd: *See—*
Hesch, Rolf-Dieter; Oettel, Michael; Droescher, Peter; Schwarz, Sigfrid; Menzenbach, Bernd; Römer, Wolfgang; Kaufmann, Günter; and Schröder, Jens, 5,795,883, Cl. 514-172.000.

Menzies, Robert H.: *See—*
Deeb, Gerald S.; Krueger, Dennis L.; Menzies, Robert H.; Morris, Herbert W.; Hyde, Patrick D.; Lau, Felix P.; Pyun, Eumi; Tucker, Pamela S.; and Wong, Roy, 5,795,834, Cl. 442-62.000.

Meo, Sam: *See—*
Filepp, Robert; Appleman, Kenneth H.; Bidwell, Alexander W.; Wolf, Allan M.; Galambos, James A.; and Meo, Sam, 5,796,967, Cl. 395-339.000.

Mercedes-Benz AG: *See—*
Aminpour, Ali; and Reiner, Michael, 5,797,109, Cl. 701-65.000.
Bergmann, Horst, 5,794,590, Cl. 123-321.000.
Papenhagen, Dieter; Löchle, Manfred; and Meyer, Thorsten, 5,794,489, Cl. 74-513.000.
Papenhagen, Dieter; Löchle, Manfred; and Meyer, Thorsten, 5,794,490, Cl. 74-513.000.
Stolpp, Dieter, 5,794,924, Cl. 267-64.110.

Merchant, Amit A.: *See—*
Rhodehamel, Michael W.; Sarangdhar, Nitin V.; Merchant, Amit A.; Fisch, Matthew A.; and Brayton, James M., 5,797,026, Cl. 395-800.010.

Merck & Co., Inc.: *See—*
Cohen, Sheila M.; and Werrmann, Jeffrey G., 5,795,904, Cl. 514-381.000.
George, Hugh; and Herber, Wayne K., 5,795,771, Cl. 435-255.210.
Ludmerer, Steven; Hollis, Gregory F.; Benincasa, Diana; and Mark, George E., III, 5,795,754, Cl. 435-172.300.

Meredith, Scott E., to Apple Computer, Inc. Method and apparatus for prosody for synthetic speech prosody determination. 5,796,916, Cl. 395-2.670.

Merkle, Hans Rupert; Durein, Alfons; Hansen, Hanspeter; and Jäger, Karl-Friedrich, to BASF Aktiengesellschaft. Preparation of ammonium salts of 3-isopropyl-2, 1, 3-benzothia-diazin-4-one 2,2-dioxide. 5,795,983, Cl. 544-11.000.

Merrill, David O.: *See—*
Clark, James E.; and Merrill, David O., 5,796,419, Cl. 347-85.000.

Mersali, Boumédienne; and Dorgeuille, François, to France Telecom. Buried structure laser device for integrated photonic circuit and method of manufacture. 5,796,768, Cl. 372-45.000.

Mertscheit, Nicole: *See—*
Daute, Peter; Gruetzmacher, Roland; Westfechtel, Alfred; and Mertscheit, Nicole, 5,795,949, Cl. 528-65.000.

Merz, Johann; and Yasuda, Masao, to ZF Friedrichshafen AG. Hydraulically balanced vane cell pump. 5,795,142, Cl. 418-133.000.

Messina, Camilo P.: *See—*
Oliveri, Paul S.; and Messina, Camilo P., 5,794,390, Cl. 52-177.000.

Messing, Wayne P.: *See—*
Lewis, Gary D.; Messing, Wayne P.; Gonopolskiy, Oleg; and Scheuing, Richard S., 5,795,292, Cl. 600-323.000.

Metabasis Therapeutics, Inc.: *See—*
Ugarkar, Bheemarao G.; Erion, Mark D.; and Gomez Galeno, Jorge E., 5,795,977, Cl. 536-27.130.

Metabolite Laboratories, Inc.: *See—*
Allen, Robert H., 5,795,873, Cl. 514-52.000.

Metallgesellschaft Aktienegesellschaft: *See—*
Kalfa, Horst; and Schroeder, Knut, 5,795,994, Cl. 73-29.010.

Metallgesellschaft Aktiengesellschaft: *See—*
Bittner, Klaus; Jansen, Walter K.M.; Mohr, Klaus-Peter; Wendel, Thomas; and Wietzoreck, Hardy, 5,795,408, Cl. 148-262.000.

Metro One Telecommunications, Inc.: *See—*
Cox, Patrick M.; Powell, Adrian P.; Filliger, Paul W.; and Kepler, Michael A., 5,797,092, Cl. 455-404.000.

Metroka, Michael P.: *See—*
Osmani, Rashid Masood; and Metroka, Michael P., 5,797,101, Cl. 455-551.000.

Metrologic Instruments, Inc.: *See—*
Schmidt, Mark C.; Knowles, Carl H.; Wilz, David M., Sr.; and Rockstein, George B., 5,796,091, Cl. 235-472.000.

Meyer, Johannes: *See—*
Strauss, Andreas; Auchter, Jochen; and Meyer, Johannes, 5,794,578, Cl. 123-90.170.

Meyer, Karen L.: *See—*
Counsell, Raymond E.; Meyer, Karen L.; Schwendner, Susan W.; and Haradahira, Terushi, 5,795,561, Cl. 424-1.770.

Meyer, Thorsten: *See—*
Papenhagen, Dieter; Löchle, Manfred; and Meyer, Thorsten, 5,794,489, Cl. 74-513.000.
Papenhagen, Dieter; Löchle, Manfred; and Meyer, Thorsten, 5,794,490, Cl. 74-513.000.

Meyer, William Anthony: *See—*
Arens, Cornelis G.; and Meyer, William Anthony, 5,794,502, Cl. 83-670.000.

Meyers, Mark M., to Eastman Kodak Company. Lenslet array system with a baffle structure and a shutter. 5,796,522, Cl. 359-626.000.

Michaelis, Jurgen; and Sleigh, Merilyn J., to Peptide Technology Limited. Treatment or prevention of Crohn's disease and/or ulcerative colitis. 5,795,858, Cl. 514-8.000.

Michaelson, Steven A.: *See—*
Chester, Michael A.; and Michaelson, Steven A., 5,795,797, Cl. 438-4.000.

Michalski, Susan: *See—*
Billings, Patricia; and Michalski, Susan, 5,795,380, Cl. 106-675.000.

Michelin Recherche et Technique: *See—*
Willard, Walter Lee, Jr.; Snipes, Virginia White; and Wilson, Allen Eugene, 5,795,416, Cl. 152-517.000.

Michiyuki, Hiromi: *See—*
Ikeda, Hayato; Yokoi, Masanobu; Michiyuki, Hiromi; Kawamura, Hisato; Satoh, Hirofumi; and Shintoku, Noriyuki, 5,795,139, Cl. 417-269.000.

Mickaels, Ronald A.: *See—*
Bierre, Pierre; and Mickaels, Ronald A., 5,795,727, Cl. 435-7.240.

Mickievicz, Scott Keith: *See—*
Preputnick, George; Fedder, James Lee; Mickievicz, Scott Keith; and Whyne, Richard Nicholas, 5,795,191, Cl. 439-608.000.

Micro Therapeutics, Inc.: *See—*
Cragg, Andrew H.; and Kagan, Jonathan, 5,795,331, Cl. 604-96.000.

Microchip Technology Incorporated: *See—*
Hull, Richard L.; and Bingham, Gregory C., 5,796,312, Cl. 331-44.000.

Microlas Lasersystm GmbH: *See—*
Kahlert, Hans-Jürgen; and Burghardt, Berthold, 5,796,521, Cl. 359-619.000.

MicroModule Systems, Inc.: *See—*
McGraw, Mark T.; Griswold, Bradley L.; Ho, Chung W.; Min, Byoung-Youl; Grove, Michael I.; and Robinette, William C., Jr., 5,796,164, Cl. 257-723.000.

Micron Electronics, Inc.: *See—*
Klein, Dean A., 5,796,590, Cl. 361-774.000.

Micron Instrument Inc.: *See—*
Hasegawa, Iwao; and Kidokoro, Toshiyuki, 5,794,664, Cl. 139-452.000.

Micron Technology, Inc.: *See—*
Burdorf, James; and Pierrat, Christophe, 5,795,688, Cl. 430-30.000.
Cathey, David A.; Watkins, Charles M.; Stansbury, Darryl M.; Hofmann, James J.; Rasmussen, Robert T.; and Chadha, Surjit S., 5,795,206, Cl. 445-24.000.
Doan, Trung Tri; and Meikle, Scott G., 5,795,218, Cl. 451-526.000.
Farnworth, Warren; and Wood, Alan, 5,796,264, Cl. 324-758.000.
Farnworth, Warren M.; Wark, James M.; Nelson, Eric S.; and Duesman, Kevin G., 5,796,746, Cl. 371-21.100.
King, Jerrold L., 5,796,158, Cl. 257-666.000.
Meikle, Scott G., 5,795,495, Cl. 216-88.000.
Shirley, Brian M.; and Duesman, Kevin G., 5,796,666, Cl. 365-205.000.
Wright, Jeffrey P.; and Zheng, Hua, 5,796,266, Cl. 324-763.000.

Microphor, Inc.: *See—*
Natalizia, Mark L., 5,794,661, Cl. 137-849.000.

Microsoft Corporation: *See—*
Ellison-Taylor, Ian, 5,796,402, Cl. 345-342.000.
Lee, Ming-Chieh, 5,796,855, Cl. 382-107.000.
Naidu, Harish; and Parry, William G., 5,796,988, Cl. 395-500.000.

Mid Products, Inc.: *See—*
Firdaus, Usman, 5,794,306, Cl. 15-418.000.

Mielich, Harald: *See—*
Clemen, Rainer; Loehlein, Wolfdieter; and Mielich, Harald, 5,796,284, Cl. 327-264.000.

Mignani, Serge: *See—*
Chapelle, Philip; Gaillard, Claude; Jimonet, Patrick; Louvel, Erik; Martinet, Michel; Mignani, Serge; and Sanderink, Gérard, 5,795,903, Cl. 514-367.000.

Mihara, Shinichi, to Olympus Optical Co., Ltd. Wide-angle lens system. 5,796,528, Cl. 359-753.000.

Mikasa, Keiichi: *See—*
Narita, Nobuhiro; Sawaki, Masayoshi; Mikasa, Keiichi; and Kita, Eiji, 5,795,871, Cl. 514-29.000.

Mikuni Corporation: *See—*
Sugii, Toshio, 5,794,593, Cl. 123-438.000.

Milbourn, David E.; and Goldy, Richard W., to Milbourn, David E. Stump grinder. 5,794,673, Cl. 144-24.120.

Millard, Barry John, to Adwest Engineering Ltd. Fluid control system for a vehicle power assisted steering mechanism. 5,794,736, Cl. 180-423.000.

Millennium Pharmaceuticals, Inc.: *See—*
Glucksmann, M. Alexandra, 5,795,726, Cl. 435-7.210.

Miller, Brian C.: *See—*
Krech, Alan S., Jr.; and Miller, Brian C., 5,796,288, Cl. 327-407.000.

Miller, Frederick Martin: *See—*
Herron, William Lee; Miller, Frederick Martin; and Klump, William Gary, 5,796,202, Cl. 310-217.000.

Miller, Harold Everett, Jr.: *See—*
Rakuljic, George Anthony; Leyva, Victor; Yariv, Amnon; Sayano, Koichi; O'Connor, Arthur Bruce; Tyler, Charles E.; Mao, Xiaoping; and Miller, Harold Everett, Jr., 5,796,096, Cl. 250-226.000.

Miller, Joseph P.: *See—*
Tavallaei, Siamak; and Miller, Joseph P., 5,797,018, Cl. 395-726.000.

Miller, Katherine L.: *See—*
Weber, Alice H.; and Miller, Katherine L., 5,795,157, Cl. 434-269.000.

Miller, Marlen L.: *See—*
Dunbar, Donald K.; Miller, Marlen L.; and Converse, George L., 5,794,432, Cl. 60-204.000.

Miller, Michael J.; Murtaza, Bilal; and Sun, Chih-Ping, to Integrated Device Technology, Inc. System and method for transmission rate control in a segmentation and reassembly (SAR) circuit under ATM protocol. 5,796,735, Cl. 370-395.000.

Miller, Nicholas F., Jr.: *See—*
Diller, Joseph B.; and Miller, Nicholas F., Jr., 5,794,893, Cl. 246-213.000.

Miller, Robert F., to Vemco Corporation. High pressure fluid valve sealing apparatus. 5,794,916, Cl. 251-148.000.

Miller, Robert W. Helical air path induction in wind instruments. 5,796,022, Cl. 84-380.00R.

Miller, Ronald T., to General Hydraulics Corporation. Valve adaptor cap. 5,794,651, Cl. 137-454.500.

Miller, William. Motion monitor useful for sleeping humans. 5,796,340, Cl. 340-573.000.

Milliman, James A. Core tube for a cross-head die apparatus. 5,795,392, Cl. 118-405.000.

Mills, R. Steven; and Smith, Randall T., to Dell USA, L.P. Planar mounts capable of mounting planars of varying thickness. 5,796,593, Cl. 361-801.000.

Milsco Manufacturing Company: *See—*
Hill, Kevin E., 5,794,911, Cl. 248-588.000.

Min, Byoung-Youl: *See—*
McGraw, Mark T.; Griswold, Bradley L.; Ho, Chung W.; Min, Byoung-Youl; Grove, Michael I.; and Robinette, William C., Jr., 5,796,164, Cl. 257-723.000.

Min, Shin B.: *See—*
Svensson, John E.; Grande, Dodd H.; Grande, Hans D.; and Min, Shin B., 5,794,950, Cl. 280-11.200.

Minami, Kouji; and Hitotsumatsu, Akira, to Mitsubishi Denki Kabushiki Kaisha. Elimination of the effect of difference in vertical scanning frequency between a display and a camera imaging the display. 5,796,425, Cl. 348-181.000.

Minami, Yoshitaka, to Idemitsu Engineering Co., Ltd. Apparatus for packing catalyst. 5,795,550, Cl. 422-219.000.

Minamino, Katsuki; Watari, Masao; Tanaka, Miyuki; Ishii, Kazuo; Kato, Yasuhiko; Ogawa, Hiroaki; Omote, Masanori; Watanabe, Kazuo; and Honda, Hitoshi, to Sony Corporation. Mapping determination methods and data discrimination methods using the same. 5,796,921, Cl. 395-22.000.

Minegishi, Seiiti: *See—*
Koishi, Toshio; Kawamura, Katsunori; and Minegishi, Seiiti, 5,795,654, Cl. 428-421.000.

Ming-Yen, Lin, to Artificial Parallax Electronics Corp. Computerized stereoscopic image system and method of using two-dimensional image for providing a view having visual depth. 5,796,373, Cl. 345-6.000.

Minicucci, Antonio: *See—*
Denis, Jean-Pierre; Minicucci, Antonio; and Julemont, Michel, 5,795,853, Cl. 510-182.000.

Minnesota Mining and Manufacturing Company: *See—*
Carim, Hatim M.; and Burton, Scott A., 5,795,293, Cl. 600-372.000.
Carlson, Casey L.; and Siltberg, Daniel E., 5,794,815, Cl. 221-45.000.
Deeb, Gerald S.; Krueger, Dennis L.; Menzies, Robert H.; Morris, Herbert W.; Hyde, Patrick D.; Lau, Felix P.; Pyun, Eumi; Tucker, Pamela S.; and Wong, Roy, 5,795,834, Cl. 442-62.000.
Keller, Janet T.; Wilson, Kenneth D.; Calhoun, Clyde D.; and Meixner, Larry A., 5,795,636, Cl. 428-40.100.
Klein, James A.; Carter, Brandt K.; Israel, Sheldon J.; and Lucking, Raymond L., 5,795,528, Cl. 264-290.200.
Lee, Nicholas A., 5,796,896, Cl. 385-59.000.
Tautvydas, Kestutis J., 5,795,730, Cl. 435-31.000.

Minnesota Mining and Manufaturing Company: *See—*
Pocius, Alphonsus V.; and Nigatu, Tadesse G., 5,795,657, Cl. 428-516.000.

Minolta Co., Ltd.: *See—*
Nanba, Katsuhiro; Yagoto, Mitsutoshi; Ishiyama, Masamitsu; Izawa, Makoto; Kitaoka, Toshio; and Matsumoto, Yasuhiro, 5,796,186, Cl. 310-14.000.
Tanaka, Yoshiharu, 5,797,053, Cl. 396-397.000.

Minus K Technology, Inc.: *See—*
Platus, David L.; and Durran, Donald A., 5,794,909, Cl. 248-550.000.

Mirov, Sergey; and Dergachev, Alex, to UAB Research Foundation, The. Room temperature stable color center laser$LiF:F_2^{+***}$ material and method of lasing. 5,796,762, Cl. 372-5.000.

Mischke, Mark R.: *See—*
Lee, John W.; McGowan, Donald A.; Mischke, Mark R.; Ramos, Socorro M.; and Telfer, Stephen J., 5,795,981, Cl. 540-1.000.

Misewich, Felix Joseph: *See—*
Emberty, Robert George; Klein, Craig Anthony; and Misewich, Felix Joseph, 5,796,938, Cl. 395-183.030.

Mishina, Kenichi: *See—*

Samizo, Ken; Mishina, Kenichi; Yamamoto, Mituo; Yakabe, Yutaka; Kageyama, Toshikazu; and Mashimo, Yoshiya, 5,797,077, Cl. 399-309.000.

Mishina, Shinya: *See*—
Kawakami, Soichiro; Mishina, Shinya; Kobayashi, Naoya; and Asao, Masaya, 5,795,679, Cl. 429-218.000.

Mishra, Umesh Kumar; DenBaars, Steven P.; and Kapolnek, David Joseph, to University of California, The Regents of the. Method of making full color monolithic gan based leds. 5,795,798, Cl. 438-35.000.

Mita Industrial Co., Ltd.: *See*—
Hayashi, Syuji, 5,796,491, Cl. 358-298.000.
Kishigami, Norimasa; Kawasaki, Kotaro; Yoshimoto, Mitsuharu; and Yoshihara, Atsushi, 5,797,066, Cl. 399-51.000.

Mitani, Kenzo: *See*—
Kamitani, Kiyoaki; Shichijyo, Akiya; Kusase, Shin; Mitani, Kenzo; and Ishikawa, Hiroaki, 5,796,201, Cl. 310-194.000.

Mitchell, David: *See*—
Giovannone, Anthony; and Mitchell, David, 5,795,535, Cl. 264-551.000.

Mitchell, James E.: *See*—
Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., 5,795,784, Cl. 436-50.000.

Mitekura, Yoshihiro, to Ricoh Company, Ltd. Image forming apparatus which displays an accumulated number of times image formation has been executed for each of image forming modes. 5,797,067, Cl. 399-79.000.

Mitilenes, George N.: *See*—
Mayer, Lawrence D.; Bally, Marcel B.; Cullis, Pieter R.; Ginsberg, Richard S.; and Mitilenes, George N., 5,795,589, Cl. 424-450.000.

Mito, Ikuo: *See*—
Hamamoto, Kiichi; Sasaki, Tatsuya; Takeuchi, Takeshi; Hayashi, Masako; Komatsu, Keiro; Mito, Ikuo; and Taguchi, Kenko, 5,796,883, Cl. 385-14.000.

Mitsuba Corporation: *See*—
Sugino, Mitsutaka; Kodaira, Tadao; and Onodera, Tugio, 5,796,198, Cl. 310-89.000.

Mitsubishi Corporation: *See*—
Kobayashi, Hiroko; Sasaki, Takashi; Hirai, Kiyoshi; Yasui, Shinichi; Nagao, Mamoru; and Harada, Hiroyuki, 5,796,799, Cl. 376-306.000.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Araki, Takashi; Iwamoto, Hisashi; and Konishi, Yasuhiro, 5,796,669, Cl. 365-222.000.
Fujioka, Shuzo, 5,796,943, Cl. 395-188.010.
Fukui, Wataru, 5,794,592, Cl. 123-414.000.
Furutani, Kiyohiro; and Ozaki, Hideyuki, 5,796,287, Cl. 327-374.000.
Gochi, Hidenobu, 5,797,024, Cl. 395-750.080.
Hayafuji, Norio; Yamamoto, Yoshitsugu; and Kizuki, Hirotaka, 5,796,127, Cl. 257-194.000.
Hirono, Tetsuro, 5,795,177, Cl. 439-378.000.
Houmoto, Tatsuya; and Murao, Fumihide, 5,796,689, Cl. 369-44.410.
Kamiyama, Kinya; Moriizumi, Koichi; Kanno, Makoto; and Taoka, Hironobu, 5,796,408, Cl. 345-441.000.
Kawajiri, Shinobu; Koubara, Shinji; and Sunaga, Kouhei, 5,796,443, Cl. 348-839.000.
Kojima, Sadaaki; Araki, Hiroshi; and Kato, Satoru, 5,796,228, Cl. 318-605.000.
Minami, Kouji; and Hitotsumatsu, Akira, 5,796,425, Cl. 348-181.000.
Mitumoto, Seiichi; Maejima, Shigeto; Masuda, Takashi; and Karino, Isamu, 5,795,919, Cl. 521-28.000.
Morisita, Akira; Konishi, Keiichi; and Yamamoto, Kyohei, 5,796,172, Cl. 290-48.000.
Nagata, Noriharu; and Gochi, Hidenobu, 5,796,092, Cl. 235-492.000.
Nakano, Hirofumi; and Ishihara, Osamu, 5,796,132, Cl. 257-284.000.
Nishihara, Hidenori, 5,795,792, Cl. 437-6.000.
Sasaki, Tsutomu, 5,795,449, Cl. 204-244.00M.
Shimotani, Mitsuo; Nishida, Minoru; Okada, Akira; Satake, Toshihide; Washino, Shoichi; Okawa, Futoshi; and Terashita, Hiromi, 5,795,306, Cl. 600-558.000.
Shinkawata, Hiroki, 5,796,136, Cl. 257-306.000.
Shiono, Takashi; and Yoshinaga, Mutsumi, 5,796,850, Cl. 381-94.100.
Tsuruda, Takahiro; and Arimoto, Kazutami, 5,796,664, Cl. 365-200.000.
Yamamoto, Yuushin, 5,796,601, Cl. 363-84.000.
Yonezawa, Shiro; and Ohuchi, Hirofumi, 5,794,585, Cl. 123-299.000.

Mitsubishi Electric Engineering Co., Ltd.: *See*—
Houmoto, Tatsuya; and Murao, Fumihide, 5,796,689, Cl. 369-44.410.

Mitsubishi Electric Information Technology Center America, Inc.: *See*—
Rich, Charles, 5,796,396, Cl. 345-332.000.

Mitsubishi Electric Semiconductor Software Co., Ltd.: *See*—
Fujioka, Shuzo, 5,796,943, Cl. 395-188.010.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Oda, Hideyuki; Goto, Kenji; Murakami, Nobuaki; Tashima, Kazuchika; and Tamura, Hiroki, 5,794,586, Cl. 123-305.000.
Shimaoka, Kiyoshige; and Ukonmaanaho, Mauri, 5,795,995, Cl. 73-40.000.
Yanagawa, Yuji; Kato, Keigo; Muta, Koichiro; Ikihara, Tadao; and Tanaka, Tamon, 5,794,666, Cl. 141-18.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Fujioka, Masanori; Sakata, Teruaki; and Dilao, Carmelo Osmena, 5,794,448, Cl. 60-736.000.
Suenaga, Kiyoshi; and Kasai, Yoshikuni, 5,795,130, Cl. 416-95.000.

Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See*—
Yoneyama, Fumihiro, 5,794,992, Cl. 292-216.000.

Mitsui Mining & Smelting Co., Ltd.: *See*—
Miyagawa, Hiroshi; and Shirai, Ryouichi, 5,795,673, Cl. 429-49.000.

Mitsui Norin Co., Ltd.: *See*—
Cheng, Shu Jun; Wang, De Chang; and Hara, Yukihiko, 5,795,911, Cl. 514-456.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Tsutsui, Toshiyuki; Yoshitsugu, Ken; Ohgizawa, Masaaki; Matsumoto, Tetsuhiro; and Imuta, Junichi, 5,795,838, Cl. 502-103.000.

Mitsumi Electric Co., Ltd.: *See*—
Setsumasa, Keiichi; and Annen, Ryoichi, 5,794,874, Cl. 242-346.100.

Mitumoto, Seiichi; Maejima, Shigeto; Masuda, Takashi; and Karino, Isamu, to Mitsubishi Denki Kabushiki Kaisha. Insulating paints. 5,795,919, Cl. 521-28.000.

Miura, Hitoshi: *See*—
Yamamoto, Taketsugu; and Miura, Hitoshi, 5,795,677, Cl. 429-194.000.

Miura, Susumu: *See*—
Hanagata, Goro; Miura, Susumu; and Tatsumi, Kiyoshi, 5,795,980, Cl. 536-124.000.

Miura, Taro: *See*—
Uchikoba, Fumio; Nakajima, Shigeyuki; Ito, Takashi; Miura, Taro; Kobayashi, Makoto; Kurahashi, Takahide; and Iijima, Yasushi, 5,796,323, Cl. 333-260.000.

Miwa, Hirokazu: *See*—
Enomoto, Hiromi; Miwa, Hirokazu; and Isogai, Hiroyuki, 5,796,379, Cl. 345-89.000.

Miyabe, Kyoko: *See*—
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Iwasaki, Manabu; Tsuboyama, Akira; Katakura, Kazunori; and Mizutani, Hidemasa, 5,796,381, Cl. 345-101.000.
Mizutani, Hideo, to Nikon Corporation. Exposure apparatus and method for positioning with a high accuracy. 5,796,114, Cl. 250-548.000.
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Kimura, Yuji; Atsumi, Kinya; Abe, Katsunori; Matsushita, Noriyuki; Mizutani, Michiyo; and Toyama, Tetsuo, 5,794,839, Cl. 228-123.100.
Mizutani, Satoshi; and Hisada, Kenichi, to Uni-Charm Corporation. Sanitary napkin. 5,795,345, Cl. 604-380.000.
Modern Techniques, Inc.: *See*—
Morrison, Gerald; and Berger, M. Steven, 5,794,551, Cl. 112-80.410.
Modern Technology Inventions: *See*—
Jacob, Elijah, 5,795,182, Cl. 439-504.000.
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Moen, Richard: *See*—
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Mohn, Christopher Dandridge, to Amtrol Inc. Valves for pressurized containers. 5,794,660, Cl. 137-614.200.
Mohr, Klaus-Peter: *See*—
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Mohrman, James A., to Philip Morris Incorporated. Versatile case packing device. 5,794,417, Cl. 53-541.000.
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Zhou, Gan; Qiao, Yong; and Mok, Fai, 5,796,858, Cl. 382-127.000.
Mok, Lawrence Shungwei, to International Business Machines Corporation. Rotational joint for hinged heat pipe cooling of a computer. 5,796,581, Cl. 361-687.000.
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Molex Incorporated: *See*—
Edgley, Richard R.; Lenz, William R.; Luthy, John S.; and Samiec, Karen, 5,795,185, Cl. 439-545.000.
Moller, Karl H., to Diamond Products Joint Venture. Drill rig. 5,794,724, Cl. 175-170.000.
Momose, Satoru, to NEC Corporation. Magnetic head damage evaluation method and apparatus therefor. 5,795,490, Cl. 216-22.000.
Monda, Albert F.; and Hinnant, Milton Darrell, to Radiator Specialty Company. Method and base for traffic channelizer. 5,795,530, Cl. 264-306.000.
Monsanto Company: *See*—
Tremont, Samuel J., 5,795,567, Cl. 424-78.260.
Monster Cable Internation, Ltd.: *See*—
Lee, Noel, 5,796,853, Cl. 381-120.000.
Montagnier, Luc: *See*—
Kieny, Marie-Paule; Rautmann, Guy; Lecocq, Jean-Pierre; Hobson, Simon Wain; Girard, Marc; and Montagnier, Luc, 5,795,577, Cl. 424-208.100.
Montanaro, Massimo: *See*—
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Monte, Paul: *See*—
Wiedeman, Robert A.; and Monte, Paul, 5,796,760, Cl. 375-200.000.
Montén, Kaj-Erik: *See*—
Hyöky, Göran; Paananen, Hannu; Montén, Kaj-Erik; Heikkilä, Heikki; and Kuisma, Jarmo, 5,795,398, Cl. 127-46.100.
Moon, Kook-Jin. Cartridge extractor. 5,794,373, Cl. 42-25.000.
Moon, Young Kiu, to Hyundai Electronics Industries Co., Ltd. Window clamp and method of alignement of lead frame strip utilizing the same. 5,796,161, Cl. 257-676.000.
Mooney, Jonathan M.: *See*—
Shepherd, Freeman D.; and Mooney, Jonathan M., 5,796,155, Cl. 257-452.000.
Moore Business Forms, Inc.: *See*—
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Moore, Donald W.: *See*—
Adams, James S.; Moore, Donald W.; Huntington, James C.; and Holland, Richard C., 5,796,403, Cl. 345-343.000.
Moore, John A., Jr.: *See*—
Akridge, Walter M.; Washburn, David E.; and Moore, John A., Jr., 5,794,409, Cl. 53-460.000.
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Hellmuth, Thomas; Kaschke, Michael; Moore, John C.; and Unold, Gerhard, 5,795,295, Cl. 600-407.000.
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Moore, Timothy F., to InterDigital Technology Corporation. Noise shaping technique for spread spectrum communications. 5,796,959, Cl. 375-206.000.
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Poto, Edward M.; Strahs, Kenneth R.; Conner, Timothy J.; Delahanty, Francis T.; Moorman, Michael; and Wieck, Henry, 5,795,543, Cl. 422-82.050.
Moran, James W.: *See*—
Beasley, William E., Jr.; Sarbell, John P.; and Moran, James W., 5,795,428, Cl. 156-344.000.
Moran, J. Christopher, to Applied Materials, Inc. Integrated microenvironment container loader apparatus having a semipermeable barrier. 5,795,355, Cl. 29-25.010.
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Moran, Patricia A.: *See*—
Diegel, Michael L.; Linsley, Peter S.; Gilliland, Lisa K.; Moran, Patricia A.; Zarling, Joyce M.; and Ledbetter, Jeffrey A., 5,795,572, Cl. 424-135.100.
Morazzoni, Paolo: *See*—
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Moreau, Wayne Martin: *See*—
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Morgan Concepts, Inc.: *See*—
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Morgan, Trevor Francis; Frame, Gordon; and Kobussen, Petrus Johannes, to Devro PLC. Process for producing a linked, co-extruded edible product. 5,795,605, Cl. 426-277.000.
Morgan, Wayne A., to Pacesetter, Inc. Switched-capacitor amplifier offset voltage compensation circuit. 5,796,300, Cl. 330-9.000.
Mori, Haruhisa: *See*—
Hayami, Yuka; Suzuki, Miki T.; Ogawa, Hiroki; Fujimura, Shuzo; Mori, Haruhisa; and Oku, Yoshiko, 5,795,494, Cl. 216-83.000.
Mori, Kuniyasu: *See*—
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Mori, Shigeo: *See*—
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Moribe, Mineo; Maeda, Miyozo; Satoh, Susumu; and Miyabe, Kyoko, to Fujitsu Limited. Optical disk having identification signal recorded between and used in common for two mutually adjacent tracks and optical disk unit therefor. 5,796,712, Cl. 369-275.400.
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Morimoto, Makoto: *See*—
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,795,968, Cl. 530-402.000.
Morimoto, Takeshi: *See*—
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Morin, Claude; and Beyrle, Andre, to Saint-Gobain Vitrage. Pane for automobile vehicle. 5,796,071, Cl. 219-203.000.
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Morisita, Akira; Konishi, Keiichi; and Yamamoto, Kyohei, to Mitsubishi Denki Kabushiki Kaisha. Starter apparatus with variable angle mounting. 5,796,172, Cl. 290-48.000.
Morita, Kazuo: *See*—
Komatsu, Toshihiro; Matsushima, Hitoshi; Hatada, Toshio; Iwai, Susumu; Homma, Tetsuro; Kondo, Yoshihiro; Fuse, Shouhei; Yamada, Hiroshi; Morita, Kazuo; Ito, Hiroshi; Iida, Akiyoshi; Kumagai, Kenta; and Shimode, Shinichi, 5,796,580, Cl. 361-687.000.
Morita, Kozo; Kinoshita, Shigeaki; Tame, Katsuyuki; and Nomura, Osamu, to Teikoku Tsushin Kogyo Co., Ltd. Rotary switch. 5,794,766, Cl. 200-569.000.
Moritsugu, Masaharu: *See*—
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Moriya, Yoshihito, to Toyota Jidosha Kabushiki Kaisha. Variable valve timing mechanism of engine. 5,794,579, Cl. 123-90.170.
Moriyama, Keiji: *See*—
Yokota, Masatoshi; Moriyama, Keiji; and Iwami, Satoshi, 5,795,247, Cl. 473-374.000.
Morizane, Kenichi; and Ono, Katsuyasu, to NSK Ltd. Seat belt retractor with pretensioner. 5,794,876, Cl. 242-374.000.
Morley, John: *See*—

Aberg, Gunnar; and Morley, John, 5,795,564, Cl. 424-45.000.

Morley, John E.; and Himelstein, Mark I., to Apple Computer, Inc. Method and system for increasing cache efficiency during emulation through operation code organization. 5,796,989, Cl. 395-500.000.

Mornhinweg, Markus: *See*—
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Morre, Kenneth F.: *See*—
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Morrel-Samuels, Palmer, to Electronic Data Systems Corporation. Leadership assessment tool and method. 5,795,155, Cl. 434-107.000.

Morris, Herbert W.: *See*—
Deeb, Gerald S.; Krueger, Dennis L.; Menzies, Robert H.; Morris, Herbert W.; Hyde, Patrick D.; Lau, Felix P.; Pyun, Eumi; Tucker, Pamela S.; and Wong, Roy, 5,795,834, Cl. 442-62.000.

Morris, Richard A.: *See*—
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Morrison, Brian D.; Batten, Martin R.; Robillard, Michael N.; and Wienke, Creig E., to Raytheon Company. Voting node for a distributed control system. 5,796,935, Cl. 395-182.090.

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Mosaid Technologies Incorporated: *See*—
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Moser, Richard: *See*—
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Moser, Rolf; and Birrer, Lukas, to Roche Diagnostic Systems, Inc. Thermal cycler. 5,795,547, Cl. 422-104.000.

Moser, Wolfgang: *See*—
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Moss Products Pty Ltd: *See*—
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Motohashi, Takeshi: *See*—
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Motorola, Inc.: *See*—
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Chen, Weizhong; Dehner, Leo G.; and Carsello, Stephen Rocco, 5,796,787, Cl. 375-326.000.
Chiu, Scott; and Novis, Scott R., 5,796,391, Cl. 345-204.000.
Duda, Michael, 5,797,103, Cl. 455-567.000.
Errico, James H.; and Mazurkiewicz, Theodore, 5,796,924, Cl. 395-23.000.
Fette, Bruce Alan; and Lee, Shirley Hsiao-Mei, 5,797,121, Cl. 704-230.000.
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Koripella, Chowdary R.; Moya, Adam D.; and Wilcox, David, Sr., 5,795,545, Cl. 422-94.000.
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Osmani, Rashid Masood; and Metroka, Michael P., 5,797,101, Cl. 455-551.000.
Ramdani, Jamal; Lebby, Michael S.; and Jiang, Wenbin, 5,796,769, Cl. 372-45.000.
Sun, Xiao; and Hull, Carmie A., 5,796,752, Cl. 371-27.100.
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Weitzel, Charles E.; Fisk, Edward L.; and Pack, Sung P., 5,796,122, Cl. 257-76.000.

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Beaulieu, Alain Bernard Marc; Epinat, Pierre; and Chapellier, Laurent, 5,796,245, Cl. 323-322.000.
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Moulton, David R.: *See*—
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Moulton, James P.: *See*—
Scott, Gerald R.; Moulton, James P.; Seyl, V. Craig; Emrich, John L.; and Peterson, Wayne L., 5,794,286, Cl. 5-611.000.

Mount Sinai School of Medicine: *See*—
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Mountz, David A.: *See*—
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Moya, Adam D.: *See*—
Koripella, Chowdary R.; Moya, Adam D.; and Wilcox, David, Sr., 5,795,545, Cl. 422-94.000.

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Moyer, Patricia L. Bowling ball carrier. 5,794,773, Cl. 206-315.910.

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Rossmeisl, Mark E.; and Murby, Edna M., 5,794,329, Cl. 29-743.000.

Mruczek, Stephen Albert: *See*—
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MTD Products Inc.: *See*—
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MTS Modulare Transport Systeme GMBH: *See*—
Enderlein, Robby; Robu, Johann; and Geiger, Hansjörg, 5,794,534, Cl. 104-88.000.

Mtu Motoren-Und Turbinen-Union München GmbH: *See*—
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Mueller, Bruce: *See*—
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Mugura, Kazuto: *See*—
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Muhich, John S.: *See*—
Levitan, David Stephen; Muhich, John S.; Talcott, Adam R.; and White, Steven W., 5,796,998, Cl. 395-586.000.

Muhlebach, Michael Joseph: *See*—
Alberts, Joseph Richard; Drezdzon, Edward Anthony, II; Fries, Donald Merlin, deceased; Konetzke, Richard Mark; Kvitek, Thomas Theodore; Muhlebach, Michael Joseph; Nelson, Michael Joseph; Rabe, Gerald Leigh; Ribble, Brendon Frank; Roth, James Frederick; and Wittmann, Jon Mark, 5,794,269, Cl. 2-227.000.

Muhr, Emil, to Branson Ultraschall Niederlassung der Emerson Technology GmbH & Co. Friction welding device. 5,795,437, Cl. 156-580.000.

Mui, Cliff Low Dor: *See*—
Al-Jiboory, Muhammed; Chow, Norman; Mui, Cliff Low Dor; Oehr, Klaus H.; and Stachowiak, Remy, 5,795,460, Cl. 205-705.000.

Muin, Andrew: *See*—
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Mukaida, Kouhachi, to Hachitei Corporation. Process for preparing coating particles used for a fried food. 5,795,608, Cl. 426-439.000.

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Mülleder, Eduard: *See*—
Firgo, Heinrich; Seidl, Sigrid; Bartsch, Peter; Köll, Berndt; and Mülleder, Eduard, 5,795,522, Cl. 264-187.000.

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Grune, Burkhard; Hager, Ludwig; Huber, Helmut; Lwowski, Gerhard; Zadny, Wilhelm; Müller, Horst; and Schneider, Otto, 5,795,583, Cl. 424-400.000.

Müller, Kay: *See*—
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Newmoyer, Kerry; Freese, Paul R.; and Mulligan, William P., 5,796,046, Cl. 174-113.0AS.

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Takatori, Ken-ichi; Suzuki, Masayoshi; Sumiyoshi, Ken; and Murai, Hideya, 5,796,456, Cl. 349-117.000.

Murai, Keiichi: *See—*
Inoue, Makoto, deceased; Inoue, Tsuneo, executor; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, 5,796,415, Cl. 347-45.000.

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Itoh, Takashi; Saitoh, Hiroyuki; Kinami, Haruyuki; Konaka, Toshinori; and Murai, Tsuyoshi, 5,795,401, Cl. 134-6.000.

Muraji, Tsutomu; Kuzumoto, Keiichi; Hirotsune, Satoshi; and Kotaka, Mitsuru, to Matsushita Electric Industrial Co., Ltd. Progressive scanning conversion apparatus. 5,796,437, Cl. 348-452.000.

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Takami, Akihide; Iwakuni, Hideharu; Kyogoku, Makoto; and Murakami, Hiroshi, 5,795,840, Cl. 502-327.000.

Murakami Kaimeido Co., Ltd.: *See—*
Kanazawa, Toru, 5,796,532, Cl. 359-858.000.

Murakami, Nobuaki: *See—*
Oda, Hideyuki; Goto, Kenji; Murakami, Nobuaki; Tashima, Kazuchika; and Tamura, Hiroki, 5,794,586, Cl. 123-305.000.

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Komatsu, Takako; and Muraki, Kazunori, 5,797,112, Cl. 701-201.000.

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Taniguchi, Tadatsugu; Muramatsu, Masami; Sugano, Haruo; Matsui, Hiroshi; and Kashima, Nobukazu, 5,795,769, Cl. 435-252.300.
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Kasahara, Nobuo; Muramatsu, Satoshi; and Shibaki, Hiroyuki, 5,797,074, Cl. 399-262.000.

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Murase, Shigemitsu: *See—*
Matsuoka, Fumio; Murase, Shigemitsu; Nagaoka, Koichi; and Nishimura, Hiroshi, 5,795,651, Cl. 428-364.000.

Murata, Kenji: *See—*
Nirasawa, Hitoshi; Kawachi, Takanori; Ogawa, Takashi; and Murata, Kenji, 5,795,671, Cl. 429-41.000.

Murata Manufacturing Co., Ltd.: *See—*
Ando, Masamichi; and Abe, Shuichi, 5,796,318, Cl. 333-202.000.
Hamuro, Mitsuro; and Shimamaki, Keiichi, 5,796,616, Cl. 364-468.280.
Hattori, Jun; Kurisu, Toru; and Abe, Shin, 5,796,320, Cl. 333-219.100.
Kano, Haruhiko, 5,795,501, Cl. 252-514.000.
Tsuru, Teruhisa; Mandai, Harufumi; Shiroki, Koji; and Asakura, Kenji, 5,797,084, Cl. 455-73.000.

Murata, Nagatoshi; and Masaki, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Method of adjusting optical axis of headlight of vehicle. 5,796,473, Cl. 356-121.000.

Murata, Satoshi: *See—*
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Murata, Yushi: *See—*
Yoshida, Toshiyuki; Kajiwara, Takaharu; Murata, Yushi; Sase, Naoki; and Hirome, Masashi, 5,796,720, Cl. 370-245.000.

Murayama, Masami: *See—*
Izawa, Naoyuki; and Murayama, Masami, 5,796,734, Cl. 370-394.000.

Murayama, Shigeki: *See—*
Hiratsuka, Masaru; Murayama, Shigeki; Nagai, Tamiji; and Eguchi, Yasuhito, 5,796,238, Cl. 320-5.000.

Murby, Edna M.: *See—*
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Muroi, Takashi: *See—*
Ando, Hiroyuki; Suzuki, Tatsuya; and Muroi, Takashi, 5,797,047, Cl. 396-349.000.

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Murphy, Patrick, to Aircraft Modular Products, Inc. Retractable armrest for an aircraft seat. 5,795,025, Cl. 297-411.360.

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Krawczak, John Anthony; and Murphy, Steven Allen, 5,796,744, Cl. 370-503.000.

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Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., 5,795,784, Cl. 436-50.000.

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Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., 5,795,784, Cl. 436-50.000.

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Sprague, Milo David; and Murray, Robert J., 5,796,282, Cl. 327-210.000.

Murtaza, Bilal: *See—*
Miller, Michael J.; Murtaza, Bilal; and Sun, Chih-Ping, 5,796,735, Cl. 370-395.000.

Musco Corporation: *See—*
Crookham, Joe P., 5,794,387, Cl. 52-122.100.

Mussman, Harry Edward; Chen, Hung-San; and Hartman, Stephen P., to GTE Laboratories Incorporated. Data transferring circuit which aligns clock and data. 5,796,795, Cl. 375-372.000.

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Muta, Kouichi, to Hoky Contico, L.L.C. Cleaning members for cleaning areas near walls used in floor cleaner. 5,794,297, Cl. 15-42.000.

Muta, Tatsushi: *See—*
Iwanaga, Sadaaki; Muta, Tatsushi; Seki, Noriaki; and Oda, Toshio, 5,795,962, Cl. 530-350.000.

Muth, Ross R.: *See—*
Totakura, Nagabhushanam; Muth, Ross R.; Gravener, Roy D.; Hain, Matthew; and Koyfman, Ilya S., 5,795,584, Cl. 424-426.000.

Mutsuda, Mitsuteru, to Daicel Chemical Industries, Ltd. Thermoplastic composition of polyester, polyamide and glycidyl-modified polyolefin. 5,795,935, Cl. 525-66.000.

Mutton, Ian Martin: *See—*
Bevan, Christopher David; and Mutton, Ian Martin, 5,795,788, Cl. 436-161.000.

Myers, Michael R.: *See—*
Spada, Alfred P.; Myers, Michael R.; Maguire, Martin P.; and Persons, Paul E., 5,795,889, Cl. 514-233.500.

Myers, Robert Andrew: *See—*
Brower, David Campbell; Myers, Robert Andrew; and Thomas, Jeff David, 5,795,087, Cl. 400-636.000.

Myrberg, Jan, to Telefonaktiebolaget LM Ericsson. Bridge for power transistors with improved cooling. 5,796,584, Cl. 361-707.000.

Na, Il Goo, to Samsung Electronics Co., Ltd. Method for tuning channels in a voltage synthesizer tuning circuit. 5,797,086, Cl. 455-179.100.

Nachman, Ronald J.; Teal, Peter E. A.; and Holman, Grant Mark, to United States of America, Agriculture. Mimetic insect pyrokinin analogs for insect control. 5,795,857, Cl. 514-2.000.

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Nagano, Akihiko; Yamada, Akira; and Irie, Yoshiaki, to Canon Kabushiki Kaisha. Visual axis controllable optical apparatus including a visual axis detecting device for detecting a visual axis. 5,797,046, Cl. 396-51.000.

Nagano, Hideo: *See—*
Hodosawa, Yoshihito; Nagano, Hideo; and Saito, Hirokazu, 5,795,506, Cl. 264-4.100.

Nagano, Shuichi; and Tomizawa, Kenji, to Sony Corporation. Decoder for decoding still picture data and data on which data length of still picture data is recorded, reproducing apparatus for reproducing recording medium, and reproducing method thereof. 5,796,910, Cl. 386-51.000.

Nagano, Yoshihisa; Fujii, Eiji; Nasu, Toru; and Matsuda, Akihiro, to Matsushita Electronics Corporation. Method for forming a semiconductor device having a capacitor. 5,795,794, Cl. 437-60.000.

Naganuma, Norihisa; and Noda, Hideki, to Fujitsu Limited. Optical device for coupling and separating two light components. 5,796,887, Cl. 385-18.000.

Nagao, Mamoru: *See—*
Hirai, Kiyoshi; Yasui, Shinichi; Kobayashi, Hiroko; Nagao, Mamoru; Sasaki, Takashi; and Harada, Hiroyuki, 5,795,450, Cl. 204-256.000.
Kobayashi, Hiroko; Sasaki, Takashi; Hirai, Kiyoshi; Yasui, Shinichi; Nagao, Mamoru; and Harada, Hiroyuki, 5,796,799, Cl. 376-306.000.

Nagaoka, Koichi: *See—*
Matsuoka, Fumio; Murase, Shigemitsu; Nagaoka, Koichi; and Nishimura, Hiroshi, 5,795,651, Cl. 428-364.000.

Nagasawa, Hiroyuki: *See—*
Shigematsu, Hiroyuki; Nakamura, Yutaka; Sakamoto, Munenori; Nagasawa, Hiroyuki; Nakao, Hiroshi; Nakajima, Yasuhiro; and Kurata, Masaaki, 5,796,406, Cl. 345-358.000.

Nagashima, Takeshi, to Sega Enterprises, Ltd. Method for executing software program and circuit for implementing the method. 5,796,940, Cl. 395-186.000.

Nagata, Mikito: *See*—
Aoki, Takashi; Nagata, Mikito; and Tsukamoto, Hisashi, 5,795,558, Cl. 423-594.000.
Nagata, Noriharu; and Gochi, Hidenobu, to Mitsubishi Denki Kabushiki Kaisha. IC card and IC card system. 5,796,092, Cl. 235-492.000.
Nagata, Norinari: *See*—
Yamamoto, Tadashi; and Nagata, Norinari, 5,794,968, Cl. 280-728.200.
Nagata, Toshio; and Akayama, Jinichi. Torsion detection apparatus for power transmission shaft and power transmission apparatus. 5,796,013, Cl. 73-862.325.
Nagazumi, Yasuo, to G.D.S. Co., Ltd. General purpose charge mode analog operation circuit. 5,796,646, Cl. 364-807.000.
Nagli, Lev; and Meiri, Abraham Zvi, to Z.M.Z. Advanced Systems Ltd. Methods and apparatus for recording and reading-out an ionization radiation image. 5,796,113, Cl. 250-483.100.
Nagumo, Masahiko: *See*—
Sato, Naoyuki; Nagumo, Masahiko; and Abe, Ryuji, 5,796,536, Cl. 360-61.000.
Naidu, Harish; and Parry, William G., to Microsoft Corporation. Method and system using dedicated location to share information between real mode and protected mode drivers. 5,796,988, Cl. 395-500.000.
Naik, Kirit N.: *See*—
Malhotra, Shadi L.; Mcaneney, T. Brian; Sharp, James H.; and Naik, Kirit N., 5,795,695, Cl. 430-120.000.
Naik, Sharda: *See*—
Mullon, Claudy Jean-Paul; Cain, Shawn Paul; Perlman, Timothy Jon; Jauregui, Hugo O.; Naik, Sharda; Santangini, Henry A.; and Trenkler, Donna M., 5,795,711, Cl. 435-1.100.
Naito, Harusuke. Shower head having a water purifying function. 5,795,471, Cl. 210-223.000.
Naka, Michio: *See*—
Xu, Kexin; Naka, Michio; and Suzuki, Norihito, 5,796,482, Cl. 356-349.000.
Nakabayashi, Jiro: *See*—
Shioi, Masahiro; Makiyama, Takeshi; Hibi, Keiichi; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakamura, Osamu; Kanada, Youji; Kura, Tsuneko; and Oshima, Takashi, 5,796,436, Cl. 348-409.000.
Nakae, Takahiko; Kato, Masashi; Fujita, Takehito; Kawabata, Kazuhito; and Ohno, Hiroyuki, to ONO Pharmaceutical Co., Ltd. Sulfonamide derivatives. 5,795,890, Cl. 514-235.500.
Nakae, Takahiko: *See*—
Konno, Mitoshi; Nakae, Takahiko; and Hamanaka, Nobuyuki, 5,795,914, Cl. 514-562.000.
Nakagawa, Akio: *See*—
Matsudai, Tomoko; Kitagawa, Mitsuhiko; and Nakagawa, Akio, 5,796,125, Cl. 257-141.000.
Nakajima, Akira; and Sekine, Norio, to Toyodenso Kabushiki Kaisha. Rocker-type electrical switch. 5,796,057, Cl. 200-6.00B.
Nakajima, Hideyuki: *See*—
Takami, Norio; Ohsaki, Takahisa; Tamaki, Toshio; Nakajima, Hideyuki; and Katsuta, Yasushi, 5,795,678, Cl. 429-218.000.
Nakajima, Hiroshi: *See*—
Maeda, Tadasu; Ota, Koji; Arao, Masaki; Sogou, Taiji; Nakajima, Hiroshi; Miyamoto, Norichika; Ishiguro, Susumu; and Hayashi, Motoji, 5,796,618, Cl. 364-474.240.
Nakajima, Shigeyuki: *See*—
Uchikoba, Fumio; Nakajima, Shigeyuki; Ito, Takashi; Miura, Taro; Kobayashi, Makoto; Kurahashi, Takahide; and Iijima, Yasushi, 5,796,323, Cl. 333-260.000.
Nakajima, Toshiyuki; Okauchi, Akira; Hujino, Setuo; Taya, Hirokazu; Shimoda, Tomoki; and Ohshiba, Seiji, to Sapporo Breweries Ltd. Method of and apparatus for disassembling can for measurement of can seam dimensions. 5,794,499, Cl. 82-1.110.
Nakajima, Yasuhiro: *See*—
Shigematsu, Hiroyuki; Nakamura, Yutaka; Sakamoto, Munenori; Nagasawa, Hiroyuki; Nakao, Hiroshi; Nakajima, Yasuhiro; and Kurata, Masaaki, 5,796,406, Cl. 345-358.000.
Nakajima, Yuji; Seto, Masaru; and Kamikawa, Yoshinori, to Kabushiki Kaisha Toshiba. Portable electronic apparatus having expansion connector covered by pivotally mounted upper and lower covers having laterally extending guide portions. 5,796,579, Cl. 361-683.000.
Nakamoto, Shinya: *See*—
Matsumoto, Toru; Furusawa, Masako; Ito, Narushi; and Nakamoto, Shinya, 5,795,774, Cl. 435-287.900.
Nakamura, Chiaki: *See*—
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Nakamura, Kimio: *See*—
Shintani, Toshimichi; Imura, Ryo; Nakamura, Kimio; and Hosaka, Sumio, 5,796,706, Cl. 369-126.000.
Nakamura, Kiyoji: *See*—
Shidara, Shinichi; Takahashi, Yutaka; Tachibana, Hajime; Nakamura, Kiyoji; Anayama, Ushio; and Ishiwata, Noriyasu, 5,796,490, Cl. 358-296.000.
Nakamura, Masayuki: *See*—
Nagai, Shigekazu; Sakurai, Shuuzou; and Nakamura, Masayuki, 5,796,187, Cl. 310-20.000.
Nakamura, Osamu: *See*—
Shioi, Masahiro; Makiyama, Takeshi; Hibi, Keiichi; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakamura, Osamu; Kanada, Youji; Kura, Tsuneko; and Oshima, Takashi, 5,796,436, Cl. 348-409.000.
Nakamura, Ryoichiro: *See*—
Takemoto, Tadashi; Amino, Yusuke; and Nakamura, Ryoichiro, 5,795,612, Cl. 426-548.000.
Nakamura, Satoru: *See*—
Sensui, Takayuki; Ito, Takayuki; Matsuo, Hirofumi; Nakamura, Satoru; Goto, Tatsuo; and Nakamura, Yasuo, 5,796,517, Cl. 359-426.000.
Nakamura, Taisuke, to NEC Corporation. Radio receiving apparatus having current consumption reducing function. 5,797,090, Cl. 455-234.100.
Nakamura, Takashi; Iwano, Haruhiko; and Matsuo, Koji, to Fuji Photo Film Co.,Ltd. Process for treating photographic processing waste solution. 5,795,485, Cl. 210-714.000.
Nakamura, Tatsuya: *See*—
Uchiyama, Masaki; Nakamura, Tatsuya; and Yachi, Shinya, 5,795,694, Cl. 430-109.000.
Nakamura, Yasuo: *See*—
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Nakamura, Yoichi, to Fujitsu Limited. Computer system having sytem bus which couples adapter and processing units and requires acquisition for data transmission thereover. 5,797,040, Cl. 395-872.000.
Nakamura, Yukito: *See*—
Matsumoto, Masahito; Tsutsubuchi, Masaaki; Kitayama, Takeo; Nakamura, Yukito; and Togawa, Yoshiaki, 5,795,510, Cl. 264-40.500.
Nakamura, Yutaka: *See*—
Shigematsu, Hiroyuki; Nakamura, Yutaka; Sakamoto, Munenori; Nagasawa, Hiroyuki; Nakao, Hiroshi; Nakajima, Yasuhiro; and Kurata, Masaaki, 5,796,406, Cl. 345-358.000.
Nakamura, Yuzuo; Kyomen, Masayuki; Asada, Soichiro; Matsunami, Toshiyuki; Suzuki, Hiroyuki; and Kawai, Satoru, to Nissha Printing Co., Ltd.; and Pacific Industrial Co., Ltd. Method of manufacturing decorated article using a transfer material. 5,795,527, Cl. 264-267.000.
Nakane, Munechika: *See*—
Inada, Takeshi; and Nakane, Munechika, 5,795,234, Cl. 470-16.000.
Nakanishi, Hidetoshi; Usui, Yasunori; and Yakushiji, Shigenori, to Kabushiki Kaisha Toshiba. MOS gate controlled thyristor. 5,796,124, Cl. 257-133.000.
Nakanishi, Hiroshi; Saito, Norihisa; Ando, Toshinori; and Morinaga, Hisakazu, to Canon Kabushiki Kaisha. Optical element, method of molding the same, and laser scanning optical system. 5,796,507, Cl. 359-205.000.
Nakano, Hirofumi; and Ishihara, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device. 5,796,132, Cl. 257-284.000.
Nakano, Kenichi; Bozada, Christopher A.; Quach, Tony K.; DeSalvo, Gregory C.; Via, G. David; Dettmer, Ross W.; Havasy, Charles K.; Sewell, James S.; Ebel, John L.; and Gillespie, James K., to United States of America, Air Force. Metal semiconductor field effect transistor (MESFET) device with single layer integrated metal. 5,796,131, Cl. 257-284.000.
Nakao, Akihiro: *See*—
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Nakao, Hiroshi: *See*—
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Nakao, Kenji; Yamamoto, Masao; and Uemura, Tsuyoshi, to Matsushita Electric Industrial Co., Ltd. Liquid crystal display device, method for producing the same, and projection-type display apparatus including the liquid crystal display device. 5,796,453, Cl. 349-86.000.
Nakao, Naoki: *See*—
Furukawa, Tohru; Nomura, Yoshikazu; Furukawa, Hiroshi; Nakao, Naoki; and Tomita, Nobuo, 5,796,888, Cl. 385-22.000.
Nakao, Tomoaki: *See*—
Madaraishi, Takashi; Nakao, Tomoaki; and Tanaka, Ryoji, 5,796,615, Cl. 364-468.160.
Nakashiba, Yasutaka, to NEC Corporation. Charge coupled device with high charge transfer efficiency. 5,796,801, Cl. 377-60.000.
Nakaso, Noritaka; and Tsukahara, Yusuke, to Toppan Printing Co., Ltd. Method and apparatus for exciting bulk acoustic wave. 5,796,004, Cl. 73-643.000.
Nakata, Yukihiko; Fujihara, Masaki; Date, Masahiro; Matsuo, Takuya; Ayukawa, Michiteru; and Itoga, Takashi, to Sharp Kabushiki Kaisha. Thin-film semiconductor device including a semiconductor film with high field-effect mobility. 5,796,116, Cl. 257-66.000.
Nakawaki, Yasunori: *See*—
Otsubo, Hideaki; and Nakawaki, Yasunori, 5,797,108, Cl. 701-51.000.
Nakaya, Fumio: *See*—
Tsuji, Masato; Seki, Masao; Leng, Svay; Aikawa, Koji; Shinohara, Koichiro; and Nakaya, Fumio, 5,796,869, Cl. 382-203.000.
Nakaya, Hiroyuki: *See*—
Osada, Hiroshi; and Nakaya, Hiroyuki, 5,795,118, Cl. 411-171.000.
Nakaya, Teruomi; Okamoto, Osamu; Kuwano, Naoaki; Suzuki, Seizo; Sasa, Shuichi; Nakayasu, Hidehiko; and Sagisaka, Masakazu, to National Aerospace Laboratory of Science & Technology. Air active control aircraft using three dimensional true airspeed detection system. 5,797,105, Cl. 701-7.000.
Nakayama, Hidehiko: *See*—
Ishikawa, Akira; Nakayama, Hidehiko; and Yamashita, Kazutaka, 5,795,642, Cl. 428-141.000.
Nakayama, Izumi; Masuda, Yukio; Bersin, Richard L.; Xu, Han; and Geng, Quain, to Ulvac Technologies, Inc. Cold processes for cleaning and stripping photoresist from surfaces of semiconductor wafers. 5,795,831, Cl. 438-714.000.
Nakayama, Shigeru, to Nikon Corporation. Method and apparatus for position sensing. 5,796,483, Cl. 356-349.000.

Nakayama, Tadayoshi; and Kawahara, Norihiro, to Canon Kabushiki Kaisha. Image interpolating circuit. 5,796,878, Cl. 382-300.000.
Nakayama, Tomoko; Tada, Jun; Fukushima, Shigeru; and Ohashi, Tetsuo, to Shimadzu Corporation. Oligonucleotides for detecting bacteria and detection process. 5,795,717, Cl. 435-6.000.
Nakayama, Toshimasa: *See*—
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Tanabe, Masahito; Wakiya, Kazumasa; Kobayashi, Masakazu; and Nakayama, Toshimasa, 5,795,702, Cl. 430-331.000.
Nakayasu, Hidehiko: *See*—
Nakaya, Teruomi; Okamoto, Osamu; Kuwano, Naoaki; Suzuki, Seizo; Sasa, Shuichi; Nakayasu, Hidehiko; and Sagisaka, Masakazu, 5,797,105, Cl. 701-7.000.
Nalco Chemical Company: *See*—
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Wetegrove, Robert L., 5,796,478, Cl. 356-318.000.
Nally, Debora E., to Siemens Automotive Corporation. Air assist injector and retainer shroud therefor. 5,794,856, Cl. 239-408.000.
Nam, In Taek, to Samsung Heavy Industries Co., Ltd. Device for controlling breaker in construction vehicles. 5,796,174, Cl. 307-9.100.
Nanami, Tomoyuki; Yamashita, Satoshi; Wright, Dennis M.; and Harris, Kendal R., to Allen-Bradley Company, LLC. Logical operator based digital filter. 5,796,643, Cl. 364-724.011.
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Kato, Shinichi; Nimura, Mitsuhiro; Hanasaki, Masaharu; and Nanba, Akimasa, 5,796,613, Cl. 364-449.800.
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Shah, Bhavin; Nangia, Era; Wolrich, Gilbert; and Patwa, Nital, 5,796,976, Cl. 395-403.000.
Naphtachimie: *See*—
Bellet, Serge; Brouillet, Jean-Luc; and Bazzoni, Daniel, 5,796,006, Cl. 73-661.000.
Napp, Eckhard: *See*—
Gronig, Hans-Ulrich; Kreuzer, Guido; and Napp, Eckhard, 5,794,528, Cl. 101-127.100.
Nara Machinery Co., Ltd.: *See*—
Senna, Mamoru; Cho, Sang-Hee; and Hamada, Kenji, 5,795,537, Cl. 264-621.000.
Narahashi, Shoichi: *See*—
Kumagai, Ken; Nojima, Toshio; and Narahashi, Shoichi, 5,796,307, Cl. 330-149.000.
Naranjo, Eduardo M.: *See*—
Diaz, Jose A.; and Naranjo, Eduardo M., 5,795,576, Cl. 424-195.100.
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Narayanan, Sekharipuram R.: *See*—
Yen, Shaio-Ping S.; Narayanan, Sekharipuram R.; Halpert, Gerald; Graham, Eva; and Yavrouian, Andre, 5,795,496, Cl. 252-62.200.
Narita, Izuru: *See*—
Iwami, Tomoyuki; and Narita, Izuru, 5,796,982, Cl. 395-500.000.
Narita, Nobuhiro; Sawaki, Masayoshi; Mikasa, Keiichi; and Kita, Eiji, to Nobuhiro Narita. Pharmaceutical composition for treatment of non-small cell lung cancer. 5,795,871, Cl. 514-29.000.
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Yoshioka, Shinichi; Kawasaki, Ikuya; Narita, Susumu; and Tamaki, Saneaki, 5,796,978, Cl. 395-416.000.
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Hourmand, Byron, 5,796,183, Cl. 307-116.000.
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Nasuti, Tony: *See*—
Robbins, Clyde; Maraska, John F.; Kamieniecki, John; Palmer, Douglas W.; and Nasuti, Tony, 5,796,423, Cl. 348-10.000.
Natalizia, Mark L., to Microphor, Inc. Tank isolation valve. 5,794,661, Cl. 137-849.000.
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Hanlon, Edite M.; Heinsius, Steven T.; Natarajan, Mrinalini; Rule, Antoinette; Sarju, Tejanand; and Walden, Gary D., 5,796,812, Cl. 379-212.000.
Nathan, Menachem: *See*—
Parkansky, Naum; Ben-shalom, Amir; Boxman, Raymond L.; Kaplan, Larisa; Goldsmith, Samuel; Yaloz, Hanan; and Nathan, Menachem, 5,795,631, Cl. 428-34.100.
National Aerospace Laboratory of Science & Technology: *See*—
Nakaya, Teruomi; Okamoto, Osamu; Kuwano, Naoaki; Suzuki, Seizo; Sasa, Shuichi; Nakayasu, Hidehiko; and Sagisaka, Masakazu, 5,797,105, Cl. 701-7.000.
National Center for Manufacturing Sciences: *See*—
Gibson, Thomas Loughborough; Chalmer, Paul David; and Abdul, Abdul Shaheed, 5,794,696, Cl. 166-264.000.
National Instruments Corporation: *See*—
Gretta, Robert E., Jr., 5,796,721, Cl. 370-245.000.
Odom, B. Keith, 5,796,963, Cl. 395-308.000.
National Molding Corp.: *See*—
Anscher, Joseph, 5,794,316, Cl. 24-625.000.
National Research Council of Canada: *See*—
Jennings, Harold J.; and Kasper, Dennis L., 5,795,580, Cl. 424-244.100.
National Science Council: *See*—
Lin, Kwang-Lung; and Lee, Chwan-Ying, 5,795,619, Cl. 427-123.000.
Wei, Wen-Cheng J.; Lo, Ming-Hung; and Cheng, Feng-Huei, 5,795,837, Cl. 501-87.000.
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Mekdhanasarn, Boonmi; Lo, Randy Hsiao-Yu; Ichikawa, Steve M.; and Ahmed, Abdul Rahim, 5,796,570, Cl. 361-126.000.
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Lee, Shaw Wei; Lee, Poh Ling; and Panczak, Anthony E., 5,796,586, Cl. 361-748.000.
National Starch and Chemical Investment Holding Corporation: *See*—
Shi, Yong-Cheng; Eden, James L.; and Kasica, James J., 5,795,397, Cl. 127-29.000.
Natori, Itaru, to Asahi Kasei Kogyo Kabushiki Kaisha. Polymer containing a cyclic olefin monomer unit. 5,795,945, Cl. 526-309.000.
Natschke, Scott L.: *See*—
Ring, Michael E.; Natschke, Scott L.; and Hawryszkow, Michael G., 5,794,739, Cl. 188-153.00R.
Nau, Robert: *See*—
Damke, Roland; Gerresheim, Manfred; Nau, Robert; Winter, Hans-Joachim; and Lowenhaupt, Bernd, 5,795,417, Cl. 152-527.000.
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Smietanski, Richard A., 5,794,476, Cl. 74-15.630.
Naylor, Bruce E.: *See*—
Bahls, James W.; Denny, George S.; Hannan, Richard G.; Mansker, Janna L.; Naylor, Bruce E.; Paffendorf, Karen D.; Patterson, Betty J.; Stoob, Sandra L.; Tse, Judy Y.; and Vakkalagadda, Anu V., 5,797,005, Cl. 395-680.000.
NBB Nachrichtentechnik GmbH & Co. KG: *See*—
Bredow, Wolfgang; Burchard, Thomas; and Haug, Thomas, 5,796,056, Cl. 200-5.00A.
NCR Corporation: *See*—
Alexander, Arthur Ray, 5,794,450, Cl. 62-6.000.
Goodwin, John C., III; and Zimmerman, Terry L., 5,797,131, Cl. 705-16.000.
Kenneth, Alexander R.; and Stewart, Mark J., 5,796,083, Cl. 255-380.000.
Zimmer, Harry, 5,796,398, Cl. 345-339.000.
NEC Corporation: *See*—
Aizawa, Yukio, 5,796,767, Cl. 372-38.000.
Aoyama, Akio, 5,796,775, Cl. 375-208.000.
Endo, Kazuhiko, 5,795,655, Cl. 428-458.000.
Hamamoto, Kiichi; Sasaki, Tatsuya; Takeuchi, Takeshi; Hayashi, Masako; Komatsu, Keiro; Mito, Ikuo; and Taguchi, Kenko, 5,796,883, Cl. 385-14.000.
Hara, Masanori, 5,796,857, Cl. 382-124.000.
Honma, Ichirou; and Aisou, Fumiki, 5,796,484, Cl. 356-371.000.
Hosoya, Futoshi, 5,795,799, Cl. 438-126.000.
Ideta, Masako, 5,797,021, Cl. 395-734.000.
Ishii, Katsuhiro, 5,796,311, Cl. 331-1.00R.
Kanno, Naotaka, 5,796,690, Cl. 369-48.000.
Kimura, Katsuji, 5,796,243, Cl. 323=312.000.
Koga, Hiroki, 5,796,167, Cl. 257-758.000.
Komatsu, Takako; and Muraki, Kazunori, 5,797,112, Cl. 701-201.000.
Matsumoto, Toru; Furusawa, Masako; Ito, Narushi; and Nakamoto, Shinya, 5,795,774, Cl. 435-287.900.
Mizobata, Eishi; Ikeno, Hidenori; and Kanoh, Hiroshi, 5,796,455, Cl. 349-116.000.
Momose, Satoru, 5,795,490, Cl. 216-22.000.
Morikawa, Takenori; and Tashiro, Tsutomu, 5,796,118, Cl. 257-19.000.
Muraoka, Shinya, 5,796,725, Cl. 370-290.000.
Nakamura, Taisuke, 5,797,090, Cl. 455-234.100.
Nakashiba, Yasutaka, 5,796,801, Cl. 377-60.000
Nomura, Masahide; and Igarashi, Hitoshi, 5,796,445, Cl. 348-607.000.
Noseyama, Hajime, 5,796,622, Cl. 364-489.000.
Ozawa, Kazunori, 5,797,119, Cl. 704-223.000.
Saeki, Takanori; and Fukuzo, Yukio, 5,796,281, Cl. 327-206.000.
Sagawa, Yuichirou, 5,796,782, Cl. 375-296.000.
Sakon, Shoichi, 5,796,946, Cl. 395-200.190.
Sasada, Taisuke, 5,796,820, Cl. 379-410.000.
Sato, Norifumi, 5,796,145, Cl. 257-336.000.

Suzuki, Hiroshi, 5,796,736, Cl. 370-399.000.
Takahashi, Mitsuasa, 5,796,290, Cl. 327-512.000.
Takatori, Ken-ichi; Suzuki, Masayoshi; Sumiyoshi, Ken; and Murai, Hideya, 5,796,456, Cl. 349-117.000.
Takeshima, Toshio; and Sugawara, Hiroshi, 5,796,652, Cl. 365-185.030.
Tanaka, Shinji, 5,796,592, Cl. 361-784.000.
Tasaka, Kazuhiro, 5,795,814, Cl. 438-424.000.
Tonegawa, Satoshi, 5,796,212, Cl. 315-5.330.
Tsumura, Soichi, 5,796,306, Cl. 330-124.00R.
Ushirozawa, Mizuyuki, 5,796,505, Cl. 359-160.000.
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Yazaki, Masahiro, 5,796,272, Cl. 327-41.000.

NEC Electronics, Inc.: *See*—
Shih, Shih-Ming; Rae, James Wilson; Contreras, Richard A.; and Chern, Jenn-Gang, 5,796,358, Cl. 341-139.000.

Neff, Andreas, to Bracker AG. Device for threading in the thread during the change of a ring traveller. 5,794,426, Cl. 57-262.000.

Negoro, Hisashi: *See*—
Arimoto, Keigō; Kojima, Masayuki; Yamamoto, Takuya; and Negoro, Hisashi, 5,796,465, Cl. 355-27.000.

Neighbors, Christopher A.: *See*—
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Neilson, Brad: *See*—
Edmondson, Michael; and Neilson, Brad, 5,795,107, Cl. 405-303.000.

Neisser, Mark O.: *See*—
Liebmann, Lars W.; Lin, Burn Jeng; and Neisser, Mark O., 5,795,685, Cl. 430-5.000.

Nelson, Alan Caril; and Lee, Shih-Jong James, to NeoPath, Inc. Method for testing proficiency in screening images of biological slides. 5,797,130, Cl. 705-11.000.

Nelson, Christopher E.; and Catron, Douglas Howard, to Kemin Industries, Inc. Process for producing metal carboxylates for use as animal feed supplements. 5,795,615, Cl. 426-648.000.

Nelson, Eric S.: *See*—
Farnworth, Warren M.; Wark, James M.; Nelson, Eric S.; and Duesman, Kevin G., 5,796,746, Cl. 371-21.100.

Nelson, Gregory D.: *See*—
Sievert, Otto K.; and Nelson, Gregory D., 5,796,414, Cl. 347-19.000.

Nelson Irrigation Corporation: *See*—
Perkins, Lee A., 5,794,646, Cl. 137-202.000.

Nelson, Michael Joseph: *See*—
Alberts, Joseph Richard; Drezdzon, Edward Anthony, II; Fries, Donald Merlin, deceased; Konetzke, Richard Mark; Kvitek, Thomas Theodore; Muhlebach, Michael Joseph; Nelson, Michael Joseph; Rabe, Gerald Leigh; Ribble, Brendon Frank; Roth, James Frederick; and Wittmann, Jon Mark, 5,794,269, Cl. 2-227.000.

Nelson, Philip L.: *See*—
Foster, Donald D.; and Nelson, Philip L., 5,794,821, Cl. 222-321.900.

Nelte, Sven E.: *See*—
Hargis, David E.; and Nelte, Sven E., 5,796,766, Cl. 372-36.000.

Nenadic, Anton: *See*—
LaPlante, Mark Joseph; Lombardi, Thomas Edward; Long, David Clifford; Nenadic, Anton; and Piciacchio, Alan, 5,795,217, Cl. 451-313.000.

NeoPath, Inc.: *See*—
Nelson, Alan Caril; and Lee, Shih-Jong James, 5,797,130, Cl. 705-11.000.

Neoperl, Inc.: *See*—
Luedke, Frederick L.; Hur, Ryan K.; and Yoshida, Dirk, 5,795,475, Cl. 210-257.200.

NeoRx Corporation: *See*—
Reed, Michael W., 5,795,560, Cl. 424-1.490.

Nerger, Klaus Klemens; and Saeftel, Josef, to Mannesmann Aktiengesellschaft. Apparatus for gripping and weight-different clamping of workpieces, bar guides and the like to be held or moved relative to a location. 5,795,003, Cl. 294-106.000.

Nerone, Louis R., to General Electric Company. Ballast circuit for gas discharge lamp. 5,796,214, Cl. 315-209.00R.

Nesbit, Larry Allan: *See*—
Gambino, Jeffrey Peter; Jaso, Mark Anthony; and Nesbit, Larry Allan, 5,795,826, Cl. 438-692.000.

Nestec S.A.: *See*—
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Netsu, Yoichi: *See*—
Takano, Toshiro; Netsu, Yoichi; and Akashi, Mitsumasa, 5,794,510, Cl. 91-517.000.

Neumann, Barry Richard, to Transcom Gas Technologies PTY, Ltd. Gas injector for gas fueled internal combustion engine. 5,794,860, Cl. 239-585.300.

Neuralsystems Corporation: *See*—
Asakawa, Toshifumi; Shindo, Masahiro; Yoshimizu, Toshikazu; and Ueyama, Sumiyoshi, 5,795,385, Cl. 117-104.000.

Neurex Corporation: *See*—
Amstutz, Gary Arthur; Bowersox, Stephen Scott; Gohil, Kishorchandra; Adriaenssens, Peter Isadore; and Kristipati, Ramasharma, 5,795,864, Cl. 514-12.000.

Neurocrine Biosciences, Inc.: *See*—
McCarthy, James R.; Xie, Yun Feng; Whitten, Jeffrey P.; Webb, Thomas R.; Chen, Chen; and Ramphal, John Y., 5,795,905, Cl. 514-383.000.

Neuromedica, Inc.: *See*—
Shashoua, Victor E.; Swindell, Charles S.; Webb, Nigel L.; and Bradley, Matthews O., 5,795,909, Cl. 514-449.000.

New, Bernard J., to Xilinx, Inc. Composable memory array for a programmable logic device and method for implementing same. 5,796,269, Cl. 326-40.000.

New Holland North America Inc.: *See*—
Branham, Douglas G., 5,794,805, Cl. 220-86.200.
Hurlburt, Joseph C.; and Linde, Gilbert W., 5,794,956, Cl. 280-156.000.

NEWance, Inc.: *See*—
Howard, John R.; and Machacek, Robert W., 5,795,027, Cl. 297-440.120.

Newberg, Donald G.: *See*—
LoGalbo, Robert D.; Newberg, Donald G.; and Hiben, Bradley M., 5,796,784, Cl. 375-298.000.

Newby, Charles F.; and Harding, Michael V., to Titan Corporation, The. Conditional access system. 5,796,829, Cl. 380-21.000.

Newman, Eric Lewis: *See*—
Jones, J. Wyn; Legg, Stephen Peter; and Newman, Eric Lewis, 5,796,540, Cl. 360-73.020.

Newman, Kenneth R.; Haver, Nelson A.; and Speller, David J., to CTES, L.C. Wellbore tractor and method of moving an item through a wellbore. 5,794,703, Cl. 166-381.000.

Newmoyer, Kerry; Freese, Paul R.; and Mulligan, William P., to Alcatel NA Cable Systems, Inc. Communication cable having a striated cable jacket. 5,796,046, Cl. 174-113.0AS.

Newnes Machine Ltd.: *See*—
Newnes, William R., 5,795,126, Cl. 414-796.700.

Newnes, William R., to Newnes Machine Ltd. Tilt hoist with multiple independent rotatable masts. 5,795,126, Cl. 414-796.700.

NeXstar Pharmaceuticals, Inc.: *See*—
Rabin, Ross S.; Jayasena, Sumedha D.; and Gold, Larry, 5,795,721, Cl. 435-6.000.

Ng, Kam C.: *See*—
Greener, Jehuda; and Ng, Kam C., 5,795,512, Cl. 264-40.600.

NGK Insulators, Ltd.: *See*—
Araki, Kiyoshi; and Nishioka, Masao, 5,795,670, Cl. 429-40.000.
Suzuki, Yoshihiro; Kutsuna, Eiji; Nozaki, Hiroshi; and Mori, Shigeo, 5,796,048, Cl. 174-141.00C.
Ushikoshi, Ryusuke; Tsuruta, Hideyoshi; and Fujii, Tomoyuki, 5,794,838, Cl. 228-121.000.

Nguyen, Dien M., to Nippondenso Co., Ltd. Temperature compensated wide dynamic range power detection circuitry for portable RF transmission terminals. 5,796,309, Cl. 330-289.000.

Nguyen, Hoan P.: *See*—
Chang, Win; Badger, Algernon S.; Luce, Richard H.; Lamance, David S.; Nguyen, Hoan P.; and Neighbors, Christopher A., 5,796,676, Cl. 367-20.000.

Nguyen, Julien T.: *See*—
Hsu, Mark; Le Cornec, Yann; and Nguyen, Julien T., 5,797,029, Cl. 395-825.000.

Nguyen, Nam D., to Telefonaktiebolaget LM Ericsson (pbul). Personal communications terminal having switches which independently energize a mobile telephone and a personal digital assistant. 5,797,089, Cl. 455-403.000.

Nicholson, Robert Steven. Golf stroke training apparatus. 5,795,238, Cl. 473-214.000.

Nickum, Larry A., to Gateway 2000, Inc. Rotationally actuated position sensor. 5,794,355, Cl. 33-366.000.

Nicodemus, Mark, to Helios Research Corporation. Rankine cycle boiler feed via hydrokinetic amplifier. 5,794,447, Cl. 60-654.000.

Nicola, Kirk M.: *See*—
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., 5,794,834, Cl. 227-175.200.

Niederman, Robert Raymond; and Webber, James Lloyd, to General Motors Corporation. Inflatable restraint cushion. 5,794,974, Cl. 280-743.100.

Niedermeyer, William P. Method and apparatus for making apparel with folded seams. 5,795,433, Cl. 156-479.000.

Nielsen, Erik; and Oxbøl, Arne, to KVK Agro A/S. Herbicide preparation, a process for producing it and an activating additive for application therewith. 5,795,847, Cl. 504-206.000.

Nielsen, Steven F.: *See*—
Euripides, Joanne M.; Phillips, Lessie C.; and Nielsen, Steven F., 5,795,439, Cl. 162-100.000.

Nielsen, Steven James; Chang, Yihua; Krueger, Allan James; Balzar, Tammy Jo; and Tews, Richard Roy, to Kimberly-Clark Worldwide, Inc. Paper applicator containing a compostable coating. 5,795,320, Cl. 604-12.000.

Niemann, Frederic J.; and Otto, Wolfgang K. F., to Consultex Corporation. Method and apparatus for application of fluent material to a moving substrate. 5,795,391, Cl. 118-315.000.

Niemann, Katherine D.: *See*—
Hamner, John F.; Janich, Sandra; Despain, Jeffrey L.; Niemann, Katherine D.; Sevy, Brian D.; Tran, Dzung D.; and Welch, Frank K., 5,796,951, Cl. 395-200.530.

Niemann, Ralph E. Early warning signal system. 5,796,333, Cl. 340-467.000.

Niessner, Manfred; Grund, Norbert; Heide, Wilfried; and Hartmann, Heinrich, to BASF Aktiengesellschaft. Preparation of finely divided polymer powders. 5,795,926, Cl. 523-339.000.

Nifco, Inc.: *See*—
Osada, Hiroshi; and Nakaya, Hiroyuki, 5,795,118, Cl. 411-171.000.

Nigatu, Tadesse G.: *See*—
Pocius, Alphonsus V.; and Nigatu, Tadesse G., 5,795,657, Cl. 428-516.000.
Nihon Koken Kogyo Co.: *See*—
Shingu, Fumiteru; Miyashita, Kiyotaka; Ogawa, Kouichi; Kose, Akira; and Kimura, Asa, 5,796,054, Cl. 181-167.000.
Nikolayczik, Hans, to American Standard Inc. Cartridge for sanitary fittings. 5,794,650, Cl. 137-454.200.
Nikon Corporation: *See*—
Fujiu, Takamitsu; Watanabe, Shunji; Sango, Yoshinori; and Nomura, Tatsushi, 5,796,000, Cl. 73-504.150.
Katsunuma, Atsushi, 5,796,515, Cl. 359-364.000.
Matsubara, Takashi; and Hasuda, Masanori, 5,797,055, Cl. 396-484.000.
Mizutani, Hideo, 5,796,114, Cl. 250-548.000.
Nakayama, Shigeru, 5,796,483, Cl. 356-349.000.
Ohtake, Motoyuki, 5,796,527, Cl. 359-692.000.
Oomura, Yasuhiro, 5,796,524, Cl. 359-633.000.
Oshita, Koichi, 5,796,530, Cl. 359-795.000.
Shiokama, Yoshiharu; and Yasukawa, Seiichi, 5,797,048, Cl. 396-80.000.
Suzuki, Kazuaki, 5,796,467, Cl. 355-53.000.
Yasuda, Masahiko, 5,795,687, Cl. 430-22.000.
Nimura, Mitsuhiro: *See*—
Kato, Shinichi; Nimura, Mitsuhiro; Hanasaki, Masaharu; and Nanba, Akimasa, 5,796,613, Cl. 364-449.800.
Nippon Carbon Co., Ltd.: *See*—
Sakurai, Fumiyoshi; and Nagai, Norio, 5,795,539, Cl. 266-46.000.
Nippon Gasket Co., Ltd.: *See*—
Kubouchi, Kenji; Furuta, Yutaka; and Geshi, Kazuyuki, 5,794,945, Cl. 277-593.000.
Nippon Oil Co., Ltd.: *See*—
Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; Tajima, Yoshio; and Matsuura, Kazuo, 5,795,839, Cl. 502-126.000.
Nippon Steel Corporation: *See*—
Sugaya, Fumitaka; and Sato, Yasuo, 5,796,149, Cl. 257-391.000.
Tomioka, Yugo, 5,796,140, Cl. 257-316.000.
Nippon Telegraph and Telephone Corporation: *See*—
Arakawa, Kenichi; Kakizaki, Takao; and Omyo, Shinji, 5,796,610, Cl. 364-167.010.
Furukawa, Tohru; Nomura, Yoshikazu; Furukawa, Hiroshi; Nakao, Naoki; and Tomita, Nobuo, 5,796,888, Cl. 385-22.000.
Ochiai, Keihiro; Suzuki, Hideto; and Sonehara, Noboru, 5,796,611, Cl. 364-420.000.
Saito, Kazuo; Anai, Koji; Igarashi, Keiju; Nishikawa, Takeshi; Himeno, Ryoichi; and Yoguchi, Kazuhiro, 5,796,741, Cl. 370-439.000.
Shioi, Masahiro; Makiyama, Takeshi; Hibi, Keiichi; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakamura, Osamu; Kanada, Youji; Kura, Tsuneko; and Oshima, Takashi, 5,796,436, Cl. 348-409.000.
Nippon Zeon Co., Ltd.: *See*—
Iwasaki, Yasunori, 5,795,635, Cl. 428-36.300.
Yokoyama, Tetsuo; Hiraoka, Kyoko; and Kidokoro, Hiroto, 5,795,633, Cl. 428-35.700.
Nippondenso Co., Ltd.: *See*—
Kamitani, Kiyoaki; Shichijyo, Akiya; Kusase, Shin; Mitani, Kenzo; and Ishikawa, Hiroaki, 5,796,201, Cl. 310-194.000.
Kimura, Yuji; Atsumi, Kinya; Abe, Katsunori; Matsushita, Noriyuki; Mizutani, Michiyo; and Toyama, Tetsuo, 5,794,839, Cl. 228-123.100.
Nguyen, Dien M., 5,796,309, Cl. 330-289.000.
Oki, Yasuhiro; and Hisanaga, Shigeru, 5,795,141, Cl. 418-55.300.
Nirasawa, Hitoshi; Kawachi, Takanori; Ogawa, Takashi; and Murata, Kenji, to Kabushiki Kaisha Toshiba. Fuel cell having electrolyte layer held between anode and cathode. 5,795,671, Cl. 429-41.000.
Nishi, Noriaki; Saito, Kimihiro; Matsumoto, Shuichi; and Hattori, Masato, to Sony Corporation. Optical pickup and opto-magnetic signal reproducing apparatus. 5,796,701, Cl. 369-110.000.
Nishida, Hiroto: *See*—
Ookawa, Eiichi; Nishida, Hiroto; Suzuki, Takashi; Watanabe, Hitoshi; and Sasaki, Toshiaki, 5,796,698, Cl. 369-77.200.
Nishida, Masayoshi: *See*—
Aimi, Mitsuo; and Nishida, Masayoshi, 5,796,058, Cl. 200-16.00D.
Nishida, Minoru: *See*—
Shimotani, Mitsuo; Nishida, Minoru; Okada, Akira; Satake, Toshihide; Washino, Shoichi; Okawa, Futoshi; and Terashita, Hiromi, 5,795,306, Cl. 600-558.000.
Nishide, Seiji, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Return preventing device and buckle pull-out preventing device. 5,794,978, Cl. 280-806.000.
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Nishihara, Tokihiro; Matsuda, Takashi; Uchishiba, Hidema; Ikata, Osamu; Satoh, Yoshio; and Komenou, Kazunari, to Fujitsu Limited. Surface acoustic wave device and method of producing the same. 5,796,205, Cl. 310-313.00R.
Nishii, Shinji; Komatsu, Masashi; and Ueda, Hiroshi, to Sumitomo Chemical Company Limited. Process for producing isatoic anhydrides. 5,795,984, Cl. 544-100.000.
Nishikawa, Chihiro: *See*—
Asai, Mitsuru; Kamiya, Nobuo; Ishikawa, Tomoji; and Nishikawa, Chihiro, 5,796,206, Cl. 310-317.000.
Nishikawa, Hiroshi: *See*—
Takada, Hiroyuki; Hayashi, Koichi; Aoyama, Yasutada; Chaya, Norio; and Nishikawa, Hiroshi, 5,796,913, Cl. 386-125.000.
Nishikawa, Takeshi: *See*—
Saito, Kazuo; Anai, Koji; Igarashi, Keiju; Nishikawa, Takeshi; Himeno, Ryoichi; and Yoguchi, Kazuhiro, 5,796,741, Cl. 370-439.000.
Nishimura, Hiroshi: *See*—
Matsuoka, Fumio; Murase, Shigemitsu; Nagaoka, Koichi; and Nishimura, Hiroshi, 5,795,651, Cl. 428-364.000.
Nishimura, Tetsuo: *See*—
Akao, Mutsuo; Nishimura, Tetsuo; and Sashihara, Kenji, 5,794,777, Cl. 206-409.000.
Nishio, Mikio: *See*—
Endo, Masayuki; Kawaguchi, Akemi; Nishio, Mikio; and Hashimoto, Shin, 5,795,828, Cl. 438-678.000.
Nishioka, Masao: *See*—
Araki, Kiyoshi; and Nishioka, Masao, 5,795,670, Cl. 429-40.000.
Nishiya, Yoshiaki: *See*—
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,795,766, Cl. 435-202.000.
Nishiyama, Haruo: *See*—
Sakai, Takashi; Nishiyama, Haruo; and Matsuyama, Kazuhiro, 5,796,103, Cl. 250-326.000.
Nishiyama, Toshihiko: *See*—
Ozawa, Godo; Fukushima, Hidetada; Nishiyama, Toshihiko; Hukui, Akihumi; and Shinohara, Masaki, 5,795,137, Cl. 417-362.000.
Nishizawa, Satoru: *See*—
Miyagawa, Masazumi; Nishizawa, Satoru; and Sano, Takayuki, 5,794,994, Cl. 292-336.300.
Nissan Motor Co., Ltd.: *See*—
Arakawa, Takashi; and Shiraishi, Kimio, 5,795,427, Cl. 156-256.000.
Kasajima, Kimihisa; and Iwasawa, Seiji, 5,794,741, Cl. 188-321.110.
Miyagawa, Masazumi; Nishizawa, Satoru; and Sano, Takayuki, 5,794,994, Cl. 292-336.300.
Onuma, Yoshiki, 5,796,178, Cl. 307-10.200.
Nissha Printing Co., Ltd.: *See*—
Nakamura, Yuzuo; Kyomen, Masayuki; Asada, Soichiro; Matsunami, Toshiyuki; Suzuki, Hiroyuki; and Kawai, Satoru, 5,795,527, Cl. 264-267.000.
Nisshinbo Industries, Inc.: *See*—
Saito, Kazuo; and Hagiwara, Atsushi, 5,796,574, Cl. 361-502.000.
Niswanger, Raymon A., to Blaylock Industries, Inc. Anti-theft device for trailer. 5,794,961, Cl. 280-507.000.
Nitsche, Michael: *See*—
Ansmann, Achim; Kawa, Rolf; Nitsche, Michael; and Gondek, Helga, 5,795,978, Cl. 536-120.000.
Nitz, Erwin: *See*—
Frank, Peter; Kraft, Klaus; Nitz, Erwin; and Aspeby, Magnus, 5,795,116, Cl. 411-6.000.
Niu, Wen-Hua: *See*—
Wachman, Elliot S.; Farkas, Daniel L.; and Niu, Wen-Hua, 5,796,512, Cl. 359-308.000.
Nivi, Hossein: *See*—
Goenka, Lakhi Nandlal; Baker, Jay DeAvis; and Nivi, Hossein, 5,794,859, Cl. 239-555.000.
NKK Corporation: *See*—
Yoshimi, Naoto; Kubota, Takahiro; Ishiyama, Takashi; Yamashita, Masaaki; and Haruta, Yasuhiko, 5,795,660, Cl. 428-626.000.
Noack, Horst Gunter: *See*—
Düchting, Wolfgang; and Noack, Horst Gunter, 5,795,514, Cl. 264-71.000.
Noack, Raymond James. Ice and liquid detector. 5,796,106, Cl. 250-341.800.
Nobel, Gary M., to Hewlett-Packard Company. Compliant interconnect assembly for mounting removable print cartridges in a carriage. 5,796,417, Cl. 347-50.000.
Nobileau, Philippe C. Method for casing a wellbore. 5,794,702, Cl. 166-380.000.
Nobuhiro Narita: *See*—
Narita, Nobuhiro; Sawaki, Masayoshi; Mikasa, Keiichi; and Kita, Eiji, 5,795,871, Cl. 514-29.000.
Noda, Hideki: *See*—
Naganuma, Norihisa; and Noda, Hideki, 5,796,887, Cl. 385-18.000.
Noda, Hidenobu; and Suda, Yasuyuki. Digital servo circuit generating mirror detecting signal. 5,796,685, Cl. 369-44.280.
NOF Corporation: *See*—
Itoh, Masayasu; Fukuda, Shigeo; Kawakami, Yoshihisa; Matsubara, Yoshiro; Kawamura, Yasushi; Masuoka, Shigeru; and Honda, Yoshihiro, 5,795,374, Cl. 106-16.000.
Noguchi, Masahiro: *See*—
Fujiwara, Yoshitsugu; Okuse, Hirotsugu; and Noguchi, Masahiro, 5,795,080, Cl. 384-580.000.
Nohr, Matthias; and Mehren, Herbert, to Daimler-Benz AG. Motor vehicle impact passenger protection arrangement. 5,794,975, Cl. 280-753.000.
Nojima, Toshio: *See*—
Kumagai, Ken; Nojima, Toshio; and Narahashi, Shoichi, 5,796,307, Cl. 330-149.000.
Nokia Mobile Phones Ltd.: *See*—
Czaja, Stash, 5,796,757, Cl. 371-46.000.
Hallikainen, Jyrki S.; Kattilakoski, Matti H. M.; and Korkeakangas, Pekka H. M., 5,797,102, Cl. 455-557.000.
Nokia Telecommunications Oy: *See*—

Aitoniemi, Aarto, 5,796,933, Cl. 395-180.000.
Kainulainen, Jukka, 5,796,793, Cl. 375-356.000.

Nomura, Haruhiko: *See—*
Hasegawa, Makoto; Sanda, Atsuo; and Nomura, Haruhiko, 5,795,399, Cl. 134-1.300.

Nomura, Hiroshi; Azegami, Kazuyoshi; and Sasaki, Takamitsu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Method for producing molding die for synthetic resin lens barrel having a helicoid and for producing the lens barrel. 5,796,062, Cl. 219-69.110.

Nomura, Masahide; and Igarashi, Hitoshi, to NEC Corporation. Stress mitigating method for video display terminal. 5,796,445, Cl. 348-607.000.

Nomura, Osamu: *See—*
Morita, Kozo; Kinoshita, Shigeaki; Tame, Katsuyuki; and Nomura, Osamu, 5,794,766, Cl. 200-569.000.

Nomura, Tatsushi: *See—*
Fujiu, Takamitsu; Watanabe, Shunji; Sango, Yoshinori; and Nomura, Tatsushi, 5,796,000, Cl. 73-504.150.

Nomura, Yoshikazu: *See—*
Furukawa, Tohru; Nomura, Yoshikazu; Furukawa, Hiroshi; Nakao, Naoki; and Tomita, Nobuo, 5,796,888, Cl. 385-22.000.

Nonami, Toru; Takahashi, Chihiro; and Sano, Tatsuji, to TDK Corporation. Glass material, living tissue replacement, and orthodontic part. 5,795,151, Cl. 433-8.000.

Nonomura, Itaru; Hashimoto, Shinichi; Kimura, Yuuji; Yamada, Takahiro; and Tanaka, Kazuaki, to Hitachi, Ltd. Image coding system with adaptive spatial frequency and quantization step and method thereof. 5,796,435, Cl. 348-405.000.

Nookala, Narasimha R.: *See—*
Abudayyeh, Jihad Y.; Dikshit, Ashutosh S.; Bezzant, Daniel G.; Smith, Stephen A.; Nookala, Narasimha R.; and Vaidyanathan, Arunachalam, 5,796,981, Cl. 395-500.000.

Norand Corporation: *See—*
Beard, Paul, 5,796,359, Cl. 341-143.000.
Kelly, Stephen J., 5,795,664, Cl. 429-7.000.

Noranda Inc.: *See—*
Spring, Robert A., 5,796,606, Cl. 364-138.000.

Nordam Group, Inc., The: *See—*
Peters, Fred H.; and Jannetta, Thomas J., 5,794,433, Cl. 60-226.200.

Nordiko, Ltd.: *See—*
Tan, Swie-In; and Pearson, David Ian Charles, 5,795,451, Cl. 204-298.200.

Nordqvist, Ulf: *See—*
Jonsson, Gumnar; and Nordqvist, Ulf, 5,795,079, Cl. 384-547.000.

Noreikat, Karl-Ernst: *See—*
Lorenz, Helmut; Noreikat, Karl-Ernst; Klaiber, Thomas; Fleck, Wolfram; Sonntag, Josef; Hornburg, Gerald; and Gaulhofer, Andreas, 5,794,732, Cl. 180-65.300.

Noren, Doug: *See—*
Noren, Lars; and Noren, Doug, 5,794,634, Cl. 134-57.00D.

Noren, Lars; and Noren, Doug, to Premark FEG L.L.C. Warewasher tank heating system and controls therefor. 5,794,634, Cl. 134-57.00D.

Noritsu Koki Co., Ltd.: *See—*
Arimoto, Keigo; Kojima, Masayuki; Yamamoto, Takuya; and Negoro, Hisashi, 5,796,465, Cl. 355-27.000.
Kinoshita, Togo; and Matsumoto, Ryosuke, 5,797,057, Cl. 396-578.000.
Narukami, Shinji, 5,797,058, Cl. 396-615.000.
Shiba, Teruo; Oishi, Michio; Ishikawa, Masazumi; and Tanibata, Tohru, 5,796,907, Cl. 385-133.000.
Shimamura, Yasunobu, 5,794,872, Cl. 242-332.200.

Norman, Gerould W., to Linvatec Corporation. Rotary tool head. 5,794,715, Cl. 173-104.000.

Norris, Joseph P., to General Signal Corporation. Time division switching system. 5,796,733, Cl. 370-366.000.

North Carolina State University: *See—*
Clapp, Timothy G.; Rust, Jon P.; Farrington, Carlos; and Bowen, Dale Thomas, 5,796,220, Cl. 318-51.000.

North Central Plastics: *See—*
Langlie, Ronald H., 5,794,870, Cl. 242-538.200.

Northern Telecom Limited: *See—*
Gale, Geoffrey N.; Glover, Richard J.; and Lischynsky, Steve J., 5,796,583, Cl. 361-704.000.
Katchmar, Roman, 5,796,582, Cl. 361-704.000.
Marcantonio, Gabriel, 5,796,170, Cl. 257-786.000.
McClennon, Scott; Ding, Heping; and Dal Farra, David, 5,796,818, Cl. 379-390.000.

Northrop Grumman Corporation: *See—*
Atmur, Steven Donald; and Strasser, Thomas Edward, 5,794,943, Cl. 277-441.000.
Diller, Joseph B.; and Miller, Nicholas F., Jr., 5,794,893, Cl. 246-213.000.

Northwestern University: *See—*
Gaber, Richard F., 5,795,770, Cl. 435-254.200.

Noseyama, Hajime, to NEC Corporation. Apparatus for logical simulation and method for producing logical circuit data. 5,796,622, Cl. 364-489.000.

Nouri, Ahmad: *See—*
Scott, Craig M.; Wang, Li Tung; Bennett, Arthur T.; and Nouri, Ahmad, 5,796,738, Cl. 370-401.000.

Novartis AG: *See—*
Prikoszovich, Walter, 5,795,593, Cl. 424-486.000.

Novartis Corporation: *See—*
Wang, Elizabeth A., 5,795,568, Cl. 424-85.100.

Novavax, Inc.: *See—*
Wright, D. Craig, 5,795,582, Cl. 424-400.000.

Novellus Systems, Inc.: *See—*
Hancock, Shawn Diane, 5,795,824, Cl. 438-656.000.

Novik, Matveeevich Anatoly: *See—*
Suslov, Eugene Ivanovich; Galakhin, Konstantin Alexandrovich; Vladimirov, Vitaly Alexandrovich; and Novik, Matveeevich Anatoly, 5,795,785, Cl. 436-64.000.

Novis, Scott R.: *See—*
Chiu, Scott; and Novis, Scott R., 5,796,391, Cl. 345-204.000.

Novo Nordisk A/S: *See—*
Andersen, Knud Erik; Olsen, Uffe Bang; Petersen, Hans; Grønvald, Frederik Christian; Sonnewald, Ursula; Jørgensen, Tine Krogh; and Andersen, Henrik Sune, 5,795,888, Cl. 514-225.200.
Berka, Randy Michael; Brown, Stephen H.; Xu, Feng; Schneider, Palle; Oxenbøll, Karen M.; and Aaslyng, Dorrit A., 5,795,760, Cl. 435-189.000.
Christgau, Stephan; Kofod, Lene Venke; Andersen, Lene Nonboe; Kauppinen, Sakari; Heldt-Hansen, Hans Peter; and Dalboege, Henrik, 5,795,764, Cl. 435-200.000.
Kjeldsen, Thomas Børglum; and Vad, Knud, 5,795,746, Cl. 435-69.900.
Schneider, Palle; and Pedersen, Anders Hjelholt, 5,795,855, Cl. 510-376.000.

Novo Nordisk Biotech, Inc.: *See—*
Berka, Randy Michael; Brown, Stephen H.; Xu, Feng; Schneider, Palle; Oxenbøll, Karen M.; and Aaslyng, Dorrit A., 5,795,760, Cl. 435-189.000.

Nowak, Hans-Georg; Quante, Michael; Wefers, Frank; and Flamm, Franz-Josef, to W. Schlafhorst AG & Co. Voltage-converting circuit for the power supply of an electrical consumer of high output, particularly a bobbin winding machine. 5,796,598, Cl. 363-37.000.

Nozaki, Hiroshi: *See—*
Suzuki, Yoshihiro; Kutsuna, Eiji; Nozaki, Hiroshi; and Mori, Shigeo, 5,796,048, Cl. 174-141.00C.

Nozawa, Fumie: *See—*
Harada, Takamasa; Yamaguchi, Hidemasa; Nozawa, Fumie; Ubukata, Masami; and Itoh, Haruhiko, 5,795,629, Cl. 428-1.000.

Nozawa, Ryoei: *See—*
Yoshizawa, Seiichi; Takegawa, Yoko; Sugiyama, Akira; Suzuki, Motoi; and Nozawa, Ryoei, 5,797,059, Cl. 396-626.000.

NSK Ltd.: *See—*
Chikaraishi, Kazuo; and Satoh, Kouichi, 5,796,014, Cl. 73-862.331.
Morizane, Kenichi; and Ono, Katsuyasu, 5,794,876, Cl. 242-374.000.
Ono, Katsuyasu; Matsuki, Masuo; and Hirase, Satoshi, 5,794,877, Cl. 242-379.100.

NTT Mobile Communications Network Inc.: *See—*
Kumagai, Ken; Nojima, Toshio; and Narahashi, Shoichi, 5,796,307, Cl. 330-149.000.

Nudd, Hugh R.: *See—*
Jobin, Michael J.; Grigoletti, Randall L.; Gentile, James R.; Nudd, Hugh R.; and Williamson, John, 5,794,897, Cl. 248-74.400.

Nueva AG: *See—*
Fischer, Hans, 5,795,515, Cl. 264-82.000.

Nukada, Hidemi: *See—*
Takegawa, Ichiro; Nukada, Hidemi; Yamamoto, Hiroshi; Goshima, Koji; and Kimura, Takaaki, 5,795,690, Cl. 430-58.000.

Nukui, Tadashi: *See—*
Tanabe, Ken; and Nukui, Tadashi, 5,796,301, Cl. 330-9.000.

Numao, Yosuke: *See—*
Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; Tajima, Yoshio; and Matsuura, Kazuo, 5,795,839, Cl. 502-126.000.

Numazu, Hiroko: *See—*
Serikawa, Mitsuhiko; Tagami, Ryou; Kawamura, Akihisa; Matsumoto, Masaharu; Oda, Mikio; and Numazu, Hiroko, 5,796,845, Cl. 381-18.000.

Nunn, Kenneth Lawrence; and Wilson, Robert Michael, to Moss Products Pty Ltd. Hygrostat and system. 5,794,848, Cl. 239-63.000.

Nurse, Harry L., Jr. Multistage filter device including a housing with removable sidewalls having a filtering capacity. 5,795,472, Cl. 210-232.000.

Nussbaum, Howard S.; Brovko, Oleg; and Dewolf, Douglas G., to Raytheon Company. Adaptive signal processor for non-stationary environments and method. 5,796,779, Cl. 375-267.000.

Nycomed Imaging AS: *See—*
Klaveness, Jo; Redford, Keith; Rongved, Pål; Solberg, Jan; Strande, Per; and Wiggen, Unni Nordby, 5,795,562, Cl. 424-9.520.

Nyilas, Charles P.; Campen, Clifford H., Jr.; and Kujawski, Joseph M., to Westinghouse Electric Corp. Sub-sea pumping system and an associated method including pressure compensating arrangement for cooling and lubricating fluid. 5,795,135, Cl. 417-53.000.

Nylund, Erling: *See—*
Olaussen, Johan; and Nylund, Erling, 5,794,291, Cl. 14-69.500.

O. Ames Co.: *See—*
Spear, Kenneth J.; Brooker, Steven F.; Planthaber, Rudy F.; and Bennett, Eric D., 5,794,649, Cl. 137-355.270.

O.I. Corporation: *See—*
Wright, Lowell; Abeel, Scott M.; Rawls, Nathan C.; and Snelling, Ronald D., 5,795,368, Cl. 95-82.000.

Obata, Yuji: *See—*

Hirayama, Ryoichi; Tsukida, Takahiro; Yamamoto, Minoru; Ikeda, Shoji; Sakamoto, Fumio; Obata, Yuji; and Matsuo, Konomi, 5,795,891, Cl. 514-238.200.

Oberg, Gordon D. Safety check valve for fuel delivery system. 5,794,657, Cl. 137-543.190.

Oberhauser, Charles J.: *See*—
Quinn, Hubert M.; Menapace, Rebecca A.; and Oberhauser, Charles J., 5,795,469, Cl. 210-198.200.

Oberländer, Klaus; Brand, Norbert; and Belzner, Winfried, to Degussa Aktiengesellschaft. Fireproof transparent pane panel. 5,794,403, Cl. 52-786.110.

Oberlin, Steven M.: *See*—
Birrittella, Mark S.; Kessler, Richard E.; Oberlin, Steven M.; Passint, Randal S.; and Thorson, Greg, 5,797,035, Cl. 395-855.000.

Obitts, Shane: *See*—
Richey, Joseph B.; and Obitts, Shane, 5,794,638, Cl. 135-65.000.

Object Licensing Corporation: *See*—
Orton, Debra L.; and Howard, Maire Lee, 5,796,969, Cl. 395-343.000.

O'Brien, Peter R.; and Wiley, Richard Paul, to Motorola, Inc. Method and apparatus for incorporating a miller compensation for modeling electrical circuits. 5,796,985, Cl. 395-500.000.

O'Brien, Rita M., to Advanced Micro Devices, Inc. Heuristic bus access arbiter. 5,796,961, Cl. 395-287.000.

O'Callaghan, Dennis J., to Research Corporation Technologies, Inc. Vaccine against equine herpesvirus type 1. 5,795,578, Cl. 424-229.100.

Oceaneering International, Inc.: *See*—
Cunningham, Michael Thomas; Rosero, Marcello; Buck, Jon; and Lugo, Mario R., 5,794,701, Cl. 166-341.000.

Ochiai, Keihiro; Suzuki, Hideto; and Sonehara, Noboru, to Nippon Telegraph and Telephone Corporation. Weather forecast apparatus and method based on recognition of echo patterns of radar images. 5,796,611, Cl. 364-420.000.

Ochii, Kiyofumi, to Kabushiki Kaisha Toshiba. Semiconductor memory device having capacitor of thin film transistor structure. 5,796,137, Cl. 257-306.000.

O'Connor, Arthur Bruce: *See*—
Rakuljic, George Anthony; Leyva, Victor; Yariv, Amnon; Sayano, Koichi; O'Connor, Arthur Bruce; Tyler, Charles E.; Mao, Xiaoping; and Miller, Harold Everett, Jr., 5,796,096, Cl. 250-226.000.

Oda, Hideyuki; Goto, Kenji; Murakami, Nobuaki; Tashima, Kazuchika; and Tamura, Hiroki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Fuel injection control system for in-cylinder injection internal combustion engine. 5,794,586, Cl. 123-305.000.

Oda, Mikio: *See*—
Serikawa, Mitsuhiko; Tagami, Ryou; Kawamura, Akihisa; Matsumoto, Masaharu; Oda, Mikio; and Numazu, Hiroko, 5,796,845, Cl. 381-18.000.

Oda, Shigeo; Matsui, Kazuharu; Kanayama, Ryoji; Mori, Kuniyasu; Sugimoto, Kazuo; and Kaneto, Kimikazu, to Sintokogio, Ltd. Molding machine. 5,794,681, Cl. 164-195.000.

Oda, Tetsuhiro: *See*—
Okamoto, Hideo; Uesugi, Toshiharu; Iwasaki, Atsushi; and Oda, Tetsuhiro, 5,795,383, Cl. 117-30.000.

Oda, Toshio: *See*—
Iwanaga, Sadaaki; Muta, Tatsushi; Seki, Noriaki; and Oda, Toshio, 5,795,962, Cl. 530-350.000.

Oddoart, Gilbert: *See*—
Suppa, Vito; Bocquillon, Pascal; Loubieres, Bernard; and Oddoart, Gilbert, 5,795,203, Cl. 441-1.000.

Odom, B. Keith, to National Instruments Corporation. System and method for converting VXI bus cycles to PCI burst cycles. 5,796,963, Cl. 395-308.000.

Oefner, Peter Josef; and Underhill, Peter Anton, to Leland Stanford Junior University, The Board of Trustees of the. Detection of nucleic acid heteroduplex molecules by denaturing high-performance liquid chromatography and methods for comparative sequencing. 5,795,976, Cl. 536-25.400.

Oehr, Klaus H.: *See*—
Al-Jiboory, Muhammed; Chow, Norman; Mui, Cliff Low Dor; Oehr, Klaus H.; and Stachowiak, Remy, 5,795,460, Cl. 205-705.000.

Oelfke, John B.: *See*—
Lott, Stephen E.; Gardner, Timothy J.; McLaughlin, Linda I.; Oelfke, John B.; and Matlock, Charlene A., 5,795,553, Cl. 423-213.200.

Oelsch, Jürgen: *See*—
Hans, Helmut; and Oelsch, Jürgen, 5,796,548, Cl. 360-99.080.

Oettel, Michael: *See*—
Hesch, Rolf-Dieter; Oettel, Michael; Droescher, Peter; Schwarz, Sigfrid; Menzenbach, Bernd; Römer, Wolfgang; Kaufmann, Günter; and Schröder, Jens, 5,795,883, Cl. 514-172.000.

Ogasawara, Makoto, to Fuji Electric Co., Ltd. Circuit breaker. 5,794,763, Cl. 200-401.000.

Ogata, Kazuyuki: *See*—
Ouchi, Genjiro; Akinaga, Nobuhiko; and Ogata, Kazuyuki, 5,796,577, Cl. 361-68.100.

Ogawa, Hiroaki: *See*—
Minamino, Katsuki; Watari, Masao; Tanaka, Miyuki; Ishii, Kazuo; Kato, Yasuhiko; Ogawa, Hiroaki; Omote, Masanori; Watanabe, Kazuo; and Honda, Hitoshi, 5,796,921, Cl. 395-22.000.

Ogawa, Hiroki: *See*—
Hayami, Yuka; Suzuki, Miki T.; Ogawa, Hiroki; Fujimura, Shuzo; Mori, Haruhisa; and Okui, Yoshiko, 5,795,494, Cl. 216-83.000.

Ogawa, Kouichi: *See*—
Shingu, Fumiteru; Miyashita, Kiyotaka; Ogawa, Kouichi; Kose, Akira; and Kimura, Asa, 5,796,054, Cl. 181-167.000.

Ogawa, Takashi: *See*—
Nirasawa, Hitoshi; Kawachi, Takanori; Ogawa, Takashi; and Murata, Kenji, 5,795,671, Cl. 429-41.000.

Ogura, Eiji: *See*—
Sekine, Takashi; Ogura, Eiji; Ota, Shinichi; and Ishikawa, Kazuyuki, 5,795,916, Cl. 514-567.000.

Ohara, Yoshikazu: *See*—
Miyata, Masami; and Ohara, Yoshikazu, 5,796,495, Cl. 358-471.000.

Ohashi, Tetsuo: *See*—
Nakayama, Tomoko; Tada, Jun; Fukushima, Shigeru; and Ohashi, Tetsuo, 5,795,717, Cl. 435-6.000.

Ohashi, Yukio: *See*—
Suzuki, Yasuhiro; and Ohashi, Yukio, 5,796,041, Cl. 174-92.000.

Ohgizawa, Masaaki: *See*—
Tsutsui, Toshiyuki; Yoshitsugu, Ken; Ohgizawa, Masaaki; Matsumoto, Tetsuhiro; and Imuta, Junichi, 5,795,838, Cl. 502-103.000.

OHI Seisakusho Co., Ltd.: *See*—
Miyagawa, Masazumi; Nishizawa, Satoru; and Sano, Takayuki, 5,794,994, Cl. 292-336.300.

Ohkawa, Hideki; Matsubara, Motonari; Yoshimaru, Tomohisa; Yoshida, Nobuhisa; and Koyahara, Satoru, to Kabushiki Kaisha Toshiba. Optical recording medium and recording system. 5,796,708, Cl. 369-283.000.

Ohkita, Masao; and Sekiya, Harutaka, to Alps Electric Co., Ltd. Disk cartridge and drive mechanism thereof. 5,796,547, Cl. 360-99.040.

Ohmori, Hiroyuki: *See*—
Shouji, Mitsuharu; Ohmori, Hiroyuki; Sugiyama, Yasunari; and Yamamoto, Tetsuya, 5,796,564, Cl. 360-123.000.

Ohmura, Yusuke: *See*—
Ohtaka, Keiji; and Ohmura, Yusuke, 5,797,049, Cl. 396-122.000.

Ohmuro, Katufumi: *See*—
Koike, Yoshio; Kamada, Tsuyoshi; Tsuyuki, Syun; Furukawa, Noriaki; Masuda, Shigeru; Murata, Satoshi; Hasegawa, Tadashi; Sasabayashi, Takashi; Tanuma, Seiji; Mayama, Takatoshi; and Ohmuro, Katufumi, 5,796,458, Cl. 349-126.000.

Ohno, Hiroyuki: *See*—
Nakae, Takahiko; Kato, Masashi; Fujita, Takehito; Kawabata, Kazuhito; and Ohno, Hiroyuki, 5,795,890, Cl. 514-235.500.

Ohora, Yasunori: *See*—
Yamada, Masayuki; Ohora, Yasunori; and Komori, Yasuhiro, 5,797,116, Cl. 704-10.000.

Øhrwald, Niels: *See*—
Kushner, Philip Marshall; Rasmussen, Kenn; and Øhrwald, Niels, 5,795,210, Cl. 446-128.000.

Ohsaki, Takahisa: *See*—
Takami, Norio; Ohsaki, Takahisa; Tamaki, Toshio; Nakajima, Hideyuki; and Katsuta, Yasushi, 5,795,678, Cl. 429-218.000.

Ohshiba, Seiji: *See*—
Nakajima, Toshiyuki; Okauchi, Akira; Hujino, Setuo; Taya, Hirokazu; Shimoda, Tomoki; and Ohshiba, Seiji, 5,794,499, Cl. 82-1.110.

Ohta, Akiho: *See*—
Akutsu, Masao; and Ohta, Akiho, 5,795,534, Cl. 264-532.000.

Ohta, Mutsuro: *See*—
Aoyagi, Akihiko; Ohta, Mutsuro; Hashi, Nobuyuki; and Tsujino, Hitoshi, 5,796,555, Cl. 360-104.000.

Ohta, Tameharu: *See*—
Ariyosi, Hiromi; and Ohta, Tameharu, 5,796,310, Cl. 330-307.000.

Ohta, Yasuhiro: *See*—
Tsukada, Yoji; Ohta, Yasuhiro; and Maru, Isafumi, 5,795,767, Cl. 435-233.000.

Ohtaka, Keiji; and Ohmura, Yusuke, to Canon Kabushiki Kaisha. Focus detection device for objective lens. 5,797,049, Cl. 396-122.000.

Ohtake, Motoyuki, to Nikon Corporation. Small zoom optical system. 5,796,527, Cl. 359-692.000.

Ohtani, Hisashi: *See*—
Teramoto, Satoshi; Takenouchi, Akira; and Ohtani, Hisashi, 5,795,816, Cl. 438-479.000.

Ohtsubo, Hiroyasu: *See*—
Katoh, Minoru; Itoh, Kenji; and Ohtsubo, Hiroyasu, 5,796,430, Cl. 348-246.000.

Ohtsuka, Masuhiro; Kono, Hiromi; and Adachi, Tsuneo, to Zexel Corporation. Method and apparatus for high-speed driving of electromagnetic load. 5,796,223, Cl. 318-126.000.

Ohuchi, Hirofumi: *See*—
Yonezawa, Shiro; and Ohuchi, Hirofumi, 5,794,585, Cl. 123-299.000.

Oi, Eisetsu: *See*—
Arai, Satoshi; Ito, Shinichi; Sakamoto, Hiroshi; Oi, Eisetsu; and Yotsumoto, Hiroki, 5,794,786, Cl. 209-29.000.

Oishi, Michio: *See*—
Shiba, Teruo; Oishi, Michio; Ishikawa, Masazumi; and Tanibata, Tohru, 5,796,907, Cl. 385-133.000.

Oka, Hideyuki: *See*—
Ishida, Takashi; Yoshida, Yasuhiro; and Oka, Hideyuki, 5,796,949, Cl. 395-200.470.

Okabe, Masami: *See*—
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,795,968, Cl. 530-402.000.

Okabe, Toshiaki, to Yazaki Corporation. Female terminal for waterproof connector and resin-filled waterproof connector. 5,795,170, Cl. 439-252.000.

Okada, Akira: *See*—
Shimotani, Mitsuo; Nishida, Minoru; Okada, Akira; Satake, Toshihide; Washino, Shoichi; Okawa, Futoshi; and Terashita, Hiromi, 5,795,306, Cl. 600-558.000.

Okada, Yoshiyuki; and Satoh, Noriko, to Fujitsu Limited. Data compressing apparatus, data restoring apparatus and data compressing/restoring system. 5,796,356, Cl. 341-51.000.

Okado, Kenji; Takiguchi, Tsuyoshi; and Ida, Tetsuya, to Canon Kabushiki Kaisha. Carrier for electrophotography, two component-type developer and image forming method. 5,795,693, Cl. 430-106.600.

Okamoto, Hideo; Uesugi, Toshiharu; Iwasaki, Atsushi; and Oda, Tetsuhiro, to Shin-Etsu Handotai Co., Ltd. Method and mechanism for lifting gas flow-guide cylinder of a crystal pulling apparatus. 5,795,383, Cl. 117-30.000.

Okamoto, Osamu: *See*—
Nakaya, Teruomi; Okamoto, Osamu; Kuwano, Naoaki; Suzuki, Seizo; Sasa, Shuichi; Nakayasu, Hidehiko; and Sagisaka, Masakazu, 5,797,105, Cl. 701-7.000.

Okamoto, Yuji, to Sharp Kabushiki Kaisha. Copying machine having a mechanism for feeding recording sheets in synchronization with the image reading timing. 5,797,080, Cl. 399-391.000.

Okamura, Yuichi, to Kabushiki Kaisha Kikai Seisakusho. Method of making a printing plate for newspaper printing. 5,795,689, Cl. 430-49.000.

Okano, Tadashi: *See*—
Saito, Masahiko; Miyasaka, Toru; Oonishi, Kazushige; Takeya, Shoji; Terashima, Isamu; Akasaki, Tetsuro; and Okano, Tadashi, 5,797,075, Cl. 399-284.000.

Okauchi, Akira: *See*—
Nakajima, Toshiyuki; Okauchi, Akira; Hujino, Setuo; Taya, Hirokazu; Shimoda, Tomoki; and Ohshiba, Seiji, 5,794,499, Cl. 82-1.110.

Okawa, Futoshi: *See*—
Shimotani, Mitsuo; Nishida, Minoru; Okada, Akira; Satake, Toshihide; Washino, Shoichi; Okawa, Futoshi; and Terashita, Hiromi, 5,795,306, Cl. 600-558.000.

Oki Electric Industry Co., Ltd.: *See*—
Oshita, Shun, 5,796,441, Cl. 348-476.000.

Oki, Yasuhiro; and Hisanaga, Shigeru, to Nippondenso, Co., Ltd; and Kabushiki Kaisha. Scroll type compressor having anti-rotation pin members. 5,795,141, Cl. 418-55.300.

Oklahoma Gas & Electric Company: *See*—
Anderson, Dwight, 5,794,495, Cl. 81-53.100.

Oksala, Olli: *See*—
Lehmussaari, Kari; Vartiainen, Eija; Reunamaki, Timo; Oksala, Olli; Alaranta, Sakari; and Pohjala, Esko, 5,795,913, Cl. 514-459.000.

Okui, Yoshiko: *See*—
Hayami, Yuka; Suzuki, Miki T.; Ogawa, Hiroki; Fujimura, Shuzo; Mori, Haruhisa; and Okui, Yoshiko, 5,795,494, Cl. 216-83.000.

Okuma, Akira: *See*—
Takano, Shigeyuki; Okuma, Akira; and Suzuki, Yasuhito, 5,794,869, Cl. 242-331.500.

Okuma Corporation: *See*—
Saruwatari, Koji; and Shiraishi, Koji, 5,795,278, Cl. 483-4.000.
Senda, Harumitsu, 5,795,112, Cl. 409-131.000.

Okumura, Haruhiko; Fujiwara, Hisao; Itoh, Goh; and Kinno, Akira, to Kabushiki Kaisha Toshiba. Liquid crystal display having multiple liquid crystal layers per pixel in which electrode pairs are driven at different phases or float. 5,796,447, Cl. 349-33.000.

Okumura, Yoshihiko: *See*—
Ito, Koichi; Okumura, Yoshihiko; and Inoue, Yoshimitsu, 5,794,845, Cl. 237-12.30B.

Okuno, Ryuhei, to Hozan Tool Industrial Co., Ltd. Electric soldering iron with metal pipe in grip to dissipate heat. 5,796,072, Cl. 219-229.000.

Okuse, Hirotsugu: *See*—
Fujiwara, Yoshitsugu; Okuse, Hirotsugu; and Noguchi, Masahiro, 5,795,080, Cl. 384-580.000.

Olaussen, Johan; and Nylund, Erling. Ramp. 5,794,291, Cl. 14-69.500.

Old, Lloyd J.: *See*—
Wallace, T. Paul; Harris, William J.; Carr, Frank J.; Old, Lloyd J.; Welt, Sydney; and Kitamura, Kunio, 5,795,961, Cl. 530-350.000.

Oliveri, Paul S.; and Messina, Camilo P. Structural covering. 5,794,390, Cl. 52-177.000.

Olm, Orville: *See*—
Shabbits, Gordon; and Olm, Orville, 5,794,820, Cl. 222-307.000.

Olofsson, Göran, to Bofors AB. Mine. 5,796,030, Cl. 102-424.000.

O'Loughlin, John P.; and Hocking, James R., to TRW Vehicle Safety Systems Inc. Dual stage air bag inflator. 5,794,973, Cl. 280-737.000.

Olsaker, Oleif; Ferentinos, James T.; and Schultz, Dale A., to Sundstrand Corporation. Encapsulated rotary screw air compressor. 5,795,136, Cl. 417-295.000.

Olsen, Robb Eric: *See*—
Lavash, Bruce Wiliam; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, 5,795,349, Cl. 604-387.000.

Olsen, Uffe Bang: *See*—
Andersen, Knud Erik; Olsen, Uffe Bang; Petersen, Hans; Grønvald, Frederik Christian; Sonnewald, Ursula; Jørgensen, Tine Krogh; and Andersen, Henrik Sune, 5,795,888, Cl. 514-225.200.

Olson, James M.: *See*—
Tapscott, Stephen J.; and Olson, James M., 5,795,723, Cl. 435-6.000.

Olson, Lorin: *See*—
Gockel, Thomas R.; Olson, Lorin; Ryle, Lynn; and Whitelaw, Brett A., 5,794,299, Cl. 15-77.000.

Olson, Scott B.: *See*—
Polk, Louis F., III; Easley, James B.; Luedke, Adam L.; and Olson, Scott B., 5,794,362, Cl. 36-97.000.

Olsovsky, Joseph C.: *See*—
Wen, Xin; and Olsovsky, Joseph C., 5,795,088, Cl. 400-662.000.

Olsson, Lars, to Saab-Scania Combitech Aktiebolag. Device for the registration of vehicle fees. 5,796,084, Cl. 235-384.000.

Olympus Optical Co., Ltd.: *See*—
Ando, Hiroyuki; Suzuki, Tatsuya; and Muroi, Takashi, 5,797,047, Cl. 396-349.000.
Kato, Shigeru, 5,796,518, Cl. 359-432.000.
Mihara, Shinichi, 5,796,528, Cl. 359-753.000.
Sakano, Hiromichi; and Saito, Shouichi, 5,796,193, Cl. 310-67.00R.

O'Mahony, Sean Patrick. Holding device. 5,794,312, Cl. 24-3.300.

Omega Electronics Inc.: *See*—
Eftechiou, Vakis, 5,796,789, Cl. 379-35.000.

Omnipoint Corporation: *See*—
Smith, Douglas G.; Dixon, Robert C.; and Vanderpool, Jeffrey S., 5,796,772, Cl. 375-200.000.

Omote, Masanori: *See*—
Minamino, Katsuki; Watari, Masao; Tanaka, Miyuki; Ishii, Kazuo; Kato, Yasuhiko; Ogawa, Hiroaki; Omote, Masanori; Watanabe, Kazuo; and Honda, Hitoshi, 5,796,921, Cl. 395-22.000.

Omron Corporation: *See*—
Kawai, Wakahiro, 5,796,572, Cl. 361-313.000.
Maeda, Tadasu; Ota, Koji; Arao, Masaki; Sogou, Taiji; Nakajima, Hiroshi; Miyamoto, Norichika; Ishiguro, Susumu; and Hayashi, Motoji, 5,796,618, Cl. 364-474.240.

Omyo, Shinji: *See*—
Arakawa, Kenichi; Kakizaki, Takao; and Omyo, Shinji, 5,796,610, Cl. 364-167.010.

Ona Electro-Erosion, S.A.: *See*—
Maidagan, Javier, 5,796,063, Cl. 219-69.120.

Onan, David D.: *See*—
Chatterji, Jiten; King, Bobby J.; Totten, Patty L.; and Onan, David D., 5,795,924, Cl. 523-130.000.

O'Neel, John: *See*—
Workman, Kurt; Sasaki, Steven; O'Neel, John; and Kari, John, 5,794,272, Cl. 2-421.000.

O'Neill, Desmond Sean: *See*—
Patterson, L. Thomas, Jr.; O'Neill, Desmond Sean; and Carroll, Stephen Tyler, 5,797,002, Cl. 395-611.000.

Ong, Bon S. Transparency sheet protector. 5,795,089, Cl. 402-79.000.

Onishi, Chie: *See*—
Asai, Motoo; and Onishi, Chie, 5,795,618, Cl. 427-98.000.

Onitsuka, Yoshihiro: *See*—
Kanda, Toshiyuki; Takabayashi, Hiroshi; and Onitsuka, Yoshihiro, 5,796,450, Cl. 349-64.000.

Ono, Katsuyasu; Matsuki, Masuo; and Hirase, Satoshi, to NSK Ltd. Retractor for seat belt. 5,794,877, Cl. 242-379.100.

Ono, Katsuyasu: *See*—
Morizane, Kenichi; and Ono, Katsuyasu, 5,794,876, Cl. 242-374.000.

Ono, Kenichi, to Kabushiki Kaisha Toshiba. Image-data processing apparatus which automatically selects one of a copying function and a facsimile function based on an orientation of an original. 5,796,496, Cl. 358-498.000.

Ono, Masayoshi, to Kabushiki Kaisha Toshiba. Semiconductor device having a plurality of circuits driven by different power sources and formed on the same substrate. 5,796,147, Cl. 257-355.000.

Ono, Michitaka, to Japan Aviation Electronics Industry Limited. Connector having ground plate for PC cards. 5,795,190, Cl. 439-607.000.

Ono Pharmaceutical Co., Ltd.: *See*—
Konno, Mitoshi; Nakae, Takahiko; and Hamanaka, Nobuyuki, 5,795,914, Cl. 514-562.000.
Nakae, Takahiko; Kato, Masashi; Fujita, Takehito; Kawabata, Kazuhito; and Ohno, Hiroyuki, 5,795,890, Cl. 514-235.500.

Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; Sasaki, Masaki; Kanaya, Miharu; Hayashi, Hiroko; Owatari, Akio; and Ouki, Yasuhiro, to Orient Chemical Industries, Ltd.; and Seiko Epson Corporation. Mixed disazo-dye composition and black aqueous ink composition containing the same that provides high grade image on print. 5,795,970, Cl. 534-573.000.

Onoda, Katsuhiko, to Yazaki Corporation. Resin molding product with a nut receiving portion. 5,795,117, Cl. 411-92.000.

Onodera, Tugio: *See*—
Sugino, Mitsutaka; Kodaira, Tadao; and Onodera, Tugio, 5,796,198, Cl. 310-89.000.

Onogi, Yukio: *See*—
Satake, Toshihiko; and Onogi, Yukio, 5,796,233, Cl. 318-705.000.

Ontrak Systems, Inc.: *See*—
Gockel, Thomas R.; Olson, Lorin; Ryle, Lynn; and Whitelaw, Brett A., 5,794,299, Cl. 15-77.000.

Onuki, Mituhiro: *See*—
Uchida, Hiroshi; Onuki, Mituhiro; and Watanabe, Hideo, 5,795,621, Cl. 427-180.000.

Onuma, Yoshiki, to Nissan Motor Co., Ltd. Anti-theft apparatus for a vehicle. 5,796,178, Cl. 307-10.200.

Ookawa, Akemi; and Umemura, Chiaki, to Aisin Seiki Kabushiki Kaisha. Energization control system for switched reluctance motor. 5,796,226, Cl. 318-254.000.
Ookawa, Eiichi; Nishida, Hiroto; Suzuki, Takashi; Watanabe, Hitoshi; and Sasaki, Toshiaki, to Matsushita Electric Industrial Co., Ltd. Disc apparatus. 5,796,698, Cl. 369-77.200.
Oomura, Yasuhiro, to Nikon Corporation. Catadioptric optical system and exposure apparatus using the same. 5,796,524, Cl. 359-633.000.
Oonishi, Kazushige: *See*—
Saito, Masahiko; Miyasaka, Toru; Oonishi, Kazushige; Takeya, Shoji; Terashima, Isamu; Akasaki, Tetsuro; and Okano, Tadashi, 5,797,075, Cl. 399-284.000.
Ootsuka, Makoto, to Kabushiki Kaisha Toshiba. Disk reproducting apparatus having improved connection between the centering member and turntable. 5,796,709, Cl. 369-271.000.
Oplink Communications, Inc.: *See*—
Huang, Yong; and Zheng, Yu, 5,796,893, Cl. 385-43.000.
Oppenländer, Knut: *See*—
Ehle, Michael; and Oppenländer, Knut, 5,795,482, Cl. 210-634.000.
Optiva Corporation: *See*—
Lundell, William G.; and Brewer, Gerald K., 5,796,325, Cl. 336-233.000.
Optum Corporation: *See*—
Filo, Andrew S., 5,796,104, Cl. 250-330.000.
Oracle Corporation: *See*—
Bhanot, Pradeep; and Jackson, Paul, 5,796,934, Cl. 395-182.020.
Orbeck, Gary A., to BTU International, Inc. Furnace chamber having eductor to enhance thermal processing. 5,795,146, Cl. 432-176.000.
Orbital Engine Company (Australia) Pty. Limited: *See*—
Hill, Raymond John, 5,794,600, Cl. 123-531.000.
Orient Chemical Industries, Ltd.: *See*—
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; Sasaki, Masaki; Kanaya, Miharu; Hayashi, Hiroko; Owatari, Akio; and Ouki, Yasuhiro, 5,795,970, Cl. 534-573.000.
Orion Corporation: *See*—
Ball, James H.; and Byrne, Thomas R., 5,795,076, Cl. 384-307.000.
Orlt, Jiri G.: *See*—
Gruenke, Roger A.; Trimble, Russell L.; Lasnier, Christopher D.; Loethen, Steven W.; Orlt, Jiri G.; Snook, James A.; and Wyble, Marilyn S., 5,794,614, Cl. 128-204.210.
Orton, Debra L.; and Howard, Maire Lee, to Object Licensing Corporation. Object-oriented view coordinate space system. 5,796,969, Cl. 395-343.000.
Osada, Hiroshi; and Nakaya, Hiroyuki, to Nifco, Inc. Tacking device. 5,795,118, Cl. 411-171.000.
Osakabe, Yoshio: *See*—
Tanaka, Shigeo; Yamazaki, Hiroshi; Sugiyama, Koichi; Sato, Makoto; Kotabe, Noriko; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,796,352, Cl. 340-825.240.
Osborn, Douglas Bruce; Gose, Mark Wendell; and Dikeman, John Mark, to Delco Electronics Corporaiton. Circuitry for controlling load current. 5,796,278, Cl. 327-108.000.
Osborn, Douglas Bruce: *See*—
Kearney, Mark Billings; Koglin, Dennis Michael; and Osborn, Douglas Bruce, 5,796,298, Cl. 327-561.000.
Osborn, Thomas Ward, III: *See*—
Lavash, Bruce Wiliam; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, 5,795,349, Cl. 604-387.000.
Oshima, Takashi: *See*—
Shioi, Masahiro; Makiyama, Takeshi; Hibi, Keiichi; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakamura, Osamu; Kanada, Youji; Kura, Tsuneko; and Oshima, Takashi, 5,796,436, Cl. 348-409.000.
Oshita, Koichi, to Nikon Corporation. Lens system with switchable soft focus. 5,796,530, Cl. 359-795.000.
Oshita, Shun, to Oki Electric Industry Co., Ltd. Video coding and decoding system with teletext capability. 5,796,441, Cl. 348-476.000.
Osmani, Rashid Masood; and Metroka, Michael P., to Motorola, Inc. Radiotelephone subscriber unit having a generic phone number. 5,797,101, Cl. 455-551.000.
Osteen, William Belmont: *See*—
Fowler, Maxie Joe; and Osteen, William Belmont, 5,795,280, Cl. 493-22.000.
Ostendorf, Ward William: *See*—
Ampulski, Robert Stanley; Ostendorf, Ward William; and Polat, Osman, 5,795,440, Cl. 162-117.000.
Oster, Heinz: *See*—
Roulin, Monique; Gerber, Manfred; and Oster, Heinz, 5,794,781, Cl. 206-531.000.
O'Sullivan, Timothy C.; Samuelson, Laurence S.; and Schwartz, Howell B., to International Business Machines Corporation. Method and apparatus for providing diverging rail edge geometry for air bearing slider. 5,796,550, Cl. 360-103.000.
Ota, Koji: *See*—
Maeda, Tadasu; Ota, Koji; Arao, Masaki; Sogou, Taiji; Nakajima, Hiroshi; Miyamoto, Norichika; Ishiguro, Susumu; and Hayashi, Motoji, 5,796,618, Cl. 364-474.240.
Ota, Shinichi: *See*—
Sekine, Takashi; Ogura, Eiji; Ota, Shinichi; and Ishikawa, Kazuyuki, 5,795,916, Cl. 514-567.000.
Otaka, Shoji, to Kabushiki Kaisha Toshiba. Attenuation circuitry using gate current control of FET conduction to vary attenuation. 5,796,286, Cl. 327-308.000.
Otake, Joji, to Yachiyo Kogyo Kabushiki Kaisha. Automotive slide roof system. 5,795,016, Cl. 296-223.000.
Otake, Tetushi, to Toko, Inc. Self-excited oscillation type power supply device. 5,796,241, Cl. 323-282.000.
Otowa, Hirotsugu: *See*—
Fujikawa, Misao; and Otowa, Hirotsugu, 5,795,509, Cl. 264-40.100.
Otsubo, Hideaki; and Nakawaki, Yasunori, to Toyota Jidosha Kabushiki Kaisha. Slip detecting device for motor vehicle mounted with automatic transmission. 5,797,108, Cl. 701-51.000.
Otsuki, Naohito; Kamei, Kyoji; Inoue, Akiyoshi; Ishikawa, Kiyoshi; Sakurai, Shin; and Matsumura, Takuo, to Fuji Xerox Co., Ltd. Compact image formation apparatus facilitating j: m removal. 5,797,068, Cl. 399-110.000.
Ott, Helmut: *See*—
Vogelsang, Klaus; Rose, Peter; Ott, Helmut; and Heilinger, Peter, 5,794,588, Cl. 123-320.000.
Ott, Michael Anthony; Hendee, Alfred W.; and Hendee, Charles C., to Hendee Enterprises, Inc.; and Salco Products, Inc. Moisture barrier filter seal for hopper rail car hatches. 5,794,539, Cl. 105-377.080.
Otten, Matthew R.: *See*—
Hamblin, Steven W.; Witt, David A.; Sierocuk, Thomas J.; Nicola, Kirk M.; Otten, Matthew R.; and Berky, Craig B., 5,794,834, Cl. 227-175.200.
Otuenwaelder, Adalbert; Machnig, Manfred; Kullick, Dieter; and Fuchs, Rudolf, to Maschinenfabrik Alfing Kessler Gmbh. Method for the inductive surface hardening of workpieces. 5,796,078, Cl. 219-639.000.
Otter Controls Limited: *See*—
Smith, David Andrew, 5,796,327, Cl. 337-342.000.
Otto, Wolfgang K. F.: *See*—
Niemann, Frederic J.; and Otto, Wolfgang K. F., 5,795,391, Cl. 118-315.000.
OTV Omnium De Traitements Et De Valorisation S.A.: *See*—
Lesouef, Andre, 5,795,481, Cl. 210-615.000.
Ouchi, Genjiro; Akinaga, Nobuhiko; and Ogata, Kazuyuki, to Hitachi Electronics Services Co., Ltd. Notebook computer with two displays. 5,796,577, Cl. 361-68.100.
Oudard, Jean-Francois, to Saint-Gobain Vitrage. Device for distributing pulverulent solids onto the surface of a substrate for the purpose of depositing a coating thereon. 5,795,388, Cl. 118-308.000.
Ouki, Yasuhiro: *See*—
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; Sasaki, Masaki; Kanaya, Miharu; Hayashi, Hiroko; Owatari, Akio; and Ouki, Yasuhiro, 5,795,970, Cl. 534-573.000.
Outboard Marine Corporation: *See*—
Gillespie, George, 5,794,584, Cl. 123-257.000.
Oval Corporation: *See*—
Gomi, Shingo; Kitami, Hirokazu; Endo, Takashi; Matsuoka, Kenichi; Ichinose, Kimihiro; Futagawa, Osamu; Kobayashi, Seiji; and Kobayashi, Kazuhide, 5,796,012, Cl. 73-861.357.
Overall, Gary Scott; Wade, Thomas Campbell; Webb, James Francis; and Wright, Phillip Byron, to Lexmark International, Inc. Method and apparatus for measuring and displaying a toner tally for a printer. 5,797,061, Cl. 399-27.000.
Overcash, Louisa C.: *See*—
Overcash, Rufus B.; and Overcash, Louisa C., 5,794,307, Cl. 16-114.00R.
Overcash, Rufus B.; and Overcash, Louisa C. Wheelbarrow handle extension. 5,794,307, Cl. 16-114.00R.
Overstrass, Detlev; and Lorenz, Hellmut, to Barmag AG. Yarn friction false twisting apparatus. 5,794,429, Cl. 57-339.000.
Owada, Isao: *See*—
Dobashi, Koichi; Owada, Isao; and Zama, Hiroyoshi, 5,794,530, Cl. 101-409.000.
Owaki, Ryoji, to Brother Kogyo Kabushiki Kaisha. Embroidery data processing device. 5,794,552, Cl. 112-102.500.
Owatari, Akio: *See*—
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; Sasaki, Masaki; Kanaya, Miharu; Hayashi, Hiroko; Owatari, Akio; and Ouki, Yasuhiro, 5,795,970, Cl. 534-573.000.
Owen, Keith James, to Light & Sound Design, Ltd. Color image protection apparatus. 5,795,058, Cl. 362-293.000.
Owen, Richard Scott, to Lamons Metal Gasket Co. Spiral wound gasket. 5,794,946, Cl. 277-610.000.
Owens-Corning Canada: *See*—
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Peters, Fred H.; and Jannetta, Thomas J., to Nordam Group, Inc., The. Thrust reverser door side fillers. 5,794,433, Cl. 60-226.200.

Petersen, Hans: *See*—
Andersen, Knud Erik; Olsen, Uffe Bang; Petersen, Hans; Grønvald, Frederik Christian; Sonnewald, Ursula; Jørgensen, Tine Krogh; and Andersen, Henrik Sune, 5,795,888, Cl. 514-225.200.

Petersen, Norman J.: *See*—
Mann, Wayne L.; and Petersen, Norman J., 5,796,344, Cl. 340-583.000.

Peterson, James Stuart: *See*—
Ejzak, Richard Paul; Peterson, James Stuart; and Sellinger, Robert Shaw, 5,797,099, Cl. 455-466.000.

Peterson, Kevin: *See*—
Berman, Rachael; Shirron, Stephen F.; Hayes, Fidelma; Peterson, Kevin; and Ciaffi, Marco, 5,797,023, Cl. 395-750.060.

Peterson, Kevin G.: *See*—
Komerath, Narayanan M.; Darden, Leigh Ann; Magill, John C.; and Peterson, Kevin G., 5,794,887, Cl. 244-75.00R.

Peterson, Max R., II. Securing apparatus. 5,794,903, Cl. 248-300.000.

Peterson, Roger. Method and apparatus for gathering and preparing liquid samples for analysis. 5,794,695, Cl. 166-264.000.

Peterson, Wayne L.: *See*—
Scott, Gerald R.; Moulton, James P.; Seyl, V. Craig; Emrich, John L.; and Peterson, Wayne L., 5,794,286, Cl. 5-611.000.

Pether, Michael John: *See*—
Kalindjian, Sarkis Barret; Steel, Katherine Isobel Mary; Pether, Michael John; Davies, Jonathan Michael Richard; Low, Caroline Minli Rachel; Hudson, Martin Lyn; Buck, Ildiko Maria; McDonald, Iain Mair; Dunstone, David John; and Tozer, Matthew John, 5,795,907, Cl. 514-397.000.

Pethig, Ronald; and Burt, Julian Paul Hillhouse, to British Technology Group Ltd. Manipulation of solid, semi-solid or liquid materials. 5,795,457, Cl. 204-547.000.

Petkovsek, James Edward: *See*—
Southwell, Joseph Ray, Jr.; Southwell, Deborah Ann; Southwell, Ruth Ann; Southwell, Joseph Ray, III; Sikorski, Kathryn A.; Robinson, Paul; Petkovsek, James Edward; and Bereyso, Steven, 5,794,284, Cl. 5-81.10R.

Petoca, Ltd.: *See*—
Endo, Morinobu, 5,795,843, Cl. 502-416.000.
Takami, Norio; Ohsaki, Takahisa; Tamaki, Toshio; Nakajima, Hideyuki; and Katsuta, Yasushi, 5,795,678, Cl. 429-218.000.

Petri, Werner: *See*—
Giese, Peter; Petri, Werner; and Räcke, Mattis, 5,795,257, Cl. 474-109.000.

Pettit, Dean K.: *See*—
Grabstein, Kenneth H.; Pettit, Dean K.; and Paxton, Raymond J., 5,795,966, Cl. 530-388.230.

Pfefferle, Walter: *See*—
Schilling, Bernhard; Pfefferle, Walter; Bachmann, Bernd; Leuchtenberger, Wolfgang; and Deckwer, Wolf-Dieter, 5,795,732, Cl. 435-41.000.

Pfeifer, Kent B.; Hoyt, Andrea E.; and Frye, Gregory C., to Sandia Corporation. Acoustic-wave sensor for ambient monitoring of a photoresist-stripping agent. 5,795,993, Cl. 73-24.010.

Pfizer Inc.: *See*—
Ahmed, Imram, 5,795,902, Cl. 514-354.000.

Pharmacia & Upjohn Company: *See*—
Bundy, Gordon L.; and Palmer, John R., 5,795,986, Cl. 544-115.000.
Smekens, Daniel P., 5,794,407, Cl. 53-428.000.

Pharmadigm, Inc.: *See*—
Ricigliano, Joseph W.; and Araneo, Barbara A., 5,795,872, Cl. 514-44.000.

Phelps, Robert Nolen: *See*—
Hewett, Douglas E.; Pier, Richard M.; Gould, Thomas A.; and Phelps, Robert Nolen, 5,796,439, Cl. 348-459.000.

Philip Morris Incorporated: *See*—
Mohrman, James A., 5,794,417, Cl. 53-541.000.

Philippe, Eric: *See*—
Gassies, Christophe; Mauzac, Olivier; and Philippe, Eric, 5,794,532, Cl. 101-493.000.

Philips Electronics North America: *See*—
Khan, Babar Ali; Cammack, David Alan; Pinker, Ronald D.; and Taskar, Nikhil Ramesh, 5,796,209, Cl. 313-493.000.

Philips Electronics North America Corporation: *See*—
Martin, Brian Clark, 5,796,283, Cl. 327-218.000.

Phillips, John Edward: *See*—
McKague, Elbert Lee, Jr.; Cox, Ronald Kendall; and Phillips, John Edward, 5,795,094, Cl. 403-335.000.

Phillips, Laurence Colin, to Innotech Pty Ltd. Mobile frame. 5,794,712, Cl. 172-459.000.

Phillips, Lessie C.: *See*—
Euripides, Joanne M.; Phillips, Lessie C.; and Nielsen, Steven F., 5,795,439, Cl. 162-100.000.

Phillips, Sean L.: *See*—
Traut, James R.; Phillips, Sean L.; and Row, Gordon D., 5,795,315, Cl. 602-18.000.

Phillips, William; and Paparo, Mario, to SGS-Thomson Microelectronics, Inc. High-speed-driver gate drive circuit. 5,796,276, Cl. 327-108.000.

Phorm Concept & Design, Inc.: *See*—
Booty, Donald J., Jr., 5,795,054, Cl. 362-96.000.

Phrasor Scientific, Inc.: *See*—
Mahoney, John F., 5,796,111, Cl. 250-492.200.

Pianezzola, Sergio: *See*—
Fabrizi, Fabrizio; and Pianezzola, Sergio, 5,796,061, Cl. 218-157.000.

Piasco, Alain: *See*—
Bucourt, Robert; Piasco, Alain; and Tchernatinsky, Claude, 5,795,884, Cl. 514-178.000.

Pichl, Werner: *See*—
Habermayr, Erwin; Huebner, Christian; Hofmeister, Juergen; Horak, Dieter; Pichl, Werner; and Schmitt, Wolfgang, 5,796,987, Cl. 395-500.000.

Piciacchio, Alan: *See*—
LaPlante, Mark Joseph; Lombardi, Thomas Edward; Long, David Clifford; Nenadic, Anton; and Piciacchio, Alan, 5,795,217, Cl. 451-313.000.

Pieper, Mark S.: *See*—
Goerke, Ulrich B.; and Pieper, Mark S., 5,796,242, Cl. 323-282.000.

Pieper, Walter: *See*—
Polaschegg, Hans-Dietrich; Pieper, Walter; and Weber, Daniel, 5,794,669, Cl. 141-285.000.

Pier, Richard M.: *See*—
Hewett, Douglas E.; Pier, Richard M.; Gould, Thomas A.; and Phelps, Robert Nolen, 5,796,439, Cl. 348-459.000.

Pierce, Adam Benson. Illuminated fire hose rescue nozzle. 5,795,053, Cl. 362-96.000.

Pierce, Kenneth R., to E. H. Wachs Company, The. Collet. 5,794,949, Cl. 279-46.700.

Pierrat, Christophe: *See*—
Burdorf, James; and Pierrat, Christophe, 5,795,688, Cl. 430-30.000.

Pierson, Mark Vincent, to International Business Machines Corporation. Simplified wiring escape technique for tiled display. 5,796,452, Cl. 349-73.000.

Pierson, Richard C.: *See—*
Pitz, Jeanne K.; Trafton, Fredrick W.; and Pierson, Richard C., 5,796,672, Cl. 365-230.030.

Pike, Michael Barry: *See—*
Datta, Madhav; Kanarsky, Thomas Safron; Pike, Michael Barry; and Shenoy, Ravindra Vaman, 5,796,168, Cl. 257-781.000.

Pillman, Bruce Harold: *See—*
Woolfe, Geoffrey John; Pillman, Bruce Harold; and Barry, Michael James, 5,796,874, Cl. 382-254.000.

Pilot Industries, Inc.: *See—*
Armentrout, Charles J.; and Basinger, Thomas J., 5,796,805, Cl. 378-136.000.

Ping, Chen: *See—*
Carignan, Robert; and Ping, Chen, 5,795,211, Cl. 446-220.000.

Pinker, Ronald D.: *See—*
Khan, Babar Ali; Cammack, David Alan; Pinker, Ronald D.; and Taskar, Nikhil Ramesh, 5,796,209, Cl. 313-493.000.

Pinnavaia, Thomas J.; and Bagshaw, Stephen A., to Board of Trustees operating Michigan State University. Porous inorganic oxide materials prepared by non-ionic surfactant templating route. 5,795,559, Cl. 423-702.000.

Pintsov, Leon A.: *See—*
Cordery, Robert A.; Lee, David K.; Pintsov, Leon A.; Ryan, Frederick W., Jr.; and Weiant, Monroe A., Jr., 5,796,841, Cl. 380-55.000.

Pintz, Adam: *See—*
Laskowski, John S.; and Pintz, Adam, 5,796,620, Cl. 364-475.020.

Pion, Benoit: *See—*
Bostelmann, Willy; Rioux, Roger; and Pion, Benoit, 5,794,574, Cl. 123-41.00E.

Pioneer Electronic Corporation: *See—*
Bessho, Akira, 5,796,702, Cl. 369-112.000.
Furukawa, Junichi; and Tateishi, Kiyoshi, 5,796,691, Cl. 369-50.000.
Tomita, Yoshimi; and Hayashi, Hideki, 5,796,711, Cl. 369-275.400.

Pioneer Hi-Bred International Inc.: *See—*
Cigan, Andrew M.; and Albertsen, Marc C., 5,795,753, Cl. 435-172.300.

Pirahesh, Mir Hamid: *See—*
Bhattacharya, Partha Pratim; Chung, Jen-Yao; Pirahesh, Mir Hamid; Selinger, Patricia G.; Viveros, Marisa S.; Wang, Yun; and Zaino, Lawrence Peter, 5,797,000, Cl. 395-602.000.

Pirelli Cavi S.p.A.: *See—*
Corsini, Raffaele; and Hiller, Dietmar, 5,796,764, Cl. 372-6.000.

Pirelli Coordinamento Pneumatici S.p.A.: *See—*
Campana, Luigi; and Carra, Alberto, 5,795,415, Cl. 152-209.00R.

Pisetski, Vladimir B., to Trans Seismic International, Inc. Method for determining the presence of fluids in a subterranean formation. 5,796,678, Cl. 367-38.000.

Piskorski, Walter, to Sepracor, Inc. Multiple-dose dispenser for dry powder inhalers. 5,794,613, Cl. 128-203.120.

Pitchford, Terry L., to Amsted Industries Incorporated. Railcar truck bearing adapter construction. 5,794,538, Cl. 105-218.100.

Pitney Bowes Inc.: *See—*
Cordery, Robert A.; Lee, David K.; Pintsov, Leon A.; Ryan, Frederick W., Jr.; and Weiant, Monroe A., Jr., 5,796,841, Cl. 380-55.000.
Daniels, Edward P., Jr.; and Woodman, Clare E., 5,797,015, Cl. 395-712.000.

Pitz, Jeanne K.; Trafton, Fredrick W.; and Pierson, Richard C., to Texas Instruments Incorporated. Method and circuit for routing data to registers in an integrated circuit. 5,796,672, Cl. 365-230.030.

Piwinski, John J.: *See—*
Shue, Ho-Jane; Shih, Neng-Yang; Blythin, David J.; Chen, Xiao; Tom, Wing C.; Piwinski, John J.; and McCormick, Kevin D., 5,795,894, Cl. 514-253.000.

Planthaber, Rudy F.: *See—*
Spear, Kenneth J.; Brooker, Steven F.; Planthaber, Rudy F.; and Bennett, Eric D., 5,794,649, Cl. 137-355.270.

Platica, Micsunica; Platica, Ovidiu; and Holland, James F., to Mount Sinai School of Medicine. Pituitary differentiation factor and methods of use thereof. 5,795,740, Cl. 435-69.100.

Platica, Ovidiu: *See—*
Platica, Micsunica; Platica, Ovidiu; and Holland, James F., 5,795,740, Cl. 435-69.100.

Platus, David L.; and Durran, Donald A., to Minus K Technology, Inc. Auto-adjust apparatus for a vibration isolation system. 5,794,909, Cl. 248-550.000.

PlaySmart, Inc.: *See—*
Weaver, Darrell A., 5,795,267, Cl. 482-35.000.

Plessey Semiconductors Limited: *See—*
Perry, Colin L., 5,796,294, Cl. 327-538.000.

Pliler, David B.; and Stevens, Matthew A. Vending machine. 5,794,816, Cl. 221-203.000.

Plomgren, John Frederick; and Cannon, Billy P., to Union Camp Corporation. Easy opening carton for shipping and storing cut paper. 5,794,770, Cl. 206-215.000.

Plona, Thomas: *See—*
Kostek, Sergio; Chang, Shu-Kong; McDaniel, Gordon; Plona, Thomas; Randall, Curtis; Masson, Jean-Pierre; Mayes, James C.; and Hsu, Kai, 5,796,677, Cl. 367-25.000.

Plotnick, Michael Allen: *See—*
Augenbraun, Joseph Ellis; Pearlstein, Larry Alan; and Plotnick, Michael Allen, 5,797,001, Cl. 395-609.000.

Plus, Dora: *See—*
DuPont, Antoine Pierre; and Plus, Dora, 5,796,390, Cl. 345-204.000.

Pocius, Alphonsus V.; and Nigatu, Tadesse G., to Minnesota Mining and Manufacturing Company. Organoborane polyamine complexes and adhesive compositions made therewith. 5,795,657, Cl. 428-516.000.

Podwalny, Sergey Gary; Derocher, Michael D.; Hickman, Scott N.; and Hippen, Jan, to Hewlett-Packard Company. Portable computer with hinged cover having a window. 5,796,575, Cl. 361-681.000.

Poh, Looi Choon; Kiang, Goh Meng; Liong, Chen Teck; Guan, Thiang Nan; and Bakar, Abu, to Texas Instruments Incorporated. Test board and process of testing wide word memory parts. 5,796,246, Cl. 324-73.100.

Pohjala, Esko: *See—*
Lehmussaari, Kari; Vartiainen, Eija; Reunamaki, Timo; Oksala, Olli; Alaranta, Sakari; and Pohjala, Esko, 5,795,913, Cl. 514-459.000.

Polaroid Corporation: *See—*
Fitzgerald, Maurice J.; Jurek, Michael J.; Liang, Rong-Chang; and Sugrue, Richard J., 5,795,698, Cl. 430-281.100.
Guerra, John M., 5,796,487, Cl. 356-376.000.
Lee, John W.; McGowan, Donald A.; Mischke, Mark R.; Ramos, Socorro M.; and Telfer, Stephen J., 5,795,981, Cl. 540-1.000.
Wenyon, Michael M., 5,796,499, Cl. 359-15.000.

Polaschegg, Hans-Dietrich; Pieper, Walter; and Weber, Daniel, to Fresenius AG. Container for collection of concentrate. 5,794,669, Cl. 141-285.000.

Polat, Osman: *See—*
Ampulski, Robert Stanley; Ostendorf, Ward William; and Polat, Osman, 5,795,440, Cl. 162-117.000.

Polcyn, Michael J., to InterVoice Limited Partnership. Network based predictive dialing. 5,796,791, Cl. 379-265.000.

Polinelli, Walter: *See—*
Bombardelli, Ezio; Curri, Sergio; Guglielmini, Giancarlo; Morazzoni, Paolo; and Polinelli, Walter, 5,795,575, Cl. 424-195.100.

Polk, Louis F., III; Easley, James B.; Luedke, Adam L.; and Olson, Scott B. Size adjustable athletic boot. 5,794,362, Cl. 36-97.000.

Pollack, Jack, to Imodco, Inc. CAM fluid transfer system. 5,794,700, Cl. 166-339.000.

Polle, Bernard; Billand, Marcel; and Hanin, Benoit, to Matra Marconi Space France. Method of controlling the attitude control for satellites on an orbit inclined relative to the equator. 5,794,891, Cl. 244-164.000.

Pollkötter, Günter, to Leico GmbH & Co. Werkzeugmaschinenbau. Method for the manufacture of a vehicle wheel. 5,794,340, Cl. 29-894.324.

Pompeii, Dario L.: *See—*
Smallegan, Jon M.; Chamberlain, L. C. Derek; and Pompeii, Dario L., 5,794,991, Cl. 292-169.000.

Pope, Bradley Gene, to Belden Wire & Cable Company. Coaxial cable having a composite metallic braid. 5,796,042, Cl. 174-102.0SP.

Pope, Jason Edward: *See—*
Bawtree, Bruce Allan; Trawin, Kevin James; and Pope, Jason Edward, 5,795,269, Cl. 482-66.000.

Popek, Witold J.: *See—*
Sandhu, Jaswinder S.; Popek, Witold J.; and Wang, Honghui, 5,796,003, Cl. 73-603.000.

Popescu, Valeri; Schultz, Merle A.; Gibson, Gary A.; Spracklen, John E.; and Lightner, Bruce D., to Hyundai Electronics America, Inc. Processor architecture supporting speculative, out of order execution of instructions including multiple speculative branching. 5,797,025, Cl. 395-800.000.

Porcelli, V. Lorenzo. Disposable oral hygiene applicator. 5,794,774, Cl. 206-369.000.

Pornin, Jean-Louis: *See—*
Ravetto, Michel; Chamonal, Jean-Paul; Marion, François; and Pornin, Jean-Louis, 5,794,331, Cl. 29-840.000.

Porter, Johnny: *See—*
Svec, Frank; and Porter, Johnny, 5,795,880, Cl. 514-169.000.

Poto, Edward M.; Strahs, Kenneth R.; Conner, Timothy J.; Delahanty, Francis T.; Moorman, Michael; and Wieck, Henry, to Advanced Care Products. Disposable electronic diagnostic instrument. 5,795,543, Cl. 422-82.050.

Potter, Donald R.: *See—*
Cucheran, John S.; Potter, Donald R.; and Rak, Artur K., 5,794,827, Cl. 224-321.000.

Potter, James D.: *See—*
Crouch, Shirley Aline; Potter, James D.; and Waldron, Joan Phillips, 5,796,821, Cl. 379-430.000.

Potts, Gordon Oliver: *See—*
Elger, Walter; Beier, Sybille; Kosub, Beate; Faehnrich, Marianne; Chwalisz, Krzysztof; Hasan, Syed Hamiduddin; and Potts, Gordon Oliver, 5,795,881, Cl. 514-170.000.

Poulos, Joyce Shordone: *See—*
Poulos, Matthew Alexander; and Poulos, Joyce Shordone, 5,794,344, Cl. 30-113.100.

Poulos, Matthew Alexander; and Poulos, Joyce Shordone. Strawberry core remover. 5,794,344, Cl. 30-113.100.

Poustie, Alistair J.; and Finlayson, Neil, to British Telecommunications PLC. Optical filter comprising multi-mode waveguides coupled in series. 5,796,891, Cl. 385-28.000.

Powell, Adrian P.: *See—*
Cox, Patrick M.; Powell, Adrian P.; Filliger, Paul W.; and Kepler, Michael A., 5,797,092, Cl. 455-404.000.

Powell, Jonathan S. Floating chemical dispenser with delay for swimming pools. 5,795,551, Cl. 422-264.000.

Powers, David B.; and Anderson, Stephen, to Rutgers, The State University of New Jersey. Mutants of 2,5-diketo-D-gluconic acid (2,5-DKG) reductase A. 5,795,761, Cl. 435-190.000.

Powerwave Technologies, Inc.: *See*—
Gentzler, Charles R., 5,796,304, Cl. 330-52.000.

Pozas Alvarez, Jose Antonio; and Perez Roldan, Luis, to Telefonica de Espa
na, S.A. Hybrid circuit for an electric operating and scanning interface, applicable to electronic recorders of electromechanical telephone stations. 5,796,817, Cl. 379-384.000.

PPG Industries, Inc.: *See*—
Benson, Vernon C., Jr.; and Freeman, Glenn E., 5,796,055, Cl. 181-208.000.
Pecoraro, George A.; and Tsai, Yih-Wan, 5,795,363, Cl. 65-134.400.

Pradel, Robert; and Angles, Manfred, to Fichtel & Sachs AG. Shock absorber or vibration damper. 5,794,743, Cl. 188-322.160.

Prasatek, Craig R.: *See*—
Cronce, Gary M.; Stapleton, Craig A.; and Prasatek, Craig R., 5,794,826, Cl. 224-321.000.

Prater, Keith B.: *See*—
Wilkinson, David; Voss, Henry H.; Prater, Keith B.; Hards, Graham A.; Ralph, Thomas R.; and Thompsett, David, 5,795,669, Cl. 429-40.000.

Prati, Massimo: *See*—
Mazzola, Mario; Edsall, Tom; Prati, Massimo; and Cafiero, Luca, 5,796,732, Cl. 370-362.000.

Pratt, Ralph E.: *See*—
Manning, John S.; Hollis, Christopher P.; Jacobs, James L.; and Pratt, Ralph E., 5,795,145, Cl. 431-280.000.

Pratt, Samuel: *See*—
Haagenstad, Ronald G.; and Pratt, Samuel, 5,794,370, Cl. 37-404.000.

Prechtl, Wolfgang: *See*—
Dwars, Anja; Prechtl, Wolfgang; Schropfer, Jorg; and Tischner, Hermann, 5,795,540, Cl. 420-12.000.

Precious, Colin John: *See*—
Saxena, Neeraj; Precious, Colin John; and Stratton, Paul Francis, 5,795,147, Cl. 432-205.000.

Preco Industries, Inc.: *See*—
Raney, Charles C., 5,794,526, Cl. 100-39.000.

Premark FEG L.L.C.: *See*—
Noren, Lars; and Noren, Doug, 5,794,634, Cl. 134-57.00D.

Preputnick, George; Fedder, James Lee; Mickievicz, Scott Keith; and Whyne, Richard Nicholas. Connector assembly with shielded modules and method of making same. 5,795,191, Cl. 439-608.000.

Presby, Herman Melvin: *See*—
Degani, Yinon; and Presby, Herman Melvin, 5,796,900, Cl. 385-95.000.
Narayanan, Chellappan; and Presby, Herman Melvin, 5,796,906, Cl. 385-129.000.

President & Fellows of Harvard College: *See*—
Church, George; Deamer, David W.; Branton, Daniel; Baldarelli, Richard; and Kasianowicz, John, 5,795,782, Cl. 436-2.000.
Flanagan, John G.; and Cheng, Hwai-Jong, 5,795,734, Cl. 435-69.100.

Presl, Rudolf: *See*—
Brenke, Horst, 5,795,272, Cl. 482-103.000.

Price, M. G. Fence post puller apparatus. 5,794,918, Cl. 254-30.000.

Price, Timothy Duane: *See*—
Funderburk, Robert Vernon; and Price, Timothy Duane, 5,794,655, Cl. 137-527.000.

Price Waterhouse LLP: *See*—
Huffman, Scott B., 5,796,926, Cl. 395-77.000.

Pricer AB: *See*—
Altwasser, Richard, 5,797,132, Cl. 705-16.000.

Priem, Heiko: *See*—
Lotz, Wilfried; Priem, Heiko; and Reitmayer, Gerd, 5,795,419, Cl. 156-64.000.

Prikoszovich, Walter, to Novartis AG. Organic compounds. 5,795,593, Cl. 424-486.000.

Primex Technologies, Inc.: *See*—
Sigler, John W., 5,796,031, Cl. 102-520.000.

Prince Corporation: *See*—
Garfias, Nicolas A.; and Faulkes, Stephan D., 5,795,005, Cl. 296-37.500.

Prins, Menno W. J.: *See*—
Van Kempen, Herman; Abraham, Daniel Lee; Prins, Menno W. J.; Jansen, Ronald; and van der Wielen, Maurice C. M. M., 5,796,102, Cl. 250-306.000.

Prior, Michael: *See*—
McLeish, Andrew; Cartilage, Roy; Coffey, Michael; and Prior, Michael, 5,795,359, Cl. 55-242.000.

Procedyne Corp.: *See*—
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Procter & Gamble Company, The: *See*—
Ampulski, Robert Stanley; Ostendorf, Ward William; and Polat, Osman, 5,795,440, Cl. 162-117.000.
Angell, Adrian John Waynforth; Pauley, Joseph Adam, III; Gabriel, Steven Matthew; and Brown, Donald Ray, 5,795,854, Cl. 510-312.000.
Dyer, John Collins; and Lloyd, Susan Nicole, 5,795,921, Cl. 521-146.000.
Lavash, Bruce Wiliam; Osborn, Thomas Ward, III; Olsen, Robb Eric; Mayer, Katherine Louise; Hines, Letha Margie; and Kawai, Noriko, 5,795,349, Cl. 604-387.000.
Roe, Donald Carroll; and Dreier, Kimberly Ann, 5,795,347, Cl. 604-385.100.
Schmitz, Christoph Johann, 5,795,350, Cl. 604-391.000.

Proctor & Gamble Company, The: *See*—
Roe, Donald Carroll; and Dreier, Kimberly Ann, 5,795,348, Cl. 604-385.100.

Produits Chimiques Auxiliares: *See*—
Pajonk, Gérard; Elaloui, Elimame; Begag, Redouane; Durant, Marcel; Chevalier, Bruno; Chevalier, Jean-Luc; and Achard, Patrick, 5,795,557, Cl. 423-338.000.

Proger, Thomas: *See*—
Fennel, Helmut; Ehmer, Norbert; Kolbe, Alexander; Schmidt, Robert; and Proger, Thomas, 5,795,039, Cl. 303-122.050.

Programmable Microelectronics Corporation: *See*—
Kowshik, Vikram; Yu, Andy Teng-Feng; and Trinh, Jayson Giai, 5,796,656, Cl. 365-185.230.

Progressive Casualty Insurance Company: *See*—
McMillan, Robert John; Craig, Alexander Dean; and Heinen, John Patrick, 5,797,134, Cl. 705-400.000.

Progressive Games, Inc.: *See*—
Jones, Daniel A.; and Suttle, James P., 5,794,964, Cl. 273-309.000.
Jones, Daniel A.; and Suttle, James P., 5,795,225, Cl. 463-13.000.

Project Services Group, Inc.: *See*—
Taylor, James L.; Alanis, Johnny A.; and Boswell, Mark S., 5,794,756, Cl. 198-429.000.

Prokhorov, Igor Victorovich: *See*—
Jacobs, Stephen David; Kordonski, William; Prokhorov, Igor Victorovich; Golini, Donald; Gorodkin, Gennadii Rafailovich; and Strafford, Tvasta David, 5,795,212, Cl. 451-36.000.

Prokopowicz, Richard A. Oil demetalizing process. 5,795,463, Cl. 208-251.00R.

Prometeo S.p.A.: *See*—
Capello, Giuseppe, 5,794,262, Cl. 2-81.000.

Proprietary Technology, Inc.: *See*—
Bartholomew, Donald D., 5,794,984, Cl. 285-91.000.

Prosch, Gerhard; Sperner, Christian; and Folk, Herbert, to Ina Wälzlager Schaeffler KG. Master cylinder. 5,794,512, Cl. 92-128.000.

Protect-A-Child Pool Fence Systems: *See*—
Coppedge, Donald L., 5,794,990, Cl. 292-153.000.

Protectoseal Company, The: *See*—
Johnson, Daryl; Johnson, Dennis; and Johnson, David, 5,795,043, Cl. 312-229.000.

Protex International Corp.: *See*—
Wachsman, David R., 5,796,337, Cl. 340-568.000.

Prucinsky, Matthew S., to Von Duprin, Inc. Fire rated removable mullion. 5,794,382, Cl. 49-365.000.

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Dudley, Peter E.; Gutwin, Paul T.; and Pruesse, Gara, 5,796,621, Cl. 364-489.000.

Przetakiewicz, Marek: *See*—
Cantor, Charles R.; Przetakiewicz, Marek; Smith, Cassandra L.; and Sano, Takeshi, 5,795,714, Cl. 435-6.000.

PSC Inc.: *See*—
Grodevant, Scott R., 5,796,222, Cl. 318-119.000.

Pugh, Stanley James: *See*—
Cottingham, Steven William; Spaulding, Frank Clyde; Davies, Maxwell Geoffrey; Pugh, Stanley James; and Crothers, Robert Arnold, 5,794,837, Cl. 228-37.000.

Pullman Company, The: *See*—
Jaworski, Kevin J.; and Luzsicza, Steven, 5,795,092, Cl. 403-56.000.

Putman, Kevin C.: *See*—
Whittaker, Wayne H.; Putman, Kevin C.; and Richter, John R., 5,794,912, Cl. 248-638.000.

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Hesse, Alfons; and Puttman, Franz-Josef, 5,795,991, Cl. 73-12.090.

Putzmeister Aktiengesellschaft: *See*—
Fügel, Dietmar; Fritz, Stefan; and Wanner, Martin, 5,794,298, Cl. 15-53.200.

Pyfer, Kimberly L.: *See*—
Kensok, Stephen B.; and Pyfer, Kimberly L., 5,794,377, Cl. 43-134.000.

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Whitehead, Matthew, 5,796,353, Cl. 340-870.010.

Pyun, Eumi: *See*—
Deeb, Gerald S.; Krueger, Dennis L.; Menzies, Robert H.; Morris, Herbert W.; Hyde, Patrick D.; Lau, Felix P.; Pyun, Eumi; Tucker, Pamela S.; and Wong, Roy, 5,795,834, Cl. 442-62.000.

Qiagen GmbH: *See*—
Henco, Karsten; Riesner, Detlev; and Steger, Gerhard, 5,795,720, Cl. 435-6.000.

Qiao, Wen Wei: *See*—
Sun, Hun H.; Qiao, Wen Wei; Chey, William Y.; and Lee, Kae Yol, 5,795,304, Cl. 600-546.000.

Qiao, Yong: *See*—
Zhou, Gan; Qiao, Yong; and Mok, Fai, 5,796,858, Cl. 382-127.000.

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Nakano, Kenichi; Bozada, Christopher A.; Quach, Tony K.; DeSalvo, Gregory C.; Via, G. David; Dettmer, Ross W.; Havasy, Charles K.; Sewell, James S.; Ebel, John L.; and Gillespie, James K., 5,796,131, Cl. 257-284.000.

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Nowak, Hans-Georg; Quante, Michael; Wefers, Frank; and Flamm, Franz-Josef, 5,796,598, Cl. 363-37.000.

Quantum Corporation: *See*—
Akin, William R., Jr.; Balakrishnan, Arun; Williams, Stephen P.; and Carpenter, Christopher M., 5,796,552, Cl. 360-104.000.
Ton-That, Luan, 5,796,543, Cl. 360-77.080.

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Butts, Michael R.; and Batcheller, Jon A., 5,796,623, Cl. 364-489.000.

Quinn, Hubert M.; Menapace, Rebecca A.; and Oberhauser, Charles J., to Cohesive Technologies, Inc. High performance liquid chromatography method and apparatus. 5,795,469, Cl. 210-198.200.

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Martin, William Wesley, 5,795,143, Cl. 418-227.000.

R. H. Associates, Ltd.: *See*—
Brown, Andrew J., 5,795,254, Cl. 473-552.000.

R. H. Murphy Co., Inc.: *See*—
Murphy, Robert H., 5,794,784, Cl. 206-725.000.

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Raab, Simon, to Faro Technologies, Inc. Three dimensional coordinate measuring apparatus. 5,794,356, Cl. 33-503.000.

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Alberts, Joseph Richard; Drezdzon, Edward Anthony, II; Fries, Donald Merlin, deceased; Konetzke, Richard Mark; Kvitek, Thomas Theodore; Muhlebach, Michael Joseph; Nelson, Michael Joseph; Rabe, Gerald Leigh; Ribble, Brendon Frank; Roth, James Frederick; and Wittmann, Jon Mark, 5,794,269, Cl. 2-227.000.

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Joulain, Daniel; and Racine, Philippe, 5,795,566, Cl. 424-76.100.

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Giese, Peter; Petri, Werner; and Räcke, Mattis, 5,795,257, Cl. 474-109.000.

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Grecksch, Hans; Winzen, Lothar; Riede, Brigitte; and Radermacher, Wolfgang, 5,794,430, Cl. 57-417.000.

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Monda, Albert F.; and Hinnant, Milton Darrell, 5,795,530, Cl. 264-306.000.

Rae, James Wilson: *See*—
Shih, Shih-Ming; Rae, James Wilson; Contreras, Richard A.; and Chern, Jenn-Gang, 5,796,358, Cl. 341-139.000.

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Cucheran, John S.; Potter, Donald R.; and Rak, Artur K., 5,794,827, Cl. 224-321.000.

Rakuljic, George Anthony; Leyva, Victor; Yariv, Amnon; Sayano, Koichi; O'Connor, Arthur Bruce; Tyler, Charles E.; Mao, Xiaoping; and Miller, Harold Everett, Jr., to Accuwave Corporation. Fabrication and applications of long-lifetime, holographic gratings in photorefractive materials. 5,796,096, Cl. 250-226.000.

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Wilkinson, David; Voss, Henry H.; Prater, Keith B.; Hards, Graham A.; Ralph, Thomas R.; and Thompsett, David, 5,795,669, Cl. 429-40.000.

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Ramax Semiconductor, Inc.: *See*—
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Lee, John W.; McGowan, Donald A.; Mischke, Mark R.; Ramos, Socorro M.; and Telfer, Stephen J., 5,795,981, Cl. 540-1.000.

RAMOT-University Authority for Applied Research and Industrial Development Ltd.: *See*—
Parkansky, Naum; Ben-shalom, Amir; Boxman, Raymond L.; Kaplan, Larisa; Goldsmith, Samuel; Yaloz, Hanan; and Nathan, Menachem, 5,795,631, Cl. 428-34.100.

Ramphal, John Y.: *See*—
McCarthy, James R.; Xie, Yun Feng; Whitten, Jeffrey P.; Webb, Thomas R.; Chen, Chen; and Ramphal, John Y., 5,795,905, Cl. 514-383.000.

Ramsey, Jack F.: *See*—
Arnquist, David C.; Barnes, Grady, III; Dunn, Chadwick M.; East, Richard C., Jr.; Fritchie, Patrick P.; Gardner, Gregory E.; Grandone, Cass J.; Gray, Robert C.; Holen, James T.; McCoy, Jimmy D.; Mitchell, James E.; Murray, Adrian John; Murray, David W.; Ramsey, Jack F.; and Sleszynski, Neal T., 5,795,784, Cl. 436-50.000.

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Kostek, Sergio; Chang, Shu-Kong; McDaniel, Gordon; Plona, Thomas; Randall, Curtis; Masson, Jean-Pierre; Mayes, James C.; and Hsu, Kai, 5,796,677, Cl. 367-25.000.

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Reimers, Kirk W.; and Weeratunga, Dammika, 5,794,422, Cl. 56-11.900.

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Azagury, Alain Charles; Dolev, Danny; Goft, German; Marberg, John Michael; Ranweiler, James Gregory; and Satran, Julian, 5,796,999, Cl. 395-600.000.

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Kushner, Philip Marshall; Rasmussen, Kenn; and Øhrwald, Niels, 5,795,210, Cl. 446-128.000.

Rasmussen, Robert T.: *See*—
Cathey, David A.; Watkins, Charles M.; Stansbury, Darryl M.; Hofmann, James J.; Rasmussen, Robert T.; and Chadha, Surjit S., 5,795,206, Cl. 445-24.000.

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Gerling, Klaus; Rau, Helge; Wendler, Kornelia; and Uhlig, Karlheinz, 5,795,851, Cl. 508-307.000.

Rauch, Stuart B.: *See*—
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Rautmann, Guy: *See*—
Kieny, Marie-Paule; Rautmann, Guy; Lecocq, Jean-Pierre; Hobson, Simon Wain; Girard, Marc; and Montagnier, Luc, 5,795,577, Cl. 424-208.100.

Ravco Innovations, Inc.: *See*—
Cohen-Ravid, Moshe, 5,794,677, Cl. 160-35.000.

Ravetto, Michel; Chamonal, Jean-Paul; Marion, François; and Pornin, Jean-Louis, to Commissariat a l'Energie Atomique. Process for the exchange of a detection module hybridized by welding bumps. 5,794,331, Cl. 29-840.000.

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Hefling, Dennis V., 5,794,261, Cl. 2-16.000.

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Wright, Lowell; Abeel, Scott M.; Rawls, Nathan C.; and Snelling, Ronald D., 5,795,368, Cl. 95-82.000.

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Rayovac Corporation: *See*—
McKenzie, Rodney Stuart; and Dopp, Robert B., 5,795,667, Cl. 429-27.000.

Raytheon Company: *See*—
Bailey, James D., 5,794,889, Cl. 244-136.000.
DeLair, Charles M.; and Cline, Russell B., 5,794,509, Cl. 91-376.00R.
Gregor, Eduard; Chen, Tzeng S.; and Bruesselbach, Hans W., 5,796,770, Cl. 372-75.000.
Morrison, Brian D.; Batten, Martin R.; Robillard, Michael N.; and Wienke, Creig E., 5,796,935, Cl. 395-182.090.
Nussbaum, Howard S.; Brovko, Oleg; and Dewolf, Douglas G., 5,796,779, Cl. 375-267.000.

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Grey, Michael J.; Williams, Wayne; and Shaw, William H., 5,794,414, Cl. 53-472.000.

Read, Christopher Jensen, to Sony Electronics, Inc.; and Sony Corporation. Selective de-blocking filter for DCT compressed images. 5,796,875, Cl. 382-261.000.

Read, Karen A.; Trogdon, David E.; Thorpe, Thurman C.; Ronsick, Christopher S.; and Jeffrey, Scott R., to Akzo Nobel N.V. Device for detecting microorganisms. 5,795,773, Cl. 45-287.500.

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Tan, Swie-In; and Pearson, David Ian Charles, 5,795,451, Cl. 204-298.200.

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Cartabiano, Michael C.; Curran, Kenneth J.; Dick, David J.; Gibbs, Douglas R.; Kirby, Morgan H.; May, Richard L.; Storer, William J. A.; and Ullman, Adam N., 5,796,354, Cl. 341-22.000.

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Wortman, Ronald D.; Rechin, Michael P.; Flick, Roland E.; and Whitney, John K., 5,794,289, Cl. 5-713.000.

Rechmann, Peter. Device and method for removing deposits from teeth. 5,795,153, Cl. 433-216.000.

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Lupton, David Francis; Schielke, Jörg; Graf, Hans-Joachim; and Reckziegel, Arno, 5,796,019, Cl. 75-235.000.

Recot, Inc.: *See*—
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Gove, Robert J.; Reder, John R.; Heimbuch, Scott D.; Markandey, Vishal; and Marshall, Stephen W., 5,796,442, Cl. 348-556.000.

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Klaveness, Jo; Redford, Keith; Rongved, Pål; Solberg, Jan; Strande, Per; and Wiggen, Unni Nordby, 5,795,562, Cl. 424-9.520.

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Henshaw, Susan F.; and Redpath, Sarah D., 5,796,383, Cl. 345-112.000.

Ree, Sook H. Healthy golf club grip. 5,795,242, Cl. 473-303.000.

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Reed, Lehman Thoren. Elevated electrical connector assembly. 5,795,169, Cl. 439-191.000.

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Reeves Brothers, Inc.: *See*—
Gaworowski, Andrew J.; Hercyk, Darren E.; Meadows, Roger D.; and Sheron, Herman D., Jr., 5,795,536, Cl. 264-571.000.

Reflectolite Products Company, Inc.: *See*—
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Bottum, Edward W., Jr.; and Bottum, Edward W., Sr., 5,794,611, Cl. 126-661.000.

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Kern, Alan; Henry, Scottlan; and Johnson, Chris, 5,794,952, Cl. 280-33.991.

Reich, Melvyn, to Masterpiece Apparel. Garment sleeve with protective insert in distal end. 5,794,265, Cl. 2-125.000.

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Reid, Walter L., Jr., to Acushnet Company. Fast thermal response mold. 5,795,529, Cl. 264-293.000.

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Raonic, Dusan; MacLennan, David S.; and Rouaud, Didier G., 5,796,599, Cl. 363-57.000.
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Galletti, Joseph, 5,794,580, Cl. 123-179.200.

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Bagnell, Glade N.; and Repphun, William F., 5,796,557, Cl. 360-105.000.

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Research Foundation of State University of New York: *See*—
Sridhar, Ramalingam; and Xuguang, Zhang, 5,796,624, Cl. 364-489.000.

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Respironics, Inc.: *See*—
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Rhone-Poulenc Rorer Pharmaceuticals Inc.: *See—*
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Ricci, Patrick J., Jr. Portable gangway with leveling stairs. 5,794,292, Cl. 14-69.500.
Rice, Edwin E.; and Vliet, Walter C., to Ingersoll-Rand Company. Method and apparatus for dual coat thermal spraying cylindrical bores. 5,796,064, Cl. 219-76.160.
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Richard, Joël; Vaslin, Sophie; Blond, Pierre; Lerat, Françoise; and Taboureau, Jean-Luc, to Societe Prolabo. Biotinylated latex microsphere, process for the preparation of such a microsphere and use as agent for biological detection. 5,795,719, Cl. 435-6.000.
Richardson, Brian D.: *See—*
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Richey, Joseph B.; and Obitts, Shane, to Invacare Corporation. Composite base assembly for cane having fifth leg. 5,794,638, Cl. 135-65.000.
Richmond, Randel William. Projectile launching and recirculating display apparatus and method of displaying same. 5,794,364, Cl. 40-406.000.
Richter, Herbert. Device for supporting rod-like objects. 5,794,905, Cl. 248-316.400.
Richter, John R.: *See—*
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Ricigliano, Joseph W.; and Araneo, Barbara A., to Pharmadigm, Inc. DNA construct for immunization. 5,795,872, Cl. 514-44.000.
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Kimura, Noriyuki; Matsushiro, Hiroyuki; Deki, Tsuyoshi; and Motohashi, Takeshi, 5,797,069, Cl. 399-113.000.
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Umezawa, Nobuhiko; and Mashiko, Harumitsu, 5,797,063, Cl. 399-34.000.
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Riepl, Gerhard. Energy-saving electric drive for small vehicles. 5,796,192, Cl. 310-67.00R.
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Ring, Michael E.; Natschke, Scott L.; and Hawryszkow, Michael G., to Westinghouse Air Brake Company. Pneumatic pressure operated parking brake for a railway vehicle brake system. 5,794,739, Cl. 188-153.00R.
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Rippon, John Anthony, to Commonwealth Scientific and Industrial Research Organization. Process for dyeing wool and other keratin fibres. 5,795,354, Cl. 8-128.100.
Rising, Brandt A. Electrode system for monitoring corrosion. 5,795,461, Cl. 205-775.500.
Riska, Joseph Edward: *See—*
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Rizkovsky, Roy R., to Ricon Corporation. Selectively engageable motor drive assembly. 5,794,381, Cl. 49-139.000.
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Roberts, Denzil S. Method and apparatus for improving the washing ability of wash water in a washing machine. 5,794,290, Cl. 8-159.000.
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Roberts, John; Freeston, Ian Leslie; Tozer, Richard Charles; Gorvin, Anthony Charles; Mayes, Ian Christopher; Djamdjl, Francois Jean; and Blight, Stephen Richard, to University of Sheffield, The; and Bio-Rad Microscience Limited. Method and apparatus for mapping of semiconductor materials. 5,797,114, Cl. 702-57.000.
Roberts, Le Roy. Money machine. 5,794,944, Cl. 273-447.000.

Robertson, Thomas W., to Consolidated Process Machinery, Inc. Apparatus for cooling and drying bulk products using primary and auxiliary air. 5,794,358, Cl. 34-172.000.

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Robinson, Edward C.; Bombalski, Robert E.; Levendusky, Thomas L.; Skiles, Jean Ann; Weaver, Mark L.; and Kotow, Nickolas C., to Aluminum Company of America. Printing plate having improved wear resistance. 5,795,647, Cl. 428-329.000.

Robinson Fin Machines, Inc.: *See—*
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Robinson, Greg: *See—*
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Robinson, Joel: *See—*
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Robinson Knife Manufacturing Company, Inc.: *See—*
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Robinson, Paul: *See—*
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Robinson, Timothy Alan, to General Motors Corporation. Automatic neutral to drive shift control. 5,795,262, Cl. 477-92.000.

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Röder, Klaus Walter; and Trutschel, Hartwig Horst, to Koenig & Bauer-Albert Aktiengesellschaft. Arrangement for the attachment of a paper web leading edge on a paper supply roll. 5,795,638, Cl. 428-57.000.

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Roe, Donald Carroll; and Dreier, Kimberly Ann, to Procter & Gamble Company, The. Diaper having explosive spacer. 5,795,347, Cl. 604-385.100.

Roe, Donald Carroll; and Dreier, Kimberly Ann, to Proctor & Gamble Company, The. Diaper having expulsive spacer. 5,795,348, Cl. 604-385.100.

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Rohan, Darius, to Texas Instruments Incorporated. Predicting resource usage in a multiple task, multiple resource environment. 5,797,129, Cl. 705-8.000.

Rohrberg, Roderick G.; and Rohrberg, Timothy K., to Creative Pathways, Inc. Method for supplying industrial gases using integrated bottle controllers. 5,794,645, Cl. 137-15.000.

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Rolandi, Paolo; and Montanaro, Massimo, to SGS-Thomson Microelectronics S.r.l. High voltages detector circuit and integrated circuit using same. 5,796,275, Cl. 327-81.000.

Roldán, Luis Pérez, to Telefonica De España, S.A. Actuating and dual scanning integrated circuit. 5,796,627, Cl. 364-492.000.

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Rolls-Royce, Inc, plc.: *See—*
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Romano, James J.: *See—*
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Romano, John F.; McVay, William Patrick; and D'Alessio, Larry M., to Beech Medical Products, Inc. Automatic needle protector having features for facilitating assembly. 5,795,336, Cl. 604-192.000.

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Romeo, Aurelio; Kirschner, Gunter; Chizzolini, Carlo; Manev, Hari; and Facci, Laura, to Fidia S.p.A. Sulfated lyso-ganglioside derivatives. 5,795,869, Cl. 514-25.000.

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Romerein, Robert L., to J.E. Thomas-Specialties Limited. Top exit coupler. 5,796,316, Cl. 333-100.000.

Romesburg, Eric Douglas, to Ericsson Inc. Echo canceler for non-linear circuits. 5,796,819, Cl. 379-406.000.

Ronan, Gregory J., to Wave Optics, Inc. Universal adaptor for keyed fiberoptic connectors. 5,796,897, Cl. 385-76.000.

Ronconi, Giuseppe, to CO.ME.SCA. Costruzioni Meccaniche Scarperia S.r.l. Method of folding a portion of dielectric sheet material. 5,794,412, Cl. 53-466.000.

Rondeau, Michael N.; Doiron, Timothy J.; Roderique, William J.; and Hoge, Philip M., to Ericsson Inc. Communication system and method for modifying a remote radio using an internet address. 5,796,728, Cl. 370-338.000.

Rongved, Pål: *See—*
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Rosa, Vincent. Article dispenser. 5,794,817, Cl. 221-281.000.

Rosazza, John P. N.; and Li, Tao, to University of Iowa Research Foundation, The. Carboxylic acid reductase, and methods of using same. 5,795,759, Cl. 435-189.000.

Rose, Peter: *See—*
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Rosenkranz, Jürgen: *See—*
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Rosette, Jack L.: *See—*
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Ross Operating Valve Company: *See—*
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Rozenberg, Alexander, to Alfacel s.a. Method for treatment of CS_2 and H_2S emissions during viscose regeneration. 5,795,523, Cl. 264-196.000.
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Saab-Scania Combitech Aktiebolag: *See*—
Olsson, Lars, 5,796,084, Cl. 235-384.000.
Saada, Charles, to Bull CP8. Method and system for writing information in a data carrier making it possible to later certify the originality of this information. 5,796,835, Cl. 380-25.000.
Sabratek Corporation: *See*—
Wilson, Larry; and Jordan, Alan E., 5,795,327, Cl. 604-65.000.
Sacchi, Giovanni: *See*—
Forni, Roberto; Santinato, Fabio; and Sacchi, Giovanni, 5,794,738, Cl. 188-71.900.
Sack, James A.: *See*—
Kakuda, Baku; and Sack, James A., 5,795,091, Cl. 403-325.000.
Sack, James W.; and Shortén, James H. Removable shade for motorcycle. 5,795,009, Cl. 296-78.100.
Sadler, Marc, to Sadler S.A.S. Di Marc Sadler & C. Footwear with a sole provided with a damper device. 5,794,361, Cl. 36-29.000.
Sadler S.A.S. Di Marc Sadler & C.: *See*—
Sadler, Marc, 5,794,361, Cl. 36-29.000.
Sadovnik, Lev S.: *See*—
Manasson, Vladimir A.; and Sadovnik, Lev S., 5,796,881, Cl. 385-9.000.
Saeftel, Josef: *See*—
Nerger, Klaus Klemens; and Saeftel, Josef, 5,795,003, Cl. 294-106.000.
Saeki, Takanori; and Fukuzo, Yukio, to NEC Corporation. Input buffer circuit with hysteresis for noise control. 5,796,281, Cl. 327-206.000.
Safari, Ahmad; Danforth, Stephen C.; Bandyopadhyay, Amit; Janas, Victor F.; and Panda, Rajesh Kumar, to Rutgers, The State University of New Jersey. Oriented piezo electric ceramics and ceramic/polymer composites. 5,796,207, Cl. 310-358.000.
Safford, David Robert: *See*—
Johnson, Donald Byron; Karger, Paul Ashley; Kaufman, Charles William, Jr.; Matyas, Stephen Michael, Jr.; Safford, David Robert; Yung, Marcel Mordechay; and Zunic, Nevenko, 5,796,830, Cl. 380-21.000.
Sagawa, Yuichirou, to NEC Corporation. Digital modulator with Root-Nyquist filter. 5,796,782, Cl. 375-296.000.
Sagisaka, Masakazu: *See*—
Nakaya, Teruomi; Okamoto, Osamu; Kuwano, Naoaki; Suzuki, Seizo; Sasa, Shuichi; Nakayasu, Hidehiko; and Sagisaka, Masakazu, 5,797,105, Cl. 701-7.000.
Sahm, Detlef Dieter; and Wezel, Rolf, to Sauter Feinmechanik GmbH. Coolant valve for a tool turret. 5,794,917, Cl. 251-176.000.
Saikin, Joel L., to Bethlehem Steel Corporation. High energy pump system for use in the descaling of steel. 5,794,658, Cl. 137-563.000.
Saint-Gobain Vitrage: *See*—
Morin, Claude; and Beyrle, Andre, 5,796,071, Cl. 219-203.000.
Oudard, Jean-Francois, 5,795,388, Cl. 118-308.000.
Saito, Akitoshi, to Yamaha Corporation. Learning vector quantization and a temporary memory such that the code book contents are renewed when a first speaker returns. 5,797,118, Cl. 704-222.000.
Saito, Hirokazu: *See*—
Hodosawa, Yoshihito; Nagano, Hideo; and Saito, Hirokazu, 5,795,506, Cl. 264-4.100.
Saito, Kazuhiro; Kamiguchi, Yuzo; Iwasaki, Hitoshi; Hashimoto, Susumu; Fuke, Hiromi; and Funayama, Tomomi, to Kabushiki Kaisha Toshiba. Magnetoresistive head. 5,796,560, Cl. 360-113.000.
Saito, Kazuki; Sekiguchi, Sunao; and Ishida, Hisashi, to Japan Aviation Electronics Industry, Limited. Multi-connector supporting device with connection/disconnection mechanism. 5,795,174, Cl. 439-310.000.
Saito, Kazuo; and Hagiwara, Atsushi, to Nisshinbo Industries, Inc. Vitreous carbon-active carbon composite material, process for producing said composite material, and polarizable electrode using said composite material for use in electric double layer capacitor. 5,796,574, Cl. 361-502.000.
Saito, Kazuo; Anai, Koji; Igarashi, Keiju; Nishikawa, Takeshi; Himeno, Ryoichi; and Yoguchi, Kazuhiro, to Nippon Telegraph and Telephone Corporation. ATM bus system. 5,796,741, Cl. 370-439.000.
Saito, Kimihiro: *See*—
Nishi, Noriaki; Saito, Kimihiro; Matsumoto, Shuichi; and Hattori, Masato, 5,796,701, Cl. 369-110.000.
Saito, Masahiko; Miyasaka, Toru; Oonishi, Kazushige; Takeya, Shoji; Terashima, Isamu; Akasaki, Tetsuro; and Okano, Tadashi, to Hitachi, Ltd. Image forming apparatus having improved toner carrier arrangement. 5,797,075, Cl. 399-284.000.
Saito, Naohito: *See*—
Inoue, Hidefumi; and Saito, Naohito, 5,794,506, Cl. 91-369.200.
Saito, Norihisa: *See*—
Nakanishi, Hiroshi; Saito, Norihisa; Ando, Toshinori; and Morinaga, Hisakazu, 5,796,507, Cl. 359-205.000.
Saito, Shinji: *See*—
Ejiri, Kiyomi; Inaba, Hiroo; Saito, Shinji; and Hayakawa, Satoru, 5,795,646, Cl. 428-323.000.
Saito, Shouichi: *See*—
Sakano, Hiromichi; and Saito, Shouichi, 5,796,193, Cl. 310-67.00R.
Saito, Shuji: *See*—

Sato, Makoto; Suzuki, Shigetaka; Saito, Shuji; and Shigihara, Makoto, 5,796,371, Cl. 343-786.000.

Saito, Yuji: *See*—
Yamada, Kazuyuki; and Saito, Yuji, 5,795,601, Cl. 425-580.000.

Saito, Yutaka; Shinogi, Masataka; and Kato, Kenji, to Seiko Instruments Inc. Power unit and electronic apparatus equipped with power unit. 5,796,240, Cl. 322-10.000.

Saitoh, Hiroyuki: *See*—
Itoh, Takashi; Saitoh, Hiroyuki; Kinami, Haruyuki; Konaka, Toshinori; and Murai, Tsuyoshi, 5,795,401, Cl. 134-6.000.

Sakai, Takashi; Nishiyama, Haruo; and Matsuyama, Kazuhiro, to Sharp Kabushiki Kaisha. Charging device and design method thereof. 5,796,103, Cl. 250-326.000.

Sakakibara, Yuichi; Yagi, Toshiharu; Yasuhara, Akinori; and Yamada, Ichiro, to Toshiba Lighting & Technology Corporation. Circular fluorescent lamp unit and lighting apparatus. 5,796,210, Cl. 313-493.000.

Sakamoto, Fumio: *See*—
Hirayama, Ryoichi; Tsukida, Takahiro; Yamamoto, Minoru; Ikeda, Shoji; Sakamoto, Fumio; Obata, Yuji; and Matsuo, Konomi, 5,795,891, Cl. 514-238.200.

Sakamoto, Hiroshi: *See*—
Arai, Satoshi; Ito, Shinichi; Sakamoto, Hiroshi; Oi, Eisetsu; and Yotsumoto, Hiroki, 5,794,786, Cl. 209-29.000.

Sakamoto, Munenori: *See*—
Shigematsu, Hiroyuki; Nakamura, Yutaka; Sakamoto, Munenori; Nagasawa, Hiroyuki; Nakao, Hiroshi; Nakajima, Yasuhiro; and Kurata, Masaaki, 5,796,406, Cl. 345-358.000.

Sakamoto, Yoshinori; Hagiwara, Yoshio; and Nakayama, Toshimasa, to Tokyo Ohka Kogyo Co., Ltd. Coating solution for silica-based coating film and method for the preparation thereof. 5,795,378, Cl. 106-287.160.

Sakane, Katsunobu, to Toyoda Gosei Co., Ltd. Steering wheel with air bag device. 5,794,969, Cl. 280-731.000.

Sakano, Hiromichi; and Saito, Shouichi, to Olympus Optical Co., Ltd. Disk driving motor. 5,796,193, Cl. 310-67.00R.

Sakashita, Hiroshi; and Katagiri, Masayuki, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Brushless motor having an anisotropic driving magnet and an isotropic frequency magnet. 5,796,200, Cl. 310-156.000.

Sakata, Teruaki: *See*—
Fujioka, Masanori; Sakata, Teruaki; and Dilao, Carmelo Osmeña, 5,794,448, Cl. 60-736.000.

Sakaue, Masaaki: *See*—
Hatano, Koichi; Yamashita, Hiroyuki; Sakaue, Masaaki; Toyoda, Koji; and Yamada, Yasuji, 5,795,856, Cl. 510-444.000.

Sakon, Shoichi, to NEC Corporation. Multi-processor system barrier synchronizer not requiring repeated intializations of shared region. 5,796,946, Cl. 395-200.190.

Saksena, Anil K.: *See*—
Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,795,874, Cl. 514-54.000.

Sakuma, Harunobu: *See*—
Kinoshita, Haruhisa; Matsumoto, Osamu; and Sakuma, Harunobu, 5,795,452, Cl. 204-298.370.

Sakurai, Fumiyoshi; and Nagai, Norio, to Nippon Carbon Co., Ltd. Method for cooling graphite electrodes used for metal melting and refining in an electric arc furnance and a ladle. 5,795,539, Cl. 266-46.000.

Sakurai, Shin: *See*—
Otsuki, Naohito; Kamei, Kyoji; Inoue, Akiyoshi; Ishikawa, Kiyoshi; Sakurai, Shin; and Matsumura, Takuo, 5,797,068, Cl. 399-110.000.

Sakurai, Shuuzou: *See*—
Nagai, Shigekazu; Sakurai, Shuuzou; and Nakamura, Masayuki, 5,796,187, Cl. 310-20.000.

Sakurai, Yasuhiro; and Kamo, Osamu, to Matsushita Electric Industrial Co., Ltd. Apparatus and method for editing handwritten stroke. 5,796,866, Cl. 382-187.000.

Salbreux, Jean-Claude, to SGS-Thomson Microelectronics S.A. Semiconductor component mounted by brazing. 5,796,123, Cl. 257-110.000.

Salco Products, Inc.: *See*—
Ott, Michael Anthony; Hendee, Alfred W.; and Hendee, Charles C., 5,794,539, Cl. 105-377.080.

Saldanha, José William: *See*—
Tsuchiya, Masayuki; Sato, Koh; Bendig, Mary Margaret; Jones, Steven Tarran; and Saldanha, José William, 5,795,965, Cl. 530-387.300.

Saleh, Bahaa E. A.: *See*—
Teich, Malvin Carl; and Saleh, Bahaa E. A., 5,796,477, Cl. 356-318.000.

Salko, Stephen James: *See*—
Butrie, Timothy; Enoeda, Shigemasa; Riska, Joseph Edward; Salko, Stephen James; Stakelon, Thomas Stanley; Swanson, Alka; and Yasuda, Toshimichi, 5,796,899, Cl. 385-92.000.

Salmen, Michael; Lunk, Hans-Joachim; Gahn, Alfred-Georg; Altmann, Bernhard; and Fait, Martin, to Patent-Treuhand-Gesellschaft fuer elektrische Gluehlampen mbH. Method of manufacturing a non-sag tungsten wire for electric lamps. 5,795,366, Cl. 75-368.000.

Salomon S.A.: *See*—
Girard, Francois, 5,794,963, Cl. 240-615.000.

Salomons, Willemina G.: *See*—
Janssen, Bernardus J. W.; Kroon, Gijsbert; Kruythoff, Dirk; and Salomons, Willemina G., 5,795,928, Cl. 524-48.000.

Salvador, Yvan; Gerard, Dominique; and Huet, Eric, to Vetrotex France. Method of producing and treating glass threads by blowing dried air across coated fibers. 5,795,365, Cl. 65-443.000.

Salvatore, Jeremiah O., to Hughes Electronics. Critical nutation dampling on spinning bodies via momentum wheels or similar devices. 5,794,892, Cl. 244-165.000.

Salzmann, Hannes; Jung, Ulrich; and Kötter, Wilfried, to Zumbach Electronic AG. Method and apparatus for the cross-sectional measurement of electric insulated conductors. 5,795,531, Cl. 264-408.000.

Samal, Babru B.: *See*—
Bartley, Timothy D.; Bogenberger, Jakob M.; Bosselman, Robert A.; Hunt, Pamela; Kinstler, Olaf B.; and Samal, Babru B., 5,795,569, Cl. 424-85.100.

Saman, Eric: *See*—
De Leys, Robert; Vanderborght, Bart; Saman, Eric; and Van Heuverswyn, Hugo, 5,795,743, Cl. 435-69.300.

Samiec, Karen: *See*—
Edgley, Richard R.; Lenz, William R.; Luthy, John S.; and Samiec, Karen, 5,795,185, Cl. 439-545.000.

Samizo, Ken; Mishina, Kenichi; Yamamoto, Mituo; Yakabe, Yutaka; Kageyama, Toshikazu; and Mashimo, Yoshiya, to Fuji Xerox Co., Ltd. Double-sided images forming apparatus and method using the same. 5,797,077, Cl. 399-309.000.

Samson, Gene, to Target Therapeutics, Inc. High performance spiral-wound catheter. 5,795,341, Cl. 604-282.000.

Samsung Aerospace Industries, LTD.: *See*—
Choi, Yong-hag, 5,796,466, Cl. 355-35.000.
Park, Cheon-ho, 5,796,529, Cl. 359-756.000.
Umei, Sachio, 5,795,048, Cl. 353-122.000.

Samsung Display Devices Co., Ltd.: *See*—
Kim, Jin-soo, 5,795,357, Cl. 29-623.500.
Kim, Kang-jae; and Choi, Su-suk, 5,795,676, Cl. 429-164.000.
Kim, Si-hwan, 5,796,451, Cl. 349-66.000.

Samsung Electro-mechanics Co., Ltd.: *See*—
Hwang, Tae-yeon, 5,795,072, Cl. 384-100.000.
Woo, Suk Ha, 5,796,204, Cl. 310-258.000.

SamSung Electronics Co., Ltd.: *See*—
Baek, Nam-Dae, 5,796,809, Cl. 379-100.060.
Choi, Hyung-Jin; Cho, Sung-Bae; Jung, Suk-Jin; and Lee, Hyung-Kil, 5,796,756, Cl. 371-43.700.
Choi, Ssi Chol, 5,795,052, Cl. 362-91.000.
Han, Min-Koo; Choi, Yearn-Ik; Kim, Jae-Hyung; and Kim, Han-Soo, 5,796,126, Cl. 257-141.000.
Jiang, Shao-Kun, 5,796,644, Cl. 364-748.070.
Jin, Sun Ik, 5,795,140, Cl. 417-372.000.
Jo, Sung-O, 5,796,077, Cl. 219-497.000.
Joo, Suk-ho; Paik, Choong-ryul; and Lee, Ki-hong, 5,795,817, Cl. 438-591.000.
Jung, Tae-Sung; and Park, Jung-Hoon, 5,796,273, Cl. 327-55.000.
Kim, Byeong-soo, 5,796,794, Cl. 375-368.000.
Kim, Chang-gyu; and Chung, Woo-in, 5,795,811, Cl. 438-404.000.
Kim, Dong-Gyu, 5,796,448, Cl. 349-39.000.
Kim, Dong-Ho, 5,794,798, Cl. 211-41.180.
Kim, Jae-Min, 5,796,412, Cl. 345-517.000.
Kim, Je Myung, 5,796,082, Cl. 219-752.000.
Kim, Seung-min, 5,796,707, Cl. 369-219.000.
Kim, Tae-Sung, 5,796,384, Cl. 345-147.000.
Kim, Tae-Yong, 5,796,576, Cl. 361-681.000.
Kim, Yeung-Saeng; and Youn, Baek, 5,794,690, Cl. 165-151.000.
Kim, Yong-ho; Lee, Young-sik; and Jo, Hyun-min, 5,796,277, Cl. 327-108.000.
Kim, Yun-gi, 5,796,134, Cl. 257-295.000.
Kwon, Joong-Yeol; and Kofune, Hideki, 5,796,218, Cl. 315-411.000.
Kwon, Kee-Won; and Kang, Chang-Seok, 5,796,133, Cl. 257-295.000.
Lee, Chul-woo; Seong, Pyeong-yong; and Shin, Dong-ho, 5,796,700, Cl. 369-106.000.
Lee, Hyo Chan, 5,797,087, Cl. 455-181.100.
Lee, Kang-yoon, 5,795,801, Cl. 438-199.000.
Lee, Kun-bin; and Cho, Sung-ho, 5,794,451, Cl. 62-71.000.
Lee, Myeong-hwan, 5,796,786, Cl. 375-326.000.
Na, Il Goo, 5,797,086, Cl. 455-179.100.
Ryu, Kyu-Bok; and Park, Bong-Hee, 5,794,989, Cl. 285-345.000.
Seo, Dong-Il; and Hwang, Hong-Sun, 5,796,668, Cl. 365-207.000.
Son, Woog-Ig, 5,796,754, Cl. 371-27.100.
Yoon, Sei-Seung; and Bae, Yong-Cheol, 5,796,293, Cl. 327-536.000.

Samsung Heavy Industries, Co., Ltd.: *See*—
Lee, Si Cheon; and Lee, Dong Jae, 5,794,369, Cl. 37-348.000.
Nam, In Taek, 5,796,174, Cl. 307-9.100.

Samuelson, Laurence S., to International Business Machines Corporation. Landing pads for air bearing sliders and method for making the same. 5,796,551, Cl. 360-103.000.

Samuelson, Laurence S.: *See*—
O'Sullivan, Timothy C.; Samuelson, Laurence S.; and Schwartz, Howell B., 5,796,550, Cl. 360-103.000.

Sanada, Masakatsu: *See*—
Tanahashi, Toshio; Sanada, Masakatsu; Domyo, Hiroyuki; Hirayama, Hiroshi; Sobue, Kazuaki; Higashi, Tsuneo; Yokota, Koji; Sobukawa, Hideo; Suzuki, Tadashi; and Matsunaga, Shinichi, 5,795,992, Cl. 73-23.310.

Sanchez, Rafael S. Cup wrap. 5,794,843, Cl. 229-403.000.

Sanda, Atsuo: *See*—

Hasegawa, Makoto; Sanda, Atsuo; and Nomura, Haruhiko, 5,795,399, Cl. 134-1.300.
Sanden Corporation: *See*—
Shimizu, Hidehiko; and Yaguchi, Masashi, 5,794,915, Cl. 251-127.000.
Sanderink, Gérard: *See*—
Chapelle, Philip; Gaillard, Claude; Jimonet, Patrick; Louvel, Erik; Martinet, Michel; Mignani, Serge; and Sanderink, Gérard, 5,795,903, Cl. 514-367.000.
Sandhu, Jaswinder S.; Popek, Witold J.; and Wang, Honghui. Acoustic imaging systems. 5,796,003, Cl. 73-603.000.
Sandia Corporation: *See*—
Pfeifer, Kent B.; Hoyt, Andrea E.; and Frye, Gregory C., 5,795,993, Cl. 73-24.010.
Segalman, Daniel J.; and Wallace, J. Shield, 5,795,581, Cl. 424-400.000.
Sandvik AB: *See*—
Coyle, Roy Tom; and Ekelund, Jan Magnus, 5,795,384, Cl. 117-87.000.
Frank, Peter; Kraft, Klaus; Nitz, Erwin; and Aspeby, Magnus, 5,795,116, Cl. 411-6.000.
Jonsson, Anders; and Forsström, Klas, 5,795,109, Cl. 407-72.000.
Palmberg, Göran, 5,794,728, Cl. 175-400.000.
Sanfilippo, Donna: *See*—
Sanfilippo, Jakie; and Sanfilippo, Donna, 5,794,303, Cl. 15-344.000.
Sanfilippo, Jakie; and Sanfilippo, Donna. Hand held vacuum and scraper combination. 5,794,303, Cl. 15-344.000.
Sanford Acquisition Company: *See*—
Kerendian, Hormoz, 5,794,751, Cl. 192-85.0AA.
Sanger, Jay L.: *See*—
Wirth, John, Jr.; Sanger, Jay L.; and McCool, Mark K., 5,795,110, Cl. 408-110.000.
Sango, Yoshinori: *See*—
Fujiu, Takamitsu; Watanabe, Shunji; Sango, Yoshinori; and Nomura, Tatsushi, 5,796,000, Cl. 73-504.150.
Sankey, Bruce M.; Maa, Peter S.; and Bearden, Roby, Jr., to Exxon Research and Engineering Company. Conversion of the organic component from tar sands to lower boiling products. 5,795,464, Cl. 208-391.000.
Sannohe, Shinya; and Miyatake, Yoshito, to Matsushita Electric Industrial Co., Ltd. Projection lens and projection display apparatus. 5,795,047, Cl. 353-81.000.
Sano, Mutsumi: *See*—
Izu, Hiroyuki; Kurome, Yoko; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,795,765, Cl. 435-200.000.
Sano, Takayuki: *See*—
Miyagawa, Masazumi; Nishizawa, Satoru; and Sano, Takayuki, 5,794,994, Cl. 292-336.300.
Sano, Takeshi: *See*—
Cantor, Charles R.; Przetakiewicz, Marek; Smith, Cassandra L.; and Sano, Takeshi, 5,795,714, Cl. 435-6.000.
Sano, Tatsuji: *See*—
Nonami, Toru; Takahashi, Chihiro; and Sano, Tatsuji, 5,795,151, Cl. 433-8.000.
Sano, Yasukazu: *See*—
Tsuji, Nobuhiko; Kaiho, Naoki; and Sano, Yasukazu, 5,796,890, Cl. 385-24.000.
Sano, Yoshikazu; Shigeta, Yoko; and Aoki, Hiromitsu, to Matsushita Electronics Corporation. Solid-state imaging device with dual lens structure. 5,796,154, Cl. 257-432.000.
Sanshin Kogyo Kabushiki Kaisha: *See*—
Kato, Masahiko, 5,794,605, Cl. 123-688.000.
Kimura, Sakayuki, 5,794,602, Cl. 123-572.000.
Santangini, Henry A.: *See*—
Mullon, Claudy Jean-Paul; Cain, Shawn Paul; Perlman, Timothy Jon; Jauregui, Hugo O.; Naik, Sharda; Santangini, Henry A.; and Trenkler, Donna M., 5,795,711, Cl. 435-1.100.
Santen Oy: *See*—
Lehmussaari, Kari; Vartiainen, Eija; Reunamaki, Timo; Oksala, Olli; Alaranta, Sakari; and Pohjala, Esko, 5,795,913, Cl. 514-459.000.
Santinato, Fabio: *See*—
Forni, Roberto; Santinato, Fabio; and Sacchi, Giovanni, 5,794,738, Cl. 188-71.900.
Sanyo Electric Co., Ltd.: *See*—
Fukase, Kenji, 5,796,139, Cl. 257-315.000.
Hamaguchi, Toshihide, 5,794,873, Cl. 242-336.000.
Machida, Toyoji; and Hara, Mitsuya, 5,796,588, Cl. 361-773.000.
Sumi, Satoshi; Tanase, Kenji; Suzuki, Yoshihisa; Yamaguchi, Atsushi; and Tsuchiya, Yoichi, 5,796,683, Cl. 369-13.000.
Saotome, Shigeru: *See*—
Aoyama, Tatsuya; Ito, Wataru; and Saotome, Shigeru, 5,796,865, Cl. 382-169.000.
Saperstein, Zalman P.: *See*—
Voss, Mark G.; Saperstein, Zalman P.; Kottal, Peter C.; and Hughes, Gregory G., 5,794,692, Cl. 165-175.000.
Sapporo Breweries Ltd.: *See*—
Nakajima, Toshiyuki; Okauchi, Akira; Hujino, Setuo; Taya, Hirokazu; Shimoda, Tomoki; and Ohshiba, Seiji, 5,794,499, Cl. 82-1.110.
Sarangdhar, Nitin V.; Singh, Gurbir; Lai, Konrad; Pawlowski, Stephen S.; MacWilliams, Peter D.; and Rhodehamel, Michael W., to Intel Corporation. Highly pipelined bus architecture. 5,796,977, Cl. 395-406.000.
Sarangdhar, Nitin V.: *See*—
Rhodehamel, Michael W.; Sarangdhar, Nitin V.; Merchant, Amit A.; Fisch, Matthew A.; and Brayton, James M., 5,797,026, Cl. 395-800.010.
Sarbell, John P.: *See*—
Beasley, William E., Jr.; Sarbell, John P.; and Moran, James W., 5,795,428, Cl. 156-344.000.
Sarju, Tejanand: *See*—
Hanlon, Edite M.; Heinsius, Steven T.; Natarajan, Mrinalini; Rule, Antoinette; Sarju, Tejanand; and Walden, Gary D., 5,796,812, Cl. 379-212.000.
Saruwatari, Koji; and Shiraishi, Koji, to Okuma Corporation. Numerical control equipment for a plurality of systems. 5,795,278, Cl. 483-4.000.
Sasa, Shuichi: *See*—
Nakaya, Teruomi; Okamoto, Osamu; Kuwano, Naoaki; Suzuki, Seizo; Sasa, Shuichi; Nakayasu, Hidehiko; and Sagisaka, Masakazu, 5,797,105, Cl. 701-7.000.
Sasabayashi, Takashi: *See*—
Koike, Yoshio; Kamada, Tsuyoshi; Tsuyuki, Syun; Furukawa, Noriaki; Masuda, Shigeru; Murata, Satoshi; Hasegawa, Tadashi; Sasabayashi, Takashi; Tanuma, Seiji; Mayama, Takatoshi; and Ohmuro, Katufumi, 5,796,458, Cl. 349-126.000.
Sasada, Taisuke, to NEC Corporation. Recovery of previous filter coefficients with smaller capacity memory. 5,796,820, Cl. 379-410.000.
Sasada, Tetsuo: *See*—
Utamura, Motoaki; Hoizumi, Shinichi; Takeda, Yasushi; Sasaki, Toshihiko; Komatsu, Hideaki; Kirikami, Seiichi; Suzumura, Takeshi; Sasada, Tetsuo; Ikeguchi, Takashi; and Sugita, Shigehisa, 5,794,431, Cl. 60-39.030.
Sasaki, Hitoshi; and Igota, Shoji, to Ajinomoto Co., Inc. Standing pouch. 5,795,071, Cl. 383-200.000.
Sasaki, Kazuo; and Kikuchi, Shuichi, to Sony Corporation. Method of punching template for forming a base plate of a tape cassette. 5,794,501, Cl. 83-49.000.
Sasaki, Masaki: *See*—
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; Sasaki, Masaki; Kanaya, Miharu; Hayashi, Hiroko; Owatari, Akio; and Ouki, Yasuhiro, 5,795,970, Cl. 534-573.000.
Sasaki, Steven: *See*—
Workman, Kurt; Sasaki, Steven; O'Neel, John; and Kari, John, 5,794,272, Cl. 2-421.000.
Sasaki, Takamitsu: *See*—
Nomura, Hiroshi; Azegami, Kazuyoshi; and Sasaki, Takamitsu, 5,796,062, Cl. 219-69.110.
Sasaki, Takashi: *See*—
Hirai, Kiyoshi; Yasui, Shinichi; Kobayashi, Hiroko; Nagao, Mamoru; Sasaki, Takashi; and Harada, Hiroyuki, 5,795,450, Cl. 204-256.000.
Kobayashi, Hiroko; Sasaki, Takashi; Hirai, Kiyoshi; Yasui, Shinichi; Nagao, Mamoru; and Harada, Hiroyuki, 5,796,799, Cl. 376-306.000.
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Hamamoto, Kiichi; Sasaki, Tatsuya; Takeuchi, Takeshi; Hayashi, Masako; Komatsu, Keiro; Mito, Ikuo; and Taguchi, Kenko, 5,796,883, Cl. 385-14.000.
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Ookawa, Eiichi; Nishida, Hiroto; Suzuki, Takashi; Watanabe, Hitoshi; and Sasaki, Toshiaki, 5,796,698, Cl. 369-77.200.
Sasaki, Toshihiko: *See*—
Utamura, Motoaki; Hoizumi, Shinichi; Takeda, Yasushi; Sasaki, Toshihiko; Komatsu, Hideaki; Kirikami, Seiichi; Suzumura, Takeshi; Sasada, Tetsuo; Ikeguchi, Takashi; and Sugita, Shigehisa, 5,794,431, Cl. 60-39.030.
Sasaki, Tsutomu, to Mitsubishi Denki Kabushiki Kaisha. Processing-liquid reservation unit for discharge processing apparatus. 5,795,449, Cl. 204-244.00M.
Sasamoto, Tatsuro; and Watanabe, Hideyuki, to Fujitsu Limited. Disk apparatus for controlling a seek operation of a read/write head to a target location of a recording disk. 5,796,546, Cl. 360-78.040.
Sase, Naoki: *See*—
Yoshida, Toshiyuki; Kajiwara, Takaharu; Murata, Yushi; Sase, Naoki; and Hirome, Masashi, 5,796,720, Cl. 370-245.000.
Sashihara, Kenji: *See*—
Akao, Mutsuo; Nishimura, Tetsuo; and Sashihara, Kenji, 5,794,777, Cl. 206-409.000.
Sass, Douglas W.; Dunn, Stephen T.; and Godlove, Ronald E., to Xerox Corporation. Photoreceptor corner prevention brush. 5,797,078, Cl. 399-357.000.
Satake Engineering Co., Ltd.: *See*—
Satake, Toshihiko; and Onogi, Yukio, 5,796,233, Cl. 318-705.000.
Satake, Toshihide: *See*—
Shimotani, Mitsuo; Nishida, Minoru; Okada, Akira; Satake, Toshihide; Washino, Shoichi; Okawa, Futoshi; and Terashita, Hiromi, 5,795,306, Cl. 600-558.000.
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Satellite Balloon Manufacturer of Hong Kong Ltd.: *See*—
Carignan, Robert; and Ping, Chen, 5,795,211, Cl. 446-220.000.
Sato, Junichi: *See*—
Sugano, Yukiyasu; and Sato, Junichi, 5,795,825, Cl. 438-690.000.
Sato, Koh: *See*—
Tsuchiya, Masayuki; Sato, Koh; Bendig, Mary Margaret; Jones, Steven Tarran; and Saldanha, José William, 5,795,965, Cl. 530-387.300.
Sato, Makoto; Suzuki, Shigetaka; Saito, Shuji; and Shigihara, Makoto, to Alps Electric Co., Ltd. Outdoor converter for receiving satellite broadcast. 5,796,371, Cl. 343-786.000.
Sato, Makoto: *See*—

Tanaka, Shigeo; Yamazaki, Hiroshi; Sugiyama, Koichi; Sato, Makoto; Kotabe, Noriko; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, 5,796,352, Cl. 340-825.240.

Sato, Moriyuki: *See*—
Kuga, Tetsuro; Miyaji, Hiromasa; Sato, Moriyuki; Okabe, Masami; Morimoto, Makoto; Itoh, Seiga; Yamasaki, Motoo; Yokoo, Yoshiharu; Yamaguchi, Kazuo; Yoshida, Hajime; and Komatsu, Yoshinori, 5,795,968, Cl. 530-402.000.

Sato, Motoaki: *See*—
Inoue, Makoto, deceased; Inoue, Tsuneo, executor; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, 5,796,415, Cl. 347-45.000.

Sato, Naoyuki; Nagumo, Masahiko; and Abe, Ryuji, to Sony Corporation. Automatic calibration of a rotary head switching signal. 5,796,536, Cl. 360-61.000.

Sato, Norifumi, to NEC Corporation. Semiconductor device composed of MOSFET having threshold voltage control section. 5,796,145, Cl. 257-336.000.

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Sato, Takehiro: *See*—
Ishiguro, Katsusuke; Sato, Takehiro; and Maruyama, Akira, 5,794,456, Cl. 62-497.000.

Sato, Tsuyoshi: *See*—
Kumano, Shinji; and Sato, Tsuyoshi, 5,796,023, Cl. 84-433.000.

Sato, Yasuo: *See*—
Sugaya, Fumitaka; and Sato, Yasuo, 5,796,149, Cl. 257-391.000.

Sato, Yoshinori, to Sony Corporation. Digital signal recording/reproducing apparatus capable of recording sequence signals in slanted and longitudinal tracks on a magnetic tape. 5,796,912, Cl. 386-96.000.

Satoh, Hirofumi: *See*—
Ikeda, Hayato; Yokoi, Masanobu; Michiyuki, Hiromi; Kawamura, Hisato; Satoh, Hirofumi; and Shintoku, Noriyuki, 5,795,139, Cl. 417-269.000.

Satoh, Kouichi: *See*—
Chikaraishi, Kazuo; and Satoh, Kouichi, 5,796,014, Cl. 73-862.331.

Satoh, Noriko: *See*—
Okada, Yoshiyuki; and Satoh, Noriko, 5,796,356, Cl. 341-51.000.

Satoh, Susumu: *See*—
Moribe, Mineo; Maeda, Miyozo; Satoh, Susumu; and Miyabe, Kyoko, 5,796,712, Cl. 369-275.400.

Satoh, Yoshio: *See*—
Nishihara, Tokihiro; Matsuda, Takashi; Uchishiba, Hidema; Ikata, Osamu; Satoh, Yoshio; and Komenou, Kazunari, 5,796,205, Cl. 310-313.00R.

Satori Electric Co., Ltd.: *See*—
Hirose, Hiroyuki; and Tachibana, Hirotaka, 5,794,764, Cl. 200-437.000.

Satran, Julian: *See*—
Azagury, Alain Charles; Dolev, Danny; Goft, German; Marberg, John Michael; Ranweiler, James Gregory; and Satran, Julian, 5,796,999, Cl. 395-600.000.

Sauget, Judith B. Container for self-defense spray canister. 5,794,808, Cl. 220-400.000.

Saulnier, Bernard: *See*—
Magnet, Didier; Garnier, Emmanuel; Saulnier, Bernard; and Girault, Jean-Louis, 5,794,457, Cl. 62-643.000.

Saunders, Leigh; and Saunders, Martha K. Pet bow tie and method of manufacture. 5,794,572, Cl. 119-858.000.

Saunders, Martha K.: *See*—
Saunders, Leigh; and Saunders, Martha K., 5,794,572, Cl. 119-858.000.

Sauter, Erich W., to Warner-Lambert Company. Encapsulated product. 5,795,588, Cl. 424-451.000.

Sauter Feinmechanik GmbH: *See*—
Sahm, Detlef Dieter; and Wezel, Rolf, 5,794,917, Cl. 251-176.000.

Sawada, Takanori: *See*—
Hara, Seinosuke; Hayashi, Nobutaka; Tsuruta, Seiji; and Sawada, Takanori, 5,794,576, Cl. 123-90.160.

Sawaki, Masayoshi: *See*—
Narita, Nobuhiro; Sawaki, Masayoshi; Mikasa, Keiichi; and Kita, Eiji, 5,795,871, Cl. 514-29.000.

Sawatari, Yoshihiro: *See*—
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; Sasaki, Masaki; Kanaya, Miharu; Hayashi, Hiroko; Owatari, Akio; and Ouki, Yasuhiro, 5,795,970, Cl. 534-573.000.

Sawvivor Inc.: *See*—
Ryon, Randall C.; and Baran, Richard M., 5,794,345, Cl. 30-144.000.

Sawyer, Francois: *See*—
Lupien, Francis; and Sawyer, Francois, 5,797,096, Cl. 455-433.000.

Saxena, Neeraj; Precious, Colin John; and Stratton, Paul Francis, to BOC Group, Inc., The. Furnace having regulated flow rate of inerting gas. 5,795,147, Cl. 432-205.000.

Sayano, Koichi: *See*—
Rakuljic, George Anthony; Leyva, Victor; Yariv, Amnon; Sayano, Koichi; O'Connor, Arthur Bruce; Tyler, Charles E.; Mao, Xiaoping; and Miller, Harold Everett, Jr., 5,796,096, Cl. 250-226.000.

Sayer, John, to GKN Sankey Limited. Method of producing a welded assembly. 5,795,034, Cl. 301-9.200.

Scalia, Lorenzo; and Sewing, Barry Donald, to International Business Machines Corporation. Method for in-situ green sheet slitting. 5,795,520, Cl. 264-146.000.

Scania CV AB: *See*—
Dungner, Stefan, 5,794,445, Cl. 60-605.200.

Scanlon, John J.; Herring, Jay J.; and Giannetta, Richard W., to W. L. Gore & Associates, Inc. Removeable deflector boot for a wet/dry vacuum cleaner. 5,795,358, Cl. 55-320.000.

Scapa Group PLC: *See*—
Bakker, Lynn Alan; Ledeker, Chris Alan; Bailey, Ernest Lee; and Young, John Ray, 5,794,758, Cl. 198-785.000.

Scarborough, Robert M., to COR Therapeutics, Inc. Platelet aggregation inhibitors. 5,795,867, Cl. 514-16.000.

Scarborough, Robert M., to COR Therapeutics, Inc. Platelet aggregation inhibitors. 5,795,868, Cl. 514-16.000.

Scepanovic, Ranko; Koford, James S.; Andreev, Alexander E.; and Pavisic, Ivan, to LSI Logic Corporation. Physical design automation system and process for designing integrated circuit chip using simulated annealing with "chessboard and jiggle" optimization. 5,796,625, Cl. 364-491.000.

Schaad, Norman Werth: *See*—
Yang, Shaw-Ming; Dowler, William Minor; Schaad, Norman Werth; and Connick, William Joseph, Jr., 5,795,845, Cl. 504-117.000.

Schaap, Arthur P.; and Romano, Louis J., to Board of Governors of Wayne State University. Alkene intermediates for preparing 1,2-dioxetane compounds. 5,795,987, Cl. 548-528.000.

Schaldach, Kurt D., to Automation Enhancements Unlimited. Pallet couple and decouple clamping apparatus and method for pallet coupling and decoupling. 5,794,324, Cl. 29-559.000.

Schaller, Stefan: *See*—
Flohr, Thomas; and Schaller, Stefan, 5,796,803, Cl. 378-15.000.

Schanze, Rudolf E. Waterglass-based material for sealing purposes and processes for hardening waterglass materials. 5,795,104, Cl. 405-263.000.

Scharfmann, Paul; and Zoller, Ludwig, to Specialty Cheese Company, Inc. Dried cheese pieces of nonmelting cheese and process of making the same. 5,795,613, Cl. 426-582.000.

Scheef, Carl John, Jr. Trailer hitch assembly, and dual purpose trailer utilizing such hitch assembly. 5,794,959, Cl. 280-400.000.

Schegerin, Robert. Head protection system with regulated pressure areas. 5,794,260, Cl. 2-6.100.

Scheibel, Markus: *See*—
Droege, Hartmut; Fischer, Ludwig; Scheibel, Markus; and Sonnentag, Dieter, 5,796,335, Cl. 340-550.000.

Schell, David L.; and Lewis, David E., to Discovision Associates. Apparatus for controlling an electrical current passed to a writing device in an optical storage system. 5,796,703, Cl. 369-116.000.

Scherber, Werner: *See*—
Büchtemann, Wolf; Scherber, Werner; and Downar, Hartmut, 5,796,107, Cl. 250-351.000.

Schering Corporation: *See*—
Girijavallabhan, Viyyoor M.; Saksena, Anil K.; Bennett, Frank; Jao, Edwin; Patel, Naginbhai M.; and Ganguly, Ashit, 5,795,874, Cl. 514-54.000.
Shue, Ho-Jane; Shih, Neng-Yang; Blythin, David J.; Chen, Xiao; Tom, Wing C.; Piwinski, John J.; and McCormick, Kevin D., 5,795,894, Cl. 514-253.000.

Schett, Georg: *See*—
Füchsle, Dieter; Högg, Peter; Mantel, Lothar; and Schett, Georg, 5,796,060, Cl. 218-79.000.

Scheuing, Richard S.: *See*—
Lewis, Gary D.; Messing, Wayne P.; Gonopolskiy, Oleg; and Scheuing, Richard S., 5,795,292, Cl. 600-323.000.

Schielke, Jörg: *See*—
Lupton, David Francis; Schielke, Jörg; Graf, Hans-Joachim; and Reckziegel, Arno, 5,796,019, Cl. 75-235.000.

Schilder, Lothar; Müller, Kay; Skutta, Christian; and Sierk, Hanke, to Ethicon, Inc. Plug for heart electrode wire. 5,795,178, Cl. 439-417.000.

Schilling, Bernhard; Pfefferle, Walter; Bachmann, Bernd; Leuchtenberger, Wolfgang; and Deckwer, Wolf-Dieter, to Degussa Aktiengesellschaft. Stirred-tank reactors and method of use. 5,795,732, Cl. 435-41.000.

Schimminger, Edward W.: *See*—
Cyman, Theodore F.; Schimminger, Edward W.; Rocco, Frank J.; Armstrong, Carl F.; and Mariani, Frank J., 5,796,411, Cl. 345-502.000.

Schinstine, Malcolm; Shoichet, Molly S.; Gentile, Frank T.; Hammang, Joseph P.; Holland, Laura M.; Cain, Brian M.; Doherty, Edward J.; Winn, Shelley R.; and Aebischer, Patrick, to Cytotherapeutics, Inc. Method for controlling proliferation and differentiation of cells encapsulated within bioartificial organs. 5,795,790, Cl. 435-382.000.

Schlage Lock Company: *See*—
Smallegan, Jon M.; Chamberlain, L. C. Derek; and Pompeii, Dario L., 5,794,991, Cl. 292-169.000.

Schlesinger, Randall L.: *See*—
Eaton, John W.; Schlesinger, Randall L.; Ikeda, Michael H.; Brummer, Charles W.; Pacheco, Xavier L.; Kevakian, Robert; and Espinosa, Ricardo G., 5,795,299, Cl. 600-459.000.

Schloss, Charles M.; and Snyder, Charles E., to Schloss Engineered Equipment, Inc. Adjustable inlet for waste water treatment apparatus. 5,795,467, Cl. 210-162.000.

Schloss Engineered Equipment, Inc.: *See*—
Schloss, Charles M.; and Snyder, Charles E., 5,795,467, Cl. 210-162.000.

Schlumberger Technology Corporation: *See*—
Kleinberg, Robert L.; Latour, Lawrence L.; and Sezginer, Abdurrahman, 5,796,252, Cl. 324-303.000.

Kostek, Sergio; Chang, Shu-Kong; McDaniel, Gordon; Plona, Thomas; Randall, Curtis; Masson, Jean-Pierre; Mayes, James C.; and Hsu, Kai, 5,796,677, Cl. 367-25.000.

Schmid, Johannes, to TRW Occupant Restraint Systems GmbH. Belt retractor for a vehicle safety belt system. 5,794,875, Cl. 242-374.000.

Schmid, Steffen. Acousto-optical waveguide device, tunable, with a polarization independent response, and a method for the acousto-optical processing of optical signals. 5,796,882, Cl. 385-11.000.

Schmidt, Barbara A., legal representative: *See*—
Jenkins, Stuart E.; Schmidt, K. Michael, deceased; and Le, Tuan N., 5,794,359, Cl. 36-28.000.

Schmidt, K. Michael, deceased (by Barbara A. Schmidt, legal representative): *See*—
Jenkins, Stuart E.; Schmidt, K. Michael, deceased; and Le, Tuan N., 5,794,359, Cl. 36-28.000.

Schmidt, Mark C.; Knowles, Carl H.; Wilz, David M., Sr.; and Rockstein, George B., to Metrologic Instruments, Inc. Automatic hand-supportable omnidirectional laser projection scanner with handle-controllable projection axis. 5,796,091, Cl. 235-472.000.

Schmidt, Robert: *See*—
Fennel, Helmut; Ehmer, Norbert; Kolbe, Alexander; Schmidt, Robert; and Proger, Thomas, 5,795,039, Cl. 303-122.050.

Schmidt, Roger Ray: *See*—
Harris, Willard Stephen; Kemink, Randall Gail; McClafferty, William David; and Schmidt, Roger Ray, 5,794,454, Cl. 62-259.200.

Schmidt, Timothy J., Jr.: *See*—
Collins, Cecil A.; Whalen, John F.; and Schmidt, Timothy J., Jr., 5,795,024, Cl. 297-361.100.

Schmitt, Peter J.; Swain, Eugene A.; Zaman, Kamran U.; and Smith, Alan D., to Xerox Corporation. Chuck assembly. 5,794,948, Cl. 279-2.170.

Schmitt, Wolfgang: *See*—
Habermayr, Erwin; Huebner, Christian; Hofmeister, Juergen; Horak, Dieter; Pichl, Werner; and Schmitt, Wolfgang, 5,796,987, Cl. 395-500.000.

Schmitz, Christoph Johann, to Procter & Gamble Company, The. Disposable absorbent article having a mechanical fastener. 5,795,350, Cl. 604-391.000.

Schneider, Michael G., to Sundstrand Corporation. Electronics mounting plate with heat exchanger and method for manufacturing same. 5,796,049, Cl. 174-252.000.

Schneider, Otto: *See*—
Grune, Burkhard; Hager, Ludwig; Huber, Helmut; Lwowski, Gerhard; Zadny, Wilhelm; Müller, Horst; and Schneider, Otto, 5,795,583, Cl. 424-400.000.

Schneider, Palle; and Pedersen, Anders Hjelholt, to Novo Nordisk A/S. Enhancement of laccase reactions. 5,795,855, Cl. 510-376.000.

Schneider, Palle: *See*—
Berka, Randy Michael; Brown, Stephen H.; Xu, Feng; Schneider, Palle; Oxenbøll, Karen M.; and Aaslyng, Dorrit A., 5,795,760, Cl. 435-189.000.

Schober, Thomas: *See*—
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Schoepferisch Aeusserung Anstalt: *See*—
Chen, Sidney Yiu Kwok; Bibb, Patricia Elaine; Bibb, Ben Lee; and Sebrechts, Phillipe, 5,796,334, Cl. 340-539.000.

Schofield, Kenneth; Larson, Mark L.; and Vadas, Keith J., to Donnelly Corporation. Vehicle headlight control using imaging sensor. 5,796,094, Cl. 250-208.100.

Scholten, Frank: *See*—
Allen, Roy D.; and Scholten, Frank, 5,796,511, Cl. 359-305.000.

Scholz, Ulrich: *See*—
Schwenk, Gerhard; Scholz, Ulrich; Magg, Ulrich; and Leist, Johannes, 5,795,379, Cl. 106-499.000.

Schönsteiner, Jochen, to Webasto Karosseriesysteme GmbH. Device for driving of sliding roofs, window raisers, or the like. 5,794,480, Cl. 74-425.000.

Schrauwers, Carolus J. A. M.: *See*—
Foster, Gilbert; and Schrauwers, Carolus J. A. M., 5,795,386, Cl. 118-203.000.

Schraw, George W.: *See*—
Murray, Daniel J.; Griffin, John C., III; Turner, Bruce L.; Gunn, Peter D.; Twiggs, Thomas E.; VonJouanne, Henry V.; Schraw, George W.; and Tracy, Ann M., 5,797,106, Cl. 701-11.000.

Schröder, Jens: *See*—
Hesch, Rolf-Dieter; Oettel, Michael; Droescher, Peter; Schwarz, Sigfrid; Menzenbach, Bernd; Römer, Wolfgang; Kaufmann, Günter; and Schröder, Jens, 5,795,883, Cl. 514-172.000.

Schrodl, Manfred; and Ensbacher, Richard. Process and circuits for determining machine-related electro-magnetic and mechanical state variables on electrodynamic induction machines supplied via converters. 5,796,235, Cl. 318-801.000.

Schroeder, Knut: *See*—
Kalfa, Horst; and Schroeder, Knut, 5,795,994, Cl. 73-29.010.

Schroeder, Martin K.; and Sharman, Duane, to Pacific Communication Sciences, Inc. User interface for cellular telephone. 5,797,098, Cl. 455-454.000.

Schroeder, Wolfgang, to Afuema Abfuellmaschinen GmbH Rosslau. Filling stream adjusting process. 5,794,668, Cl. 141-198.000.

Schropfer, Jorg: *See*—
Dwars, Anja; Prechtl, Wolfgang; Schropfer, Jorg; and Tischner, Hermann, 5,795,540, Cl. 420-12.000.

Schuler Pressen GmbH & Co.: *See*—
Schuppler, Helmut; and Moser, Wolfgang, 5,794,475, Cl. 72-213.000.

Schuller, Edmund; Greppmair, Eva-Maria; and Franz, Claus, to Rieter Ingolstadt Spinnereimaschinenbau AG. Opener roller for an open-end spinning device. 5,794,311, Cl. 19-112.000.

Schultz, Dale A.: *See*—
Olsaker, Oleif; Ferentinos, James T.; and Schultz, Dale A., 5,795,136, Cl. 417-295.000.

Schultz, Merle A.: *See*—
Popescu, Valeri; Schultz, Merle A.; Gibson, Gary A.; Spracklen, John E.; and Lightner, Bruce D., 5,797,025, Cl. 395-800.000.

Schulz, John C. Wildlife feeder. 5,794,561, Cl. 119-52.100.

Schumacher, Markus; and Muin, Andrew, to Daimler-Benz Aerospace Airbus GmbH. Passenger service terminal particularly in passenger cabin of an aircraft. 5,795,018, Cl. 297-184.170.

Schumacher, Steven: *See*—
Shapiro, Raymond E.; Stanley, Paul C.; and Schumacher, Steven, 5,797,031, Cl. 395-828.000.

Schuppler, Berthold: *See*—
Jentzsch, Horst; and Schuppler, Berthold, 5,794,648, Cl. 137-355.230.

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Schwabe, Rudolf: *See*—
Hüsler, Rinaldo; Schwabe, Rudolf; and Luisoli, Reto, 5,795,985, Cl. 544-106.000.

Schwanda, Josef, to Asea Brown Boveri AG. Bulb-type generator. 5,796,191, Cl. 310-58.000.

Schwartz, Howell B.: *See*—
O'Sullivan, Timothy C.; Samuelson, Laurence S.; and Schwartz, Howell B., 5,796,550, Cl. 360-103.000.

Schwartz, Shirley. Water saver attachment for toilets. 5,794,279, Cl. 4-415.000.

Schwartz, Waldemar: *See*—
Urban, Jörg; Strum, Hans-Dieter; and Schwartz, Waldemar, 5,795,129, Cl. 415-170.100.

Schwarz, Sigfrid: *See*—
Hesch, Rolf-Dieter; Oettel, Michael; Droescher, Peter; Schwarz, Sigfrid; Menzenbach, Bernd; Römer, Wolfgang; Kaufmann, Günter; and Schröder, Jens, 5,795,883, Cl. 514-172.000.

Schwarzbich, Jörg. Adjusting mechanism. 5,794,479, Cl. 74-143.000.

Schwarzkopf, Bernhard: *See*—
Berger, Frank; and Schwarzkopf, Bernhard, 5,794,595, Cl. 123-470.000.

Schwärzler, Peter: *See*—
Eschbach, Markus; Schwärzler, Peter; and Welschof, Hans-Heinrich, 5,795,233, Cl. 464-143.000.

Schwegler, Helmut; Frank, Kurt; Seitz, Ansgar; Bueser, Wolfgang; and Talmon, Uwe, to Robert Bosch GmbH. Device for supplying internal combustion engine with fuel from supply container. 5,794,597, Cl. 123-514.000.

Schweizer, Anton Richard; and Grund, Peter, to Chiron-Werke GmbH & Co. KG. Machine tool. 5,795,114, Cl. 409-233.000.

Schwendner, Susan W.: *See*—
Counsell, Raymond E.; Meyer, Karen L.; Schwendner, Susan W.; and Haradahira, Terushi, 5,795,561, Cl. 424-1.770.

Schwenk, Gerhard; Scholz, Ulrich; Magg, Ulrich; and Leist, Johannes, to Giesecke & Devrient GmbH. Pigments and a method for producing them. 5,795,379, Cl. 106-499.000.

Schwenninger, Franz: *See*—
Kalt, Wolfram; Männer, Johann; Firgo, Heinrich; and Schwenninger, Franz, 5,795,488, Cl. 210-767.000.

SCI Systems, Inc.: *See*—
DuRoss, Ronald R.; and Tucker, William K., 5,794,659, Cl. 137-597.000.

Scientific Generics Limited: *See*—
Dames, Andrew Nicholas, 5,796,250, Cl. 324-207.220.

Scimed Life Systems, Inc.: *See*—
Wang, Lixiao; Hastings, Roger; Buscemi, Paul; and Tay, Sew-Wah, 5,795,318, Cl. 604-8.000.

Scotsman Group, Inc.: *See*—
Black, William J.; Allison, Matthew W.; Baker, Melvin A.; and Van Riper, Gary L., 5,794,452, Cl. 62-73.000.

Scott, Craig M.; Wang, Li Tung; Bennett, Arthur T.; and Nouri, Ahmad, to Compaq Computer Corporation. Multiport repeater with collision detection and jam signal generation. 5,796,738, Cl. 370-401.000.

Scott, Gerald R.; Moulton, James P.; Seyl, V. Craig; Emrich, John L.; and Peterson, Wayne L., to Standex International. Patient treatment apparatus. 5,794,286, Cl. 5-611.000.

Scott, Johnnie Bruce, III: *See*—
East, Garvin Lane; and Scott, Johnnie Bruce, III, 5,794,908, Cl. 248-503.100.

Scott, Mike. Clipper comb. 5,794,348, Cl. 30-195.000.

Scott, Robert Earl; and Lastinger, E. Robert, Jr., to Paradyne Corporation. System and method for automatically selecting the mode of communication between a plurality of modems. 5,796,808, Cl. 379-93.310.

Scripps Research Institution, The: *See*—
Wong, Chi-Huey; and Gijsen, Harrie J. M., 5,795,749, Cl. 435-105.000.

Seabaugh, Alan C., to Texas Instruments Incorporated. Silicon resonant tunneling. 5,796,119, Cl. 257-25.000.

Seagate Technology, Inc.: *See*—

Bagnell, Glade N.; and Repphun, William F., 5,796,557, Cl. 360-105.000.
Boutaghou, Zine-Eddine, 5,796,556, Cl. 360-104.000.
Goker, Turguy; and Buchan, William, 5,796,537, Cl. 360-64.000.
Rahman, Mohamed M.; Leuthold, Hans; and Clark, Wesley, 5,795,074, Cl. 384-123.000.
Sedbrook, Darreyl S.; and Strayer, Brian D., 5,796,549, Cl. 360-103.000.
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Reichental, Abraham N.; Chrisman, Kenneth P.; Shafir, Alexander; Ruscitti, Michael C.; and Bertram, George T., 5,794,406, Cl. 53-410.000.
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Chen, Sidney Yiu Kwok; Bibb, Patricia Elaine; Bibb, Ben Lee; and Sebrechts, Phillipe, 5,796,334, Cl. 340-539.000.
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Markham, Thomas R., 5,796,836, Cl. 380-28.000.
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Mattes, Michael F.; and Seefeldt, James D., 5,796,291, Cl. 327-513.000.
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Nagashima, Takeshi, 5,796,940, Cl. 395-186.000.
Yoshida, Yusuke, 5,795,224, Cl. 463-2.000.
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Karni, Jacob; Ries, Harald; Segal, Akiba; Krupkin, Vladimir; and Yogev, Amnon, 5,796,892, Cl. 385-38.000.
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Sei, Toshikazu; and Fujisaki, Tomohiro, to Kabushiki Kaisha Toshiba. Integrated circuit array including I/O cells and power supply cells. 5,796,299, Cl. 327-565.000.
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Asanuma, Yoshinori, 5,794,987, Cl. 285-224.000.
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Boos, Karl-Siegfried; Seidel, Dietrich; Engel, Wolf-Dieter; and Kurrle-Weittenhiller, Angelika, 5,795,786, Cl. 436-71.000.
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Haight, Richard Allan; and Seidler, Paul Fredrich, 5,796,101, Cl. 250-306.000.
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Iwanaga, Sadaaki; Muta, Tatsushi; Seki, Noriaki; and Oda, Toshio, 5,795,962, Cl. 530-350.000.
Seiko Epson Corp.: *See*—
Mizuno, Masao, 5,796,129, Cl. 257-206.000.
Ono, Takashi; Yagyu, Tatsuya; Sawatari, Yoshihiro; Sasaki, Masaki; Kanaya, Miharu; Hayashi, Hiroko; Owatari, Akio; and Ouki, Yasuhiro, 5,795,970, Cl. 534-573.000.
Shimada, Kazumichi; and Kakutani, Toshiaki, 5,795,082, Cl. 400-120.090.
Shu, Joseph S.; and Li, Chia-Hsin, 5,796,929, Cl. 395-109.000.
Wang, Laiqiang; and Furuhata, Fujio, 5,796,876, Cl. 382-270.000.
Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; Shimmura, Tomoyuki; Toyosawa, Yoshiya; Kurashina, Hiroyasu; and Hosokawa, Takeshi, 5,795,086, Cl. 400-615.200.
Yamaguchi, Hisashi, 5,796,852, Cl. 381-104.000.
Yasukawa, Naoaki; and Nakamura, Chiaki, 5,795,301, Cl. 600-500.000.
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Yasukawa, Naoaki; and Nakamura, Chiaki, 5,795,301, Cl. 600-500.000.
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Schwegler, Helmut; Frank, Kurt; Seitz, Ansgar; Bueser, Wolfgang; and Talmon, Uwe, 5,794,597, Cl. 123-514.000.
Seki, Masao: *See*—
Tsuji, Masato; Seki, Masao; Leng, Svay; Aikawa, Koji; Shinohara, Koichiro; and Nakaya, Fumio, 5,796,869, Cl. 382-203.000.
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Seki, Noriaki: *See*—
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Sekine, Takashi; Ogura, Eiji; Ota, Shinichi; and Ishikawa, Kazuyuki, to Tsumura & Co. Composition of external preparation. 5,795,916, Cl. 514-567.000.
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Selby, Ronald Kenneth: *See*—
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Sencorp Systems, Inc.: *See*—
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Senda, Harumitsu, to Okuma Corporation. Method for compensating a component of a machine tool for displacement caused by heat. 5,795,112, Cl. 409-131.000.
Senda, Kazuto: *See*—
Matsumoto, Kiyoshi; Yagawa, Yuichi; and Senda, Kazuto, 5,796,428, Cl. 348-231.000.
Senju Pharmaceutical, Co., Ltd.: *See*—
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Senn, Robert Allen: *See*—
Pawlicki, Thaddeus Francis; Gaborski, Roger Stephen; and Senn, Robert Allen, 5,796,862, Cl. 382-132.000.
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Drew, Douglas A.; and Zschirnt, Joerg W., 5,796,339, Cl. 340-572.000.
Sensui, Takayuki; Ito, Takayuki; Matsuo, Hirofumi; Nakamura, Satoru; Goto, Tatsuo; and Nakamura, Yasuo, to Asahi Seimitsu Kabushiki Kaisha; and Asahi Kogaku Kogyo Kabushiki Kaisha. Inner focus type telescope. 5,796,517, Cl. 359-426.000.
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Sepracor, Inc.: *See*—
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Sequa Chemicals, Inc.: *See*—
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Serikawa, Mitsuhiko; Tagami, Ryou; Kawamura, Akihisa; Matsumoto, Masaharu; Oda, Mikio; and Numazu, Hiroko, to Matsushita Electric Industrial Co., Ltd. Sound field and sound image control apparatus and method. 5,796,845, Cl. 381-18.000.
Serpa, Michael L. Knife/sheath locking device. 5,794,347, Cl. 30-162.000.
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Whalen, Dennis; Pepper, Jeffrey A.; and Enand, Rajiv, 5,797,135, Cl. 706-53.000.
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Erickson, Charles Robert; and Sessions, Roger Hereward, 5,797,007, Cl. 395-683.000.
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Nakajima, Yuji; Seto, Masaru; and Kamikawa, Yoshinori, 5,796,579, Cl. 361-683.000.

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Sevy, Brian D.: *See*—
Hamner, John F.; Janich, Sandra; Despain, Jeffrey L.; Niemann, Katherine D.; Sevy, Brian D.; Tran, Dzung D.; and Welch, Frank K., 5,796,951, Cl. 395-200.530.

Sewell, James S.: *See*—
Nakano, Kenichi; Bozada, Christopher A.; Quach, Tony K.; DeSalvo, Gregory C.; Via, G. David; Dettmer, Ross W.; Havasy, Charles K.; Sewell, James S.; Ebel, John L.; and Gillespie, James K., 5,796,131, Cl. 257-284.000.

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Sezginer, Abdurrahman: *See*—
Kleinberg, Robert L.; Latour, Lawrence L.; and Sezginer, Abdurrahman, 5,796,252, Cl. 324-303.000.

SGS-Thompson Microelectronics S.A.: *See*—
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SGS-Thomson Microelectronics, Inc.: *See*—
Canclini, Athos, 5,796,545, Cl. 360-78.040.
Chan, Tsiu Chiu; and Balasinski, Artur P., 5,795,800, Cl. 438-149.000.
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Brigati, Alessandro; Demange, Nicolas; Aulas, Maxence; and Guedj, Marc, 5,796,297, Cl. 327-546.000.
Gaultier, Jean-Marie, 5,796,653, Cl. 365-185.090.
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Botti, Edoardo; and Mandrini, Tiziana, 5,796,567, Cl. 361-91.000.
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Rolandi, Paolo; and Montanaro, Massimo, 5,796,275, Cl. 327-81.000.

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Shafir, Alexander: *See*—
Reichental, Abraham N.; Chrisman, Kenneth P.; Shafir, Alexander; Ruscitti, Michael C.; and Bertram, George T., 5,794,406, Cl. 53-410.000.

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Shah, Lacky: *See*—
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Shahid, Mohammed, to Federal Cartridge Company. Photo-degradable shot-shell of polyethylene and EVA-CO terpolymer. 5,795,923, Cl. 523-125.000.

Shahriari, Navid; Mayberry, Mike; and Barabi, Nasser, to Intel Corporation. Production printed circuit board (PCB) edge connector test connector. 5,795,172, Cl. 439-260.000.

Shaklee, Patrick N.: *See*—
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Shalaby, Mohamed R.: *See*—
Aggarwal, Bharat B.; Palladino, Michael A.; and Shalaby, Mohamed R., 5,795,967, Cl. 530-388.230.

Shalaby, Shalaby W.: *See*—
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Shand, James. Utility knife adaptor. 5,794,350, Cl. 30-294.000.

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Shapiro, Raymond E.; Stanley, Paul C.; and Schumacher, Steven, to System-Soft Corporation. Method and apparatus for peripheral device control by clients in plural memory addressing modes. 5,797,031, Cl. 395-828.000.

Shapiro, Ted S. Motorized spinning MYLAR illusion device. 5,795,630, Cl. 428-13.000.

Sharma, Dinesh; Clark, Gordon R.; and Alton, Lawrence E., to Compaq Computer Corporation. Printed circuit board having conductors which can be decoupled for isolating inactive integrated circuits connected thereto. 5,796,566, Cl. 361-86.000.

Sharman, Duane: *See*—
Schroeder, Martin K.; and Sharman, Duane, 5,797,098, Cl. 455-464.000.

Sharp, James H.: *See*—
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Iizuka, Kunihiko; Fujio, Mitsuhiko; Matsui, Hirofumi; and Miyamoto, Masayuki, 5,796,647, Cl. 364-807.000.
Kusano, Fumio, 5,796,397, Cl. 345-339.000.
Matsuura, Yoshiaki, 5,796,674, Cl. 365-233.500.
Nakata, Yukihiko; Fujihara, Masaki; Date, Masahiro; Matsuo, Takuya; Ayukawa, Michiteru; and Itoga, Takashi, 5,796,116, Cl. 257-66.000.
Okamoto, Yuji, 5,797,080, Cl. 399-391.000.
Sakai, Takashi; Nishiyama, Haruo; and Matsuyama, Kazuhiro, 5,796,103, Cl. 250-326.000.
Shigematsu, Hiroyuki; Nakamura, Yutaka; Sakamoto, Munenori; Nagasawa, Hiroyuki; Nakao, Hiroshi; Nakajima, Yasuhiro; and Kurata, Masaaki, 5,796,406, Cl. 345-358.000.
Shioi, Masahiro; Makiyama, Takeshi; Hibi, Keiichi; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakamura, Osamu; Kanada, Youji; Kura, Tsuneko; and Oshima, Takashi, 5,796,436, Cl. 348-409.000.
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Sharp Kubushiki Kaisha: *See*—
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Sharp, Louis J.; and Dimaano, Hilda R., to Dexter Corporation, The. Waterborne coating compositions having ultra low formaldehyde concentration. 5,795,933, Cl. 524-596.000.

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Sharpe-Geisler, Bradley A., to Advanced Micro Devices, Inc. Reference for CMOS memory cell having PMOS and NMOS transistors with a common floating gate. 5,796,295, Cl. 327-541.000.

Sharples, Robert: *See*—
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Shashoua, Victor E.; Swindell, Charles S.; Webb, Nigel L.; and Bradley, Matthews O., to Neuromedica, Inc. DHA-pharmaceutical agent conjugates of taxanes. 5,795,909, Cl. 514-449.000.

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Shaw, Ronald D.: *See*—
Shaw, Lee A.; and Shaw, Ronald D., 5,794,401, Cl. 52-741.410.

Shaw, William H.: *See*—
Grey, Michael J.; Williams, Wayne; and Shaw, William H., 5,794,414, Cl. 53-472.000.

Shea, Patrick J., to UT Automotive Dearborn, Inc. Method and a unit for changing a die during wire termination. 5,794,333, Cl. 29-863.000.

Shearon, James C., to Unifran Inc. Shower curtain apparatus and method. 5,794,281, Cl. 4-558.000.

Shell Oil Company: *See*—
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Graafland, Teunis; and Bean, Arthur Robinson, Jr., 5,795,944, Cl. 526-181.000.

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Shen, Chung-Shan. Electrically operated oscillatory toothbrush. 5,794,295, Cl. 15-22.100.

Shen, Ji: *See*—
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Shen, Lewis, to Advanced Micro Devices, Inc. Method of high density plasma metal etching. 5,795,829, Cl. 438-694.000.

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Guthrie, William L.; Cheng, Tsungnan; Ko, Sen-Hou; Lee, Harry Q.; Sherwood, Michael T.; and Shendon, Norm, 5,795,215, Cl. 451-286.000.

Sheng-Hsin, Liao. Electric box for connection between a handset and a telephone base. 5,796,047, Cl. 174-135.000.

Shenoy, Ravindra Vaman: *See*—
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Shepherd, Freeman D.; and Mooney, Jonathan M., to United States of America, Air Force. Schottky barrier infrared detector array with increased effective fill factor. 5,796,155, Cl. 257-452.000.

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Elger, Walter; Beier, Sybille; Kosub, Beate; Faehnrich, Marianne; Chwalisz, Krzysztof; Hasan, Syed Hamiduddin; and Potts, Gordon Oliver, 5,795,881, Cl. 514-170.000.

Sheron, Herman D., Jr.: *See*—
Gaworowski, Andrew J.; Hercyk, Darren E.; Meadows, Roger D.; and Sheron, Herman D., Jr., 5,795,536, Cl. 264-571.000.

Sherrill, Ronald George: *See*—
Aquino, Christopher Joseph; Dezube, Milana; Sherrill, Ronald George; Sugg, Elizabeth Ellen; Szewczyk, Jerzy Ryszard; and Willson, Timothy Mark, 5,795,887, Cl. 514-221.000.

Sherwin, Martin B.: *See*—
Friedman, Semyon D.; Sherwin, Martin B.; Brezny, Rasto; and Francis, Poovatholil F., 5,795,456, Cl. 204-471.000.

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Shibaki, Hiroyuki: *See*—
Kasahara, Nobuo; Muramatsu, Satoshi; and Shibaki, Hiroyuki, 5,797,074, Cl. 399-262.000.

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Shidara, Shinichi; Takahashi, Yutaka; Tachibana, Hajime; Nakamura, Kiyoji; Anayama, Ushio; and Ishiwata, Noriyasu, to Fuji Photo Film Co., Ltd. Document reader system. 5,796,490, Cl. 358-296.000.

Shieh, Jin-Fu. Paint roller. 5,795,279, Cl. 492-13.000.

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Shiga, Akira: *See*—
Kitaori, Noriyuki; Yoshida, Osamu; Mizunoya, Hirohide; Wakabayashi, Shigemi; and Shiga, Akira, 5,796,533, Cl. 360-17.000.

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Shigematsu, Hiroyuki; Nakamura, Yutaka; Sakamoto, Munenori; Nagasawa, Hiroyuki; Nakao, Hiroshi; Nakajima, Yasuhiro; and Kurata, Masaaki, to Sharp Kabushiki Kaisha. Gesture-based input information processing apparatus. 5,796,406, Cl. 345-358.000.

Shigenai, Osamu; and Ishikawa, Hideki. Chassis with strengthening rib having stepped section for recording and/or reproducing a apparatus. 5,796,696, Cl. 369-75.100.

Shigeta, Yoko: *See*—
Sano, Yoshikazu; Shigeta, Yoko; and Aoki, Hiromitsu, 5,796,154, Cl. 257-432.000.

Shigihara, Makoto: *See*—
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Shih, Choon J. Puncture resistant tire assembly. 5,795,414, Cl. 152-195.000.

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Shue, Ho-Jane; Shih, Neng-Yang; Blythin, David J.; Chen, Xiao; Tom, Wing C.; Piwinski, John J.; and McCormick, Kevin D., 5,795,894, Cl. 514-253.000.

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Hatakeyama, Jun; Umemura, Mitsuo; Ishihara, Toshinobu; and Watanabe, Satoshi, 5,795,700, Cl. 430-325.000.

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Okamoto, Hideo; Uesugi, Toshiharu; Iwasaki, Atsushi; and Oda, Tetsuhiro, 5,795,383, Cl. 117-30.000.

Shin, Seong S.: *See*—
Choi, Hwangsoo; Kwong, Manpo; and Shin, Seong S., 5,796,965, Cl. 395-309.000.

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Hirai, Kiyoshi; Yasui, Shinichi; Kobayashi, Hiroko; Nagao, Mamoru; Sasaki, Takashi; and Harada, Hiroyuki, 5,795,450, Cl. 204-256.000.
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Zasloff, Michael; Shinnar, Ann; Kinney, William; Anderson, Mark; Williams, Jon; and McLane, Michael, 5,795,885, Cl. 514-182.000.

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Saito, Yutaka; Shinogi, Masataka; and Kato, Kenji, 5,796,240, Cl. 322-10.000.

Shinohara, Koichiro: *See*—
Tsuji, Masato; Seki, Masao; Leng, Svay; Aikawa, Koji; Shinohara, Koichiro; and Nakaya, Fumio, 5,796,869, Cl. 382-203.000.

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Shioi, Masahiro; Makiyama, Takeshi; Hibi, Keiichi; Nakabayashi, Jiro; Iwano, Tsuneaki; Nakamura, Osamu; Kanada, Youji; Kura, Tsuneko; and Oshima, Takashi, to Sharp Kabushiki Kaisha; and Nippon Telegraph & Telephone Corporation. Video data storing device and method for coding video data based upon determining whether or not video data conforms to a predetermined standard. 5,796,436, Cl. 348-409.000.

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Iwano, Kenji; and Shiomi, Yoshinori, 5,796,563, Cl. 360-132.000.

Shiono, Takashi; and Yoshinaga, Mutsumi, to Mitsubishi Denki Kabushiki Kaisha. Noise reduction circuit, noise reduction apparatus, and noise reduction method. 5,796,850, Cl. 381-94.100.

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Shirane, Kyoichi. Method and apparatus for driving a recording medium. 5,796,694, Cl. 369-59.000.

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Shirron, Stephen F.: *See*—
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Shoichet, Molly S.: *See*—
Schinstine, Malcolm; Shoichet, Molly S.; Gentile, Frank T.; Hammang, Joseph P.; Holland, Laura M.; Cain, Brian M.; Doherty, Edward J.; Winn, Shelley R.; and Aebischer, Patrick, 5,795,790, Cl. 435-382.000.

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Fukuda, Kazuichi, 5,795,231, Cl. 464-65.000.

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Bachhuber, Anton, 5,796,329, Cl. 340-426.000.
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Flohr, Thomas; and Schaller, Stefan, 5,796,803, Cl. 378-15.000.
Glehr, Manfred, 5,796,180, Cl. 307-10.500.
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Siemens Telecom Networks: *See*—
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Siemon Company, The: *See*—
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Sierk, Hanke: *See*—
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Sigl, Alfred, to Robert Bosch GmbH. Vehicle deceleration by engine control followed by brake control. 5,794,735, Cl. 180-170.000.

Sigler, John W., to Primex Technologies, Inc. Foward fin flechette. 5,796,031, Cl. 102-520.000.

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Siltberg, Daniel E.: *See*—
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Silva, Robert John: *See*—
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Sim, Yong-Won: *See*—
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Simán, Jaime E., to Baxter International Inc. Double lumen tubing design for catheter. 5,795,326, Cl. 604-43.000.

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Simon, Ron M., to RSI Home Products, Inc. Container for a vanity top or the like. 5,794,785, Cl. 206-783.000.

Simon, Werner, to American Cyanamid Company. Biocidal compounds their preparation and use. 5,795,878, Cl. 514-149.000.

Simone, Albert A. Automated window screen assembly apparatus. 5,794,328, Cl. 29-709.000.

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Singer, Jack W.: *See*—
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Skiles, Jean Ann: *See—*
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Skutta, Christian: *See—*
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Slattery, Charles W. Human infant formulas containing recombinant human alpha-lactalbumin and beta-casein. 5,795,611, Cl. 426-580.000.

Slattery, Michael Gerard, to Techsearch Incorporated. Ground following opener apparatus. 5,794,711, Cl. 172-265.000.

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Smallegan, Jon M.; Chamberlain, L. C. Derek; and Pompeii, Dario L., to Schlage Lock Company. Interlocking dead bolt with projecting pins. 5,794,991, Cl. 292-169.000.

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Smedley, Daniel G.: *See—*
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Smekens, Daniel P., to Pharmacia & Upjohn Company. Aseptic chemical transfer system. 5,794,407, Cl. 53-428.000.

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Smith, Alan D.: *See—*
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Smith, Cassandra L.: *See—*
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Smith, David Andrew, to Otter Controls Limited. Thermally responsive electrical switches. 5,796,327, Cl. 337-342.000.

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Smith Engineering: *See—*
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Smith, James W.: *See—*
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Smith, Jay, III: *See—*
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Christensen, Siegfried B., IV; and Karpinski, Joseph M., 5,795,918, Cl. 514-709.000.
Gentry, Daniel Robert; Greenwood, Rebecca Claire; and Lawlor, Elizabeth Jane, 5,795,758, Cl. 435-183.000.

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Hodgson, John Edward; and Lawlor, Elizabeth Jane, 5,795,757, Cl. 435-183.000.

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Hanagata, Goro; Miura, Susumu; and Tatsumi, Kiyoshi, 5,795,980, Cl. 536-124.000.

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Valley, Kirsten L.; Snow, David W.; Fan, Sylvia W.; and Mueller, Richard L., Jr., 5,795,325, Cl. 604-53.000.

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Soar, Roger: *See—*
Field, Bradley J.; and Soar, Roger, 5,796,028, Cl. 89-36.050.

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Richard, Joël; Vaslin, Sophie; Blond, Pierre; Lerat, Françoise; and Taboureau, Jean-Luc, 5,795,719, Cl. 435-6.000.

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Sodick Co., Ltd.: *See—*
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Softub, Inc.: *See—*
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Maeda, Tadasu; Ota, Koji; Arao, Masaki; Sogou, Taiji; Nakajima, Hiroshi; Miyamoto, Norichika; Ishiguro, Susumu; and Hayashi, Motoji, 5,796,618, Cl. 364-474.240.

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Something Else Limited Liability Co.: *See—*
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Sommer, Karl L.: *See—*
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Droege, Hartmut; Fischer, Ludwig; Scheibel, Markus; and Sonnentag, Dieter, 5,796,335, Cl. 340-550.000.

Sonnewald, Ursula: *See—*
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Sonrier, Michel: *See—*
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Ishiguro, Ryuji, 5,796,839, Cl. 380-44.000.
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Nishi, Noriaki; Saito, Kimihiro; Matsumoto, Shuichi; and Hattori, Masato, 5,796,701, Cl. 369-110.000.
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Sato, Naoyuki; Nagumo, Masahiko; and Abe, Ryuji, 5,796,536, Cl. 360-61.000.
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Wicks, James E.; Mugura, Kazuto; and Fujii, Toshiya, 5,796,394, Cl. 345-329.000.
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Yamamoto, Noriyuki; Yada, Hiroaki; Hayashi, Nobuhiro; and Yamakoshi, Takamichi, 5,796,534, Cl. 360-48.000.
Yasuhara, Nae; Marusawa, Miyuki; Yasuhara, Hiroshi; and Kusano, Hiroko, 5,796,388, Cl. 345-168.000.
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Sopha Medical: *See—*
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Sotom, Michel; Masetti, Francesco; De Bouard, Dominique; Gabriagues, Jean-Michel; and Chiaroni, Dominique, to Alcatel N.V. Wavelength division multiplexing optical communication network. 5,796,501, Cl. 359-119.000.

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Weder, Donald E.; Straeter, Joseph G.; Straeter, William F.; Craig, Frank; King, Michael J.; and Funk, William C., 5,795,281, Cl. 493-154.000.

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Southwell, Deborah Ann: *See—*
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Southwell, Joseph Ray, III: *See—*
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SP Reifenwerke GmbH: *See—*
Damke, Roland; Gerresheim, Manfred; Nau, Robert; Winter, Hans-Joachim; and Lowenhaupt, Bernd, 5,795,417, Cl. 152-527.000.

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Sparico, Thomas M.: *See—*
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Spataro, Anthony: *See—*
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Spaulding, Kevin E.: *See—*
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Specialty Cheese Company, Inc.: *See—*
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Speller, David J.: *See—*
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Spencer, Donald J.: *See—*
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Spierling, Todd Alan: *See—*
Johnsen, Tyrone Arthur; Spierling, Todd Alan; and Carter, Harry Raymond, Jr., 5,796,196, Cl. 310-68.00D.

Spiero, Richard C., to U.S. Philips Corporation. Digital audio broadcast receiver having circuitry for retrieving embedded data and for supplying the retrieved data to peripheral devices. 5,796,785, Cl. 375-316.000.

Spies, Marcus, to International Business Machines Corporation. Method and system using separate context and constituent probabilities for speech recognition in languages with compound words. 5,797,122, Cl. 704-255.000.

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Spiralex Corporation: *See—*
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Spolter, Leonard: *See—*
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Sporck, Nicholas, to LSI Logic Corporation. Method for metal delay testing in semiconductor devices. 5,796,265, Cl. 324-763.000.

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Sprague, Milo David; and Murray, Robert J., to Intel Corporation. Latching mechanism for pulsed domino logic with inherent race margin and time borrowing. 5,796,282, Cl. 327-210.000.

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Sprick, William Douglas, to Rexam Closures, Inc. Child-resistant measuring cup closure and dispensing container. 5,794,803, Cl. 215-217.000.

Spring, Robert A., to Noranda Inc. Process information and maintenance system for distributed control systems. 5,796,606, Cl. 364-138.000.

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Stammer, Marc, to Siecor Corporation. Indoor/outdoor transition cable. 5,796,901, Cl. 385-100.000.

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Stanford University: *See—*
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Stang, Michael A.; Zeak, Jeffrey Alan; and Strouts, Brian Lee, to De Novo, Inc. Toxin decontaminant food product and method of forming same. 5,795,586, Cl. 424-441.000.

Stanley, Paul C.: *See—*
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Stansbury, Darryl M.: *See—*
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Stant Manufacturing Inc.: *See—*
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Stanton, Lawrence E.; and Landry, Phillip, to Acushnet Company. Compression mold with rubber shims. 5,795,596, Cl. 425-116.000.

Stanwood, David C. Method for inertial balancing of musical instrument keyboards. 5,796,024, Cl. 84-433.000.

Stanzione, Matthew: *See—*
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Staubli AG: *See—*
Hunziker, Martin, 5,794,319, Cl. 28-203.100.

Stauder, Gary D. Device and method for preventing damage to goods during handling by material handling equipment. 5,796,343, Cl. 340-626.000.

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Rees, David Brian; and Steadman, Martin Jonathon, 5,796,289, Cl. 327-425.000.

Stedry, Bernd: *See—*
Hill, Karlheinz; Igelmund, Sigrid; Stedry, Bernd; Geke, Juergen; Wilde, Andreas; and Kuester, Harald, 5,795,372, Cl. 106-14.410.

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Kalindjian, Sarkis Barret; Steel, Katherine Isobel Mary; Pether, Michael John; Davies, Jonathan Michael Richard; Low, Caroline Minli Rachel; Hudson, Martin Lyn; Buck, Ildiko Maria; McDonald, Iain Mair; Dunstone, David John; and Tozer, Matthew John, 5,795,907, Cl. 514-397.000.

Steelcase Inc.: *See—*
Forslund, Carl V., III; Feldpausch, Thomas G.; and Faiks, Frederick S., 5,794,392, Cl. 52-220.700.

Steele, Duncan Andrew; and Silvester, David Graham, to Trailer Lock Development Limited. Disabling device. 5,794,462, Cl. 70-18.000.

Steger, Gerhard: *See—*
Henco, Karsten; Riesner, Detlev; and Steger, Gerhard, 5,795,720, Cl. 435-6.000.

Stegmeier, Karlheinz: *See—*
Von Der Saal, Wolfgang; Heck, Reinhard; Kucznierz, Ralf; Leinert, Herbert; and Stegmeier, Karlheinz, 5,795,892, Cl. 514-247.000.

Steidl, Michael J.: *See—*
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Steiert, Edwin, to J. Eberspächer GmbH & Co. Diagnostic system for sensing and displaying functions of a motor vehicle heating apparatus. 5,796,332, Cl. 340-438.000.

Steiger, Martin: *See—*
Dangelmaier, Peter; and Steiger, Martin, 5,796,015, Cl. 73-863.560.

Stein, Anatoly; Tesler, Alexander; and Varsanofiev, Dimitry, to Guzik Technical Enterprises, Inc. Servo track writing measurement of gapped initial clock track to write full clock track. 5,796,541, Cl. 360-75.000.

Stein, Inc.: *See—*
London, Eugene J., 5,795,610, Cl. 426-512.000.

Steiner, Joseph P.: *See—*
Hamilton, Gregory S.; and Steiner, Joseph P., 5,795,908, Cl. 514-423.000.

Steinheil Industrielle Messtechnik GMBH: *See—*
Dassler, Hans-Ulrich; Haas, Rüdiger; and Lang, Johann, 5,796,485, Cl. 356-373.000.

Steininger, Helmut; Heilmann, Peter; and Hewkin, Peter, to BASF Magnetics GmbH. Anticopying film. 5,795,643, Cl. 428-143.000.

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Larson, Gerald L.; Steinmetz, James R.; and Zazyczny, Joel M., 5,796,117, Cl. 252-182.140.

Stemmons, William L. Framework system for electrical/electronic controls. 5,794,795, Cl. 211-26.000.

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Archer, William R.; Becerra, Roger C.; Beifus, Brian L.; Brattoli, Mark A.; Erdman, David M.; Jahns, Thomas M.; Kliman, Gerald B.; Soong, Wen Liang; Stephens, Charles M.; Benedict, Eric R.; and Degner, Michael W., 5,796,194, Cl. 310-68.00B.

Stephens, Michael C., Jr.: *See—*
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Stern, Donald S.: *See—*
Redford, Peter M.; and Stern, Donald S., 5,795,156, Cl. 434-118.000.

Stevens, Matthew A.: *See—*
Pliler, David B.; and Stevens, Matthew A., 5,794,816, Cl. 221-203.000.

Stevens, Timothy A.: *See—*
Lahm, William J.; Stevens, Timothy A.; Tschumakow, Alexander G.; Wilkins, Leon M.; Janson, John M.; and Conley, Stephen C., 5,795,775, Cl. 435-297.500.

Stevenson, Peter E.: *See—*
Bruner, Jeffrey W.; and Stevenson, Peter E., 5,795,835, Cl. 442-310.000.

Stevicks, Roy A. Safety shield for all terrain vehicles. 5,794,976, Cl. 280-770.000.

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Brooks, Clint D.; Bhatia, Pramila; Kolasa, Teodozyj; Stewart, Andrew O.; Gunn, David E.; and Craig, Richard A., 5,795,900, Cl. 514-314.000.

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Stolpp, Dieter, to Mercedes-Benz AG. Pneumatic or hydropneumatic spring system. 5,794,924, Cl. 267-64.110.

Stolyar, Aleksandr L.: *See—*
Kotzin, Michael D.; Fleming, Philip J.; and Stolyar, Aleksandr L., 5,796,722, Cl. 370-252.000.

Stone Container Corporation: *See—*
Fowler, Maxie Joe; and Osteen, William Belmont, 5,795,280, Cl. 493-22.000.

Stone, James W.: *See—*
Harding, Paul R.; Van Erden, Donald; and Stone, James W., 5,795,084, Cl. 400-225.000.

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St. Onge, Henri S.; and St. Onge, Bryan, 5,794,662, Cl. 138-97.000.

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Stoob, Sandra L.: *See—*
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Stora Feldmühle AG: *See—*
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Storage Technology Corporation: *See—*
Todor, John S., 5,795,042, Cl. 312-221.000.

Storer, William J. A.: *See—*
Cartabiano, Michael C.; Curran, Kenneth J.; Dick, David J.; Gibbs, Douglas R.; Kirby, Morgan H.; May, Richard L.; Storer, William J. A.; and Ullman, Adam N., 5,796,354, Cl. 341-22.000.

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Wess, Othmar, 5,795,311, Cl. 601-2.000.

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Stoughton Trailers, Inc.: *See—*
Sill, Gerald A.; and Fenton, Gary L., 5,794,960, Cl. 280-441.200.

Stoyko, Michael T., to Gerome Manufacturing Company, Inc. Electrically conductive joint. 5,796,033, Cl. 174-35.00C.

Strååt, Olle, to Isaberg AB. Cassette for use in a stapler. 5,794,833, Cl. 227-137.000.

Straeter, Joseph G.: *See—*
Weder, Donald E.; Straeter, Joseph G.; Straeter, William F.; Craig, Frank; King, Michael J.; and Funk, William C., 5,795,281, Cl. 493-154.000.

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Strafford, Tvasta David: *See—*
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Strahs, Kenneth R.: *See—*
Poto, Edward M.; Strahs, Kenneth R.; Conner, Timothy J.; Delahanty, Francis T.; Moorman, Michael; and Wieck, Henry, 5,795,543, Cl. 422-82.050.

Strande, Per: *See—*
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Strasser, Thomas Edward: *See—*
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Strategic Solutions Group, Inc: *See—*
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Strategic Weather Services: *See—*
Fox, Frederick D.; Pearson, Douglas R.; Caine, Diane; Kenney, Andrew; Morris, Richard A.; Beck, Steve A.; Beck, Cathy J.; and Chu, Robert J., 5,796,932, Cl. 395-161.000.

Stratiotis, Gus. Safety and security system for work area. 5,796,341, Cl. 340-573.000.

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Saxena, Neeraj; Precious, Colin John; and Stratton, Paul Francis, 5,795,147, Cl. 432-205.000.
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Naumovitz, Joseph P.; Straub, Joseph; and Wilson, Leighton B., 5,794,458, Cl. 62-647.000.
Strauss, Andreas; Auchter, Jochen; and Meyer, Johannes, to Ina Wälzlager Schaeffler oHG. Valve timing control apparatus. 5,794,578, Cl. 123-90.170.
Strauss, Rolf-Peter: *See*—
Hofbauer, Peter; Heikrodt, Klaus; Strauss, Rolf-Peter; and Thomas, Bernd, 5,794,444, Cl. 60-517.000.
Strayer, Brian D.: *See*—
Sedbrook, Darreyl S.; and Strayer, Brian D., 5,796,549, Cl. 360-103.000.
Stringer, Calvin R., to P.L. Porter Co. Mechanical seat lock. 5,794,470, Cl. 70-261.000.
Stromberg, C. Bertil; Marcoccia, Bruno S.; and Chamblee, J. Wayne, to Ahlstrom Machinery Inc. Method and apparatus for feeding multiple digesters. 5,795,438, Cl. 162-52.000.
Strong, Daniel J., to TRW Inc. Power steering control valve with back pressure. 5,794,507, Cl. 91-375.00A.
Stropkay, Scott Edward: *See*—
McArthur, William Allan; Stropkay, Scott Edward; and Tanner, Marc Walter, 5,795,321, Cl. 604-20.000.
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Stuker, Robert W.; and Winkler, Frederick, to Mohawk Manufacturing & Supply Co., Inc. Stabilizer link. 5,794,965, Cl. 280-665.000.
St. Ville, James A. Method and apparatus for manufacturing a prosthesis having optimized response characteristics. 5,796,617, Cl. 364-468.040.
Su, Chung-Hui: *See*—
Liang, Mong-Song; Wuu, Shou-Gwo; Wang, Chen-Jong; and Su, Chung-Hui, 5,796,135, Cl. 257-296.000.
Suarez, Daniel F.: *See*—
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Suba Cooperation Gesellschaft Fur Bauforschung und Franchising MBH: *See*—
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Suda, Yasuyuki: *See*—
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Sueoka, Manabu: *See*—
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Sugano, Haruo: *See*—
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Sugano, Yukiyasu; and Sato, Junichi, to Sony Corporation. Connection layer forming method. 5,795,825, Cl. 438-690.000.
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Sugarman, Marcia S.: *See*—
Sugarman, Henry; and Sugarman, Marcia S., 5,796,640, Cl. 364-709.020.
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Sugaya, Fumitaka; and Sato, Yasuo, to Nippon Steel Corporation. Semiconductor memory using different concentration impurity diffused layers. 5,796,149, Cl. 257-391.000.
Sugg, Elizabeth Ellen: *See*—
Aquino, Christopher Joseph; Dezube, Milana; Sherrill, Ronald George; Sugg, Elizabeth Ellen; Szewczyk, Jerzy Ryszard; and Willson, Timothy Mark, 5,795,887, Cl. 514-221.000.
Sugii, Toshio, to Mikuni Corporation. Electronically controlled type floatless carburetor. 5,794,593, Cl. 123-438.000.
Sugimoto, Kazuo: *See*—
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Sugimoto, Kenshi; Suzuki, Shinji; and Ibuki, Ichiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Straight chain crystalline polyuretdione. 5,795,950, Cl. 528-73.000.
Sugimoto, Mamoru; and Hayashi, Shiro, to Amada Metrecs Company, Limited. Upper tool holder apparatus for press brake. 5,794,486, Cl. 72-481.300.
Sugino, Mitsutaka; Kodaira, Tadao; and Onodera, Tugio, to Honda Giken Kogyo Kabushiki Kaisha; and Mitsuba Corporation. Electric motor for a power steering apparatus. 5,796,198, Cl. 310-89.000.
Sugita, Shigehisa: *See*—
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Sugiyama, Akira; and Hoshino, Tsutomu, to Kabushiki Kaisha Toshiba. Electronic equipment mounting device. 5,796,585, Cl. 361-735.000.
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Sugiyama, Mitsumasa, to Canon Kabushiki Kaisha. Image data converting method and image processing apparatus. 5,796,931, Cl. 395-131.000.
Sugiyama, Yasunari: *See*—
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Sumi, Satoshi; Tanase, Kenji; Suzuki, Yoshihisa; Yamaguchi, Atsushi; and Tsuchiya, Yoichi, to Sanyo Electric Co., Ltd. Magneto-optical recording device having a controllable polarizing filter. 5,796,683, Cl. 369-13.000.
Sumitomo Chemical Company, Limited: *See*—
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Sumitomo Electric Lightwave Corp.: *See*—
Beasley, William E., Jr.; Sarbell, John P.; and Moran, James W., 5,795,428, Cl. 156-344.000.
Sumitomo Metal Industries, Ltd.: *See*—
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Sumitomo Rubber Industries Ltd.: *See*—
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Sun, Hun H.; Qiao, Wen Wei; Chey, William Y.; and Lee, Kae Yol, to Drexel University. System and method for analyzing electrogastrophic signal. 5,795,304, Cl. 600-546.000.
Sun Microsystems, Inc.: *See*—
Birnbaum, William C., 5,797,128, Cl. 707-5.000.
Gentner, Donald R., 5,796,404, Cl. 345-352.000.
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Sun Pionnier Co., Ltd.: *See*—
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Sundquist, Tore. Oil-absorbing article comprising wool felt forming an enclosure containing pine bark. 5,795,842, Cl. 502-400.000.
Sundstrand Corporation: *See*—
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Olsaker, Oleif; Ferentinos, James T.; and Schultz, Dale A., 5,795,136, Cl. 417-295.000.
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Suppa, Vito; Bocquillon, Pascal; Loubieres, Bernard; and Oddoart, Gilbert, to Thomson-CSF. Air-launched buoy. 5,795,203, Cl. 441-1.000.

Supra Products, Inc.: *See*—
Hill, Matthew S., 5,794,465, Cl. 70-63.000.

Suslov, Eugene Ivanovich; Galakhin, Konstantin Alexandrovich; Vladimirov, Vitaly Alexandrovich; and Novik, Matveeevich Anatoly. Method for the diagnosis of human malignant tumors. 5,795,785, Cl. 436-64.000.

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Suzuki, Hideto: *See*—
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Suzuki, Hiroyuki: *See*—
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Waki, Kenichiro; Itoh, Masahiro; Suzuki, Hiroyuki; and Inoue, Ryo, 5,797,070, Cl. 399-149.000.

Suzuki, Kazuaki, to Nikon Corporation. Scanning projection exposure method and apparatus using substrate position adjustment based on mask pattern positioin during scanning exposure. 5,796,467, Cl. 355-53.000.

Suzuki, Kenji, to Fuji Photo Film, Co., Ltd. Micromirror type image forming apparatus and adminstration method for the same. 5,796,508, Cl. 359-224.000.

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Suzuki, Masayoshi: *See*—
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Suzuki, Miki T.: *See*—
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Suzuki Motor Corporation: *See*—
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Suzuki, Norihito: *See*—
Xu, Kexin; Naka, Michio; and Suzuki, Norihito, 5,796,482, Cl. 356-349.000.

Suzuki, Norio; Fujimori, Koichi; Hasegawa, Yusuke; Munakata, Hiroki; Akazaki, Shusuke; and Yoshizaki, Masuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system having function of after-start lean-burn control for internal combustion engines. 5,794,604, Cl. 123-673.000.

Suzuki, Noriyuki, to Kabushiki Kaisha Tokai Rika Denki Sesakusho. Steering lock device. 5,794,469, Cl. 70-252.000.

Suzuki, Seizo: *See*—
Nakaya, Teruomi; Okamoto, Osamu; Kuwano, Naoaki; Suzuki, Seizo; Sasa, Shuichi; Nakayasu, Hidehiko; and Sagisaka, Masakazu, 5,797,105, Cl. 701-7.000.

Suzuki, Shigehiko, to Sumitomo Rubber Industries Ltd. Pneumatic motorcycle tire for improved cornering and straight running stability. 5,795,418, Cl. 152-530.000.

Suzuki, Shigetaka: *See*—
Sato, Makoto; Suzuki, Shigetaka; Saito, Shuji; and Shigihara, Makoto, 5,796,371, Cl. 343-786.000.

Suzuki, Shinji: *See*—
Sugimoto, Kenshi; Suzuki, Shinji; and Ibuki, Ichiro, 5,795,950, Cl. 528-73.000.

Suzuki, Tadashi: *See*—
Tanahashi, Toshio; Sanada, Masakatsu; Domyo, Hiroyuki; Hirayama, Hiroshi; Sobue, Kazuaki; Higashi, Tsuneo; Yokota, Koji; Sobukawa, Hideo; Suzuki, Tadashi; and Matsunaga, Shinichi, 5,795,992, Cl. 73-23.310.

Suzuki, Takashi: *See*—
Ookawa, Eiichi; Nishida, Hiroto; Suzuki, Takashi; Watanabe, Hitoshi; and Sasaki, Toshiaki, 5,796,698, Cl. 369-77.200.
Watanabe, Shunpei; Suzuki, Takashi; and Ikeda, Shuuichiro, 5,795,650, Cl. 428-355.0AC.

Suzuki, Tatsuya: *See*—
Ando, Hiroyuki; Suzuki, Tatsuya; and Muroi, Takashi, 5,797,047, Cl. 396-349.000.

Suzuki, Yasuhiro; and Ohashi, Yukio, to Yazaki Corporation. Waterproof protective cover. 5,796,041, Cl. 174-92.000.

Suzuki, Yasuhito: *See*—
Takano, Shigeyuki; Okuma, Akira; and Suzuki, Yasuhito, 5,794,869, Cl. 242-331.500.

Suzuki, Yoshihiro; Kutsuna, Eiji; Nozaki, Hiroshi; and Mori, Shigeo, to NGK Insulators, Ltd. Insulator having conductive surface coating to prevent corona discharge. 5,796,048, Cl. 174-141.00C.

Suzuki, Yoshihisa: *See*—
Sumi, Satoshi; Tanase, Kenji; Suzuki, Yoshihisa; Yamaguchi, Atsushi; and Tsuchiya, Yoichi, 5,796,683, Cl. 369-13.000.

Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, to Toyo Boseki Kabushiki Kaisha. Protein having α-glucosidase activity, DNA having genetic information thereof, and production of α-glucosidase. 5,795,766, Cl. 435-202.000.

Suzumura, Takeshi: *See*—
Utamura, Motoaki; Hoizumi, Shinichi; Takeda, Yasushi; Sasaki, Toshihiko; Komatsu, Hideaki; Kirikami, Seiichi; Suzumura, Takeshi; Sasada, Tetsuo; Ikeguchi, Takashi; and Sugita, Shigehisa, 5,794,431, Cl. 60-39.030.

Svec, Frank; and Porter, Johnny, to Louisiana State University Medical Center Foundation. Method and composition for treating obesity and related disorders in animals comprising dehydroepiandrosterone (DHEA), or a derivative thereof, and an anorectic agent. 5,795,880, Cl. 514-169.000.

Svejkovsky, Paul A.; and Silvester, John, to Svejkovsky, Paul A. Differential impulse conveyor and method. 5,794,757, Cl. 198-750.800.

Svensson, John E.; Grande, Dodd H.; Grande, Hans D.; and Min, Shin B., to K-2 Corporation. In-line skate brake. 5,794,950, Cl. 280-11.200.

Svensson, Nils: *See*—
Wetzel, Uwe; and Svensson, Nils, 5,796,571, Cl. 361-190.000.

Sverdlov, Boris: *See*—
Ben-Matitayhu, Ruth; Sverdlov, Boris; and Brailovski, Ilena, 5,795,395, Cl. 118-712.000.

Swain, Eugene A.: *See*—
Schmitt, Peter J.; Swain, Eugene A.; Zaman, Kamran U.; and Smith, Alan D., 5,794,948, Cl. 279-2.170.

Swanson, Alka: *See*—
Butrie, Timothy; Enoeda, Shigemasa; Riska, Joseph Edward; Salko, Stephen James; Stakelon, Thomas Stanley; Swanson, Alka; and Yasuda, Toshimichi, 5,796,899, Cl. 385-92.000.

Swanson, David K.; and Panescu, Dorin, to EP Technologies, Inc. Systems and methods for making time-sequential measurements of biopotentials sensed in myocardial tissue. 5,795,303, Cl. 600-509.000.

Swapp, Mavin C., to Motorola, Inc. Method for measuring time and structure therefor. 5,796,682, Cl. 368-120.000.

Swartz, Jerome: *See*—
Pavlidis, Theodosios; Wang, Ynjiun Paul; and Swartz, Jerome, 5,796,090, Cl. 235-462.000.

Sweeney, Charles T. Apparatus and method for water purification. 5,795,459, Cl. 205-701.000.

Sweha, Sherif; and Bauer, Mark E., to Intel Corporation. Bit map addressing schemes for flash memory. 5,796,667, Cl. 365-207.000.

Swindell, Charles S.: *See*—
Shashoua, Victor E.; Swindell, Charles S.; Webb, Nigel L.; and Bradley, Matthews O., 5,795,909, Cl. 514-449.000.

Sylvester Associates: *See*—
Sylvester, Elyse, 5,794,631, Cl. 206-387.100.

Sylvester, Elyse, to Sylvester Associates. Gift/product holding system. 5,794,631, Cl. 206-387.100.

Sylvester, Gail Monica: *See*—
Ross, David Alan; Selby, Ronald Kenneth; Sylvester, Gail Monica; and Kruppa, Victor David, 5,796,324, Cl. 336-192.000.

Symantec Corporation: *See*—
McDonnal, William D.; Lohstroh, Shawn; and Grawrock, David, 5,796,825, Cl. 380-4.000.

Symbios, Inc.: *See*—
Kurker, Christopher M., 5,796,778, Cl. 375-229.000.

Symbol Technologies, Inc.: *See*—
Marom, Emanuel, 5,796,089, Cl. 235-472.000.
Pavlidis, Theodosios; Wang, Ynjiun Paul; and Swartz, Jerome, 5,796,090, Cl. 235-462.000.

Symphonix Devices, Inc.: *See*—
Ball, Geoffrey R.; and Katz, Bob H., 5,795,287, Cl. 600-25.000.

Syrtlanov, Ampir Shaibakovich: *See*—
Green, Herbert J.; Butler, Major G.; Tahautdinov, Shafagat Fahrazovich; Syrtlanov, Ampir Shaibakovich; Zagirov, Magsum Mudarisovich; Kalachev, Ivan Fedorovich; and Voider, Alexander Leongardovich, 5,794,982, Cl. 285-55.000.

SystemSoft Corporation: *See*—
Shapiro, Raymond E.; Stanley, Paul C.; and Schumacher, Steven, 5,797,031, Cl. 395-828.000.

Szczepanski, Steven W., to FMC Corporation. Insecticidal N-(substituted arylmethyl)-4-[bis(substituted aryl)hydroxymethyl]piperidinium salts. 5,795,901, Cl. 514-326.000.

Szeremeta, Wally, to Western Digital Corporation. Servo-track writer system having a plurality of engaging pins coaxially rotated with head actuator pivot axes. 5,796,542, Cl. 360-77.020.

Szewczyk, Jerzy Ryszard: *See*—

Aquino, Christopher Joseph; Dezube, Milana; Sherrill, Ronald George; Sugg, Elizabeth Ellen; Szewczyk, Jerzy Ryszard; and Willson, Timothy Mark, 5,795,887, Cl. 514-221.000.

Szilagyi, Andrei: *See*—
Gonzalez, Walter; and Szilagyi, Andrei, 5,796,377, Cl. 345-84.000.

Szupkay, Imre A., to Boeing Company, The. Aircraft thrust reverser system with linearly translating inner and outer doors. 5,794,434, Cl. 60-226.200.

Taboureau, Jean-Luc: *See*—
Richard, Joël; Vaslin, Sophie; Blond, Pierre; Lerat, Françoise; and Taboureau, Jean-Luc, 5,795,719, Cl. 435-6.000.

Tachi, Shinichi: *See*—
Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, 5,795,832, Cl. 438-714.000.

Tachibana, Hajime: *See*—
Shidara, Shinichi; Takahashi, Yutaka; Tachibana, Hajime; Nakamura, Kiyoji; Anayama, Ushio; and Ishiwata, Noriyasu, 5,796,490, Cl. 358-296.000.

Tachibana, Hirotaka: *See*—
Hirose, Hiroyuki; and Tachibana, Hirotaka, 5,794,764, Cl. 200-437.000.

Tackett, Wendell D.: *See*—
Fuller, Edward N.; Linker, Herbert L., Jr.; Sivulka, Gerald M.; and Tackett, Wendell D., 5,795,038, Cl. 303-119.200.

Tada, Jun: *See*—
Nakayama, Tomoko; Tada, Jun; Fukushima, Shigeru; and Ohashi, Tetsuo, 5,795,717, Cl. 435-6.000.

Taffinger, Berta M., to Bethlehem Steel Corporation. Zinc coated steel sheet and strip having improved formability and surface quality and method thereof. 5,795,661, Cl. 428-628.000.

Tagami, Ryou: *See*—
Serikawa, Mitsuhiko; Tagami, Ryou; Kawamura, Akihisa; Matsumoto, Masaharu; Oda, Mikio; and Numazu, Hiroko, 5,796,845, Cl. 381-18.000.

Taguchi, Kenko: *See*—
Hamamoto, Kiichi; Sasaki, Tatsuya; Takeuchi, Takeshi; Hayashi, Masako; Komatsu, Keiro; Mito, Ikuo; and Taguchi, Kenko, 5,796,883, Cl. 385-14.000.

Taguchi, Masakazu; Matsuura, Michio; Fujita, Yoshihide; and Itakura, Akihiro, to Fujitsu Limited. Data reproduction apparatus and data reproduction method. 5,796,693, Cl. 369-59.000.

Tahautdinov, Shafagat Fahrazovich: *See*—
Green, Herbert J.; Butler, Major G.; Tahautdinov, Shafagat Fahrazovich; Syrtlanov, Ampir Shaibakovich; Zagirov, Magsum Mudarisovich; Kalachev, Ivan Fedorovich; and Voider, Alexander Leongardovich, 5,794,982, Cl. 285-55.000.

Taisei Plas Co., Ltd.: *See*—
Naritomi, Masanori, 5,795,525, Cl. 264-251.000.

Taiwan Semiconductor Manufacturing Company, Inc.: *See*—
Wuu, Shou-Gwo; Lee, Kan-Yuan; and Liang, Mong-Song, 5,796,150, Cl. 257-401.000.

Taiwan Semiconductor Manufacturing Company, Ltd.: *See*—
Liang, Mong-Song; Wuu, Shou-Gwo; Wang, Chen-Jong; and Su, Chung-Hui, 5,796,135, Cl. 257-296.000.
Liaw, Jhon-Jhy; and Wang, Ding-Shan, 5,795,827, Cl. 438-663.000.
Yu, Chen-Hua; and Cheng, Yao-Yi, 5,795,833, Cl. 438-763.000.

Tajima Engineering Kabushiki Kaishya: *See*—
Yamakawa, Katsumi, 5,796,237, Cl. 318-806.000.

Tajima, Yoshio: *See*—
Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; Tajima, Yoshio; and Matsuura, Kazuo, 5,795,839, Cl. 502-126.000.

Takabayashi, Hiroshi: *See*—
Kanda, Toshiyuki; Takabayashi, Hiroshi; and Onitsuka, Yoshihiro, 5,796,450, Cl. 349-64.000.

Takabayashi, Susumu: *See*—
Gansel, Guy; and Takabayashi, Susumu, 5,794,986, Cl. 285-173.000.

Takada, Hiroyuki; Hayashi, Koichi; Aoyama, Yasutada; Chaya, Norio; and Nishikawa, Hiroshi, to Brother Kogyo Kabushiki Kaisha. Video disk and video reproduction device which automatically extracts reproduction control data from a disk and subsequently modifies a control program which was stored in a ROM. 5,796,913, Cl. 386-125.000.

Takada, Kazutoshi, to Honda Giken Kogyo Kabushiki Kaisha. Jig apparatus for assembling belt onto variator. 5,795,256, Cl. 474-37.000.

Takahashi, Chihiro: *See*—
Nonami, Toru; Takahashi, Chihiro; and Sano, Tatsuji, 5,795,151, Cl. 433-8.000.

Takahashi, Kazuhiro; Hashimoto, Hideyuki; and Takeda, Hisashi, to Asahi Glass Company Ltd. Method for preparing a panel with a resinous frame. 5,795,421, Cl. 156-108.000.

Takahashi, Koji: *See*—
Suzuki, Koichiro; Hieda, Teruo; and Takahashi, Koji, 5,796,429, Cl. 348-239.000.

Takahashi, Masatoshi; Asada, Nobuyoshi; Hashimoto, Hiroshi; and Aonuma, Masashi, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 5,795,645, Cl. 428-216.000.

Takahashi, Mitsuasa, to NEC Corporation. Temperature detection method and circuit using mosfet. 5,796,290, Cl. 327-512.000.

Takahashi, Ryoji: *See*—
Fukumura, Tikashi; Iwata, Masuo; Narita, Noriaki; Inoue, Kouji; Tanaka, Masaya; Seki, Mika; and Takahashi, Ryoji, 5,795,930, Cl. 524-100.000.

Takahashi, Souichi; and Yasutaka, Satoshi, to Fujitsu Limited. Method for controlling the confirmation of association on an application layer of open systems interconnection between one communication equipment and a facing communication and a loop carrier system using the method. 5,796,955, Cl. 395-200.620.

Takahashi, Yutaka: *See*—
Shidara, Shinichi; Takahashi, Yutaka; Tachibana, Hajime; Nakamura, Kiyoji; Anayama, Ushio; and Ishiwata, Noriyasu, 5,796,490, Cl. 358-296.000.

Takai, Yohei, to Walt Disney Company, The. Speed control apparatus for waterway traveling vehicle. 5,794,533, Cl. 104-73.000.

Takami, Akihide; Iwakuni, Hideharu; Kyogoku, Makoto; and Murakami, Hiroshi, to Mazda Motor Corporation. Burned gas purifying catalyst. 5,795,840, Cl. 502-327.000.

Takami, Norio; Ohsaki, Takahisa; Tamaki, Toshio; Nakajima, Hideyuki; and Katsuta, Yasushi, to Kabushiki Kaisha Toshiba; and Petoca, Ltd. Negative electrode for use in lithium secondary battery and process for producing the same. 5,795,678, Cl. 429-218.000.

Takamiya, Makoto: *See*—
Ueda, Shinji; Kadowaki, Hidejiro; Takamiya, Makoto; and Kato, Shigeki, 5,796,470, Cl. 356-28.500.

Takamiya, Takeshi, to Kabushiki Kaisha Toshiba. Bus arbiter used in a computer system. 5,796,968, Cl. 395-293.000.

Takamura, Yoshiji; Kawamura, Akio; and Iguchi, Katsuji, to Sharp Kabushiki Kaisha. Method for manufacturing a semiconductor device. 5,795,803, Cl. 438-228.000.

Takano, Shigeyuki; Okuma, Akira; and Suzuki, Yasuhito, to Fuji Photo Film Co., Ltd.; and Fuji Photo Optical Co., Ltd. Paper winding device for photographic printer. 5,794,869, Cl. 242-331.500.

Takano, Toshiro; Netsu, Yoichi; and Akashi, Mitsumasa, to Komatsu Ltd. Pressurized fluid feed system. 5,794,510, Cl. 91-517.000.

Takara Shuzo Co., Ltd.: *See*—
Izu, Hiroyuki; Kurome, Yoko; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,795,765, Cl. 435-200.000.

Takata, Kazuo; Whitehouse, James Bruce; and Ferguson, Bruce Robert, to Sony Corporation; and Sony Trans Com Inc. Circuit card present sense and protective power supply inhibit for airborne application of ATM switch unit. 5,796,185, Cl. 307-140.000.

Takatori, Ken-ichi; Suzuki, Masayoshi; Sumiyoshi, Ken; and Murai, Hideya, to NEC Corporation. Liquid crystal display with optical negative uni-axial compensation layer. 5,796,456, Cl. 349-117.000.

Takayama, Makoto: *See*—
Tomita, Motowo; Sugita, Yuji; Takemoto, Toshiyuki; Furuichi, Kiyoshi; Takayama, Makoto; Yasukawa, Ko; Ito, Katsuhisa; Yamaji, Noboru; and Yano, Shinya, 5,795,736, Cl. 435-65.100.

Takayama, Shuichi: *See*—
Higaki, Nobuo; Tominaga, Nobuki; Miyaji, Shinya; and Takayama, Shuichi, 5,796,970, Cl. 395-376.000.

Takeda, Hisashi: *See*—
Takahashi, Kazuhiro; Hashimoto, Hideyuki; and Takeda, Hisashi, 5,795,421, Cl. 156-108.000.

Takeda, Masanobu; Mizuno, Yasumasa; Tetsui, Shunichi; and Yamamoto, Hirotaka, to Denyo Kabushiki Kaisha. Engine-driven permanent magnetic type welding generator. 5,796,190, Cl. 310-58.000.

Takeda, Yasushi: *See*—
Utamura, Motoaki; Hoizumi, Shinichi; Takeda, Yasushi; Sasaki, Toshihiko; Komatsu, Hideaki; Kirikami, Seiichi; Suzumura, Takeshi; Sasada, Tetsuo; Ikeguchi, Takashi; and Sugita, Shigehisa, 5,794,431, Cl. 60-39.030.

Takegawa, Ichiro; Nukada, Hidemi; Yamamoto, Hiroshi; Goshima, Koji; and Kimura, Takaaki, to Fuji Xerox Co., Ltd. Electrophotographic photoreceptor, image forming apparatus and image forming process. 5,795,690, Cl. 430-58.000.

Takegawa, Yoko: *See*—
Yoshizawa, Seiichi; Takegawa, Yoko; Sugiyama, Akira; Suzuki, Motoi; and Nozawa, Ryoei, 5,797,059, Cl. 396-626.000.

Takemoto, Tadashi; Amino, Yusuke; and Nakamura, Ryoichiro, to Ajinomoto Co., Inc. Aspartyldipeptideamine derivatives and sweetner. 5,795,612, Cl. 426-548.000.

Takemoto, Toshiyuki: *See*—
Tomita, Motowo; Sugita, Yuji; Takemoto, Toshiyuki; Furuichi, Kiyoshi; Takayama, Makoto; Yasukawa, Ko; Ito, Katsuhisa; Yamaji, Noboru; and Yano, Shinya, 5,795,736, Cl. 435-65.100.

Takenouchi, Akira: *See*—
Teramoto, Satoshi; Takenouchi, Akira; and Ohtani, Hisashi, 5,795,816, Cl. 438-479.000.

Takeo, Hideya, to Fuji Photo Film Co., Ltd. Method and apparatus for compressing dynamic ranges of images. 5,796,870, Cl. 382-232.000.

Takeshima, Toshio; and Sugawara, Hiroshi, to NEC Corporation. Non-volatile semiconductor memory capable of writing multi-value information. 5,796,652, Cl. 365-185.030.

Takeuchi, Takeshi: *See*—
Hamamoto, Kiichi; Sasaki, Tatsuya; Takeuchi, Takeshi; Hayashi, Masako; Komatsu, Keiro; Mito, Ikuo; and Taguchi, Kenko, 5,796,883, Cl. 385-14.000.

Takeya, Shoji: *See*—
Saito, Masahiko; Miyasaka, Toru; Oonishi, Kazushige; Takeya, Shoji; Terashima, Isamu; Akasaki, Tetsuro; and Okano, Tadashi, 5,797,075, Cl. 399-284.000.

Takigawa, Mitsuru: *See*—

Ukai, Yasuhiro; Unate, Takao; and Takigawa, Mitsuru, 5,796,457, Cl. 349-119.000.
Takiguchi, Tsuyoshi: *See*—
Okado, Kenji; Takiguchi, Tsuyoshi; and Ida, Tetsuya, 5,795,693, Cl. 430-106.600.
Takii, Yukio: *See*—
Suzuki, Yuzuru; Takii, Yukio; Yamamoto, Kazumi; Nishiya, Yoshiaki; Sogabe, Atsushi; Sogabe, Yukihiro; and Emi, Shigenori, 5,795,766, Cl. 435-202.000.
Takizawa, Hideaki; and Hayashi, Shougo, to Fujitsu Limited. Pattern forming method and method of manufacturing liquid crystal display device. 5,795,686, Cl. 430-5.000.
Talcott, Adam R.: *See*—
Levitan, David Stephen; Muhich, John S.; Talcott, Adam R.; and White, Steven W., 5,796,998, Cl. 395-586.000.
Talmi, Yair: *See*—
Howard, Roy; and Talmi, Yair, 5,795,617, Cl. 427-58.000.
Talmon, Uwe: *See*—
Schwegler, Helmut; Frank, Kurt; Seitz, Ansgar; Bueser, Wolfgang; and Talmon, Uwe, 5,794,597, Cl. 123-514.000.
Tamagawa Seiki Kabushiki Kaisha: *See*—
Kushihara, Hiroshi, 5,796,357, Cl. 341-116.000.
Tamaki, Saneaki: *See*—
Yoshioka, Shinichi; Kawasaki, Ikuya; Narita, Susumu; and Tamaki, Saneaki, 5,796,978, Cl. 395-416.000.
Tamaki, Toshio: *See*—
Takami, Norio; Ohsaki, Takahisa; Tamaki, Toshio; Nakajima, Hideyuki; and Katsuta, Yasushi, 5,795,678, Cl. 429-218.000.
Tame, Katsuyuki: *See*—
Morita, Kozo; Kinoshita, Shigeaki; Tame, Katsuyuki; and Nomura, Osamu, 5,794,766, Cl. 200-569.000.
Tamllos, George Michael. Hunting tripod. 5,794,899, Cl. 248-166.000.
Tamura, Hiroki: *See*—
Oda, Hideyuki; Goto, Kenji; Murakami, Nobuaki; Tashima, Kazuchika; and Tamura, Hiroki, 5,794,586, Cl. 123-305.000.
Tamura, Kishio: *See*—
Yamazaki, Hiroshi; Tamura, Kishio; and Hayashi, Mayumi, 5,795,691, Cl. 430-106.600.
Tan, Swie-In; and Pearson, David Ian Charles, to Read-Rite Corporation; and Nordiko, Ltd. Sputtering apparatus with a rotating magnet array. 5,795,451, Cl. 204-298.200.
Tan, Swie-In: *See*—
Hurwitt, Steven; Reiss, Ira; Zielinski, Marian; and Tan, Swie-In, 5,795,448, Cl. 204-192.100.
Tanabe, Ken; and Nukui, Tadashi, to Kabushiki Kaisha Toshiba. Offset cancellation circuit. 5,796,301, Cl. 330-9.000.
Tanabe, Masahito; Wakiya, Kazumasa; Kobayashi, Masakazu; and Nakayama, Toshimasa, to Tokyo Ohka Kogyo Co, Ltd. Photoresist stripping liquid compositions and a method of stripping photoresists using the same. 5,795,702, Cl. 430-331.000.
Tanahashi, Toshio; Sanada, Masakatsu; Domyo, Hiroyuki; Hirayama, Hiroshi; Sobue, Kazuaki; Higashi, Tsuneo; Yokota, Koji; Sobukawa, Hideo; Suzuki, Tadashi; and Matsunaga, Shinichi, to Toyota Jidosha Kabushiki Kaisha; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Method of testing durability of exhaust gas purification device. 5,795,992, Cl. 73-23.310.
Tanaka, Kazuaki: *See*—
Nonomura, Itaru; Hashimoto, Shinichi; Kimura, Yuuji; Yamada, Takahiro; and Tanaka, Kazuaki, 5,796,435, Cl. 348-405.000.
Tanaka, Masaya: *See*—
Fukumura, Takashi; Iwata, Masuo; Narita, Noriaki; Inoue, Kouji; Tanaka, Masaya; Seki, Mika; and Takahashi, Ryoji, 5,795,930, Cl. 524-100.000.
Tanaka, Miyuki: *See*—
Minamino, Katsuki; Watari, Masao; Tanaka, Miyuki; Ishii, Kazuo; Kato, Yasuhiko; Ogawa, Hiroaki; Omote, Masanori; Watanabe, Kazuo; and Honda, Hitoshi, 5,796,921, Cl. 395-22.000.
Tanaka, Ryoji: *See*—
Madaraishi, Takashi; Nakao, Tomoaki; and Tanaka, Ryoji, 5,796,615, Cl. 364-468.160.
Tanaka, Satoshi, to Kabushiki Kaisha Toshiba. Disc cartridge with opening detector. 5,796,713, Cl. 369-291.000.
Tanaka, Shigeo; Yamazaki, Hiroshi; Sugiyama, Koichi; Sato, Makoto; Kotabe, Noriko; Katsuyama, Akira; Osakabe, Yoshio; and Kusagaya, Yasuo, to Sony Corporation. Audio video equipment system with bus line and method of establishing a connection setting for the audio video equipment system. 5,796,352, Cl. 340-825.240.
Tanaka, Shinji, to NEC Corporation. Module mounting structure. 5,796,592, Cl. 361-784.000.
Tanaka, Tamon: *See*—
Yanagawa, Yuji; Kato, Keigo; Muta, Koichiro; Ikihara, Tadao; and Tanaka, Tamon, 5,794,666, Cl. 141-18.000.
Tanaka, Toshihiro, to Tanaka, Toshihiro. Overload protection device. 5,796,348, Cl. 340-666.000.
Tanaka, Yoshiharu, to Minolta Co., Ltd. Apparatus and method for feeding film having perforations including judging wheter a film tip has passed a detector. 5,797,053, Cl. 396-397.000.
Tanase, Kenji: *See*—
Sumi, Satoshi; Tanase, Kenji; Suzuki, Yoshihisa; Yamaguchi, Atsushi; and Tsuchiya, Yoichi, 5,796,683, Cl. 369-13.000.
Tanegawa, Tetsuo: *See*—
Kusatsu, Masayoshi; Tanegawa, Tetsuo; and Miyashiro, Shigeyoshi, 5,795,979, Cl. 536-123.120.
Tang, Weixin: *See*—
Wang, Yuzhou; Tang, Weixin; and Liberti, Paul A., 5,795,470, Cl. 210-222.000.
Tang, Y. Tom: *See*—
Hillman, Jennifer L.; Tang, Y. Tom; and Corley, Neil C., 5,795,724, Cl. 435-6.000.
Tangren, John H., to Hutchinson Technology Incorporated. Disk drive head suspension having gaps in the load beam which are at least partially filled with or covered by damping material. 5,796,553, Cl. 360-104.000.
Tanibata, Tohru: *See*—
Shiba, Teruo; Oishi, Michio; Ishikawa, Masazumi; and Tanibata, Tohru, 5,796,907, Cl. 385-133.000.
Tanigawa, Masaki; Hosono, Shinichiro; Hoshino, Kozo; and Asakawa, Yoshihiko, to Kabushiki Kaisha Kobe Seiko Sho. Aluminum alloy sheet for lithographic printing plates and method for manufacturing the same. 5,795,541, Cl. 420-520.000.
Taniguchi, Keiji: *See*—
Wada, Takasumi; Yamamoto, Yoichi; and Taniguchi, Keiji, 5,797,062, Cl. 399-29.000.
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Tanner, Charles E.: *See*—
Wilson, Wallace Andrew; and Tanner, Charles E., 5,795,637, Cl. 428-42.200.
Tanner, James Jay; and Hollenberg, David Henry, to Kimberly-Clark Worldwide, Inc. Method for modifying papermaking sludge and products made from modified papermaking sludge. 5,795,377, Cl. 106-164.400.
Tanner, Marc Walter: *See*—
McArthur, William Allan; Stropkay, Scott Edward; and Tanner, Marc Walter, 5,795,321, Cl. 604-20.000.
Tantawi, Sami G.; Ruth, Ronald D.; and Zolotorev, Max, to Stanford University. Active high-power RF switch and pulse compression system. 5,796,314, Cl. 333-20.000.
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Koike, Yoshio; Kamada, Tsuyoshi; Tsuyuki, Syun; Furukawa, Noriaki; Masuda, Shigeru; Murata, Satoshi; Hasegawa, Tadashi; Sasabayashi, Takashi; Tanuma, Seiji; Mayama, Takatoshi; and Ohmuro, Katufumi, 5,796,458, Cl. 349-126.000.
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Kamiyama, Kinya; Moriizumi, Koichi; Kanno, Makoto; and Taoka, Hironobu, 5,796,408, Cl. 345-441.000.
Tapphorn, Ralph M.: *See*—
Gabel, Howard; and Tapphorn, Ralph M., 5,795,626, Cl. 427-458.000.
Tapscott, Stephen J.; and Olson, James M., to Fred Hutchinson Cancer Research Center. Expression of neurogenic bHLH genes in primitive neuroectodermal tumors. 5,795,723, Cl. 435-6.000.
Tarabella, Robert M. Idle time multimedia viewer method and apparatus for collecting and displaying information according to user defined indicia. 5,796,945, Cl. 395-200.900.
Target Therapeutics, Inc.: *See*—
Samson, Gene, 5,795,341, Cl. 604-282.000.
Tarnawskyj, Ihor W.: *See*—
Law, Kock-Yee; Tarnawskyj, Ihor W.; Mammino, Joseph; Abkowitz, Martin A.; and Knier, Frederick E., Jr., 5,795,500, Cl. 252-511.000.
Tarnoski, Charles P.: *See*—
Decker, Owen H.; Mountz, David A.; and Tarnoski, Charles P., 5,795,927, Cl. 523-401.000.
Tartaron, Joseph R.: *See*—
Williams, Marvin E.; and Tartaron, Joseph R., 5,794,679, Cl. 160-46.000.
Tasaka, Kazuhiro, to NEC Corporation. Method for manufacturing semiconductor device having groove-type isolation area. 5,795,814, Cl. 438-424.000.
Tasaka, Masahito: *See*—
Aihara, Toshio; Tasaka, Masahito; and Hayashi, Chihiro, 5,794,607, Cl. 125-16.020.
Tashima, Kazuchika: *See*—
Oda, Hideyuki; Goto, Kenji; Murakami, Nobuaki; Tashima, Kazuchika; and Tamura, Hiroki, 5,794,586, Cl. 123-305.000.
Tashiro, Tsutomu: *See*—
Morikawa, Takenori; and Tashiro, Tsutomu, 5,796,118, Cl. 257-19.000.
Taskar, Nikhil Ramesh: *See*—
Khan, Babar Ali; Cammack, David Alan; Pinker, Ronald D.; and Taskar, Nikhil Ramesh, 5,796,209, Cl. 313-493.000.
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Furukawa, Junichi; and Tateishi, Kiyoshi, 5,796,691, Cl. 369-50.000.
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Yoshikawa, Noriyuki; Kanazawa, Kunihiko; Makioka, Satoshi; and Tateoka, Kazuki, 5,796,165, Cl. 257-728.000.

Tatsumi, Kiyoshi: *See*—
Hanagata, Goro; Miura, Susumu; and Tatsumi, Kiyoshi, 5,795,980, Cl. 536-124.000.

Taub, Steven L., to Ceco Filters, Inc. Fluted filter media for a fiber bed mist eliminator. 5,795,369, Cl. 95-273.000.

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Tawara, Makoto: *See*—
Maezono, Shunichiro; Tawara, Makoto; and Toyose, Kikuo, 5,795,662, Cl. 428-650.000.

Tay, Sew-Wah: *See*—
Wang, Lixiao; Hastings, Roger; Buscemi, Paul; and Tay, Sew-Wah, 5,795,318, Cl. 604-8.000.

Taya, Hirokazu: *See*—
Nakajima, Toshiyuki; Okauchi, Akira; Hujino, Setuo; Taya, Hirokazu; Shimoda, Tomoki; and Ohshiba, Seiji, 5,794,499, Cl. 82-1.110.

Taylor, Alwyn H.: *See*—
van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P., 5,796,239, Cl. 320-107.000.

Taylor, Dene Harvey: *See*—
Brault, Donald Armand; Cahill, Douglas Allan; Himmelwright, Richard Scott; and Taylor, Dene Harvey, 5,795,425, Cl. 156-235.000.

Taylor Hobson Limited: *See*—
Chaloux, Leonard E., 5,794,498, Cl. 82,1.110.

Taylor, James L.; Alanis, Johnny A.; and Boswell, Mark S., to Project Services Group, Inc. Article conveyor and collator system and method. 5,794,756, Cl. 198-429.000.

Tays, Kevin L.: *See*—
Jackson, Paul F.; Slusher, Barbara S.; Tays, Kevin L.; and Maclin, Keith M., 5,795,877, Cl. 514-75.000.

Tchernatinsky, Claude: *See*—
Bucourt, Robert; Piasco, Alain; and Tchernatinsky, Claude, 5,795,884, Cl. 514-178.000.

TDK Corporation: *See*—
Nonami, Toru; Takahashi, Chihiro; and Sano, Tatsuji, 5,795,151, Cl. 433-8.000.
Uchikoba, Fumio; Nakajima, Shigeyuki; Ito, Takashi; Miura, Taro; Kobayashi, Makoto; Kurahashi, Takahide; and Iijima, Yasushi, 5,796,323, Cl. 333-260.000.

Teal, Peter E. A.: *See*—
Nachman, Ronald J.; Teal, Peter E. A.; and Holman, Grant Mark, 5,795,857, Cl. 514-2.000.

Techmitrol, Inc.: *See*—
DeAndrea, John J.; and Conroy, Keith M., 5,796,781, Cl. 375-288.000.

Techsearch Incorporated: *See*—
Slattery, Michael Gerard, 5,794,711, Cl. 172-265.000.

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DeClerck, David M., 5,795,127, Cl. 415-106.000.

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Morita, Kozo; Kinoshita, Shigeaki; Tame, Katsuyuki; and Nomura, Osamu, 5,794,766, Cl. 200-569.000.

Tektronix, Inc.: *See*—
Link, Garry N.; and Andrews, Roland E., 5,796,308, Cl. 330-284.000.

Teledesic Corporation: *See*—
Patterson, David Palmer; and Liron, Moshe L., 5,796,715, Cl. 370-60.000.

Telefonaktiebolaget L M Ericsson: *See*—
Brunner, Robert Frank, 5,796,790, Cl. 379-59.000.
Houde, Michel; Turcotte, Eric; Tom, Wayne; and Boudreau, Alain, 5,797,094, Cl. 455-412.000.

Telefonaktiebolaget LM Ericsson: *See*—
Andersson, Christer, 5,796,367, Cl. 343-700.0MS.
Gustafson, Karl Fredrik Robert; and Lundberg, Jan-Erik, 5,797,095, Cl. 455-422.000.
Houde, Michel, 5,797,093, Cl. 455-404.000.
Lupien, Francis; and Sawyer, Francois, 5,797,096, Cl. 455-433.000.
Myrberg, Jan, 5,796,584, Cl. 361-707.000.
Nguyen, Nam D., 5,797,089, Cl. 455-403.000.

Telefonaktiebolate LM Ericsson: *See*—
Wendelrup, Heino, 5,796,360, Cl. 341-143.000.

Telefonica de España, S.A.: *See*—
Pozas Alvarez, Jose Antonio; and Perez Roldan, Luis, 5,796,817, Cl. 379-384.000.
Roldán, Luis Pérez, 5,796,627, Cl. 364-492.000.

Teletransactions, Inc.: *See*—
Wall, Daniel G., 5,796,088, Cl. 235-472.000.

Telfer, Stephen J.: *See*—
Lee, John W.; McGowan, Donald A.; Mischke, Mark R.; Ramos, Socorro M.; and Telfer, Stephen J., 5,795,981, Cl. 540-1.000.

Temic Telefunken microelectronic GmbH: *See*—
Alberter, Gunther; Baumann, Jörg; Breu, Gunther; and Gutbrod, Wolfgang, 5,796,232, Cl. 318-653.000

Temma, Shoji; and Funaki, Jun, to Fujitsu Limited. Processor apparatus and its control method for controlling a processor having a CPU for executing an instruction according to a control program. 5,796,996, Cl. 395-566.000.

Tempo Instrument, Inc.: *See*—
Iancu, Daniel S.; and DiFranco, Christian A., 5,796,631, Cl. 364-492.000.

Tenryu Seikyo Kabushiki Kaisha: *See*—
Asada, Tanehiko, 5,794,503, Cl. 83-835.000.

Tensar Corporation, The: *See*—
Bruner, Jeffrey W.; and Stevenson, Peter E., 5,795,835, Cl. 442-310.000.

Teoule, Robert: *See*—
Livache, Thierry; Fouque, Brigitte; and Teoule, Robert, 5,795,715, Cl. 435-6.000.

Tepley, Norman: *See*—
Chopp, Micheal; Moran, John; and Tepley, Norman, 5,794,622, Cl. 128-654.000.

Teradyne, Inc.: *See*—
Chester, Michael A.; and Michaelson, Steven A., 5,795,797, Cl. 438-4.000.

Teramoto, Satoshi; Takenouchi, Akira; and Ohtani, Hisashi, to Semiconductor Energy Laboratory Co., Ltd. Method of fabricating semiconductor device. 5,795,816, Cl. 438-479.000.

Terashi, Yoshitake; Shigehisa, Takashi; Akiyama, Masahide; and Yamashita, Shoji, to Kyocera Corporation. Electrically conducting ceramics, process for producing the same and fuel cell using the ceramics. 5,795,502, Cl. 252-521.100.

Terashima, Isamu: *See*—
Saito, Masahiko; Miyasaka, Toru; Oonishi, Kazushige; Takeya, Shoji; Terashima, Isamu; Akasaki, Tetsuro; and Okano, Tadashi, 5,797,075, Cl. 399-284.000.

Terashima, Seiji: *See*—
Matsumoto, Masahito; Usui, Nobuhiro; and Terashima, Seiji, 5,795,526, Cl. 264-266.000.

Terashita, Hiromi: *See*—
Shimotani, Mitsuo; Nishida, Minoru; Okada, Akira; Satake, Toshihide; Washino, Shoichi; Okawa, Futoshi; and Terashita, Hiromi, 5,795,306, Cl. 600-558.000.

Terenzi, Bruno. Automatic dog and cat feeder. 5,794,560, Cl. 119-51.110.

Terlep, Daniel Joseph; and Elder, Robert Charles, to Motorola, Inc. Apparatus and method for digitizing and detecting a received radio frequency signal. 5,796,777, Cl. 375-227.000.

Ternullo, Luigi, Jr.; and Stephens, Michael C., Jr., to Vanguard International Semiconductor Corporation. Semiconductor memory device with improved read signal generation of data lines and assisted precharge to mid-level. 5,796,665, Cl. 365-203.000.

Ternullo, Luigi, Jr.: *See*—
Adams, Robert D.; Connor, John; Koch, Garrett S.; and Ternullo, Luigi, Jr., 5,796,745, Cl. 371-21.100.

Terrastar, Inc.: *See*—
Lusignan, Bruce B., 5,797,082, Cl. 455-3.200.

Terrien, Pascal; Pedarre, Pierre; Sicoli, Bernadette; and Bioteau, Claude, to Ugine Savoie. Ferritic stainless steel wire and steel wool. 5,795,411, Cl. 148-325.000.

Tesler, Alexander: *See*—
Stein, Anatoly; Tesler, Alexander; and Varsanofiev, Dimitry, 5,796,541, Cl. 360-75.000.

Tessera, Inc.: *See*—
Distefano, Thomas H.; and Smith, John W., Jr., 5,794,330, Cl. 29-840.000.

Tetsui, Shunichi: *See*—
Takeda, Masanobu; Mizuno, Yasumasa; Tetsui, Shunichi; and Yamamoto, Hirotaka, 5,796,190, Cl. 310-58.000.

Tews, Richard Roy: *See*—
Nielsen, Steven James; Chang, Yihua; Krueger, Allan James; Balzar, Tammy Jo; and Tews, Richard Roy, 5,795,320, Cl. 604-12.000.

Texas A&M University System, The: *See*—
Vance, John M.; and Shultz, Richard R., 5,794,942, Cl. 277-303.000.

Texas Instruments Incorporated: *See*—
Anderson, Charles H., 5,796,526, Cl. 359-671.000.
Bell, Weldon J.; and Grimes, H. Michael, 5,795,382, Cl. 117-20.000.
Choi, Hwangsoo; Kwong, Manpo; and Shin, Seong S., 5,796,965, Cl. 395-309.000.
Gove, Robert J.; Reder, John R.; Heimbuch, Scott D.; Markandey, Vishal; and Marshall, Stephen W., 5,796,442, Cl. 348-556.000.
Houston, Theodore W., 5,795,810, Cl. 438-404.000.
Hsu, Wei-Yung; Anderson, Dirk N.; and Kraft, Robert, 5,796,151, Cl. 257-410.000.
Inamori, Shinri, 5,796,444, Cl. 348-525.000.
Kang, Sung-Mo Steve; Duvvury, Charvaka; Diaz, Carlos Hernando; and Ramaswamy, Sridhar, 5,796,638, Cl. 364-578.000.
Krzentz, Steven V., 5,796,296, Cl. 327-545.000.
Nasserbakht, Mitra; and Bosshart, Patrick W., 5,796,995, Cl. 395-558.000.
Pitz, Jeanne K.; Trafton, Fredrick W.; and Pierson, Richard C., 5,796,672, Cl. 365-230.030.
Poh, Looi Choon; Kiang, Goh Meng; Liong, Chen Teck; Guan, Thiang Nan; and Bakar, Abu, 5,796,246, Cl. 324-73.100.
Rohan, Darius, 5,797,129, Cl. 705-8.000.
Seabaugh, Alan C., 5,796,119, Cl. 257-25.000.

Thompson, E. Earle, 5,797,060, Cl. 399-25.000.

Thai Hospital Products Co. Ltd.: *See—*
Maturaporn, Thawatchai, 5,796,460, Cl. 351-86.000.

THAT Corporation: *See—*
Hanna, Christopher M., 5,796,842, Cl. 381-4.000.

Thayer, Adam E.: *See—*
Dussia, Ralph J., Jr.; Roberts, Gerald E.; Hoffman, Margaret A.; Calvert, William A., Jr.; Dutkievic, Duane T.; West, Charles R.; and Thayer, Adam E., 5,795,028, Cl. 297-440.140.

Theeus Logic: *See—*
Fant, Karl M.; and Kinney, Larry L., 5,796,962, Cl. 395-306.000.

Theeuwes, Felix: *See—*
Lee, Eun Soo; Bura, Scott A.; Yum, Su Il; Wong, Patrick S.-L.; and Theeuwes, Felix, 5,795,591, Cl. 424-473.000.

Thermoscan, Inc.: *See—*
Fraden, Jacob; Brown, Joseph P.; Lackey, Robert P.; Howe, Randall R.; Bultges, Heinz; Debus, Wolfram; Bautz, Gunther; and Franke, Helmut, 5,795,067, Cl. 374-158.000.

ThermoTrex Corporation: *See—*
Squire, Mark; Hyman, Howard; Trissel, Richard; Houghton, George; Leslie, Daniel; and Dunn, Murray, 5,796,474, Cl. 356-152.100.

Thesken, Mark H.: *See—*
Parker, Daniel J.; and Thesken, Mark H., 5,794,318, Cl. 27-1.000.

Thevenet, Michel: *See—*
Bardin, Roland; and Thevenet, Michel, 5,794,962, Cl. 280-607.000.

Third Wave Technologies, Inc.: *See—*
Dahlberg, James E.; Lyamichev, Victor I.; and Brow, Mary Ann D., 5,795,763, Cl. 435-194.000.

Thomas & Betts Corporation: *See—*
Hopson, Mark G.; and Roland, Scott C., 5,794,336, Cl. 29-882.000.

Thomas, Bernd: *See—*
Hofbauer, Peter; Heikrodt, Klaus; Strauss, Rolf-Peter; and Thomas, Bernd, 5,794,444, Cl. 60-517.000.

Thomas, Donald J.: *See—*
Solomon, Todd R.; Thomas, Donald J.; and Labonville, Gerard J., 5,794,487, Cl. 74-490.030.

Thomas, Jeff David: *See—*
Brower, David Campbell; Myers, Robert Andrew; and Thomas, Jeff David, 5,795,087, Cl. 400-636.000.

Thomas Jefferson University: *See—*
Kmiec, Eric B., 5,795,972, Cl. 536-23.100.

Thomas, Jeffrey K.; and Walker, Frank J., to Morgan Concepts, Inc. Subterranean water collection and delivery device and system. 5,795,100, Cl. 405-45.000.

Thomas, Robert E.: *See—*
Simcoe, Robert; Thomas, Robert E.; and Varghese, George, 5,796,966, Cl. 395-311.000.

Thomason, Scott; and Martens, Daniel J., to MTD Products Inc. Lawn debris collecting system and method. 5,794,425, Cl. 56-202.000.

Thompsett, David: *See—*
Wilkinson, David; Voss, Henry H.; Prater, Keith B.; Hards, Graham A.; Ralph, Thomas R.; and Thompsett, David, 5,795,669, Cl. 429-40.000.

Thompson, E. Earle, to Texas Instruments Incorporated; and AGFA-Gevaert N.V. Electrophotographic printing subsystem with self-monitoring and adjustment. 5,797,060, Cl. 399-25.000.

Thompson, Nolan H.: *See—*
Dragner, Louis R.; Harper, Douglas W.; and Thompson, Nolan H., 5,795,932, Cl. 524-276.000.

Thomson Broadcast: *See—*
Rebiai, Mohammed; and Pavie, Hugues, 5,796,407, Cl. 345-430.000.

Thomson Consumer Electronics: *See—*
Maurice, François; Colineau, Joseph; Hanna, Charaf; and Sonrier, Michel, 5,796,710, Cl. 369-275.300.

Thomson Consumer Electronics, Inc.: *See—*
Fitzgerald, William Vincent, 5,796,597, Cl. 363-21.000.
Williams, Kevin Michael, 5,796,596, Cl. 363-21.000.

Thomson-CSF: *See—*
Maurice, François; Colineau, Joseph; Hanna, Charaf; and Sonrier, Michel, 5,796,710, Cl. 369-275.300.
Suppa, Vito; Bocquillon, Pascal; Loubieres, Bernard; and Oddoart, Gilbert, 5,795,203, Cl. 441-1.000.

Thomson multimedia S.A.: *See—*
Marcellin-Dibon, Eric, 5,796,446, Cl. 348-744.000.

Thomson, S.A.: *See—*
DuPont, Antoine Pierre; and Plus, Dora, 5,796,390, Cl. 345-204.000.

Thorpe, Thurman C.: *See—*
Read, Karen A.; Trogdon, David E.; Thorpe, Thurman C.; Ronsick, Christopher S.; and Jeffrey, Scott R., 5,795,773, Cl. 45-287.500.

Thorson, Greg: *See—*
Birrittella, Mark S.; Kessler, Richard E.; Oberlin, Steven M.; Passint, Randal S.; and Thorson, Greg, 5,797,035, Cl. 395-855.000.

Thorssen, Donald A.; and Loree, Dwight N., to Trysol Limited. Oil and gas well operation fluid used for the solvation of waxes and asphaltenes, and method of use thereof. 5,795,850, Cl. 507-203.000.

Three Bond Co., Ltd.: *See—*
Shimizu, Toru, 5,794,947, Cl. 277-630.000.

Tibbetts, John A. One-handed canoe paddle. 5,795,201, Cl. 440-101.000.

Tidwell, Richard R.: *See—*
Dykstra, Christine C.; Boykin, David; and Tidwell, Richard R., 5,795,906, Cl. 514-394.000.

Tielemans, Luc: *See—*
Christiaens, Filip; Tielemans, Luc; De Schepper, Luc; and Beyne, Eric, 5,795,063, Cl. 374-43.000.

Tigercat Industries Inc.: *See—*
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Time Warner Cable: *See—*
Brown, Ralph W., 5,797,010, Cl. 395-712.000.

Tischner, Hermann: *See—*
Dwars, Anja; Prechtl, Wolfgang; Schropfer, Jorg; and Tischner, Hermann, 5,795,540, Cl. 420-12.000.

Titan Corporation, The: *See—*
Newby, Charles F.; and Harding, Michael V., 5,796,829, Cl. 380-21.000.

Titus, John; Barry, Jim; and Hendrickson, Max, to Joint Techno Concepts International, Inc. Apparatus and method for electronic confinement of animals. 5,794,569, Cl. 119-721.000.

Toda, Haruki, to Kabushiki Kaisha Toshiba. Memory device and serial-parallel data transform circuit. 5,796,660, Cl. 365-189.050.

Todd, Dan: *See—*
Woods, Jim; and Todd, Dan, 5,795,270, Cl. 482-72.000.

Tode, Hiroyoshi: *See—*
Ozawa, Yoshio; Tomiie, Norio; Tode, Hiroyoshi; and Ikeda, Yukio, 5,797,071, Cl. 399-159.000.

Todor, John S., to Storage Technology Corporation. Receiver and magazine assembly for storage library system. 5,795,042, Cl. 312-221.000.

Tofighi, Aliassghar; Vasconcellos, Alfred V.; Jacobs, Katherine; and Chakravarthy, Pramod, to Etex Corporation. Mixing device. 5,795,330, Cl. 604-82.000.

Toganoh, Shigeo: *See—*
Inoue, Makoto, deceased; Inoue, Tsuneo, executor; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, 5,796,415, Cl. 347-45.000.

Togawa, Yoshiaki: *See—*
Matsumoto, Masahito; Tsutsubuchi, Masaaki; Kitayama, Takeo; Nakamura, Yukito; and Togawa, Yoshiaki, 5,795,510, Cl. 264-40.500.

Tohgi, Yutaka, to Yamaha Corporation. Electronic musical apparatus capable of automatically analyzing performance information of a musical tune. 5,796,026, Cl. 84-609.000.

Tohoku Ricoh Co., Ltd.: *See—*
Araseki, Yoshiyuki; Kamada, Takenobu; and Kimura, Hitoshi, 5,794,928, Cl. 271-9.080.

Tokai Kogyo Kabushiki Kaisha: *See—*
Yada, Yukihiko, 5,795,597, Cl. 425-465.000.

Tokai Rubber Industries, Ltd.: *See—*
Kamitani, Kiyoaki; Shichijyo, Akiya; Kusase, Shin; Mitani, Kenzo; and Ishikawa, Hiroaki, 5,796,201, Cl. 310-194.000.

Toko, Inc.: *See—*
Otake, Tetushi, 5,796,241, Cl. 323-282.000.

Tokuyama Corporation: *See—*
Kimura, Mikio; and Aizawa, Masayuki, 5,795,497, Cl. 252-182.180.

Tokyo Electron Limited: *See—*
Ishii, Nobuo; and Hata, Jiro, 5,795,429, Cl. 156-345.000.

Tokyo Ohka Kogyo Co, Ltd.: *See—*
Tanabe, Masahito; Wakiya, Kazumasa; Kobayashi, Masakazu; and Nakayama, Toshimasa, 5,795,702, Cl. 430-331.000.

Tokyo Ohka Kogyo Co., Ltd.: *See—*
Sakamoto, Yoshinori; Hagiwara, Yoshio; and Nakayama, Toshimasa, 5,795,378, Cl. 106-287.160.

Tokyo Tsuki Co., Ltd.: *See—*
Umeda, Kazuhiro; and Ichikawa, Syuzi, 5,796,279, Cl. 327-110.000.

Tolan, Peter J. Method and apparatus for the separation of hazardous waste from groundwater. 5,795,474, Cl. 210-257.200.

Tom Thumb Toys: *See—*
Robbs, Albert Alexander, III, 5,794,937, Cl. 273-447.000.

Tom, Wayne: *See—*
Houde, Michel; Turcotte, Eric; Tom, Wayne; and Boudreau, Alain, 5,797,094, Cl. 455-412.000.

Tom, Wing C.: *See—*
Shue, Ho-Jane; Shih, Neng-Yang; Blythin, David J.; Chen, Xiao; Tom, Wing C.; Piwinski, John J.; and McCormick, Kevin D., 5,795,894, Cl. 514-253.000.

Tomiie, Norio: *See—*
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Tominaga, Nobuki: *See—*
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Wedel, Raymond B., Jr.; and Moser, Richard, 5,794,581, Cl. 123-196.00R.
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Kalindjian, Sarkis Barret; Steel, Katherine Isobel Mary; Pether, Michael John; Davies, Jonathan Michael Richard; Low, Caroline Minli Rachel; Hudson, Martin Lyn; Buck, Ildiko Maria; McDonald, Iain Mair; Dunstone, David John; and Tozer, Matthew John, 5,795,907, Cl. 514-397.000.
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Bohlman, Walter; and Greeley, John, 5,796,317, Cl. 333-127.000.
Gordon, Robert B.; Doak, Robert C.; and Shields, James L., 5,796,315, Cl. 333-24.00C.
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Steele, Duncan Andrew; and Silvester, David Graham, 5,794,462, Cl. 70-18.000.
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Holloman, Charles J., 5,796,375, Cl. 345-74.000.
Trans Seismic International, Inc.: *See*—
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Transaction Technology, Inc.: *See*—
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Neumann, Barry Richard, 5,794,860, Cl. 239-585.300.
Transcrypt International, Inc.: *See*—
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Tremont, Samuel J., to Monsanto Company. Polyamines and method for preparation thereof, 5,795,567, Cl. 424-78.260.
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Vogt, Robert C.; and Trenkle, John M., 5,796,861, Cl. 382-128.000.
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Sheynblat, Len, 5,796,773, Cl. 375-200.000.
Trimble, Russell L.: *See*—
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Peh, Kheng Boon; and Lee, Eng Han, 5,796,645, Cl. 364-750.500.

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Yanusko, David P., 5,794,488, Cl. 74-502.600.

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Troutman, Ronald Roy: *See—*
Doany, Fuad Elias; and Troutman, Ronald Roy, 5,796,509, Cl. 359-254.000.

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Cantor, Charles R.; Przetakiewicz, Marek; Smith, Cassandra L.; and Sano, Takeshi, 5,795,714, Cl. 435-6.000.
Teich, Malvin Carl; and Saleh, Bahaa E. A., 5,796,477, Cl. 356-318.000.

Trustees of Dartmouth College: *See—*
Smith, Kendall A., 5,795,752, Cl. 435-172.300.

Trustees of Princeton University: *See—*
Kahne, Suzanne Walker, 5,795,870, Cl. 514-26.000.

Truth Hardware Corporation: *See—*
Dallmann, Brian D., 5,794,310, Cl. 16-362.000.

Trutschel, Hartwig Horst: *See—*
Röder, Klaus Walter; and Trutschel, Hartwig Horst, 5,795,638, Cl. 428-57.000.

TRW Fahrwerksysteme GmbH & Co. KG: *See—*
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Injeyan, Hagop; Cheung, Eric C.; and Ho, James G., 5,796,761, Cl. 372-3.000.
Strong, Daniel J., 5,794,507, Cl. 91-375.00A.

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Berti, Dietmar, 5,795,284, Cl. 493-405.000.
Fischer, Anton, 5,794,970, Cl. 280-731.000.
Huber, Andreas, 5,794,879, Cl. 242-382.200.
Schmid, Johannes, 5,794,875, Cl. 242-374.000.

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Frank, Matthew C., 5,794,977, Cl. 280-801.200.
O'Loughlin, John P.; and Hocking, James R., 5,794,973, Cl. 280-737.000.

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Pecoraro, George A.; and Tsai, Yih-Wan, 5,795,363, Cl. 65-134.400.

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Iwasaki, Manabu; Tsuboyama, Akira; Katakura, Kazunori; and Mizutani, Hidemasa, 5,796,381, Cl. 345-101.000.

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Kumihashi, Takao; Tsujimoto, Kazunori; and Tachi, Shinichi, 5,795,832, Cl. 438-714.000.

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UBE Industries, Ltd.: *See—*
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Ubukata, Masami: *See—*
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Uesugi, Toshiharu: *See—*
Okamoto, Hideo; Uesugi, Toshiharu; Iwasaki, Atsushi; and Oda, Tetsuhiro, 5,795,383, Cl. 117-30.000.

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Terrien, Pascal; Pedarre, Pierre; Sicoli, Bernadette; and Bioteau, Claude, 5,795,411, Cl. 148-325.000.

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Gerling, Klaus; Rau, Helge; Wendler, Kornelia; and Uhlig, Karlheinz, 5,795,851, Cl. 508-307.000.

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Weinheimer, Alois; and Uhlmann, Dieter, 5,794,779, Cl. 206-443.000.

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Halm, Hans; Werhahn, Wilhelm; Eichler, Klaus; and Kapsa, Hans-Martin, 5,795,436, Cl. 156-579.000.

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McLaughlin, David Francis; and Ulerich, Nancy Hamp, 5,795,285, Cl. 588-256.000.

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Cartabiano, Michael C.; Curran, Kenneth J.; Dick, David J.; Gibbs, Douglas R.; Kirby, Morgan H.; May, Richard L.; Storer, William J. A.; and Ullman, Adam N., 5,796,354, Cl. 341-22.000.

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Nakayama, Izumi; Masuda, Yukio; Bersin, Richard L.; Xu, Han; and Geng, Quain, 5,795,831, Cl. 438-714.000.

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Ookawa, Akemi; and Umemura, Chiaki, 5,796,226, Cl. 318-254.000.

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Duchene, Val-Jean; and Reinbold, James F., 5,794,953, Cl. 280-33.992.

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Oefner, Peter Josef; and Underhill, Peter Anton, 5,795,976, Cl. 536-25.400.

Underiner, Gail, to Cell Therapeutics, Inc. Oxohexyl methylxanthine compounds. 5,795,897, Cl. 514-261.000.

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Löfroth, Jan-Erik; and Ungell, Anna-Lena, 5,795,896, Cl. 514-256.000.

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Unifran Inc.: *See—*
Shearon, James C., 5,794,281, Cl. 4-558.000.

Union Camp Corporation: *See—*
Plomgren, John Frederick; and Cannon, Billy P., 5,794,770, Cl. 206-215.000.

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Hara, Seinosuke; Hayashi, Nobutaka; Tsuruta, Seiji; and Sawada, Takanori, 5,794,576, Cl. 123-90.160.

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Whittaker, Wayne H.; Putman, Kevin C.; and Richter, John R., 5,794,912, Cl. 248-638.000.

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Johnson, David C.; Fuller, Douglas A.; Engelbrecht, Kenneth L.; Marlan, Gregory A.; Arnold, Ronald G.; and Fagerness, Gerald G., 5,796,972, Cl. 395-384.000.

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Bryan-Brown, Guy P.; McDonnell, Damien G.; Towler, Michael J.; and Bancroft, Martin S., 5,796,459, Cl. 349-132.000.

United Microelectronics Corporation: *See—*
Chao, Fang-Ching, 5,796,138, Cl. 257-306.000.
Jenq, J.S. Jason, 5,795,804, Cl. 438-244.000.
Lin, Ruei-Ling; Hsu, Ching-Hsiang; and Hong, Gary, 5,796,141, Cl. 257-316.000.
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Wu, Der-Yuan; and Jenq, Jason, 5,795,805, Cl. 438-253.000.

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United States of America
Agriculture: *See—*
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Air Force: *See—*
Morse, Jeffrey W., 5,795,324, Cl. 604-27.000.
Nakano, Kenichi; Bozada, Christopher A.; Quach, Tony K.; DeSalvo, Gregory C.; Via, G. David; Dettmer, Ross W.; Havasy, Charles K.; Sewell, James S.; Ebel, John L.; and Gillespie, James K., 5,796,131, Cl. 257-284.000.
Shepherd, Freeman D.; and Mooney, Jonathan M., 5,796,155, Cl. 257-452.000.
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DenBaars, Steven P.; Speck, James S.; Church, Charles H.; Wilson, Robert G.; and Zavada, John M., 5,796,771, Cl. 372-75.000.
Hall, John M., 5,796,523, Cl. 359-629.000.
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Suzuki, Hiroaki; Bhat, Narayan K.; and Papas, Takis S., 5,795,866, Cl. 514-12.000.
Navy: *See*—
Hughes, Harold; and McMarr, Patrick, 5,795,813, Cl. 438-423.000.
Ralls, Stephen Alden; and Roddy, William Corry, 5,795,159, Cl. 433-92.000.
Secretary of Agriculture: *See*—
Yang, Shaw-Ming; Dowler, William Minor; Schaad, Norman Werth; and Connick, William Joseph, Jr., 5,795,845, Cl. 504-117.000.
U.S. Philips Corporation: *See*—
Bellec, Martial, 5,796,730, Cl. 370-347.000.
Brajal, Américo; and Chouly, Antoine, 5,796,814, Cl. 375-232.000.
Deville, Yannick, 5,796,925, Cl. 395-27.000.
Dossel, Olaf Helmut; and Kullmann, Walter Heinrich, 5,794,620, Cl. 128-653.100.
Draaisma, Eeltje A., 5,796,562, Cl. 360-121.000.
Hefford, David V., 5,794,520, Cl. 99-323.300.
Ludikhuize, Adrianus W., 5,796,146, Cl. 257-343.000.
Spiero, Richard C., 5,796,785, Cl. 375-316.000.
Suzuki, Fuminori, 5,796,427, Cl. 348-208.000.
Vacher, Pierre, 5,796,217, Cl. 315-408.000.
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Beuk, Leonardus G.M.; Köhler, Hans E.P.; Jansen, Robertus C.J.; and Van Gerwen, Adrianus H., 5,797,085, Cl. 455-88.000.
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Klotzbach, David; Pecen, Mark; Favreau, Keith; and Knueven, Michael, 5,796,742, Cl. 370-466.000.
United States Surgical Corporation: *See*—
Totakura, Nagabhushanam; Muth, Ross R.; Gravener, Roy D.; Hain, Matthew; and Koyfman, Ilya S., 5,795,584, Cl. 424-426.000.
United Technologies Corporation: *See*—
Barcza, William Kevin, 5,794,851, Cl. 239-127.300.
Gutierrez, Jose L., Jr., 5,794,850, Cl. 239-127.100.
Unitika, Ltd.: *See*—
Matsuoka, Fumio; Murase, Shigemitsu; Nagaoka, Koichi; and Nishimura, Hiroshi, 5,795,651, Cl. 428-364.000.
Universite Claude Bernard: *See*—
Pajonk, Gérard; Elaloui, Elimame; Begag, Redouane; Durant, Marcel; Chevalier, Bruno; Chevalier, Jean-Luc; and Achard, Patrick, 5,795,557, Cl. 423-338.000.
University of Bath, The: *See*—
Johns, Allan Thomas, 5,796,257, Cl. 324-520.000.
University of British Columbia, The: *See*—
Ma, Qi Yuan, 5,795,848, Cl. 505-162.000.
University of California: *See*—
Browning, Jeffrey; and Ware, Carl F., 5,795,964, Cl. 530-351.000.
University of California, The Regents of the: *See*—
Bullimore, Mark A., 5,796,463, Cl. 351-205.000.
Church, George; Deamer, David W.; Branton, Daniel; Baldarelli, Richard; and Kasianowicz, John, 5,795,782, Cl. 436-2.000.
DenBaars, Steven P.; Speck, James S.; Church, Charles H.; Wilson, Robert G.; and Zavada, John M., 5,796,771, Cl. 372-75.000.
Dimri, Goberdhan P.; Campisi, Judith; and Peacocke, Monica, 5,795,728, Cl. 435-18.000.
Frazee, John G., 5,794,629, Cl. 128-898.000.
Mast, Jeffrey E., 5,796,363, Cl. 342-22.000.
Mishra, Umesh Kumar; DenBaars, Steven P.; and Kapolnek, David Joseph, 5,795,798, Cl. 438-35.000.
University of Illinois, The Board of Trustees of the: *See*—
Kang, Sung-Mo Steve; Duvvury, Charvaka; Diaz, Carlos Hernando; and Ramaswamy, Sridhar, 5,796,638, Cl. 364-578.000.
University of Iowa Research Foundation, The: *See*—
Rosazza, John P. N.; and Li, Tao, 5,795,759, Cl. 435-189.000.
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Counsell, Raymond E.; Meyer, Karen L.; Schwendner, Susan W.; and Haradahira, Terushi, 5,795,561, Cl. 424-1.770.
University of North Carolina at Chapel Hill: *See*—
Dykstra, Christine C.; Boykin, David; and Tidwell, Richard R., 5,795,906, Cl. 514-394.000.
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Jacobs, Stephen David; Kordonski, William; Prokhorov, Igor Victorovich; Golini, Donald; Gorodkin, Gennadii Rafailovich; and Strafford, Tvasta David, 5,795,212, Cl. 451-36.000.
University of Sheffield, The: *See*—
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University of Utah Research Foundation: *See*—
Cole, Barry C.; Atkin, Curtis L.; and Knudtson, Kevin L., 5,795,974, Cl. 536-23.700.
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Pathak, Sayan; Chalana, Vikram; and Kim, Yongmin, 5,795,296, Cl. 600-443.000.
Uno, Taiga; Koyama, Kiyomi; and Yamamoto, Kazuko, to Kabushiki Kaisha Toshiba. Method and a system for designing a photomask for use in manufacture of a semiconductor device. 5,795,683, Cl. 430-5.000.
Unold, Gerhard: *See*—
Hellmuth, Thomas; Kaschke, Michael; Moore, John C.; and Unold, Gerhard, 5,795,295, Cl. 600-407.000.
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Le Febre, David A.; and Zetter, Mark S., 5,796,251, Cl. 324-300.000.
Urban, Ernst-Günther, to Jagenberg Aktiengesellschaft. Coiling machine with adhesive strip applicator. 5,795,432, Cl. 156-446.000.
Urban, Jörg; Strum, Hans-Dieter; and Schwartz, Waldemar, to KSB Aktiengesellschaft. Centrifugal pump for the delivery of hot media. 5,795,129, Cl. 415-170.100.
Ushikoshi, Ryusuke; Tsuruta, Hideyoshi; and Fujii, Tomoyuki, to NGK Insulators, Ltd. Ceramics joined body and method of joining ceramics. 5,794,838, Cl. 228-121.000.
Ushirozawa, Mizuyuki, to NEC Corporation. Lightwave transmitter. 5,796,505, Cl. 359-160.000.
Usinor Sacilor (Societe Anonyme): *See*—
Damasse, Jean-Michel; and Barbe, Jacques, 5,794,682, Cl. 164-437.000.
Usui Kokusai Sangyo Kaisha Limited: *See*—
Ryuu, Hideo, 5,794,749, Cl. 192-58.681.
Usui, Nobuhiro: *See*—
Matsumoto, Masahito; Usui, Nobuhiro; and Terashima, Seiji, 5,795,526, Cl. 264-266.000.
Usui, Yasunori: *See*—
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USX Corporation: *See*—
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UT Automotive Dearborn, Inc.: *See*—
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Utah State University: *See*—
Wilkerson, Thomas D.; and McKay, Jack A., 5,796,471, Cl. 356-28.500.
Utamura, Motoaki; Hoizumi, Shinichi; Takeda, Yasushi; Sasaki, Toshihiko; Komatsu, Hideaki; Kirikami, Seiichi; Suzumura, Takeshi; Sasada, Tetsuo; Ikeguchi, Takashi; and Sugita, Shigehisa, to Hitachi, Ltd. Exhaust recirculation type combined plant. 5,794,431, Cl. 60-39.030.
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Utsumi, Katsunori, to Jintec Corporation. Device and method for cleaning telephone number list. 5,796,816, Cl. 379-381.000.
Uttecht, Ronald Robert: *See*—
Motsiff, William Thomas; Geffken, Robert Michael; and Uttecht, Ronald Robert, 5,795,819, Cl. 438-618.000.
Uvex Safety, Inc.: *See*—
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Kjeldsen, Thomas Børglum; and Vad, Knud, 5,795,746, Cl. 435-69.900.
Vadas, Keith J.: *See*—
Schofield, Kenneth; Larson, Mark L.; and Vadas, Keith J., 5,796,094, Cl. 250-208.100.
Vaidyanathan, Arunachalam: *See*—
Abudayyeh, Jihad Y.; Dikshit, Ashutosh S.; Bezzant, Daniel G.; Smith, Stephen A.; Nookala, Narasimha R.; and Vaidyanathan, Arunachalam, 5,796,981, Cl. 395-500.000.
Vakkalagadda, Anu V.: *See*—
Bahls, James W.; Denny, George S.; Hannan, Richard G.; Mansker, Janna L.; Naylor, Bruce E.; Paffendorf, Karen D.; Patterson, Betty J.; Stoob, Sandra L.; Tse, Judy Y.; and Vakkalagadda, Anu V., 5,797,005, Cl. 395-680.000.
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Lefevre, Gerard, 5,795,230, Cl. 464-63.000.
Villata, Gino, 5,794,754, Cl. 192-107.000.
Vale Porben, José Antonio: *See*—
Mellado, Augusto Guilabert; Vale Porben, José Antonio; and Gonzalez Martinez, Jorge, 5,796,731, Cl. 370-362.000.
Valley, Kirsten L.; Snow, David W.; Fan, Sylvia W.; and Mueller, Richard L., Jr., to Heartport, Inc. Methods and apparatus for anchoring an occluding member. 5,795,325, Cl. 604-53.000.
Valliere, Charles R.: *See*—
Bishop, Charles W.; Knutson, Joyce C.; and Valliere, Charles R., 5,795,882, Cl. 514-170.000.
Van Ameyde, Gary: *See*—
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Van Der Hoeven, Martin A.; Cayne, Jaeson; and Ryan, Thomas J. Exercise apparatus. 5,795,275, Cl. 482-122.000.
Van Der Laan, Jan Metske: *See*—
Bovenberg, Roelof Ary Lans; Koekman, Bertus Pieter; Hoekema, Andreas; Van Der Laan, Jan Metske; Verweij, Jan; and De Vroom, Erik, 5,795,733, Cl. 435-51.000.
Vanderpool, Jeffrey S.: *See*—
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van der Wielen, Maurice C. M. M.: *See*—
Van Kempen, Herman; Abraham, Daniel Lee; Prins, Menno W. J.; Jansen, Ronald; and van der Wielen, Maurice C. M. M., 5,796,102, Cl. 250-306.000.

Vandewalle, Jean-Jacques: *See*—
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Van Erden, Donald: *See*—
Harding, Paul R.; Van Erden, Donald; and Stone, James W., 5,795,084, Cl. 400-225.000.

Vanfossan, Jimmy D.: *See*—
Hill, D. Lee; Vanfossan, Jimmy D.; and Woosley, Steven E., 5,795,133, Cl. 416-247.00R.

Van Gerwen, Adrianus H.: *See*—
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Vanguard International Semiconductor Corporation: *See*—
Chen, Yun Sheng; and Lin, Ming-Zen, 5,796,244, Cl. 323-313.000.
Ternullo, Luigi, Jr.; and Stephens, Michael C., Jr., 5,796,665, Cl. 365-203.000.
Tseng, Horng-Huei, 5,795,806, Cl. 438-255.000.
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Van Kempen, Herman; Abraham, Daniel Lee; Prins, Menno W. J.; Jansen, Ronald; and van der Wielen, Maurice C. M. M., to Stichting Katholieke Universiteit Nijmegen. Measuring device for measuring the intensity and/or polarization of electromagnetic radiation, for determining physical properties of a preparation, and for reading information from a storage medium, 5,796,102, Cl. 250-306.000.

Van Meter, Eldon L.; and Pater, Lowell L., to Spiralex Corporation. Coker unit drilling equipment. 5,794,729, Cl. 175-424.000.

van Phuoc, Duong; Wieczorek, Rudi; Zeising, Elmar; Hruska, Louis W.; Taylor, Alwyn H.; Friel, Daniel D.; and Hull, Matthew P. Battery pack having a processor controlled battery operating system. 5,796,239, Cl. 320-107.000.

Van Riper, Gary L.: *See*—
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Varghese, George: *See*—
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Varix Corporation: *See*—
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Varma, Subir: *See*—
Peris, Vinod Gerard John; Georgiadis, Leonidas; Guerin, Roch Andre; and Varma, Subir, 5,796,719, Cl. 370-231.000.

Varsanofiev, Dimitry: *See*—
Stein, Anatoly; Tesler, Alexander; and Varsanofiev, Dimitry, 5,796,541, Cl. 360-75.000.

Vartiainen, Eija: *See*—
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Vasconcellos, Alfred V.: *See*—
Tofighi, Aliassghar; Vasconcellos, Alfred V.; Jacobs, Katherine; and Chakravarthy, Pramod, 5,795,330, Cl. 604-82.000.

Vaslin, Sophie: *See*—
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Vedanayaki, Ramaswamy: *See*—
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Lapré, John Arthur; McNabola, William Thomas; Veenstra, Jan; and De Vries, Hielke Tjeerd, 5,795,606, Cl. 426-302.000.

Velan, G. Michael; Bolger, Richard P.; Dewey, George G.; and Wendling, E. Jonathan, to Illinois Tool Works Inc. Fastener detection and firing control system for powered fastener driving tools. 5,794,831, Cl. 227-2.000.

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Kramer, Mark E.; and Veldman, Roger L., 5,796,176, Cl. 307-10.100.

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Miller, Robert F., 5,794,916, Cl. 251-148.000.

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Venkataraman, Ramaswamy Arumugamangalam: *See*—
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Verbeeck, Ann: *See*—
Willems, Peter; Verbeeck, Ann; and Hendrickx, Freddy, 5,795,704, Cl. 430-434.000.

Verkhovskiy, Yan. Apparatus and method for starting and protecting a three-phase motor. 5,796,565, Cl. 361-29.000.

Vermeulen, Arnoldus Nicolaas: *See*—
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Verweij, Jan: *See*—
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Kaerts, Eric; and Verzele, Paul, 5,796,420, Cl. 347-188.000.

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Salvador, Yvan; Gerard, Dominique; and Huet, Eric, 5,795,365, Cl. 65-443.000.

Via, G. David: *See*—
Nakano, Kenichi; Bozada, Christopher A.; Quach, Tony K.; DeSalvo, Gregory C.; Via, G. David; Dettmer, Ross W.; Havasy, Charles K.; Sewell, James S.; Ebel, John L.; and Gillespie, James K., 5,796,131, Cl. 257-284.000.

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Gage, Edward Charles; and Victora, Randall Harry, 5,796,688, Cl. 369-44.340.

Videotron Corp.: *See*—
Hirohama, Tsutomu, 5,797,125, Cl. 704-277.000.

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Hofbauer, Peter; Heikrodt, Klaus; Strauss, Rolf-Peter; and Thomas, Bernd, 5,794,444, Cl. 60-517.000.

Vila, Elina M.: *See*—
Vila, Jose E.; and Vila, Elina M., 5,794,283, Cl. 5-18.100.

Vila, Jose E.; and Vila, Elina M. Convertible furniture. 5,794,283, Cl. 5-18.100.

Villagran, Marcus: *See*—
Kyle, Jimmie R.; Spolter, Leonard; and Villagran, Marcus, 5,795,783, Cl. 436-8.000.

Villata, Gino, to Valeo. Liner support disc for a clutch friction wheel, especially for a motor vehicle. 5,794,754, Cl. 192-107.000.

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Vinn, Charles L.; and Armstrong, Bruce G. Popless amplifier. 5,796,303, Cl. 330-51.000.

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Gitis, Norm; Levinson, Leo; Dorfman, Vlad; and Vinogradov, Michael, 5,795,990, Cl. 73-9.000.

Virtual Vision, Inc.: *See*—
Cone, George; Peart, Stephen; Robinson, Joel; and Williams, Wes, 5,796,374, Cl. 345-8.000.

Vishakhadatta, Diwakar: *See*—
Tuttle, Tyson; Vishakhadatta, Diwakar; Hein, Jerrel P.; Welland, David R.; Reed, David E.; Behrens, Richard T.; Bliss, William G.; Romano, Paul M.; Dudley, Trent O.; and Zook, Christopher P., 5,796,535, Cl. 360-51.000.

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Lacroix, Jean-Michel; and Dunn, James M., 5,795,722, Cl. 435-6.000.

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Rajamani, Krishnan; and Viswanathan, Krishnaswamy, 5,796,724, Cl. 370-263.000.

VISX, Incorporated: *See*—
Clapham, Terrance N., 5,795,351, Cl. 606-4.000.

Vivat, Michel: *See*—
Geurts, Catherine; and Vivat, Michel, 5,795,982, Cl. 546-25.000.

Viveros, Marisa S.: *See*—
Bhattacharya, Partha Pratim; Chung, Jen-Yao; Pirahesh, Mir Hamid; Selinger, Patricia G.; Viveros, Marisa S.; Wang, Yun; and Zaino, Lawrence Peter, 5,797,000, Cl. 395-602.000.

Vladimirov, Vitaly Alexandrovich: *See*—
Suslov, Eugene Ivanovich; Galakhin, Konstantin Alexandrovich; Vladimirov, Vitaly Alexandrovich; and Novik, Matveeevich Anatoly, 5,795,785, Cl. 436-64.000.

Vliet, Walter C.: *See*—
Rice, Edwin E.; and Vliet, Walter C., 5,796,064, Cl. 219-76.160.

VLSI Technology, Inc.: *See*—
Chambers, Peter; and Shelton, Roger Lee, 5,796,994, Cl. 395-555.000.
Manteghi, Kamran, 5,796,038, Cl. 174-52.400.
Reis, Kenneth; and Page, Allen, 5,795,492, Cl. 216-57.000.
Vokoun, Edward R.; Delgado, Miguel A.; Carter, Gregory N.; Richardson, Brian D.; Dhar, Rajive; and Chambers, Elizabeth A., 5,795,815, Cl. 438-462.000.

Voce, Maurice F., to Compaq Computer Corporation. Quick access to computer applications. 5,797,003, Cl. 395-652.000.

Vogel, Daniel A. Archival washer for photographic prints or film with multi level dividers. 5,794,636, Cl. 134-115.00R.

Vogel, Peter S. Apparatus and method for calculating an absolute time at which an event occurred. 5,795,161, Cl. 434-350.000.

Vogelsang, Klaus; Rose, Peter; Ott, Helmut; and Heilinger, Peter, to Voith Turbo GmbH & Co. KG. Drive unit with an engine and a retarder. 5,794,588, Cl. 123-320.000.

Vogt, Gerd: *See*—
Hohl, Gerold; and Vogt, Gerd, 5,794,840, Cl. 228-151.000.

Vogt, Gregory M.; Vogt, Hubert S.; and Walter, Herman K., to Eastern Power Limited. Apparatus and method for waste recycling and conversion. 5,795,479, Cl. 210-603.000.

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Vogt, Gregory M.; Vogt, Hubert S.; and Walter, Herman K., 5,795,479, Cl. 210-603.000.

Vogt, John E.: *See—*
Jackson, Dana B.; Asher, Donald I.; Halcomb, Ronald G.; and Vogt, John E., 5,795,426, Cl. 156-249.000.

Vogt, Robert C.; and Trenkle, John M., to Frim International, Inc. Mosaic construction, processing, and review of very large electronic micrograph composites. 5,796,861, Cl. 382-128.000.

Voider, Alexander Leongardovich: *See—*
Green, Herbert J.; Butler, Major G.; Tahautdinov, Shafagat Fahrazovich; Syrtlanov, Ampir Shaibakovich; Zagirov, Magsum Mudarisovich; Kalachev, Ivan Fedorovich; and Voider, Alexander Leongardovich, 5,794,982, Cl. 285-55.000.

Voith Sulzer Papiermaschinen GmbH: *See—*
Lehleiter, Klaus; and Trondle, Robert, 5,795,441, Cl. 162-343.000.

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Vogelsang, Klaus; Rose, Peter; Ott, Helmut; and Heilinger, Peter, 5,794,588, Cl. 123-320.000.

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Stosel, Dennis E.; and Palenchar, Thomas J., 5,794,733, Cl. 180-68.100.

Von Duprin, Inc.: *See—*
Prucinsky, Matthew S., 5,794,382, Cl. 49-365.000.

Von Berg, Thomas, to MECO Corporation. Barbecue stand. 5,794,608, Cl. 126-25.00R.

Von Der Saal, Wolfgang; Heck, Reinhard; Kucznierz, Ralf; Leinert, Herbert; and Stegmeier, Karlheinz, to Boehringer Manneim GmbH. 4-aminopyridazines, method of preparing them and drugs containing these compounds. 5,795,892, Cl. 514-247.000.

Von Felten, Kenneth: *See—*
Dombrowski, David; and Von Felten, Kenneth, 5,794,540, Cl. 108-3.000.

VonJouanne, Henry V.: *See—*
Murray, Daniel J.; Griffin, John C., III; Turner, Bruce L.; Gunn, Peter D.; Twiggs, Thomas E.; VonJouanne, Henry V.; Schraw, George W.; and Tracy, Ann M., 5,797,106, Cl. 701-11.000.

Vontechs Limited, Inc.: *See—*
Wong, Tit Shing, 5,794,296, Cl. 15-23.000.

Vorndran, Ralf: *See—*
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Vorwerk & Co. Interholding GmbH: *See—*
Kemker, Uwe; Dörner, Stefan; and Lapp, Oliver, 5,794,524, Cl. 99-348.000.

Voss, Henry H.: *See—*
Wilkinson, David; Voss, Henry H.; Prater, Keith B.; Hards, Graham A.; Ralph, Thomas R.; and Thompsett, David, 5,795,669, Cl. 429-40.000.

Voss, Mark G.; Saperstein, Zalman P.; Kottal, Peter C.; and Hughes, Gregory G., to Modine Manufacturing Co. Header and tank construction for a heat exchanger. 5,794,692, Cl. 165-175.000.

VOXEL: *See—*
Hart, Stephen J., 5,796,500, Cl. 359-24.000.

Vrionis, Nick, to Gas Research Institute. Variable speed motor apparatus and method for forming same from a split capacitor motor. 5,796,234, Cl. 318-751.000.

Vysma, Erwin L. Hurricane home shelter. 5,794,389, Cl. 52-169.600.

W.C. Heraeus GmbH: *See—*
Lupton, David Francis; Schielke, Jörg; Graf, Hans-Joachim; and Reckziegel, Arno, 5,796,019, Cl. 75-235.000.

W. L. Gore & Associates, Inc.: *See—*
Scanlon, John J.; Herring, Jay J.; and Giannetta, Richard W., 5,795,358, Cl. 55-320.000.

W. Schlafhorst AG & Co.: *See—*
Grecksch, Hans; Winzen, Lothar; Riede, Brigitte; and Radermacher, Wolfgang, 5,794,430, Cl. 57-417.000.
Hermanns, Ferdinand-Josef; Zitzen, Wilhelm; and Wirtz, Ulrich, 5,794,867, Cl. 242-18.0DD.
Nowak, Hans-Georg; Quante, Michael; Wefers, Frank; and Flamm, Franz-Josef, 5,796,598, Cl. 363-37.000.

Waaler, Luke: *See—*
Makinen, Bruce A.; and Waaler, Luke, 5,794,772, Cl. 206-308.100.

Wachman, Elliot S.; Farkas, Daniel L.; and Niu, Wen-Hua, to Carnegie Mellon University. Subicron imaging system having an acousto-optic tunable filter. 5,796,512, Cl. 359-308.000.

Wachsman, David R., to Protex International Corp. Electronic security clip device. 5,796,337, Cl. 340-568.000.

Wachter, Allan; and Lindsay, Stuart, to Aeromax Technologies, Inc. MDI device with ultrasound sensor to detect aerosol dispensing. 5,794,612, Cl. 128-200.230.

Wacker-Chemie GmbH: *See—*
Grune, Burkhard; Hager, Ludwig; Huber, Helmut; Lwowski, Gerhard; Zadny, Wilhelm; Müller, Horst; and Schneider, Otto, 5,795,583, Cl. 424-400.000.

Wada, Takasumi; Yamamoto, Yoichi; and Taniguchi, Keiji, to Sharp Kabushiki Kaisha. Measuring device for amount of charge of developer. 5,797,062, Cl. 399-29.000.

Wade, Robert K.: *See—*
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Wade, Thomas Campbell: *See—*
Overall, Gary Scott; Wade, Thomas Campbell; Webb, James Francis; and Wright, Phillip Byron, 5,797,061, Cl. 399-27.000.

Waferscale Integration Inc.: *See—*
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Wagner, Brent K.: *See—*
Summers, Christopher J.; and Wagner, Brent K., 5,796,120, Cl. 257-30.000.

Wagner, Jennifer R.; Wagner, Moritz P.; Alvarez, Jorge A.; and Irving, David C., to Xerox Corporation. Method for making a magnetic roll. 5,795,532, Cl. 264-429.000.

Wagner, Klaus; Helling, Günter; Groth, Torsten; and Joentgen, Winfried, to Agfa-Gevaert. Photographic silver halide material. 5,795,707, Cl. 430-569.000.

Wagner, Moritz P.: *See—*
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Wahlstrom, Sven E. Dynamic random access memory. 5,796,671, Cl. 365-230.030.

Wakabayashi, Shigemi: *See—*
Kitaori, Noriyuki; Yoshida, Osamu; Mizunoya, Hirohide; Wakabayashi, Shigemi; and Shiga, Akira, 5,796,533, Cl. 360-17.000.

Wakabayashi, Takashi: *See—*
Shinbashi, Masahiro; and Wakabayashi, Takashi, 5,796,717, Cl. 370-216.000.

Waki, Kenichiro; Itoh, Masahiro; Suzuki, Hiroyuki; and Inoue, Ryo, to Canon Kabushiki Kaisha. Image-forming apparatus featuring a plurality of image forming means. 5,797,070, Cl. 399-149.000.

Wakiya, Kazumasa: *See—*
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Walch, Martin: *See—*
Ermacora, Rino; Walch, Martin; Wattron, Bernard; and Wilhelm, Joel, 5,794,424, Cl. 56-15.100.

Wald, Kevin; Carlson, Robin; and Moen, Richard, to IBOCO, Inc. Boom suspension assembly. 5,794,852, Cl. 239-167.000.

Walden, Gary D.: *See—*
Hanlon, Edite M.; Heinsius, Steven T.; Natarajan, Mrinalini; Rule, Antoinette; Sarju, Tejanand; and Walden, Gary D., 5,796,812, Cl. 379-212.000.

Waldron, Joan Phillips: *See—*
Crouch, Shirley Aline; Potter, James D.; and Waldron, Joan Phillips, 5,796,821, Cl. 379-430.000.

Waldspurger, Carl A: *See—*
Berc, Lance M.; Ghemawat, Sanjay; Henzinger, Monika H.; Sites, Richard L.; Waldspurger, Carl A; and Weihl, William E., 5,796,939, Cl. 395-184.010.

Walkden, Charles D. Truck ramp assembly. 5,795,125, Cl. 414-537.000.

Walker Asset Management Limited Partnership: *See—*
Walker, Jay S.; Case, T. Scott; Jorasch, James A.; and Sparico, Thomas M., 5,797,127, Cl. 705-5.000.

Walker, Fern Lisa. Neck protection device. 5,794,276, Cl. 2-468.000.

Walker, Frank J.: *See—*
Thomas, Jeffrey K.; and Walker, Frank J., 5,795,100, Cl. 405-45.000.

Walker, James Albert: *See—*
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Walker, Jay S.; Case, T. Scott; Jorasch, James A.; and Sparico, Thomas M., to Walker Asset Management Limited Partnership. Method, apparatus, and program for pricing, selling, and exercising options to purchase airline tickets. 5,797,127, Cl. 705-5.000.

Walker, Kathy S.: *See—*
Skeffington, Cheryl J.; and Walker, Kathy S., 5,794,768, Cl. 206-38.100.

Walker, Patrick A. Conduit drain for use in non-hazardous locations. 5,796,035, Cl. 174-48.000.

Walker Sled, L.P.: *See—*
Southwell, Joseph Ray, Jr.; Southwell, Deborah Ann; Southwell, Ruth Ann; Southwell, Joseph Ray, III; Sikorski, Kathryn A.; Robinson, Paul; Petkovsek, James Edward; and Bereyso, Steven, 5,794,284, Cl. 5-81.10R.

Walker Systems, Inc.: *See—*
Young, Joe A.; and Arthur, Richard L., 5,796,037, Cl. 174-50.000.

Walkin, Bengt, to AP&T Tranemo AB. Apparatus in a hydraulic press. 5,794,482, Cl. 72-350.000.

Wall, Daniel G., to Teletransactions, Inc. Hand held portable bar code dataform reader having a rotatable reader module portion. 5,796,088, Cl. 235-472.000.

Wallace, J. Shield: *See—*
Segalman, Daniel J.; and Wallace, J. Shield, 5,795,581, Cl. 424-400.000.

Wallace, Richard D. Interactive articles of apparel with removable and interchangeable panels. 5,794,267, Cl. 2-227.000.

Wallace, T. Paul; Harris, William J.; Carr, Frank J.; Old, Lloyd J.; Welt, Sydney; and Kitamura, Kunio, to Ludwig Institute for Cancer Research. Recombinant human anti-Lewis b antibodies. 5,795,961, Cl. 530-350.000.

Wallach, David; Kemper, Oliver; and Kuhnert, Peter, to Yeda Research and Development Co. Ltd. TNF receptor promoter. 5,795,975, Cl. 536-24.100.

Wallen, Peter Eric: *See—*
Bracken, Peter Wallace; Brener, Jeffery Richard; Digirolamo, Martin Victor; Mullinix, Samuel Edward, Jr.; Stafford, Donald Wayne; and Wallen, Peter Eric, 5,797,076, Cl. 399-284.000.
Wallenfels, Lynda: *See—*
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Walsh, James K.; and Gardner, Marc A., to InterVoice Limited Partnership. Voice-controlled voice mail having random-order message retrieval based on played spoken identifier list. 5,797,124, Cl. 704-275.000.
Walsh, Joseph C., to Graphic Packaging Corporation. Carton, carton blank and method for forming the carton. 5,794,811, Cl. 220-462.000.
Walsh, Joseph C., to Graphic Packaging Corporation. Carton, carton blank and method for forming the carton. 5,794,812, Cl. 220-462.000.
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Walton, Ballard E.: *See—*
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Walton, Richard A.: *See—*
Kabat, Zbigniew; and Walton, Richard A., 5,796,594, Cl. 361-818.000.
Wampler, Robert R., to Boeing Company, The. Method and apparatus for numerically controlled probing. 5,796,619, Cl. 364-474.370.
Wandrey, Christian: *See—*
Kruse, Wolfgang; Kragl, Udo; and Wandrey, Christian, 5,795,750, Cl. 435-128.000.
Wang, Bor-Min, to Industrial Technology Research Institute. Pointer adjustment jitter cancellation processor utilizing phase hopping and phase leaking techniques. 5,796,796, Cl. 375-372.000.
Wang, Cheng-Shan: *See—*
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Wang, Chen-Jong: *See—*
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Wang, De Chang: *See—*
Cheng, Shu Jun; Wang, De Chang; and Hara, Yukihiko, 5,795,911, Cl. 514-456.000.
Wang, Ding-Shan: *See—*
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Wang, Elizabeth A., to Novartis Corporation. Method of treating infectious disease with GM-CSF. 5,795,568, Cl. 424-85.100.
Wang, Honghui: *See—*
Sandhu, Jaswinder S.; Popek, Witold J.; and Wang, Honghui, 5,796,003, Cl. 73-603.000.
Wang, Laiqiang; and Furuhata, Fujio, to Seiko Epson Corporation. Apparatus for reading image and method therefor. 5,796,876, Cl. 382-270.000.
Wang, Li Tung: *See—*
Scott, Craig M.; Wang, Li Tung; Bennett, Arthur T.; and Nouri, Ahmad, 5,796,738, Cl. 370-401.000.
Wang, Lixiao; Hastings, Roger; Buscemi, Paul; and Tay, Sew-Wah, to Scimed Life Systems, Inc. Method for delivering drugs to a vascular site. 5,795,318, Cl. 604-8.000.
Wang, Patrick Shui-Chung, to Johnson Electric, S.A. Noise suppressed commutator. 5,796,203, Cl. 310-233.000.
Wang, Ting-I. Extended range optical scintillometer with interruption protection for measuring atmospheric refractive turbulence. 5,796,105, Cl. 250-338.500.
Wang, Xianhong: *See—*
Rhee, Suh Bong; Lee, Chang Jin; and Wang, Xianhong, 5,795,942, Cl. 525-540.000.
Wang, Yi-Pin Eric: *See—*
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Wang, Yung Xiang; and Dou, Xiaoming, to Kyoto Dai-Ichi Kagaku Co., Ltd. Method of optically measuring component in solution. 5,796,476, Cl. 356-301.000.
Wang, Yuzhou; Tang, Weixin; and Liberti, Paul A., to Immunivest Corporation. Magnetic separation apparatus. 5,795,470, Cl. 210-222.000.
Wanner, Lawrence J.: *See—*
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Wanner, Martin: *See—*
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Ware, Carl F.: *See—*
Browning, Jeffrey; and Ware, Carl F., 5,795,964, Cl. 530-351.000.
Warinner, Peter. Apparatus to review clinical microbiology. 5,795,158, Cl. 434-295.000.
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Warrick, James C.: *See—*
Carpenter, Christopher; Zollinger, Lindsay P.; Freeman, Michael J.; Warrick, James C.; and Hagan, Willard F., 5,794,878, Cl. 242-381.000.
Wash, Richard L.; and McClary, James S. Stove having grease fire avoidance circuitry. 5,796,346, Cl. 340-635.000.
Washburn, David E.: *See—*
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Washino, Shoichi: *See—*
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Watabe, Mitsuru; and Yamaoka, Hiromasa, to Hitachi, Ltd. Distributed control system in which individual controllers executed by sharing loads. 5,796,936, Cl. 395-182.090.
Watanabe, Hideo: *See—*
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Watanabe, Hideyuki: *See—*
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Watanabe, Hitoshi: *See—*
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Watanabe, Kenji; Kameda, Takanobu; Aida, Chieko; Shimmura, Tomoyuki; Toyosawa, Yoshiya; Kurashina, Hiroyasu; and Hosokawa, Takeshi, to King Jim Co., Ltd.; and Seiko Epson Corporation. Tape printing device. 5,795,086, Cl. 400-615.200.
Watanabe, Masahiko: *See—*
Abukawa, Fumitaka; Goi, Hitoshi; Watanabe, Masahiko; Kurasawa, Shin; and Kamisugi, Hirofumi, 5,795,538, Cl. 266-46.000.
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Watanabe, Shunpei; Suzuki, Takashi; and Ikeda, Shuuichiro, to Lintec Corporation. Pressure-sensitive adhesive sheet. 5,795,650, Cl. 428-355.0AC.
Watanabe, Takashi: *See—*
Inoue, Makoto, deceased; Inoue, Tsuneo, executor; Masuda, Kazuaki; Toganoh, Shigeo; Sueoka, Manabu; Murai, Keiichi; Watanabe, Takashi; Goto, Akira; and Sato, Motoaki, 5,796,415, Cl. 347-45.000.
Watari, Masao: *See—*
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Waterman, Paul Sheldon, to Cytec Technology Corp. Stabilization of high solids coatings with liquid compositions of triazine UV absorbers. 5,795,499, Cl. 252-404.000.
Waters, Jesse Walter, Jr. Transfer tape applicator system. 5,795,435, Cl. 156-577.000.
Watkins, Charles M.: *See—*
Cathey, David A.; Watkins, Charles M.; Stansbury, Darryl M.; Hofmann, James J.; Rasmussen, Robert T.; and Chadha, Surjit S., 5,795,206, Cl. 445-24.000.
Watkins, Joseph A.; Zander, Dennis R.; and Stanzione, Matthew, to Eastman Kodak Company. Three roller film winder and method. 5,797,045, Cl. 396-6.000.
Watson, Arthur L., to Camco International Inc. Spring cartridge rotor bearing. 5,795,075, Cl. 384-215.000.
Watson, James B.: *See—*
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Watters, Bill Gene: *See—*
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Webb, James Francis: *See*—
Overall, Gary Scott; Wade, Thomas Campbell; Webb, James Francis; and Wright, Phillip Byron, 5,797,061, Cl. 399-27.000.

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Weber, Collin J.; and Ayres-Price, Jennifer, to Emory University. Method of containing core material in microcapsules. 5,795,570, Cl. 424-93.700.

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Weidmann, Lawrence W.; Bucaro, Laura J.; and Bucaro, Michael V. Apparatus for cleaning play balls. 5,794,294, Cl. 15-21.200.

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Willard, Walter Lee, Jr.; Snipes, Virginia White; and Wilson, Allen Eugene, to Michelin Recherche et Technique. Run-flat tire having partial carcass layers. 5,795,416, Cl. 152-517.000.

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Williams, Robert C., III: *See—*
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Wilson, Robert G.: *See—*
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Wilson, Robert Michael: *See—*
Nunn, Kenneth Lawrence; and Wilson, Robert Michael, 5,794,848, Cl. 239-63.000.

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Schmidt, Mark C.; Knowles, Carl H.; Wilz, David M., Sr.; and Rockstein, George B., 5,796,091, Cl. 235-472.000.

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Schinstine, Malcolm; Shoichet, Molly S.; Gentile, Frank T.; Hammang, Joseph P.; Holland, Laura M.; Cain, Brian M.; Doherty, Edward J.; Winn, Shelley R.; and Aebischer, Patrick, 5,795,790, Cl. 435-382.000.

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Damke, Roland; Gerresheim, Manfred; Nau, Robert; Winter, Hans-Joachim; and Lowenhaupt, Bernd, 5,795,417, Cl. 152-527.000.

Winters, Bruce C.: *See—*
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Wintersteiger GmbH: *See—*
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Winzen, Lothar: *See—*
Grecksch, Hans; Winzen, Lothar; Riede, Brigitte; and Radermacher, Wolfgang, 5,794,430, Cl. 57-417.000.

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Witkowski, Thomas G.: *See—*
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Witt, David A.: *See—*
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Witt, David B.; and Goddard, Michael D., to Advanced Micro Devices, Inc. Method and apparatus for decoding one or more complex instructions into concurrently dispatched simple instructions. 5,796,973, Cl. 395-384.000.

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Pearce, John J.; and Witte, Kendall C., 5,796,984, Cl. 395-500.000.

Witte, Vernon C.: *See—*
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Alberts, Joseph Richard; Drezdzon, Edward Anthony, II; Fries, Donald Merlin, deceased; Konetzke, Richard Mark; Kvitek, Thomas Theodore; Muhlebach, Michael Joseph; Nelson, Michael Joseph; Rabe, Gerald Leigh; Ribble, Brendon Frank; Roth, James Frederick; and Wittmann, Jon Mark, 5,794,269, Cl. 2-227.000.

Wixey, Barry D.; and Welsh, Robert P., to Black & Decker Inc. Optical unit for image projection and tool incorporating same. 5,795,113, Cl. 409-210.000.

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Wohl, Peter: *See—*
Erle, Mark Alan; Graf, Matthew Christopher; and Wohl, Peter, 5,796,990, Cl. 395-500.000.

Wohlgemuth, Emanuel E.; and Cobiski, Richard J., Jr., to Ultraseal Technologies Corporation. Assembly for inflating a parison and forming the neck of a plastic bottle. 5,795,598, Cl. 425-525.000.

Wojdylak, George: *See—*
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Wolf, Allan M.: *See—*
Filepp, Robert; Appleman, Kenneth H.; Bidwell, Alexander W.; Wolf, Allan M.; Galambos, James A.; and Meo, Sam, 5,796,967, Cl. 395-339.000.

Wolf, David, to COR Therapeutics, Inc. Recombinant agents affecting thrombosis. 5,795,863, Cl. 514-12.000.

Wolfe, Robert Howard: *See—*
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Jin, Rui; Zhao, Kesen; Liu, Jun; Jin, Yan; Lei, Qin; and Li, Xinnong, 5,795,836, Cl. 442-417.000.

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Wong, Tit Shing, to Vontechs Limited, Inc. Electric toothbrush. 5,794,296, Cl. 15-23.000.

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Keun, Oh Kwang; Woo, Lee Cheol; Joong, Jeon Yeong; and Heung, Lee Jae, 5,795,480, Cl. 210-611.000.

Woo, Seong-Jae, to Daewoo Electronics, Ltd. Method for pre-compensating an asymmetrical picture in a projection system for displaying a picture. 5,795,046, Cl. 353-69.000.

Woo, Suk Ha, to Samsung Electro-Mechanics Co., Ltd. Brushless motor with a stator core integral with a holder. 5,796,204, Cl. 310-258.000.

Wood, Alan: *See*—
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Wood, Peter N.: *See*—
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Woodman, Clare E.: *See*—
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Woods, Jim; and Todd, Dan, to Jim Woods. Semi-recumbent arm and leg press exercising apparatus. 5,795,270, Cl. 482-72.000.

Woodward, Jonathan R., to Black Diamond Equipment Ltd. Wedge securing device. 5,794,914, Cl. 248-925.000.

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Wirth, John, Jr.; Sanger, Jay L.; and McCool, Mark K., 5,795,110, Cl. 408-110.000.

Woolfe, Geoffrey John; Pillman, Bruce Harold; and Barry, Michael James, to Eastman Kodak Company. Restoration of faded images. 5,796,874, Cl. 382-254.000.

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Workman, Kurt; Sasaki, Steven; O'Neel, John; and Kari, John, to Specialized Bicycle Components, Inc. Protective helmet with improved retention system having a rear stabilizer. 5,794,272, Cl. 2-421.000.

Wortman, Ronald D.; Rechin, Michael P.; Flick, Roland E.; and Whitney, John K., to Gaymar Industries, Inc. Mattress for relieving pressure ulcers. 5,794,289, Cl. 5-713.000.

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Wright, Michael D. Fishing rod retainers. 5,794,375, Cl. 43-25.000.

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Wright, Phillip Byron: *See*—
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Wyble, Marilyn S.: *See*—
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Wyshynski, Susan: *See*—
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Wyttenbach, William H. Speculum. 5,795,289, Cl. 600-207.000.

Xerox Corporation: *See*—
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Malhotra, Shadi L., 5,795,696, Cl. 430-124.000.
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Xie, Zheng-Yi: *See*—
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New, Bernard J., 5,796,269, Cl. 326-40.000.

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Xu, Feng: *See*—
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Xu, Han: *See*—
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Xu, Jingyu; and Pan, Jing-Jong, to E-Tek Dynamics, Inc. Integrated WDM coupler devices for fiberoptic networks. 5,796,889, Cl. 385-24.000.

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Xue, Suli. Retractable arced window covering. 5,794,680, Cl. 160-84.070.

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Yada, Yukihiko, to Tokai Kogyo Kabushiki Kaisha. Windshield molding for vehicles. 5,795,597, Cl. 425-465.000.

Yaegashi, Akira, to Sony Corporation; and Sony Electronics Inc. Reconfigurable duplicator system. 5,796,684, Cl. 369-30.000.

Yagawa, Yuichi: *See*—
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Yamada, Kazuyuki; and Saito, Yuji, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for supplying inorganic slurry to an injection mold. 5,795,601, Cl. 425-580.000.
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Yamada, Miho, to NEC Corporation. Level-by-level explosion method for material requirements planning. 5,796,614, Cl. 364-468.130.
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Yamamoto, Hiroshi; and Kato, Akira, to Yazaki Corporation. Method of producing a plurality of press-connecting joint connectors. 5,794,332, Cl. 29-863.000.
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Yamamoto, Noriyuki; Yada, Hiroaki; Hayashi, Nobuhiro; and Yamakoshi, Takamichi, to Sony Corporation. Apparatus which performs an ID operation simultaneously with a servo operation using a data recording medium with the ID area recorded immediately before the servo area. 5,796,534, Cl. 360-48.000.
Yamamoto, Tadashi; and Nagata, Norinari, to Toyoda Gosei Co., Ltd. Air bag device. 5,794,968, Cl. 280-728.200.
Yamamoto, Taketsugu; and Miura, Hitoshi, to Sumitomo Chemical Company, Limited. Non-aqueous electrolyte and lithium secondary battery. 5,795,677, Cl. 429-194.000.
Yamamoto, Takuya: *See*—
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Merz, Johann; and Yasuda, Masao, 5,795,142, Cl. 418-133.000.
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Zhen, Jun-Hsiung. Electric connector assembly. 5,794,765, Cl. 200-550.000.

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Zheng, Yu: *See*—
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Zhong, Jianyuan; and Zhong, Lei. Antislip traction machine. 5,794,737, Cl. 187-266.000.

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Zhou, Gan; Qiao, Yong; and Mok, Fai, to Digital Persona, Inc. Fingerprint sensing system using a sheet prism. 5,796,858, Cl. 382-127.000.

Zhou, Mei Sheng; and Chu, Ron-Fu, to Chartered Semiconductor Manufacturing Ltd. Langmuir-blodgett (LB) films as ARC and adhesion promoters for patterning of semiconductor devices. 5,795,699, Cl. 430-318.000.

Zhu, Wei: *See*—
Graebner, John Edwin; Jin, Sungho; Kochanski, Gregory Peter; and Zhu, Wei, 5,796,211, Cl. 315-3.500.

Zielinski, Marian: *See*—
Hurwitt, Steven; Reiss, Ira; Zielinski, Marian; and Tan, Swie-In, 5,795,448, Cl. 204-192.100.

Zikeli, Stefan; Longin, Michael; and Ecker, Friedrich, to Lenzing Aktiengesellschaft. Process for transporting thermally unstable viscous masses. 5,794,642, Cl. 137-4.000.
Zimmer Aktiengesellschaft: *See*—
Beeck, Heinz-Dieter; Kretschmann, Bernd; and Sprick, Wilhelm, 5,795,595, Cl. 425-198.000.
Zimmer, Harry, to NCR Corporation. Information visualization icons. 5,796,398, Cl. 345-339.000.
Zimmerman, John. Hand held device for elevating objects. 5,795,004, Cl. 294-119.000.
Zimmerman, Joseph J., to Joy MM Delaware, Inc. Mining machine with multiple propulsion members. 5,795,032, Cl. 299-33.000.
Zimmerman, Lee H.: *See*—
Zimmerman, Matthew K.; and Zimmerman, Lee H., 5,795,017, Cl. 297-15.000.
Zimmerman, Matthew K.; and Zimmerman, Lee H. Stowable fish fighting chair. 5,795,017, Cl. 297-15.000.
Zimmerman, Terry L.: *See*—
Goodwin, John C., III; and Zimmerman, Terry L., 5,797,131, Cl. 705-16.000.
Zimmerman, Thomas G.: *See*—
Coppersmith, Don; Raghavan, Prabhakar; and Zimmerman, Thomas G., 5,796,827, Cl. 380-9.000.
Zimmermann, Andreas: *See*—
Jansen, Rolf-Michael; Zimmermann, Andreas; Jacquinot, Eric; and Smith, Douglas, 5,795,556, Cl. 423-338.000.
Zingheim, Steven C.: *See*—
Bell, James; and Zingheim, Steven C., 5,795,652, Cl. 428-383.000.
Zinreich, Eva S. Intravenous tube restraint and cover device. 5,795,335, Cl. 604-174.000.
Zitzen, Wilhelm: *See*—
Hermanns, Ferdinand-Josef; Zitzen, Wilhelm; and Wirtz, Ulrich, 5,794,867, Cl. 242-18.0DD.
Zoller, Ludwig: *See*—
Scharfmann, Paul; and Zoller, Ludwig, 5,795,613, Cl. 426-582.000.
Zollinger, Lindsay P.: *See*—
Carpenter, Christopher; Zollinger, Lindsay P.; Freeman, Michael J.; Warrick, James C.; and Hagan, Willard F., 5,794,878, Cl. 242-381.000.
Zollinger, W. Thor; and Reutzel, Edward W., to Lockheed Idaho Technologies Company. Maneuvering impact boring head. 5,794,718, Cl. 175-19.000.
Zolotorev, Max: *See*—
Tantawi, Sami G.; Ruth, Ronald D.; and Zolotorev, Max, 5,796,314, Cl. 333-20.000.
Zook, Christopher P.: *See*—
Tuttle, Tyson; Vishakhadatta, Diwakar; Hein, Jerrel P.; Welland, David R.; Reed, David E.; Behrens, Richard T.; Bliss, William G.; Romano, Paul M.; Dudley, Trent O.; and Zook, Christopher P., 5,796,535, Cl. 360-51.000.
Zschirnt, Joerg W.: *See*—
Drew, Douglas A.; and Zschirnt, Joerg W., 5,796,339, Cl. 340-572.000.
Zuehlke, Timothy R.: *See*—
Baer, Kurt R.; Willford, George A.; and Zuehlke, Timothy R., 5,794,752, Cl. 192-85.0CA.
Zulaski, John A., to S&C Electric Company. Control of a device in an inaccessible location. 5,796,347, Cl. 340-635.000.
Zumbach Electronic AG: *See*—
Salzmann, Hannes; Jung, Ulrich; and Kötter, Wilfried, 5,795,531, Cl. 264-408.000.
Zunic, Nevenko: *See*—
Johnson, Donald Byron; Karger, Paul Ashley; Kaufman, Charles William, Jr.; Matyas, Stephen Michael, Jr.; Safford, David Robert; Yung, Marcel Mordechay; and Zunic, Nevenko, 5,796,830, Cl. 380-21.000.
Zurich Design Laboratories, Inc.: *See*—
Smigelski, Thomas, 5,796,355, Cl. 311-33.000.
3Com Corporation: *See*—
Fuller, Mark, 5,796,986, Cl. 395-500.000.
Hill, Shannon Q.; and Lawler, Christopher P., 5,796,944, Cl. 395-200.800.
4U2C, Inc.: *See*—
Johnson, James A., 5,795,249, Cl. 473-406.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18th DAY OF AUGUST, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Advanced Fuel Research, Inc.: *See*—
Fenner, David B.; and Carangelo, Robert M., RE. 35,872, Cl. 250-336.200.

Americleer Corporation: *See*—
Bundy, Dennis; and Hansen, Ralph M., Jr., RE. 35,871, Cl. 210-765.000.

Antal Trading, Ltd.: *See*—
Durand, Michel George, RE. 35,870, Cl. 108-56.300.

Barker, Riley Keith: *See*—
Simmons, Randy Gray; Barker, Riley Keith; and Sizemore, Ronald Dillon, RE. 35,873, Cl. 361-818.000.

Bundy, Dennis; and Hansen, Ralph M., Jr., to Americleer Corporation. Water reclamation system and method. RE. 35,871, Cl. 210-765.000.

Carangelo, Robert M.: *See*—
Fenner, David B.; and Carangelo, Robert M., RE. 35,872, Cl. 250-336.200.

Durand, Michel George, to Antal Trading, Ltd. Normed transport pallet. RE. 35,870, Cl. 108-56.300.

Fenner, David B.; and Carangelo, Robert M., to Advanced Fuel Research, Inc. Superconducting detector assembly and apparatus utilizing same. RE. 35,872, Cl. 250-336.200.

Hansen, Ralph M., Jr.: *See*—
Bundy, Dennis; and Hansen, Ralph M., Jr., RE. 35,871, Cl. 210-765.000.

Simmons, Randy Gray; Barker, Riley Keith; and Sizemore, Ronald Dillon, to Whitaker Corporation, The. Shielded printed circuit card holder. RE. 35,873, Cl. 361-818.000.

Sizemore, Ronald Dillon: *See*—
Simmons, Randy Gray; Barker, Riley Keith; and Sizemore, Ronald Dillon, RE. 35,873, Cl. 361-818.000.

Whitaker Corporation, The: *See*—
Simmons, Randy Gray; Barker, Riley Keith; and Sizemore, Ronald Dillon, RE. 35,873, Cl. 361-818.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Audiofax IP L.L.C.: *See*—
Gordon, Richard J.; and Kennedy, James R., B1 994,926, Cl. 358-400.000.

Cintel S.A.S. Di Fontana A. & C.: *See*—
Fontana, Anacleto, B1 728,565, Cl. 442-60.000.

Collins, Harvey C. Floor covering installation tool. B1 181,694, Cl. 254-133.00R.

Collins, Harvey C. Floor covering installation method. B1 299,779, Cl. 254-1.000.

Dake, Michael D.; Hedger, Bruce; and Oesterle, Stephen. Radioactive catheter. B1 199,939, Cl. 600-3.000.

Fontana, Anacleto, to Cintel S.A.S. Di Fontana A. & C. Elasted support member for supporting stuffing of furniture pieces. B1 728,565, Cl. 442-60.000.

Gordon, Richard J.; and Kennedy, James R., to Audiofax IP L.L.C. Fascimilie telecommunications system and method. B1 994,926, Cl. 358-400.000.

Hedger, Bruce: *See*—
Dake, Michael D.; Hedger, Bruce; and Oesterle, Stephen, B1 199,939, Cl. 600-3.000.

Kennedy, James R.: *See*—
Gordon, Richard J.; and Kennedy, James R., B1 994,926, Cl. 358-400.000.

Lin, Mei Mei. Christmas light. B1 446,640, Cl. 362-407.000.

Nagano, Masashi, to Shimano Industrial Company Limited. Caliper brake for a bicycle. B1 754,853, Cl. 188-24.190.

Oesterle, Stephen: *See*—
Dake, Michael D.; Hedger, Bruce; and Oesterle, Stephen, B1 199,939, Cl. 600-3.000.

Pendleton, Stevens P.; and Worsford, Herbert A., to Vac-U-Max. Bulk bag unloading station. B1 810,156, Cl. 414-415.000.

Shimano Industrial Company Limited: *See*—
Nagano, Masashi, B1 754,853, Cl. 188-24.190.

Vac-U-Max: *See*—
Pendleton, Stevens P.; and Worsford, Herbert A., B1 810,156, Cl. 414-415.000.

Worsford, Herbert A.: *See*—
Pendleton, Stevens P.; and Worsford, Herbert A., B1 810,156, Cl. 414-415.000.

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Beall, Paul F., 397,156, Cl. D21-6.000.
Beall, Paul F., 397,157, Cl. D21-6.000.

Abels, Larry, to Selco Custom Time Corp. Can clock. 397,041, Cl. D10-6.000.

Action Overseas Co., Ltd.: *See*—
Lien, Chang-Hsing, 396,988, Cl. D7-322.000.

Acumen, Inc.: *See*—
Shaw, Mark B., 397,221, Cl. D24-167.000.

Adams, Herbert Lester, III, to SLP Engineering, Inc. Clutch plate. 397,070, Cl. D12-180.000.

Aktiebolaget Volvo Penta: *See*—
Mannerfelt, Ocke, 397,080, Cl. D12-314.000.

Allegiance Corporation: *See*—
Clelland, John W., 397,024, Cl. D8-338.000.

Allen, Diane; Birdsell, Walter; Longan, John; Ritsher, Kenneth; Harris, Kenneth David; and Gresens, Stanley, to Honeywell Inc. Humidifier. 397,195, Cl. D23-356.000.

Allen-Reed Company, Inc.: *See*—
Kaiser, Ian R.; and Neiberger, Sean A., 396,978, Cl. D6-518.000.

Allende, Paula Andrea, to U.S. Philips Corporation. Handle for an electric toothbrush. 396,957, Cl. D4-101.000.

Almonte, Gertrudys. Multi-use electromic navigational aid and scheduler. 397,045, Cl. D10-65.000.

Alvern, Åyvind, to Alvern Norway, ASA. Advertiing carrying body for use on a filler gun. 397,204, Cl. D23-227.000.

Alvern Norway, ASA: *See*—
Alvern, Åyvind, 397,204, Cl. D23-227.000.

Amell, John J.: *See*—
Wanek, Ronald G.; and Amell, John J., 396,977, Cl. D6-505.000.

Anderson, Torrence C.: *See*—
Whitehead, Stephen P.; Vogler, Michael R.; and Anderson, Torrence C., 397,005, Cl. D8-10.000.

Anthony, James R.: *See*—
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Antista, Thomas; and Fairclough, Thomas. Pizza cutter. 397,001, Cl. D7-694.000.

Armand, Guirlene. Baby medication dispenser. 397,216, Cl. D24-117.000.

Arnoux, Axel: *See*—
Arnoux, Daniel; Arnoux, Axel; and Genter, Claude, 397,052, Cl. D10-80.000.

Arnoux, Daniel; Arnoux, Axel; and Genter, Claude, to Societe Chauvin Arnoux. Test lead. 397,052, Cl. D10-80.000.

Arora, Samir, to NetObjects, Inc. Computer icon for a display screen. 397,103, Cl. D14-114.400.

Arvilla, Joel W. Boat cap. 397,081, Cl. D12-318.000.

Ashley Furniture Industries, Inc.: *See*—
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Bakic, Dieter Gottlieb, to Project Consultancy Limited, The. Cosmetic container. 397,040, Cl. D9-574.000.
Balolia, Shiraz. Sword handle. 397,190, Cl. D22-118.000.
Bartkus, Jimmie. Anchor. 397,078, Cl. D12-215.000.
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Bathum, Dale. Shoe spike. 396,949, Cl. D2-962.000.
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Bell, Randall; Herbst, Walter; Horne, Eric C.; and Heald, Edward E., to Werner Co. Step ladder. 397,228, Cl. D25-65.000.
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Berkeley Products Inc.: *See—*
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Blacklock, Paul Adrian. Game board. 397,159, Cl. D21-32.000.
Blase, Daniel J., to Intermec Technologies Corporation. Battery charger pocket. 397,085, Cl. D13-118.000.
Boisvert, Marc H. Tool holding device. 397,125, Cl. D15-140.000.
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Bonnell, Thomas A., to Kohler Co. Sink. 397,213, Cl. D23-290.000.
Boothe, Diana S. Cake carrier. 396,999, Cl. D7-610.000.
Boots, Margery L. Icon for a display screen. 397,104, Cl. D14-114.500.
Bost, Danny M. Deer mount support. 397,227, Cl. D25-62.000.
Boyle, Stephan; Birdsell, Walter; Hecker, Steven L.; and Harris, Kenneth David, Jr., to Honeywell Inc. Portable electric heater. 397,193, Cl. D23-330.000.
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Brantley, Charles W.; and Ho, Ken. Message light. 397,054, Cl. D10-109.000.
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ISSUED AUGUST 18, 1998

NOTE—First number, class; second number, subclass; third number, patent number

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743	5,794,329
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	5,794,331
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	5,794,333
876	5,794,334
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294	5,794,350
390	5,794,351
392	5,794,352
418	5,794,353
530	5,794,354

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767	5,794,357

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97	5,794,362
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135	5,794,368

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122.1	5,794,387
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220.7	5,794,392
294	5,794,393
295	5,794,394
298	5,794,395
506.08	5,794,397
518	5,794,396
653.2	5,794,398
718.01	5,794,399
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741.41	5,794,401
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	5,794,412
	5,794,413
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80.3	5,794,420

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	5,794,440
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456	5,794,443
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605.2	5,794,445
646	5,794,446
654	5,794,447
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643	5,794,457
647	5,794,458

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134.4	5,795,363
158	5,795,364
443	5,795,365

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16	5,794,461
18	5,794,462
	5,794,463
57	5,794,464
63	5,794,465
	5,794,466
118	5,794,467
209	5,794,468
252	5,794,469
261	5,794,470
456 R	5,794,471
472	5,794,472

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8.9	5,794,473
62	5,794,474
213	5,794,475
307	5,794,481
350	5,794,482
379.6	5,794,483
414	5,794,484
458	5,794,485
481.3	5,794,486

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1.77	5,795,988
7	5,795,989
9	5,795,990
12.09	5,795,991
23.31	5,795,992
24.01	5,795,993
29.01	5,795,994
40	5,795,995
61.41	5,795,996
118.1	5,795,997
	5,795,998
504.15	5,796,000
504.16	5,796,001
	5,796,002
603	5,796,003
643	5,796,004
651	5,796,005
661	5,796,006
716	5,796,007
740	5,796,008
861.28	5,796,009
861.357	5,796,010
	5,796,011
	5,796,012
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862.331	5,796,014
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866	5,796,016

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33	5,794,477
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143	5,794,479
425	5,794,480
490.03	5,794,487
502.6	5,794,488
513	5,794,489
	5,794,490
529	5,794,492
603	5,794,493

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232	5,796,017
235	5,796,019
368	5,795,366

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53.1	5,794,495
63.2	5,794,496
451	5,794,497

CLASS 82

1.11	5,794,498
	5,794,499

CLASS 83

22	5,794,500
49	5,794,501
670	5,794,502
835	5,794,503

CLASS 84

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329	5,796,021
380 R	5,796,022
433	5,796,023
	5,796,024
464 R	5,796,025
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CLASS 86

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CLASS 87

1	5,794,504

CLASS 89

36.05	5,796,028

CLASS 91

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	5,794,508
376 R	5,794,509
517	5,794,510
536	5,794,511

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71	5,794,514
128	5,794,512
	5,794,515
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244	5,794,517

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82	5,795,368
273	5,795,369

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130	5,795,370
175	5,795,371

CLASS 99

277.2	5,794,518
295	5,794,519
323.3	5,794,520
327	5,794,521
330	5,794,522
348	5,794,524
413	5,794,525

CLASS 100

39	5,794,526
151	5,794,527

CLASS 101

127.1	5,794,528
216	5,794,529
409	5,794,530
479	5,794,531
493	5,794,532

CLASS 102

213	5,796,029
424	5,796,030
520	5,796,031

CLASS 104

73	5,794,533
88 R	5,794,534
130.07	5,794,535

CLASS 105

3	5,794,536
4.1	5,794,537
218.1	5,794,538
377.08	5,794,539

CLASS 106

14.41	5,795,372
14.42	5,795,373
16	5,795,374
31.57	5,795,375
31.73	5,795,376
164.4	5,795,377
287.16	5,795,378
499	5,795,379
675	5,795,380

CLASS 108

3	5,794,540
20	5,794,541
51.3	5,794,542
56.1	5,794,543
56.3	RE. 35,870
57.25	5,794,544
64	5,794,545
115	5,794,546

CLASS 109

50	5,794,547

CLASS 110

104 R	5,794,548
347	5,794,549

CLASS 111

200	5,794,550

CLASS 112

80.41	5,794,551
102.5	5,794,552
	5,794,553
470.01	5,794,554
475.22	5,794,555

CLASS 114

123	5,794,556
144 R	5,794,557
274	5,794,558
343	5,794,559

CLASS 117

14	5,795,381
20	5,795,382
30	5,795,383
87	5,795,384
104	5,795,385

CLASS 118

203	5,795,386
244	5,795,387
308	5,795,388
	5,795,389
314	5,795,390
315	5,795,391
405	5,795,392
413	5,795,393
665	5,795,394
712	5,795,395
724	5,795,396

CLASS 119

51.11	5,794,560
52.1	5,794,561
52.4	5,794,562
57.91	5,794,563
61	5,794,564
	5,794,565
161	5,794,566
416	5,794,567
707	5,794,568
721	5,794,569
756	5,794,570
792	5,794,571
858	5,794,572

CLASS 123

18 R	5,794,573
41 E	5,794,574
41.08	5,794,575
90.16	5,794,576
90.17	5,794,577
	5,794,578
	5,794,579
179.2	5,794,580
196 R	5,794,581
197.2	5,794,582
244	5,794,583
257	5,794,584
299	5,794,585
305	5,794,586
308	5,794,587
320	5,794,588
321	5,794,589
	5,794,590
337	5,794,591
414	5,794,592
438	5,794,593
450	5,794,594
470	5,794,595
488	5,794,596
514	5,794,597
	5,794,598

519 5,794,599
531 5,794,600
538 5,794,601
572 5,794,602
634 5,794,603
673 5,794,604
688 5,794,605

CLASS 124
51.1 5,794,606

CLASS 125
16.02 5,794,607

CLASS 126
25 R 5,794,608
363 5,794,609
512 5,794,610
661 5,794,611

CLASS 127
29 5,795,397
46.1 5,795,398

CLASS 128
200.23 5,794,612
203.12 5,794,613
204.21 5,794,614
204.23 5,794,615
205.11 5,794,616
206.16 5,794,617
207.18 5,794,619
653.1 5,794,620
5,794,621
654 5,794,622
702 5,794,623
5,794,624
736 5,794,625
754 5,794,626
848 5,794,627
858 5,794,628
898 5,794,629

CLASS 131
84.1 5,794,630

CLASS 132
317 5,794,632

CLASS 134
1.3 5,795,399
6 5,795,401
8 5,795,402
10 5,795,400
22.12 5,795,403
5,795,404
25.4 5,795,405
53 5,794,633
57 D 5,794,634
95.3 5,794,635
115 R 5,794,636

CLASS 135
27 5,794,637
65 5,794,638
67 5,794,639
131 5,794,640

CLASS 137
1 5,794,641
4 5,794,642
14 5,794,643
15 5,794,644
5,794,645
202 5,794,646
315 5,794,647
355.23 5,794,648
355.27 5,794,649
454.2 5,794,650
454.5 5,794,651
474 5,794,652
486 5,794,653
512.15 5,794,654
527 5,794,655
533.11 5,794,656
543.19 5,794,657
563 5,794,658
597 5,794,659
614.2 5,794,660
849 5,794,661

CLASS 138
97 5,794,662
98 5,794,663

CLASS 139
452 5,794,664
455 5,794,665

CLASS 141
18 5,794,666
128 5,794,667
198 5,794,668
285 5,794,669
314 5,794,670
319 5,794,671
331 5,794,672

CLASS 144
24.12 5,794,673
34.1 5,794,674
117.1 5,794,675

CLASS 148
216 5,795,406
253 5,795,407
262 5,795,408
269 5,795,409
320 5,795,410
325 5,795,411
524 5,795,412
671 5,795,413

CLASS 150
131 5,794,676

CLASS 152
195 5,795,414
209 R 5,795,415
517 5,795,416
527 5,795,417
530 5,795,418

CLASS 156
64 5,795,419
5,795,420
89.12 5,795,422
108 5,795,421
166 5,795,423
5,795,424
235 5,795,425
249 5,795,426
256 5,795,427
344 5,795,428
345 5,795,429
350 5,795,430
358 5,795,431
446 5,795,432
479 5,795,433
486 5,795,434
577 5,795,435
579 5,795,436
580 5,795,437

CLASS 160
35 5,794,677
41 5,794,678
46 5,794,679
84.07 5,794,680

CLASS 162
52 5,795,438
100 5,795,439
117 5,795,440
343 5,795,441
353 5,795,442
388 5,795,443

CLASS 164
195 5,794,681
437 5,794,682

CLASS 165
41 5,794,683
80.3 5,794,684
114 5,794,686
121 5,794,685
5,794,687
134.1 5,794,688
140 5,794,689
151 5,794,690
153 5,794,691
175 5,794,692

CLASS 166
85.5 5,794,693
212 5,794,694
264 5,794,695
5,794,696
265 5,794,697
5,794,698
332.2 5,794,699
339 5,794,700
341 5,794,701
380 5,794,702
381 5,794,703

CLASS 169
54 5,794,704
61 5,794,705
69 5,794,706
5,794,707

CLASS 172
19 5,794,708
33 5,794,709
5,794,710
265 5,794,711
459 5,794,712
518 5,794,713
799.5 5,794,714

CLASS 173
104 5,794,715
189 5,794,716
206 5,794,717

CLASS 174
5 R 5,796,032
35 C 5,796,033
45 R 5,796,034
48 5,796,035
50 5,796,036
5,796,037
52.4 5,796,038
59 5,796,039
65 SS 5,796,040
92 5,796,041
102 SC 5,796,043
102 SP 5,796,042
103 5,796,044
109 5,796,045
113 AS 5,796,046
135 5,796,047
141 C 5,796,048
252 5,796,049
255 5,796,050

CLASS 175
19 5,794,718
21 5,794,719
40 5,794,720
45 5,794,721
66 5,794,722
85 5,794,723
170 5,794,724
339 5,794,725
371 5,794,726
394 5,794,727
400 5,794,728
424 5,794,729

CLASS 177
17 5,796,051
145 5,796,052

CLASS 180
7.1 5,794,730
9.56 5,794,731
65.3 5,794,732
68.1 5,794,733
165 5,794,734
170 5,794,735
423 5,794,736

CLASS 181
131 5,796,053
167 5,796,054
208 5,796,055

CLASS 187
266 5,794,737
333 5,794,745
5,794,746

CLASS 188
24.19 B1 754,853
71.9 5,794,738
153 R 5,794,739
251 A 5,794,740
321.11 5,794,741
5,794,742
322.16 5,794,743

CLASS 190
18 A 5,794,744
18 R 5,794,747

CLASS 192
4 A 5,794,748
58.681 5,794,749
70.17 5,794,750
85 AA 5,794,751
85 CA 5,794,752
89.25 5,794,753
107 5,794,754

CLASS 194
348 5,794,755

CLASS 196
46.1 5,795,444

CLASS 198
429 5,794,756
750.8 5,794,757
785 5,794,758

CLASS 200
5 A 5,796,056
6 B 5,796,057
16 D 5,796,058
43.14 5,794,760
43.19 5,794,759
85 R 5,796,059
181 5,794,761
345 5,794,762
401 5,794,763
437 5,794,764
550 5,794,765
569 5,794,766

CLASS 201
39 5,795,445

CLASS 203
49 5,795,446
57 5,795,447

CLASS 204
192.1 5,795,448
244 M 5,795,449
256 5,795,450
298.2 5,795,451
298.37 5,795,452
403 5,795,453
424 5,795,454
466 5,795,455
471 5,795,456
547 5,795,457

CLASS 205
124 5,795,458
701 5,795,459
705 5,795,460
775.5 5,795,461

CLASS 206
37 5,794,767
38.1 5,794,768
69 5,794,769
215 5,794,770
223 5,794,771
308.1 5,794,772
315.91 5,794,773
369 5,794,774
387.1 5,794,631
388 5,794,775
5,794,776
409 5,794,777
428 5,794,778
443 5,794,779
459.5 5,794,780
531 5,794,781
600 5,794,782
725 5,794,783
5,794,784
783 5,794,785

CLASS 208
182 5,795,462
251 R 5,795,463
391 5,795,464

CLASS 209
29 5,794,786
166 5,795,465
5,795,466
420 5,794,787
524 5,794,788
549 5,794,789
653 5,794,790
727 5,794,791

CLASS 210
162 5,795,467
172 5,795,468
198.2 5,795,469
222 5,795,470
223 5,795,471
232 5,795,472
5,795,473
257.1 5,795,476
257.2 5,795,474
5,795,475
360.1 5,795,477
521 5,795,478
603 5,795,479
611 5,795,480
615 5,795,481
634 5,795,482
645 5,795,483
696 5,795,484
714 5,795,485
723 5,795,486
754 5,795,487
765 RE 35,871
767 5,795,488
782 5,795,489

CLASS 211
12 5,794,792
20 5,794,793
26 5,794,794
5,794,795
40 5,794,796
41.18 5,794,798
41.3 5,794,797
70.6 5,794,799
113 5,794,800

CLASS 215
11.1 5,794,802
217 5,794,803
249 5,794,804

CLASS 216
22 5,795,490
28 5,795,491
57 5,795,492
59 5,795,493
83 5,795,494
88 5,795,495

CLASS 218
79 5,796,060
157 5,796,061

CLASS 219
69.11 5,796,062
69.12 5,796,063
76.16 5,796,064
78.02 5,796,065
121.48 5,796,066
121.52 5,796,067
121.63 5,796,068
121.64 5,796,069
137.43 5,796,070
203 5,796,071
229 5,796,072
265 5,796,073
390 5,796,074
457 5,796,075
486 5,796,076
497 5,796,077
639 5,796,078
678 5,796,079
697 5,796,080
711 5,796,081
752 5,796,082

CLASS 220
86.2 5,794,805
203.26 5,794,806
315 5,794,807
400 5,794,808
407 5,794,809
408 5,794,810
458 5,794,801
462 5,794,811
5,794,812
565 5,794,813
685 5,794,814

CLASS 221
45 5,794,815
203 5,794,816
281 5,794,817

CLASS 222
105 5,794,818
129 5,794,819
307 5,794,820
321.9 5,794,821
383.1 5,794,822
400.7 5,794,823
468 5,794,824
504 5,794,825

CLASS 224
321 5,794,826
5,794,827
530 5,794,828

CLASS 226
18 5,794,829
24 5,794,830

CLASS 227
2 5,794,831
109 5,794,832
137 5,794,833
175.2 5,794,834

CLASS 228
2.1 5,794,835
33 5,794,836
37 5,794,837
121 5,794,838
123.1 5,794,839
151 5,794,840

CLASS 229
198.2 5,794,842
403 5,794,843

CLASS 232
25 5,794,844

CLASS 235
384 5,796,084
441 5,796,085
449 5,796,086
462 5,796,087
5,796,090
472 5,796,088
5,796,089
5,796,091
492 5,796,092
5,796,093

CLASS 237
12.3 B 5,794,845

CLASS 238
10 E 5,794,846

CLASS 239
8 5,794,847
63 5,794,848
99 5,794,849
127.1 5,794,850
127.3 5,794,851
167 5,794,852
208 5,794,853
242 5,794,854
288 5,794,855
408 5,794,856
430 5,794,857
433 5,794,858
555 5,794,859
585.3 5,794,860

CLASS 240
615 5,794,963

CLASS 241
1 5,794,861
21 5,794,862
40 5,794,863
56 5,794,864
74 5,794,865
101.72 5,794,866

CLASS 242
18 DD 5,794,867
35.5 R 5,794,868
331.5 5,794,869
332.2 5,794,872
336 5,794,873
346.1 5,794,874
374 5,794,875
5,794,876
379.1 5,794,877
381 5,794,878
382.2 5,794,879
396 5,794,880
410 5,794,881
423.1 5,794,882
423.2 5,794,883
433.3 5,794,884
533.8 5,794,885
538.2 5,794,870
594.3 5,794,886

CLASS 244
75 R 5,794,887
117 A 5,794,888
136 5,794,889
163 5,794,890
164 5,794,891
165 5,794,892

CLASS 246
213 5,794,893

CLASS 248
53 5,794,894
73 5,794,895
74.3 5,794,896
74.4 5,794,897
102 5,794,898
166 5,794,899
221.11 5,794,901
250 5,794,902
300 5,794,903
311.3 5,794,904
316.4 5,794,905
317 5,794,906
354.7 5,794,907
503.1 5,794,908
548 5,794,910
550 5,794,909
588 5,794,911
638 5,794,912

688 5,794,913
925 5,794,914

CLASS 250

208.1 5,796,094
5,796,095
226 5,796,096
229 5,796,097
231.13 5,796,098
286 5,796,099
292 5,796,100
306 5,796,101
5,796,102
326 5,796,103
330 5,796,104
336.2 RE. 35,872
338.5 5,796,105
341.8 5,796,106
351 5,796,107
368 5,796,108
5,796,109
385.1 5,796,110
458.1 5,796,112
483.1 5,796,113
492.2 5,796,111
548 5,796,114

CLASS 251

127 5,794,915
148 5,794,916
176 5,794,917

CLASS 252

62.2 5,795,496
182.14 5,796,117
182.18 5,795,497
404 5,795,499
511 5,795,500
514 5,795,501
521.1 5,795,502

CLASS 254

1 B1 299,779
30 5,794,918
133 R B1 181,694
343 5,794,919
361 5,794,920

CLASS 255

380 5,796,083

CLASS 256

19 5,794,921
34 5,794,922
64 5,794,923
65 5,795,503

CLASS 257

19 5,796,118
25 5,796,119
30 5,796,120
59 5,796,121
66 5,796,116
76 5,796,122
110 5,796,123
133 5,796,124
141 5,796,125
5,796,126
194 5,796,127
202 5,796,128
206 5,796,129
5,796,130
284 5,796,131
5,796,132
295 5,796,133
5,796,134
296 5,796,135
306 5,796,136
5,796,137
5,796,138
315 5,796,139
316 5,796,140
5,796,141
5,796,142
330 5,796,143
336 5,796,145
343 5,796,146
355 5,796,147
379 5,796,148
391 5,796,149
401 5,796,150
410 5,796,151
415 5,796,152
432 5,796,154
445 5,796,153
452 5,796,155
504 5,796,156
557 5,796,157
560 5,796,158
668 5,796,159
675 5,796,160
676 5,796,161
5,796,162
698 5,796,163
723 5,796,164
728 5,796,165
751 5,796,166
758 5,796,167
780 5,796,169
781 5,796,168
786 5,796,170
5,796,171

CLASS 261

30 5,795,504
92 5,795,505

CLASS 264

4.1 5,795,506
5 5,795,507
30 5,795,508
40.1 5,795,509
40.5 5,795,510
40.6 5,795,511
5,795,512
71 5,795,513
5,795,514
82 5,795,515
103 5,795,516
115 5,795,517
134 5,795,518
139 5,795,519
146 5,795,520
163 5,795,521
187 5,795,522
196 5,795,523
221 5,795,524
251 5,795,525
266 5,795,526
267 5,795,527
290.2 5,795,528
293 5,795,529
306 5,795,530
308 5,795,531
429 5,795,532
529 5,795,533
532 5,795,534
551 5,795,535
571 5,795,536
621 5,795,537

CLASS 266

46 5,795,538
5,795,539

CLASS 267

64.11 5,794,924

CLASS 269

237 5,794,925

CLASS 270

52.26 5,794,926

CLASS 271

3.18 5,794,927
9.08 5,794,928
270 5,794,929
277 5,794,930
303 5,794,931

CLASS 273

241 5,794,932
272 5,794,933
292 5,794,934
309 5,794,935
5,794,964
442 5,794,936
447 5,794,937
5,794,944

CLASS 276

210 5,795,014

CLASS 277

53 5,794,938
81 R 5,794,939
92 5,794,940
175 5,794,941
303 5,794,942
441 5,794,943
593 5,794,945
610 5,794,946
630 5,794,947

CLASS 279

2.17 5,794,948
46.7 5,794,949

CLASS 280

11.2 5,794,950
30 5,794,951
33.991 5,794,952
33.992 5,794,953
87.042 5,794,955
156 5,794,956
304 5,794,957
287 5,794,958
400 5,794,959
441.2 5,794,960
507 5,794,961
507 5,794,962
663 5,794,965
714 5,794,966
728.2 5,794,968
728.3 5,794,967
731 5,794,969
5,794,970
733 5,794,971
735 5,794,972
737 5,794,973
743.1 5,794,974
753 5,794,975
770 5,794,976
801.2 5,794,977
806 5,794,978
834 5,794,979

CLASS 281

2 5,794,980

CLASS 283

109 5,794,981

CLASS 285

55 5,794,982
5,794,983
91 5,794,984
93 5,794,985
173 5,794,986
224 5,794,987
305 5,794,988
345 5,794,989

CLASS 290

48 5,796,172
52 5,796,173

CLASS 292

153 5,794,990
169 5,794,991
216 5,794,992
288 5,794,871
307 R 5,794,993
336.3 5,794,994
348 5,794,995

CLASS 294

7 5,794,996
15 5,794,997
5,794,998
16 5,794,999
57 5,795,000
64.1 5,795,001
99.2 5,795,002
106 5,795,003
119 5,795,004

CLASS 296

37.5 5,795,005
39.2 5,795,006
5,795,007
78.1 5,795,009
97.13 5,795,010
98 5,795,008
100 5,795,011
136 5,795,012
188 5,795,013
214 5,795,015
223 5,795,016

CLASS 297

15 5,795,017
184.17 5,795,018
216.12 5,795,019
256.15 5,795,020
281 5,795,021
314 5,795,022
331 5,795,023
361.1 5,795,024
411.36 5,795,025
5,795,026
440.12 5,795,027
440.14 5,795,028
440.16 5,795,029
446 5,795,030

CLASS 298

17.6 5,795,031

CLASS 299

33 5,795,032

CLASS 301

9.2 5,795,034
37.32 5,795,035
59 5,795,036
124.1 5,795,037

CLASS 303

119.2 5,795,038
122.05 5,795,039

CLASS 307

9.1 5,796,174
10.1 5,796,175
5,796,176
5,796,177
10.2 5,796,178
10.5 5,796,179
5,796,180
10.8 5,796,181
86 5,796,182
116 5,796,183
118 5,796,184
140 5,796,185

CLASS 310

14 5,796,186
20 5,796,187
50 5,796,188
54 5,796,189
58 5,796,190
5,796,191
67 R 5,796,192
5,796,193
68 B 5,796,194
5,796,195
68 D 5,796,196
85 5,796,197
89 5,796,198
90 5,796,199
156 5,796,200
194 5,796,201
217 5,796,202
233 5,796,203
258 5,796,204
313 R 5,796,205
317 5,796,206
358 5,796,207

CLASS 311

33 5,796,355

CLASS 312

184 5,795,040
205 5,795,041
221 5,795,042
229 5,795,043
333 5,795,044
408 5,795,045

CLASS 313

493 5,796,208
5,796,209
5,796,210

CLASS 315

3.5 5,796,211
5.33 5,796,212
209 R 5,796,213
5,796,214
224 5,796,215
307 5,796,216
408 5,796,217
411 5,796,218
500 5,796,219

CLASS 318

51 5,796,220
68 5,796,221
119 5,796,222
126 5,796,223
139 5,796,224
5,796,225
254 5,796,226
5,796,227
563 5,796,229
599 5,796,230
605 5,796,228
608 5,796,231
653 5,796,232
705 5,796,233
751 5,796,234
801 5,796,235
804 5,796,236
806 5,796,237

CLASS 320

5 5,796,238
107 5,796,239

CLASS 322

10 5,796,240

CLASS 323

282 5,796,241
5,796,242
312 5,796,243
313 5,796,244
322 5,796,245

CLASS 324

73.1 5,796,246
207.16 5,796,248
207.2 5,796,247
207.21 5,796,249
207.22 5,796,250
300 5,796,251
303 5,796,252
336 5,796,253
419 5,796,254
429 5,796,255
456 5,796,256
520 5,796,257
522 5,796,258
524 5,796,259
537 5,796,260
705 5,796,261
714 5,796,262
758 5,796,264
763 5,796,265
5,796,266

CLASS 326

39 5,796,267
5,796,268
40 5,796,269
86 5,796,270
108 5,796,271

CLASS 327

41 5,796,272
55 5,796,273
63 5,796,274
81 5,796,275
108 5,796,276
5,796,277
5,796,278
110 5,796,279
205 5,796,280
206 5,796,281
210 5,796,282
218 5,796,283
264 5,796,284
306 5,796,285
308 5,796,286
374 5,796,287
407 5,796,288
425 5,796,289
512 5,796,290
513 5,796,291
534 5,796,292
536 5,796,293
538 5,796,294
541 5,796,295
545 5,796,296
546 5,796,297
561 5,796,298
565 5,796,299

CLASS 330

9 5,796,300
5,796,301
10 5,796,302
51 5,796,303
52 5,796,304
105 5,796,305
124 R 5,796,306
149 5,796,307
184 5,796,308
289 5,796,309
307 5,796,310

CLASS 331

1 R 5,796,311
44 5,796,312
57 5,796,313

CLASS 333

20 5,796,314
24 C 5,796,315
100 5,796,316
127 5,796,317
202 5,796,318
208 5,796,319
219.1 5,796,320
246 5,796,321
248 5,796,322
260 5,796,323

CLASS 336

192 5,796,324
233 5,796,325

CLASS 337

169 5,796,326
342 5,796,327

CLASS 340

384.1 5,796,328
426 5,796,329
5,796,330
433 5,796,331
438 5,796,332
467 5,796,333
539 5,796,334
550 5,796,335
566 5,796,336
568 5,796,337
5,796,338
572 5,796,339
573 5,796,340
5,796,341
577 5,796,342
583 5,796,344
604 5,796,345
625.69 5,796,351
626 5,796,343
635 5,796,346
5,796,347
666 5,796,348
682 5,796,349
815.75 5,796,350
825.24 5,796,352
870.01 5,796,353

CLASS 341

22 5,796,354
51 5,796,356
116 5,796,357
139 5,796,358
143 5,796,359
5,796,360
172 5,796,361

CLASS 342

6 5,796,362
22 5,796,363
99 5,796,364
357 5,796,365
448 5,796,366

CLASS 343

700 MS 5,796,367
704 5,796,368
752 5,796,369
781 5,796,370
786 5,796,371
797 5,796,372

CLASS 345

6 5,796,373
8 5,796,374
74 5,796,375
82 5,796,376
84 5,796,377
88 5,796,378
89 5,796,379
96 5,796,380
101 5,796,381
102 5,796,382
112 5,796,383
147 5,796,384
155 5,796,385
156 5,796,386
158 5,796,387
168 5,796,388
173 5,796,389
204 5,796,390
5,796,391
213 5,796,392
329 5,796,393
5,796,394
331 5,796,395
332 5,796,396
339 5,796,397
5,796,398
5,796,399
342 5,796,402
343 5,796,403
352 5,796,404
358 5,796,406
420 5,796,400
430 5,796,407
433 5,796,401
441 5,796,408
468 5,796,409
471 5,796,410
502 5,796,411
517 5,796,412
522 5,796,413

CLASS 347

19 5,796,414
45 5,796,415
47 5,796,416
50 5,796,417
55 5,796,418
85 5,796,419
103 5,796,422
188 5,796,420
257 5,796,421

CLASS 348

10 5,796,423
15 5,796,424
181 5,796,425

207 5,796,426
208 5,796,427
231 5,796,428
239 5,796,429
246 5,796,430
308 5,796,431
311 5,796,432
5,796,433
403 5,796,434
405 5,796,435
409 5,796,436
452 5,796,437
458 5,796,438
459 5,796,439
476 5,796,440
5,796,441
525 5,796,444
556 5,796,442
607 5,796,445
744 5,796,446
839 5,796,443

CLASS 349

33 5,796,447
39 5,796,448
54 5,796,449
64 5,796,450
66 5,796,451
73 5,796,452
86 5,796,453
98 5,796,454
116 5,796,455
117 5,796,456
119 5,796,457
126 5,796,458
132 5,796,459

CLASS 351

86 5,796,460
106 5,796,461
161 5,796,462
205 5,796,463

CLASS 353

69 5,795,046
81 5,795,047
122 5,795,048
5,795,049

CLASS 354

288 5,796,464

CLASS 355

27 5,796,465
35 5,796,466
53 5,796,467
5,796,468
5,796,469

CLASS 356

28.5 5,796,470
5,796,471
72 5,796,472
121 5,796,473
152.1 5,796,474
237 5,796,475
301 5,796,476
318 5,796,477
5,796,478
326 5,796,479
336 5,796,480
343 5,796,481
349 5,796,482
5,796,483
371 5,796,484
373 5,796,485
375 5,796,486
376 5,796,487
399 5,796,488
440 5,796,489

CLASS 358

296 5,796,490
298 5,796,491
400 5,796,492
B1 994,926
442 5,796,493
468 5,796,494
471 5,796,495
498 5,796,496

CLASS 359

4 5,796,498
15 5,796,499
24 5,796,500
119 5,796,501
124 5,796,502
125 5,796,503
144 5,796,504
160 5,796,505
191 5,796,506
205 5,796,507
224 5,796,508
254 5,796,509
256 5,796,510
305 5,796,511
308 5,796,512
330 5,796,513
354 5,796,514
364 5,796,515
399 5,796,516
426 5,796,517
432 5,796,518
549 5,796,519
565 5,796,520
619 5,796,521
626 5,796,522
629 5,796,523
633 5,796,524
653 5,796,525
671 5,796,526
692 5,796,527
753 5,796,528
756 5,796,529
795 5,796,530
832 5,796,531
858 5,796,532

CLASS 360

17 5,796,533
48 5,796,534
51 5,796,535
61 5,796,536
64 5,796,537
71 5,796,538
73.02 5,796,540
73.03 5,796,539
75 5,796,541
77.02 5,796,542
77.07 5,796,544
77.08 5,796,543
78.04 5,796,545
5,796,546
99.04 5,796,547
99.08 5,796,548
103 5,796,549
5,796,550
104 5,796,551
5,796,552
5,796,553
5,796,554
5,796,555
5,796,556
105 5,796,557
106 5,796,558
108 5,796,559
113 5,796,560
5,796,561
121 5,796,562
123 5,796,564
132 5,796,563

CLASS 361

29 5,796,565
68.1 5,796,577
86 5,796,566
91 5,796,567
106 5,796,568
5,796,569
126 5,796,570
190 5,796,571
313 5,796,572
321.5 5,796,573
502 5,796,574
681 5,796,575
5,796,576
683 5,796,578
5,796,579
687 5,796,580
5,796,581
704 5,796,582
5,796,583
707 5,796,584
735 5,796,585
748 5,796,586
763 5,796,587
773 5,796,588
774 5,796,589
5,796,590
779 5,796,591
784 5,796,592
801 5,796,593
818 RE. 35,873
5,796,594

CLASS 362

72 5,795,050
[illegible] 5,795,051
91 5,795,052
[illegible] 5,795,053
5,795,054
156 5,795,055
263 5,795,056
268 5,795,057
293 5,795,058
368 5,795,059
407 B1 446,640

CLASS 363

16 5,796,595
21 5,796,596
5,796,597
37 5,796,598
57 5,796,599
60 5,796,600
84 5,796,601

CLASS 364

130 5,796,602
131 5,796,603
132 5,796,604
134 5,796,605
138 5,796,606
140.01 5,796,607
157 5,796,608
164 5,796,609
167.01 5,796,610
420 5,796,611
424.013 5,796,612
449.8 5,796,613
468.04 5,796,617
468.13 5,796,614
468.16 5,796,615
468.28 5,796,616
474.24 5,796,618
474.37 5,796,619
475.02 5,796,620
489 5,796,621
5,796,622
5,796,623
5,796,624
491 5,796,625
492 5,796,627
5,796,628
5,796,629
5,796,630
5,796,631
496 5,796,632
551.01 5,796,633
559 5,796,634
563 5,796,635
571.01 5,796,636
572 5,796,637
578 5,796,638
579 5,796,639
709.02 5,796,640
715.03 5,796,641
724.011 5,796,643
748.07 5,796,644
750.5 5,796,645
807 5,796,646
5,796,647

CLASS 365

145 5,796,648
149 5,796,649
150 5,796,650
156 5,796,651
185.03 5,796,652
185.09 5,796,653
185.11 5,796,657
185.22 5,796,655
185.23 5,796,656
189.04 5,796,659
189.05 5,796,660
5,796,661
200 5,796,662
5,796,663
5,796,664
203 5,796,665
205 5,796,666
207 5,796,667
5,796,668
222 5,796,669
228 5,796,670
230.03 5,796,671
5,796,672
230.08 5,796,675
233 5,796,673
233.5 5,796,674

CLASS 366

2 5,795,060
130 5,795,061
136 5,795,062

CLASS 367

20 5,796,676
25 5,796,677
38 5,796,678
99 5,796,679

CLASS 368

10 5,796,681
96 5,796,680
120 5,796,682

CLASS 369

13 5,796,683
30 5,796,684
44.28 5,796,685
5,796,686
44.29 5,796,687
44.34 5,796,688
44.41 5,796,689
48 5,796,690
50 5,796,691
59 5,796,692
5,796,693
5,796,694
60 5,796,695
75.1 5,796,696
75.2 5,796,697
77.2 5,796,698
106 5,796,700
110 5,796,701
112 5,796,702
116 5,796,703
5,796,704
124 5,796,705
126 5,796,706
219 5,796,707
271 5,796,709
275.3 5,796,710
275.4 5,796,711
5,796,712
283 5,796,708
291 5,796,713

CLASS 370

60 5,796,715
207 5,796,716
216 5,796,717
217 5,796,718
231 5,796,719
245 5,796,720
5,796,721
252 5,796,722
5,796,723
263 5,796,724
290 5,796,725
322 5,796,726
338 5,796,727
5,796,728
345 5,796,729
347 5,796,730
362 5,796,731
5,796,732
366 5,796,733
394 5,796,734
395 5,796,735
399 5,796,736
401 5,796,738
5,796,739
5,796,740
439 5,796,741
466 5,796,742
474 5,796,743
503 5,796,744

CLASS 371

21.1 5,796,745
5,796,746
21.3 5,796,748
22.1 5,796,749
22.2 5,796,750
22.3 5,796,751
27.1 5,796,752
5,796,753
5,796,754
39.1 5,796,755
43.7 5,796,756
46 5,796,757
49.1 5,796,758
67.1 5,796,759

CLASS 372

3 5,796,761
5 5,796,762
6 5,796,764
25 5,796,765
36 5,796,766
38 5,796,767
45 5,796,768
5,796,769
50 5,796,714
75 5,796,770
5,796,771

CLASS 374

43 5,795,063
44 5,795,064
106 5,795,065
158 5,795,067
170 5,795,068
183 5,795,069
206 5,795,070

CLASS 375

200 5,796,760
5,796,772
5,796,773
206 5,796,774
5,796,959
208 5,796,775
222 5,796,776
227 5,796,777
229 5,796,778
232 5,796,814
267 5,796,779
274 5,796,780
288 5,796,781
296 5,796,782
298 5,796,783
5,796,784
316 5,796,785
326 5,796,786
5,796,787
341 5,796,788
354 5,796,792
356 5,796,793
368 5,796,794
372 5,796,795
5,796,796

CLASS 376

260 5,796,797
283 5,796,798
306 5,796,799

CLASS 377

8 5,796,800
60 5,796,801

CLASS 378

8 5,796,802
15 5,796,803
35 5,796,804
136 5,796,805

CLASS 379

35 5,796,789
59 5,796,790
67 5,796,806
5,796,807
93.31 5,796,808
100.06 5,796,809
142 5,796,810
189 5,796,811
212 5,796,812
220 5,796,813
265 5,796,791
372 5,796,815
381 5,796,816
384 5,796,817
390 5,796,818
[illegible] 5,796,819
410 5,796,820
430 5,796,821
433 5,796,822

CLASS 380

4 5,796,824
5,796,825
5 5,796,826
9 5,796,827
10 5,796,828
21 5,796,829
5,796,830
24 5,796,831
5,796,832
25 5,796,833
5,796,834
5,796,835
28 5,796,836
5,796,837
38 5,796,838
44 5,796,839
50 5,796,840
55 5,796,841

CLASS 381

4 5,796,842
17 5,796,843
18 5,796,844
5,796,845
57 5,796,847
68.2 5,796,848
71.8 5,796,849
94.1 5,796,850
94.5 5,796,851
104 5,796,852
120 5,796,853
188 5,796,854

CLASS 382

107 5,796,855
108 5,796,856
124 5,796,857
127 5,796,858
128 5,796,859
5,796,860
5,796,861
132 5,796,862
157 5,796,863
166 5,796,864
169 5,796,865
187 5,796,866
5,796,867
199 5,796,868
203 5,796,869
232 5,796,870
236 5,796,871
237 5,796,872
254 5,796,873
5,796,874
261 5,796,875
270 5,796,876
298 5,796,877
300 5,796,878
5,796,879

CLASS 383

200 5,795,071

CLASS 384

100 5,795,072
110 5,795,073
123 5,795,074
215 5,795,075
307 5,795,076
312 5,795,077
498 5,795,078
547 5,795,079
580 5,795,080

CLASS 385

1 5,796,880
9 5,796,881
11 5,796,882
14 5,796,883
15 5,796,885
16 5,796,884
18 5,796,887
21 5,796,886
22 5,796,888
24 5,796,889
5,796,890
28 5,796,891
38 5,796,892
43 5,796,893
56 5,796,894
5,796,895
59 5,796,896
76 5,796,897
78 5,796,898
92 5,796,899
95 5,796,900
100 5,796,901
122 5,796,902
123 5,796,903
5,796,904
128 5,796,905
129 5,796,906
133 5,796,907
135 5,796,908
147 5,796,909

CLASS 386

51 5,796,910
96 5,796,912
125 5,796,913

CLASS 392

390 5,796,914
441 5,796,915

CLASS 395

2.67 5,796,916
3 5,796,917
5,796,918
5,796,919
22 5,796,920
5,796,921
5,796,922
23 5,796,923
5,796,924
27 5,796,925
77 5,796,926
95 5,796,927
106 5,796,928
109 5,796,929
116 5,796,930
131 5,796,931
161 5,796,932
180 5,796,933
182.02 5,796,934
182.09 5,796,935
5,796,936
182.11 5,796,937
183.03 5,796,938
184.01 5,796,939
186 5,796,940
187.01 5,796,941
5,796,942
188.01 5,796,943
200.19 5,796,946
200.36 5,796,948

200.47 5,796,949
200.48 5,796,950
200.53 5,796,951
200.54 5,796,952
200.57 5,796,953
200.61 5,796,954
200.62 5,796,955
200.63 5,796,956
200.8 5,796,944
5,796,958
200.81 5,796,957
200.9 5,796,945
286 5,796,960
287 5,796,961
293 5,796,968
306 5,796,962
308 5,796,963
5,796,964
309 5,796,965
311 5,796,966
339 5,796,967
343 5,796,969
376 5,796,970
383 5,796,971
384 5,796,972
5,796,973
387 5,796,974
394 5,796,975
403 5,796,976
406 5,796,977
416 5,796,978
469 5,796,979
471 5,796,980
500 5,796,981
5,796,982
5,796,983
5,796,984
5,796,985
5,796,986
5,796,987
5,796,988
5,796,989
5,796,990
5,796,991
555 5,796,992
5,796,993
5,796,994
558 5,796,995
566 5,796,996
581 5,796,997
586 5,796,998
600 5,796,999
602 5,797,000
609 5,797,001
611 5,797,002
612 5,797,008
652 5,797,003
674 5,797,004
680 5,797,005
682 5,797,006
683 5,797,007
705 5,797,011
5,797,012
709 5,797,013
710 5,797,014
712 5,797,010
5,797,015
5,797,016
726 5,797,018
728 5,797,020
734 5,797,021
735 5,797,019
750.05 5,797,022
750.06 5,797,023
750.08 5,797,024
800 5,797,025
800.01 5,797,026
800.11 5,797,027
800.32 5,797,028
825 5,797,029
827 5,797,030
828 5,797,031
829 5,797,032
842 5,797,033
844 5,797,034
855 5,797,035
858 5,797,036
868 5,797,037
5,797,038
872 5,797,039
5,797,040
5,797,041
876 5,797,042
5,797,043

CLASS 396

6 5,797,044
5,797,045
51 5,797,046
80 5,797,048
122 5,797,049
241 5,797,050
319 5,797,051
330 5,797,052
349 5,797,047
397 5,797,053
421 5,797,054
484 5,797,055
512 5,797,056
578 5,797,057
615 5,797,058
626 5,797,059

CLASS 399

25 5,797,060
27 5,797,061
29 5,797,062
34 5,797,063
46 5,797,064
5,797,065
51 5,797,066
79 5,797,067
110 5,797,068
113 5,797,069
149 5,797,070
159 5,797,071
174 5,797,072
260 5,797,073
262 5,797,074
284 5,797,075
5,797,076
309 5,797,077
357 5,797,078
384 5,797,079
391 5,797,080

CLASS 400

120.07 5,795,081
120.09 5,795,082
207 5,795,083
225 5,795,084
248 5,795,085
615.2 5,795,086
636 5,795,087
662 5,795,088

CLASS 402

79 5,795,089
5,795,090

CLASS 403

56 5,795,092
322 5,795,093
325 5,795,091
335 5,795,094

CLASS 404

1 5,795,095
90 5,795,096
121 5,795,097

CLASS 405

7 5,795,098
28 5,795,099
45 5,795,100
154 5,795,101
171 5,795,102
188 5,795,103
263 5,795,104
284 5,795,105
5,795,106
303 5,795,107

CLASS 406

48 5,795,108

CLASS 407

72 5,795,109

CLASS 408

110 5,795,110
224 5,795,111

CLASS 409

131 5,795,112
210 5,795,113
233 5,795,114

CLASS 410

22 5,795,115

CLASS 411

6 5,795,116
92 5,795,117
171 5,795,118
288 5,795,119
386 5,795,120
442 5,795,121
551 5,795,122

CLASS 414

343 5,795,123
415 B1 810,156
489 5,795,124
537 5,795,125
796.7 5,795,126

CLASS 415

106 5,795,127
160 5,795,128
170.1 5,795,129

CLASS 416

95 5,795,130
146 R 5,795,131
147 5,795,132
247 R 5,795,133

CLASS 417

44.9 5,795,134
53 5,795,135
243 5,795,138
269 5,795,139
295 5,795,136
362 5,795,137
372 5,795,140

CLASS 418

55.3 5,795,141
133 5,795,142
227 5,795,143

CLASS 419

67 5,797,081

CLASS 420

12 5,795,540
520 5,795,541

CLASS 422

82.05 5,795,543
83 5,795,544
94 5,795,545
102 5,795,546
104 5,795,547
171 5,795,548
172 5,795,549
219 5,795,550
264 5,795,551
294 5,795,552

CLASS 423

213.2 5,795,553
263 5,795,554
326 5,795,555
338 5,795,556
5,795,557
594 5,795,558
702 5,795,559

CLASS 424

1.49 5,795,560
1.77 5,795,561
9.361 5,795,563
9.52 5,795,562
45 5,795,564
60 5,795,565
76.1 5,795,566
78.26 5,795,567
85.1 5,795,568
5,795,569
93.7 5,795,570
94.64 5,795,571
135.1 5,795,572
195.1 5,795,573
5,795,574
5,795,575
5,795,576
208.1 5,795,577
229.1 5,795,578
231.1 5,795,579
244.1 5,795,580
400 5,795,581
5,795,582
5,795,583
426 5,795,584
438 5,795,585
441 5,795,586
450 5,795,587
5,795,589
451 5,795,588
5,795,590
473 5,795,591
484 5,795,592
486 5,795,593
489 5,795,594

CLASS 425

116 5,795,596
198 5,795,595
465 5,795,597
525 5,795,598
549 5,795,599
562 5,795,600
580 5,795,601

CLASS 426

2 5,795,602
94 5,795,603
129 5,795,604
277 5,795,605
302 5,795,606
391 5,795,607
439 5,795,608
512 5,795,610
542 5,795,609
548 5,795,612
580 5,795,611
582 5,795,613
613 5,795,614
648 5,795,615
650 5,795,616

CLASS 427

58 5,795,617
98 5,795,618
123 5,795,619
136 5,795,620
180 5,795,621
186 5,795,622
388.1 5,795,623
412.1 5,795,624
434.5 5,795,625
458 5,795,626
526 5,795,627
566 5,795,628

CLASS 428

1 5,795,629
13 5,795,630
34.1 5,795,631
35.2 5,795,632
35.7 5,795,633
36.1 5,795,634
36.3 5,795,635
40.1 5,795,636
42.2 5,795,637
57 5,795,638
68 5,795,639
100 5,795,640
134 5,795,641
141 5,795,642
143 5,795,643
178 5,795,644
216 5,795,645
323 5,795,646
329 5,795,647
336 5,795,648
5,795,649
355 AC 5,795,650
364 5,795,651
383 5,795,652
408 5,795,653
421 5,795,654
458 5,795,655
484 5,795,656
516 5,795,657
593 5,795,658
610 5,795,659
626 5,795,660
628 5,795,661
650 5,795,662
692 5,795,663

CLASS 429

7 5,795,664
12 5,795,665
17 5,795,666
27 5,795,667
33 5,795,668
40 5,795,669
5,795,670
41 5,795,671
42 5,795,672
49 5,795,673
54 5,795,674
129 5,795,675
164 5,795,676
194 5,795,677
218 5,795,678
5,795,679
245 5,795,680

CLASS 430

2 5,795,681
5 5,795,682
5,795,683
5,795,684
5,795,685
5,795,686
5,795,687
30 5,795,688
49 5,795,689
58 5,795,690
106.6 5,795,691
5,795,692
5,795,693
109 5,795,694
120 5,795,695
124 5,795,696
204 5,795,697
281.1 5,795,698
318 5,795,699
325 5,795,700
5,795,701
331 5,795,702
393 5,795,703
434 5,795,704
501 5,795,705
506 5,795,706
569 5,795,707
617 5,795,708
627 5,795,709

CLASS 431

1 5,795,144
280 5,795,145

CLASS 432

176 5,795,146
200 5,795,148
205 5,795,147

CLASS 433

5 5,795,149
6 5,795,150
8 5,795,151
60 5,795,152
92 5,795,159
100 5,795,167
174 5,795,160
216 5,795,153

CLASS 434

87 5,795,154
107 5,795,155
118 5,795,156
171 5,795,163
269 5,795,157
295 5,795,158
350 5,795,161

CLASS 435

1 5,795,710
1.1 5,795,711
5 5,795,713
6 5,795,714
5,795,715
5,795,716
5,795,717
5,795,718
5,795,719
5,795,720
5,795,721
5,795,722
5,795,723
5,795,724
7.1 5,795,725
7.21 5,795,726
7.24 5,795,727
18 5,795,728
24 5,795,729
31 5,795,730
32 5,795,731
41 5,795,732
51 5,795,733
65.1 5,795,736
69.1 5,795,734
5,795,735
5,795,737
5,795,738
5,795,739
5,795,740
69.3 5,795,741
5,795,743
69.4 5,795,745
69.9 5,795,746
91.1 5,795,747
91.2 5,795,748
105 5,795,749
128 5,795,750
168 5,795,751
172.3 5,795,752
5,795,753
5,795,754
173.5 5,795,755
183 5,795,756
5,795,757
5,795,758
189 5,795,759
5,795,760
190 5,795,761
194 5,795,762
5,795,763
200 5,795,764
5,795,765
202 5,795,766
233 5,795,767
252.3 5,795,768
5,795,769
254.2 5,795,770
255.21 5,795,771
287.9 5,795,774
297.5 5,795,775
320.1 5,795,776
325 5,795,777
326 5,795,778
360 5,795,779
371 5,795,780
382 5,795,790
404 5,795,781

CLASS 436

2 5,795,782
5 5,795,712
8 5,795,783
50 5,795,784
64 5,795,785
71 5,795,786
116 5,795,787
161 5,795,788
500 5,795,789
501 5,795,791

CLASS 437

6 5,795,792
41 DM 5,795,793
60 5,795,794
174 5,795,795
189 5,795,796

CLASS 438

4 5,795,797
35 5,795,798
126 5,795,799
149 5,795,800
199 5,795,801
227 5,795,802
228 5,795,803
244 5,795,804
253 5,795,805
255 5,795,806
279 5,795,807
301 5,795,808
402 5,795,809
404 5,795,810
5,795,811
423 5,795,813
424 5,795,814
462 5,795,815
479 5,795,816
591 5,795,817
612 5,795,818
618 5,795,819
624 5,795,820
5,795,821
637 5,795,822
639 5,795,823
656 5,795,824
663 5,795,827
678 5,795,828
690 5,795,825
692 5,795,826
694 5,795,829
696 5,795,830
714 5,795,831
5,795,832
763 5,795,833

CLASS 439

63 5,795,162
79 5,795,164
86 5,795,165
134 5,795,166
188 5,795,168
191 5,795,169
252 5,795,170
260 5,795,171
5,795,172
275 5,795,173
310 5,795,174
358 5,795,175
373 5,795,176
378 5,795,177
417 5,795,178
441 5,795,179
489 5,795,180
500 5,795,181
504 5,795,182
534 5,795,183
541.5 5,795,184
545 5,795,185
557 5,795,186
567 5,795,187
583 5,795,188
602 5,795,189
607 5,795,190
608 5,795,191
619 5,795,192
621 5,795,193
660 5,795,194
783 5,795,195
850 5,795,196
884 5,795,197

CLASS 440

2 5,795,198
79 5,795,199
81 5,795,200

101 5,795,201
113 5,795,202

CLASS 441
1 5,795,203
61 5,795,204
75 5,795,205

CLASS 442
60 B1 728,565
62 5,795,834
310 5,795,835
417 5,795,836

CLASS 445
24 5,795,206
28 5,795,207
50 5,795,208

CLASS 446
73 5,795,209
128 5,795,210
220 5,795,211
297 5,795,213

CLASS 451
36 5,795,212
102 5,795,214
286 5,795,215
313 5,795,217
456 5,795,216
526 5,795,218

CLASS 454
49 5,795,219
292 5,795,220

CLASS 455
3.2 5,797,082
25 5,797,083
73 5,797,084
88 5,797,085
179.1 5,797,086
181.1 5,797,087
234.1 5,797,090
345 5,797,088
403 5,797,089
404 5,797,091
5,797,092
5,797,093
412 5,797,094
422 5,797,095
433 5,797,096
456 5,797,097
464 5,797,098
466 5,797,099
518 5,797,100
551 5,797,101
557 5,797,102
567 5,797,103

CLASS 460
6 5,795,221
97 5,795,222
102 5,795,223

CLASS 463
2 5,795,224
13 5,795,225
22 5,795,226
34 5,795,227
42 5,795,228
47 5,795,229

CLASS 464
63 5,795,230
65 5,795,231
73 5,795,232
143 5,795,233

CLASS 470
16 5,795,234

CLASS 472
14 5,795,235

CLASS 473
129 5,795,236
131 5,795,237
214 5,795,238
255 5,795,239
291 5,795,240
300 5,795,241
303 5,795,242
310 5,795,243
317 5,795,244
335 5,795,245
340 5,795,246
374 5,795,247
406 5,795,248
5,795,249
426 5,795,250
427 5,795,251
434 5,795,252
489 5,795,253
552 5,795,254

CLASS 474
14 5,795,255
37 5,795,256
109 5,795,257

CLASS 475
348 5,795,258

CLASS 476
33 5,795,259

CLASS 477
20 5,795,260
48 5,795,261
92 5,795,262
113 5,795,263
124 5,795,264
143 5,795,265
169 5,795,266

CLASS 482
35 5,795,267
51 5,795,268
66 5,795,269
72 5,795,270
5,795,271
103 5,795,272
111 5,795,273
115 5,795,274
122 5,795,275
142 5,795,276
146 5,795,277

CLASS 483
4 5,795,278

CLASS 492
13 5,795,279

CLASS 493
22 5,795,280
154 5,795,281
210 5,795,282
243 5,795,283
405 5,795,284

CLASS 501
87 5,795,837

CLASS 502
103 5,795,838
126 5,795,839
325 5,795,841
327 5,795,840
400 5,795,842
416 5,795,843

CLASS 503
227 5,795,844

CLASS 504
117 5,795,845
128 5,795,846
206 5,795,847

CLASS 505
162 5,795,848
329 5,795,849

CLASS 507
203 5,795,850

CLASS 508
307 5,795,851

CLASS 510
151 5,795,852
182 5,795,853
312 5,795,854
376 5,795,855
444 5,795,856

CLASS 514
2 5,795,857
8 5,795,858
12 5,795,859
5,795,860
5,795,861
5,795,862
5,795,863
5,795,864
5,795,865
5,795,866
16 5,795,867
5,795,868
25 5,795,869
26 5,795,870
29 5,795,871
44 5,795,872
52 5,795,873
54 5,795,874
56 5,795,875
63 5,795,876
75 5,795,877
149 5,795,878
159 5,795,879
169 5,795,880
170 5,795,881
5,795,882
172 5,795,883
178 5,795,884
182 5,795,885
220 5,795,886
221 5,795,887
225.2 5,795,888
233.5 5,795,889
235.5 5,795,890
238.2 5,795,891
247 5,795,892
252 5,795,893
253 5,795,894
5,795,895
256 5,795,896
261 5,795,897
263 5,795,898
275 5,795,899
314 5,795,900
326 5,795,901
354 5,795,902
367 5,795,903
381 5,795,904
383 5,795,905
394 5,795,906
397 5,795,907
423 5,795,908
449 5,795,909
450 5,795,910
456 5,795,911
458 5,795,912
459 5,795,913
562 5,795,914
567 5,795,915
5,795,916
634 5,795,917
709 5,795,918

CLASS 521
28 5,795,919
64 5,795,920
146 5,795,921

CLASS 523
117 5,795,922
125 5,795,923
130 5,795,924
223 5,795,925
339 5,795,926
401 5,795,927

CLASS 524
48 5,795,928
60 5,795,929
100 5,795,930
276 5,795,932
494 5,795,931
596 5,795,933

CLASS 525
54.3 5,795,934
66 5,795,935
71 5,795,936
98 5,795,938
199 5,795,939
222 5,795,940
240 5,795,941
540 5,795,942

CLASS 526
181 5,795,944
309 5,795,945
348.1 5,795,946

CLASS 528
15 5,795,947
59 5,795,948
65 5,795,949
73 5,795,950
196 5,795,952
423 5,795,953

CLASS 530
324 5,795,954
5,795,955
326 5,795,956
329 5,795,957
331 5,795,958
350 5,795,961
5,795,962
5,795,963
351 5,795,964
387.3 5,795,965
388.23 5,795,966
5,795,967
402 5,795,968

CLASS 534
573 5,795,970
637 5,795,971

CLASS 536
23.1 5,795,972
23.7 5,795,974
24.1 5,795,975
25.4 5,795,976
27.13 5,795,977
120 5,795,978
123.12 5,795,979
124 5,795,980

CLASS 540
1 5,795,981

CLASS 544
11 5,795,983
100 5,795,984
106 5,795,985
115 5,795,986

CLASS 546
25 5,795,982

CLASS 548
528 5,795,987

CLASS 554
9 5,795,969

CLASS 588
256 5,795,285

CLASS 600
3 5,795,286
B1 199,939
25 5,795,287
29 5,795,288
207 5,795,289
210 5,795,290
232 5,795,291
323 5,795,292
372 5,795,293
407 5,795,294
5,795,295
443 5,795,296
447 5,795,297
450 5,795,298
459 5,795,299
500 5,795,300
5,795,301
509 5,795,303
546 5,795,304
549 5,795,305
558 5,795,306
561 5,795,307
567 5,795,308
569 5,795,309
595 5,795,310

CLASS 601
2 5,795,311
151 5,795,312
166 5,795,314

CLASS 602
18 5,795,315
27 5,795,316

CLASS 604
5 5,795,317
8 5,795,318
5,795,319
12 5,795,320
20 5,795,321
22 5,795,322
5,795,323
27 5,795,324
43 5,795,326
53 5,795,325
65 5,795,327
67 5,795,328
82 5,795,330
96 5,795,331
5,795,332
154 5,795,333
174 5,795,334
5,795,335
192 5,795,336
222 5,795,337
264 5,795,339
282 5,795,341
283 5,795,340
300 5,795,342
310 5,795,343
379 5,795,344
380 5,795,345
385.1 5,795,346
5,795,347
5,795,348
387 5,795,349
391 5,795,350

CLASS 606
4 5,795,351

CLASS 623
18 5,795,353

CLASS 701
7 5,797,105
11 5,797,106
29 5,797,107
51 5,797,108
65 5,797,109
84 5,797,110
103 5,797,111
201 5,797,112
5,797,113

CLASS 702
57 5,797,114
186 5,797,115

CLASS 704
10 5,797,116
222 5,797,118
223 5,797,119
226 5,797,120
230 5,797,121
255 5,797,122
256 5,797,123
275 5,797,124
277 5,797,125

CLASS 705
5 5,797,126
5,797,127
8 5,797,129
11 5,797,130
16 5,797,131
5,797,132
38 5,797,133
400 5,797,134

CLASS 706
53 5,797,135

CLASS 707
2 5,797,136
4 5,797,137
5 5,797,128
8 5,797,138
100 5,797,139
101 5,797,117

CLASSIFICATION OF DESIGNS

D1— 101 396,935
D2— 610 396,936
625 396,937
639 396,938
863 396,939
869 396,940
882 396,941
396,942
396,943
884 396,944
893 396,945
912 396,946
959 396,947
961 396,948

D3— 962 396,949
26 396,950
203 396,951
216 396,952
310 396,953
313 396,954
396,955
396,956
D4— 101 396,957
D5— 7 396,958
D6— 301 396,959
334 396,960
396,961
349 396,962
358 396,963
368 396,964
372 396,965
374 396,966
381 396,967
396 396,968
407 396,969
417 396,970
429 396,971
433 396,972
477 396,973
480 396,974
500 396,975
396,976

505 396,977
518 396,978
560 396,979
601 396,980
396,981
608 396,982
611 396,983
396,984
630 396,985
396,986
D7— 309 396,987
322 396,988
346 396,989
378 396,990
379 396,991
384 396,992
391 396,993
393 396,994
398 396,995
413 396,996
509 396,997
596 396,998
610 396,999
637 397,000
694 397,001
700 397,002
D8— 10 397,004
397,005
14 397,006
20 397,007
30 397,008
39 397,009
42 397,010
68 397,011
70 397,012
71 397,013
397,014
88 397,015
99 397,016
397,017
107 397,018
397,019

		397.020	D11—	25	397.056		182	397.092		209	397.129		78	397.166		330	397.193
		397.021		35	397.057			397.093		215	397.130		104	397.167		354	397.194
	310	397.022			397.058	D14—	100	397.094		315	397.131		108	397.168		356	397.195
	319	397.023		117	397.060		106	397.095			397.132		141.1	397.169			397.196
	338	397.024		130.1	397.061		107	397.096		321	397.133		145	397.170		364	397.197
	343	397.025		164	397.062		114	397.097		326	397.134			397.171		367	397.198
	346	397.026		216	397.063			397.098			397.135		149	397.172		377	397.199
	348	397.027		222	397.064			397.099			397.136		191	397.173		380	397.200
	360	397.028	D12—	91	397.065		114.3	397.100		335	397.137		197	397.174		387	397.201
	383	397.029		151	397.066			397.101	D18—	4	397.138		205	397.175		393	397.202
	387	397.030		162	397.067		114.4	397.103		15	397.139			397.176			
D9—	310	397.032		176	397.068		114.5	397.104		40	397.140		217	397.177	D24—	110.4	397.215
	339	397.033		178	397.069		115	397.105		43	397.141		219	397.178		117	397.216
	444	397.031		180	397.070		116	397.106		56	397.142			397.179		130	397.217
	448	397.034			397.071		117	397.107			397.143		220	397.180		140	397.220
	449	397.035		187	397.072		133	397.108	D19—	3	397.144		221	397.181		143	397.218
	520	397.036		191	397.073		137	397.109		11	397.145			397.182		147	397.219
	521	397.037		193	397.074		138	397.110		32	397.146			397.183		167	397.221
	523	397.038			397.075		151	397.111		36	397.147			397.184		190	397.222
	544	397.039		197	397.076			397.112			397.148			397.185		200	397.223
	574	397.040		209	397.077		156	397.113		51	397.149			397.186		214	397.224
D10—	6	397.041		215	397.078		191	397.114			397.150		239	397.187		215	397.225
	30	397.042		223	397.079		214	397.115		90	397.151		243	397.188		224	397.226
	52	397.043		314	397.080			397.116	D20—	18	397.152	D22—	118	397.190			
	64	397.044		318	397.081		216	397.117		41	397.153	D23—	214	397.203	D25—	62	397.227
	65	397.045		406	397.082		221	397.118			397.154		227	397.204		65	397.228
		397.046		408	397.189		228	397.119		43	397.155		238	397.205		68	397.229
	70	397.047		419	397.083		229	397.120	D21—	6	397.156			397.206		114	397.230
	72	397.048	D13—	107	397.084	D15—	15	397.121			397.157		241	397.207		119	397.231
	78	397.049		118	397.085		127	397.122		28	397.158		262	397.210		139	397.232
		397.050		137.2	397.086		128	397.123		32	397.159			397.211	D26—	63	397.234
	80	397.051		139.6	397.087		133	397.124		34	397.160			397.212		67	397.233
		397.052			397.088		140	397.125		37	397.161		290	397.213		104	397.208
	99	397.053		139.8	397.089	D16—	101	397.126		48	397.162		301	397.214			
	109	397.054		155	397.090		133	397.127			397.164		316	397.191			
	122	397.055		158	397.091		202	397.128		65	397.165		328	397.192			

CLASSIFICATION OF PLANTS

P—	9	10.552		43.2	10.555		53.3	10.558		87.12	10.561			10.564	
		10.553			10.556		69.1	10.559		100	10.562				
	42.1	10.554		51.1	10.557		69.2	10.560			10.563				

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GEOGRAPHICAL INDEX

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PATENTS

01 :	5,794,545	5,794,282	5,794,937	5,795,551	5,796,002	5,796,474
	5,794,659	5,794,299	5,794,943	5,795,569	5,796,020	5,796,479
	5,795,202	5,794,322	5,794,966	5,795,579	5,796,031	5,796,486
	5,795,906	5,794,325	5,794,971	5,795,591	5,796,038	5,796,500
	5,796,109	5,794,330	5,794,986	5,795,611	5,796,066	5,796,502
	5,796,762	5,794,344	5,795,004	5,795,626	5,796,074	5,796,504
02 :	5,795,030	5,794,346	5,795,035	5,795,627	5,796,096	5,796,506
	5,795,125	5,794,347	5,795,050	5,795,652	5,796,097	5,796,510
	5,795,620	5,794,359	5,795,051	5,795,675	5,796,100	5,796,537
04 :	5,794,300	5,794,368	5,795,067	5,795,682	5,796,104	5,796,541
	5,794,305	5,794,376	5,795,068	5,795,684	5,796,111	5,796,542
	5,794,509	5,794,380	5,795,074	5,795,716	5,796,130	5,796,543
	5,794,531	5,794,381	5,795,078	5,795,718	5,796,164	5,796,545
	5,794,612	5,794,389	5,795,089	5,795,724	5,796,171	5,796,550
	5,794,727	5,794,394	5,795,095	5,795,725	5,796,185	5,796,551
	5,794,783	5,794,401	5,795,097	5,795,727	5,796,215	5,796,552
	5,794,878	5,794,402	5,795,156	5,795,728	5,796,234	5,796,554
	5,794,889	5,794,419	5,795,169	5,795,729	5,796,251	5,796,558
	5,794,921	5,794,450	5,795,175	5,795,739	5,796,265	5,796,561
	5,794,973	5,794,470	5,795,182	5,795,745	5,796,267	5,796,570
	5,795,008	5,794,487	5,795,205	5,795,749	5,796,268	5,796,586
	5,795,172	5,794,546	5,795,215	5,795,760	5,796,269	5,796,589
	5,795,251	5,794,550	5,795,226	5,795,762	5,796,283	5,796,605
	5,795,387	5,794,559	5,795,275	5,795,779	5,796,295	5,796,609
	5,795,465	5,794,560	5,795,287	5,795,783	5,796,300	5,796,625
	5,795,493	5,794,570	5,795,291	5,795,793	5,796,303	5,796,644
	5,795,644	5,794,623	5,795,295	5,795,797	5,796,304	5,796,650
	5,795,818	5,794,626	5,795,299	5,795,798	5,796,309	5,796,656
	5,796,122	5,794,629	5,795,300	5,795,820	5,796,314	5,796,657
	5,796,163	5,794,634	5,795,303	5,795,823	5,796,319	5,796,665
	5,796,256	5,794,645	5,795,324	5,795,824	5,796,340	5,796,667
	5,796,312	5,794,656	5,795,325	5,795,829	5,796,341	5,796,670
	5,796,391	5,794,661	5,795,326	5,795,849	5,796,354	5,796,671
	5,796,403	5,794,680	5,795,327	5,795,861	5,796,358	5,796,684
	5,796,617	5,794,700	5,795,332	5,795,863	5,796,359	5,796,715
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	5,797,121	5,794,843	5,795,394	5,795,917	5,796,401	5,796,766
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05 :	5,795,259	5,794,855	5,795,414	5,795,954	5,796,414	5,796,771
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	5,794,271	5,794,908	5,795,451	5,795,976	5,796,433	5,796,783
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For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1205 O.G. 4, on December 2, 1997.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1997, and were announced in the *Official Gazette* at 1201 O.G. 63, on August 19, 1997.

The schedule of PCT fees (in U.S. dollars), effective January 1, 1998, is as follows:

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U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
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— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	105.00
— Confirmation fee	52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
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— All claims presented satisfied provisions of PCT Article 33(2) to (4)	49.00	98.00
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	360.00	720.00
USPTO was ISA but not IPEA	395.00	790.00
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	535.00	1070.00
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	465.00	930.00
Other National fees		
— For each independent claim in excess of 3	41.00	82.00
— For each claim in excess of 20	11.00	22.00
— For each application containing a multiple dependent claim	135.00	270.00
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 10, 1997

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 22, 1995 for which maintenance fees due at 3 years

and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,442,815 through 5,444,869
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 20, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,040,243 through 5,042,086
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on August 18, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,686,710 through 4,688,268
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f))	$525.00
By other than a small entity	$1,050.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f))	$1,050.00
By other than a small entity	$2,100.00

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f))	$1,580.00
By other than a small entity	$3,160.00

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f))	$65.00
By other than a small entity	$130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable	$700.00
(2) unintentional	$1,640.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED June 17, 1998
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 32,666	07/064,949	05/17/88
(4,594,751)	(06/486,948)	(06/17/86)
Re. 33,037	07/145,157	08/29/89
(4,595,175)	(06/718,971)	(06/17/86)
Re. 33,400	07/207,133	10/23/90
(4,595,895)	(06/751,252)	(06/17/86)
Re. 34,219	07/591,789	04/13/93
(4,933,981)	(07/333,335)	(06/12/90)
4,594,742	06/448,417	06/17/86
4,594,753	06/535,797	06/17/86
4,594,762	06/703,350	06/17/86
4,594,778	06/713,521	06/17/86
4,594,784	06/622,555	06/17/86
4,594,800	06/754,471	06/17/86
4,594,801	06/693,912	06/17/86
4,594,806	06/739,193	06/17/86
4,594,821	06/706,236	06/17/86
4,594,827	06/779,591	06/17/86
4,594,835	06/536,450	06/17/86
4,594,843	06/647,516	06/17/86
4,594,856	06/707,847	06/17/86
4,594,858	06/636,068	06/17/86
4,594,860	06/653,792	06/17/86
4,594,865	06/678,748	06/17/86
4,594,875	06/652,771	06/17/86
4,594,881	06/686,845	06/17/86
4,594,886	06/707,555	06/17/86
4,594,894	06/647,519	06/17/86
4,594,895	06/651,963	06/17/86
4,594,896	06/659,798	06/17/86
4,594,901	06/669,966	06/17/86
4,594,905	06/673,698	06/17/86
4,594,913	06/581,319	06/17/86
4,594,915	06/469,827	06/17/86
4,594,917	06/680,606	06/17/86
4,594,918	06/632,801	06/17/86
4,594,919	06/553,053	06/17/86
4,594,920	06/665,780	06/17/86
4,594,925	06/671,224	06/17/86
4,594,928	06/575,295	06/17/86
4,594,932	06/633,865	06/17/86
4,594,936	06/668,436	06/17/86
4,594,937	06/701,900	06/17/86
4,594,942	06/701,035	06/17/86
4,594,946	06/726,426	06/17/86
4,594,952	06/657,172	06/17/86
4,594,958	06/696,729	06/17/86
4,594,961	06/676,116	06/17/86
4,594,963	06/657,227	06/17/86
4,594,968	06/586,278	06/17/86
4,594,973	06/748,281	06/17/86
4,594,984	06/755,213	06/17/86
4,594,986	06/692,639	06/17/86
4,594,993	06/529,533	06/17/86
4,594,995	06/680,273	06/17/86
4,594,997	06/670,832	06/17/86
4,595,018	06/617,936	06/17/86
4,595,019	06/606,981	06/17/86
4,595,041	06/635,667	06/17/86
4,595,051	06/599,686	06/17/86
4,595,055	06/608,057	06/17/86

Patent Number	Serial Number	Issue Date
4,595,056	06/593,438	06/17/86
4,595,059	06/661,152	06/17/86
4,595,065	06/567,847	06/17/86
4,595,078	06/703,851	06/17/86
4,595,083	06/672,962	06/17/86
4,595,084	06/661,496	06/17/86
4,595,108	06/460,385	06/17/86
4,595,119	06/744,416	06/17/86
4,595,139	06/670,166	06/17/86
4,595,142	06/667,426	06/17/86
4,595,149	06/652,776	06/17/86
4,595,164	06/672,896	06/17/86
4,595,178	06/687,634	06/17/86
4,595,180	06/657,982	06/17/86
4,595,182	06/568,370	06/17/86
4,595,187	06/760,208	06/17/86
4,595,189	06/451,800	06/17/86
4,595,196	06/541,355	06/17/86
4,595,200	06/621,632	06/17/86
4,595,201	06/561,595	06/17/86
4,595,202	06/621,513	06/17/86
4,595,206	06/701,788	06/17/86
4,595,219	06/462,382	06/17/86
4,595,222	06/655,253	06/17/86
4,595,224	06/628,820	06/17/86
4,595,233	06/621,941	06/17/86
4,595,234	06/662,568	06/17/86
4,595,238	06/654,150	06/17/86
4,595,243	06/649,244	06/17/86
4,595,245	06/624,966	06/17/86
4,595,247	06/558,819	06/17/86
4,595,248	06/487,448	06/17/86
4,595,249	06/689,041	06/17/86
4,595,254	06/497,211	06/17/86
4,595,256	06/482,358	06/17/86
4,595,259	06/572,023	06/17/86
4,595,261	06/541,604	06/17/86
4,595,266	06/609,542	06/17/86
4,595,273	06/595,359	06/17/86
4,595,280	06/556,298	06/17/86
4,595,310	06/688,635	06/17/86
4,595,324	06/425,163	06/17/86
4,595,328	06/492,212	06/17/86
4,595,334	06/572,086	06/17/86
4,595,352	06/691,907	06/17/86
4,595,356	06/497,177	06/17/86
4,595,357	06/730,282	06/17/86
4,595,359	06/638,475	06/17/86
4,595,370	06/770,705	06/17/86
4,595,375	06/551,835	06/17/86
4,595,377	06/679,711	06/17/86
4,595,405	06/684,655	06/17/86
4,595,417	06/665,850	06/17/86
4,595,430	06/607,773	06/17/86
4,595,444	06/551,748	06/17/86
4,595,447	06/680,136	06/17/86
4,595,460	06/531,289	06/17/86
4,595,464	06/757,364	06/17/86
4,595,467	06/759,886	06/17/86
4,595,473	06/645,089	06/17/86
4,595,484	06/803,190	06/17/86
4,595,499	06/784,904	06/17/86
4,595,505	06/615,480	06/17/86
4,595,507	06/637,639	06/17/86
4,595,530	06/590,357	06/17/86
4,595,531	06/602,279	06/17/86
4,595,532	06/718,127	06/17/86
4,595,544	06/604,914	06/17/86
4,595,545	06/454,718	06/17/86
4,595,554	06/669,193	06/17/86
4,595,555	06/580,285	06/17/86
4,595,567	06/687,359	06/17/86
4,595,569	06/691,114	06/17/86
4,595,571	06/647,994	06/17/86
4,595,581	06/741,490	06/17/86
4,595,584	06/689,405	06/17/86
4,595,585	06/601,355	06/17/86
4,595,588	06/613,640	06/17/86
4,595,592	06/676,203	06/17/86
4,595,594	06/533,821	06/17/86
4,595,604	06/631,973	06/17/86
4,595,605	06/631,972	06/17/86
4,595,606	06/631,974	06/17/86
4,595,607	06/762,626	06/17/86
4,595,612	06/739,486	06/17/86
4,595,620	06/633,735	06/17/86
4,595,622	06/708,678	06/17/86
4,595,625	06/645,625	06/17/86
4,595,636	06/724,000	06/17/86
4,595,637	06/544,668	06/17/86
4,595,639	06/647,885	06/17/86
4,595,653	06/709,062	06/17/86
4,595,656	06/568,698	06/17/86
4,595,663	06/569,394	06/17/86
4,595,664	06/578,756	06/17/86
4,595,667	06/722,821	06/17/86
4,595,672	06/680,379	06/17/86
4,595,673	06/676,444	06/17/86
4,595,680	06/599,341	06/17/86
4,595,682	06/554,812	06/17/86
4,595,692	06/735,250	06/17/86
4,595,698	06/500,396	06/17/86
4,595,700	06/703,973	06/17/86
4,595,701	06/685,893	06/17/86
4,595,706	06/773,901	06/17/86
4,595,707	06/700,791	06/17/86
4,595,721	06/617,070	06/17/86
4,595,732	06/604,570	06/17/86
4,595,733	06/650,866	06/17/86
4,595,742	06/708,028	06/17/86
4,595,748	06/661,201	06/17/86
4,595,751	06/713,797	06/17/86
4,595,758	06/677,614	06/17/86
4,595,763	06/507,910	06/17/86
4,595,764	06/633,701	06/17/86
4,595,777	06/707,881	06/17/86
4,595,780	06/568,072	06/17/86
4,595,788	06/674,786	06/17/86
4,595,789	06/604,915	06/17/86
4,595,806	06/679,294	06/17/86
4,595,807	06/712,372	06/17/86
4,595,815	06/550,151	06/17/86
4,595,822	06/620,067	06/17/86
4,595,826	06/637,316	06/17/86
4,595,836	06/626,368	06/17/86
4,595,847	06/543,747	06/17/86
4,595,851	06/664,975	06/17/86
4,595,855	06/684,881	06/17/86
4,595,856	06/766,236	06/17/86
4,595,859	06/592,938	06/17/86
4,595,861	06/635,770	06/17/86
4,595,865	06/793,368	06/17/86
4,595,881	06/738,865	06/17/86
4,595,883	06/647,789	06/17/86
4,595,885	06/655,823	06/17/86
4,595,888	06/602,650	06/17/86
4,595,900	06/668,942	06/17/86
4,595,908	06/386,394	06/17/86
4,595,910	06/518,146	06/17/86
4,595,929	06/367,853	06/17/86
4,595,932	06/486,120	06/17/86
4,595,934	06/617,942	06/17/86
4,595,947	06/544,893	06/17/86
4,595,957	06/610,442	06/17/86
4,595,961	06/563,740	06/17/86
4,595,964	06/461,057	06/17/86
4,595,978	06/797,171	06/17/86
4,595,979	06/482,578	06/17/86
4,595,994	06/573,528	06/17/86
4,596,002	06/624,488	06/17/86
4,596,004	06/532,113	06/17/86
4,596,008	06/526,433	06/17/86
4,596,009	06/741,364	06/17/86
4,596,013	06/460,557	06/17/86
4,596,015	06/750,660	06/17/86
4,596,020	06/541,354	06/17/86

Patent Number	Serial Number	Issue Date
4,596,025	06/518,566	06/17/86
4,596,030	06/648,298	06/17/86
4,596,045	06/610,611	06/17/86
4,596,051	06/527,054	06/17/86
4,932,077	07/349,485	06/12/90
4,932,087	07/369,339	06/12/90
4,932,104	07/413,531	06/12/90
4,932,117	07/164,840	06/12/90
4,932,120	07/419,825	06/12/90
4,932,125	07/459,443	06/12/90
4,932,127	07/223,460	06/12/90
4,932,129	07/279,649	06/12/90
4,932,136	07/379,624	06/12/90
4,932,137	07/368,194	06/12/90
4,932,146	07/208,745	06/12/90
4,932,148	07/299,665	06/12/90
4,932,153	07/408,253	06/12/90
4,932,165	07/239,826	06/12/90
4,932,170	07/373,408	06/12/90
4,932,175	07/281,077	06/12/90
4,932,177	07/302,807	06/12/90
4,932,181	07/380,702	06/12/90
4,932,187	07/312,267	06/12/90
4,932,190	07/254,173	06/12/90
4,932,191	07/374,886	06/12/90
4,932,192	07/367,942	06/12/90
4,932,193	07/413,397	06/12/90
4,932,194	06/299,020	06/12/90
4,932,195	07/350,755	06/12/90
4,932,197	07/291,277	06/12/90
4,932,202	07/377,464	06/12/90
4,932,204	07/332,195	06/12/90
4,932,210	07/234,407	06/12/90
4,932,211	07/241,024	06/12/90
4,932,213	07/309,584	06/12/90
4,932,215	07/359,409	06/12/90
4,932,222	07/259,296	06/12/90
4,932,224	07/346,645	06/12/90
4,932,227	07/247,196	06/12/90
4,932,228	07/148,731	06/12/90
4,932,237	07/222,654	06/12/90
4,932,239	07/241,813	06/12/90
4,932,240	07/377,891	06/12/90
4,932,247	07/223,365	06/12/90
4,932,250	07/220,014	06/12/90
4,932,251	07/288,217	06/12/90
4,932,262	07/371,155	06/12/90
4,932,263	07/371,141	06/12/90
4,932,265	07/352,684	06/12/90
4,932,266	07/271,752	06/12/90
4,932,270	07/326,820	06/12/90
4,932,272	07/232,803	06/12/90
4,932,273	07/278,401	06/12/90
4,932,282	07/215,161	06/12/90
4,932,284	07/380,030	06/12/90
4,932,287	07/268,316	06/12/90
4,932,291	07/404,860	06/12/90
4,932,294	07/381,534	06/12/90
4,932,300	07/316,757	06/12/90
4,932,311	07/229,062	06/12/90
4,932,317	07/369,512	06/12/90
4,932,323	07/303,572	06/12/90
4,932,325	07/382,731	06/12/90
4,932,328	07/369,303	06/12/90
4,932,329	07/392,416	06/12/90
4,932,330	06/904,724	06/12/90
4,932,332	07/396,627	06/12/90
4,932,336	07/413,530	06/12/90
4,932,341	07/348,943	06/12/90
4,932,344	07/194,940	06/12/90
4,932,345	07/286,384	06/12/90
4,932,347	07/230,138	06/12/90
4,932,350	07/250,255	06/12/90
4,932,353	07/279,721	06/12/90
4,932,363	07/279,157	06/12/90
4,932,370	07/407,338	06/12/90
4,932,376	07/301,022	06/12/90
4,932,378	07/111,880	06/12/90
4,932,380	07/264,483	06/12/90
4,932,392	07/417,916	06/12/90
4,932,393	07/312,806	06/12/90
4,932,398	07/290,484	06/12/90
4,932,399	07/254,186	06/12/90
4,932,403	07/337,901	06/12/90
4,932,405	07/082,548	06/12/90
4,932,417	07/219,253	06/12/90
4,932,418	07/268,009	06/12/90
4,932,422	07/364,841	06/12/90
4,932,425	07/230,900	06/12/90
4,932,436	07/410,082	06/12/90
4,932,437	07/309,257	06/12/90
4,932,442	07/340,745	06/12/90
4,932,443	07/341,366	06/12/90
4,932,445	07/211,710	06/12/90
4,932,449	07/406,391	06/12/90
4,932,453	07/224,403	06/12/90
4,932,456	07/374,757	06/12/90
4,932,458	07/301,153	06/12/90
4,932,463	07/257,916	06/12/90
4,932,464	07/417,933	06/12/90
4,932,469	07/417,049	06/12/90
4,932,470	07/325,980	06/12/90
4,932,472	07/343,959	06/12/90
4,932,477	07/382,309	06/12/90
4,932,482	07/380,426	06/12/90
4,932,487	07/395,983	06/12/90
4,932,489	07/178,624	06/12/90
4,932,491	07/326,815	06/12/90
4,932,492	07/269,442	06/12/90
4,932,494	07/275,051	06/12/90
4,932,502	07/310,553	06/12/90
4,932,504	07/386,295	06/12/90
4,932,510	07/058,209	06/12/90
4,932,512	07/420,435	06/12/90
4,932,513	07/253,406	06/12/90
4,932,514	07/229,777	06/12/90
4,932,516	07/197,106	06/12/90
4,932,519	07/252,408	06/12/90
4,932,522	07/410,307	06/12/90
4,932,523	07/376,309	06/12/90
4,932,526	07/316,493	06/12/90
4,932,528	07/358,588	06/12/90
4,932,530	07/272,472	06/12/90
4,932,537	06/909,646	06/12/90
4,932,538	07/215,598	06/12/90
4,932,548	07/408,895	06/12/90
4,932,552	07/238,717	06/12/90
4,932,553	07/176,029	06/12/90
4,932,557	07/409,895	06/12/90
4,932,559	07/261,378	06/12/90
4,932,563	07/234,509	06/12/90
4,932,565	07/314,725	06/12/90
4,932,570	07/326,031	06/12/90
4,932,572	07/339,262	06/12/90
4,932,581	07/347,945	06/12/90
4,932,585	07/376,295	06/12/90
4,932,587	07/398,914	06/12/90
4,932,593	07/224,761	06/12/90
4,932,594	07/197,926	06/12/90
4,932,595	07/313,509	06/12/90
4,932,597	07/280,381	06/12/90
4,932,601	07/319,932	06/12/90
4,932,610	06/838,649	06/12/90
4,932,611	07/317,663	06/12/90
4,932,637	07/301,025	06/12/90
4,932,642	07/401,986	06/12/90
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4,932,651	07/416,693	06/12/90
4,932,652	07/243,639	06/12/90
4,932,657	07/243,710	06/12/90
4,932,658	07/345,223	06/12/90
4,932,659	07/177,134	06/12/90
4,932,669	07/332,334	06/12/90
4,932,682	07/260,065	06/12/90
4,932,691	07/305,788	06/12/90
4,932,692	07/325,936	06/12/90

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4,932,699	07/393,384	06/12/90
4,932,711	07/365,756	06/12/90
4,932,713	07/297,429	06/12/90
4,932,714	07/245,581	06/12/90
4,932,719	07/406,668	06/12/90
4,932,720	07/270,671	06/12/90
4,932,738	07/366,047	06/12/90
4,932,746	07/197,206	06/12/90
4,932,747	07/404,243	06/12/90
4,932,748	07/377,983	06/12/90
4,932,754	07/318,506	06/12/90
4,932,762	07/282,665	06/12/90
4,932,765	07/111,931	06/12/90
4,932,766	07/344,769	06/12/90
4,932,767	07/384,940	06/12/90
4,932,770	07/286,946	06/12/90
4,932,778	07/387,906	06/12/90
4,932,779	07/293,621	06/12/90
4,932,780	07/116,233	06/12/90
4,932,782	07/224,976	06/12/90
4,932,796	07/351,961	06/12/90
4,932,799	07/227,534	06/12/90
4,932,801	07/329,614	06/12/90
4,932,808	07/257,329	06/12/90
4,932,810	07/411,763	06/12/90
4,932,813	07/214,405	06/12/90
4,932,816	07/309,193	06/12/90
4,932,827	07/272,114	06/12/90
4,932,829	07/281,405	06/12/90
4,932,830	07/329,163	06/12/90
4,932,833	07/318,770	06/12/90
4,932,834	07/318,542	06/12/90
4,932,840	07/408,217	06/12/90
4,932,851	07/288,345	06/12/90
4,932,852	07/178,040	06/12/90
4,932,862	07/225,940	06/12/90
4,932,863	07/323,380	06/12/90
4,932,865	07/220,303	06/12/90
4,932,866	07/230,337	06/12/90
4,932,867	07/300,887	06/12/90
4,932,873	07/306,494	06/12/90
4,932,874	07/347,003	06/12/90
4,932,876	07/244,066	06/12/90
4,932,879	07/306,648	06/12/90
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4,932,882	07/369,323	06/12/90
4,932,883	07/384,089	06/12/90
4,932,888	07/367,950	06/12/90
4,932,890	07/296,087	06/12/90
4,932,891	07/396,978	06/12/90
4,932,898	07/307,107	06/12/90
4,932,900	07/410,049	06/12/90
4,932,902	07/326,302	06/12/90
4,932,907	07/253,047	06/12/90
4,932,908	07/163,578	06/12/90
4,932,909	07/360,990	06/12/90
4,932,913	07/152,932	06/12/90
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4,932,926	07/409,263	06/12/90
4,932,936	07/150,084	06/12/90
4,932,939	07/319,423	06/12/90
4,932,942	07/217,455	06/12/90
4,932,945	07/286,249	06/12/90
4,932,949	07/249,564	06/12/90
4,932,950	07/203,371	06/12/90
4,932,957	07/168,877	06/12/90
4,932,965	07/286,625	06/12/90
4,932,967	07/253,066	06/12/90
4,932,972	07/186,330	06/12/90
4,932,980	07/223,793	06/12/90
4,932,981	07/137,456	06/12/90
4,932,984	07/386,834	06/12/90
4,932,986	07/349,003	06/12/90
4,932,987	07/356,846	06/12/90
4,932,991	07/267,153	06/12/90
4,932,992	07/266,963	06/12/90
4,932,993	07/268,095	06/12/90
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4,933,007	07/424,082	06/12/90
4,933,009	07/201,943	06/12/90
4,933,018	07/390,637	06/12/90
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4,933,077	07/222,965	06/12/90
4,933,083	06/723,128	06/12/90
4,933,084	06/690,977	06/12/90
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4,933,100	07/145,427	06/12/90
4,933,109	06/916,873	06/12/90
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4,933,113	07/349,284	06/12/90
4,933,117	07/370,505	06/12/90
4,933,121	07/224,033	06/12/90
4,933,122	07/155,248	06/12/90
4,933,125	07/342,954	06/12/90
4,933,130	07/237,989	06/12/90
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4,933,173	07/354,657	06/12/90
4,933,177	07/206,821	06/12/90
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4,933,205	07/226,867	06/12/90
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4,933,231	07/306,690	06/12/90
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4,933,236	07/095,186	06/12/90
4,933,241	07/311,795	06/12/90
4,933,243	07/233,852	06/12/90
4,933,244	07/292,806	06/12/90
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4,933,259	07/236,089	06/12/90
4,933,274	07/270,030	06/12/90
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4,933,322	07/037,972	06/12/90
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4,933,341	07/414,551	06/12/90
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4,933,352	07/033,593	06/12/90
4,933,355	07/337,366	06/12/90
4,933,358	07/336,937	06/12/90
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4,933,376	07/184,803	06/12/90
4,933,380	07/403,056	06/12/90
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4,933,394	07/045,096	06/12/90
4,933,395	07/307,635	06/12/90
4,933,414	07/225,316	06/12/90
4,933,416	07/164,393	06/12/90
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4,933,420	07/248,509	06/12/90
4,933,424	07/292,136	06/12/90
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4,933,435	07/333,488	06/12/90
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4,933,442	07/375,987	06/12/90
4,933,445	07/277,610	06/12/90
4,933,446	07/133,605	06/12/90
4,933,454	07/341,092	06/12/90
4,933,459	07/285,171	06/12/90
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4,933,472	07/333,971	06/12/90
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4,933,531	07/372,004	06/12/90
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4,933,544	07/300,333	06/12/90
4,933,552	07/254,328	06/12/90
4,933,558	07/304,155	06/12/90
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4,933,572	07/418,908	06/12/90
4,933,581	07/337,921	06/12/90
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4,933,593	06/835,406	06/12/90
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4,933,620	07/351,504	06/12/90
4,933,622	07/290,396	06/12/90
4,933,639	07/310,542	06/12/90
4,933,656	07/069,689	06/12/90
4,933,658	07/350,006	06/12/90
4,933,663	07/353,548	06/12/90
4,933,665	07/405,438	06/12/90
4,933,666	07/385,318	06/12/90
4,933,667	07/248,822	06/12/90
4,933,669	07/392,865	06/12/90
4,933,683	07/284,508	06/12/90
4,933,687	07/252,670	06/12/90
4,933,690	07/264,559	06/12/90
4,933,698	07/302,793	06/12/90
4,933,714	07/368,978	06/12/90
4,933,717	07/293,649	06/12/90
4,933,728	07/309,929	06/12/90
4,933,753	07/278,332	06/12/90
4,933,765	07/238,694	06/12/90
4,933,769	07/278,705	06/12/90
4,933,770	07/155,475	06/12/90
4,933,777	07/343,542	06/12/90
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4,933,781	07/262,109	06/12/90
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4,933,800	07/354,453	06/12/90
4,933,806	07/161,080	06/12/90
4,933,807	07/397,766	06/12/90
4,933,808	07/350,862	06/12/90
4,933,809	07/218,706	06/12/90
4,933,812	07/420,080	06/12/90
4,933,814	07/299,660	06/12/90
4,933,815	07/269,880	06/12/90
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4,933,841	07/204,749	06/12/90
4,933,842	07/162,399	06/12/90
4,933,855	07/278,444	06/12/90
4,933,856	06/942,693	06/12/90
4,933,857	07/175,860	06/12/90
4,933,859	07/263,416	06/12/90
4,933,864	07/253,231	06/12/90
4,933,877	07/174,807	06/12/90
4,933,880	07/206,788	06/12/90
4,933,884	07/151,215	06/12/90
4,933,889	07/187,715	06/12/90
4,933,890	07/365,668	06/12/90
4,933,896	07/152,293	06/12/90
4,933,917	07/330,513	06/12/90
4,933,922	07/273,543	06/12/90
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4,933,944	07/317,207	06/12/90
4,933,954	06/887,531	06/12/90
4,933,959	07/349,018	06/12/90
4,933,963	07/275,187	06/12/90
4,933,974	07/393,499	06/12/90
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4,933,980	07/348,739	06/12/90
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4,523,819	06/497,645	05/24/83	06/18/85	06/23/98
4,766,178	07/048,854	05/12/87	08/23/88	06/23/98
4,841,878	07/087,996	08/17/87	06/27/89	06/19/98
4,850,133	07/291,507	12/29/88	07/25/89	06/25/98
4,870,585	07/107,168	10/13/87	09/26/89	06/25/98
4,878,779	07/306,089	02/03/89	11/07/89	06/19/98
5,103,758	07/687,165	04/18/91	04/14/92	06/25/98
5,171,330	07/711,763	06/07/91	12/15/92	06/23/98
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5,236,352	07/958,967	10/08/92	08/17/93	06/25/98
5,265,807	07/890,849	06/01/92	11/30/93	06/19/98
5,280,932	08/085,454	06/30/93	01/25/94	06/19/98
5,282,660	07/968,348	10/29/92	02/01/94	06/25/98
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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,890,383, Re. S.N. 09/118,747, Jul. 17, 1998, Cl. 029/841, METHOD FOR PRODUCING DISPLAYS AND MODULAR COMPONENTS, Marvin Lumbard, et. al., Owner of Record: *Siemens Microelectronics, Inc., Cupertino, Calif.*, Attorney or Agent: Heather S. Vance, Ex. Gp.: 3721

5,250,490, Re. S.N. 09/116,870, Jul. 16, 1998, Cl. 502/313, NOBLE METAL SUPPORTED ON A BASE METAL CATALYST, James S. Ritscher, et. al., Owner of Record: *OSI Specialties, Inc., Danbury, Conn.*, Attorney or Agent: Andrew S. Reiskind, Ex. Gp.: 1754

5,396,071, Re. S.N. 08/810,486, Mar. 3, 1997, Cl. 250/358.1, MODULARIZED ASSEMBLY FOR BULK MATERIAL ANALYZER, Thomas L. Atwell, et. al., Owner of Record: *Gamma-Metrics, San Diego, Calif.*, Attorney or Agent: Edward W. Callan, Ex. Gp.: 2878

5,480,839, Re. S.N. 09/000,865, Dec. 30, 1997, Cl. 437/209, SEMICONDUCTOR DEVICE MANUFACTURING METHOD, Hirokazu Ezawa, et. al., Owner of Record: *Kabushiki Kaisha Toshiba, Kawasaki-shi, Japan*, Attorney or Agent: Richard V. Burgujan, Ex. Gp.: 1763

5,490,891, Re. S.N. 09/023,780, Feb. 13, 1998, Cl. 156/073.1, METHOD OF MANUFACTURING A MEMORY CARD PACKAGE, James Farquhar, et. al., Owner of Record: *Duel Systems, San Jose, Calif.*, Attorney or Agent: Robert M. Barrett, Ex. Gp.: 1733

5,504,772, Re. S.N. 09/053,422, Apr. 1, 1998, Cl. 372/102, LASER WITH ELECTRICALLY-CONTROLLED GRATING REFLECTOR, David A. G. Deacon, et. al., Owner of Record: *Gemfire Corp., Palo Alto, Calif.*, Attorney or Agent: Edward J. Keeling, Ex. Gp.: 2874

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5,537,157, Re. S.N. 09/113,615, Jul. 10, 1998, Cl. 348/722, MULTI-FORMAT AUDIO/VIDEO PRODUCTION SYSTEM, Kinya Washino, et. al., Owner of Record: *Inventor*, Attorney or Agent: John G. Posa, Ex. Gp.: 2711

5,565,663, Re. S.N. 09/115,750, Jul. 15, 1998, Cl. 200/017.R, ELECTRICAL SWITCH, Thomas Kossakowski, et. al., Owner of Record: *Leopold Kostal GMBH and CO.KG, Ludenscheid, Germany*, Attorney or Agent: James N. Kallis, Ex. Gp.: 2832

5,626,409, Re. S.N. 09/118,182, Jul. 17, 1998, Cl. 353/031, PROJECTION-TYPE DISPLAY APPARATUS, Tadaaki Nakayama, et. al., Owner of Record: *Seiko Epson Corp., Tokyo, Japan*, Attorney or Agent: David J. Zibelli, Ex. Gp.: 3641

5,645,836, Re. S.N. 09/109,154, Jul. 2, 1998, Cl. 424/181.1, ANTI-AIDS IMMUNOTOXINS, George Barrie Kitto, Owner of Record: *Research Development Foundation, Carson City, Nev.*, Attorney or Agent: Benjamin Aaron Adler, Ex. Gp.: 1806

5,653,148, Re. S.N. 09/115,764, Jul. 15, 1998, Cl. 074/502.4, CONDUIT SHORTENING ADJUSTMENT ASSEMBLY, Michael Reasoner, Owner of Record: *Teleflex Inc., Plymouth Meeting, Pa.*, Attorney or Agent: Harold W. Milton, Jr., Ex. Gp.: 3622

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,653,865, Re. S.N. 90/005,024, Jun. 24, 1998, Cl. 349/101, LIQUID CRYSTAL DISPLAY DEVICE, Yasuhiko Kande, et. al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Melvin Kraus, Antonelli Terry Stout and Kraus, Arlington, Va., Ex. Gp.: 2871, Requester: Owner

4,996,780, Re. S.N. 90/005,025, Jun. 25, 1998, Cl. 034/323, METHOD AND APPARATUS FOR DRYING BRINE SHRIMP CYSTS, Simon Soul-Sun Goe, Owner of Record: *Inventor*, Attorney or Agent: A. Ray Osburn, Mallinckrodt and Mallinckrodt, Ogden, Utah, Ex. Gp.: 3744, Requester: Evan R. Witt, Madson and Metcalf, Salt Lake City, Utah

5,149,579, Re. S.N. 90/005,026, Jun. 26, 1998, Cl. 428/213, POLYPROPYLENE FOAM SHEETS, John J. Park, et. al., Owner of Record: James River Corp. of Virginia, Richmond, Va., Attorney or Agent: Charles M. Leedom, Jr., Sixbey Friedman Leedom and Ferguson, McLean, Va., Ex. Gp.: 1774, Requester: Kenyon and Kenyon, New York, N.Y.

5,180,751, Re. S.N. 90/005,027, Jun. 29, 1998, Cl. 521/051, POLYPROPYLENE FOAM SHEETS, John J. Park, et. al., Owner of Record: James River Corp. of Virginia, Richmond, Va., Attorney or Agent: Charles M. Leedom, Jr., Sixbey Friedman Leedom and Ferguson, McLean, Va., Ex. Gp.: 1711, Requester: Kenyon and Kenyon, New York, N.Y.

5,440,578, Re. S.N. 90/005,023, Jun. 23, 1998, Cl. 372/059, GAS REPLENISHMENT METHOD AND APPARATUS FOR EXCIMER LASERS, Richard L. Sandstrom, Owner of Record: *Cymer Inc., San Diego, Calif.*, Attorney or Agent: Donald C. Mallery, Blakely Sokoloff Taylor and Zafman, Los Angeles, Calif., Ex. Gp.: 2874, Requester: John F. Carney, Armstrong Westerman Hattori McLeland and Naughton, Washington, D.C.

5,553,083, Re. S.N. 90/005,028, Jun. 26, 1998, Cl. 371/032, METHOD FOR QUICKLY AND RELIABLY TRANSMITTING FRAMES OF DATA OVER COMMUNICATIONS LINKS, C. Kenneth Miller, Owner of Record: *Starburst Communications Corp., Concord, Mass.*, Attorney or Agent: Testa Hurwitz and Thiebeault, Boston, Mass., Ex. Gp.: 2786, Requester: Owner

5,670,781, Re. S.N. 90/005,029, Jun. 29, 1998, Cl. 250/231.16, PHOTOELECTRICAL ENCODER, Robert Set-

backen, Owner of Record: *Renco Encoders, Inc., Goleta, Calif.*, Attorney or Agent: David Toren, Ako Toren, New York, N.Y., Ex. Gp.: 2878, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
July 7, 1998
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
118,740	71/100,157	10/02/1917
350,362	71/385,024	09/28/1937
350,370	71/386,505	09/28/1937
350,398	71/390,256	09/28/1937
350,406	71/390,962	09/28/1937
350,429	71/391,467	09/28/1937
350,432	71/391,479	09/28/1937
350,447	71/391,756	09/28/1937
350,452	71/391,870	09/28/1937
350,486	71/392,434	09/28/1937
350,494	71/392,588	09/28/1937
350,513	71/392,705	09/28/1937
350,514	71/392,707	09/28/1937
350,542	71/392,879	09/28/1937
350,571	71/393,267	09/28/1937
350,602	71/393,639	09/28/1937
350,604	71/393,661	09/28/1937
626,129	71/691,185	05/01/1956
639,282	72/009,034	01/01/1957
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652,233	72/023,003	10/01/1957
652,242	72/012,376	10/01/1957
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652,247	72/018,671	10/01/1957
652,250	72/019,961	10/01/1957
652,268	72/016,516	10/01/1957
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652,287	72/023,831	10/01/1957
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652,317	72/008,383	10/01/1957
652,320	72/003,885	10/01/1957
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652,362	72/019,801	10/01/1957
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652,418	72/021,969	10/01/1957
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652,517	72/022,073	10/01/1957
652,526	72/019,352	10/01/1957
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1,074,287	73/106,424	09/27/1977
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1,074,687	73/116,697	10/04/1977
1,074,688	73/012,995	10/04/1977
1,074,690	73/081,498	10/04/1977
1,074,692	73/093,757	10/04/1977
1,074,694	73/096,284	10/04/1977
1,074,700	73/107,385	10/04/1977
1,074,711	73/091,049	10/04/1977
1,074,715	73/075,328	10/04/1977
1,074,717	73/104,716	10/04/1977
1,074,720	73/061,251	10/04/1977
1,074,723	73/091,533	10/04/1977
1,074,724	73/092,799	10/04/1977
1,074,726	73/098,392	10/04/1977
1,074,732	73/078,290	10/04/1977
1,074,735	73/100,725	10/04/1977
1,074,744	73/103,936	10/04/1977
1,074,746	73/086,569	10/04/1977
1,074,747	73/087,599	10/04/1977
1,074,752	73/102,395	10/04/1977
1,074,763	73/086,732	10/04/1977
1,074,767	73/100,979	10/04/1977
1,074,771	73/105,050	10/04/1977
1,074,773	73/105,906	10/04/1977
1,074,774	73/109,721	10/04/1977
1,074,776	73/113,934	10/04/1977
1,074,778	73/116,644	10/04/1977
1,074,783	72/437,753	10/04/1977
1,074,788	73/044,662	10/04/1977
1,088,553	73/082,429	04/04/1978

Notice Regarding Technical Center Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

March 11, 1998

NICHOLAS P. GODICI
Deputy Assistant Commissioner for Patents (Acting)

Fastener Insignia Register To Be Posted On PTO Web Cite

The Patent and Trademark Office is now posting a copy of the Fastener Insignia Register on its Web cite (http://www.uspto.gov). The register is available for viewing and downloading, free of charge.

The Fastener Quality Act (15 U.S.C. §§5401, et seq.) requires that certain fasteners bear an identifying insignia for traceability purposes, and requires the Secretary of Commerce to provide for the recordation of these insignia. The implementing regulations (15 C.F.R. §§280.700, et seq.) direct the Commissioner of Patents and Trademarks to maintain a Fastener Insignia Register. The deadline for compliance with the Act has been extended to October 25, 1998.

Parties wishing to obtain paper copies of the Register should continue to send the written request and $20.00 fee to:

Assistant Commissioner for Trademarks
Box: Fastener

2900 Crystal Drive
Arlington, Virginia
22202-3513

July 24, 1998

PHILIP G. HAMPTON, II
Assistant Commissioner
for Trademarks

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

CT Furniture Expo Corporation, Milford, Conn., Reg. No. 1,993,249, for the mark "FURNITURE EXPO", Canc. No. 27,348.

Body Systems, Inc., Dayton, Ohio, Reg. No. 1,508,595, for the mark "BODY SYSTEMS AND DESIGN", Canc. No. 27,490.

KATRINA PETERSON
Supervisory Legal Assistant
Trademark Trial
and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Certificates of Correction
for August 25, 1998

B2-4,408,150	5,619,690	5,668,245	5,701,504
D. 391,912	5,622,852	5,669,014	5,701,838
D. 395,356	5,623,038	5,669,396	5,702,377
P. 09,881	5,623,397	5,670,185	5,702,602
4,970,989	5,627,174	5,671,801	5,703,055
5,092,751	5,628,363	5,673,089	5,703,899
5,139,499	5,629,093	5,674,019	5,703,949
5,282,376	5,629,173	5,675,744	5,703,961
5,284,443	5,629,939	5,676,779	5,703,982
5,304,449	5,631,258	5,677,462	5,704,286
5,334,563	5,631,374	5,678,072	5,704,456
5,345,016	5,635,123	5,681,256	5,704,766
5,391,552	5,635,716	5,681,400	5,705,698
5,433,896	5,638,390	5,682,068	5,706,262
5,447,848	5,640,510	5,683,786	5,707,149
5,470,984	5,644,061	5,684,936	5,707,377
5,493,115	5,650,449	5,686,323	5,707,862
5,508,047	5,651,113	5,686,415	5,708,679
5,533,994	5,653,660	5,687,027	5,708,748
5,549,439	5,654,158	5,687,286	5,709,729
5,552,545	5,654,433	5,687,916	5,709,921
5,554,500	5,654,450	5,689,045	5,710,204
5,565,151	5,654,839	5,689,263	5,711,489
5,566,498	5,655,500	5,691,892	5,711,517
5,568,980	5,656,645	5,693,469	5,711,985
5,576,521	5,658,038	5,695,326	5,714,525
5,599,440	5,659,022	5,695,483	5,714,667
5,601,998	5,661,621	5,695,874	5,714,871
5,602,138	5,661,708	5,695,897	5,715,201
5,604,441	5,661,731	5,696,182	5,715,343
5,607,925	5,662,092	5,696,376	5,716,920
5,610,708	5,663,918	5,696,651	5,717,475
5,612,071	5,664,935	5,697,882	5,717,721
5,613,513	5,665,296	5,697,903	5,717,908
5,614,134	5,665,439	5,700,096	5,718,424
5,614,414	5,665,630	5,701,045	5,718,724
5,616,759	5,666,001	5,701,476	5,718,936
5,618,438	5,666,859	5,701,503	5,719,179
5,719,388	5,736,028	5,746,782	5,758,049
5,719,610	5,736,064	5,746,847	5,758,771
5,719,816	5,736,411	5,746,871	5,759,526
5,720,950	5,736,444	5,747,265	5,759,649
5,720,956	5,737,205	5,747,404	5,759,905
5,721,357	5,737,241	5,747,450	5,760,201
5,721,423	5,737,749	5,747,537	5,760,347
5,721,812	5,737,852	5,747,787	5,760,375
5,722,030	5,738,214	5,748,672	5,760,492
5,722,604	5,738,765	5,748,881	5,760,891
5,722,702	5,738,929	5,749,316	5,761,266
5,723,147	5,739,210	5,749,837	5,761,378
5,723,506	5,739,402	5,750,111	5,761,838
5,723,575	5,740,162	5,750,248	5,762,511
5,724,128	5,740,278	5,750,575	5,762,973
5,724,207	5,740,329	5,751,039	5,763,404
5,724,772	5,740,468	5,751,516	5,763,565
5,724,890	5,741,178	5,751,707	5,764,168
5,725,281	5,741,663	5,751,788	5,765,303
5,725,319	5,741,802	5,752,091	5,766,053
5,726,177	5,742,038	5,752,269	5,766,701
5,726,995	5,742,352	5,752,440	5,766,944
5,727,114	5,742,507	5,752,666	5,767,653
5,727,115	5,742,589	5,752,816	5,767,984
5,727,618	5,742,634	5,752,833	5,769,794
5,728,535	5,742,965	5,752,882	5,769,903
5,728,569	5,743,088	5,753,500	5,770,496
5,729,226	5,744,053	5,754,079	5,770,845
5,729,715	5,744,261	5,754,995	5,770,902
5,729,897	5,744,330	5,755,084	5,771,249
5,730,393	5,744,555	5,755,374	5,772,429
5,730,854	5,745,083	5,755,833	5,772,437
5,731,945	5,745,150	5,755,843	5,772,586
5,732,379	5,746,043	5,756,115	5,772,898
5,732,617	5,746,047	5,756,300	5,773,285
5,733,207	5,746,270	5,756,963	5,774,003
5,733,440	5,746,388	5,757,238	5,774,246
5,733,715	5,746,495	5,757,568	5,774,336
5,733,844	5,746,659	5,757,953	

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

July 6-10, 1998

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-8	EX	75/017,413	Lancer Orthodontics, Inc.	2(d)	Refusal reversed		IN ADVANCE and design [dental abrasives and polishes]	ADVANCE [dental restorative materials]	No
7-8	OPP	101,856	General Electric Co. v. Asha Records, Inc.	2(d)	Opposition sustained	design of dog with phonograph player [sound recordings and various electronic products]	ASHA RECORDS and fanciful rabbit design with phonograph player [pre-recorded tapes, phonograph records and compact discs featuring music]		No
7-8	EX	74/693,416	Volk Art, Inc.	2(a) (deceptive) and 2(e)(1) (deceptively misdescriptive]	Refusals affirmed		BLANC DE CHINE [porcelain, namely, lamp bases, pots and figurines]		No
7-8	EX	74/635,846	Raceway Lube Inc.	2(d)	Refusal affirmed		RACEWAY LUBE [vehicle lubrication and oil change services]	RACEWAY [motor oil]	No
7-8	EX	74/241,020	Fonovisa, Inc.	2(d)	Refusal reversed		MELODY and design [cassette tapes, compact discs and phonograph records bearing musical sound recordings in the Spanish language]	The word "MELODY" in Russian Cyrillic [phonograph records, audio cassettes and compact discs, all for musical recordings]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
7-8	OPP OPP CANC	93,526 95,936 22,550	Otis Elevator Co. v. Schindler Aufzuge AG	2(d) and nonuse of the mark ESCALANT	Oppositions sustained as to 2(d); Opp. 93,526 dismissed as to ground of nonuse; judgment entered against respondent in canc. (reg. cancelled under Sec. 8)	ESCAL-AIRE [moving stairways and parts therefor]	ESCALANT [escalators; moving pavements and walkways; continuous passenger conveyors] SCHINDLER ESCALINE [escalators; moving pavements and walkways and other belt conveying apparatus for persons; continuous passenger conveyors] SCHINDLER ESCALANT [escalators, passenger walkways, continuous passenger conveyors]		No
7-9	OPP	96,081	Armstrong World Industries, Inc. v. La Crosse Acoustical Tile, Inc.	2(d)	Opposition sustained	SIGNATURE VINYL [acoustical wall panels]	SIGNATURE SERIES [custom designed acoustical tiles]		No
7-9	OPP	98,146	Scenergy Foods, Inc. v. Lico Brands, Inc.	2(d) and 2(e)(1)	Opposition dismissed as to both grounds	CASALINGA and design [variety of food products]	CASALINGA [canned goods, namely, canned tomatoes and tomato based food sauces]		No
7-9	EX	74/688,234	Miavana Wholesale Co. Inc.	2(e)(4)	Refusal affirmed		BATEY [canned vegetables, dried beans, fruit drinks and non-alcoholic malt based beverage, namely, malta]		No
7-10	EX	74/431,164	Traditional Medicinals, Inc.	2(d)	Refusal affirmed		GOLDEN GREEN TEA [teas]	THE GREEN GOLD TEA and leaf design [tea]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

SPECIAL BOXES FOR PATENT MAIL

Special box designations should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each special box are addressed to that box, they will be significantly delayed in reaching the appropriate area for which they are intended.

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Washington, D.C. 20231

Box Designations	Explanation
Box 7	Reissue applications for patents involved in litigation and subsequently filed related papers.
Box 12	Contributions to the Examiner Education Program.
Box 313b	Petitions under 37 CFR 1.313(b) to withdraw a patent application from issue after payment of the issue fee and any papers associated with the petition, including papers necessary for filing a continuing application.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box Comments Patents	Public comments regarding patent related regulations and procedures.
Box CPA	Requests for Continued Prosecution Applications (CPA's) under 37 CFR 1.53(d).
Box DAC	Petitions decided by the Office of Petitions including petitions to revive and petitions to accept late payment of issue fees or maintenance fees.
Box DD	Disclosure Documents or materials related to the Disclosure Document Program.
Box Design	The filing of all design patent applications and any communications relating thereto.
Box Issue Fee	All communications following the receipt of a PTOL–85, "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments are the exception. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
Box Missing Parts	Response to the Notice to File Missing Parts of Application and associated papers and fees.
Box MPEP	Submissions concerning the Manual of Patent Examining Procedures.
Box Non-Fee Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box PATENT APPLICATION	New patent applications and associated papers and fees.
Box Patent Ext.	Applications for patent term extension and any communications relating thereto.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Provisional Patent Application	The filing of all provisional patent applications and any communications relating thereto.
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return post card or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").

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Please address mail as follows:

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Assistant Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

Box Designations	Explanation
Box NEW APP FEE	New trademark applications and fees.
Box ITU FEE	Statements of Use (SOUs) and extension requests.
Box TTAB FEE	Oppositions, cancellation petitions, and ex parte appeals.
Box TTAB NO FEE	Interferences, motions, and extension requests.
Box STATUS NO FEE	Written status inquiries.
Box POST REG FEE	Affidavits, renewals, corrections and amendments.
Box RESPONSES NO FEE	Responses to Examining Attorneys' Office actions and Post Registration actions.

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Box Designations	Explanation
Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Deputy Assistant Secretary of Commerce and Deputy Commissioner of Patents and Trademarks; Office of Legislative and International Affairs.
Box 6	Mail for the Office of Procurement.
Box 8	All papers for the Office of the Solicitor *except* communications relating to *pending litigation and disciplinary proceedings*; papers relating to pending litigation in court cases shall be mailed only to Office of the Solicitor, P.O. Box 15667, Arlington, Virginia 22215 and papers relating to pending disciplinary proceedings before the Administrative Law Judge or the Commissioner shall be mailed only to the Office of the Solicitor, P.O. Box 16116, Arlington, Virginia 22215.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of PTO documents.
Box 11	Electronic Ordering Service (EOS).
Box 13	Mail for the Employee and Labor Relations Division.
Box 14	Mail directed to the APS Contracts Office.
Box 16	Deposit Account Replenishment Checks.
Box 17	Invoices directed to the Office of Finance.
Box 171	Vacancy Announcement Applications.
Box Assignment	All assignment documents except those filed with new applications.
Box EEO	Mail for the Office of Civil Rights.
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box M Fee	Correspondence regarding patent maintenance fees and related matter.
Box OED	Mail for the Office of Enrollment and Discipline.

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The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information from the U.S. Patent and Trademark Office. Many PTDLs have on file patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PTDLs receive both the patent and trademark sections of the *Official Gazette of the U.S. Patent and Trademark Office* and numerical sets of patents in a variety of formats. Patent and trademark search systems in the Cassis CD-ROM series are available at all PTDLs to increase access to that information. It is through the CD-ROM systems and other depository materials that preliminary patent and trademark searches may be conducted through the numerically arranged collections.

Each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials.

All information is available for use by the public free of charge. However, there may be charges associated with the use of on-line systems, photocopying and related services.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI^3) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
Alaska	Anchorage: Z.J. Loussac Public Library	(907) 562-7323
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	Not Yet Operational
	New Haven Free Public Library	Not Yet Operational
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-8875
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 630-6120
Mississippi	Jackson: Mississippi Library Commission	(601) 359-1036
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6500 Ext. 257
New Hampshire	Concord: New Hampshire State Library	(603) 271-2239

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New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 445-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 474-5355
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 592-7000
	Stony Brook: Engineering Library, State University of New York	Not Yet Operational
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280
North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
Ohio	Akron - Summit County Public Library	(330) 643-9075
	Cincinnati and Hamilton County, Public Library of	(513) 369-6971
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
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Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Clemson University Libraries	(864) 656-3024
South Dakota	Rapid City: Devereaux Library, South Dakota School of Mines and Technology	(605) 394-1275
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	(806) 742-2282
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	(802) 656-2542
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 286-3051
Wyoming	Casper: Natrona County Public Library	(307) 237-4935

PATENT EXAMINING CORPS

BRUCE A. LEHMAN, Commissioner
LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
NICHOLAS P. GODICI, (Acting) Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	01/11/96
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	06/25/96
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	07/29/96
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	05/27/96
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	11/23/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/13/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/26/96
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	04/26/96
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	12/21/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	11/12/96
TELECOMMUNICATIONS, GROUP 2600—JIN F. NG, Director	305-3900	09/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	305-3293	06/28/96
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	12/14/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	03/11/97
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	02/07/96
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	02/13/96
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	02/04/97

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of July 1, 1998

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Christopher Wells, Acting Managing Attorney, (703) 308–9101—4th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/26/98	05/15/98
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308–9102—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/28/97	03/06/98
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/07/97	05/13/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—6th Floor Unwrought metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	09/17/97	04/09/98
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—6th Floor Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/10/97	02/25/98
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/08/97	03/09/98
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/13/98	04/27/98
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/27/97	04/13/98
Law Office 109—Deborah Cohn, Managing Attorney, (703) 308–9109—8th Floor Precious metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	10/17/97	06/09/98
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Simms, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—Mary Bowman, Supervisor, (703) 308-9500 ext. 126		
Affidavits Under Sections 8 & 15 (All Classes)	04/30/98	—0—
Renewals (All Classes)	05/12/98	—0—
Section 12(c) Publications (All Classes)	04/01/98	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 through (703) 305–9752 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

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REEXAMINATIONS

AUGUST 25, 1998

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,418,388 (3609th)

ENGINE WAVEFORD PATTERN ANALYZER

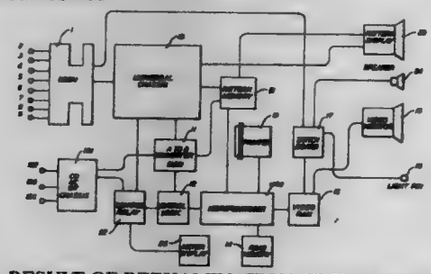
Clarence B. Allgor, Portage; Clair J. St. Clair, Otsego, and Richard A. Pearson, Kalamazoo, all of Mich., assignors to SPX Corporation, Muskegon, Mich.

Reexamination Request Nos. 90/004,101, Nov. 13, 1995 and 90/004,553, Feb. 14, 1997.

Reexamination Certificate for Patent 4,418,388, issued Nov. 29, 1983, Ser. No. 178,187, Aug. 14, 1980.

Int. Cl.[6] **G01M** *15/00*

U.S. Cl. 701—99



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** & **14–42** is confirmed.

Claim **13** is determined to be patentable as amended.

New claims **43–75** were added and determined to be patentable.

1. Apparatus for electrically storing substantially a time-varying operating parameter of an internal combustion engine comprising:

electrical signal means adapted to be coupled to the engine for providing a time-varying electrical signal related to the time-varying operating parameter,

converting means coupled to the electrical signal means for converting the time-varying electrical signal to a series of digital signals representing discrete magnitudes of the time-varying electrical signal at temporally spaced intervals,

storing means coupled to the converting means for storing digital signals, and

control means coupled to the storing means for causing digital signals from the converting means representing discrete magnitudes of the time-varying electrical signal at temporally spaced intervals which are determined by the control means in accordance with an operating parameter of the internal combustion engine other than said time-varying operating parameter being electrically stored; to be stored in said storing means, and for causing reading of the stored digital signals out of the storing means.

B1 5,047,183 (3610th)

METHOD OF INJECTION MOLDING ARTICLES OF THERMOPLASTIC MATERIALS

Helmut Eckardt, Meinerzhagen, and Jürgen Ehritt, Hilchenbach-Müsen, both of Germany, assignors to Battenfeld GmbH, Meinerzhagen, Germany

Reexamination Request Nos. 90/004,706, Jun. 27, 1997 and 90/004,857, Dec. 4, 1997.

Reexamination Certificate for Patent 5,047,183, issued Sep. 10, 1991, Ser. No. 255,715, Oct. 7, 1988.

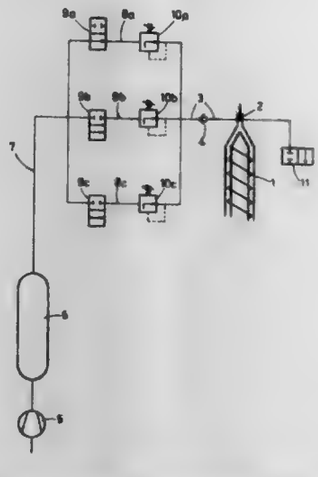
Claims priority, application Germany, Oct. 9, 1987, 3734164

Int. Cl.[6] **B29C** *45/76*; **B29D** *22/00*

U.S. Cl. 264—40.3

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.



Claims **2–12**, dependent on an amended claim, are determined to be patentable.

1. In a method of injection molding an article of thermoplastic material, the method including initially forcing molten thermoplastic material into a mold cavity of an injection mold in an amount sufficient for forming the article, the mold cavity having a surface, subsequently forcing a single flowable medium into the injection mold and thermoplastic material with a pressure which distributes the thermoplastic material uniformly over the surface of the mold cavity so as to form a hollow body, such that the thermoplastic material defines a surface, cooling the hollow body in the injection mold while maintaining the pressure of the medium therein, and releasing the pressure of the medium from the hollow body and removing the molded article from the injection mold, the improvement comprising conducting the flowable medium from a pressure reservoir into the mold cavity and to the surface of the thermoplastic material distributed over the surface of the mold cavity, preventing the flowable medium from flowing back out of the mold cavity and controlling the pressure of the medium existing within the injection mold and acting on the surface of the thermoplastic material distributed over the surface of the mold cavity at least temporarily until the thermoplastic material has cooled, wherein the [pressure of the medium is controlled from a lowest pressure level to a highest pressure level and then to a middle pressure level before the pressure of the medium is released from the hollow body] *controlling of the pressure of the medium includes introducing* into the mold cavity the medium having the lowest pressure level for distributing the thermoplastic material uniformly over the surface of the mold cavity, maintaining an existing pressure level of the medium in the mold cavity after delivery of the medium having the lowest pressure level has been stopped, increasing the existing pressure in the mold cavity to the highest pressure level, maintaining the highest pressure level of the medium in the mold cavity for a predetermined period of time, releasing into the atmosphere the highest pressure level of the medium, introducing in the mold cavity the medium having a middle pressure level, maintaining a pressure level of the medium existing in the mold cavity after delivery of the medium having the middle pressure level has been stopped and, finally, releasing the pressure of the medium.

B1 5,244,797 (3611th)

CLONED GENES ENCODING REVERSE TRANSCRIPTASE LACKING RNASE H ACTIVITY

Michael L. Kotewicz, Columbus, and Gary F. Gerard, Frederick, both of Md., assignors to Life Technologies, Inc., Gaithersburg, Md.

Reexamination Request No. 90/003,803, Apr. 24, 1995.
Reexamination Certificate for Patent 5,244,797, issued Sep. 14, 1993, Ser. No. 671,156, Mar. 18, 1991.
Continuation of Ser. No. 143,396, Jan. 13, 1988, abandoned.
Int. Cl.[6] C12N *9/12;15/54;15/62*
U.S. Cl. 435—194

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1, 2, 3** and **4** is confirmed.

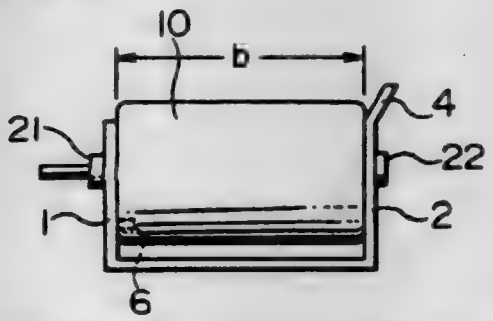
1. A polypeptide having DNA polymerase activity and substantially no RNase H activity wherein said polypeptide may be used for the preparation of full length cDNA without significant degradation of the mRNA template during first strand synthesis wherein said polypeptide is encoded by a nucleotide sequence derived from an organism selected from the group consisting of a retrovirus, yeast, Neurospora, Drosphila, primates and rodents.

B1 5,290,005 (3612th)

SUPPORTING DEVICE FOR MINIATURE MOTORS

Takeshi Akiyama, and Shinichi Nakayama, both of Matsudo, Japan, assignors to Mabuchi Motor Co., Matsudo, Japan

Reexamination Request No. 90/004,839, Nov. 14, 1997.
Reexamination Certificate for Patent 5,290,005, issued Mar. 1, 1994, Ser. No. 953,927, Sep. 29, 1992.
Claims priority, application Japan, Oct. 21, 1991, 3-085602 U
Int. Cl.[6] F16M *1/08*
U.S. Cl. 248—671



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

1. A miniature motor and supporting device, comprising:

a miniature motor including a housing made of a metallic material, said housing being formed into a bottomed hollow cylindrical shape including an end with a hole and having permanent magnets fixedly fitted to an inner circumferential surface of said housing, a rotor positioned in said housing and including an armature facing said permanent magnets and including a commutator, and a motor case fitted to an opened end opposite said end of said housing and having brushes making sliding contact with said commutator and input terminals electrically connected to said brushes, said rotor being rotatably supported by bearings provided in bearing convex parts of said housing which include a first convex part formed in said end of said housing and a second convex part formed in said motor case; and

supporting means for supporting said motor including;

a first member having a notch portion for supporting said first convex part and a protruded portion, said protruded portion being inserted into said hole provided on said end of said housing;

a second member having a second member hole receiving said second convex part, said second member hole being of a partially cut circular shape, said second convex part having an outer surface being of a partially cut circular shape complimentary to the partially cut circular shape of said second member hole;

a connecting member connecting said first member and said second member such that said first member and said second member are in opposing relationship and having a distance therebetween; and

a handle member connected to one of said first and second members whereby said first member, said second member, said connecting member, and said handle member being formed integrally; and

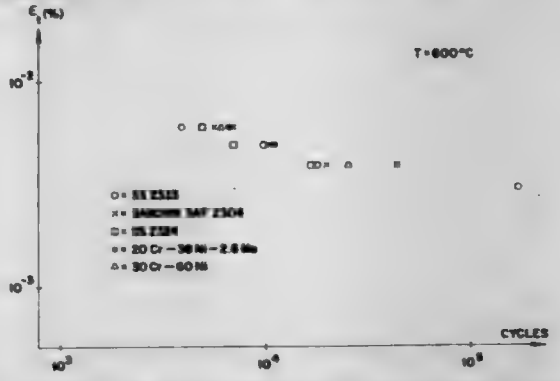
whereby the first member and the second member having resiliency such that when said miniature motor is inserted between the opposing first and second members, said first and second members are flexed about the connecting member to accommodate the miniature motor.

B1 5,324,595 (3613th)

COMPOSITE TUBE

Jonas Rosen, Sandviken, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Reexamination Request No. 90/004,584, Mar. 19, 1997.
Reexamination Certificate for Patent 5,324,595, issued Jun. 28, 1994, Ser. No. 932,692, Aug. 20, 1992.
Claims priority, application Sweden, Aug. 21, 1991, 9102410
Int. Cl.[6] F16L *9/02;* **B32B** *1/08;15/18*
U.S. Cl. 428—679



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3** is confirmed.

1. In a soda recovery unit having bottom tubes of a carbon steel, the improvement comprising using as the bottom tubes a composite tube comprising an inner portion of carbon steel and an outer portion of an austenitic Cr—Ni—Mo—Fe-based alloy comprising, in weight %:

C	0.01–0.04
Cr	19.5–23.5
Ni	38–46
Mo	2.5–3.5
Si	up to 0.5
N	up to 0.3
Fe	remainder (except normal impurities).

B1 5,522,687 (3614th)

SCREW BAND

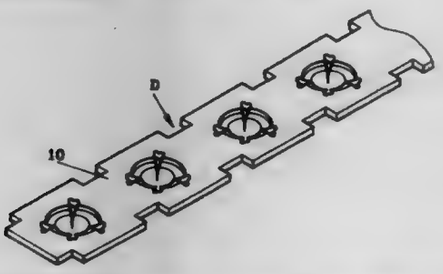
Ho T. Chen, 9F3R, No. 210, Chung Hsueh Rd., Tainan, Taiwan

Reexamination Request No. 90/004,900, Jan. 22, 1998.

Reexamination Certificate for Patent 5,522,687, issued Jun. 4, 1996, Ser. No. 249,709, May 26, 1994.

Int. Cl.[6] **F16B** *15/08;* **B65D** *85/24*

U.S. Cl. 411—444



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–4** is confirmed.

1. A screw band of an elongate tape shape having both its longitudinal sides provided with a plurality of transporting notches spaced equidistantly, a plurality of screw holes provided spaced apart equidistantly through its thickness, each said screw hole having four nearly triangular notches spaced equidistantly aroung the hole wall to divide said hole wall into four sections of the same size, and characteristics that a cone-shaped circumferential wall extends down from a round screw hole wall and is connected with a downward annular wall, an inner sloping-down surface of said cone-shaped circumferential wall conforms to a sloping-down surface of a head of a screw so that said sloping-down surface of the screw can rest on said inner surface of said cone-shaped circumferential wall, said annular wall extends do from said cone-shaped wall, having an inner end curved inward edge to engage a thread of said screw, and thus screws may be kept stabilized in said screw holes of said screw band.

B1 5,570,616 (3615th)

RATCHETING SCREWDRIVER WITH REVERSING CAP HAVING PROJECTING PIN

Christopher D. Thompson, Milwaukee, and Joseph R. Hoepfl, Greenfield, both of Wis., assignors to Snap-on Technologies, Inc., Crystal Lake, Ill.

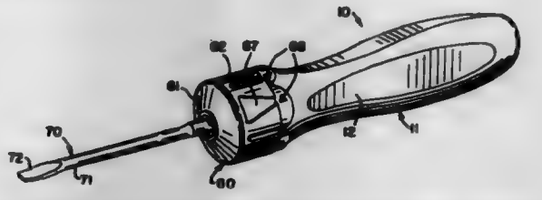
Reexamination Request No. 90/004,462, Nov. 19, 1996.

Reexamination Certificate for Patent 5,570,616, issued Nov. 5, 1996, Ser. No. 546,511, Oct. 20, 1995.

Continuation of Ser. No. 388,993, Feb. 15, 1995, abandoned, which is a continuation-in-part of Ser. No. 160,151, Dec. 2, 1993, Pat. No. 5,437,212.

Int. Cl.[6] **B25B** *13/46*

U.S. Cl. 81—63.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–10** is confirmed.

New claims **11–18** are added and determined to be patentable.

1. A ratcheting driver handle for a driver having a shank, said handle comprising: an elongated body having an axis and an axial recess in one end thereof, a ratchet mechanism disposed in said recess and including a gear and a pawl assembly including at least one pawl engageable with said gear, said ratchet mechanism having a bore for receiving therein the shank of the associated driver, mounting means for said pawl assembly accommodating movement of said at least one pawl between first and second conditions, said at least one pawl including a first tooth portion engaging said gear in the first condition of said pawl assembly so that said body rotates said gear with said body when the body is rotated in one direction and said body ratchets with respect to said gear when said body is rotated in the opposite direction, said pawl assembly including a second tooth portion engaging said gear in the second condition of said pawl assembly so that said body rotates said gear with said body when said body is rotated in said opposite direction and said body ratchets with respect to said gear when said body is rotated in said one direction, a selector member coupled to said one end of said body and accessible by a user for manual movement with respect to said one end between first and second positions, said positions of said selector member corresponding to said first and second conditions of said pawl assembly, an actuator pin on said selector member extending parallel to said axis and positioned and dimensioned for direct engagement with said at lesat one pawl for movement of said at least one pawl between its first and second conditions in response to movement of said selector member between its first and second positions, and bias mechanism resiliently retaining said selector member in each of said first and second positions.

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REISSUES

AUGUST 25, 1998

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,874

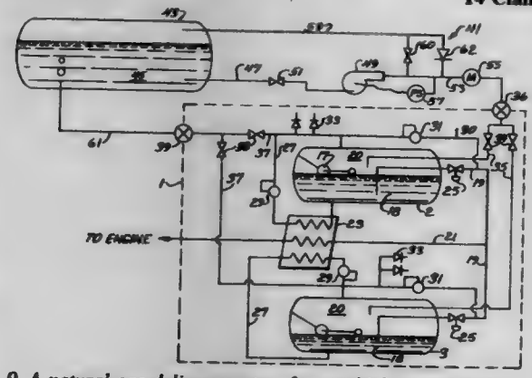
LNG DELIVERY SYSTEM FOR GAS POWERED VEHICLES

Timothy A. Neeser, Savage, Minn., and Kelly W. Hedegard, Scottsdale, Ariz., assignors to Minnesota Valley Engineering, Inc., New Prague, Minn.

Original No. 5,127,230, dated Jul. 7, 1992, Ser. No. 702,076, May 17, 1991. Application for reissue Jul. 6, 1994, Ser. No. 271,041

Int. Cl.[6] F25B *19/00*

U.S. Cl. 62—7 **14 Claims**



9. A natural gas delivery system for a vehicle comprising:

a) a first vehicle mounted tank for storing liquid natural gas and natural gas vapor under pressure;

b) a second vehicle mounted tank for storing liquid natural gas and natural gas vapor under pressure;

c) a use line connected to said first and second tanks for receiving natural gas from the first and second tanks and delivering natural gas vapor to the use device on said vehicle;

d) means for pressurizing the natural gas in the use line; and

e) means for delivering natural gas to the use line from either of said tanks, said means for delivering natural gas delivering the natural gas from the tank which has the higher pressure.

Re. 35,875

CONTAINER WITH SLEEVE INTERLOCKING LATCH

Lyle H. Shuert, 70 Kingsley Manor Dr., Bloomfield Hills, Mich. 48304

Original No. 4,765,252, dated Aug. 23, 1988, Ser. No. 88,230, Jul. 28, 1987. Continuation of Ser. No. 858,524, Apr. 23, 1986, abandoned, which is a continuation of Ser. No. 642,778, Aug. 21, 1984, abandoned. Application for reissue Aug. 1, 1996, Ser. No. 691,120

The portion of the term of this patent subsequent to Nov. 2, 2002, has been disclaimed.

Int. Cl.[6] B65D *19/18*

U.S. Cl. 108—55.1 **13 Claims**

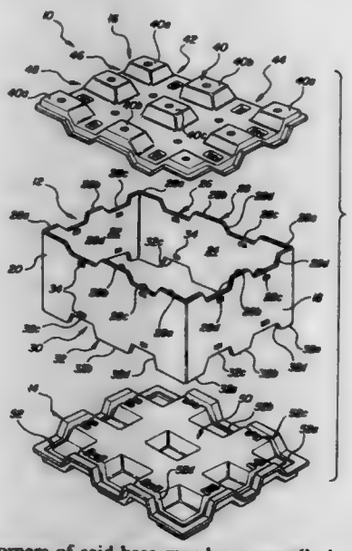
6. A container comprising:

(A) a generally planar rectangular base member having

(1) an undersurface defining downwardly facing support faces for the base member as the corners of the base member adapted to rest on an underlying supporting surface and selectively raised above the level of said support faces intermediate the corners of the base member to define tunnels for entry of lift truck forks or the like, and

(2) an upper surface defining an upwardly facing rectangular seat extending continuously and completely around the periphery of said base member, *in general conformity with the associated undersurface and, specifically, extending upwardly over said tunnels and extending around the remainder of the periphery of said base member* including the corners of said base member, generally in the plane of said support faces; and

(B) a sleeve having a selectively cut away lower peripheral edge generally conforming, three dimensionally, to said seat so that said lower peripheral edge may be seated on said seat with the cut outs therein spanning said tunnels and the remainder of the peripheral edge lying generally in the plane of said support faces to transfer downward compressive loads applied to the container substantially directly to the supporting surface on which said support faces are positioned.



Re. 35,876

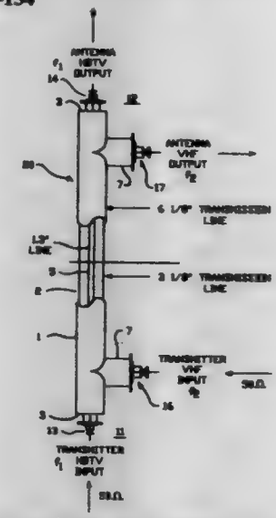
TRIAXIAL TRANSMISSION LINE FOR TRANSMITTING TWO INDEPENDENT FREQUENCIES

Ali R. Mahnad, 5063 Olive Oak Way, Carmichael, Calif. 95608

Original No. 5,418,506, dated May 23, 1995, Ser. No. 91,652, Jul. 14, 1993. Application for reissue Dec. 16, 1996, Ser. No. 766,085

Int. Cl.[6] H01P *5/12*

U.S. Cl. 333—134 **5 Claims**



5. A triaxial transmission line having two ends for transmitting two independent and different frequency signals f_1 and f_2 from two

transmitter channels at one end respectively to two antennas, one for each signal, at the other end, comprising:

an inner substantially cylindrical conductor having an axis;

an outer tubular conductor coaxial with said inner conductor;

a middle tubular conductor coaxial with and between said inner and outer conductors;

a coaxial input port for said signal f_1, for connection to one of said transmitter channels, coaxial with and connected at said one end and including as active portions said inner and middle conductors, said inner and middle conductors transmitting said signal f_1 to one of said antennas at said other end of said transmission line;

a coaxial input port for said signal f_2, for connection to the other of said transmitter channels, perpendicular to said axis of said inner conductor and positioned near said one end of said transmission line and connected to and including as active portions said outer and middle conductors, said outer and middle conductors transmitting said signal f_2 to the other of said antennas at said other end of said transmission line, whereby two independent and isolated signal paths for f_1 and f_2 are respectively provided by said triaxial transmission line from said transmitter channels to said respective antennas.

Re. 35,877

AUTOMATIC LIGHT MODULATING CAMERA

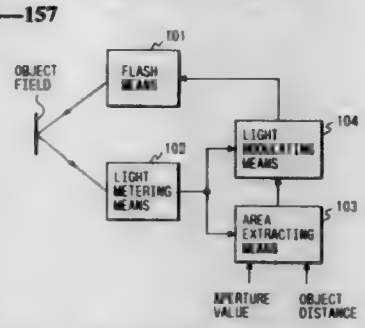
Tadao Takagi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Original No. 5,268,730, dated Dec. 7, 1993, Ser. No. 672,055, Mar. 13, 1991. Application for reissue Nov. 27, 1995, Ser. No. 563,094

Claims priority, application Japan, Mar. 19, 1990, 2-69251; Apr. 3, 1990, 2-88898; Apr. 3, 1990, 2-88899; Apr. 3, 1990, 2-88900

Int. Cl.[6] G03B *15/05*

U.S. Cl. 396—157 **68 Claims**



63. An automatic light modulating camera capable of a flash phototaking operation with a preliminary light emission followed by a main light emission, comprising:

a light metering circuit which has a plurality of photosensor elements corresponding to plural areas divided in an object field, said light metering circuit metering reflected light from said plural areas at said preliminary and main light emissions and outputting corresponding light metering signals;

an area extracting circuit connected with said light metering circuit which extracts effective light metering areas from said plural areas, based on the light metering signals obtained at said preliminary light emission and on lens signals indicating the phototaking state of a phototaking lens; and

a light modulating circuit which terminates said main light emission, according to the light metering signals obtained in said effective light metering areas.

Re. 35,878

VARIABLE CAPACITY SWASH PLATE TYPE REFRIGERANT COMPRESSOR HAVING A DOUBLE FULCRUM HINGE MECHANISM

Kazuya Kimura, and Hiroaki Kayukawa, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

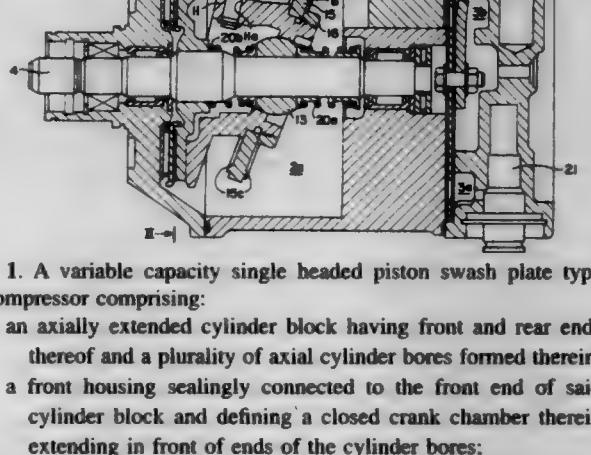
PCT No. PCT/JP92/00384, § 371 Date Nov. 23, 1992, § 102(e) Date Nov. 23, 1992, PCT Pub. No. WO92/17705, PCT Pub. Date Oct. 15, 1992

Original No. 5,336,056, dated Aug. 9, 1994, Ser. No. 952,836, Mar. 27, 1992. This PCT application Mar. 27, 1992, Ser. No. 693,483

Claims priority, application Japan, Mar. 30, 1991, 3-037365

Int. Cl.[6] F04B *1/12*

U.S. Cl. 417—222.1 **7 Claims**



1. A variable capacity single headed piston swash plate type compressor comprising:

an axially extended cylinder block having front and rear ends thereof and a plurality of axial cylinder bores formed therein;

a front housing sealingly connected to the front end of said cylinder block and defining a closed crank chamber therein extending in front of ends of the cylinder bores;

a rear housing connected to the rear end of said cylinder block and defining therein a suction chamber for a refrigerant gas before compression and a discharge chamber for the refrigerant gas after compression;

a drive shaft rotatably held by said cylinder block and said front housing with a longitudinal axis thereof extending through said crank chamber;

a rotary support element mounted on said drive shaft to be rotated therewith in said crank chamber;

a variable inclination rotary swash plate assembly pivotally held by a hinge means and slidably mounted on said drive shaft **[**via a slidable sleeve element**]** for rotation about an axis perpendicular to the axis of said drive shaft to thereby vary an angle of inclination thereof;

a plurality of reciprocatory single headed pistons fitted in said cylinder bores or said cylinder block and engaged with said swash plate assembly via a motion conversion means for converting rotation of said swash plate assembly into reciprocation of said single headed pistons in said cylinder bores; and

a control valve means for adjusting a fluid pressure in said crank chamber to thereby control the capacity of said compressor,

said hinge means being provided with a pair of hinges separately coupled to said swash plate assembly to provide two fulcrum positions about which said swash plate assembly is pivotally hinged, said two fulcrum positions being spaced apart from one another with respect to a center position which lies in a plane including the axis of said drive shaft and passing through a predetermined position of said swash plate assembly at which said swash plate assembly is engaged with one of said plurality of pistons brought to a top dead center thereof.

Re. 35,879

CLEANING METHOD USING BOTH WET AND DRY STEAM, AND APPARATUS ADAPTED THEREFOR

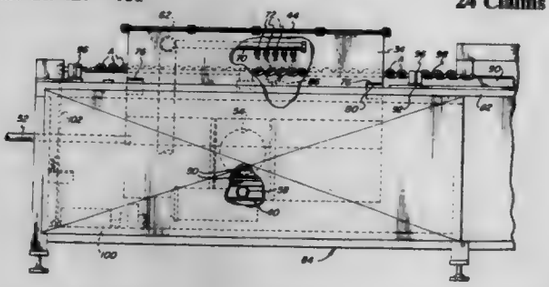
Daniel Castelli, North Haven; John Donahue, New Haven; Donald J. Gillette, Guilford, and Bedrich Hajek, Clinton, all of Conn., assignors to Electrostatic Technology, Inc., Branford, Conn.

Original No. 5,275,849, dated Jan. 4, 1994, Ser. No. 871,494, Apr. 21, 1992. Continuation-in-part of Ser. No. 743,098, Aug. 9, 1991, Pat. No. 5,116,636, which is a division of Ser. No. 493,791, Mar. 15, 1990, Pat. No. 5,052,332. Application for reissue Dec. 21, 1995, Ser. No. 576,464

Int. Cl.[6] B05D *1/06*; B08B *3/02*

U.S. Cl. 427—461

24 Claims



23. A method for cleaning a workpiece, comprising the steps:

a. providing apparatus for cleaning, said apparatus comprising an enclosure defining a chamber with entrance and exit openings thereinto and therefrom, and defining a travel path section extending therethrough between said openings, said travel path section demarcating, within said chamber, a spray compartment thereabove and a collection compartment therebelow;

spray means, disposed within said spray compartment, for discharging steam upon a workpiece transported along said travel path section;

supply means operatively connected to said spray means for supplying steam thereto, said supply means comprising at least first and second, mutually independent steam-discharge structures, said second structure being spaced from said first structure in the downstream direction of said travel path section; and said supply means comprising means for providing steam having a first temperature, operatively connected to said first steam-discharge structure, and means for providing steam having a second temperature higher than said first temperature, operatively connected to said second steam-discharge structure; and

suction means for drawing air and steam from said collection compartment, and thereby for drawing ambient air through said chamber openings and steam from spray compartment;

b. transporting a contaminated workpiece along said travel path section, and carrying out the following steps during said transporting;

c. discharging steam at said first temperature upon said workpiece so as to elevate the temperature of said workpiece;

d. thereafter discharging steam at said second temperature upon said workpiece so as to further elevate the temperature thereof; and

e. operating said suction means, while carrying out said steps b., c., and d., so as to draw air and steam from said collection compartment, and thereby to draw ambient air through said chamber openings and steam from said spray compartment.

Re. 35,880

ENDOCARDIAL ELECTRICAL MAPPING CATHETER AND METHOD

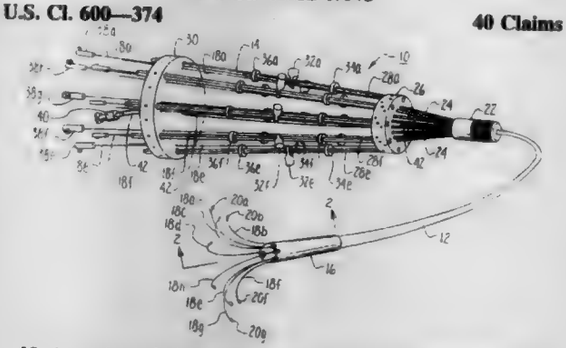
Lewis K. Waldman, La Jolla, and Peng-Sheng Chen, La Canada-Flintridge, both of Calif., assignors to Cardiac Pathways Corporation, Sunnyvale, Calif.

Original No. 5,237,996, dated Aug. 24, 1993, Ser. No. 833,746, Feb. 11, 1992. Application for reissue Aug. 13, 1995, Ser. No. 518,355

Int. Cl.[6] A61B *5/042*

U.S. Cl. 600—374

40 Claims



18. An endocardial mapping catheter which comprises an elongate flexible support sheath having a proximal end and a distal end, a plurality of probes, each of said probes having a proximal end and a distal end and being slidably disposed in said support sheath, at least one electrode mounted on the distal end of each probe, guide means disposed on said distal end of said support sheath for directing the probes from the sheath, said guide means having a plurality of passageways, each of said passageways separately receiving one of said probes and being formed with a surface having an arcuately extending distal portion means carried by the proximal ends of said probes for deploying the distal ends of said probes from said support sheath whereby the arcuately extending distal portion of each surface serves to radially deploy said distal end of a probe from said guide means along a favorable trajectory from said guide means as said probe is moved distally through said support sheath.

Re. 35,881

METHOD AND SYSTEM FOR TRAVERSING LINKED LIST RECORD BASED UPON WRITE-ONCE PREDETERMINED BIT VALUE OR SECONDARY POINTERS

Phillip L. Barrett, Redmond; Scott D. Quinn, Issaquah, and Ralph A. Lipe, Woodinville, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Original No. 5,247,658, dated Sep. 21, 1993, Ser. No. 430,746, Oct. 31, 1989. Application for reissue Sep. 21, 1995, Ser. No. 531,460

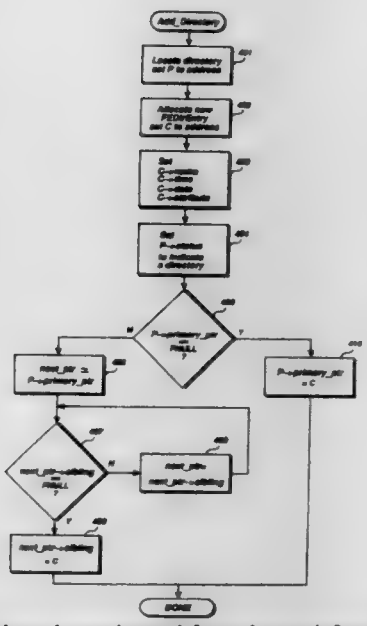
Int. Cl.[6] G06F *15/40*

U.S. Cl. 707—1

31 Claims

1. A method of updating data stored on a computer memory file storage device with new data, the memory containing records of data, each record having a primary pointer and a secondary pointer, the records stored as a linked list that is linked by the primary pointers, the method comprising the steps of:

locating a record that contains data to be updated, the record being contained in the memory comprising a plurality of bits such that once a bit is changed from a predefined bit value to another bit value the changed bit cannot be individually changed back to the predefined bit value, the data including



bits that have been changed from the predefined bit value to the other bit value, the secondary pointer of the located record having each bit set to the predefined bit value;

allocating a record to contain the new data, the record being allocated in the memory, each bit of the allocated record being set to the predefined bit value;

writing the new data to the allocated record; and

setting the secondary pointer in the located record to point to the allocated record to indicate that the new data in the allocated record is an update of the data in the located record by changing at least one bit of the secondary pointer from the predefined bit value to the other bit value

wherein the step of locating a record includes the steps of:

(a) selecting a record at which to start a traversal of the linked list;

(b) reading the secondary pointer for the selected record;

(c) if each bit of the read secondary pointer is set to the predefined bit value, then selecting the record pointed to by the primary pointer of the selected record;

(d) if [each] *at least one* bit of the read secondary pointer is not set to the predefined bit value, then selecting the record pointed to by the secondary pointer of the selected record; and

(e) repeating steps (b) to (d), until the selected record contains the data to be updated.

PLANT PATENTS

GRANTED AUGUST 25, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,565

HYBRID TEA ROSE PLANT NAMED 'MEIPAROS'

Alain A. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Feb. 6, 1997, Ser. No. 796,905
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant characterized by the following combination of characteristics:

(a) forms attractive long-lasting fragrant pink blossoms, (b) exhibits a vigorous erect growth habit, (c) forms attractive dark green and glossy foliage, (d) exhibits good disease resistance, and (e) is particularly well suited for cut flower production under greenhouse growing conditions;
substantially as herein shown and described.

10,566

FLORIBUNDA ROSE PLANT NAMED 'JACYESP'

Keith W. Zary, Thousand Oaks, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 14, 1997, Ser. No. 800,049
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its attractive yellow flowers arranged in clusters; long stems; good vase life; good production; and moderate fragrance.

10,567

AZALEA HYBRID VARIETY NAMED 'CONLEE'

Robert Edward Lee, 52063 Ridge Crest Rd., Independence, La. 70443, assignor to Robert Edward Lee, and Plant Development Services Inc., Loxley, Ala.

Filed Apr. 8, 1997, Ser. No. 833,395
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—56 **1 Claim**

1. A new and unique variety of azalea hybrid plant named 'Conlee' as herein shown and described.

10,568

AZALEA HYBRID 'CONLED'

Robert Edward Lee, 52063 Ridge Crest Rd., Independence, La. 70443, assignor to Robert Edward Lee, and Plant Development Services, Inc., Loxley, Ala.

Filed Apr. 8, 1997, Ser. No. 841,944
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—56 **1 Claim**

1. A new and unique variety of azalea hybrid plant named 'Conled' as herein shown and described.

10,569

CANNA PLANT NAMED 'PHASTON'

Jan H. Potgieter, P.O. Box 536, Bethal 2310, South Africa

Filed Sep. 6, 1996, Ser. No. 709,533
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct canna plant name 'Phasion', as illustrated and described.

10,570

AFRICAN VIOLET PLANT NAMED 'PARIS'

Reinhold Holtkamp, Sr., Rees-Haffen, Germany, assignor to International Plant Breeding AG, Bern, Switzerland

Filed Feb. 7, 1997, Ser. No. 798,303
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named 'Paris', as described and illustrated, and particularly characterized by its extra large growth habit (35–45 cm in diameter); star-shaped, double, purple flowers with fine white frilled edges; strong stems which curve toward the center to form a bouquet above the leaves; profuse flowering; large, dark green, heart to spear-shaped leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

10,571

CHRYSANTHEMUM PLANT NAMED 'RED AKRON'

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 21, 1997, Ser. No. 786,419
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.5 **1 Claim**

1. A new and distinct Chrysanthemum plant named Red Akron, as described and illustrated.

10,572

POINSETTIA PLANT 'BRIGHT RED FREEDOM'

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Mar. 31, 1997, Ser. No. 829,177
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—86.4 **1 Claim**

1. A new amd distinct Poinsettia plant, substantially as herein shown and described, distinguished by its early flowering, bright red flower bracts, dark green foliage and self branching traits.

10,573

BEGONIA PLANT NAMED 'SOLENIA ROSA'

Konrad Wagner, Hann. Münden, Germany, assignor to Gebr. Man C.V., Aalsmeer, Netherlands

Filed May 9, 1997, Ser. No. 854,291
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—87.18 **1 Claim**

1. A new and distinct cultivar of Begonia plant named 'Solenia Rosa', as illustrated and described.

10,574

AGLAONEMA PLANT NAMED 'MOONSHINE'

Marcus Steven Lambert, Zolfo Springs, Fla., assignor to Sunshine Foliage World, Zolfo Springs, Fla.

Filed May 13, 1997, Ser. No. 855,492
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Aglaonema plant named 'Moonshine', as illustrated and described.

10,575

GUZMANIA PLANT NAMED RUMBA

Gerardus J. Bak, Assendelft; Nicolaas D. Steur, Oude Niedorp, and Elly Bak, Rijsenhout, all of Netherlands, assignors to Corn.Bak B.V., Assendelft, Netherlands

Filed Mar. 7, 1997, Ser. No. 813,179
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.8 1 Claim

1. A new and distinct cultivar of Guzmania plant named 'Rumba', as illustrated and described.

10,576

'MOBUFF BUFFALOGRASS'

Suleiman Bughrara, and John Dunn, both of Columbia, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Apr. 30, 1997, Ser. No. 846,267
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—90 1 Claim

1. A new and distinct variety of buffalograss substantially as shown and described.

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PATENTS

GRANTED August 25, 1998

ERRATA

Patents	
For CLASS	See PATENT NO.
228—180	5,797,388
285—005	5,797,626
285—038	5,797,627
285—049	5,797,628
285—256	5,797,629
417—014	5,797,717
417—044	5,797,718
417—046	5,797,719
106—014	5,797,987
106—472	5,797,988
117—206	5,797,989
117—208	5,797,990
118—264	5,797,991
504—206	5,798,310
504—282	5,798,311
505—230	5,798,312
524—259	5,798,416
364—578	5,798,645
320—128	5,798,671
347—186	5,798,789
369—270	5,799,006
369—275	5,799,007
369—291	5,799,008
369—291	5,799,009
435—007	5,799,190

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PATENTS

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GENERAL AND MECHANICAL

5,797,140

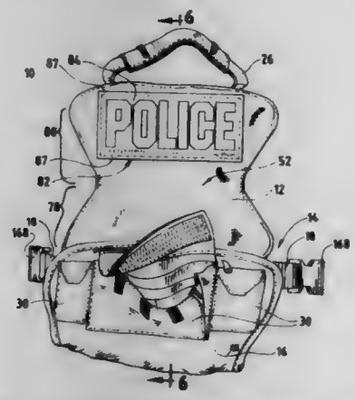
BALLISTIC RESISTANT GARMENT ASSEMBLY AND METHOD OF USING THE SAME

Richard Clinton Davis, Travers City, and Gail Marie St. Amour, Eastport, both of Mich., assignors to Second Chance Body Armor, Inc., Central Lake, Mich.

Continuation of Ser. No. 981,250, Nov. 25, 1992, abandoned. This application Oct. 17, 1994, Ser. No. 323,854

Int. Cl.[6] F41H *1/02*

U.S. Cl. 2—2.5 **25 Claims**



1. A bullet resistant garment carrying assembly, comprising:

a foldable bullet resistant panel capable of stopping a bullet fired from a firearm in which the panel in a deployed position overlies at least a portion of the torso of a wearer, in which the panel has a top portion at the chest of the torso and a bottom portion at the waist of the torso, in which a central portion positioned therebetween is narrower in width in a transverse direction to the direction in which the torso extends and than the width in said transverse direction of the top portion and bottom portion of the panel;

a pouch member to carry the bullet resistant panel in a folded nondeployed position whereby the bottom portion of said bullet resistant panel is releasably connected to an inner portion of the pouch by a pair of mating hook and loop fasteners in which one pair of the pair is attached to the panel and the other of said pair is attached to the inner portion of the pouch;

means for securing the pouch to a body of a wearer; and

means for moving the panel from said nondeployed position to a deployed position.

5,797,141

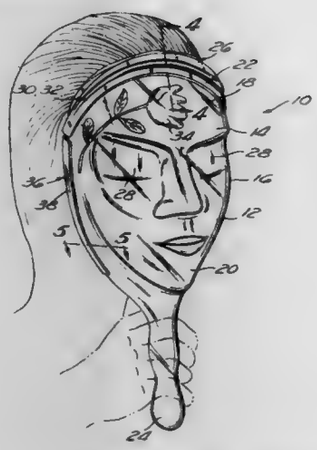
FACE SHIELD/FAN

Oscar Louis Morlett, 22951 Lynda La., Lake Forest, Calif. 92630

Filed Dec. 2, 1997, Ser. No. 982,729

Int. Cl.[6] A41D *13/00*

U.S. Cl. 2—9 **20 Claims**



1. A face shield/fan for protecting a user's face against spray and against spillage occurring at the user's forehead, for dissipating odors and heat and for facilitating drying, the face shield/fan comprising:

a mask, generally formed to receive a user's face, comprising an upper portion and a lower portion, the upper portion generally formed to correspond to the user's forehead;

a sealing member, attachable to the upper portion of the mask, generally formed to conform to the contours of the user's forehead for sealing therewith, for directing spillage occurring at the user's forehead away from the user's face; and

a handle, disposable adjacent the lower portion of the mask, for manually supporting the face shield/fan against the user's forehead and for facilitating waving of the face shield/fan to dissipate odors and heat and facilitate drying.

5,797,142

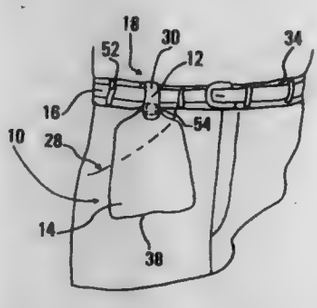
GOLF TOWEL ASSEMBLY

Nicholas Debronsky, Jr., 1309 Summit Oaks Dr., Burnsville, Minn. 55337, and Kelly C. Robertson, Rosemount, Minn., assignors to Nicholas Debronsky, Jr., Burnsville, Minn.

Filed Jan. 24, 1997, Ser. No. 787,275

Int. Cl.[6] A41D *27/00*

U.S. Cl. 2—69 **32 Claims**



1. A golf towel assembly for attachment to a golfer's front waist area for cleaning a golf ball, said golf towel assembly comprising:

an upper portion for attachment to a golfer's front waist area and a depending lower portion for wiping debris from a golf ball, at least said lower portion being comprised essentially of a layer of terry cloth,

said lower portion having a length and width and surface area and a base edge, said length being in the direction depending from said upper portion and being at least about 15 centimeters and not more than about 25 centimeters, said width being in the direction transverse to said length and being at least about 10 centimeters and not more than about 20 centimeters, said surface area being at least about 150 square centimeters and not more than about 425 square centimeters and being of a shape sufficient to accommodate a circle having a diameter of at least about 10 centimeters so as to permit easy wrapping of said lower portion about a golf ball for cleaning, and said base edge being at the end of said lower portion most distant from said upper portion and extending as a straight edge substantially perpendicular to said length and substantially parallel to said width and being at least as wide as the widest part of said width, said length and width and surface area and base edge being such that at least the major bulk portion of

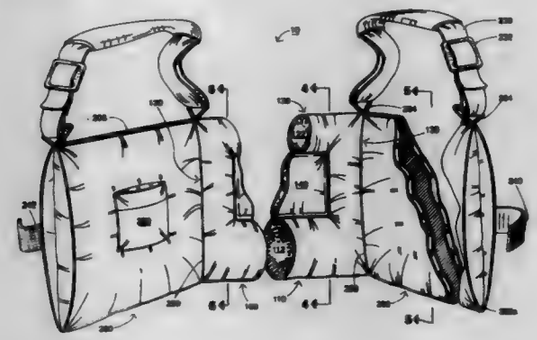
said lower portion is most distant from said upper portion and proximate to said base edge and is easily stowed and retained in a stowed condition in a front pants pocket of a golfer to keep said depending lower portion from interfering with the golfer's swing and yet is quickly removed from the golfer's front pants pocket to permit use of said lower portion to clean a golf ball preliminary to putting while at all times retaining said golf towel assembly attached at its upper portion to the golfer's front waist area.

5,797,143

VEST PACK WITH BACK AND NECK SUPPORTS

Bradly J. Buxton, 2912 N. Battleground Ave., Greensboro, N.C. 27408

Filed Jan. 29, 1996, Ser. No. 593,448
Int. Cl.[6] A41D *1/04*
U.S. Cl. 2—102 **26 Claims**



1. A garment for supporting the lower back of a wearer, comprising:

a) a back panel including a cushion member and having a pair of side edges;

b) a pair of side panels each attached by an edge thereof to a respective one of said side edges;

c) support means attached to each of said side panels arranged and configured to suspend said garment from the wearer's shoulders;

d) wherein said cushion member is positionable with respect to the wearer such that at least a portion of said cushion member supports the lower back of the wearer when the garment is being worn; and

e) wherein said cushion member includes a lower portion and an upper portion, said lower portion being thicker than said upper portion said lower portion arranged and configured to support the lower back of the wearer when the garment is being worn and said upper portion arranged and configured to support the wearer's neck when said garment is not being worn.

5,797,144

NECK TOWEL AND ADJUSTABLE CLASP

Michael James Ciccone, 3519 Bigelow Blvd., Pittsburgh, Pa. 15213

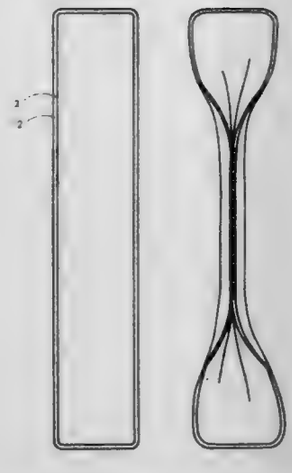
Filed Jan. 20, 1998, Ser. No. 9,537
Int. Cl.[6] A41D *27/00;23/00*
U.S. Cl. 2—144 **2 Claims**

1. A method for fastening a towel of predetermined shape around the neck of a human being and combining an adjustable clasp comprising the steps of:

(a) providing said towel of predetermined length, width and shape, and

(b) sewing a fabric binding along perimeter of said towel,

(c) providing said clasp consisting of a pliable material of predetermined length and width, and



(d) wrapping said pliable material in a circle to form inner band having a predetermined diameter, and

(e) continuing to wrap said pliable material forming a transitional segment and an outer band of predetermined diameter that encircles said inner band, and

(f) bonding at conjunct the combination of said transitional segment with said inner band, and said outer band at a predetermined distance from inner band end and outer band end,

(g) passing one end of said towel into said inner band and the other end of said towel into said outer band, which forms a neck band section which can be draped around the neck, and

(h) moving said clasp up or down the length of said towel to enable enlargement or reduction of said neck band section.

5,797,145

CLOTHING DECORATION

Jeffrey A. Levinson, 61 Prince St., #4A, Boston, Mass. 02113

Filed Sep. 12, 1996, Ser. No. 713,019
Int. Cl.[6] A41D *27/00;27/08*
U.S. Cl. 2—244 **23 Claims**



1. A method of decorating an item of clothing that includes a closed loop of material disposed on a waist portion of the item of clothing, the closed loop of material being configured to support the item of clothing using a belt or the like, the method comprising

providing a decorative device that includes a generally annular surface configured to enclose a space, the annular surface being open at two ends, the annular surface being interrupted by a gap extending from one of the two open ends to the other of the two open ends to permit entry to the enclosed space via the gap, and

manipulating a portion of the closed loop disposed at the waist portion of the clothing through the gap to cause it to lie within the space enclosed by the annular surface, other portions of the closed loop extending outside the device,

the gap remaining after the portion of the closed loop at the waist portion has been manipulated to lie within the space.

5,797,146

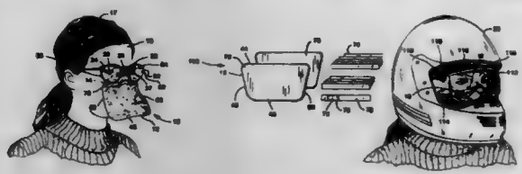
BREATH DEFLECTOR WITH SEAL

Ronald D. Matich, P.O. Box 2541, Baxter, Minn. 56401

Filed Nov. 21, 1996, Ser. No. 752,857

Int. Cl.[6] A42B *3/24*; A62B *18/00*

U.S. Cl. 2—424 **20 Claims**



1. A breath deflector in combination with a helmet and sealed across the bridge of a nose and extending generally forwardly from the nose to an inside portion of the helmet, comprising:

a) a piece having first and second opposite faces defining a thickness, proximal and distal end edge portions defining a length, and side edge portions defining a width;

b) with the piece being formed of a polymeric material which is insulative;

c) with the material further being substantially impermeable to air and water vapor;

d) with the width of the piece along the proximal end edge portion being at least approximately the distance between the outer corner portions of the eyes of an average sized adult such that breath is deflected away from the eyes;

e) with the length of the piece being at least approximately the distance from the bridge of the nose to the inside portion of the helmet in a general forwardly direction whereby breath is deflected away from a transparent portion of the helmet; and

f) a skin-friendly seal on at least a section of the proximal end edge portion such that the proximal end edge portion is sealable across the bridge of the nose, with the length of the seal being at least approximately the distance between the outer corner portions of the eyes of an average sized adult such that the permeation of moisture and air is minimized between the proximal end edge portion and the bridge of the nose and other portions of the face to which the seal is affixed whereby fogging of glasses or the transparent portion of the helmet is minimized.

5,797,147

SPILL-RESISTENT URINAL

Michael J. Young, 680 N. Lake Shore Dr. #424; James A. Young, 680 N. Lake Shore Dr. #621, both of Chicago, Ill. 60611, and Jack Bankier, 6151 Gross Point Rd., Niles, Ill. 60714

Filed Oct. 25, 1996, Ser. No. 738,665

Int. Cl.[6] A47K *11/12*

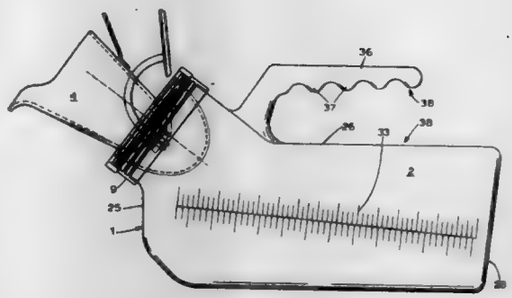
U.S. Cl. 4—144.1 **9 Claims**

1. A urinal comprising:

a canister defining an interior volume and having a mouth through which urine can flow between outside of the canister and the interior volume;

a spout adapted to be refastenably attached to the mouth to seal the mouth against the flow of urine between the interior volume and outside of the canister except through a spout channel;

a trigger on the exterior of the urinal, a seal adapted to close the spout channel upon activation of the trigger; and



a locking arm for securing the seal in an open position, said locking arm arranged to surround said trigger to prevent said trigger from moving and maintain said seal in an open position.

5,797,148

TOILET SEAT

Antti Kivelä, Jämsä, Finland, assignor to Nobi Oy, Jämsä, Finland

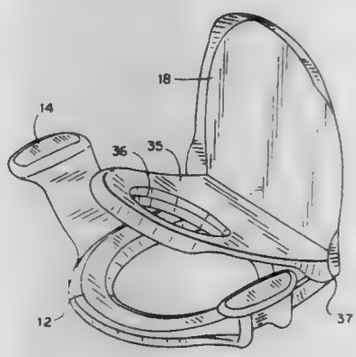
PCT No. PCT/FI95/00144, § 371 Date Oct. 1, 1996, § 102(e) Date Oct. 1, 1996, PCT Pub. No. WO95/27430, PCT Pub. Date Oct. 19, 1995

PCT Filed Mar. 17, 1995, Ser. No. 718,498

Claims priority, application Finland, Apr. 12, 1994, 941682

Int. Cl.[6] A47K *13/00*

U.S. Cl. 4—235 **12 Claims**



1. A toilet seat assembly for a user to use a toilet seat, the toilet seat assembly comprising:

at least two seat rings (12,35; 12',12") adapted to be mounted adjacent to a toilet bowl rim and placed one upon another, including an uppermost seat ring and a lower seat ring;

each of the seat rings being a seat for the user to sit upon and having a respective outer edge;

at least one of the seat rings (12;12',12") including at least one support (14;14',14") which extends from the outer edge thereof on at least one side thereof and intermediate front and back portions thereof, and wherein the support extends substantially upwardly above a top surface plane of the uppermost seat ring (35; 12"), whereby sitting down on and rising up from said toilet seat assembly is facilitated;

said at least one support (14;14',14") and said seat ring which includes said support (12;12',12") comprising an integrally molded one-piece unit (13;13',13").

5,797,149

BATH LIFT

John Clarke Mustarde, 90 Longhill Avenue, Ayr, Ayrshire, KA7 4DF, Great Britain

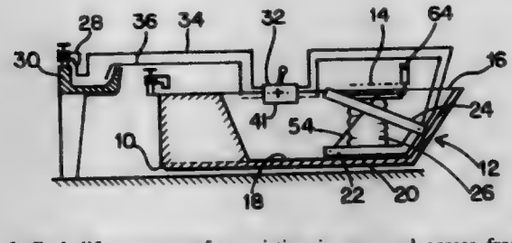
PCT No. PCT/GB92/02084, § 371 Date Aug. 29, 1994, § 102(e) Date Aug. 29, 1994, PCT Pub. No. WO93/09748, PCT Pub. Date May 27, 1993

Continuation of Ser. No. 240,688, Aug. 29, 1994, abandoned. This PCT application Nov. 11, 1992, Ser. No. 603,518

Claims priority, application United Kingdom, Nov. 15, 1991, 9124327; Jun. 20, 1992, 9213149

Int. Cl.[6] A47K *3/02*

U.S. Cl. 4—566.1 12 Claims



1. Bath lift apparatus for assisting ingress and egress from a bath, the apparatus comprising:

a frame having a lower frame portion and an upper frame portion, the lower frame portion including a bath floor engaging first part rigidly fixed to a second part extending upwardly and rearwardly from a rear portion of said first part to a pivotal connection with said upper frame portion, said connection being at a fixed elevation, said upper frame portion extending forwardly from said connection;

a seat pivotally mounted to a front part of the upper frame portion;

a fluid actuated lifting means located between the lower frame portion and the seat for lifting the seat from a bathing position to a raised position, said connection remaining at said elevation during seat movement between said bathing and raised positions;

conduit means for connecting the lifting means to a pressurised fluid source; and

control means operatively connected to said lifting means for controlling the supply of pressurised fluid to the lifting means to permit inflation thereof to lift the seat and to permit deflation thereof to lower the seat.

5,797,150

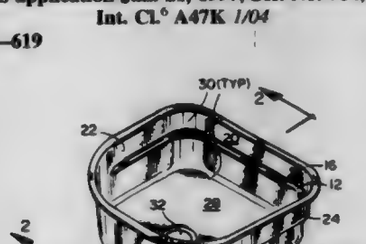
SEAMLESS STAINLESS STEEL SINK BOWL WITH A GRID LEDGE

Melchior Lanz, Sumiswald, Switzerland, assignor to Franke Inc., North Wales, Pa.

Division of Ser. No. 635,850, Apr. 22, 1996, Pat. No. 5,644,943. This application Jan. 21, 1997, Ser. No. 784,661

Int. Cl.[6] A47K *1/04*

U.S. Cl. 4—619 2 Claims



1. A seamless stainless steel sink bowl having a rim, a sidewall and a bottom surface interconnected by smooth corner surfaces from a single sheet, the sink bowl having a finished length, width and depth, formed by the method of:

clamping a stainless steel blank having a thickness of at least approximately 1.2 mm to a surface of a first draw die;

drawing the blank between the first draw die and a first forming die to form a first drawn blank having an unfinished bowl with a length, width and depth which are less than the finished length, width and depth;

generating a deformation warmth in the blank at the corner surfaces in proximity to the rim as the first drawn blank is being formed to a temperature of between approximately 70° C. and 90° C.;

immediately removing the first drawn blank from the first draw die and the first forming die;

immediately clamping the first drawn blank to a surface of a finish draw die; and

finish drawing the first drawn blank, prior to loss of the deformation warmth, between the finish draw die and a finish forming die to form a finish drawn blank having a finished bowl with the finished length, width and depth, the finish drawing including tangentially expanding a non-continuous portion of the sidewall of the first drawn blank and forming the tangentially expanded non-continuous portion between a step in the finish draw die and a complementary shoulder in the finish forming die to form a non-continuous ledge at a medial position in the portion of the sidewall of the finished bowl.

5,797,151

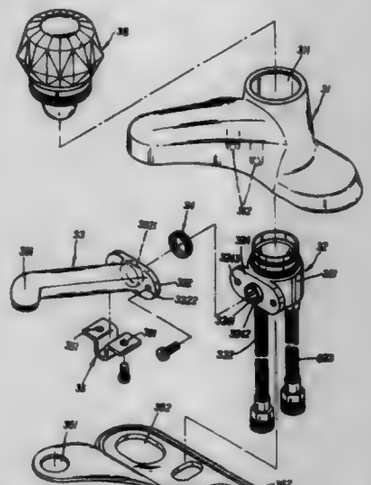
ASSEMBLY STRUCTURE OF A COMBINATION FAUCET

Hsi-Chin Ko, Changhua Hsien, Taiwan, assignor to Chung Cheng Faucet Co., Ltd., Changhua Hsien, Taiwan

Filed Aug. 1, 1997, Ser. No. 905,043

Int. Cl.[6] E03C *1/04*

U.S. Cl. 4—677 3 Claims



1. An improved assembly structure of a combination faucet, comprising a housing, a tap body, a water discharging pipe, a leaking-proof ring washer, a fixing means, a base plate, a filter cap, and a knob; wherein the housing being provided with a central cavity at the rear section and two locking posts having thread groove thereon at the interior front top thereof; the tap body being comprised of an engaging seat having a cold and a hot water pipes attached at the bottom and a fixing plate disposed at the front plane; the water discharging pipe having a water spout disposed at the front end and a locking plate disposed at the rear end; the fixing means having two locking holes disposed at both lateral sides respectively; the base plate defining a similar shape of the bottom plane of the housing being provided with a slot at the front top thereof and a left and a right through holes at the rear lateral sides thereof, whereby, the engaged tap body and the water discharging

pipe can be mounted onto the interior of the housing, and be further secured via the fixing means and the knob before the base plate is fixed to the bottom flange of the housing and the filter cap applied onto the water spout; said improved assembly of the combination faucet of single knob is characterized by that;

said fixing plate being provided with a circular hole at the middle section and a protruding flange defining the periphery of the circular hole; in addition, two screw holes being arranged at both side of said circular bole and said protruding flange;

said locking plate having a stepped hole defining the interior middle section thereof corresponding to the circular hole and the protruding flange of said fixing plate, and two through holes arranged at both sides of said stepped hole matching to said screw holes of said fixing plate;

whereby, the water discharging pipe is securely engaged with the tap body via said fixing plate and said locking plate; said leaking-proof ring washer being first led through s aid protruding flange of said fixing plate, said locking plate being then screwed up to said fixing plate right at the front via the through holes and the screw holes respectively, abutting said leaking-proof ring washer right into the larger step of said stepped hole of said locking plate, and permitting said water spout of the water discharging pipe being directed right downwards to come out through the slot of said base plate and be covered with said filter cap at the mouth.

5,797,152

BEDSTEAD FOR SINGLE BEDS, WHICH CAN BE ASSEMBLED PAIRWISE, ADJACENT TO ONE ANOTHER, INTO A DOUBLE BED

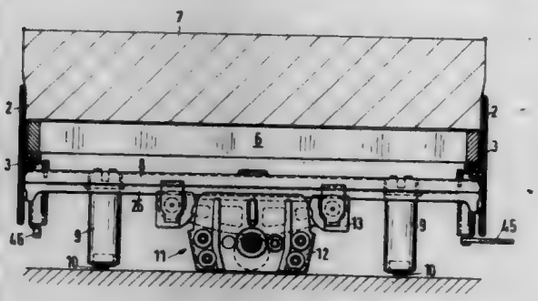
Gerhard Wiesch, Am Thietor 2, D-48431 Rheine, Germany

Filed Oct. 31, 1996, Ser. No. 741,447

Claims priority, application Germany, Nov. 6, 1995, 195 41 267.2

Int. Cl.[6] A47C *19/04*

U.S. Cl. 5—8 **21 Claims**



1. A bedstead movable between a first position and a second position transversely displaced from said first position comprising a bed structure having a longitudinal axis, at least one transverse bar on said bed structure, said transverse bar having an elongate axis perpendicular to said longitudinal axis of said bed structure, a base fixed to a floor, support means operable with said base for vertically moving said support means between a lowered position and an elevated positions, mounting means mounting said support means on said transverse bar such that when said support means moves between its lowered and elevated position, said transverse bar and said bed structure also move between lowered and elevated positions, said mounting means further mounting said support means on said traverse bar to provide for relative shifting movement between said support means and said transverse bar such that when said support means is in said elevated position at one longitudinal end of said transverse bar, the bed structure juxtaposed to the other end of the transfer bar is adapted to be manually raised so that the bed structure can be shifted transversely from said first position to said second position while being supported by said base via said support means and said mounting means.

5,797,153

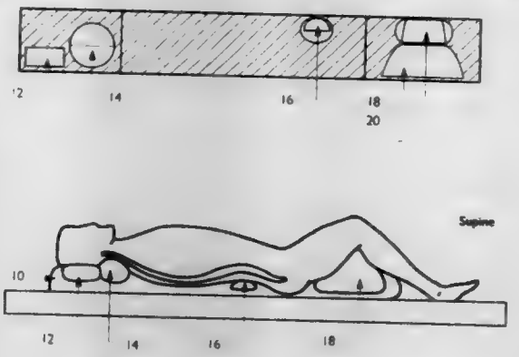
ORTHOPEDIC BODY PILLOW

James Minoru Amioka, 57 Seth Sq., Plattsburgh, N.Y. 12901

Filed Apr. 21, 1997, Ser. No. 845,088

Int. Cl.[6] A47C *27/00*

U.S. Cl. 5—632 **4 Claims**



1. A posture pillow for sound sleep comprising an body pillow generally conforming to a reclining person's body length and width, the body pillow having a filler material therein, a flat cushion for supporting the skull and a cervical roll for supporting the neck, the flat cushion and the cervical roll both positioned within the filler material of the body pillow, a lumbar surface cavity in the body pillow for receiving a lumbar roll, a knee pillow positioned within the filler material of the body pillow, and a knee surface cavity in the pillow for receiving a knee extension.

5,797,154

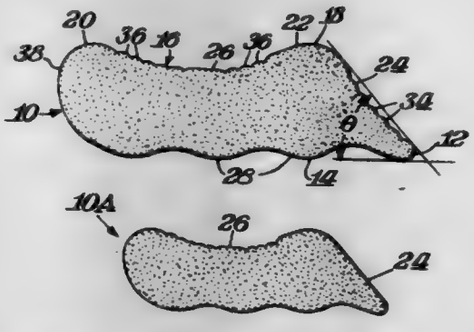
CONTOURED PILLOW

Jose D. M. Contreras, Boothwyn, Pa., assignor to Foamex L.P., Linwood, Pa.

Filed Apr. 30, 1997, Ser. No. 844,115

Int. Cl.[6] A47G *9/00*

U.S. Cl. 5—636 **13 Claims**



1. An integral one piece pillow to support the head, neck and a portion of the upper body of a user, comprising:

a front edge;

a generally planar lower support surface;

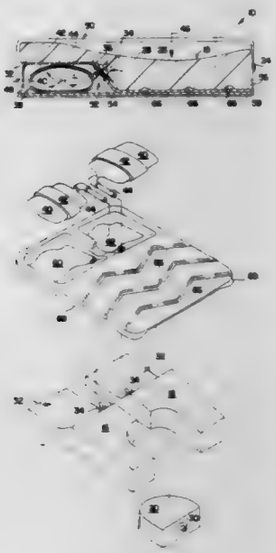
an upper support surface having a front lobe with an upper surface separated from a rear lobe having a back edge by a trough, wherein the trough is adapted to support the head of a user, and having a wedge potion extending downwardly from the upper surface of the front lobe to the front edge of the pillow, said wedge portion having a concavely curved upper surface, wherein the wedge and front lobe are together adapted to support the neck and a portion of the user's upper body and the front edge is generally parallel to the back edge of the rear lobe.

5,797,155

WHEELCHAIR CUSHION WITH PROTECTIVELY ENCASED SELF-ADJUSTING RESERVOIR MEANS

Edmund K. Maier, and Richard W. Raburn, both of Simpsonville, S.C., assignors to Span-America Medical Systems, Inc., Greenville, S.C.

Filed Jun. 6, 1997, Ser. No. 870,526
Int. Cl.[6] A47C *27/18;27/10;* A61G *7/057*
U.S. Cl. 5—654 31 Claims



1. A self-adjusting therapeutic pressure relief seating system, comprising:

at least one resilient support element having a fluid impermeable exterior, said exterior defining an orifice therethrough to the interior of said support element;

at least one self-adjusting reservoir means in fluid communication with said support element orifice for accommodating to equilibrium fluid flow through said orifice responsive to changes in pressure received by said support element exterior;

protective encasement means for protectively receiving said reservoir means so as to isolate said reservoir means from direct contact with changes in pressure to said support element exterior; and

fluid permeable cover means received about said support element, said reservoir means, and said encasement means for forming an integral pressure relief seating system.

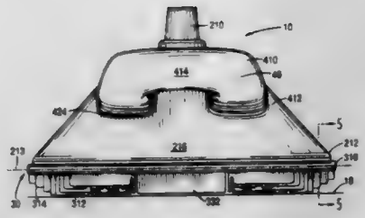
5,797,156

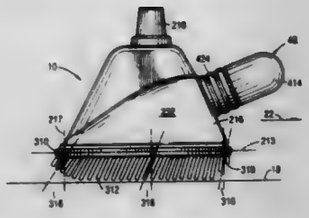
VIBRATORY CLEANER AND METHOD

Pavel Sebor, 751 Cricklewood Ter., Heathrow, Fla. 32746

Continuation-in-part of Ser. No. 307,938, Sep. 16, 1994, Pat. No. 5,664,275, and Ser. No. 288,998, Aug. 11, 1994, which is a continuation of Ser. No. 978,237, Nov. 18, 1992, Pat. No. 5,404,607, which is a continuation-in-part of Ser. No. 880,662, May 11, 1992, abandoned, Ser. No. 880,663, May 11, 1992, Pat. No. 5,259,258, Ser. No. 880,664, May 11, 1992, Pat. No. 5,303,444, Ser. No. 880,665, May 11, 1992, Pat. No. 5,371,910, Ser. No. 880,666, May 11, 1992, Pat. No. 5,274,868, Ser. No. 880,667, May 11, 1992, Pat. No. 5,285,547, Ser. No. 880,668, May 11, 1992, Pat. No. 5,259,082, and Ser. No. 880,669, May 11, 1992, Pat. No. 5,261,287. This application Jun. 7, 1995, Ser. No. 474,991
Int. Cl.[6] F04H *4/16*
U.S. Cl. 15—1.7 29 Claims

1. Apparatus for traveling along a direction across a surface comprising:





a housing having a bottom, a relatively straight forward edge elongated in a direction generally lateral to the direction of travel and generally parallel to the bottom, and a rear;

means coupled with the housing for imparting a continuous vibratory movement to the housing;

rows of treads extending from the bottom of the housing, at least some of the treads being segmented into individual tread elements, each tread element elongated in a direction which is generally parallel with both the direction of elongation of the front edge and the bottom, substantially all, of the tread elements each having a portion which is angled rearwardly with respect to the direction of travel; and wherein

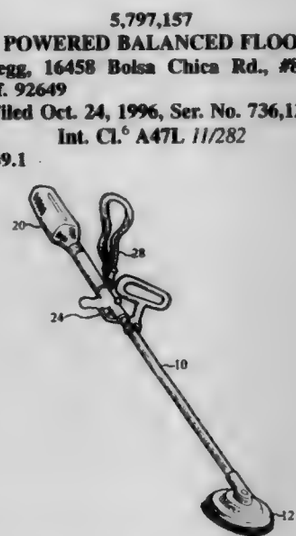
the tread elements are collectively shaped and rounded at the peripheral edges of the housing to facilitate the movement of the apparatus through transitions.

5,797,157

BATTERY POWERED BALANCED FLOOR BUFFER

James R. Gregg, 16458 Bolsa Chica Rd., #84, Huntington Beach, Calif. 92649

Filed Oct. 24, 1996, Ser. No. 736,121
Int. Cl.[6] A47L *11/282*
U.S. Cl. 15—49.1 3 Claims



1. A household floor buffer machine comprising, in combination:

an elongate tubular handle having a proximal end, a midpoint and a distal end;

a power pack and motor housing mounted on the proximal end of the elongate tubular handle;

a battery power pack and an electric motor driven by the power pack mounted in the housing;

an elongate shaft rotatably driven by the electric motor extending through the elongate tubular handle;

a drive gear on the distal end of the shaft;

a buffer head mounted on the distal end of the elongate tubular handle for receiving at least one buffer brush;

gearing mounted in the buffer head driven by the drive gear on the shaft, the buffer head, gearing and drive gear being constructed and configured to drive at least one buffer brush;

an electric switch for turning the electric motor on and off mounted on the elongate tubular handle spaced distally from the power pack and motor housing between the power pack and motor housing and the midpoint of said elongate tubular handle; and

a hand grip mounted on the elongate tubular handle between the electric switch and the midpoint of said elongate tubular handle.

5,797,158

TOOTHBRUSH

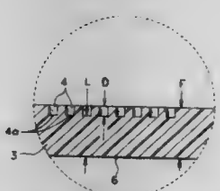
Hisakata Hoshizaki, c/o Johnson & Johnson K.K. Dormitory 1-4 1, Aza Meotozaka, Oh-aza Ohkanbara, Sukagawa-shi, Fukushima-ken, and Takayuki Watanabe, 9-6 Aza Shoubuzawa, Oh-aza Odakura, Nishigou-mura, Nishishirakawa-gun, Fukushima-ken, both of Japan

Continuation of Ser. No. 700,601, Aug. 12, 1996, abandoned, which is a continuation of Ser. No. 342,518, Nov. 21, 1994, abandoned. This application Apr. 23, 1997, Ser. No. 844,964

Int. Cl.[6] A46B *9/04*

U.S. Cl. 15—167.1 **4 Claims**





1. A toothbrush comprising: a block head with bristles embedded in tuft holes, a block handle for holding said toothbrush, and an elongated neck portion connecting said block head with said block handle, said block head having a bottom surface, said tuft holes having corresponding bottoms, wherein said block head is at least 3 mm but at most 4 mm in thickness, said block head has a length from said bottoms of said tuft holes to said bottom surface of said block head, said length being at least 0.2 mm but at most 2.2 mm, said tuft holes are at least 1.8 mm but at most 3.8 mm in depth, and said block head, block handle and elongated neck portion are formed of a polyacetal resin.

5,797,159

MODULAR APPARATUS FOR WASHING AND WIPING A VEHICLE WINDSHIELD

Gilles Berge, Rambouillet; Jean-Pierre Eustache, Antony, and Jean-Louis Roumegoux, Paris, all of France, assignors to Valeo Systemes D'Essuyage, La Verriere, France

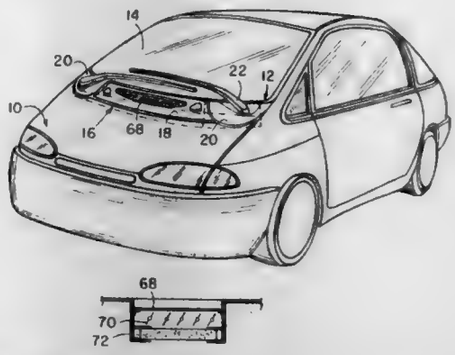
Filed Jul. 25, 1995, Ser. No. 506,858

Claims priority, application France, Jul. 26, 1994, 94 09335

Int. Cl.[6] B62D *25/08;* **B60H** *1/28*

U.S. Cl. 15—250.31 **4 Claims**

1. A modular windshield washing and wiping apparatus, for a windshield of a vehicle which includes the windshield, the windshield defining a lower edge thereof, and a hood extending away from the lower edge, the modular apparatus including windshield wiping means and comprising a plurality of modules adapted for assembly together and to the vehicle, one of the modules having a



windshield washing liquid reservoir and another module carrying the windshield wiping means, the modular apparatus further including a ventilating duct having a plurality of components, wherein at least two of the components are a set of vanes, the vanes being within said ventilating duct for pivoting movement within said ventilating duct in order to regulate air flow, and an air filter spaced from the vanes and within the duct in order to filter the regulated air flow.

5,797,160

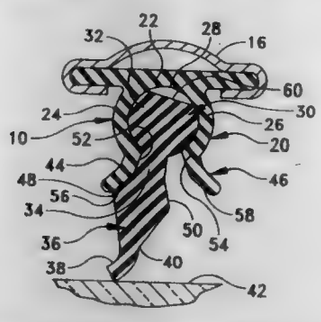
ARTICULATED WINDSHIELD WIPER BLADE ASSEMBLY

Peter H. Jeffer, New York, N.Y., and Michel Fernandes, E. Freetown, Mass., assignors to New-View Windshield Wiper, L.P., Freeport, N.Y.

Continuation-in-part of Ser. No. 781,277, Jan. 10, 1997, Pat. No. 5,742,974, which is a continuation-in-part of Ser. No. 708,669, Sep. 5, 1996, Pat. No. 5,644,814, which is a continuation-in-part of Ser. No. 634,346, Apr. 18, 1996, Pat. No. 5,572,764. This application Oct. 22, 1997, Ser. No. 955,646

Int. Cl.[6] B60S *1/38*

U.S. Cl. 15—250.361 **16 Claims**



1. An articulated twin spline windshield wiper blade assembly for wiping a curved surface, said assembly comprising:

an elongated, polymeric thin-walled female spline having a generally planar backbone, and two opposing arcuate spline legs which extends downwardly from said backbone, said spline legs cooperating with said backbone to define a cylindrical spline channel therebetween, said female spline being fashioned from a polymeric material having a durometer on the "Rockwell R" scale between about 110 and about 130, said planar backbone having a width d_1 generally between about 0.2350 and about 0.4350 inches, and a thickness d_2 between about 0.0200 and about 0.0400, said spline legs having a wall thickness between about 0.0350 and about 0.0750 inches;

an elastomeric male spline having a cylindrical body portion rotatably journaled within said spline channel of said female spline, said male spline further including a neck portion depending from said body portion, and a wiping portion depending from said neck portion, said wiping portion includ-

ing opposing wiping edges which are alternately engageable with a surface to be wiped upon rotation of said male spline within said spline channel,

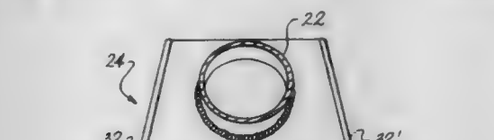
said polymeric material, and said dimensions of said female spline generally providing said female spline with a suitable combination of flexibility and rigidity to prevent torsional and lateral flexing of the female spline during use while also providing an acceptable level of flexure in a Y-direction, towards the curved surface, to allow the female spline to properly conform to the curved surface of the windshield and maintain the wiping edges of the male spline in wiping engagement with the curved surface of the windshield along the entire length thereof, said material and dimensions further providing said spline legs with suitable flexibility relative to the backbone to prevent the spline legs from squeezing the male spline too tightly during simultaneous Y-direction flexure of the female spline and rotation of the male spline there within.

5,797,161

NOZZLE FOR A FLUID VACUUM CLEANING SYSTEM

Joanne Marie Campbell, Klamath Falls, Oreg., assignor to Production Metal Forming, Inc., Klamath Falls, Oreg.

Filed Jul. 12, 1994, Ser. No. 273,637
Int. Cl.[6] A47L *11/38*
U.S. Cl. 15—322 **25 Claims**



1. A nozzle for a fluid vacuum cleaning system, comprising:

a hollow, rigid wand having one end adapted for attachment to a vacuum hose pipe of a vacuum cleaner;

a rear plate defining an opening for receiving an opposite end of said wand, said rear plate extending from said wand at an angle to the longitudinal axis of said wand;

a front plate spaced from said rear plate a predetermined distance and connected to said rear plate by a pair of opposing side plates and a top plate, said plates forming a suction chamber having an open end for contact with a surface to be cleaned; and

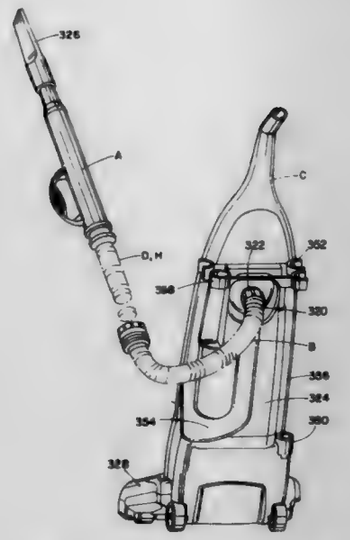
at least one aperture defined by said rear plate, adjacent to a bottom edge of said rear plate, and spaced from said edge a predetermined distance for drawing in fluid from said surface being cleaned.

5,797,162

EXTENDABLE HOSE FOR A VACUUM CLEANER

Robert A. Vystrcil, West Farmington; Mark E. Cipolla, Chardon; Charles J. Thur, Broadview Heights; Jeffrey M. Kalman, Cleveland Heights, and Michael F. Wright, Srow, all of Ohio, assignors to Royal Appliance Mfg. Co., Cleveland, Ohio

Continuation-in-part of Ser. No. 568,174, Dec. 6, 1995. This application Jan. 10, 1997, Ser. No. 781,721
Int. Cl.[6] A47L *5/32*
U.S. Cl. 15—323 **31 Claims**



1. A vacuum cleaner comprising:

a housing comprising a filter chamber;

a hose including a first end, secured to said housing and in communication with said filter chamber, an intermediate portion and a second end;

a tubular wand selectively mounted on said housing, said wand having a first end and a second end, wherein said hose intermediate portion extends longitudinally through said wand from said wand first end toward said wand second end and wherein said hose second end is positioned adjacent to said wand second end; and,

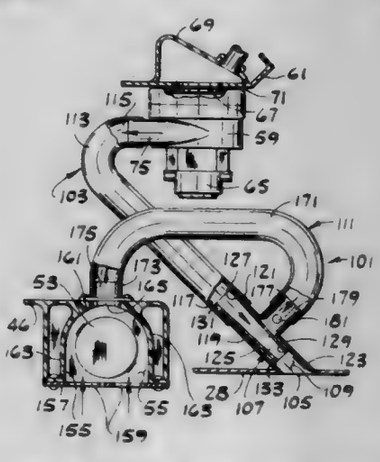
a connector assembly secured on said hose intermediate portion and selectively secured to said wand first end, wherein when said connector assembly is secured to said wand first end a substantial portion of said hose intermediate portion is stowed in said wand and when said connector assembly is spaced from said wand first end said substantial portion of said hose intermediate portion is pulled out of said wand.

5,797,163

LIQUID EXTRACTION MACHINE

Emert Robert Whitaker, Siloam Springs; Lenard Keith Deiterman, and Michael Gerald Kramer, both of Springdale, all of Ark., assignors to Clarke Industries, Inc., Springdale, Ark.

Filed Jul. 26, 1996, Ser. No. 686,821
Int. Cl.[6] A47L *11/00; 13/00*
U.S. Cl. 15—413 **18 Claims**



1. A machine for extracting liquid from a surface, such as carpeting, said machine comprising,

a main housing,

a vacuum pump in the main housing for creating a vacuum to extract liquid from the surface,

a motor in the main housing for driving said vacuum pump, said vacuum pump having an exhaust,

an exhaust duct for conducting exhaust air from the exhaust of the vacuum pump to an opening in the main housing for exhaust to the environment,

a constriction in said exhaust duct for reducing the pressure of exhaust air flowing through the exhaust duct from a first pressure upstream from the constriction to a second lower pressure in a low pressure zone adjacent the constriction,

a compartment having an inlet for entry of ambient air into the compartment and an outlet for exit of air from the compartment,

a second motor within the compartment,

a cooling duct having an inlet communicating with the outlet of the compartment and an outlet communicating with said low pressure zone in said exhaust duct, said second lower pressure of the exhaust air in said low pressure zone being less than ambient pressure thereby to cause a flow of cooling ambient air into the compartment, through the compartment and into the cooling duct, and then into the exhaust duct for exhaust out of the main housing.

5,797,164

DOVETAIL REFRIGERATOR DOOR HANDLE LOCK

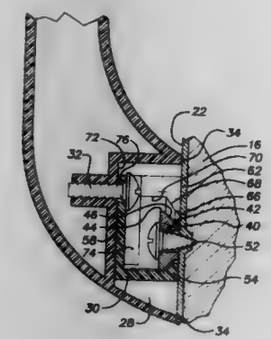
David J. Donaghy, Gowen, Mich., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 30, 1995, Ser. No. 565,412

Int. Cl.[6] A47B *95/02;* **A47J** *45/00*

U.S. Cl. 16—111 R

14 Claims



1. A handle assembly for a refrigerator door, comprising a mounting button, a mounting block, and a handle, said handle having a first end to which one of said mounting block or mounting button is secured, the other of said mounting block or mounting button being secured to the refrigerator door, said mounting button having a frustoconical outer surface, said mounting block defining a slot having a closed end and into which said mounting button is inserted, wall surfaces surrounding said slot being angled to cooperate with and engage said frustoconical outer surface of said mounting button at said closed end of said slot, wherein at least one of said mounting button and said mounting block comprises a compressible resilient material and angled wall surfaces of said mounting block and said frustoconical outer surface of said mounting button cooperate to provide an interference-type connection which secures said handle first end to the refrigerator door.

5,797,165

EXERCISE GRIP FOR ATTACHMENT TO HANDLEBARS

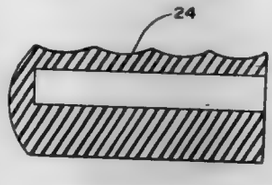
Ronald Oran Armbrust, 1955 W. Henderson St., Apt. 2, Chicago, Ill. 60657

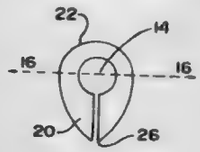
Filed May 14, 1993, Ser. No. 61,281

Int. Cl.[6] A47B *95/02*

U.S. Cl. 16—114 R

6 Claims





5. An improved stationary exercise bicycle apparatus having handle bars said improvement comprising: a handgrip of one piece construction and having a central channel so as to define an axis running through said channel and a plane parallel to said axis, said handgrip having two halves, a smaller half on one side of said plane and a larger half on the other side of said plane, said larger half having a cross section of ovoid shape and having a broad portion adjacent to said central channel and a pointed portion facing away from said central channel, said larger half having a slot running through said cross section of said larger half and in connection with said central channel, said handgrip attached to at least one of said handle bars.

5,797,166

CARRYING HANDLE FOR ARTICLES

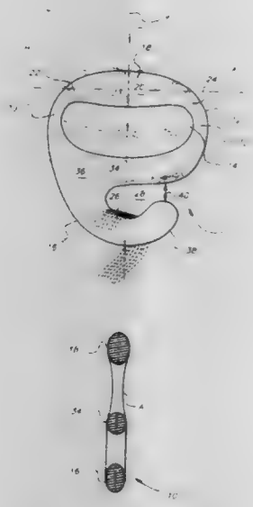
Evan J. Wagenheim, 19132 Fisher Island Dr., Fisher Island, Fla. 33109

Filed Feb. 10, 1997, Ser. No. 799,034

Int. Cl.[6] A47B *95/02*

U.S. Cl. 16—124

2 Claims



1. A carrying handle for articles, comprising:

a closed loop handgrip portion having a hand passage therethrough, and an open hook portion depending from said handgrip portion, said handgrip portion and said open hook portion formed as a unitary solid construction of sturdy plastic, said hook portion being laterally narrower than said handgrip portion, said closed handgrip portion disposed coplanar with said open hook portion;

said handgrip portion including an upper grip extending along a horizontal axis, said grip being symmetrical about a central vertical axis normal to the horizontal axis and including a first

end and an opposite second end, said grip having an ergonomic shape defined by an upper edge and a lower edge, each said edge having a convex curvature, said handgrip portion having a first end element depending from said first end and an opposite second end element depending from said second end, said handgrip portion further including an intermediate member connecting said first end element and said second end element, each said end element being thinner than said grip, said intermediate member, and said hook portion, said intermediate member being downwardly curved away from said grip, said grip and said intermediate member each having a solid elliptical cross section;

a padded covering surrounding said grip;

said hook portion having an upwardly turned distal end and a wide article support area, said distal end being closer to said handgrip portion than said article support area of said hook portion to define an article carrier passage having a narrow mouth for retaining articles securely within said hook portion, said article carrier passage having a height and a width, said height being less than said width, said article support area having a lowermost central point disposed on said central vertical axis, said article support area having a solid elliptical cross section, said hook portion having a wide connecting flange connected to said intermediate member.

5,797,167

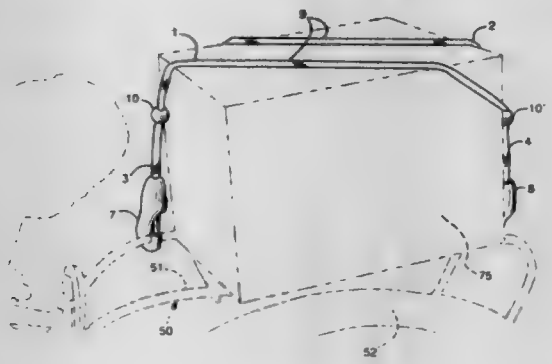
ELASTIC CORD TIE-DOWN CONSTRUCTION

Leonard M. Schwab, 3 Olde Lantern Rd., Acton, Mass. 01720

Filed Jul. 1, 1996, Ser. No. 674,174

Int. Cl.[6] B65D *63/00*

U.S. Cl. 24—16 R **11 Claims**



1. An elastic cord tie-down construction comprising:

at least one pair of elongate stretchable elastic cord elements having end portions;

each said end portion having an attachment element for securing said tie-down construction to a support structure therefor and that portion of said pair of elastic cord elements between said attachment elements defining an article-engaging loop therebetween;

at least one keeper element composed of a resilient elastomeric material and having a bore to receive said pair of elongate stretchable elastic cord elements therethrough, said bore being of a size such that said keeper element is in slideable frictional engagement with said pair of elastic cord elements defining said article-engaging loop and the resiliency of said keeper element being sufficient to maintain the bore thereof in said slideable and frictional engagement with said pair of elastic cord elements and to clasp said pair of cord elements in substantially adjacent relationship over at least a substantial range of stretching thereof.

5,797,168

TWO-LOOP COILED TYPE CLAMPING DEVICE

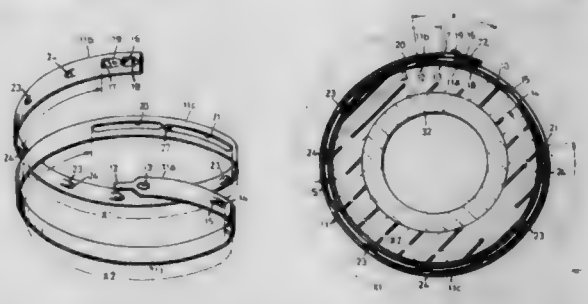
Kenji Nagano, Ibaragi, Japan, assignor to Kabushiki Kaisha Kenlock, Osaka-fu, Japan

Filed Aug. 7, 1997, Ser. No. 908,381

Claims priority, application Japan, Sep. 5, 1996, 8-257561; Apr. 24, 1997, 9-122948

Int. Cl.[6] B65D *63/00*

U.S. Cl. 24—20 R **9 Claims**



1. A two-loop coiled type clamping device wherein a clamp band (**11**) consisting of a metal strip material (M) cut to a fixed length (L) is roll-bent in a two-loop circular coiled state for three dimensionalization such that the inner and outer overlap portions (**11***a* and **11***b*) of the clamp band (**11**) respectively forming one and the other roll-bent end overlap each other through an intermediate overlap portion (**11***c*) in three layers by a fixed amount (X), the bore diameter of said clamp band (**11**) being manually forcibly contracted to fix a fluid conveying hose, dustproof bellows, axial boot or other article to be fixed (**10**) to the circumferential connecting surface (**32**) of a desired mating device (**31**),

said clamping device being characterized in that the one severed end of said inner overlap portion (**11***a*) alone is cut to form a pilot nose (**12**) having a fixed width (W1) smaller than the fixed width (W) of the metal strip material (M), said inner overlap portion (**11**) being formed with a first tool receiving hole (**14**), and a first tool locking tooth (**15**) is bent out in an outwardly raised state from the opening edge of the first tool receiving hole (**14**) on the side adjacent said pilot nose (**12**),

said outer overlap portion (**11***b*) is formed with a first fixing tooth receiving hole (**16**) and a second tool receiving hole (**17**) which are juxtaposed in the order mentioned as seen from the other severed end side, while a first fixing tooth (**18**) is bent out in an inwardly recessed state from the opening edge of the first fixing tooth receiving hole (**16**) on the other severed end side and a second tool locking tooth (**19**) is bent out in an outwardly raised state from the opening edge of the second tool receiving hole (**17**) on the side adjacent the first fixing tooth receiving hole (**16**),

said intermediate overlap portion (**11***c*) is formed with a nose receiving hole (**20**) for relief reception of the pilot nose (**12**) of the inner overlap portion (**11***a*) and a communication hole (**21**) for relief reception of said first tool locking tooth (**15**) of said inner overlap portion (**11***a*) which are in juxtaposed relation to each other, while a second fixing tooth (**22**) is bent out in an outwardly raised state from the opening edge of said communication hole (**21**) on the side adjacent said nose receiving hole (**20**),

the arrangement being such that when the bore diameter of said clamp band (**11**) is forcibly contracted by applying the pair of working teeth (**33**) of a draw operating tool (P) to the first and second tool locking teeth (**15** and **19**) of the inner and outer overlap portions (**11***a* and **11***b*), respectively, to draw said pair of working teeth (**33**) toward each other, the first and second fixing teeth (**18** and **22**) of the outer and intermediate overlap portions (**11***b* and **11***c*), respectively, come in seizure engagement with each other,

a plurality of distributed float leg pieces (**23**) are cut up in an inwardly bent state from an external contact region (X1) extending from the tool relief reception communication hole (**21**) in the intermediate overlap portion (**11***c*) to the second tool receiving hole (**17**) in the outer overlap portion (**11***b*), the cut-up front ends of said float leg pieces (**23**) being elastically

contacted with an internal contact region (X2) extending from the nose receiving hole (20) in the intermediate overlap portion (11c) overlapping said external overlap region (X1) in two layers to the first tool receiving hole (14) in the inner overlap portion (11a), thereby storing diametrically directed spring force in said clamp band (11).

5,797,169

COUPLING PIECE FOR THE DETACHABLE CONNECTION OF CONTAINERS

Julius Donner, Lemwerder; Thomas Niemann, Delmenhorst, and Wilhelm Wilk, Bremen, all of Germany, assignors to MacGregor-Conver GmbH, Bremen, Germany

PCT No. PCT/EP95/03072, § 371 Date Apr. 9, 1997, § 102(e) Date Apr. 9, 1997, PCT Pub. No. WO96/06027, PCT Pub. Date Feb. 29, 1996

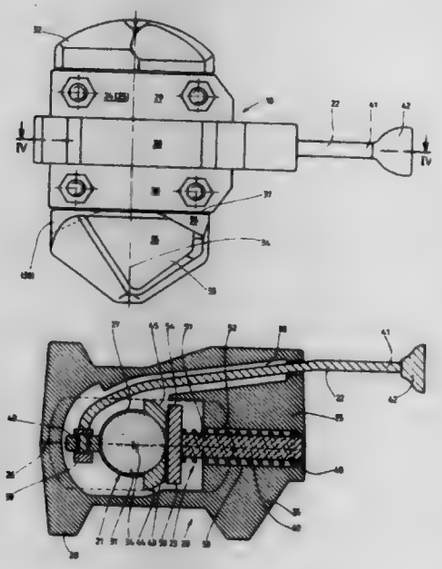
PCT Filed Aug. 2, 1995, Ser. No. 776,532

Claims priority, application Germany, Aug. 19, 1994, 44 29 358.5; Feb. 13, 1995, 195 04 633.1

Int. Cl.[6] B65D *90/00*

U.S. Cl. 24—287

3 Claims



1. A coupling piece for the detachable connection of containers, especially of containers stacked one above the other on board ships, having a housing and a locking bolt mounted by a middle part rotatably in the housing, which locking bolt has at opposite ends of the middle part, crossbolts, characterized in that:

the locking bolt (21) is assigned a pressure element:

the locking bolt (21) and the pressure element have corresponding first and second stop means, respectively, for fixing the locking bolt (21); and

the pressure element of the locking bolt (21) can be twisted in such a way that the first stop means on the middle part (31) of the locking bolt (21) can be brought into engagement with the second stop means on the pressure element, which engagement fixes the locking bolt (21).

5,797,170

SYNTHETIC RESIN MOLDED SURFACE FASTENER

Mitsuru Akeno, Toyama-ken, Japan, assignor to YKK Corporation, Tokyo, Japan

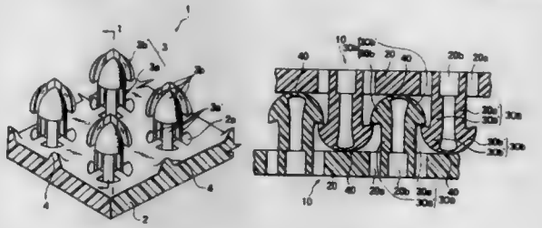
Filed Feb. 28, 1997, Ser. No. 807,782

Claims priority, application Japan, Mar. 4, 1996, 8-046036

Int. Cl.[6] A44B *18/00*

U.S. Cl. 24—452

13 Claims



1. A synthetic resin molded surface fastener comprising:

(a) substrate sheet;

(b) a multiplicity of engaging elements standing on a front surface of said substrate sheet, each of said engaging elements having a stem rising from said front surface of said substrate sheet and an engaging head continuously formed on and horizontally bulging from an upper end of said stem, said engaging head being expandable and shrinkable horizontally; and

(c) a multiplicity of head-diameter enlarging means for enlarging diameter of said engaging heads when said engaging heads engage engaging heads of a companion surface fastener, said head-diameter enlarging means enlarging the diameter of said engaging heads from a first diameter when said engaging heads are disengaged from the companion surface fastener to a second diameter which is larger than the first diameter when said engaging heads are engaged with the companion surface fastener.

5,797,171

BUCKLELESS BELT

Constantinelli R. Nelson, 7371 Oakmeadows Dr., Worthington, Ohio 43085

Filed Dec. 17, 1997, Ser. No. 992,594

Int. Cl.[6] A44B *12/20*

U.S. Cl. 24—600.5

5 Claims



1. A buckleless belt, comprising:

a belt having a first end, a second end, and an inner surface;

a plate having a first end and a second end, the first end of the plate attached to the first end of the belt;

a hook attached to the plate, the hook having an entrance;

a slide mounted on the plate, slidable into a first position that blocks the entrance of the hook, and slidable into a second position that unblocks the entrance of the hook;

a spring acting between the plate and the slide to urge the slide into the first position thereof that blocks the entrance of the hook; and,

at least one engagement wire mounted on the inner surface of the belt near the second end of the belt for engagement with the hook, the wire mounted at sufficient distance from the second end of the belt so that the second end of the belt covers and hides the plate from frontal view when the wire is engaged in the hook;

whereby the belt can be closed into a loop having no visible buckle by moving the slide to its second position to unblock the hook, engaging the wire in the hook, and releasing the slide to its first position where it retains the wire in the hook.

5,797,172

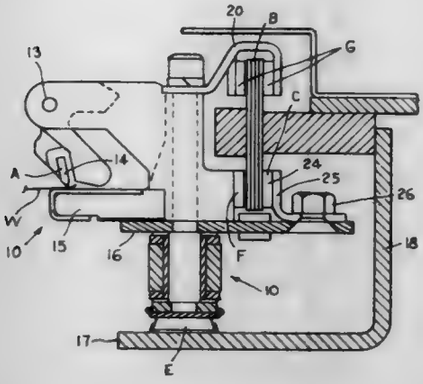
TENTER FRAME AND METHOD

Christopher Eugene Hosmer, Greer, S.C., assignor to Marshall and Williams Company, Greenville, S.C.

Continuation-in-part of Ser. No. 641,350, Apr. 30, 1996, Pat. No. 5,613,284. This application Jan. 23, 1997, Ser. No. 787,642

Int. Cl.[6] D06C *3/04*

U.S. Cl. 26—89 9 Claims



7. A method of carrying tenter clips for supporting a web in open width comprising the steps of:

providing a single vertical stationary monorail for supporting said tenter clips while subjecting the web to a treatment medium;

guiding a chain carried beneath and driving the tenter clips for longitudinal movement on a low friction bearing surface;

utilizing longitudinally aligned anti-friction means supporting each of said tenter clips on a back side of said monorail in opposed horizontal alignment with said web for carrying the tenter clips during treatment;

mounting wear pads for guiding said tenter clips opposite said anti-friction means on a front side of said monorail; and

supporting wear pads on said tenter clips at a top of said monorail for guiding said tenter clips for vertical alignment;

whereby a method is provided for use in a tenter frame during transport of the web for continuous guidance of the tenter clips thereby with the anti-friction means out of contact with a turnaround sprocket.

5,797,173

METHOD OF MANUFACTURING A HINGE FOR EYEGLASSES

Reiner Wagner, Ispringen, Germany, assignor to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. KG, Ispringen, Germany

Filed Dec. 28, 1995, Ser. No. 580,261

Claims priority, application Germany, Dec. 20, 1995, 195 47 817.7

Int. Cl.[6] B21K *13/02;* B23P *17/00*

U.S. Cl. 29—11 4 Claims

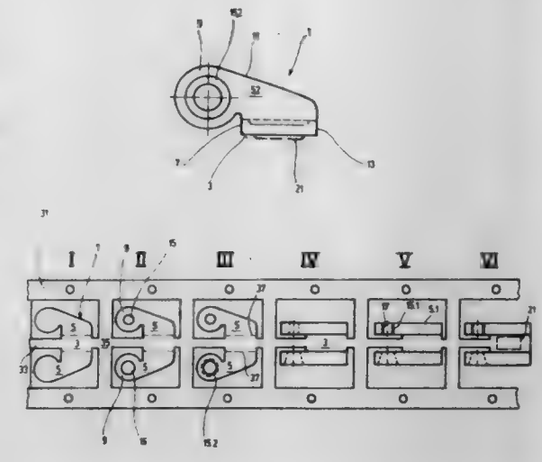
1. A method of fabricating an eye-glasses hinge having a twin-roller hinge part with a base surface and two legs, said method comprising the steps of:

punching out the hinge part from a strip material, with the punched-out part remaining connected with the strip material by at least one web;

forming a bore in each of the two legs of the hinge part;

forming a thread in the bore of one of the two legs;

embossing one of a weld point and a soldering knurling in a bottom side of the hinge part to provide for attachment of the hinge part to an eye-glasses frame;



bending out the two legs relative to the base surface by an angle of 90°; and

separating the hinge part from the strip material.

5,797,174

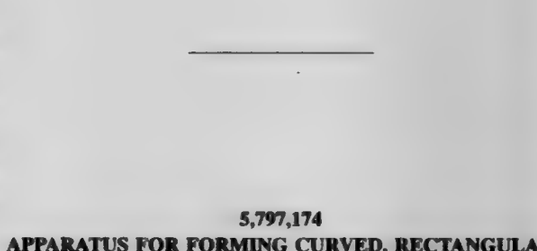
APPARATUS FOR FORMING CURVED, RECTANGULAR BODIED NEEDLE BLANKS FROM TUBULAR STOCK

Thomas D. Guy, Hobe Sound, Fla.; Terry C. Eisensmith, Guilford, Conn., and Donald A. Morin, Goffstown, N.H., assignors to United States Surgical Corporation, Norwalk, Conn.

Division of Ser. No. 590,226, Jan. 23, 1996, Pat. No. 5,682,940. This application May 6, 1997, Ser. No. 851,650

Int. Cl.[6] B23P *13/00;* B21G *1/00*

U.S. Cl. 29—56.5 15 Claims



1. An apparatus for forming needle blanks from a ring of needle stock comprising:

a) means for supporting a ring of needle stock; and

b) means for imparting a plurality of needle blank shapes in the ring of needle stock.

5,797,175

PROCESS FOR CONNECTING AN INSERT TO A SHEET TO FORM A JOINT DESIGNED TO BE SECURED AGAINST ROTATION AND INSERT EJECTION

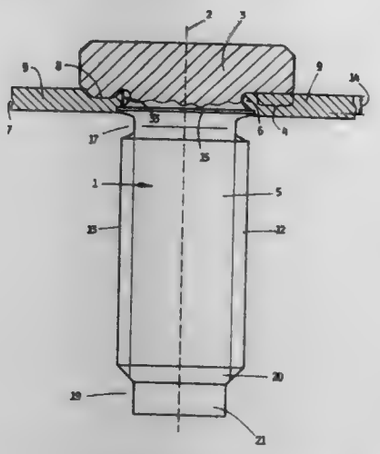
Wilhelm Schneider, Schwabach, Germany, assignor to Richard Bergner GmbH & Co., Schwabach, Germany

Continuation of Ser. No. 367,125, Jan. 6, 1995, abandoned. This application Feb. 7, 1997, Ser. No. 796,190

Claims priority, application Germany, Aug. 24, 1992, 92 11 342.7; Jul. 7, 1993, 92 09 059.1

Int. Cl.[6] B21D *39/00*

U.S. Cl. 29—520 3 Claims



1. A process for inserting an insert element having a longitudinal axis and comprising one of a bolt, a screw, and a nut having an interior thread, into a flat sheet metal piece to form a connected element, comprising the steps of:

providing the insert element with a head coaxially positioned on the longitudinal axis, and having a width defining a first diameter, and a seating surface extending essentially radially relative to the longitudinal axis; a shank connected to and concentric to the head and having a width defining a second diameter smaller than the first diameter, the shank axially extending on one side of the head from the seating surface; a transition area defined by the connection between the head and the shank, the transition area having a concentric annular groove forming a constriction, the groove being open toward an exterior of the insert element for receiving the sheet metal piece; and a plurality of separate projections circumferentially arranged on the seating surface in an area beyond the width of the shank and providing a twisting resistance between the insert element and the sheet metal piece, each separate projection having a length that extends approximately radially relative to the longitudinal axis;

providing the sheet metal piece with a perforation for receiving the shank and having a diameter sized to allow the shank to pass therethrough, the perforation having an edge bent up in a direction toward the head to form a collar projecting out from a plane defined by a surface of the sheet metal piece;

inserting the shank through the perforation;

pressing the shank in the longitudinal direction toward the sheet metal piece causing the collar to be bent in a direction toward the plane so that the collar is essentially level with the surface of the sheet metal piece in a region between adjacent projections, and so that the seating surface firmly rests against the surface of the sheet metal piece; whereby said pressing step causes a reduction in the perforation diameter so that the collar fills the annular groove, so that only the projections enter the sheet metal piece in axial direction, and so that the annular groove extends from a shank side of the insert element to the plane defined by the surface of the sheet metal piece; and

forming the connected element so that the insert element and the sheet metal piece are nonrotatably and nonejectably connected together.

5,797,176

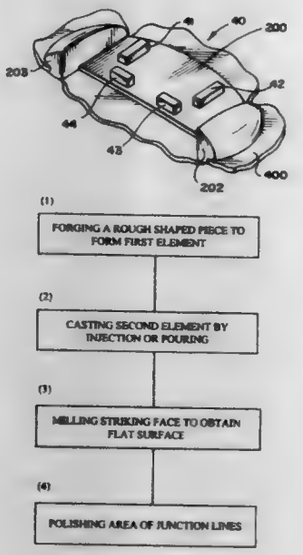
GOLF CLUB HEAD MANUFACTURING METHOD

Dave Rose, Cardiff, and William A. Priest, Oceanside, both of Calif., assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.

Filed Jan. 25, 1996, Ser. No. 591,298

Int. Cl.[6] B23P *17/00;* B22D *19/06;* B24B *13/00;* A63B *53/08*

U.S. Cl. 29—527.5 24 Claims



1. A method of manufacturing a golf club head of two materials, the method comprising:

forming a first part of the head comprising forging the first part from a first material, the first material being a metallic material;

positioning the first part in a mold and creating free space between surfaces of the first part and the mold;

forming a second part of the head from a second material, comprising casting by injecting or pouring the second material into the free space and creating an intimate connection between the first part and the second part;

removing the head from the mold after the second part has solidified in intimate connection with the first part; and

said forming a first part comprises forming outer surfaces of a toe and a heel of the golf club head.

5,797,177

INSERTION TOOL FOR PRINTED CIRCUIT BOARD ELECTRICAL CONNECTORS

Robert M. Simmons, Winston-Salem, N.C., and Brian L. Thomason, Danville, Va., assignors to The Whitaker Corporation, Wilmington, Del.

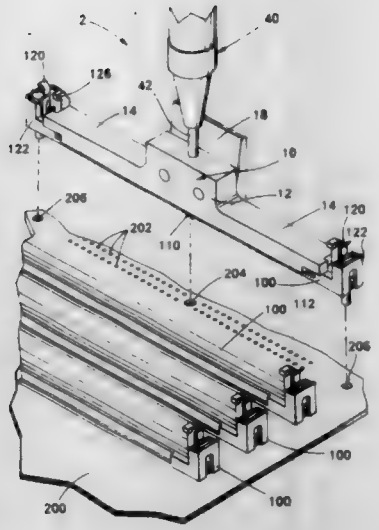
Filed Jan. 23, 1996, Ser. No. 590,307

Int. Cl.[6] B23P *19/00*

U.S. Cl. 29—739 9 Claims

1. A tool for installing an electrical connector on a circuit board, wherein the electrical connector includes a housing having a lower surface to be mounted adjacent to the circuit board, a plurality of electrical terminals disposed in cavities in the housing, the cavities being open to a top surface of the housing, the tool comprising:

an insertion head including a lower surface configured to conform to the top surface of the electrical connector housing, the insertion head having laterally extending arms and a wing extending from each of the arms, the wings comprising orientation means for engaging the electrical connector in only one orientation; and



a shaft connected to the insertion head for delivering a force transmitted through the shaft to the insertion head.

5,797,178

MOUNTING APPARATUS FOR ELECTRONIC COMPONENT

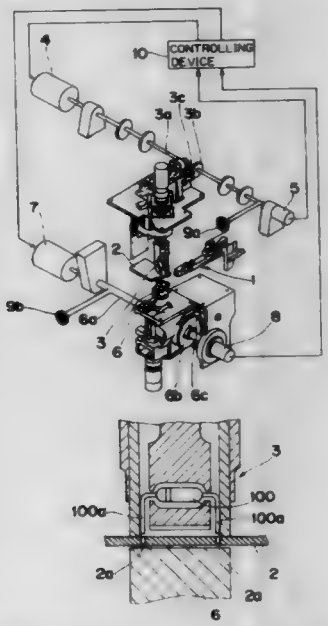
Yuzuru Inaba; Kiyoshi Imai; Hideaki Watanabe, all of Kofu, and Hiromi Kinoshita, Kitakyushu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 22, 1996, Ser. No. 605,774

Claims priority, application Japan, Feb. 22, 1995, 7-034022

Int. Cl.[6] **H05K** *3/32;13/02;13/04*

U.S. Cl. 29—74.1 **2 Claims**



1. An apparatus for mounting electronic components, comprising:

an electronic component feeding member for feeding electronic components with lead wires tape-bonded by tapes;

an insertion head for inserting into holes of a board the lead wires of one of the electronic components fed from the feeding member after separating from the tapes;

a fixing head facing the insertion head via the board for cutting and folding the lead wires of the electronic component to the board, the fixing head including a lifting part for moving the whole fixing head up and down and a folding the lead wires of the electronic component;

a first driving motor for the insertion head;

a cam, fitted at a driving shaft connected to the first driving motor, for driving the insertion head;

an encoder for detecting a rotating position of a rotor of the first driving motor; and

each of the lifting part and the folding part being equipped with a second driving motor and an encoder for detecting a rotating position of a rotor of the second driving motor.

5,797,179

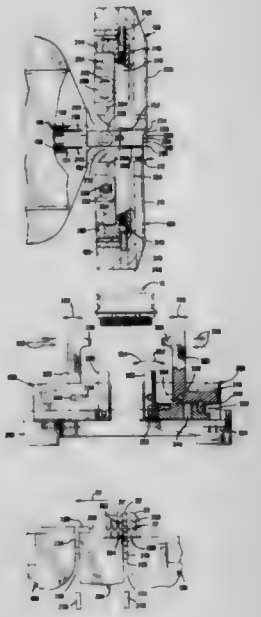
MACHINE FOR TERMINATING OFFSET CONNECTOR

Mark Elton Unger, III, Tower City, and Dale Eugene Stough, Jr., Red Lion, both of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 29, 1996, Ser. No. 740,459

Int. Cl.[6] **H01R** *43/01;43/20*

U.S. Cl. 29—753 **16 Claims**



1. A machine for inserting discrete wires of a cable into pluralities of first and second insulation displacement contacts of an electrical connector, wherein said first contacts are arranged in a first row and said second contacts are arranged in a second row spaced from said first row and extending from a common side thereof so that said second contacts of said second row extend from said common side further than do said first contacts of said first row, said machine comprising:

(a) a frame;

(b) a first inserting mechanism having a first insertion blade movable in a first direction for effecting said inserting discrete wires into said first contacts of said first row;

(c) a second inserting mechanism adjacent to and spaced from said first inserting mechanism and having a second insertion blade movable in said first direction for effecting said inserting discrete wires into said second contacts of said second row;

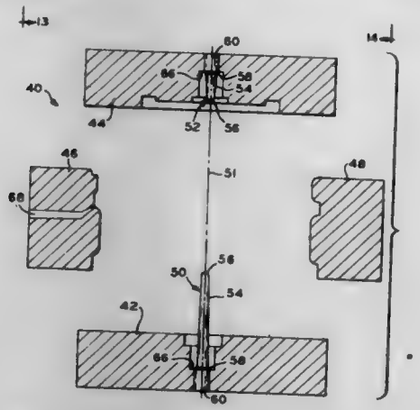
(d) a holder slidingly coupled to said frame and arranged to hold and incrementally move said connector in second and third opposite directions along a pathway perpendicular to said first direction to momentarily position each said first contact in said first row in alignment with said first insertion blade and to momentarily position each said second contact in said second row in alignment with said second insertion blade during said inserting discrete wires.

5,797,180

METHOD OF MANUFACTURING A PLASTIC CAMSHAFT WITH A TUBULAR METAL INSERT

Brian S. Buchholz, Chilton, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Aug. 28, 1996, Ser. No. 703,969
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.1 **16 Claims**



1. A method of manufacturing a plastic camshaft having a tubular metal insert, said method comprising:

providing a die assembly, said die assembly comprising a plurality of mold blocks, said mold blocks being movable between an open and a closed position, said mold blocks defining a mold cavity when in said closed position, said die assembly including first and second pins extending into said mold cavity when said mold blocks are in said closed position and first and second mold surfaces disposed on said mold blocks adjacent said pins are separated by a first length when said mold blocks are closed;

cutting the metal tubular insert to a second length shorter than said first length;

placing one end of the tubular metal insert on said first pin;

inserting said second pin in an opposite end of the tubular metal insert;

closing said mold blocks; and

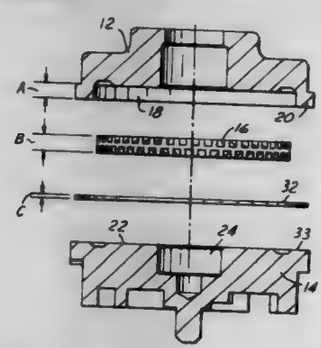
filling said closed mold cavity with a molten plastic.

5,797,181

METHODS OF MANUFACTURING AUTOMOTIVE FUEL PUMPS WITH SET CLEARANCE FOR THE PUMPING CHAMBER

Barry Robinson, Williamsburg, Va., assignor to Siemens Automotive Corporation, Auburn Hills, Mich.

Filed Nov. 18, 1996, Ser. No. 751,600
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.024 **12 Claims**



1. In a fuel pump having first and second opposed turbine housings with a channel therebetween of decreasing cross-sectional area between a fuel inlet port in said first housing and a fuel outlet port in said second housing and an impeller disposed between said housings for pumping fuel between said inlet port and said outlet port, a method of manufacturing the fuel pump, comprising the steps of:

forming a circular recess in a face of one of said housings having a depth A in an axial direction of said impeller;

forming a flat face on another of said housings;

determining the thickness B of the impeller;

providing a spacer of predetermined depth;

crushing the spacer to reduce the depth of the spacer from said predetermined depth to a depth C where A+C=B+ a predetermined clearance;

inserting said impeller into said recess; and

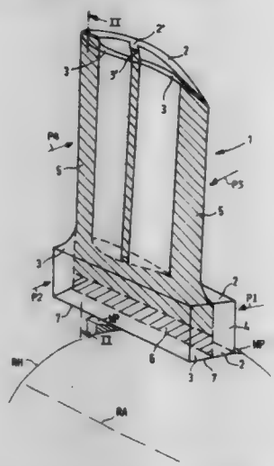
locating said spacer between said housing faces of the housings in face to face opposition to one another whereby the clearance between the impeller and the housings corresponds to said predetermined clearance.

5,797,182

METHOD FOR PRODUCING ROTORS WITH BLADES

Roberto Furlan; Ulrich Knott, both of Munich, and Horst Friedrich, Augsburg, all of Germany, assignors to MTU Motoren- und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed Nov. 7, 1996, Ser. No. 744,995
Claims priority, application Germany, Nov. 11, 1995, 195 42 080.2
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.21 **11 Claims**



1. A method for manufacturing a rotor having a rotor hub or disk and rotor blades integrally secured to said hub or disk, each blade being provided with a thickened blade foot having a radially inner blade foot sole (7) butt-welded to said rotor hub or disk, each rotor blade including first and second blade sections (2, 3) having thickened foot portions and seam surfaces fitted to each other, comprising the following steps:

(a) producing said first and second blade sections (2, 3) as hollow shell parts (2A, 3A) each with a thickening in its blade foot area and with said seam surfaces,

(b) applying solder at least to a radially outer seam portion of said seam surfaces while leaving a radially inner seam portion of said seam surfaces free of solder,

(c) fitting and joining said hollow shell parts of said first and second blade sections together along said seam surfaces and pressing said first and second blade sections together with a first pressure along said radially outer seam portion and with a second pressure along said radially inner seam portion to form hollow rotor blades,

(d) producing said rotor hub with integral welding stubs or plateaus (WP) for welding said hollow rotor blades to said rotor hub,

(e) butt-welding said thickened blade foot with said radially inner blade foot sole (7) to a respective one of said integral welding stubs or plateaus, and

(f) machining said thickened blade foot (4) to finished contours of said hollow rotor blades to form said rotor disk with integral hollow rotor blades.

5,797,183

METHOD FOR PRODUCING AN APPARATUS FOR CATALYTICALLY DECONTAMINATING EXHAUST GASES

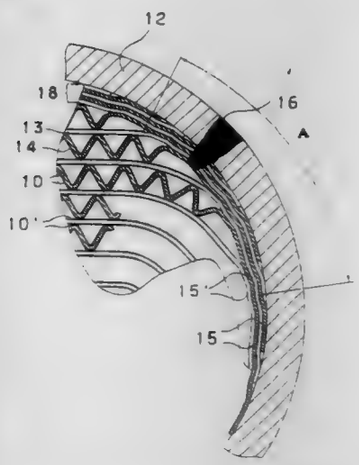
Bohumil Humpolik, Ludwigsburg, and Jürgen Bayer, Esslingen, both of Germany, assignors to Emitec Gesellschaft fuer Emissionstechnologie mbH, Lohmar, Germany

Division of Ser. No. 338,963, Nov. 14, 1994, Pat. No. 5,502,023, which is a division of Ser. No. 138,342, Oct. 18, 1993, Pat. No. 5,366,700. This application Feb. 5, 1996, Ser. No. 596,498

Claims priority, application Germany, Apr. 16, 1991, 41 12 354.9

Int. Cl.[6] **B23K** *31/02*; **B21D** *53/00*

U.S. Cl. 29—890 **14 Claims**



1. A method for producing a metal carrier body for an apparatus for catalytically decontaminating exhaust gases, which comprises:

a) providing individual at least partly corrugated sheet metal layers having end segments to form an outer layer;

b) intertwining the sheet metal layers and overlapping the end segments, and inserting the intertwined sheet metal layers into a jacket; and

c) attaching the outer layer formed by the overlapping end segments of the sheet metal layers to the jacket.

5,797,184

METHOD OF MAKING A HEAT EXCHANGER

Hiroshi Tanaka, Isesaki, and Kazuki Hosoya, Sawa-gun, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Continuation of Ser. No. 361,301, Dec. 21, 1994, Pat. No. 5,586,598. This application May 31, 1995, Ser. No. 454,668

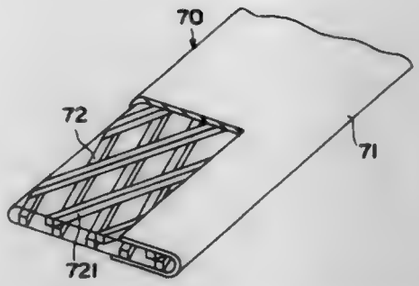
Claims priority, application Japan, Dec. 21, 1993, 5-346144

Int. Cl.[6] **B23P** *15/26*

U.S. Cl. 29—890.053 **10 Claims**

1. A method of manufacturing a heat exchanger; said heat exchanger including pipe means for directing a first fluid to flow therethrough, said pipe means including at least one flat tube member across an exterior of which a second fluid flows laterally; and

dispersing means for dispersing the flow of the first fluid, as the first fluid flows through said pipe means;



comprising the steps of:

forming a cylindrical tube member having a plurality of projected stripes on an inner surface thereof, said cylindrical tube member having a longitudinal axis, such that said projected stripes extend along said cylindrical tube member diagonally to said longitudinal axis; and

pressing said cylindrical tube member, so that said cylindrical tube member forms a flat tube member with a lower inner surface from which first portions of said projected stripes project and an upper inner surface from which second portions of said projected stripes project, said first and second portions of the projected stripes intersecting one another, and said first and second portions of the projected stripes contacting one another at the intersections therebetween.

5,797,185

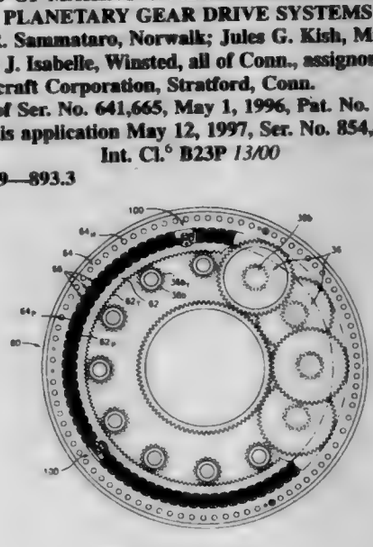
METHOD OF MAKING AN ISOLATED RING GEAR FOR PLANETARY GEAR DRIVE SYSTEMS

Stephen R. Sammataro, Norwalk; Jules G. Kish, Milford, and Charles J. Isabelle, Winsted, all of Conn., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Division of Ser. No. 641,665, May 1, 1996, Pat. No. 5,716,300. This application May 12, 1997, Ser. No. 854,428

Int. Cl.[6] **B23P** *13/00*

U.S. Cl. 29—893.3 **4 Claims**



1. A method for fabricating an isolated ring gear (**60**) including the steps of forming a ring-shaped blank of metallic material and grinding a series of gear teeth (62_T) about an inner diameter of said ring-shaped blank, the method characterized by the steps of:

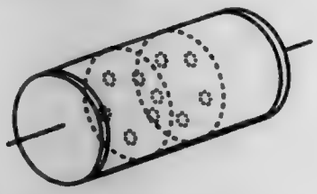
selectively removing material from said ring-shaped blank to form a plurality of integral spring elements (**66**), thereby segmenting said blank into an inner ring segment (**62**) and an outer ring segment (**64**).

5,797,186

METHOD FOR MANUFACTURABILITY OF A LOW COST PRINTING DRUM

John Hans Bode, Eden Prairie, Minn., assignor to Colorspan Corporation, Eden Prairie, Minn.

Filed Sep. 10, 1996, Ser. No. 709,804
Int. Cl.[6] B21K *1/02*
U.S. Cl. 29—895.22 8 Claims



1. A method of thermally treating an imaging drum made of a resin-based material, comprising the steps of:

forming a resin-based material into a cylindrical shaped member having a known interior and exterior diameter and both of a first and a second end open;

inserting a mandrel member having a desired dimensional shape into the cylindrical shaped member;

placing the drum member in an autoclave device;

elevating the temperature of the autoclave device so that the drum member reaches a temperature at which the resin material begins to soften;

gradually lowering the temperature of the autoclave device so that the drum member reaches room temperature;

attaching a first of two round end-caps to the first of the open ends of the drum member, wherein the first end cap has an aperture formed in the center therein;

inserting and thereby sealing a drive shaft member coupled to a set of bearings through the aperture in the first end cap so that the drive shaft is rigidly fixed to the drum member and the drum member and drive shaft rotate together on the bearings; and

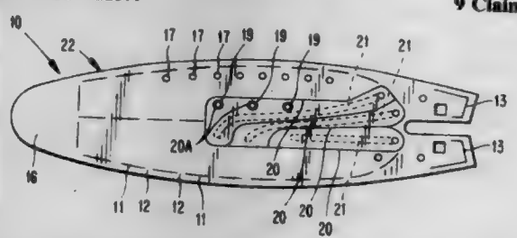
attaching a second of the two round end-caps to the second of the open ends of the drum member so that the drive shaft member protrudes through an aperture formed in the center of the second round end cap.

5,797,187

CHAIN SAW GUIDE BAR HAVING DYE-EMITTING NOZZLES

Arvo Leini, Edsbyn; Per-Olof Löfgren, Vallsta, and Karl-Olof Pettersson, Voxnabruk, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Jul. 8, 1996, Ser. No. 677,571
Claims priority, application Sweden, Jul. 6, 1995, 9502448
Int. Cl.[6] B27B *17/02*
U.S. Cl. 30—123.4 9 Claims



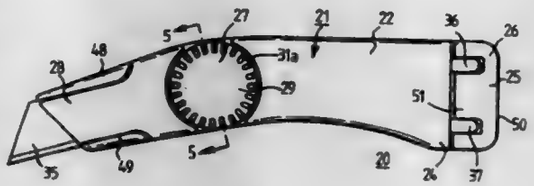
1. A chain saw guide bar comprising a middle plate and a pair of side plates affixed on opposite sides thereof; each side plate forming an interface with a respective side of the middle plate; one end of the guide bar defining a clamping end adapted to be clamped to a motor housing; a plurality of nozzles disposed in a said side plate for emitting liquid dyes of different respective colors; a plurality of channels defined by respective grooves formed in one of the interfaces, the channels communicating with respective ones of the nozzles; and laser welds disposed in the interface and arranged to completely isolate the channels from one another.

5,797,188

HAND-HELD UTILITY KNIFE

Richard Gilbert, Dronfield, United Kingdom, assignor to The Stanley Works Limited, Sheffield, England

Filed Mar. 5, 1997, Ser. No. 810,762
Claims priority, application United Kingdom, Mar. 6, 1996, 9604748
Int. Cl.[6] B26B *5/00*
U.S. Cl. 30—330 3 Claims



1. A hand-held utility knife comprising an elongate handle formed by two elongate handle portions, rear ends of said handle portions being hinged together at a rear end of the handle, said handle portions being releasably clamped together by a releasable clamping device positioned forwardly of the rear end of the handle and rearwardly of a front end of the handle;

the hinging together of the handle portions being by means of direct interlocking inter-engagement of the rear ends of the handle portions, due to at least one lug of a first one of the handle portions projecting into at least one recess or cavity of the second handle portion, said at least one lug projecting generally rearwardly of said first handle portion and having a lateral extension adapted and arranged so that said extension can be introduced into and extracted from said recess or cavity of the second handle portion through a restricted opening into said recess or cavity when the handle portions are held at one particular predetermined angle, but not at other angles, relative to each other;

said direct interlocking inter-engagement of the rear ends of the handle portions being such that, when the clamping device is released, the two handle portions can be hinged apart and together, on a hinging axis at the rear end of the handle, so as to open and close the front end of the handle;

said direct interlocking inter-engagement of the rear ends of the handle portions also being such that, when the clamping device is released, the two handle portions can be completely disengaged from each other, and re-engaged with each other, at their rear ends, and thereby can be separated, and reconnected, when the handle portions are held at said one particular predetermined angle, but not at said other angles, relative to each other;

the two handle portions being adapted to clamp a blade therebetween at the front end of the handle, with the plane of the blade parallel to the hinging axis;

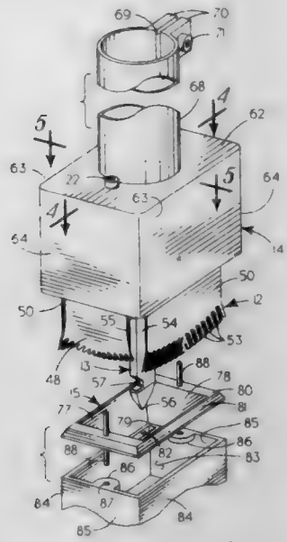
characterised in that mutually engageable abutments at the rear ends of the two handle portions are adapted to restrain movement apart of the two handle portions at the rear end of the handle when the handle is closed; the mutually engageable abutment on said first handle portion extending rearwardly of said hinging axis, the other of said mutually engageable abutments being carried by the other handle portion and cooperatively confronting the abutment on said first handle portion to restrain separation of the two handle portions; the relative positions of the hinging axis, on the one hand, and of said mutually engageable abutments, on the other hand, being such that the abutments move apart when the handle is hinged open.

5,797,189

TOOL FOR CUTTING RECTILINEAR OPENINGS FOR ELECTRICAL OUTLET BOXES IN SHEET MATERIAL

Dale A. Gilbert, Wallace, Id., assignor to Carl L. Blalack, Id.

Filed Mar. 24, 1997, Ser. No. 826,104
Int. Cl.[6] B23D 15/08;15/12
U.S. Cl. 30—500 14 Claims



9. A tool for cutting rectangular holes for electrical junction boxes in sheet material established thereover to provide access to orifices of the junction boxes, comprising in combination:

a rigid body;

cutting structure articulatingly carried by the body to extend therefrom including spaced, parallel, overlying saw blade plates, each said saw blade plate carrying a pair of similar spaced parallel saw blades extending spacedly away from the body with one pair of saw blades arrayed perpendicularly to the other pair of saw blades to cut the periphery of a rectangular hole;

driving linkage carried by the body including a drive shaft journaled in the body to extend spacedly adjacent the saw blade plates and mechanical means communicating between the drive shaft and the saw blade plates for moving each saw blade plate in limited reciprocal motion parallel to the saw blades carried thereby responsive to rotary motion of the drive shaft.

5,797,190

WHEEL ALIGNMENT METHOD AND APPARATUS

Kenneth N. Matson, 3786 Happy Valley Rd., Lafayette, Calif. 94549

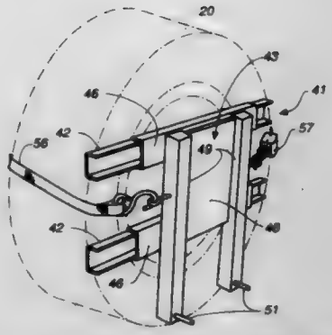
Filed Oct. 3, 1995, Ser. No. 538,386
Int. Cl.[6] G01B 5/255
U.S. Cl. 33—203.18 9 Claims

1. A wheel fixture for use in combination with a tire mounted on a vehicle in aligning the wheels of the vehicle, comprising:

a sidewall engaging means defining a first planar surface for engaging a sidewall of the tire;

a base structure in laterally sliding engagement with said sidewall engaging means and defining a planar measurement surface parallel to said first planar surface;

a strap secured to said base structure at a first side thereof, said strap having sufficient length to extend laterally around the tire for securing the wheel fixture in engagement with a sidewall of the tire; and



a clasp secured to said base structure at a second side thereof for fastening said strap to said base structure at said second side so as to secure the wheel fixture in position against the tire;

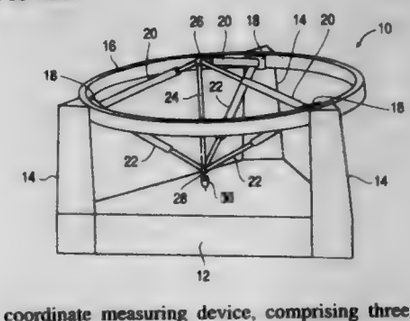
whereby said planar measurement surface is parallel to the sidewall of the tire when the wheel fixture is strapped to the tire.

5,797,191

PARALLEL KINEMATIC STRUCTURE FOR SPATIAL POSITIONING DEVICES AND METHOD OF INITIALIZING SAME

John C. Ziegert, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Filed Sep. 25, 1996, Ser. No. 720,146
Int. Cl.[6] G01B 5/03
U.S. Cl. 33—503 20 Claims



1. A coordinate measuring device, comprising three spherical base joints, means for maintaining said base joints in a fixed spaced relation, six actuator assemblies each having a variable length, wherein each of said base joints has a first end of two of said six actuator assemblies connected therewith, respectively, a center pole having a first spherical joint connected to a first end thereof and a second spherical joint connected to a second end thereof, wherein a second end of a first one of each of said two actuator assemblies connected to each of said base joints is connected to said first spherical joint of said center pole and a second end of a second one of each of said two actuator assemblies connected to each of said base joints is connected to said second spherical joint of said center pole in a manner which forms a hexahedron, said device further including a probe mounted at one end of said center pole and means for determining a change in length of each of said six actuator assemblies upon movement of said probe.

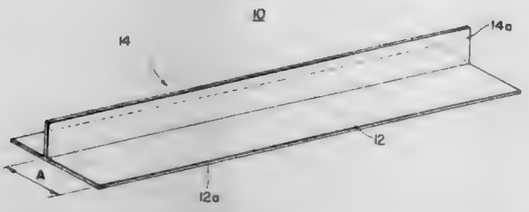
5,797,192

METHOD AND APPARATUS FOR A RUG CUTTING GUIDE

Michael Curtis, 916 N. Henrietta St., Henrietta, Tex. 76365

Filed Jul. 3, 1996, Ser. No. 680,128
Int. Cl.[6] B26D 7/01; B43L 7/00
U.S. Cl. 33—526 4 Claims

1. A guide device for securing carpet to a floor, comprising:



an elongated main body having an aligning edge portion for positionally aligning with and abutting against a Z-bar secured to a floor to be carpeted; and

means for guiding cutting of a carpet to be secured relative to the Z-bar, said guiding means including an elongated vertical edge element operatively secured to a top surface of said main body and extending parallel to a longitudinal axis of said main body, wherein said vertical edge element is positioned a predetermined distance from said aligning edge portion along an entire length of said main body whereby the carpet to be secured is cut with a remaining portion of the carpet extending approximately said predetermined distance to fit under the Z-bar when secured thereby.

5,797,193

ALIGNMENT APPARATUS FOR LITHOGRAPHIC SYSTEM

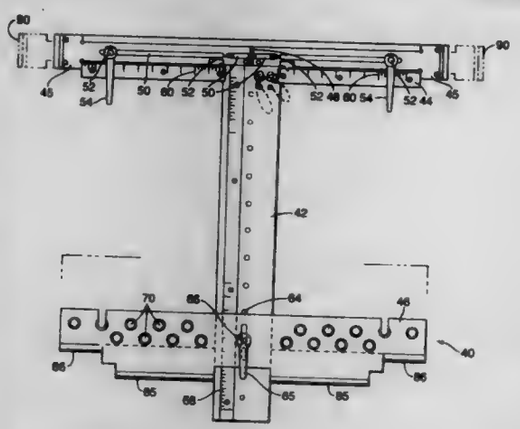
Richard E. Amend, and William A. Hartlove, both of Baltimore, Md., assignors to U.S. Can Metal Services, Oak Brook, Ill.

Continuation of Ser. No. 635,333, Apr. 19, 1996, abandoned. This application Jun. 24, 1996, Ser. No. 668,999

Int. Cl.[6] B41B *11/00*

U.S. Cl. 33—614

22 Claims



1. An apparatus for configuring a printing station of a lithographic system to align a workpiece with a printing cylinder of the printing station comprising:

an elongated body member adapted for alignment with a printing cylinder, the body member extending along a path transverse to the axis of the printing cylinder;

a first cross-arm perpendicularly attached to the body member and laterally extending from both sides thereof;

first means associated with the first cross-arm for variably adjusting the lateral extension of both sides of the first cross-arm to facilitate the adjustment of laterally disposed guide rollers of the lithographic system;

a second cross-arm perpendicularly attached to the body member and laterally extending from both sides thereof, the second cross-arm being spaced apart from the first cross-arm; and

second means associated with the second cross-arm for variably adjusting the longitudinal spacing separating the first and second cross-arms.

5,797,194

MOBILE MICROWAVE DRYER

Leif Zettergren, Jarfalla, Sweden, assignor to Microz Sweden AB, Jarfalla, Sweden

PCT No. PCT/SE95/00219, § 371 Date Oct. 24, 1996, § 102(e) Date Oct. 24, 1996, PCT Pub. No. WO95/23945, PCT Pub. Date Sep. 8, 1995

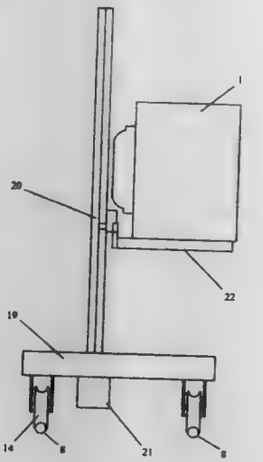
PCT Filed Mar. 2, 1995, Ser. No. 702,616

Claims priority, application Sweden, Mar. 2, 1994, 9400715

Int. Cl.[6] F26B *3/34*

U.S. Cl. 34—259

10 Claims



7. Apparatus for supplying energy to promote drying and sanitization of flat surfaces comprising:

at least one magnetron for the generation of microwaves;

a housing supporting said at least one magnetron and propelling means for moving said at least one magnetron over a predetermined path; and

control means for automatically governing movement of said at least one magnetron in response to at least one selected parameter; and

wherein said propelling means includes a plurality of wheels rolling on at least one rail and an adjustable support means for supporting said rail at an adjustable distance from a surface to be dried and subjected to sanitization.

5,797,195

NITROGEN TRIFLUORIDE THERMAL CLEANING APPARATUS AND PROCESS

Bruce Alan Huling, Phoenix; Charles Anthony Schneider, Gilbert, and George Martin Engle, Scottsdale, all of Ariz., assignors to Air Products and Chemicals, Inc., Allentown, Pa., and GEC, Inc., Tempe, Ariz.

Division of Ser. No. 216,895, Mar. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 97,424, Jul. 26, 1993, abandoned. This application Feb. 17, 1995, Ser. No. 390,612

Int. Cl.[6] F26B *5/04*

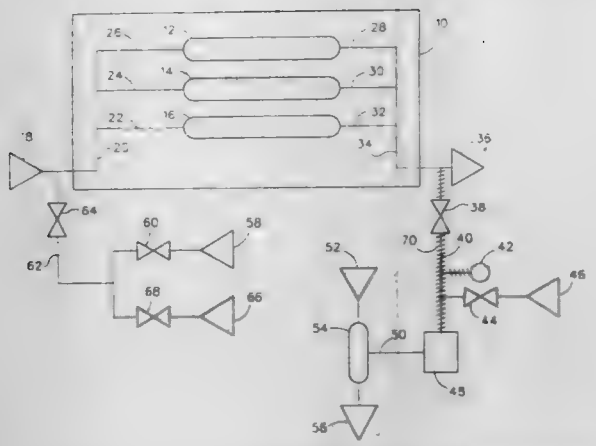
U.S. Cl. 34—404

14 Claims

1. An apparatus for cleaning materials or equipment surfaces in semiconductor manufacturing using nitrogen trifluoride, comprising:

(a) a gas supply means connected to a chamber for supplying nitrogen trifluoride to said chamber for cleaning materials or equipment surfaces in said chamber;

(b) a heated exhaust conduit for removing waste products of nitrogen trifluoride and volatile reaction products formed from the reaction of undesired substances on the materials or equipment surfaces and said nitrogen trifluoride or fluorine cleaning reagents disassociated from nitrogen trifluoride, said conduit connected to said chamber and said vacuum means of (c) below;



(c) a vacuum means communicating with said heated exhaust conduit for evacuating said chamber through said conduit wherein said vacuum means is connected to a disposal means for said waste products;

(d) the heated exhaust conduit being activated during the operation of the vacuum means.

5,797,196

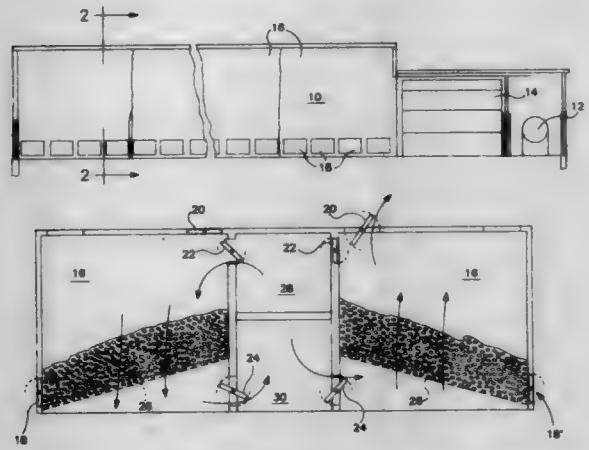
SEED CORN DRYING SYSTEM AND METHOD

Zenas A. Stanfield, 106 S. Vale St., Bloomington, Ill. 61701

Filed Feb. 12, 1997, Ser. No. 799,631

Int. Cl.[6] F26B *3/00*

U.S. Cl. 34—494 **17 Claims**



1. A seed corn drying method for providing higher yielding seed corn comprising the steps of:

forming a pile of seed corn in a drying bin; and

blowing heated ambient air through said pile at a velocity of at least 170 ft/min per total cross-sectional area of said pile, said velocity being sufficient to substantially prevent said seed corn from germinating in said drying bin.

5,797,197

CARPET DRYER

Marcelino G. Alday, 2186 Bikini Ave., San Jose, Calif. 95122

Filed Feb. 7, 1996, Ser. No. 598,118

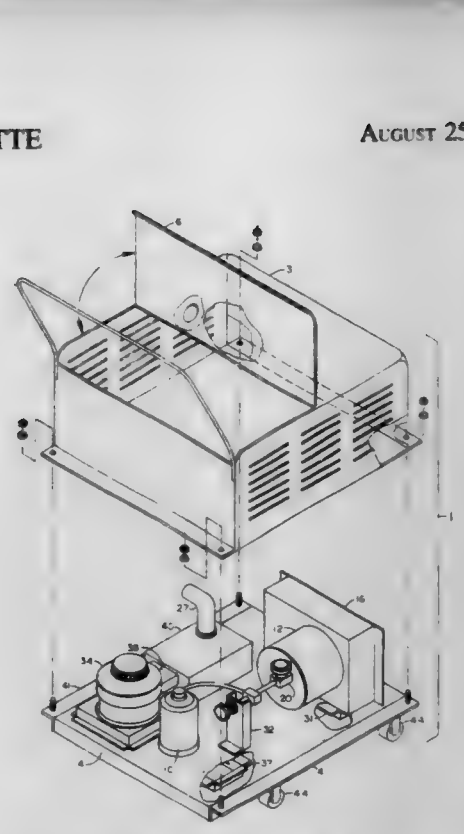
Int. Cl.[6] F26B *9/00*

U.S. Cl. 34—618 **4 Claims**

1. A carpet dryer comprising:

a blower unit that forces heated air onto a subject carpet, said blower unit comprising a fan unit and a heating means,

a vacuum unit that draws water out of the carpet and deposits the water into a recovery tank,



a base comprising wheels, a first opening that allows said blower unit to blow air onto the carpet, and a second opening that allows the vacuum to draw water out of the carpet into a recovery tank including a venting means, and

a means for a user to grasp to move the dryer; wherein

said fan unit of said blower draws air heated by the heating means through a cylinder, and then forces said heated air out through said first opening onto the carpet,

said vacuum unit draws water in through said second opening, and deposits said water into said recovery tank.

5,797,198

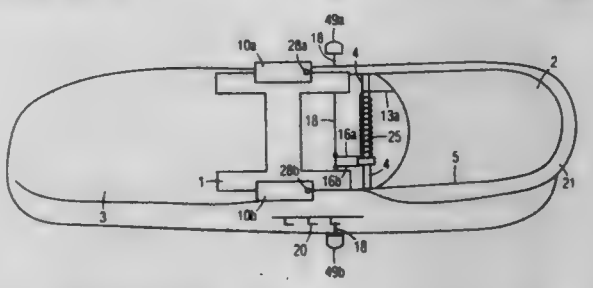
ADJUSTABLE SHOCK ABSORBING DEVICE FOR SHOE

David B. Pomerantz, 251 174th St., Apt. 504, Miami Beach, Fla. 33160

Filed Jun. 19, 1996, Ser. No. 666,866

Int. Cl.[6] A43B *21/30;13/18*

U.S. Cl. 36—27 **14 Claims**



1. An adjustable shock absorbing device for a shoe, comprising:

(a) a substantially horizontal stiff bracket fixedly secured to a midsole of said shoe;

(b) a thin, inflexible heel plate disposed in a heel portion of said shoe generally below the calcaneous of the wearer's heel;

(c) mounting means for pivotally mounting said heel plate at a forward end thereof to said fixed bracket so that side ways movement of said heel plate relative to said fixed bracket is prevented;

(d) biasing means for biasing the rearward end of said heel plate vertically relative to said fixed bracket so that upon deflection of said heel plate by a heel strike by the wearer of the shoe, the energy thereof is at least partially absorbed by said biasing means and returned to the wearer's heel subsequent to said heel strike;

(e) adjusting means for said biasing means to increase or decrease the tension of said biasing means; and

(f) at least one stop arranged on said heel plate at the forward end thereof and a complimentary latch pivotally mounted to said horizontal bracket for horizontal movement for engagement with said stop whereby said heel plate is thereby disposed horizontally relative to said horizontal bracket.

5,797,199

SOLE CONSTRUCTION FOR FOOTWEAR

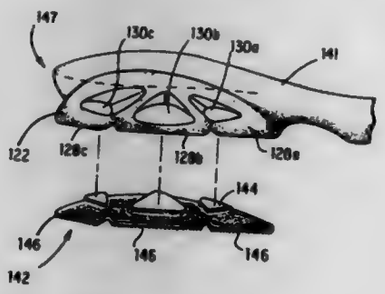
Todd Miller, West Linn, Oreg.; Craig Feller, Randolph, Mass.; Daniel Wickemeyer; David Potter, both of Venice, Calif.; Erik Purdom, Battle Ground, Wash., and Tuan Le, Portland, Oreg., assignors to American Sporting Goods Corp., Irvine, Calif.

Division of Ser. No. 332,041, Nov. 1, 1994, Pat. No. 5,625,963. This application Dec. 20, 1996, Ser. No. 777,737

The portion of the term of this patent subsequent to Nov. 1, 2014, has been disclaimed.

Int. Cl.[6] A43B *13/18;21/26*

U.S. Cl. 36—28 **26 Claims**



24. Footwear comprising:

a midsole being formed from a shock absorbing material, said midsole having a medial side, a lateral side, an upper surface and a lower surface, wherein a portion of said lower surface is concave;

an outsole having upper and lower surfaces, said upper surface being disposed adjacent at least a portion of said lower surface of said midsole and said lower surface being substantially abrasive resistant;

at least one cavity extending through said midsole, said cavity having a first open end extending through at least one of said medial and lateral sides and a second open end extending through said lower surface of said midsole and wherein said first and second open ends are in tapered communication with one another extending transversely across the midsole; and

a support piece disposed in said cavity.

5,797,200

SHOE WITH STRETCHABLE TOP

Robert Hess, New Holstein, and Robert Marquardt, Sheboygan, both of Wis., assignors to Redwood Sportswear Ltd., New Holstein, Wis.

Filed Nov. 15, 1996, Ser. No. 752,446

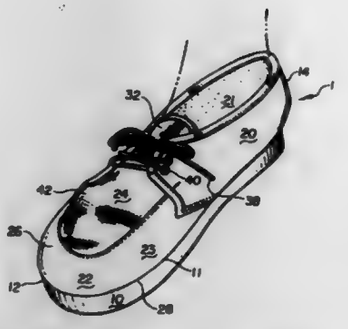
Int. Cl.[6] A43B *3/26;23/26*

U.S. Cl. 36—97 **8 Claims**

1. A conformable shoe for wearing on a foot having an irregularly shaped frontal area, said conformable shoe comprising:

(a) a sole extending from a toe end to a heel end;

(b) a substantially inelastic upper extending from the sole and along the side of the foot, the inelastic upper extending along an edge of the foot from the toe end to the heel end to form a generally U-shaped inelastic perimeter around the top, front of the foot configured to assist in supporting the foot and in retaining the foot within the shoe; the generally u-shaped elastic upper curving up and over a u-shaped portion of the top front of the foot;



(c) a single-piece elastic vamp portion configured to cover the portion of a foot within the U-shaped inelastic perimeter, such that:

(1) said elastic vamp portion has an inner surface and an outer surface, the inner surface configured such that it is exposed along the front, interior portion of the shoe above the sole;

(2) said outer surface of the elastic vamp portion including a generally ushaped exposed exterior portion on the exterior of the shoe constructed solely of the elastic material positioned to cover and conform to the shape of an irregularly shaped area of the foot by expanding in at least two orientations, said exposed exterior top portion being exposed over substantially all of the top, front of the foot but not along the sides thereof;

(3) said single-piece elastic vamp portion extending around the bottom of the foot and is held in place by an adhesive;

(4) a generally u-shaped sewn seam running along a junction between the exposed outer surface of the exposed exterior elastic portion and the generally inelastic perimeter along the top, front of the foot; and

(d) a tongue comprising an extension of the elastic material and constructed of the elastic material, the tongue further comprising a stiffening material adhered to a section of the tongue to assist in retaining the shape of the tongue.

5,797,201

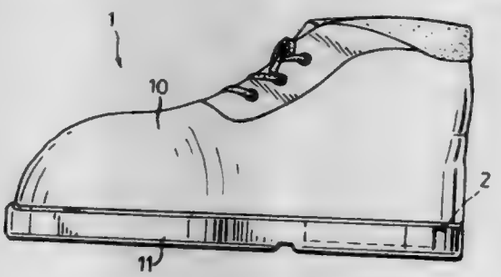
SHOE WITH STEP COUNTING CAPABILITY

Tien-Tsai Huang, No. 4, Lane 30, Wu-Chuan St., Pan-Chiao City, Taipei Hsien, Taiwan

Filed Jul. 24, 1997, Ser. No. 899,591

Int. Cl.[6] A43B *5/00*

U.S. Cl. 36—132 **14 Claims**



1. A shoe with a step counting capability, comprising:

a shoe body adapted to be worn on a foot of a wearer, said shoe body including a vamp and a sole mounted on said vamp, said sole including an outer sole portion which has a top side formed with a receiving space, and an inner sole portion which is disposed on top of said outer sole portion;

a step detector disposed in said receiving space, said step detector including a piezoelectric unit which generates a voltage output when subjected to impact, and an impact unit which is disposed adjacent to said piezoelectric unit and which is associated operably with said inner sole portion so as to

impact said piezoelectric unit every time the foot of the wearer raises then lowers said shoe body for stepping on a ground surface;

a transmitter device disposed in said receiving space and connected electrically to said piezoelectric unit, the voltage output from said piezoelectric unit serving as a power input of said transmitter device and activating said transmitter device to radiate a radio frequency signal; and

a receiver device for receiving the radio frequency signal from said transmitted device and for counting number of times the radio frequency signal was received thereby so as to generate a step count output.

5,797,202

VERTICAL HOLE EXCAVATING MACHINE

Toshio Akesaka, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Iseki Kaihatsu Koki, Japan

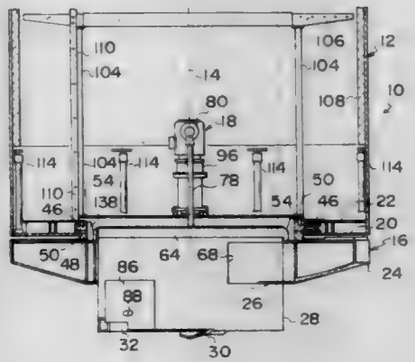
PCT No. PCT/JP95/01671, § 371 Date Dec. 5, 1996, § 102(e) Date Dec. 5, 1996, PCT Pub. No. WO96/06262, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 23, 1995, Ser. No. 750,334

Claims priority, application Japan, Aug. 25, 1994, 6-222679

Int. Cl.[6] E02F *3/24*

U.S. Cl. 37—184 **15 Claims**



1. A vertical hole excavating machine comprising: a cylindrical body disposed with its axis in a vertical position; a cutter head disposed to be rotatable about the axis of the cylindrical body at the lower end of the cylindrical body; and a driving mechanism for rotating the cutter head; said cutter head including a first head supported to be rotatable about the axis of the cylindrical body at the lower end of the cylindrical body and having a central space vertically extending therethrough; at least one first cutter disposed on the first head to excavate earth under the first head; a second head disposed in the central space and coaxially with the first head so as to be removably inserted from above, the second head having a cylindrical portion to receive matter excavated by the first cutter therein and a bottom closing the lower end of the cylindrical portion; and at least one second cutter disposed on the second head to excavate earth under the second head; wherein the second head is further provided with a notch formed at the bottom to receive matter excavated by the second cutter into the cylindrical portion, and a lid disposed on the upper side of the bottom to be angularly rotatable about the axis extending horizontally to open and close the notch on the upper side of the bottom; wherein the lid which in its normal state closes the notch by its own weight is pushed up by the excavated matter when the cutter head is rotated thereby opening the notch.

5,797,203

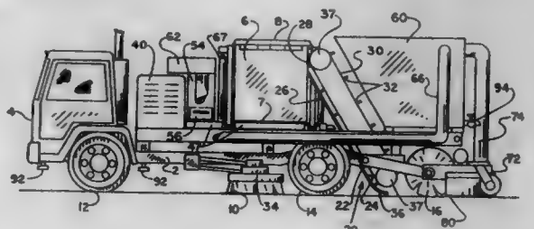
VEHICULAR APPARATUS FOR REMOVING SNOW AND AIRCRAFT DE-ICING OR ANTI-ICING LIQUIDS FROM RUNWAY SURFACES

Glenn M. Vanderlinden, Vinemount, Canada, assignor to Fluid Sciences, L.L.C., Lafayette, La.

Continuation of Ser. No. 366,749, Dec. 30, 1994, Pat. No. 5,561,921, which is a continuation-in-part of Ser. No. 331,923, Oct. 31, 1994, Pat. No. 5,630,286, which is a continuation-in-part of Ser. No. 155,132, Nov. 22, 1993, abandoned. This application Oct. 8, 1996, Ser. No. 727,193

Int. Cl.[6] E01H *5/07*

U.S. Cl. 37—227 **25 Claims**



1. A vehicular apparatus adapted for removing fluids including de-icing or anti-icing liquids from a surface as said apparatus traverses said surface, the apparatus comprising:

(a) a first container for receiving a first portion of said fluids removed from a zone of said surface;

(b) means for collecting and means for transferring the first portion of said fluids from the zone to said first container;

(c) a second container capable of being maintained at less than atmospheric pressure for collecting residual fluids remaining on said zone of said surface after said first portion is removed;

(d) nozzles positioned for impinging water at a high pressure on said surface to looser, said residual fluids;

(e) a diaphragm pump in communication with said nozzles for pumping said water at a high pressure to said nozzles; and

(f) an air sweep means connected in fluid communication with said second container for drawing said loosened residual fluids and water into said second container concurrently with said impinging high pressure water on said surface.

5,797,204

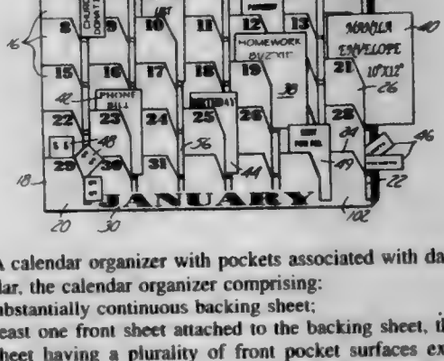
CALENDAR ORGANIZING SYSTEM

John Paulos, 3440 Dupont Ave. So., Minneapolis, Minn. 55408

Filed Sep. 27, 1996, Ser. No. 720,302

Int. Cl.[6] G09B *19/00*

U.S. Cl. 40—122 **20 Claims**



1. A calendar organizer with pockets associated with days on a calendar, the calendar organizer comprising:

a substantially continuous backing sheet;

at least one front sheet attached to the backing sheet, the front sheet having a plurality of front pocket surfaces extending therefrom, each front pocket surface being associated with one day on the calendar, each of the front pocket surfaces

being attached to the backing sheet along a substantially horizontal bottom edge and along one substantially vertical edge, each of the front pocket surfaces having a top edge unattached to the backing sheet, and each of the front pocket surfaces having a second substantially vertical edge intersecting the bottom edge, said second substantially vertical edge being unattached to the backing sheet, thereby forming a pocket for receiving items associated with that day.

5,797,205

MEANS FOR DISPLAYING PHOTOGRAPHS

Alexander Ferdinandsen, and Bendix Ferdinandsen, both of Milan, Denmark, assignors to Zoomas ApS, Gilleleje, Denmark

Division of Ser. No. 302,864, Sep. 14, 1994. This application Jan. 27, 1997, Ser. No. 789,619

Claims priority, application Denmark, Jan. 14, 1993, 930020; Jun. 10, 1993, 0682/93

Int. Cl.[6] A47G *1/06*

U.S. Cl. 40—768

7 Claims



1. A method for accentuating a portion of a photograph, the method comprising the steps of:

forming a mask for superimposing upon a photograph having a portion to be accentuated, said mask being made of a thin sheet and having an opaque peripheral region, a central transparent region and a transitional region between the opaque peripheral region and the central transparent region, wherein the transitional region becomes more and more transparent when moving across the transitional region from the opaque peripheral region to the central transparent region and;

placing said mask over said photograph such that the portion of said photograph to be accentuated can be seen through said clear region of said mask.

5,797,206

METHOD FOR REVERSIBLY CONVERTING A TRADITIONAL DOUBLE ACTION PISTOL TO A SINGLE ACTION, TARGET PISTOL

Olimpio Vitorino, Ludlow, Mass., assignor to Smith & Wesson Corp., Springfield, Mass.

Filed Dec. 26, 1996, Ser. No. 780,170

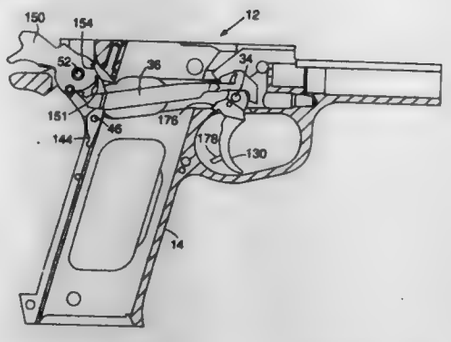
Int. Cl.[6] F41A *3/00;5/00*

U.S. Cl. 42—69.03

10 Claims

1. Method of reversibly converting pistols that have been manufactured and sold as double action pistols to single action, target pistols, the double action pistols having a longer, initial trigger stroke, followed either by shorter strokes or long strokes, for the double action performance thereof, the method comprising the steps of:

substantially decreasing the length of the trigger stroke by the removable placement of an abutment between opposed portions of the trigger and the frame to substantially shorten the full length of the trigger stroke;



modifying the hammer to include an intermediate notch positioned to serve as a safety in the event that the hammer is dislodged in its fully cocked position; and

by removing at least any firing pin safety mechanism and any other mechanism which may inhibit the single action operation of the pistol.

5,797,207

GUN GRIP PANEL

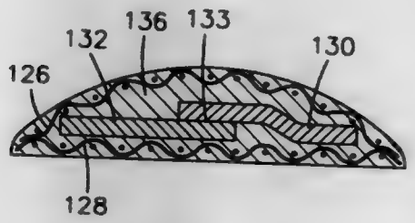
David Marable, 41465 Avenida de la Reina, Temecula, Calif. 92592, and John Cato, 30536 Rolling Hills Dr., Valley Center, Calif. 92082

Filed Aug. 30, 1996, Ser. No. 708,091

Int. Cl.[6] F41C *23/10*

U.S. Cl. 42—71.02

8 Claims



1. An improved gun grip panel having a longitudinal axis, a first edge and a second edge substantially parallel to said longitudinal axis, said gun grip panel comprising:

a sheet of woven material, said sheet of woven material being substantially gun-grip-panel-shaped;

a second sheet of woven material, said second sheet of woven material being substantially gun-grip-panel-shaped and adjacent said sheet of woven material;

a first spacer pad;

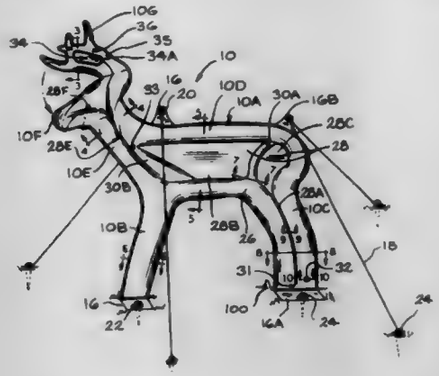
a second spacer pad, said first spacer pad and said second spacer pad being positioned within said gun grip panel such that they overlap approximately at said longitudinal axis of said gun grip panel to separate said sheet of woven material and said second sheet of woven material further at said longitudinal axis than at said edges; and

said sheet of woven material, said second sheet of woven material, said first spacer pad and said second spacer pad being encapsulated with a resin to form the gun grip panel, and wherein said sheet of woven material, said second sheet of woven material, said first spacer pad, said second spacer pad and said resin cooperate to provide a gun grip panel having increased strength.

5,797,208
INFLATABLE FIGURE

Roger C. Lessa, 1180 Mason St., Dansville, Mich. 48819

Continuation-in-part of Ser. No. 514,604, Aug. 14, 1995, abandoned. This application Dec. 30, 1996, Ser. No. 777,083
Int. Cl.[6] A01M 31/06
U.S. Cl. 43—2 25 Claims



1. An article of manufacture for use in attracting an animal, which comprises:

(a) an inflatable bag having opposed sides, each side having a foldable antler portion, the sides in lateral side view defining a circumference in a shape similar to the animal, the sides comprising opposed sheets of a material each having a same shape and attached together around and at intermediate positions within the circumference of the bag such as to form interconnected air passageways within the bag wherein a portion of the bag defined by the antler portion of the sides has narrow air passageways; and

(b) a fastening means mounted on one of the sides adjacent the antler portion to hold the portion of the bag defined by the antler portion of the sides down along one of the opposed sides of the bag wherein when the antler portion of the sides is folded and hold by the fastening means, the air passageways in the portion of the bag defined by the antler portion of the sides do not inflate and in lateral side view the sides define a circumference in a shape similar to the animal without antlers, wherein when the antler portion of the sides is not held in the folded position by the fastening means, the air passageways in the portion of the bag defined by the antler portion of the sides inflates and in lateral side view the sides define a circumference in a share similar to the animal with antlers.

2. A method for attracting an animal, which comprises:

(a) providing an inflatable bag having opposed sides, each side having a foldable antler portion, the sides in lateral side view defining a circumference in a shape similar to the animal, the bag including layers each having a same shape and attached around and at intermediate positions within the circumference of the bag such as to form interconnected passageways having a single inflation valve within the bag; support flaps being provided on one or both layers of the bag for securing the bag to a ground surface and for holding the article in an upright position such as to simulate the animal in the upright position; and a fastener mounted on one of the sides adjacent the antler portion of the bag to fold a portion of the bag defined by the antler portion down along one of the opposed sides of the bag;

(b) folding the portion of the bag defined by the antler portion of the sides and fastening the portion to the fastening means such that in lateral side view the circumference has a shape similar to the animal without antlers;

(c) evenly inflating the bag using the single inflation valve to inflate the interconnected passageways;

(d) positioning the bag in an area within which the animal to be attracted is located;

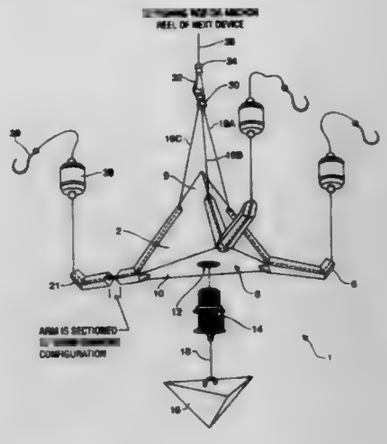
(e) securing the bag by the support flags in the upright position; and

(f) moving away from the bag and out of sight and smell of the animal to be attracted.

5,797,209
ANCHORED, RETRIEVABLE MULTI-LINE FISH CATCHING DEVICE

Timothy A. Nicholas, 40 W. Washburn St., New London, Ohio 44851

Filed May 6, 1996, Ser. No. 642,044
Int. Cl.[6] A01K 91/04
U.S. Cl. 43—4 17 Claims



1. A fish catching device for use in conjunction with a conventional fishing rod, said fish catching device comprising:

a main body, said main body being buoyant and floatable, said main body further forming a plurality of upper surfaces, and a bottom surface which forms and supports a female threaded anchoring orifice;

a plurality arm receiving notches which penetrate the main body and are formed at the intersection of each adjacent individual upper surfaces;

a plurality of extension arms, one each affixed to each said arm receiving notch;

a plurality of line segments, one each supported and retained by a corresponding extension arm, each said line segment having a first end and a second end;

a retrieval hook affixed to said fishing rod via a fishing line, said retrieval hook for affixing to said first end of said line segments;

a fishing hook affixed to each of said second end of said line segment;

an anchor reel having a protruding, male threaded extension for threadingly engaging with said threaded anchoring orifice in order to removably affix the anchor reel to the body, said anchor reel further having a line spool for supporting a wound adjustable length of sinker line; and

a sinker affixed to said sinker line for providing ballast for submerging said fish catching device.

5,797,210
APPARATUS FOR ELECTRO-FISHING

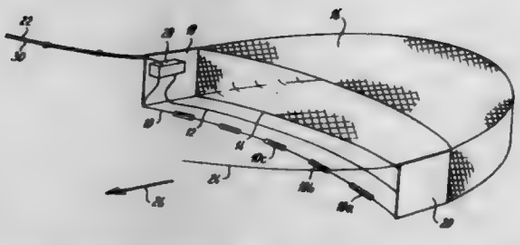
Abraham Leendert Verburg, Havenstraat 11, NL-4486 AA Colijnsplaat, Netherlands

PCT No. PCT/NL95/00009, § 371 Date Jun. 20, 1996, § 102(e) Date Jun. 20, 1996, PCT Pub. No. WO95/18528, PCT Pub. Date Jul. 13, 1995
PCT Filed Jan. 5, 1995, Ser. No. 666,350
Claims priority, application Netherlands, Jan. 5, 1994, 9400010
Int. Cl.[6] A01K 73/02
U.S. Cl. 43—9.6 7 Claims

1. Electro-fishing apparatus comprising:

a trawl net,

a plurality of electrodes in front of the net when the net is being towed,



a pulse generator supplying pulses to said plurality of electrodes to generate a pulsed electric field,

a power source providing electrical power to the pulse generator,

each electrode connected through a separate insulated connection cable to said pulse generator,

switching means having an input and a plurality of outputs, the input connected to the pulse generator and each output connected to one of said insulated connection cables,

a control circuit controlling the switching means so that only two of said electrodes at a time are powered by the pulse generator whereby an electric field is generated only between said two electrodes.

5,797,211

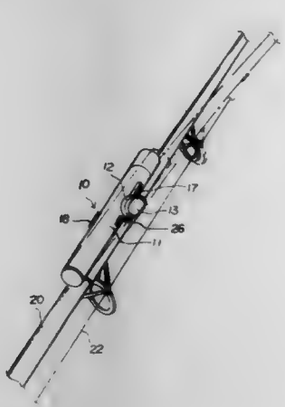
POSITION-SENSING LIGHT AND ALARM FOR A FISHING ROD

Tae Hong Bae; Sang Yun Bae, and Sang Il Bae, all of 6898 Old Annapolis Rd., Linthicum, Md. 21090

Continuation-in-part of Ser. No. 496,198, Jun. 28, 1995, Pat. No. 5,555,667. This application Mar. 29, 1996, Ser. No. 623,533

Int. Cl.[6] A01K *97/12*

U.S. Cl. 43—17 **16 Claims**



1. A position-sensing light and alarm system for a fishing rod, the system comprising:

an attachment for movably mounting to the fishing rod;

a housing fixedly connected to the attachment, the housing including a light source for illuminating light, a sound source for generating an alarm sound, and a battery for supplying power to the system;

a first switch for selectively controlling the system;

a second switch for selectively controlling the light source;

a mercury switch with mercury bubbles, mounted on an outer surface of the housing so that the mercury bubbles are located outside of the housing, the mercury switch being manually rotatable with respect to the housing to vary a sensitivity of the mercury switch and achieving a first position initially and a second position upon a movement of the fishing rod; and

a control circuit disposed in the housing;

whereby at least one of the light source and the sound source is activated in response to the mercury switch being at the second position.

5,797,212

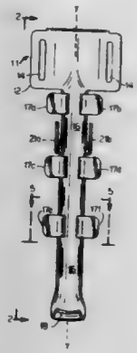
FISHING GEAR HOLDER

Thomas Kistner, 30 Markie La., Windsor, N.Y. 13865, and Daren Dale Pilch, 60 High St., Walton, N.Y. 13856

Filed Nov. 13, 1995, Ser. No. 556,491

Int. Cl.[6] A01K *97/10*

U.S. Cl. 43—21.2 **5 Claims**



1. A fishing gear holder or caddy which comprises, in combination: a unitary plastic article comprising, in combination: a vertically-extending central portion having an upper end, a lower end and a shelf portion; attachment means for detachably attaching said upper end of said central strip portion to a users article of clothing; at least one pair of arms spaced mutually apart and extending generally forward from said central strip portion, said arms being adapted to resiliently and frictionally grasp one or more objects pressed between said arms, said lower end of said central strip portion terminating in said shelf portion, which extends horizontally away from said central strip portion in a substantially perpendicular direction, whereby said shelf portion may butt against the handle end of a fishing rod or other member to preclude lowering of said handle end below said shelf portion and said rod may be pivoted with said handle end resting on said shelf portion between a vertical frictionally-gripped position between said arms and a free position beyond the outer ends of said arms, wherein each of said arms of said pair of arms extends first outwardly from said central strip portion and horizontally toward the other of said pair of arms, to a terminal portion which curves horizontally away from the other of said pair of arms.

5,797,213

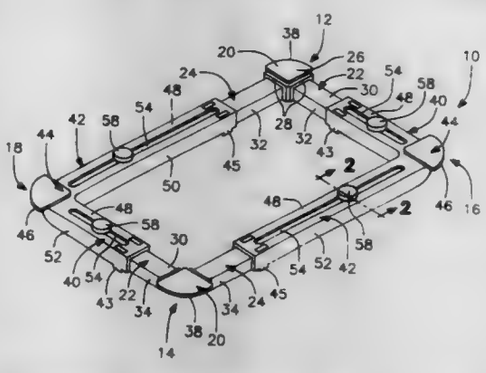
ADJUSTABLE LIVE WELL BRACKET

Robert J. Frick, 24 Fernciff Dr., Bull Shoals, Ariz. 72619

Filed Dec. 5, 1996, Ser. No. 761,750

Int. Cl.[6] A01K *97/05*

U.S. Cl. 43—54.1 **16 Claims**



1. An adjustable live well bracket assembly for use together with a live well having a rectangular shape with side walls including an upper edge, said adjustable live well bracket comprising:

four bracket portions forming a rectangular shaped frame for fitting in and on a live well, said four bracket portions each slidingly engaging an arm of two adjacent bracket portions for adjusting a size of said frame to the size of the live well,

a tab portion located at an upper surface and at each corner of said frame, said tab portion projecting beyond and above an exterior lateral edge of said bracket portion for engaging the upper edge of the live well at corners of the live well while the exterior lateral edges of the bracket portions engage an interior surface of the side walls of the live well to secure the bracket portions in position around the circumference of the upper edge of the side walls of the live well,

four thumb screws projecting above an upper surface of the bracket portions and extending between one arm of one bracket portion and another arm of another bracket portion for securing said one arm and said another arm together in a fixed position and said thumb screws being accessible from the upper surfaces of the bracket portions for loosening and tightening of the thumb screws so as to be able to form varied sized frames defined by said bracket portions, and

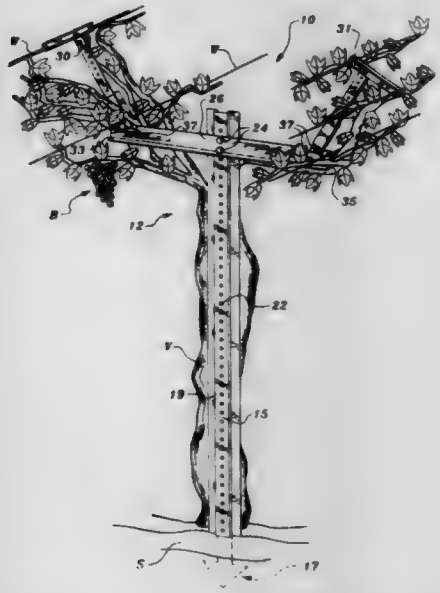
a net suspended from said frame and secured around said arms of said bracket portions.

5,797,214

APPARATUS FOR GROWING AND HARVESTING GRAPES

David E. Parrish, 11206 Ave. 264, and Devin G. Stout, 507 S. Divisadero St., both of Visalia, Calif. 93277

Filed May 5, 1997, Ser. No. 841,779
Int. Cl.[6] A01G *17/06*
U.S. Cl. 47—47 **15 Claims**



1. In a trellis system in which a plurality of trellises are aligned in parallel rows, and having wires extending the length of each of the rows and being attached to each trellis, the improvement comprising:

a trellis, said trellis comprising an upstanding post, said post having a lower portion, said lower portion being secured in soil, and having an upper portion remote from said lower portion;

a cross member rigidly affixed to said post in said upper portion, said cross member being aligned in a plane transverse to the line of said trellises which comprise a row within the trellis system; said cross member being affixed to said post in the center thereof, and having remote ends extending to either side thereof;

rotator arms; a said rotator arm secured to each of said remote ends of said cross member, each said rotator arm being rotatable through an acute angle relative to said cross member;

means for selectively locking said rotator arm in an upright position, and stop means for limiting rotation of said rotator arm when the same is unlocked;

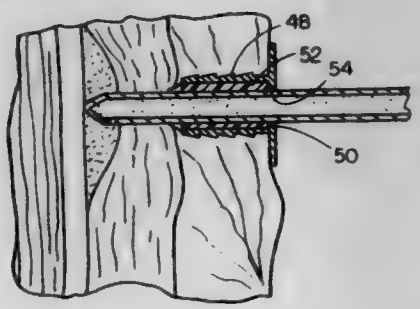
said locking means including a notch said notch being formed in said rotator arm; a slide, said slide being disposed about said rotator arm, and being aligned such that it may be selectively fitted into said notch to secure said rotator arm in its upright position.

5,797,215

APPARATUS AND METHOD FOR RETAINING INJECTION FLUIDS IN A TREE

Glayne D. Doolittle, 9647 Ruggles St., Omaha, Nebr. 68134, and Mark O. Harrell, 536 W. Keating Cir., Lincoln, Nebr. 68521

Filed Nov. 21, 1996, Ser. No. 752,843
Int. Cl.[6] A01G *29/00*
U.S. Cl. 47—57.5 **4 Claims**



1. A method of injecting fluids into a tree having inner layers including heartwood surrounded by a xylem layer, and outer layers including a cambium layer surrounding the xylem layer, an inner bark layer surrounding the cambium layer, and an outer bark layer surrounding the inner bark layer, comprising the steps of:

providing an injection fluid within an injection device;

forming a hole directed inwardly through at least the outer bark layer but extending short of the xylem layer, said hole of a size for passage of said injection device therethrough;

inserting a plug, including a core of resilient material and an inward end, into the hole, said plug having a diameter great enough to plug the hole;

driving the injection device through the plug inwardly beyond the inward end of the plug, but short of the xylem layer;

injecting fluid from the injection device between the xylem and inner bark layers; and

withdrawing the injection device from the plug; wherein

the plug is formed of a material which seals the passage formed by the injection device upon removal of the injection device.

5,797,216

APPARATUS AND METHODS FOR REDUCING THE REDOX POTENTIAL OF SUBSTANCES

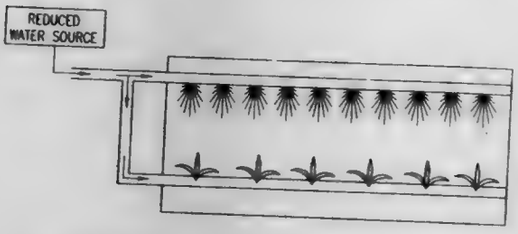
David Reznik, 1231 Loquat Ave., Patterson, Calif. 95363

Continuation of Ser. No. 121,264, Sep. 13, 1993, abandoned. This application May 15, 1995, Ser. No. 441,636
Int. Cl.[6] A01B *79/00*
U.S. Cl. 47—58 **2 Claims**

1. A method for improving the quality of and utilizing water comprising the steps of

providing a supply of water to be treated; and

decreasing the redox potential of the water principally by supplying thereto atomic hydrogen which is not accompanied by



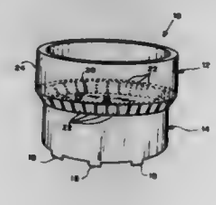
any other substance; and also comprising the step of irrigating plants with water following decreasing of the redox potential thereof.

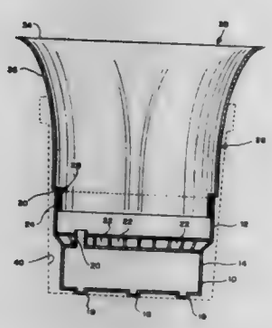
5,797,217

INSERTS PROVIDING SIZE ADAPTABLE SELF WATERING SYSTEMS FOR POTTED PLANTS

Betty Magee, 3460 Buford Hwy., Apt. L6, Atlanta, Ga. 30329

Filed Mar. 1, 1996, Ser. No. 609,534
Int. Cl.[6] A01G *27/00*
U.S. Cl. 47—79 **12 Claims**





1. An insert for providing a contained watering system for potted plants comprising:

walls and a bottom forming a first compartment suitable to hold soil and a plant;

wherein the bottom of the first compartment serves as a barrier forming a sealed second compartment containing water when the insert is placed into a pot;

an inlet through which water can be introduced through the bottom of the first compartment into the second compartment; and

at least one orifice communicating between the first compartment and the second compartment, wherein the orifice is sufficiently large to allow ingrowth of roots from the first compartment into the second compartment but retains soil in the first compartment, and

wherein the first and second compartments form a third compartment when the insert is placed in a pot, and

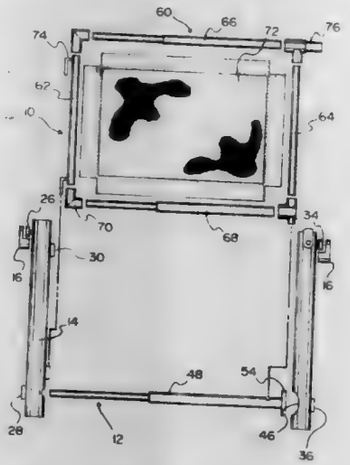
the second and third compartments are in liquid communication.

5,797,218

ADJUSTABLE AND REMOVABLE SAFETY GATE

Matthew W. Holland, 605 S. 25th Street, Colorado Springs, Colo. 80904

Filed Jan. 21, 1997, Ser. No. 792,942
Int. Cl.[6] E06B *3/68*
U.S. Cl. 49—55 **10 Claims**



1. An adjustable and removable safety gate for preventing children and pets from entering off-limits areas comprising, in combination:

a wall mount frame having a pair of door jamb mounts, the door jamb mounts secured to opposing door jambs of a door opening, each of the door jamb mounts comprising a circular disk having a mounting aperture therethrough, a semi-circular receiving sleeve integral with an outer surface of the circular disk, the wall mount frame including a left mount and a right mount, the left mount comprising an elongated cylindrical member, the left mount having an interior surface and an exterior surface, the interior surface having a mounting knob extending outwardly of an upper end thereof, the mounting knob being removably received within one of the receiving sleeves of the door jamb mount on a left side of the door jamb, the interior surface having a rubber stop secured on a lower end thereof, the exterior surface having a pair of sleeves disposed thereon, an aperture extends through a lower end of the exterior surface, the right mount comprising an elongated cylindrical member, the right mount having an interior surface and an exterior surface, the interior surface of the right mount having a mounting knob extending outwardly of an upper end thereof, the mounting knob being removably received within one of the receiving sleeves of the door jamb mount on a right side of the door jamb, the interior surface of the right mount having a rubber stop secured on a lower end thereof, an upper end of the right jamb having a receiving recess extending downwardly thereof, the upper end having a strap secured thereto disposed on one side of the receiving recess, the strap having a female coupler on a free end thereof, a male coupler disposed on an opposing side of the receiving recess from the strap, an oval-shaped recess extends through a lower end of the exterior surface of the right jamb, the wall mount frame including a telescoping bottom tube, the bottom tube including a right portion and a left portion whereby the left portion is adjustably received within the right portion, a free end of the left portion removably received within the aperture of the exterior surface of the left mount, a free end of the right portion having an oval-shaped knob disposed thereon, the oval-shaped knob removably receiving within the oval-shaped recess of the right jamb, the right portion having a recess formed therein inwardly of the free end thereof; and

a gate portion having a generally rectangular configuration, the gate portion having a left side member, a right side member, an upper telescoping member, a lower telescoping member and four L-shaped corner brackets together forming the gate portion, the left side member having a pair of inverted

L-shaped brackets disposed on an interior surface thereof, the brackets slidably and pivotally received within the pair of sleeves of the left mount of the wall mount frame, an upper right corner bracket having an extension extending outwardly thereof, the extension removably received within the receiving recess of the right mount of the wall mount frame, a lower right corner bracket having a lower extension extending downwardly therefrom, the lower extension removably received within the recess formed in the right portion of the bottom tube of the wall mount frame.

5,797,219

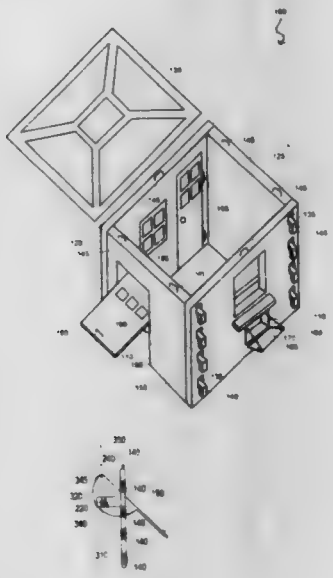
CHILDREN'S PLAY GARAGE WITH ARTICULATING DOOR

Vonda B. Croswell, 20145 Verta St., Perris, Calif. 92570

Filed Jul. 2, 1996, Ser. No. 678,399

Int. Cl.[6] **E04B** *1/00;* **A63H** *33/08*

U.S. Cl. 52—69 **13 Claims**



1. A play garage comprising:

a plurality of walls, each having a top and two sides, the sides of said walls being interconnected to define an enclosed area, including a first wall which defines an opening to said area;

a roof connected to said tops of said walls which, together with said walls, defines an interior and an exterior of said play garage; and

an articulating vehicle door having a door connection to said first wall and capable of transition between an open and a closed position, for covering at least a portion of said opening when in the closed position and for allowing access to said interior when in the open position, said door connection comprising a vehicle door pinion having a polygonal cylinder and said first wall defining a polygonal bore of slightly larger dimension than said pinion for receiving said pinion such that said pinion is not freely rotatable within said bore, but can be rotated by applying an external force to said vehicle door.

5,797,220

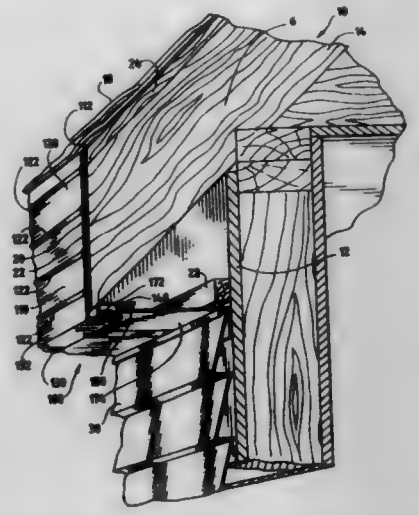
FASCIA-SOFFIT COMBINATION

Richard J. Zaccagni, Downers Grove, Ill., assignor to ZMC, Inc., Addison, Ill.

Division of Ser. No. 633,478, Apr. 17, 1996, which is a continuation-in-part of Ser. No. 304,277, Sep. 12, 1994, Pat. No. 5,537,785, which is a continuation-in-part of Ser. No. 238,657, May 5, 1994, abandoned. This application Feb. 5, 1997, Ser. No. 794,893

Int. Cl.[6] **E04D** *13/064*

U.S. Cl. 52—11 **5 Claims**



1. For trimming a building structure, a combination comprising a fascia member and a soffit member, the fascia member being elongate and having a generally vertical panel and a generally horizontal flange projecting from the generally vertical panel at a lower corner defined by a lower edge of the generally vertical panel and by a proximal edge of the generally horizontal flange, the generally horizontal flange having a distal edge and having a locking lip extending along the distal edge, the soffit member being elongate and having an edge portion having a locking lip engagable with the locking lip extending therealong, the combination further comprising a channel member extending along the generally horizontal flange of the fascia member and confining the edge portion of the soffit member within the channel member, when the locking lip of the edge portion of the soffit member is engaged with the locking lip extending therealong, so as to interlock the fascia member and the soffit member.

5,797,221

REPLACEMENT MANHOLE COVER ASSEMBLY

James E. Young, 406 Inglenook Pl., and Roy A. Meyer, 1000 Crestview Dr., both of Angola, Ind. 46703

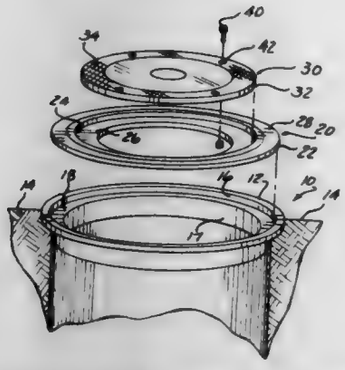
Filed Mar. 5, 1997, Ser. No. 811,901

Int. Cl.[6] **E02D** *29/14*

U.S. Cl. 52—20 **12 Claims**

1. A replacement manhole cover assembly for direct installation into a manhole having a fixed annular frame secured therein, said frame having an annular first vertical member extending alone the periphery of said manhole, said vertical member having an annular upper horizontal surface at one end essentially flush with adjacent pavement, and said vertical member terminating at a lower horizontal shelf at the other end, said lower horizontal shelf having an inner diameter smaller than the diameter of the upper horizontal surface, said assembly comprising:

an annular skirt having an annular horizontal lip positionable on said lower horizontal shelf of the frame, an annular vertical drop extension attached to the horizontal lip, and a horizontal replacement shelf, wherein said vertical drop extension terminates at the horizontal replacement shelf, wherein said hori-



zontal replacement shelf is locatable below said lower horizontal shelf of the frame; and

a manhole cover made of a composite material and supported on the horizontal replacement shelf.

5,797,222

EXTENDED RIDGE ROOF VENT

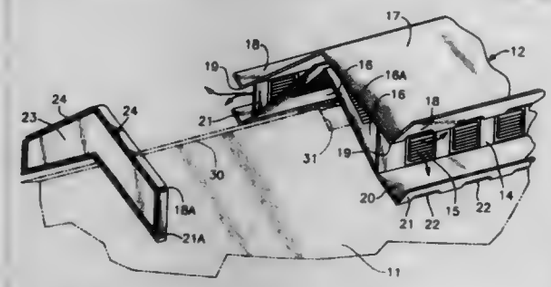
Paul Martin, P.O. Box 563, Wampsville, N.Y. 13163

Filed Jul. 25, 1997, Ser. No. 900,587

Int. Cl.[6] E04B 7/00

U.S. Cl. 52—198

8 Claims



1. A ridge roof vent to be positioned over a vent opening in a roof ridge, and to extend therebeyond over a gable end of the roof comprises; a ridge vent portion and a gable extension portion. said ridge vent portion having a pair of spaced parallel upstanding sidewalls, a plurality of vent openings in said sidewalls, interior return vent walls extending from said sidewalls with vent openings therein, flanges extending from said sidewalls onto said roof, said gable extension portions comprising; a pair of sidewalls, internal end gable wall and wall bottom member, said side and gable walls having vent openings therein, a top extending between and over said respective sidewalls, means for securing said gable portion to said top and means for extending said ridge vent portions along said ridge vent.

5,797,223

SCREEN DOOR FRAME MEMBER CONNECTION SYSTEM

Curtis C. Shoup, and Alfonso Muniz, both of 14400 S. San Pedro St., Gardena, Calif. 90248

Filed Jun. 23, 1997, Ser. No. 880,839

Int. Cl.[6] E06B 1/04

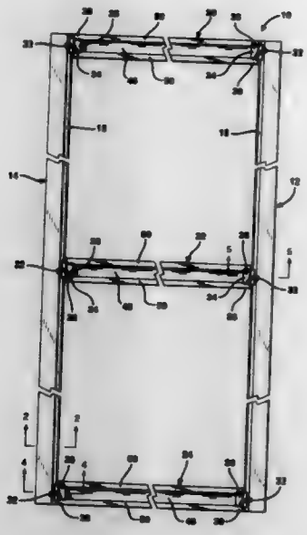
U.S. Cl. 52—204.1

15 Claims

1. A screen door frame comprising:

a pair of mutually parallel, longitudinally extending door stiles each having a longitudinal channel defined therein for receiving an edge of a screen;

a plurality of transverse members oriented perpendicular to said stiles and joined thereto, wherein at least one of said transverse members is detachable from said stiles and is joined



thereto by means of a pair of coupling elements located at its opposite ends, wherein said coupling elements are held on said opposite ends of said detachable, transverse member by the force of friction, and said coupling members each include a hook, and said hooks extend from said ends of said detachable, transverse member and into said channels of said stiles, and an elongated, compressible bead is inserted into said channels of said stiles so as to press said hooks into intimate contact with said channels and thereby immobilize said detachable, transverse member relative to said stiles.

5,797,224

PREFABRICATED EXPANDABLE ARCHITECTURE AND METHOD OF MAKING

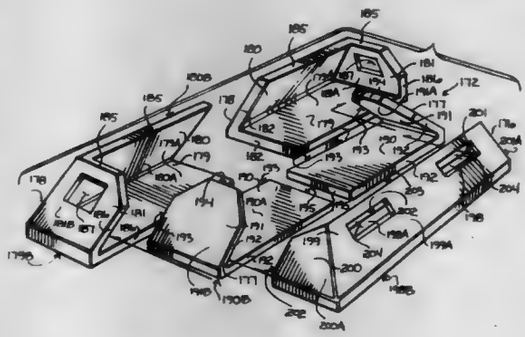
Ray R. Gunthardt, 1133 W. Baseline Rd. #233, Tempe, Ariz. 85283

Filed Oct. 19, 1995, Ser. No. 545,394

Int. Cl.[6] E04H 1/00

U.S. Cl. 52—79.4

38 Claims



1. A prefabricated expandable architecture comprising:

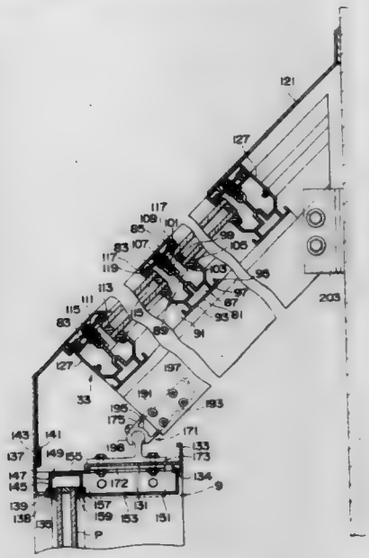
a plurality of structural segments defining a first volume in a first configuration and a second larger volume in a second configuration, wherein said structural segments include a plurality puzzle segments movable from a nested orientation defining the first configuration and an expanded interconnected orientation having a predetermined shape defining the second configuration; and

rigid coupling means for rigidly coupling said structural segments together in said second configuration.

5,797,225
SLOPED ROOF AND HEAD

Masayoshi Ishikawa, Dublin, Ga., assignor to YKK Corporation of America, Lyndhurst, N.J.

Continuation of Ser. No. 377,011, Jan. 23, 1995, abandoned.
This application Mar. 25, 1997, Ser. No. 823,906
Int. Cl.[6] E04B 7/04
U.S. Cl. 52—93.1 5 Claims



2. A sloped roof and head comprising:

two or more rafters positioned substantially coplanarly at an angle, each such rafter having a rafter gutter extending longitudinally along the rafter;

first and second purlins extending between the rafters and forming a plurality of openings, each purlin having a purlin gutter extending longitudinally along the purlin;

a plurality of glazing panels fitted into said plurality of openings;

a head to support the lower end of said sloped roof, said head having an internal trough;

a means for pivotally joining the lower ends of the rafters to said head that allows for a large lateral tolerance between the rafters and the head; and

a bolt for fixing the pitch angle of the rafters relative to the head at the joining means;

wherein the second purlin is interconnected to the head and the purlins and the rafters are interconnected such that the purlin gutters drain into the rafter gutters, and further wherein the lower end of the rafter gutters drain into the internal trough of said head.

5,797,226
DRIVE ANCHOR FOR MANUFACTURED HOME

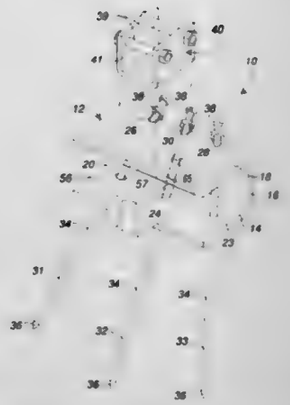
Charles J. MacKarvich, 1720 Tyler Green Trail, Atlanta, Ga. 30080

Filed Dec. 16, 1996, Ser. No. 766,066
Int. Cl.[6] E02D 5/74
U.S. Cl. 52—155 12 Claims

1. A drive anchor for use in a manufactured home stabilizing foundation system which includes parallel rows of piers for supporting a manufactured home and a plurality of tensioning straps that are used to stabilize the manufactured home above ground, said drive anchor comprising:

an elongated C-shaped in cross section rod support bracket having a first arm for placement on a ground surface, a second arm for placement spaced above a ground surface, and a connecting web extending between said first and second arms;

at least two drive rods, each of said drive rods having a shaft portion to be driven into a ground surface;



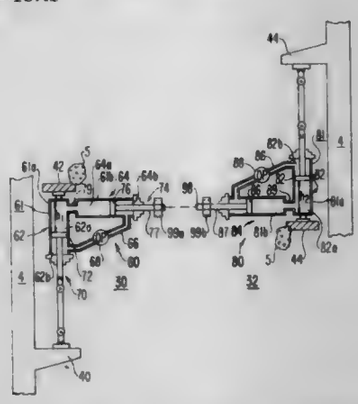
said support bracket including means for receiving said shaft portion of each rod such that each rod is driven through each arm of said support bracket and into a ground surface beneath said support bracket with said rods diverging downwardly away from each other to hold said bracket against the ground surface; and

means for attaching a tensioning strap of a manufactured home stabilizing foundation system to said drive anchor.

5,797,227
STRUCTURE STABILIZATION SYSTEM

Federico Garza-Tamez, Rio Tamesi 305 Col. Mex., Monterrey N.L., Mexico

Filed Apr. 9, 1996, Ser. No. 629,601
Int. Cl.[6] E04H 9/02
U.S. Cl. 52—167.1 30 Claims



1. A stabilization system for protecting a structure having an associated foundation formed in the earth from the effects of seismic disturbances, the structure comprising at least a horizontally disposed slab having first and second longitudinal edges and first and second lateral ends, the stabilization system comprising:

a base isolation system comprising plural support columns affixed to the foundation arranged in a first row of plural first support columns, spaced longitudinally along and disposed adjacent to the first longitudinal edge of the slab, and a second row of plural second support columns, spaced longitudinally along and disposed adjacent to the second longitudinal edge of the slab, the plural first and plural second support columns further being arranged in respective, opposed pairs in the lateral direction;

pendulum support elements having corresponding upper ends connected to the plural support columns, respectively, and corresponding lower ends connected to the slab at corresponding connection positions spaced along the respective longitudinal edges thereof adjacent the corresponding support columns, the plural pendulum support elements supporting the

slab in suspension from the respective support columns while affording limited relative movement between the slab and the support columns, thereby to limit the transmission, to the slab, of movement of the earth and foundation resultant from a seismic disturbance;

a damping system connected between the slab and the foundation and comprising plural hydraulic dampers arranged as first and second orthogonally related damping subsystems symmetrically disposed relatively to the center of gravity of the slab and damping relative linear displacements, respectively in the lateral and longitudinal directions, between the slab and the support columns and impeding action of forces tending to produce relative rotation between the slab and the plural support columns; and

a level monitoring system comprising plural level monitoring detectors affixed to the slab at respective, plural monitoring positions spaced longitudinally along the first and second longitudinal edges of the slab, respectively at the plural connection positions of the corresponding pendulum support elements, the detectors detecting differential changes in the respective levels of the corresponding slab monitoring positions.

5,797,228

SEISMIC ISOLATION BEARING

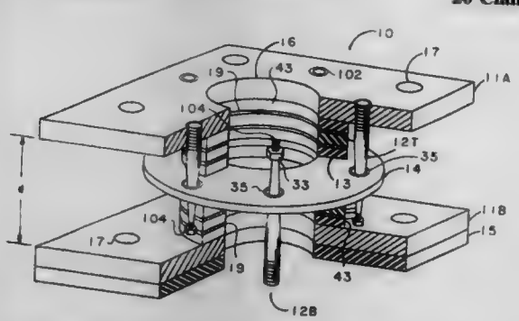
Zoltan A. Kemeny, Tempe, Ariz., assignor to Tekton, Tempe, Ariz.

PCT No. PCT/US94/13598, § 371 Date Aug. 8, 1996, § 102(e) Date Aug. 8, 1996, PCT Pub. No. WO95/14830, PCT Pub. Date Jun. 1, 1995

Continuation-in-part of Ser. No. 156,550, Nov. 24, 1993, Pat. No. 5,490,356. This PCT application Nov. 25, 1994, Ser. No. 649,584

Int. Cl.[6] E04B *1/98*

U.S. Cl. 52—167.7 **20 Claims**



1. A method for isolating and supporting a bearing load, comprising:

providing an upper load plate having a first downwardly facing surface;

providing an oppositely disposed lower load plate having a second upwardly facing surface;

providing a reinforced rubber bearing body extending between and contacting said first and second surfaces;

providing a mid plate disposed approximately midway between and substantially parallel to said first and second surfaces and having a distal portion which extends radially beyond said body, said distal portion including a plurality of holes formed therein;

providing at least one first yield pin extending substantially orthogonally from said first surface, through a first one of said holes, and having a first distal end terminating between said first hole and said second surface;

providing at least one second yield pin extending substantially orthogonally from said second surface, through a second one of said holes, and having a second distal end terminating between said second hole and said first surface;

resiliently deflecting said body in response to an externally applied lateral force such that said first and second pins are engaged by said distal portion of said mid plate thereby plastically deforming said pins.

5,797,229

FITTING ELEMENT FOR A DOOR, WINDOW OR THE LIKE

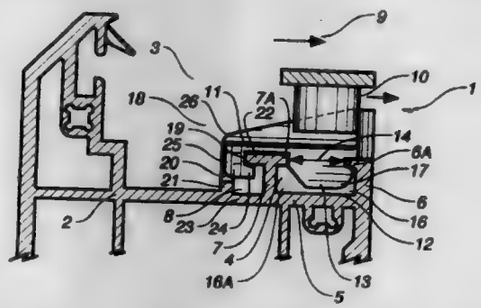
Eric Alvarez, Hommert, and Bruno Charton, Saint Lye, both of France, assignors to Ferco International Ferrures et Serrures de Batiment, Sarrebourg, France

Filed Apr. 9, 1997, Ser. No. 835,606

Claims priority, application France, Apr. 10, 1996, 96 04638

Int. Cl.[6] E06B *3/964*

U.S. Cl. 52—204.62 **9 Claims**



1. A hinging or locking fitting apparatus for a door or window, the door or window being of the type formed of an assembling of profiles, the apparatus comprising:

a profile having a fillister with a T-shaped groove formed therein, said profile having a hooking-in rim formed in said fillister so as extend in parallel relation to said groove and in an opposite direction to said groove; and

a fitting element having a base with means for fixing said fitting element in said groove of said profile, said means comprising a hooking-in member engaged in said hooking-in rim, said base having a rear edge with an extension extending perpendicular to said base, said extension having a bend formed at an end of said extension opposite said base, said bend extending in parallel relation to said base, said bend forming said hooking-in member.

5,797,230

ELEMENT FOR USE IN MAKING A REINFORCE CONCRETE STRUCTURE WITH CAVITIES, FILLER BODY FOR MAKING SUCH AN ELEMENT, AND METHOD OF MAKING A REINFORCED CONCRETE STRUCTURE WITH CAVITIES

Jørgen Lassen, Lundely 9, DK-3900 Hellerup, Denmark

PCT No. PCT/DK94/00104, § 371 Date Sep. 6, 1996, § 102(e) Date Sep. 6, 1996, PCT Pub. No. WO95/24532, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 10, 1994, Ser. No. 714,043

Int. Cl.[6] E04B *5/36*

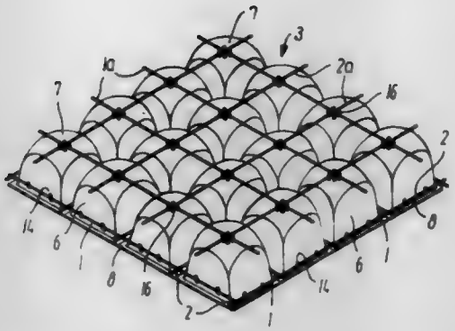
U.S. Cl. 52—323 **24 Claims**

1. A reinforcing element for use in making a reinforced concrete structure of substantially planar shape comprising:

a lower reinforcing mesh including mutually crossing reinforcing rods rigidly secure to each other;

an upper reinforcing mesh including mutually crossing reinforcing rods rigidly secured to each other;

a plurality of discrete spaced filler bodies of substantially identical shape and size cooperating with said upper and lower meshes so as to locate said filler bodies in a regular pattern corresponding to a pattern of said upper and lower meshes, said filler bodies interengaging with said upper and lower meshes so as to form a rigid body, and each said filler body having:



a major face for facing in a same direction as a lower side of the concrete structure.

edges around said major face, and

a flange extending outwardly from each said edge so as to cooperate with an adjacent said flange of an adjacent said filler body such that a lower shuttering is formed by adjacent said flanges.

5,797,231

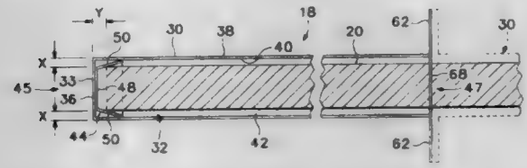
CONCRETE SLAB DOWEL SYSTEM AND METHOD FOR MAKING SAME

Donald R. Kramer, 3673 Old Lewis River Rd., Woodland, Wash. 98674

Continuation-in-part of Ser. No. 587,229, Jan. 16, 1996. This application Jun. 18, 1996, Ser. No. 665,423

Int. Cl.[6] E04F *15/08*

U.S. Cl. 52—396.02 **14 Claims**



1. A concrete dowel slab joint system, comprising:

a dowel bar for maintaining adjacent sections of concrete in alignment during contraction and expansion of the concrete, and for transferring shear stresses and bending moments across a joint formed between adjacent concrete slabs; and

a first sleeve assembly for receiving and maintaining the dowel bar therewithin so that the dowel bar does not transmit substantial shear stresses to the concrete during the contraction and expansion of the concrete, the first sleeve assembly comprising (a) an elongate sleeve body having a longitudinal axis and including an outer surface and an inner surface, and defining a hollow interior compartment, (b) at least one closed end, (c) a sleeve member joined to said elongate sleeve body or to said closed end, and having a longitudinal axis, at least one open outer end, an outer surface and an inner surface, the inner surface of said sleeve member defining a hollow interior chamber and the longitudinal axis of the sleeve body being disposed substantially at a right angle with respect to the longitudinal axis of said sleeve member, the first sleeve assembly being mountable onto an upright support stanchion so that the upright support stanchion is disposed within the hollow interior chamber, and (d) at least one collapsible, generally V-shaped spacer member located within the hollow interior compartment, each collapsible spacer member engaging and positioning the dowel bar at a lateral distance from the inner surface of the elongate sleeve body and at a longitudinal distance from the closed end, said lateral distance and said longitudinal distance together defining an expansion area between the dowel bar and the sleeve assembly, the spacer member being collapsible by interactive forces exerted by the dowel bar moving in a lateral and/or longitudinal path within the hollow interior compartment in response to the expansion and contraction of the concrete, said V-shaped spacer member including a pair of outwardly angularly extending side sections having a pair of free ends and joined together at the other end of the side sections to form a base, the base of the V-shaped spacer member being attached to an inner surface of the closed end, and the pair of free ends being joined to the inner surface of the elongate sleeve body, one of the ends of the dowel bar engaging an inner surface of the outwardly angularly extending side sections thereby defining the expansion area between the dowel bar and the elongate sleeve body.

5,797,232

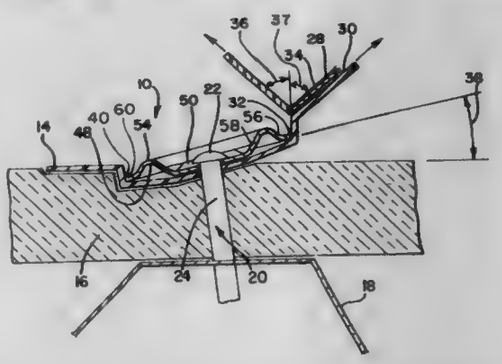
GRIPPING PLATE FOR ATTACHING ROOFING MEMBRANE

Paul M. Larson, Hoffman Estates, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Aug. 15, 1996, Ser. No. 689,851

Int. Cl.[6] E04B *5/00*

U.S. Cl. 52—408 **22 Claims**



1. A gripping element for attaching a roofing membrane to a roof, comprising:

a substantially planar, rigid plate having an opening, defined within a substantially central portion of said substantially planar plate, for receiving a fastener for securing said gripping element to a roof, and a rigid, non-bendable peripheral region having an outermost peripheral edge portion;

said rigid, non-bendable peripheral region having a plurality of gripping formations formed within said outermost peripheral edge portion thereof for engaging the roofing membrane and preventing slippage of the roofing membrane relative to said plate.

5,797,233

PRE-SPACED TIME-SAVING TRACK FOR MOUNTING STUDS FOR CONSTRUCTION OF DRYWALL AND OTHER WALL SURFACES

Karl B. Hascall, 2833 - 72nd St., SW., Byron Center, Mich. 49315

Filed Dec. 26, 1996, Ser. No. 777,151

Int. Cl.[6] E04C *3/07*

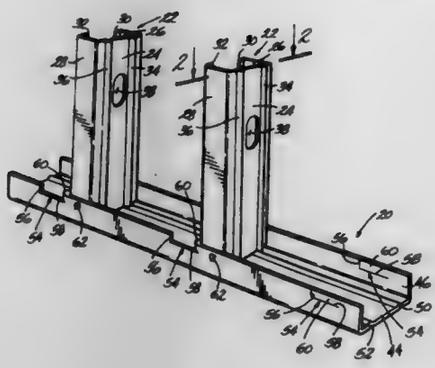
U.S. Cl. 52—481.1 **22 Claims**

1. A wall construction comprising:

a plurality of elongated studs each having a pair of opposed sidewalls, said sidewalls each having an inwardly-directed lip thereon;

first and second elongate members, each of said elongate members having a longitudinal axis and formed of resiliently deformable material, said elongate members each comprising an elongate base wall, first and second opposed side walls extending generally perpendicular from said base wall, said base wall and side walls defining a channel;

said first and second side walls each having at least one tab;



said at least one tab deformed around one of said lips of said stud when said stud is disposed in a generally perpendicular relationship with respect to one of said first and second elongate members.

5,797,234

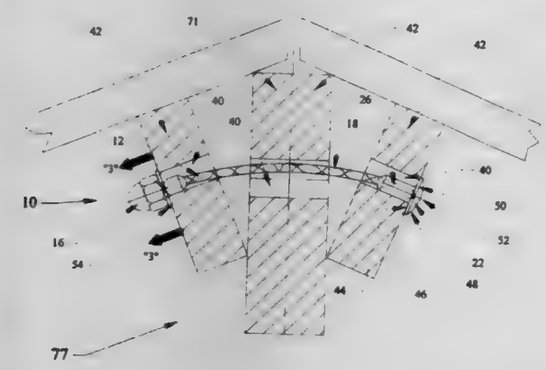
FLEXIBLE CONNECTOR AND ASSEMBLY FOR STRUCTURAL CONNECTION

Antonis Theodorou, 737 Danielle Ct., Sleepy Hollow, Ill. 60118

Filed Mar. 4, 1997, Ser. No. 810,064

Int. Cl.[6] E04C *3/00;3/30*

U.S. Cl. 52—578 **34 Claims**



1. A flexible connector for use in holding at least two frame members together, the flexible connector comprising: a first rigid end portion having threaded surfaces, the first rigid end portion adapted for receiving a threaded nut, a second rigid end portion having an enlarged head at a distal end thereof, an elongated flexible member formed of cable attached to and extending between the first and second rigid end portions, the elongated flexible member having a diameter less than respective diameters of the first and second rigid end portions so that the elongated flexible member has increased flexibility, each of the first and second rigid end portions having a sloped annular surface extending inwardly from each respective end portion towards the elongated flexible member, and a spike washer having an aperture therethrough, the spike washer being engageable on the first rigid end portion, the first rigid end portion and aperture being shaped and configured for mated engagement to prevent rotation of the first rigid end portion, the spike washer having at least two projections outwardly extending from an inner facing surface of the spike washer, whereby said flexible connector can be fished through aligned holes in said at least two frame members.

5,797,235

DOUBLE SKIN COMPOSITE STRUCTURES

Hugh Gordon Bowerman, Woking, and Bassam Adeeb Burgan, Bracknell, both of England, assignors to British Steel PLC, London, England

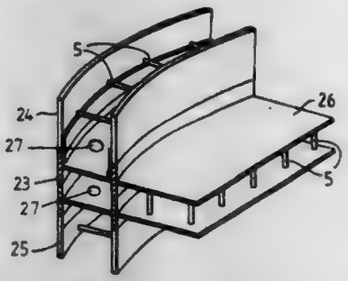
PCT No. PCT/GB95/00754, § 371 Date Jan. 29, 1997, § 102(e) Date Jan. 29, 1997, PCT Pub. No. WO95/26856, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 31, 1995, Ser. No. 732,237

Claims priority, application United Kingdom, Mar. 31, 1994, 9406438; Mar. 31, 1994, 9406441

Int. Cl.[6] E04B *1/00*

U.S. Cl. 52—582.1 **13 Claims**



1. A double skin composite structure in which neighbouring double skin composite panels of the structure are connected by welding, the structure being characterised in that the composite panels are welded to a connector fabricated from one or more non-planar seamless sections, the or each seamless section being produced as a single piece and including two or more lengthwise extending elements each of which is inclined to its neighbouring element.

5,797,236

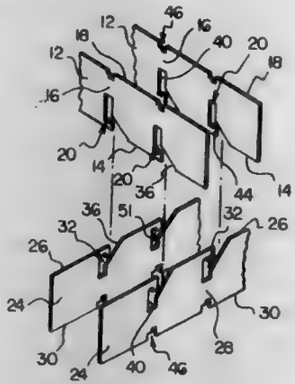
AUXILIARY BOTTOM INSERT APPARATUS FOR A CONTAINER

John T. Posey, Jr., and Julea Ruth Posey, both of HC 68 Box 1065, Vian, Okla. 74962

Filed Sep. 9, 1996, Ser. No. 711,104

Int. Cl.[6] E04C *2/42;5/04;* **E04F** *15/06;19/10*

U.S. Cl. 52—664 **7 Claims**



1. An auxiliary bottom insert apparatus for a container, comprising:

first panels, each of which includes a first panel top edge, a first panel middle portion, and a first panel bottom edge, wherein each of said first panels includes first keyways spaced at predetermined first increments along said first panel top edge and extending from said first panel top edge to said first panel middle portion, and

second panels, each of which includes a second panel top edge, a second panel middle portion, and a second panel bottom edge, wherein each of said second panels includes second

keyways spaced at predetermined second increments along said second panel top edge and extending from said second panel top edge to said second panel middle portion,

wherein said first panels and said second panels include substantially identical dimensions and keyways,

wherein said second panels are inverted with respect to said first panels, and

wherein each of said first panel middle portions is inserted in a corresponding one of said second keyways and each of said second panel middle portions is inserted in a corresponding one of said first keyways, whereby said first panels and said second panels form a flexibly interlocked panel gridwork;

wherein each of said first keyways and said second keways includes:

a ramp portion extending from a respective top panel edge to a respective middle panel portion at an obtuse ramp angle with respect to said respective top panel edge,

a key-reception well extending into a respective middle panel portion from said ramp angle,

wherein each of said first panels and said second panels further includes:

a plurality of flexible lock tabs, wherein each lock tab extends from a respective panel top edge toward a respective middle panel portion and is positioned over a portion of a respective keyway in spaced confronting relation to said ramp portion, and

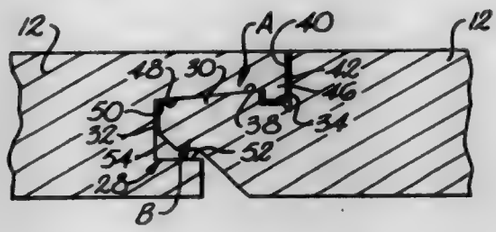
a plurality of lock-tab-receiving notches, wherein each lock-tab-receiving notch extends from a respective panel bottom edge toward a respective said middle panel portion.

5,797,237

FLOORING SYSTEM

Donald R. Finkell, Jr., Spartanburg, S.C., assignor to Standard Plywoods, Incorporated, Clinton, S.C.

Filed Feb. 28, 1997, Ser. No. 807,242
Int. Cl.[6] E04B *2/08*
U.S. Cl. 52—589.1 **15 Claims**



1. A flooring system for use on a generally planar base surface, the flooring system comprising:

a first flooring member and a second flooring member, said first flooring member defining an elongated first engagement portion, and said second flooring member defining an elongated second engagement portion; said first engagement portion cooperating with said second engaging portion for attaching to attach said first and second flooring members together;

said first engagement portion defining an elongated channel extending generally transversely into said first flooring member and generally parallel to said base surface, and said first engagement portion defining a downwardly extending barb adjacent to said channel; and

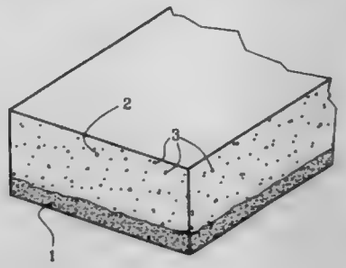
said second engagement portion having an elongated tongue received in said channel, said tongue defining a transversely extending tapered-in end portion projecting outwardly substantially parallel to said base surface and a longitudinally extending groove receiving said barb such that upon receipt of said tongue in said channel and said barb in said groove, said first and second flooring members are connected to one another, whereby said first and second engagement portions are restrained against both lateral movement and upward movement with respect to one another.

5,797,238

METHOD OF PRODUCING CONCRETE STRUCTURES WITH A SURFACE PROTECTION AND A CONCRETE STRUCTURE PRODUCED IN ACCORDANCE WITH THE METHOD

Leif Berntsson, and Bengt Hedberg, both of Göteborg, Sweden, assignors to Delcon AB Concrete Development, Sweden

PCT No. PCT/SE94/00558, § 371 Date Dec. 18, 1995, § 102(e) Date Dec. 18, 1995, PCT Pub. No. WO95/00305, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 9, 1994, Ser. No. 569,080
Claims priority, application Sweden, Jun. 18, 1993, 9302118
Int. Cl.[6] E04B *1/14*; E04C *1/40;2/04*
U.S. Cl. 52—612 **5 Claims**



1. A concrete structure comprising:

a surface layer comprised of cement allied mortar with a low water binding average ratio and a binding agent strength of at least 70 Mpa, and of separated ballast particles; and

a concrete layer above the surface layer, said concrete layer being comprised of a concrete layer having a lower binding agent strength than the surface layer, said strength being approximately 10 to 20 Mpa, said concrete layer having an air-entrained ballast and having a dense structure;

wherein a part of said surface layer adjacent to said concrete has a lower volume percent of ballast than the part of said surface layer facing away from said concrete layer.

5,797,239

TITANIUM REINFORCED STRUCTURAL PANEL HAVING A PREDETERMINED SHAPE

Mark A. Zaccone, Maryland Heights, and Jeffery D. Russom, Chesterfield, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Division of Ser. No. 411,477, Mar. 28, 1995. This application Jan. 13, 1997, Ser. No. 782,228
Int. Cl.[6] E04C *2/34*
U.S. Cl. 521—793.1 **5 Claims**



1. A structural panel having a predetermined shape, the structural panel comprising:

a metallic core comprising first and second metallic core sheets having superplastic properties, said first and second metallic core sheets having the predetermined shape, said first and second metallic core sheets disposed in a facing relationship and joined along respective edge portions thereof;

a first reinforced titanium composite sheet bonded to a respective one of said metallic core sheets to thereby form an interior portion of the structural panel, said first reinforced titanium composite sheet also]having the same predetermined shape as the respective metallic core sheet; and

a pair of metallic face sheets having superplastic properties and formed in the predetermined shape, said pair of metallic face sheets being bonded to and disposed on opposite sides of the interior portion of the structural panel formed by a combination of said metallic core and said first reinforced titanium composite sheet to thereby form an integral structural panel having the predetermined shape,

wherein said first reinforced titanium composite sheet has a first predetermined flow stress and said pair of metallic face sheets have a second predetermined flow stress, the first predetermined flow stress being greater than the second predetermined flow stress such that said first reinforced titanium composite sheet increases the relative strength of the structural panel.

5,797,240

METHOD OF WRAPPING LOADS BY MEANS OF A STRETCHABLE FILM, A MACHINE AND A FILM FOR IMPLEMENTING THE METHOD

Jean-Paul Martin-Cocher, Servolex, and Georges Jaconelli, Brison-Saint-Innocent, both of France, assignors to Newtec International, Viroflay, France

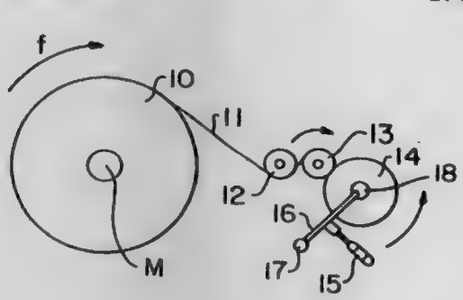
PCT No. PCT/FR93/00827, § 371 Date Aug. 29, 1995, § 102(e) Date Aug. 29, 1995, PCT Pub. No. WO94/04419, PCT Pub. Date Mar. 3, 1994

PCT Filed Aug. 25, 1993, Ser. No. 387,711

Int. Cl.[6] B65B *13/02;53/00*

U.S. Cl. 53—399

24 Claims



1. A method of wrapping a load by means of a stretchable film that is put into place around said load, comprising the steps of:

pre-stretching said film by predetermined traction forces to an elongation value which is within the range of 150% to 500%;

relaxing said predetermined traction forces so as to relax said pre-stretched film to a predetermined degree;

subsequently winding said pre-stretched and relaxed film upon a spool so that said pre-stretched and relaxed film wound upon said spool is stabilized and exhibits a tension value upon said spool which is within the range of 2 to 7 decaNewtons per square millimeter of film section per turn; and

unwinding said pre-stretched and relaxed film from said spool so as to wrap said load with said pre-stretched and relaxed film.

5,797,241

STATION IN A PACKAGING LINE FOR FOLDING A FLAP OF A BAG

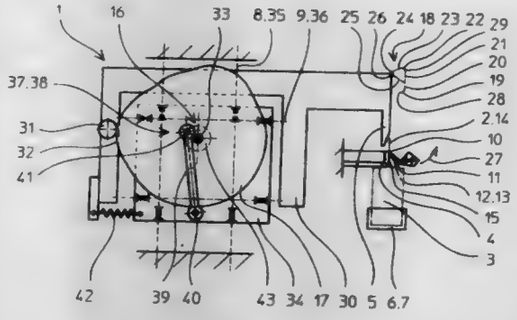
Matthias Schuh, Wettenberg; Volker Dersch, Lahntal, and Walter Baur, Gruendau, all of Germany, assignors to Rovema Verpackungsmaschinen GmbH, Fernwald, Germany

Filed Jun. 16, 1997, Ser. No. 876,403

Int. Cl.[6] B65B *7/00*

U.S. Cl. 53—375.5

14 Claims



1. A station in a packaging line for folding a flap of a bag along a shaping line of the flap and for compressing the folded flap, comprising: a resistance member against which a flap is pressed; a folding element movable against the flap and against the resistance member; a feeding device for feeding a bag to said folding element; a drive mechanism for driving the folding element in two perpendicular directions, said drive mechanism having a movable mounting and a cam plate for controlling the movement of said folding element, said cam plate rotating about an axis of rotation and being mounted to said movable mounting at the axis of rotation, said movable mounting having linear guides for providing linear movement of said movable mounting, said linear guides being positioned at right angles to each other providing movement in two planar, perpendicular directions; and a holding element being movable against a shaping line of the flap and having a rectilinear shaping edge.

5,797,242

PRODUCTION OF AN ENDLESS BAND AND METHOD AND BANDING APPARATUS FOR BANDING WITH THIS ENDLESS BAND

Hartmut Karl Sauer, Himmelstadt, Germany, assignor to De La Rue Giori S.A., Switzerland

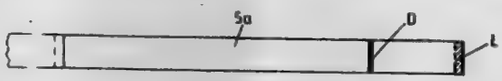
Filed Jun. 3, 1996, Ser. No. 657,395

Claims priority, application Switzerland, Jun. 9, 1995, 01 705/95

Int. Cl.[6] B65B *13/04;57/00*

U.S. Cl. 53—399

3 Claims



1. An endless band (5) for the automatic banding of pack goods (P), the endless band (5) having a repeat length and being provided with print marks (D) at equal distances, this distance between adjacent print marks (D) being equal to the repeat length (r) of the band, the repeat length (r) of the band corresponding to the circumference of the largest pack goods item to be banded, plus an overlap, and a strip-shaped glue coating (L) for closing the band loops (5*a* to 5*f*) being applied transversely to the longitudinal direction of the endless band (5) at a constant predetermined distance (s) in front of each print mark (D).

5,797,243

METHOD FOR CLOSING A FILTER BAG FOR INFUSIBLE PRODUCTS AND FOR CONNECTING A TAGGED THREAD THERETO

Roberto Tagliaferri, Castel S. Pietro, and Paolo Cardinali, Conselice, both of Italy, assignors to I.M.A. Industria Macchine Automatiche S.p.A., Ozzano Emilia, Italy

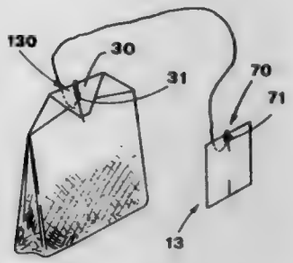
PCT No. PCT/IT95/00090, § 371 Date Nov. 15, 1996, § 102(e) Date Nov. 15, 1996, PCT Pub. No. WO95/32905, PCT Pub. Date Dec. 7, 1995

PCT Filed May 25, 1995, Ser. No. 737,241

Claims priority, application Italy, May 27, 1994, BO94A0249; Feb. 22, 1995, BO95A0061

Int. Cl.[6] B65B 29/04

U.S. Cl. 53—413 16 Claims



1. A method for closing a filter bag for an infusible product, and for connecting a thread having a tag to said filter bag, comprising:

providing a filter bag, having at least a lobe, at least a flap folded to prevent the filter bag from opening and the infusible product from going out,

providing a connecting thread, having a first terminal portion at a first end and a second terminal portion at its end opposite the first end,

providing a pickup tag,

placing at least two sections of the first terminal portion vertically adjacent each other on opposite sides of the flap,

providing stitching means for locking said flap in a predetermined position, simultaneously fixing the first terminal portion of said connecting thread to said filter bag, by engaging an upper portion of said filter bag in the region of said flap with a portion of a first auxiliary thread made of a natural fiber, forming a short stitch, simultaneously engaging the at least two adjacent vertical sections of the first terminal portion, with the first auxiliary thread.

5,797,244

METHOD AND DEVICE FOR TRANSFERRING FILLED TEA BAGS FROM A SINGLE TEA BAG PACKAGING MACHINE TO A PROCESSING MACHINE

Helmut Nippes, Solingen-Merscheid, and Friedhelm Funda, Wuppertal, both of Germany, assignors to Teepack Spezialmaschinen GmbH & Co., Meerbusch, Germany

Filed Nov. 27, 1996, Ser. No. 757,580

Claims priority, application European Pat. Off., Nov. 30, 1995, 95118827

Int. Cl.[6] B65B 35/56

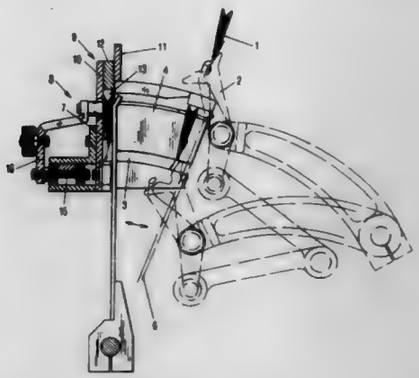
U.S. Cl. 53—446 2 Claims

1. A method for transferring filled tea bags from a single track tea packaging machine to a two-track processing machine, said method comprising the steps of:

feeding tea bags on a single track to a transfer station and positioning each tea bag individually therein;

individually gripping the tea bags and rotating the tea bags about a first axis alternatingly to the left and to the right toward a left and a right track of a two-track transporting table;

subsequently placing the tea bags onto the left and right tracks of the two-track transporting table by pivoting the tea bags about a second axis extending transverse to said first axis;



transporting the tea bags subsequently on the left and rights tracks;

wherein said step of feeding includes positioning the tea bags upside down;

wherein in said step of rotating the tea bags are rotated about 90° in a vertical plane;

wherein in said step of placing the tea bags are pivoted into a horizontal position; and

wherein in said step of transporting the tea bags are positioned head to head on the left and right tracks.

5,797,245

DEVICE FOR AUTOMATICALLY RECEIVING AN UMBRELLA IN A BAG

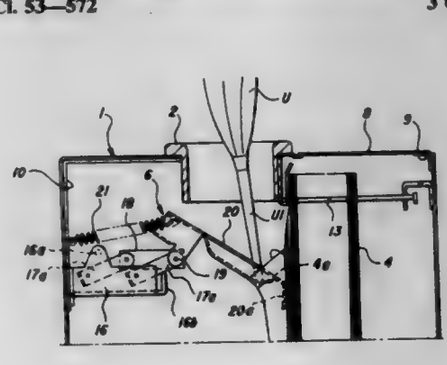
Toshiyuki Murakami, Kanagawa, Japan, assignor to Kabushiki Kaisha Muraharu Seisakusho, Kanagawa, and Niikura Scales Co., Ltd., Tokyo, both of Japan

PCT No. PCT/JP95/01433, § 371 Date Jun. 26, 1996, § 102(e) Date Jun. 26, 1996, PCT Pub. No. WO97/03882, PCT Pub. Date Feb. 6, 1997

PCT Filed Jul. 19, 1995, Ser. No. 663,309

Int. Cl.[6] B65B 67/04;67/12;43/28;43/30

U.S. Cl. 53—572 3 Claims



1. A device for automatically receiving an umbrella and positioning said umbrella in a bag, comprising:

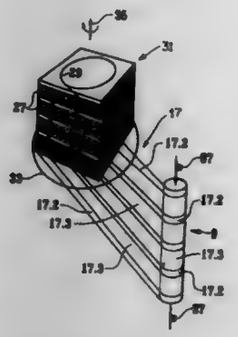
umbrella receiving bags which are loaded within a main body; and an opening operation member in said main body for rotating and opening an insertion opening of a selected one of said receiving bags when rotated by a point of said umbrella, wherein said opening operation member is supported for movement by a mobile plate for advancement to and retreat from said selected one of said umbrella receiving bags loaded within the main body and wherein said opening operation member has a four link mechanism including said mobil plate, a pair of parallel links, and a fixed plate.

5,797,246

PRE-STRETCHED FILM, AND APPARATUS AND A METHOD FOR OUTER PACKAGING

Jean-Paul Martin-Cocher, La Motte Servolex, and Georges Jaconelli, Brison Saint-Innocent, both of France, assignors to Thimon, S.A., Aix les Bains, France

Filed Dec. 13, 1996, Ser. No. 766,251
Claims priority, application France, Dec. 13, 1995, 95 14757
Int. Cl.[6] B65B 53/00
U.S. Cl. 53—399
19 Claims



1. A method of packaging an object, comprising the steps of:

conducting a stretchable film, having a longitudinal extent and a lateral width, over a single stretching roller having different diametrical portions disposed along its axial length so as to provide said stretchable film with laterally spaced, longitudinally extending zones which exhibit different degrees of longitudinal stretch which correspond to different regions of said film which are to be disposed about different regions of an object so as to permit said different regions of said film to exert different forces upon different regions of an object; and

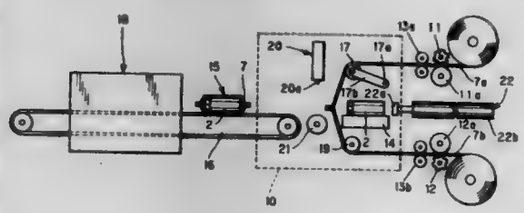
wrapping said stretchable film about an object to be packaged.

5,797,247

PHOTOSENSITIVE MATERIAL PACKAGE AND PACKAGING APPARATUS FOR THE SAME

Isao Nakagoshi; Hiromi Shimura; Ikuo Katsumata, and Osamu Suzuki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 518,836, Aug. 24, 1995, Pat. No. 5,667,071. This application May 7, 1997, Ser. No. 852,338
Claims priority, application Japan, Aug. 31, 1994, 6-206216
Int. Cl.[6] B65B 53/02;13/02
U.S. Cl. 53—442
20 Claims



11. A packaging method of packaging photosensitive material, said photosensitive material contained in each of cassettes, said packaging method comprising steps of:

pre-containing N of said cassettes in respective cylindrical watertight cases;

supplying said N cassettes associated with said N watertight cases;

supplying at least one continuous heat shrinkable film material to a top and a bottom of said N cylindrical cases;

guiding said shrinkable film material, to cause said shrinkable film material to touch and cover said N cylindrical cases;

sealing a-rear edge portion and a front edge portion of said shrinkable film material with heat, said rear edge portion disposed upstream from an initial N cylindrical cases covered in said shrinkable film material, and said front edge portion disposed downstream from a next N cylindrical cases to be covered in said shrinkable film material;

cutting said rear edge portion from said front edge portion, a shrinkable film piece of a regular length covering initial said N cylindrical cases;

pressing said next N cylindrical cases toward said front edge portion sealed with heat, said shrinkable film material covering said next N cylindrical cases; and

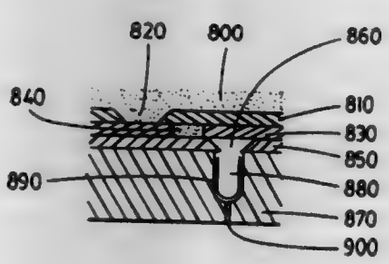
applying a controlled amount of heat based on a heat tolerance characteristic of said photosensitive material to said shrinkable film piece with said initial N cylindrical cases, to touch and fit said shrinkable film piece tightly on said cylindrical watertight cases without damaging said photosensitive material.

5,797,248

MANUAL CAPSULE FILLING DEVICE

Michael Hetherington, Ontario, and William Wassenaar, Toronto, both of Canada, assignors to Willem Wassenaar, Toronto, Canada

Filed May 6, 1997, Ser. No. 851,686
Int. Cl.[6] B65B 1/06;1/36;67/00;67/02
U.S. Cl. 53—473
19 Claims



1. A capsule filling device comprising:

i) an upper housing;

ii) a dosage plate;

iii) a base plate; and

iv) a capsule plate; the dosage plate, the upper housing and the base plate being arranged such that the upper housing is above the dosage plate and the base plate is below the dosage plate; the base plate being in engageable connection with and above the capsule plate; the capsule plate comprising capsule holder means to receive at least one open capsule bottom; the dosage plate being slidable between a first, a second and a third position, such that the second position is located between the first position and the third position; the upper housing, dosage plate and base plate each define at least one channel, the dimension of each channel permitting a pourable substance to be passed through each channel; the channels in the base plate align with the capsule holder means in the capsule plate; in first position, the channels in the upper housing align with the channels in the dosage plate such that a pourable substance may pass through the channels in the upper housing and the channels in the dosage plate; in second position the channels in the dosage plate are not aligned with the channels in the upper housing and the channels in the dosage plate are not aligned with the channels in the base plate; and in third position the channels in the dosage plate are aligned with the channels in the base plate such that a pourable substance may pass through the channels in the dosage plate and the channels in the base plate and into the open capsule bottoms in the capsule holder means.

5,797,249

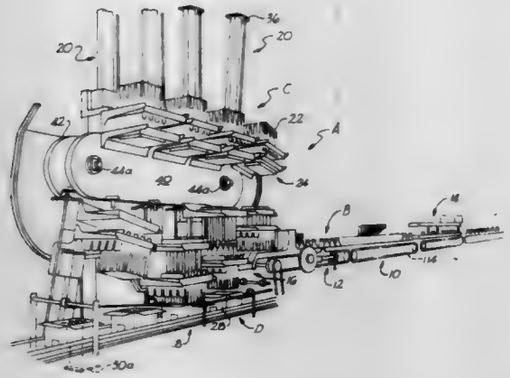
CONTINUOUS MOTION CASE PACKING APPARATUS AND METHOD

Thomas Patterson Hartness, Greenville, S.C., assignor to Hartness International, Inc., Greenville, S.C.

Continuation-in-part of Ser. No. 338,026, Nov. 10, 1994, Pat. No. 5,588,282. This application Oct. 24, 1996, Ser. No. 736,376

Int. Cl.[6] B65B 5/08;21/06;21/18

U.S. Cl. 53—473 37 Claims



1. Apparatus for continuously packing articles into cases which includes a slug feeder for supplying a slug of said articles to a slug pick-up station at which said slug of articles is picked up and transferred to a case packing station for being deposited in a partitioned case; said apparatus comprising:

a plurality of transfer arms disposed about a vertical plane for continuous sequential transfer of said articles from said pick-up station to said case packing station;

a carriage carried by a frame for moving said transfer arms between said slug pick-up station and said case packing station along said vertical plane;

a plurality of article pick-up heads carried by said transfer arms having an array of gripper elements arranged in a matrix corresponding to said slug of articles for holding said articles in a positive manner during said transfer;

a plurality of reciprocating grid heads carried in alignment with said pick-up heads which move in relative vertical movement with said pick-up heads;

an array of pivotal grid fingers depending downwardly from said grid heads to define a matrix of grid chutes corresponding to said slug of articles;

said grid chutes having an open position in which said grid fingers are open to accommodate relative passage between said articles and said grid fingers, and said grid chutes having a closed position in which said grid fingers are closed in a convergent configuration and converge toward the case at said case packing station;

a vertical motion mechanism operatively associated with said grid heads and pick-up heads for positioning said grid and pick-up heads in various positions along said vertical plane including a first relative position wherein said grid finger chutes are in said open position at said pick-up station and case packing station for allowing said articles to be picked up and released, respectively, and a second relative position at said case packing station wherein said grid finger chutes are in said closed position and aligned with the case prior to said articles being deposited in the case;

an actuator operatively associated with said grid fingers having a first position in which said grid fingers are disposed in said chute closed position with said grid fingers converged; and

said actuator having a second position in which said grid fingers are spread apart in said chute open position for relative passage between said articles and grid fingers.

5,797,250

FORAGE HARVESTER FEED ROLL ASSEMBLY DESIGNED FOR MINIMIZING FALSE TRIPPING OF A METAL DETECTOR SYSTEM

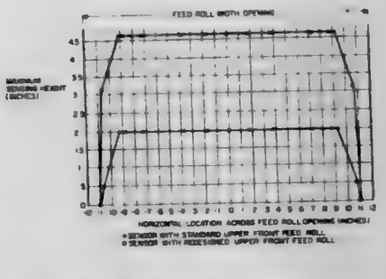
Patrick Augie, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sep. 27, 1996, Ser. No. 722,597

Int. Cl.[6] A01D 75/18

U.S. Cl. 56—10.2 J 2 Claims





1. In a forage harvester including a rotatably supported cutterhead having knives located for sweeping across a stationary shear bar for cutting a mat of crop being fed across the shear bar into lengths, a feed roll assembly for feeding the mat of crop to the cutterhead, the feed roll assembly including a pair of opposed contra-rotating closely spaced feed rolls including lower and upper feed rolls constructed of non-magnetic material, a metal detector being fixedly mounted within said lower feed roll and positioned for generating a balanced magnetic field in a crop feed zone above said lower feed roll, a pair of parallel link assemblies being mounted for swinging vertically about a fixed horizontal transverse axis, an upper feed roll support shaft having opposite ends respectively fixed to said pair of parallel link assemblies, and bearings rotatably supporting said upper feed roll on said upper feed roll support shaft, the improvement comprising: said upper feed roll support shaft being non-magnetic.

5,797,251

BLADE DRIVE CLUTCH AND BRAKE FOR A LAWN MOWER

Garry W. Busboom, Beatrice, Nebr., assignor to ExMark Mfg. Co., Inc., Beatrice, Nebr.

Filed Feb. 26, 1997, Ser. No. 806,427

Int. Cl.[6] A01D 69/08

U.S. Cl. 56—11.3 5 Claims

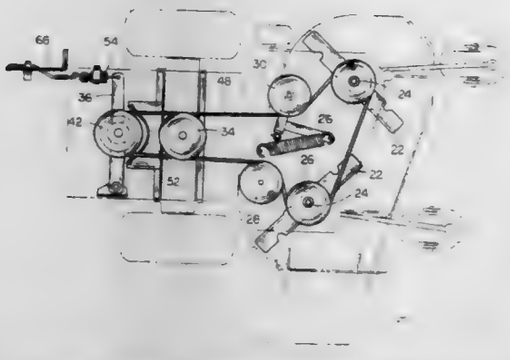
1. A self-propelled lawn mower, comprising:

a frame having a forward end, a rearward end, and opposite sides;

a mower deck at the forward end of said frame which house a blade assembly containing one or more rotatable cutting blades;

each of said cutting blades being mounted on a vertically disposed, rotatable spindle having a horizontally disposed sheave mounted thereon;

an engine mounted on said frame rearwardly of said mower deck and having a vertically disposed, rotatable drive shaft extending downwardly therefrom;



a horizontally disposed drive sheave mounted on said drive shaft below said engine;

a substantially horizontally disposed, elongated clutch arm having one end pivoted about a vertical axis, to said frame at one side thereof and extending towards said other side of said frame;

said clutch arm being positioned rearwardly of said engine drive shaft and drive sheave;

said clutch arm, being pivotally movable, from a first forward position to a second rearward position;

a vertically disposed, rotatable jackshaft mounted on said clutch arm intermediate the ends thereof and having upper and lower ends;

an upper sheave mounted on the upper end of said jackshaft;

a lower sheave mounted on the lower end of said jackshaft;

an upper belt extending around and connecting said drive sheave and said upper sheave;

said upper belt normally extending loosely around said drive sheave and said upper sheave in a non-driving relationship when said clutch arm is in said first forward position;

a blade drive belt extending around and connecting said lower sheave and said cutting blade sheaves;

a spring-loaded idler sheave in engagement with said blade drive belt for tensioning said blade drive belt so that the tension in said blade drive belt yieldably urges said lower sheave forwardly and yieldably urges said clutch arm towards said first forward position;

and a handle assembly having a manually operated control linkage operatively connected to said clutch arm for selectively moving said clutch arm from said first forward position to said second rearward position, thereby moving said jackshaft and said upper and lower sheaves rearwardly, with respect to said drive shaft, so that said upper belt is brought into frictional driving engagement with said drive sheave and said top sheave to cause said lower sheave to drive said blade drive belt and said cutting blades.

5,797,252

HEIGHT OF CUT ADJUSTMENT MECHANISM

Gerald Eugene Goman, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed May 13, 1996, Ser. No. 645,366

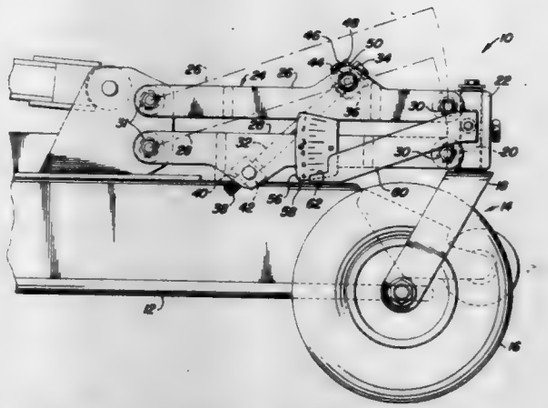
Int. Cl.[6] A01D *34/64*

U.S. Cl. 56—17.2 **11 Claims**

1. A mechanism for adjusting the operating height of an implement, comprising:

a rotatable member operatively coupled with the implement for adjusting the operating height of the implement as the rotatable member is rotated by an operator,

an abutment member fixedly positioned adjacent the rotatable member, said abutment member and rotatable member defining generally mating shapes which engage each other as the rotatable member rotates to a particular position for indicating to the operator an incremental height adjustment of the implement, said abutment member is resiliently biased toward the rotatable member in a radial direction with respect to an axis



of rotation of the rotatable member for pressing the mating shape of the abutment member toward the rotatable member and into engagement with the mating shape of the rotatable member

said abutment member further comprises a leaf spring member having a mating shape defined therein, said leaf spring member serving to bias the mating shape of the leaf spring toward the rotatable member and into engagement with the mating shape defined by the rotatable member, and

the rotatable member is operatively coupled with a link member coupled between a pair of beam members which form part of a four bar linkage for supporting the implement,

and said link member adjusts the relative position of the beam members as the rotatable member is rotated by the operator to thereby adjust the operating height of the implement.

5,797,253

HAY MAKING MACHINE

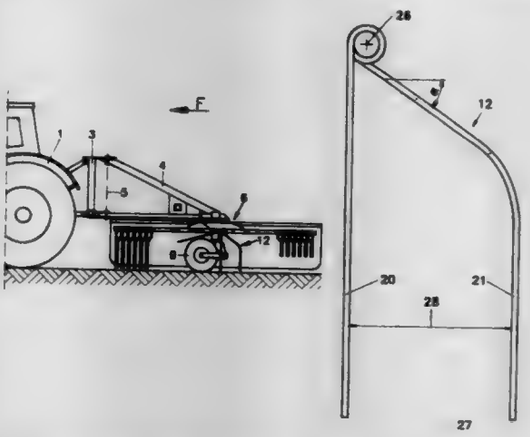
Josef Ungruh, Rheine, Germany, assignor to H. Niemeyer Soehne GmbH & Co. KG, Hoerstel, Germany

Filed Jul. 30, 1996, Ser. No. 692,804

Claims priority, application Germany, Aug. 1, 1995, 295 12 347 U

Int. Cl.[6] A01D *78/12;79/06*

U.S. Cl. 56—370 **33 Claims**



1. A hay making machine comprising rake means supported on the ground, said rake means including a prong carrier rotatable about a rotatable axis in a rotary direction, said prong carrier having a longitudinal axis, double prong means carried on said prong carrier, said double prong means comprising first and second leg springs and a connecting section connecting said first and second leg springs, said connecting section including two helical coils coiled in opposite directions and a U-shaped loop between said two helical coils, said helical coils having an axis aligned with

the longitudinal axis of said prong carrier, at least one of said first and second leg springs being displaced from underlying said helical coils, said first and second leg springs being spaced from one another in the direction of rotary movement of the prong carrier about said rotatable axis, the space between said first and second leg springs providing a storage area for accumulating and transporting raked material.

5,797,254

HIGH STRENGTH CORE FOR WIRE ROPES

John Mawson Walton, Doncaster, United Kingdom, assignor to Bridon plc, United Kingdom

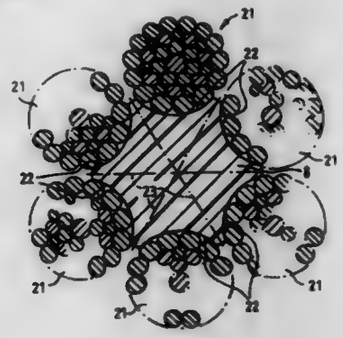
PCT No. PCT/GB94/01672, § 371 Date Apr. 22, 1996, § 102(e) Date Apr. 22, 1996, PCT Pub. No. WO95/04855, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 1, 1994, Ser. No. 591,448

Claims priority, application United Kingdom, Aug. 4, 1993, 9316190

Int. Cl.[6] D02G *3/36*

U.S. Cl. 57—220 **10 Claims**



1. A solid polymeric core for wire rope, the core having an axis and consisting of a body of polymeric material formed by simultaneous elongation and cross-sectional deformation in the solid state, the polymeric material having a structure orientated substantially in the axial direction of the core, said orientated structure including whisker-like crystals which have a length extending substantially in the axial direction of the core and ribbon-like crystals each having length extending substantially in the axial direction and a width extending substantially in a transverse direction normal to the axial direction, the body having a plurality of concave grooves which are parallel to the axis and which are equally spaced about the axis.

5,797,255

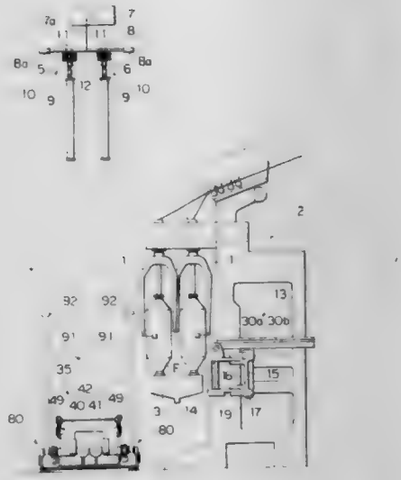
BOBBIN CHANGING METHOD AND APPARATUS

Yukio Saito; Kengo Ohashi; Takayuki Morita, and Daiji Kasahara, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 10, 1995, Ser. No. 541,677

Int. Cl.[6] D01H *9/10*

U.S. Cl. 57—281 **7 Claims**



2. A bobbin changing apparatus for exchanging full bobbins with empty bobbins in a flyer frame having top-supported flyers disposed in two parallel rows arranged in a zigzag array in front along the length of said flyer frame:

a plurality of bobbin supporting members equal in number to twice the number of bobbin wheels of said flyer frame, said bobbin supporting members being disposed alongside said flyer frame directly in front of said rows of flyers in two rows with a pitch corresponding to half of the pitch at which said bobbin wheels are disposed;

a rigid work platform for supporting a worker disposed along with said supporting members for movement in the longitudinal direction of said flyer frame reciprocatively for a distance corresponding to half of the pitch of said bobbin wheels, said bobbin supporting members being supported on said work platform for movement from a support member unexposed retracted position with respect to said work platform to a position of upward exposure above said work platform upon a bobbin changing operation;

a bobbin changing mechanism including bobbin changing arms for grasping the bobbins and movable between a changing mechanism retracted position, a first operative position corresponding to the position of said bobbin wheels on a bobbin rail, and a second operative position corresponding to the location of said bobbin supporting members on said work platform when said bobbin supporting members are in the upwardly exposed position, said bobbin changing mechanism further including driving means for moving said bobbin changing arms selectively to said changing mechanism retracted position and said first and second operative positions;

bobbin transporting carriers disposed in front of said flyer frame higher than the top of said flyer frame and having a number of bobbin hangers, said number of bobbin hangers being equal to the number of the bobbin wheels of at least one flyer frame, said bobbin hangers being disposed in staggered relation with the same pitch as that of said bobbin wheels;

supporting rails for supporting said bobbin transporting carriers; and

lift means for moving said supporting rails selectively between a lowered position at which full bobbins mounted on the bobbin supporting members of said work platform can be engaged by the bobbin hangers and an upper position at which said supporting rails are connected to transporting rails for delivering said bobbin transporting carriers to other locations.

5,797,256

APPARATUS FOR HEATING AN ADVANCING YARN

Uwe Baader, Wuppertal, and Johannes Bruske, Remscheid, both of Germany, assignors to Barmag AG, Remscheid, Germany

Filed Jun. 27, 1996, Ser. No. 670,541

Claims priority, application Germany, Jun. 27, 1995, 195 23 356.5

Int. Cl.[6] D01H *5/00;* **B65H** *57/00;* **F27B** *9/06*

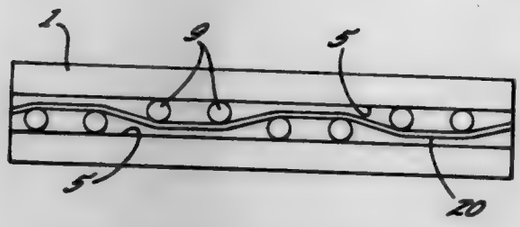
U.S. Cl. 57—290 **13 Claims**

1. An apparatus for heating an advancing yarn comprising

an elongate heater body having a channel therein which extends in an axial direction along the length of the heater body and which defines opposite side walls and a bottom wall,

means for heating the heater body, and

a plurality of yarn guides disposed in the channel so as to guide the advancing yarn axially along the channel in a non-linear



path of travel, wherein at least some of the yarn guides are arranged in groups of at least two next adjacent yarn guides, with some of the groups being configured to support the advancing yarn closer to one of the side walls than the other side wall and with others of the groups being configured to support the advancing yarn closer to the other side wall than the one side wall, and wherein said yarn guides are configured to maintain the advancing yarn spaced from the side walls and the bottom wall along the length of the channel.

5,797,257

REINFORCING METALLIC CORD FOR ELASTOMER-MATRIX COMPOSITE ARTICLES, A PROCESS AND APPARATUS FOR THE MANUFACTURE THEREOF

Marco Cipparrone, Flesole, and Omero Noferi, San Giovanni Valdarno, both of Italy, assignors to Pirelli Coordinamento Pneumatici, Milan, Italy

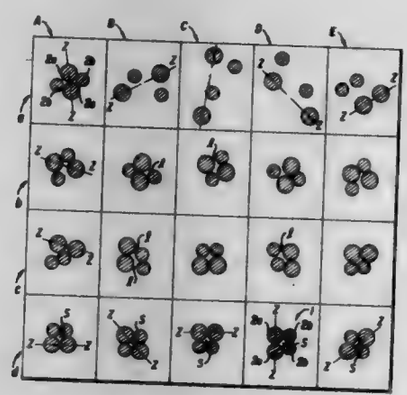
Filed Dec. 20, 1996, Ser. No. 770,110

Claims priority, application Italy, Dec. 21, 1997, MI95 A 002721

Int. Cl.[6] D02G *3/02*

U.S. Cl. 57—902

12 Claims



1. A reinforcing metallic cord for composite articles of elastomer material, comprising at least two pairs of wires of different diameter, helically twisted together and about the longitudinal axis of the cord in which:

(a) under a rest condition, with a tractive load not exceeding 5 kg. in the extension of a laying pitch, said cord has at least one right cross section in which, between at least two of said wires, at least one inlet port is defined to enable access of elastomer material to the inside of the cord section,

(b) under a load condition, with a tractive load exceeding 5 kg. at any right cross section of the cord each wire is intimately in contact with at least two of the other wires, causing elimination of said access ports and a structural compaction of the cord.

5,797,258

METHOD OF MANUFACTURING HOLLOW DIAMOND CUT CHAIN WITH MULTI-FACETED SURFACE

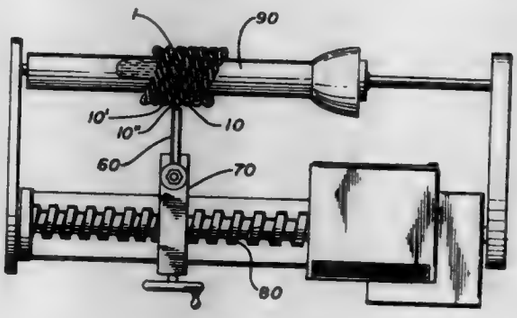
Kalman Strobel, New York, N.Y., and Godofredo Molina Briceno, Santiago, Chile, assignors to Oroamerica, Inc., Burbank, Calif.

Continuation of Ser. No. 509,707, Jul. 31, 1995, Pat. No. 5,581,993, which is a continuation of Ser. No. 295,597, Aug. 25, 1994, Pat. No. 5,437,149, which is a continuation of Ser. No. 903,894, Jun. 25, 1992, Pat. No. 5,353,584, which is a continuation-in-part of Ser. No. 792,291, Nov. 14, 1991, Pat. No. 5,129,220, and Ser. No. 792,002, Nov. 14, 1991, Pat. No. 5,125,225. This application Nov. 29, 1996, Ser. No. 757,658

Int. Cl.[6] B21L *1/00;15/00*

U.S. Cl. 59—35.1

57 Claims



1. The process of manufacturing a hollow diamond cut rope chain comprising the steps of:

(a) preparing a plurality of hollow segmented links, said links having an annular configuration interrupted by an inner gap along an inner circumference of said annular links, said links having a curved outer wall portion spaced apart from said inner circumferential gap, said outer wall portion having a center opposite said inner gap and said links having opposite said curved outer wall portion two inner wall portions separated from each other by said inner gap along said inner circumference of said annular links,

(b) applying said links in a chain configuration;

(c) wrapping said chain about a lathe drum;

(d) freezing said drum;

(e) applying water to said chain upon said frozen drum until said water and said outer and said inner wall portions are frozen;

(f) advancing a blunt burnishing tool against said links of said chain to apply a plurality of incremental deformative thrusts of blunt force against said curved outer wall portions of said hollow links until said wall against which said deformative force is being applied is pushed back toward said opposite inner wall portions of said hollow link, said outer wall portions being flattened by said application of said incremental blunt force to form a first flattened facet;

(g) rotating said chain upon said drum so that said blunt burnishing tool is applied to an area adjacent to said first flattened facet until said outer wall portion is flattened to form a second flattened facet as aforesaid; and

(h) repeating said rotating of said chain until a final further flattened facet is formed adjacent to said first and second flattened portions.

5,797,259

COOLING AIR COOLER FOR POWER PLANTS

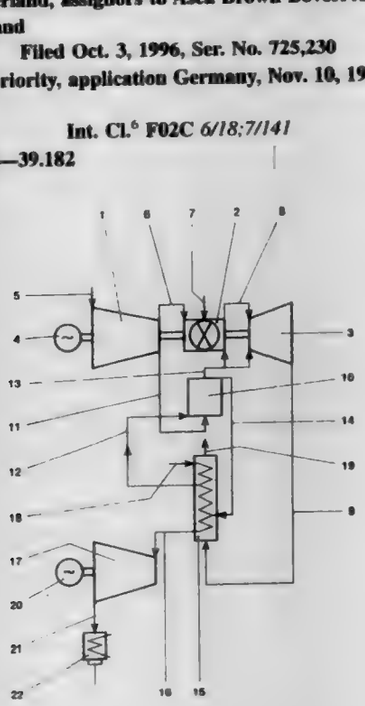
Henrik Nielsen, Wettingen, and Christoph Ruchti, Uster, both of Switzerland, assignors to Asea Brown Boveri AG, Baden, Switzerland

Filed Oct. 3, 1996, Ser. No. 725,230

Claims priority, application Germany, Nov. 10, 1995, 195 41 914.6

Int. Cl.[6] F02C 6/18;7/141

U.S. Cl. 60—39.182 8 Claims



1. A cooling air cooler in combination with a power plant comprising a compressor, said cooling air cooler comprising a pressure vessel including a top, a bottom, and an air outlet located away from said bottom, an outer jacket tube within said pressure vessel, an inner jacket tube within said pressure vessel and said outer jacket tube, a space defined between said inner and outer jacket tubes, a helix steam generator vertically arranged in said pressure vessel, said helix steam generator comprising at least one spirally coiled tube which fills said space between said inner and said outer jacket tubes, said at least one spirally coiled tube including a fluid inlet and a fluid outlet, a water inflow conduit in fluid communication with said at least one spirally coiled tube through said fluid inlet for supplying water to said at least one spirally coiled tube, a steam outflow conduit in fluid communication with said at least one spirally coiled tube through said fluid outlet for discharging steam from said at least one spirally coiled tube, said fluid outlet positioned vertically above said fluid inlet, and an air supply conduit in fluid communication between said compressor and a portion of said space adjacent said fluid outlet, whereby when water is supplied through said water inflow conduit to said at least one spirally coiled tube, and when air is supplied from said compressor through said air supply conduit to said space, said water flows upwardly through said at least one spirally coiled tube and said air flows downwardly around said at least one spirally coiled tube and through said space, said water and said air are in counterflow, and said air is deflected at said bottom of said pressure vessel after exiting said space and before exiting said pressure vessel through said air outlet.

5,797,260

PULSE ROCKET ENGINE

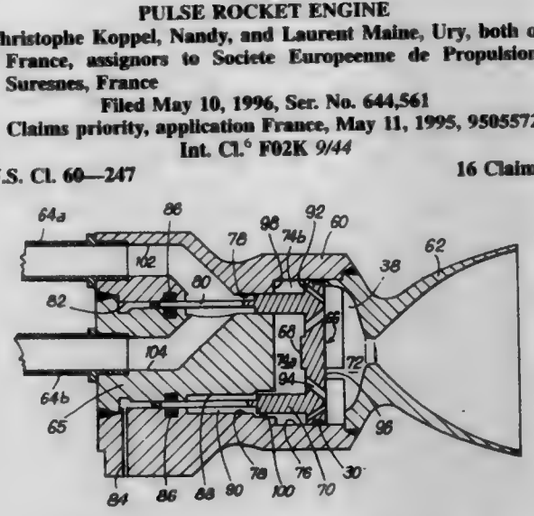
Christophe Koppel, Nandy, and Laurent Maine, Ury, both of France, assignors to Societe Europeenne de Propulsion, Suresnes, France

Filed May 10, 1996, Ser. No. 644,561

Claims priority, application France, May 11, 1995, 9505572

Int. Cl.[6] F02K 9/44

U.S. Cl. 60—247 16 Claims



1. A liquid propellant rocket engine comprising a chamber body connected to a converging/diverging thrust nozzle and to at least one lightly pressurized propellant feed duct, said body including a body bore in which an injector-forming piston can move longitudinally between a rest first position and an operating second position, the piston comprising a piston head and a piston rod, and subdividing the chamber body bore into a combustion chamber in front of the piston, and at least one injection chamber surrounding the piston rod, wherein the chamber body further includes a flow section that is closed in said rest position to prevent any propellant being fed from the injection chamber(s) and that is opened when the piston moves from said rest position to said operating position in order to allow the injection chamber(s) to be filled via said flow section directly from the feed duct(s), the propellant(s) being injected into the combustion chamber via injection channels formed between the combustion chamber and the injection chamber(s), displacement of the piston being a function, in particular, of the pressures in the feed duct(s), in the injection chamber(s), and in the combustion chamber.

5,797,261

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

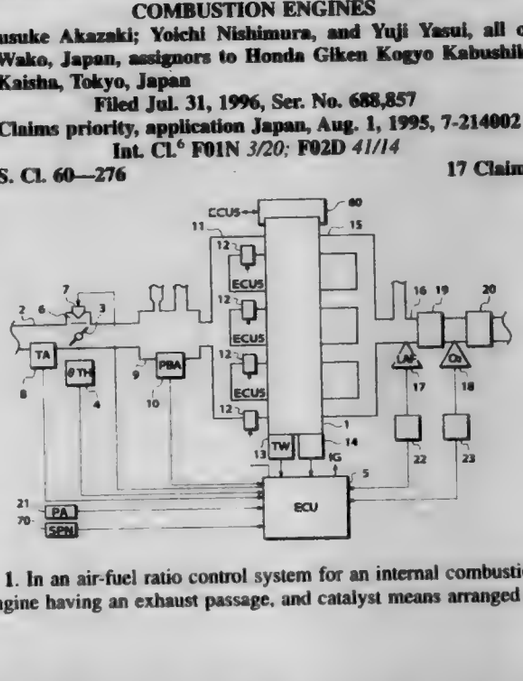
Shusuke Akazaki; Yoichi Nishimura, and Yuji Yasui, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1996, Ser. No. 688,857

Claims priority, application Japan, Aug. 1, 1995, 7-214002

Int. Cl.[6] F01N 3/20; F02D 41/14

U.S. Cl. 60—276 17 Claims



1. In an air-fuel ratio control system for an internal combustion engine having an exhaust passage, and catalyst means arranged in

said exhaust passage, for purifying exhaust gases emitted from said engine, said air-fuel ratio control system including a first air-fuel ratio sensor arranged in said exhaust passage at a location upstream of said catalyst means, and a second air-fuel ratio sensor arranged in said exhaust passage at a location downstream of said catalyst means, first feedback control means responsive to an output from said first air-fuel ratio sensor, for calculating an air-fuel ratio correction coefficient for correcting an amount of fuel supplied to said engine in a manner such that an air-fuel ratio of a mixture supplied to said engine is converged to a desired air-fuel ratio, second feedback control means responsive to an output from said second air-fuel ratio sensor, for calculating a desired air-fuel ratio correction amount for correcting said desired air-fuel ratio, and learning/correcting means for calculating a learned value of said desired air-fuel ratio correction amount, and for correcting said desired air-fuel ratio,

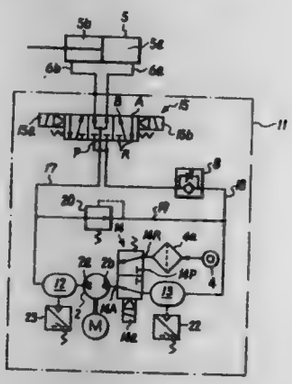
the improvement wherein said learning/correcting means comprises learned value calculation-permitting means for permitting calculation of said learned value of said desired air-fuel ratio correction amount depending on a ratio between a time period over which said output from said second air-fuel ratio sensor is on a richer side with respect to a predetermined reference value and a time period over which said output from said second air-fuel ratio sensor is on a leaner side with respect to said predetermined reference value.

5,797,262

DRIVE CIRCUIT FOR FLUID OPERATED ACTUATOR HAVING HIGH AND LOW PRESSURE RESERVOIRS

Wataru Omoto, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 613,984
Claims priority, application Japan, Apr. 25, 1995, 7-124391
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—410 **3 Claims**



1. A fluid pressure drive circuit for a fluid-operated actuator or the like, the drive circuit comprising:

a compressor for compressing an operating gas;

a gas source and a low pressure tank switchably connectible to an intake end of said compressor through a first change-over valve;

a high pressure tank connected to a discharge end of said compressor to hold therein a compressed gas from said compressor;

a high pressure conduit for supplying said compressed gas from said high pressure tank to said actuator;

a low pressure conduit for recovering exhaust gas discharges from said actuator into said low pressure tank; and

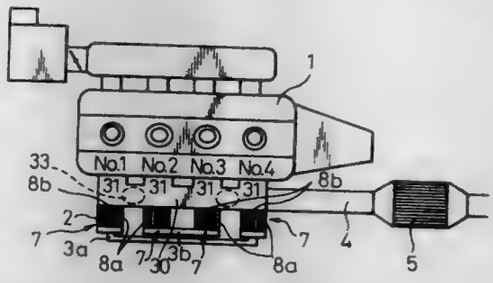
a second change-over valve for connecting said high pressure conduit and said low pressure conduit selectively to said actuator, wherein a reducing valve is connected between said high pressure conduit and said low pressure conduit to supply the compressed gas from said high pressure tank to said low pressure tank.

5,797,263

EXHAUST EMISSION CONTROL APPARATUS

Shingo Morishima, Nukata-gun; Jun Yamada, Okazaki; Kenji Kanehara, Toyohashi, and Tohru Yoshinaga, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 7, 1996, Ser. No. 598,176
Claims priority, application Japan, Feb. 8, 1995, 7-020544
Int. Cl.[6] F01N *3/02*
U.S. Cl. 60—311 **5 Claims**



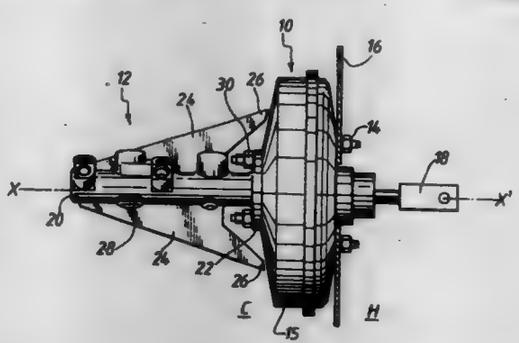
1. An exhaust emission control apparatus comprising a container body which is provided in an exhaust manifold of an engine having a plurality of cylinders and which defines therein adsorbent receiving compartments with openings that are opposed to exhaust ports of the corresponding cylinders of the engine, and adsorbents which are arranged in the respective adsorbent receiving compartments, wherein the adsorbents corresponding to the cylinders that are not adjacent to each other,in terms of exhaust stroke order are interconnected at the ends thereof away from the openings by connecting gas passages to permit the exhaust gas to flow and enter the same.

5,797,264

MASTER CYLINDER AND PNEUMATIC BRAKE BOOSTER ASSEMBLY

Ulysse Verbo, Aulnay-Sous-Bois, and Flavio Cobianchi, Drancy, both of France, assignors to Bosch Systems de Freinage, Drancy, France

PCT No. PCT/FR95/01666, § 371 Date Jan. 16, 1996, § 102(e) Date Jan. 16, 1996, PCT Pub. No. WO96/22209, PCT Pub. Date Jul. 25, 1996
PCT Filed Dec. 13, 1995, Ser. No. 581,558
Claims priority, application France, Jan. 18, 1995, 95 00490
Int. Cl.[6] B60T *13/00*
U.S. Cl. 60—547.1 **9 Claims**



1. A master cylinder and pneumatic brake booster assembly for use in a vehicle, a pneumatic booster including a casing fastened to a wall separating a cabin from a front compartment of the vehicle, said pneumatic booster being actuated by a control rod, said control rod having a rear end which is connected to a brake pedal situated in the cabin, a master cylinder including a body formed with at least one flange for fastening said master cylinder onto a front wall of said casing, said assembly comprising at least one aggressive element for engaging said casing of said booster on

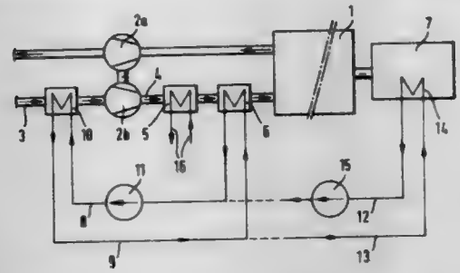
rotation of said master cylinder relative to said booster under the effect of a torque being applied to said master cylinder.

5,797,265

UTILIZATION OF LOW-VALUE HEAT IN A SUPERCHARGED THERMAL ENGINE

Thomas Hägglund, Skolhusgatan 40 A 9, FIN-65100 Vaasa, Finland

Filed Jun. 10, 1996, Ser. No. 661,159
Claims priority, application Finland, Jun. 12, 1995, 952869
Int. Cl.[6] F02B *29/04*
U.S. Cl. 60—599 **15 Claims**



1. A method of operating a power plant that includes a combustion engine, said method comprising:

(a) transferring low-temperature thermal energy to a flow of low pressure air, thereby warming the flow of low pressure air,

(b) compressing the flow of warmed low pressure air, whereby the temperature of thermal energy transferred to the flow of low pressure air is boosted to above 230° C.,

(c) recovering boosted high-temperature thermal energy from the flow of compressed air and thereby cooling the flow of air, and

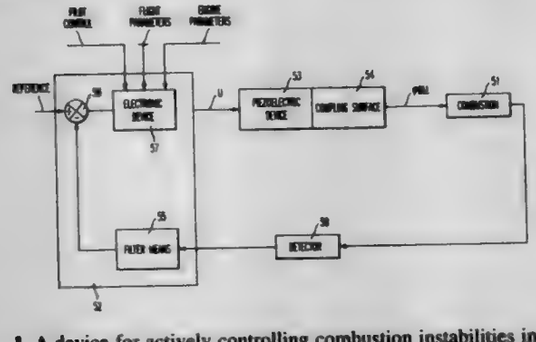
(d) supplying the flow of cooled air to the engine as feed air, whereby a greater total quantity of thermal energy is recovered from operation of the engine.

5,797,266

DEVICE FOR ACTIVELY CONTROLLING COMBUSTION INSTABILITIES AND FOR DECOKING A FUEL INJECTOR

Jean-Marie Brocard, Rubelles; Jean-Yves Capelle, Monthlery; Michel André Albert Desaulty; Jean-Paul Perrin, both of Vert Saint Denis, and Alain Michel Varizat, Yerres, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation Snecma, Paris, France

Filed Nov. 2, 1995, Ser. No. 552,015
Claims priority, application France, Nov. 9, 1994, 94 13434
Int. Cl.[6] F02C *7/22*
U.S. Cl. 60—725 **12 Claims**



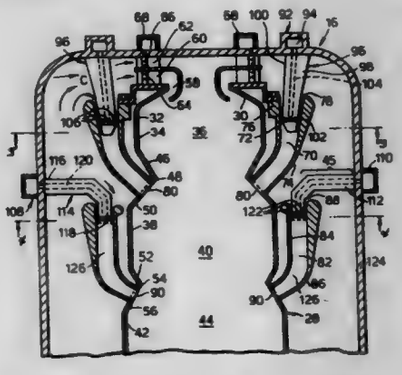
1. A device for actively controlling combustion instabilities in a combustion chamber provided with a hydraulic line for the supply of fuel to said chamber and a fuel injector defining an injection orifice, and for decoking said fuel injector, said device comprising at least one detector for measuring pressure fluctuations in said combustion chamber and providing an output signal, means for processing said output signal from said detector and providing, in turn, a control voltage, and at least one piezoelectric device capable of ultrasonic operation disposed in said hydraulic fuel supply line for generating, in response to said control voltage, pulses in the flow of fuel from said injection orifice of said fuel injector.

5,797,267

GAS TURBINE ENGINE COMBUSTION CHAMBER

Brian Richards, Leicestershire, England, assignor to Rolls-Royce plc, London, England

Filed May 19, 1995, Ser. No. 446,576
Claims priority, application United Kingdom, May 21, 1994, 9410233.2
Int. Cl.[6] F23R *3/34*
U.S. Cl. 60—737 **23 Claims**



1. A gas turbine combustion chamber comprising at least one combustion zone defined by at least one peripheral wall,

mixing duct means for conducting a mixture of fuel and air to the at least one combustion zone, the mixing duct means having an upstream end for receiving air, an intermediate region for receiving fuel and a downstream end for delivering a fuel and air mixture into the at least one combustion zone, the mixing duct means reducing in cross-sectional area from its upstream end to its downstream end to produce an accelerating flow therethrough,

a plurality of fuel injectors for injecting fuel into the intermediate region of the mixing duct means, the fuel injectors extending in a downstream direction along the mixing duct means to the intermediate region, the fuel injectors being effective to subdivide the mixing duct means into a plurality of ducts over at least a part of the streamwise length of the mixing duct means, the fuel injectors having discharge apertures positioned to inject fuel into the intermediate region of the mixing duct means, said injection occurring transversely of the streamwise direction and being directed towards adjacent fuel injectors.

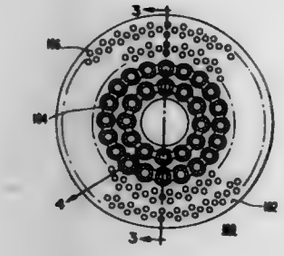
5,797,268

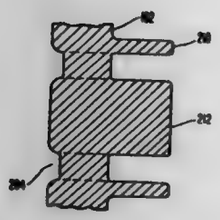
PARTIALLY SWIRLED MULTI-SWIRL COMBUSTOR PLATE AND CHIMNEYS

William Richard Ryan, Orlando, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jul. 5, 1996, Ser. No. 675,981
Int. Cl.[6] F02G *3/00*
U.S. Cl. 60—748 **14 Claims**

1. A gas turbine combustor comprising a multi-swirl combustor plate containing a plurality of swirlers arranged around an interior section of the multi-swirl combustor plate, and a plurality of





non-swirled holes machined in a solid exterior section of the multi-swirl combustor plate.

5,797,269

HYDROGEN STORAGE CONTAINERS

Kouichi Nishimura, Suita; Kouichi Satoh, Hirakata; Shin Fujitani, Hirakata; Ikuo Yonezu, Hirakata, and Koji Nishio, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

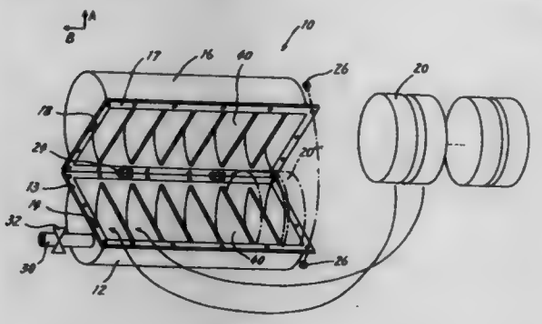
Filed Feb. 21, 1997, Ser. No. 804,334

Claims priority, application Japan, Feb. 23, 1996, 8-036446; Feb. 29, 1996, 8-042758

Int. Cl.[6] F17C *11/00*

U.S. Cl. 62—46.2

6 Claims



1. A hydrogen storage container for accommodating a plurality of molded bodies of a hydrogen absorbing alloy each having planar faces and arranged as opposed to one another face-to-face, the container being dividable into a first segment and a second segment to provide an opening so that the molded bodies can be placed into or taken out of the container through the opening by being moved in a direction parallel to their planar faces.

5,797,270

REJUVENATOR CHILL DEVICE

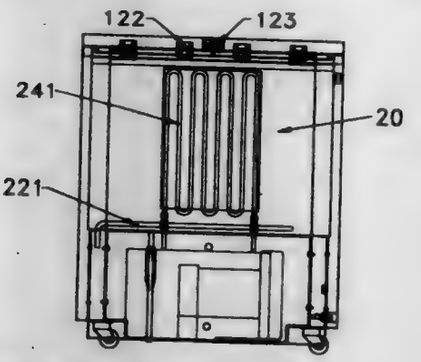
Carl Halterman; Chuck Bonnici; Mike Mangini, and Steve Tognoli, all of 1650 Zanker Rd., Ste. 231, San Jose, Calif. 95112-1115

Filed Apr. 21, 1997, Ser. No. 837,532

Int. Cl.[6] F25D *17/02*; A23C *3/02*; A47G *29/00*

U.S. Cl. 62—64

7 Claims



1. A thawing device comprising:

an outer housing,

means to control cycle times and power on/off,

a sealable circulation chamber,

a water circulation and agitation means to circulate and agitate water in said circulation chamber,

a refrigeration unit with means to provide coolant to cooling elements in said circulation chamber, and

means to suspend a food product within said circulation chamber; wherein

when a thawing cycle of said device is initiated, said water circulation and agitation means causes said water to flow throughout said circulation chamber,

said water flows around the food product suspended in said circulation chamber causing the food product to thaw quickly while immersed in said water to eliminate drying of the food product,

said water also flows around said cooling elements, so that said cooling elements continually chill said water.

5,797,271

MOBILE BRINE TANK QUICK-FREEZING SYSTEM AND METHOD

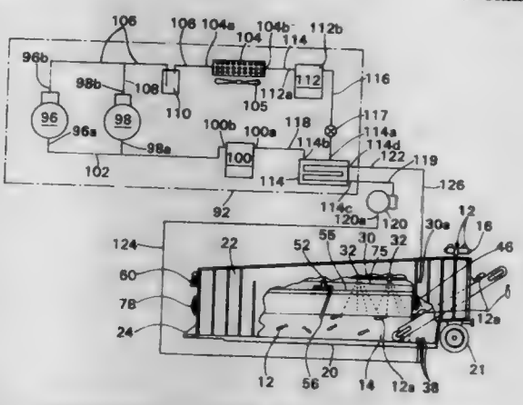
Robert Joseph Darigo, Huntingdon Valley, Pa., and Daniel Virgil Black, Milton, Fla., assignors to Pelican Bait, Inc, Philadelphia, Pa.

Filed Apr. 23, 1996, Ser. No. 636,452

Int. Cl.[6] F25D *17/02*

U.S. Cl. 62—64

9 Claims



6. A mobile system for quick-freezing seafood, comprising:

a tank for containing at least 4000 gallons of liquid coolant attached to one a truck and trailer for transport over land;

a seafood inlet in fluid communication with the tank through at least one opening in the tank;

a liquid coolant distribution header located in the tank and adapted for connection to a liquid coolant source, the distribution header being in fluid communication with a plurality of spray heads located in the tank:

a liquid coolant outlet port in fluid communication with the tank;

a conveyor adapted to remove frozen seafood from the tank located in communication with the tank;

a mobile chilled liquid coolant source having the capacity to cool the at least 4000 gallons of liquid coolant located in the tank to at least approximately 12° F., the mobile liquid coolant source being attached to one of a second truck and a second trailer, the mobile liquid coolant source being adapted to be connected to the liquid coolant distribution header on the tank for providing chilled brine, such that the liquid coolant tank and the mobile chilled liquid coolant source can be moved overland from dock to dock to quick freeze fresh seafood.

5,797,272

VACUUM DEWATERING OF DESICCANT BRINES

Robert Wilton James, St Marys, Australia, assignor to F F Seeley Nominees Pty Ltd, St Marys, Australia

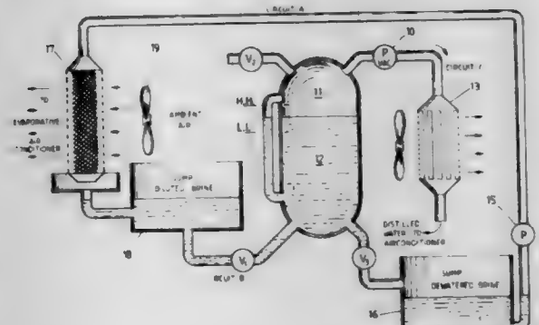
PCT No. PCT/AU95/00314, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO95/33161, PCT Pub. Date Dec. 7, 1995

PCT Filed May 29, 1995, Ser. No. 750,541

Claims priority, application Australia, May 30, 1994, PM 5926

Int. Cl.[6] F25B *17/02*

U.S. Cl. 62—93 **10 Claims**



1. Means for vacuum dewatering of diluted desiccant brine, comprising a vacuum chamber, a vacuum pump in fluid flow communication with an upper end of said chamber,

a sump at a level below said vacuum chamber, and an air drier,

a hydraulic flow passage including a valve extending from said vacuum chamber to said sump,

first and second hydraulic circuits,

said first hydraulic circuit comprising a pump operable to deliver dewatered desiccant brine through a hydraulic conduit to said air drier so as to effect drying of air when passing through said air drier, with consequential aqueous dilution of said brine,

said second hydraulic circuit comprising a second hydraulic conduit, and means to deliver said diluted brine to said vacuum chamber, wherein low vapour pressure created by actuation of said vacuum pump effects dewatering of said diluted brine by evaporation.

5,797,273

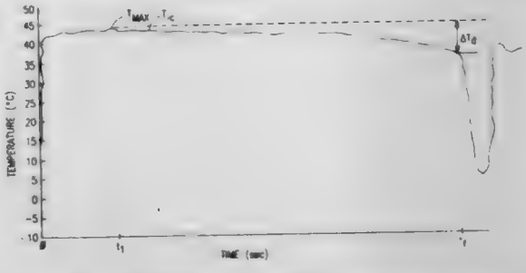
CONTROL OF DEFROST IN HEAT PUMP

Zhichao Guo, Fayetteville, and Robert P. Dolan, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 14, 1997, Ser. No. 799,945

Int. Cl.[6] F25D *47/02*

U.S. Cl. 62—156 **16 Claims**



1. A method executable by a computer means that is operative to initiate defrost actions of an outdoor coil of a heat pump, said method comprising the steps of:

repetitively reading the temperature of an indoor coil of the heat pump from an indoor coil temperature sensor following the last defrosting of the outdoor coil;

determining the maximum indoor coil temperature to have been read from the readings of the temperature of the indoor coil that have occurred following the last defrosting of the outdoor coil;

computing a limit as to the drop in a read indoor coil temperature that may be permitted from the determined maximum indoor coil temperature wherein the limit is computed as a function of the then determined maximum indoor coil temperature and;

determining whether a defrost action of the outdoor coil should be activated when a read indoor coil temperature as sensed by the indoor coil temperature sensor indicates a drop below the then determined maximum indoor coil temperature of more than the limit computed as a function of the then determined maximum indoor coil temperature.

5,797,274

COOLING OF HOT BODIES

David Peter Jackaman, and William Barry Featherstone, both of Cleveland, England, assignors to Davy McKee (Stockton) Limited, England

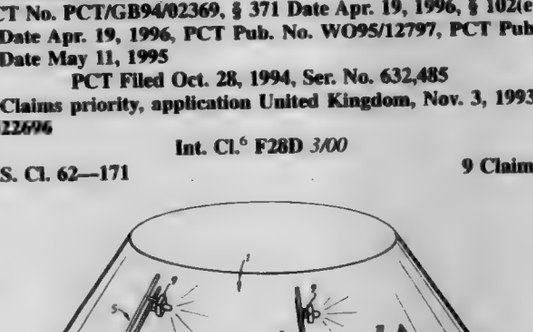
PCT No. PCT/GB94/02369, § 371 Date Apr. 19, 1996, § 102(e) Date Apr. 19, 1996, PCT Pub. No. WO95/12797, PCT Pub. Date May 11, 1995

PCT Filed Oct. 28, 1994, Ser. No. 632,485

Claims priority, application United Kingdom, Nov. 3, 1993, 9322696

Int. Cl.[6] F28D *3/00*

U.S. Cl. 62—171 **9 Claims**



1. A method of cooling a hot metal body which forms part of a vessel containing molten metal, comprising the steps of disposing a

plurality of spray nozzles in relation to a surface of the body to be cooled; arranging a non-electrical temperature responsive element in thermal contact with the surface of the body to be cooled; supplying gaseous medium continuously to the nozzles; supplying liquid coolant to the nozzles under the control of at least one valve operated by the action of said temperature responsive element for the liquid coolant to be atomised into droplets by the gaseous medium and the droplets to be sprayed onto the surface of the body and said valve being controlled such that the volume of liquid coolant applied to the surface in a given time period does not exceed the volume of liquid coolant which is vaporised by contact with the surface of the hot metal body in the given time period.

5,797,275

AIR-COOLING SYSTEM

Bertil S. Forsman, Huddinge, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

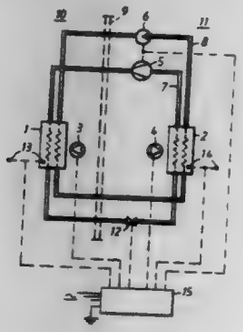
PCT No. PCT/SE94/01222, § 371 Date Jun. 13, 1996, § 102(e) Date Jun. 13, 1996, PCT Pub. No. WO95/17636, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 19, 1994, Ser. No. 656,337

Claims priority, application Sweden, Dec. 22, 1993, 9304266-1

Int. Cl.[6] F25B *7/00;25/00*

U.S. Cl. 62—175 **4 Claims**



1. A cooling system for cooling an indoor space comprising:

a first heat exchanger located outside an indoor space including a combined condenser for a coolant and cooler for a heat absorbing medium, wherein the first heat exchanger emits heat to the ambient air;

a second heat exchanger located within the indoor space including a combined evaporator for the coolant and cooler for the heat absorbing medium, wherein the coolant and heat absorbing medium extract heat from air in the indoor space;

a first circuit to circulate the coolant connected to the condenser of the first heat exchanger and the evaporator of the second heat exchanger;

a compressor connected in the first circuit to compress the coolant flowing from the second heat exchanger to the first heat exchanger;

an expansion valve connected in the first circuit to expand cooled coolant flowing from the first heat exchanger to the second heat exchanger;

a second circuit to circulate the heat absorbing medium connected to the cooler of the first heat exchanger and the cooler of the second heat exchanger;

a pump connected in the second circuit to circulate the heat absorbing medium between the first heat exchanger and the second heat exchanger;

temperature sensors positioned for measuring temperature in the indoor space and outside the indoor space; and

a control unit connected for monitoring said temperature sensors and controlling the compressor and the pump, wherein responsive to received temperature signals the control unit activates at least one of the compressor and the the pump to cool the indoor space.

5,797,276

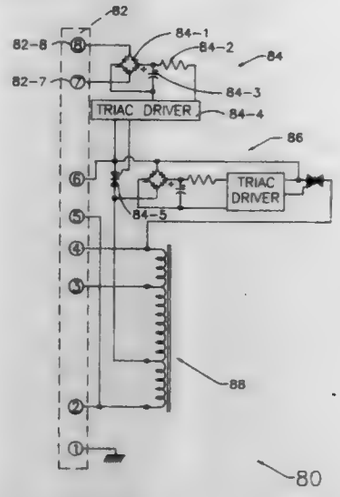
METHODS AND DEVICES FOR ENERGY CONSERVATION IN REFRIGERATED CHAMBERS

Mervin W. Howenstine, 7817 Smolley Way, Citrus Park, Calif. 95610, and Allan E. Schrum, 3197 Boeing Rd., Cameron Park, Calif. 95682

Continuation of Ser. No. 597,023, Feb. 5, 1996, abandoned, which is a continuation of Ser. No. 99,823, Jul. 28, 1993, Pat. No. 5,488,835. This application Aug. 1, 1997, Ser. No. 905,259

Int. Cl.[6] F25D *17/06*

U.S. Cl. 62—186 **2 Claims**



1. A device for conserving energy in a refrigeration chamber utilizing a compressor external to the chamber and an evaporator having an expansion valve, a plurality of evaporator fans and a thermostatic switch located within said chamber,

comprising:

a. a fan power supply, including a source of single phase alternating; power and transforming means comprising an auto transformer for selectively providing a first energizing voltage to run the plurality of evaporator fans at a high speed, and a second energizing voltage to run the plurality of evaporator fans at a low speed; and

b. control means for regulating the operation of said fan power supply in accordance with the thermostatic switch, said control means further including switching means responsive to said thermostatic switch to selectively energize said first and second voltages, said switching means including a first electronic power relay having a triac driver connected to a triac, a second electronic relay having a triac driver connected to a triac, said first and second electronic relays operatively connected to said auto transformer to provide said first and second energizing voltages to run said plurality of evaporator fans.

5,797,277

CONDENSATE COOLER FOR INCREASING REFRIGERANT DENSITY

Kwangtaek Hong, Riverview, and Albert A. Patrosso, Grosse Pointe Woods, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 6, 1997, Ser. No. 965,137

Int. Cl.[6] F25D *21/14*

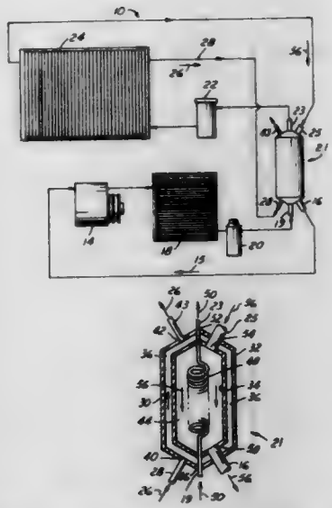
U.S. Cl. 62—285 **10 Claims**

1. A refrigeration system, comprising:

a compressor for compressing a refrigerant, said compressor having an inlet and an outlet;

a condenser having an inlet receiving said refrigerant compressed by said compressor and having an outlet;

an expansion valve receiving said refrigerant from said condenser outlet and metering said refrigerant to a valve outlet;



an evaporator having an inlet receiving said refrigerant from said expansion valve outlet and an outlet passing said refrigerant to said compressor;

a drain line receiving condensed water from said evaporator;

a heat exchanger receiving said condensed water from said drain line and arranged in heat exchanging relation to said refrigerant flowing between said evaporator and said compressor for cooling said refrigerant entering said compressor.

5,797,278

AIR TREATMENT APPARATUS

Sven-Olle Rothstein, Ängelholm, Sweden, assignor to Frigoscandia Equipment AB, Helsingborg, Sweden

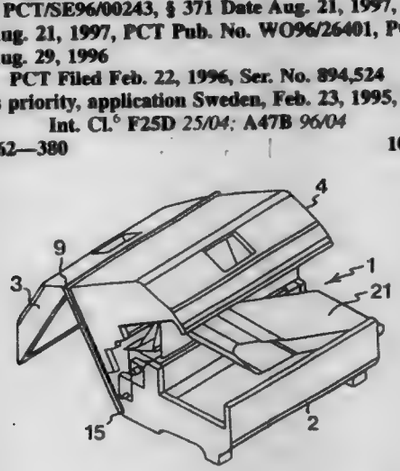
PCT No. PCT/SE96/00243, § 371 Date Aug. 21, 1997, § 102(e) Date Aug. 21, 1997, PCT Pub. No. WO96/26401, PCT Pub. Date Aug. 29, 1996

PCT Filed Feb. 22, 1996, Ser. No. 894,524

Claims priority, application Sweden, Feb. 23, 1995, 9500688

Int. Cl.[6] F25D *25/04*; **A47B** *96/04*

U.S. Cl. 62—380 **10 Claims**



1. An air treatment apparatus comprising a housing (**1**), which includes an elongate trough (**18**) for receiving products that are to be air-treated, a heat-exchanging battery (**22**) for conditioning the air used in the air treatment, and a fan assembly (**24**) for generating an air flow which, for the purposes of the air treatment, circulates along a closed path that, apart from the fan assembly, extends up through the elongate trough and through the heat-exchanging battery, characterised in that the housing (**1**) has a casing comprising three elements (**2–4**) which are pivotable in relation to each other about axes (**9**, **15**) parallel to a longitudinal direction of the elongate trough (**18**) and which are made up of a one-piece lower element (**2**) supporting the elongate trough, the heat-exchanging battery (**22**) and the fan assembly (**24**), a one-piece rear element (**3**) forming a first side wall and being pivotable about an upper edge so as to provide access to the heat-exchanging battery and the fan assembly from outside, as well as a one-piece upper element (**4**) forming at least part (**11**) of a second side wall and being pivotable in relation to the lower element so as to provide access to the elongate trough from outside.

5,797,279

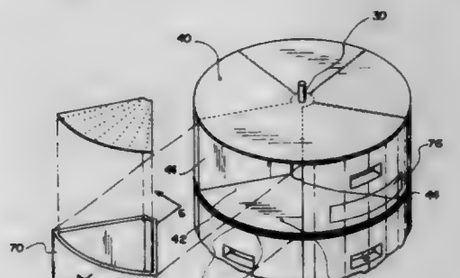
ORGANIC REFRIGERATION SYSTEM

Elaine W. Osborne, 730 Riverside Dr., Apt. 1E, New York, N.Y. 10031

Filed Feb. 14, 1997, Ser. No. 799,380

Int. Cl.[6] F25D *25/02*

U.S. Cl. 62—381 **8 Claims**



1. A refrigeration system comprising:

a refrigerator having a ceiling, a door, sidewalls, a floor and a rear wall defining an inner cavity;

a vertical shaft secured vertically within said inner cavity concentrically;

a plurality of compartmentalized drums rotatably secured along said vertical shaft forming a rotatable vertical structure;

a plurality of discs, each disc having a plurality of ball bearings secured to said vertical shaft, said discs being positioned such that a bottom of each compartmentalized drum is positioned adjacent to a respective one of said discs, said discs being for supporting said adjacent compartmentalized drum and for allowing said adjacent compartmentalized drum to rotate about said vertical shaft;

said compartmentalized drums include a plurality of vertical partitions which form wedge-shaped sections; and

a plurality of storage compartments formed to removably fit within said wedge-shaped sections for storing food.

5,797,280

REFRIGERATOR WITH AN EXTERNAL AIR INVASION PREVENTION APPARATUS

Kang-Sun Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 22, 1996, Ser. No. 685,922

Claims priority, application Rep. of Korea, Jul. 20, 1995, 95-21426

Int. Cl.[6] F25D *17/04*

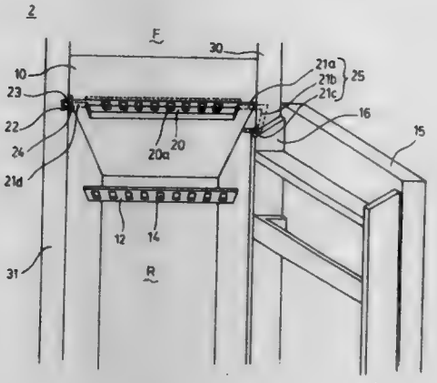
U.S. Cl. 62—408 **34 Claims**

1. A refrigerator with an external air invasion prevention apparatus, comprising:

a return duct having an air inlet portion and formed in a wall separating a freezing room and a refrigerating room, and for providing a passageway to circulate cooled air in the refrigerator;

a duct cover having a plurality of air inlet holes and covering the air inlet portion;

an external air invasion prevention apparatus for closing and opening the plurality of air inlet holes according to opening and closing of a door of the refrigerator;



a link part movably engaged with a first side wall on which the door is mounted, and moving in the left and right directions according to the closing and opening of the door;

a rod part moving in the left and right directions according to the left and right directions of the link part;

a rod-receiving groove part formed on a second side wall and movably receiving one end portion of the rod part, the second side wall being a side wall opposite to the first side wall; and

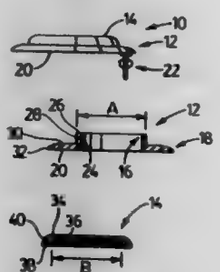
a shutter part fixed to one end portion of the link part and the other end portion of the rod part so that the shutter part is disposed between the link part and the rod part, and for closing and opening the air inlet portion by moving in the left and right directions according to the movements of the left and right directions of the link part, the center portion of a first side of the shutter part being fixed to the one end portion of the link part and the center portion of a second side of the shutter part being fixed to the other end portion of the rod part, the second side of the shutter part being a side opposite to the first side of the shutter part.

5,797,281

EARRING ASSEMBLY WITH INTERCHANGEABLE DECORATIVE RINGS

Carole D. Fox, 61 Centre Street N., Brampton, Ontario, Canada, L6V 1T1

Filed Apr. 4, 1997, Ser. No. 833,270
Int. Cl.[6] A44C *7/00*
U.S. Cl. 63—12 **15 Claims**



1. An earring assembly, comprising:

(a) a base comprising an annular flange having a n inner edge and an outer edge, and a cylindrical collar extending upwards therefrom, the collar having an outside engagement surface;

(b) attachment means coupled to the base for releasably attaching the base to a wearer's ear lobe; and

(c) a removable decorative ring, being dimensioned to fit around the collar, and having an inside engagement surface shaped to mate with the outside engagement surface of the collar.

5,797,282

METHOD OF UTILIZING A STANDARD CIRCULAR KNITTING MACHINE TO PRODUCE A FABRIC WITH A PATTERN

Ted Bodin, 100 Quayside Ter., Miami, Fla. 33138

Continuation-in-part of Ser. No. 913,000, Aug. 18, 1997. This application Apr. 14, 1998, Ser. No. 59,981
Int. Cl.[6] D04B *1/12;1/00*
U.S. Cl. 66—169 R **6 Claims**

1. A method of utilizing a standard circular knitting machine to produce a fabric with a pattern, comprising the steps of:

a) initializing the standard circular knitting machine to have a direction of rotation, a cylinder, a plurality of circumferentially spaced cones of yarn, a plurality of needles, each of the needles has a needle latch, a needle hook, and the ability of being rendered selectively inoperative, and a plurality of yarn feeds at least one of which feeds a yarn being one of S-twist, Z-twist, colored, and textured;

b) determining which of the needles are to be rendered inoperative so as to form determined inoperative needles;

c) rendering said determined inoperative needles so as to leave a plurality of operative needles;

d) removing pre-selected needles in a predetermined manner from the cylinder of the knitting machine;

e) determining which of the of yarn feeds are to feed the at least one yarn of the S-twist, Z-twist, colored, and textured so as to form a plurality of determined yarn feeds;

f) utilizing said plurality of determined yarn feeds so as to form a plurality of utilized yarn feeds;

g) feeding the yarn types in alternating manner with a predetermined length of yarn of each type;

h) raising a needle of said plurality of operative needles, by a respective cam so as to form a raised needle of said plurality of operative needles;

i) opening said needle latch of said raised needle, by a stitch loop disposed in said needle hook of said raised needle;

j) holding down the stitch loop in said needle hook of said raised needle;

k) drawing down said raised needle so as to form a lowered needles;

l) engaging said needle hook of said lowered needle with the yarn;

m) closing said needle latch of said lowered needle by sliding over old stitch loop;

n) drawing the yarn engaged in said needle hook through the old stitch loop on said lowered needle to form a new stitch;

o) shedding the old stitch loop from said lowered needle; and

p) repeating steps h)–o) progressively, one needle after the other as said standard circular knitting machine rotates.

5,797,283

CROCHET KNITTED DECORATIVE RIBBON WITH SEVERABLE SECTIONS FORMING DECORATIVE CURLS

Christina T. Kaczmarczyk, Williamstown, Mass., assignor to Novtex Corp., North Adams, Mass.

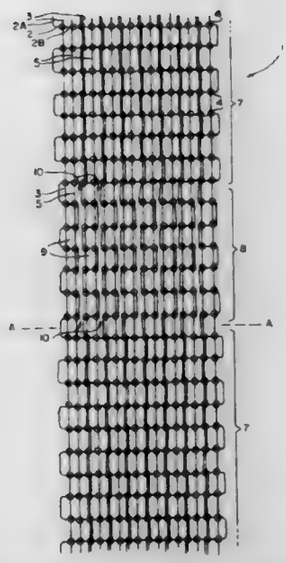
Filed May 14, 1997, Ser. No. 855,994
Int. Cl.[6] D04B *23/08;23/10*
U.S. Cl. 66—193 **9 Claims**

1. A crochet knitted decorating ribbon of a given width and length comprising:

longitudinally extending, integral, alternating first and second ribbon sections,

each said first section being a flat solid pattern section comprising a plurality of side-by-side longitudinally extending continuous warp yarns,

continuous weft yarns extending over the length of said ribbon and having transverse portions extending laterally across the ribbon, and said weft yarn portions in said first section interconnecting adjacent warp yarns at connecting points defined by warp yarn chain stitches at alternating intervals;



and wherein each said second section comprises a plurality of equal width, laterally separated strands across the full width of said ribbon defined by at least one warp yarn, with said continuous weft yarn portions extending across said at least one warp yarn interconnecting only said at least one warp yarn for each strand at connecting points defined by chain stitches at alternating intervals within said second section, thereby defining longitudinally extending free spaces separating respective adjacent strands within said second section and extending the full length of each said second section, and wherein said at least one warp yarn of said ribbon strands within each second section have a distinct shrink-back property under tension such that by severing said ribbon transversely through the strands of said second section, the severed ends of said strands automatically curl up on themselves, thereby producing a highly pleasing, aesthetic curled fringe along at least one transverse edge of each first section of said ribbon.

5,797,284

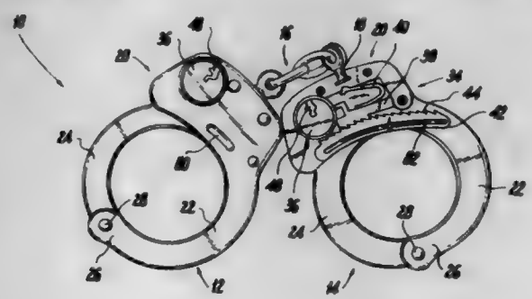
HIGH SECURITY HANDCUFFS

Alan E. Lurie, 52 Briarwood Dr., Huntington, N.Y. 11743

Filed Jul. 22, 1996, Ser. No. 686,172

Int. Cl.[6] E05B *75/00*

U.S. Cl. 70—16 **5 Claims**



1. A handcuff having first and second locking positions set by inserting a single key into a single keyway and rotating said single key in said single keyway, said handcuff comprising:

a body having a set of substantially planar cheek plates lying in substantially parallel planes;

a locking arm having a pivot end pivotally connected to said body, a free end selectively positionable in said body, and a concave engaging surface;

a locking mechanism having said single keyway, said locking mechanism comprising a pawl positioned within said body and having pawl teeth, and a ratchet on said free end of said locking arm and having ratchet teeth engaging said pawl teeth;

in said first locking position, said pawl has limited movement with respect to said ratchet such that said pawl can ride along said ratchet to permit said locking arm to move in a tightening direction to thereby tighten said handcuff;

in said second locking position, said pawl is locked with respect to said ratchet such that said pawl teeth and said ratchet teeth interengage and cannot be moved apart;

said locking mechanism further comprising a cylinder lock positioned within a cylinder lock shell and rotatable within said cylinder lock shell between said first locking position and said second locking position;

said cylinder lock having a radially extending retaining pin and a side bar selectively extendable from said cylinder lock;

said cylinder lock shell has first and second slots into which said side bar selectively extends;

in said first locking position, said side bar is positioned within said first slot in said cylinder lock shell so that said retaining pin locks said pawl with respect to said ratchet to place said locking mechanism in said first locking position;

in said second locking position, said side bar is positioned within said second slot in said cylinder lock shell so that said retaining pin locks said pawl with respect to said ratchet to place said locking mechanism in said second locking position;

said pawl having a receiving slot into which said retaining pin extends;

rotation of said cylinder moves said retaining pin in said receiving slot to thereby move said pawl with respect to said ratchet and into one of said first and second locking positions; and

wherein:

said locking arm is pivotable with respect to said body in either a tightening direction which brings said concave engaging surface of said locking arm closer to said body, or a loosening direction which brings said concave engaging surface of said locking arm away from said body; and

said locking mechanism is selectively positionable, by positioning and rotating said single key in said keyway, between a first locking position in which said locking arm is free to pivot in only said tightening direction and is locked against pivoting in said loosening direction, and a second locking position in which said locking arm is double locked against pivoting in both said tightening direction and said loosening direction.

5,797,285

DEVICE FOR LOCKING ROTATABLE SHAFTS HAVING STOP PLATES

Ronald Allan Sackowitz, 161 Disbrow Hill Rd., Hightstown, N.J. 08520

Filed Apr. 7, 1997, Ser. No. 834,909

Int. Cl.[6] F16K *35/10*

U.S. Cl. 70—177 **5 Claims**

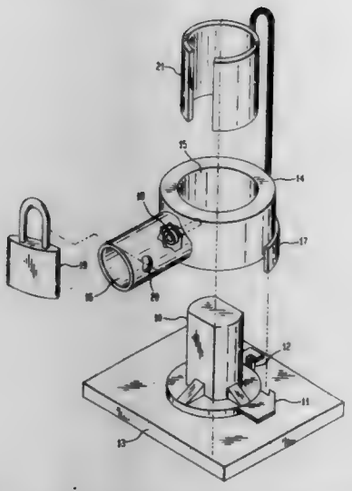
1. A locking device for locking a valve having a rotatable shaft with a stop plate secured thereto, and a stop, said stop secured to a housing, said locking device comprising:

a hollow body having a first chamber, a threaded aperture extending into said first chamber, and a second chamber extending radially from said first chamber;

said hollow body is attachable to said shaft to peripherally surround said shaft;

a locking tab coupled to said hollow body, said locking tab comprises a tab extending axially below said body around a sector thereof, said locking tab adapted for fitting between said stop plate and said stop when said first chamber is positioned around said shaft to block rotation of said shaft;

a screw threadedly received through said second chamber when said first chamber is positioned around said shaft, said second chamber peripherally surrounding a radially outer portion of



said screw when said screw is received therein, said screw engaging said threaded aperture and adapted to press against said shaft for locking said body in an axial position on said shaft; and

a lockable closure coupled to said second chamber,

wherein said lockable closure and said second chamber prevent access to said screw.

5,797,286

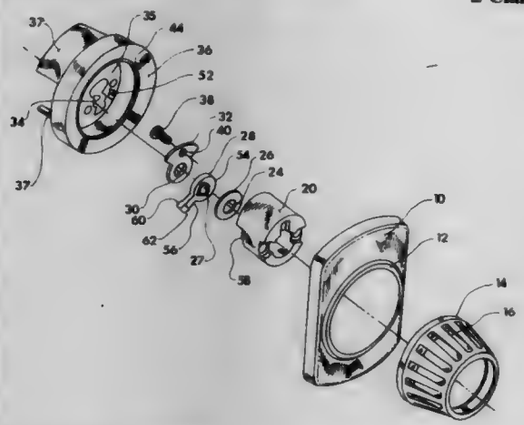
LOCKSET

Steven Armstrong, Yorba Linda, Calif., assignor to Emhart Inc., Newark, Del.

Filed Apr. 29, 1997, Ser. No. 819,175

Int. Cl.[6] B60R *25/02*

U.S. Cl. 70—224 **2 Claims**



1. A lockset comprising

a keyed cylinder including an axially extending torque blade,

a support plate mountable on a door,

a cylindrical bezel,

means for rotatably supporting said cylindrical bezel between said keyed cylinder and said support plate,

said support plate including an annular surface facing said bezel having an axially extending notch therein located at a door locked location,

said bezel including an annular surface facing said support plate annular surface,

a plurality of axially projecting teeth on said bezel annular surface, and

a cam element including

a hole for receiving said torque blade so that said cam element can be slidably displaced along said torque blade and so that said cam element will rotate with said torque blade,

a first tooth projecting axially towards said support plate annular surface for riding on said support plate annular surface when the door is unlocked and selectively configured for insertion into said axially extending notch when the door is locked and

a second tooth projecting axially towards said bezel annular surface and selectively configured to engage one of said bezel teeth in the event that said bezel is rotated while said second tooth is riding on said annular surface, said second tooth and said bezel teeth being axially spaced when said first tooth is at the door locked position,

a spring for biasing said cam element towards said support plate,

said hole being selectively configured so that said cam element can selectively move so that said first tooth can either enter said notch or ride on the annular surface of said support plate,

whereby said bezel can be rotated when the door is unlocked so that one of said bezel teeth will engage said cam second tooth which will be located on said support plate annular surface to thereby rotatively drive said cam element until said first tooth is forced into said notch by said spring.

5,797,287

FLAT KEY

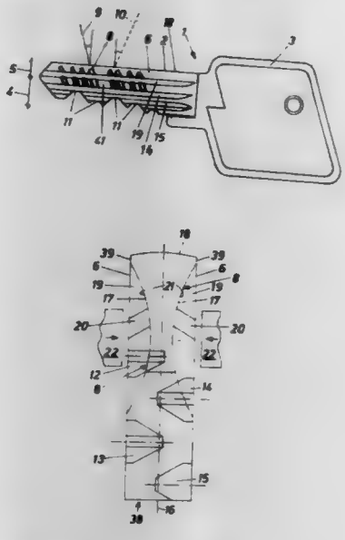
Kurt Prunbauer, Herzogenburg, Austria, assignor to Evva-Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co. KG, Vienna, Austria

Filed Feb. 1, 1996, Ser. No. 593,120

Claims priority, application Austria, Feb. 1, 1995, 177/95

Int. Cl.[6] E05B *19/06*

U.S. Cl. 70—409 **3 Claims**



1. A key comprising:

a flat key body having a blade extending along a longitudinal insert axis, having a front edge formed with transversely directed bitting, an opposite longitudinally extending back edge, and a pair of oppositely directed side faces each formed with

at least two longitudinally extending front grooves extending adjacent the front edge a full length of the blade and having depths equal to more than half of a transverse thickness of the blade,

a longitudinally extending back groove having a floor at a depth equal to less than half of the blade thickness, and

an elongated angled groove extending at an acute angle to and across the respective back groove at an intersection and having a part-cylindrical floor aligned with and forming a smooth continuation of the floor of the respective back groove at the intersection, the angled groove of one of the side faces extending nonparallel to and crossing the angled groove of the

other of the side faces, each of the angled grooves ending at a spacing from the back edge on the respective side face and each side face having a clear and uninterrupted land extending along the back edge.

5,797,288

APPARATUS FOR OPERATING A MULTIPLE-STAND MILL TRAIN

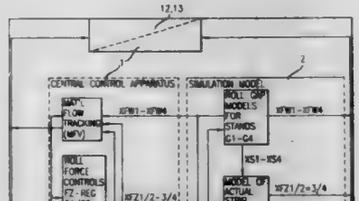
Luis Rey Mas, Berlin, Germany, assignor to Alcatel Alsthom Compagnie Generale d'Electricite, Paris, France

Filed Nov. 22, 1996, Ser. No. 754,424

Claims priority, application Germany, Nov. 25, 1995, 195 45 262.3

Int. Cl.[6] B21B *37/24*

U.S. Cl. 72—7.1 **17 Claims**



16. Apparatus for simulating the operation of a single-stand or multiple-stand mill train with a controller, for controlling an overall process including a plurality of sub-processes thereof, said apparatus comprising a simulation model which itself comprises plural model units, each model unit comprising a model of a corresponding one of said sub-processes, each model unit responsive to a corresponding setpoint signal from said controller or to a signal from another model unit, for providing an output signal to another model unit or for providing an output signal indicative of a simulated response of said corresponding one of said sub-processes for use by said controller in simulated control of said corresponding one of said sub-processes.

5,797,289

BENDING SYSTEM FOR BENDING TUBE

Masaki Hoshino, Sunto-gun, Japan, assignor to Usui Kokusai Sangyo Kaisha Limited, Japan

Filed Feb. 5, 1997, Ser. No. 795,069

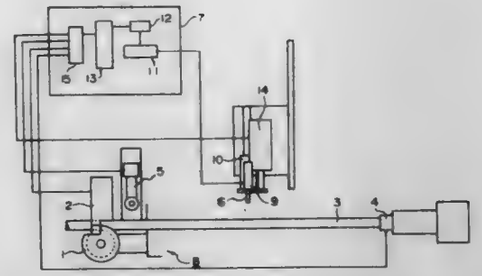
Int. Cl.[6] B21D *7/04*

U.S. Cl. 72—17.3 **4 Claims**

1. A tube bending system for placing at least one bend of a specified tube, said tube having a front end, a rear end and an axis extending therebetween, comprising:

a memory in which a program for bending the tube is stored, said program identifying at least one predetermined bending value;

a gripper for gripping the rear end of said tube and for moving said tube in the axial direction and around the axis in accordance with the program in said memory;



a bending die disposed to face and contact a first longitudinal side of said tube;

a pressing die unit disposed to face the bending die and to contact a second longitudinal side of said tube, said second longitudinal side being opposite said first longitudinal side, said pressing die unit being turnable around said axis of rotation while pinching said tube against said bending die;

a reaction receiving section between said gripper and said pressing die and disposed to face the second longitudinal side of the tube;

a displacement sensor between said gripper and said reaction receiving section in spaced relationship from said reaction receiving section and disposed to face the second longitudinal side of the tube for detecting the position of said tube, said displacement sensor being reversibly movable independently of said reaction receiving section in directions orthogonal to the axis of the tube; and

a controller for controlling setting of said pressing die unit in accordance with the program in said memory, turning said pressing die unit around said axis of rotation to said predetermined bending value, adding an error detected by said displacement sensor to the predetermined bending value of said program so as to approach the specified value, and releasing said setting of said pressing die unit thereafter.

5,797,290

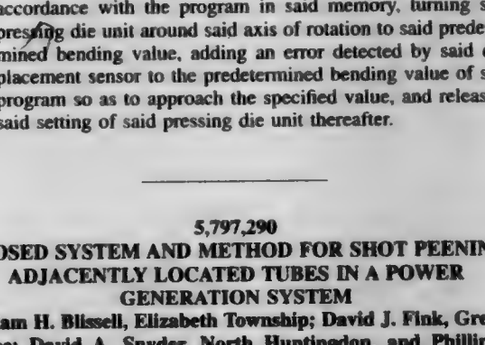
CLOSED SYSTEM AND METHOD FOR SHOT PEENING ADJACENTLY LOCATED TUBES IN A POWER GENERATION SYSTEM

William H. Blissell, Elizabeth Township; David J. Fink, Greentree; David A. Snyder, North Huntingdon, and Phillip J. Hawkins, Penn Hills Township, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 850,543, Mar. 13, 1992, abandoned. This application Feb. 9, 1994, Ser. No. 193,771

Int. Cl.[6] B23P *15/26;* **B24C** *1/10;7/00;9/00*

U.S. Cl. 72—53 **10 Claims**



1. A shot stream generator generating for a shot peening system a shot stream with a selected amount of shot entrained in a flow of gas said generator comprising:

a feed valve having an orifice through which shot is fed into a flow of gas;

a supply line supplying said flow of gas to said feed valve;

a shot tank delivering shot to said orifice in said feed valve; and

pressure control means controlling pressure in said supply line and said gas pressure in said shot tank independently of each other to vary the concentration of shot in said shot stream.

5,797,291

DIE SET FOR MANUFACTURING HEAT EXCHANGING FIN OF HEAT EXCHANGER

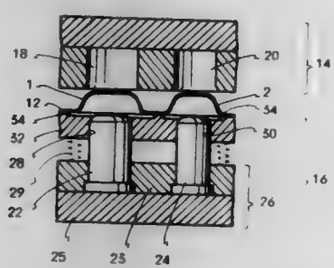
Mamoru Yamada, Tokyo, Japan, assignor to Hidaka Seiki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1997, Ser. No. 821,579

Claims priority, application Japan, Apr. 8, 1996, 8-085020

Int. Cl.[6] B21D *45/06*

U.S. Cl. 72—344 **16 Claims**



1. A die set for manufacturing a heat exchanging fin of a heat exchanger by the steps of: forming a projected section in a thin metal plate; drawing the projected section to reduce a diameter thereof and to form the projected section into a cylindrical section; and piercing and barring the cylindrical section to form into a collar section through which a heat exchanging pipe is pierced, comprising:

a lower die;

an upper die movable close to and away from said lower die, said upper die having a die hole for drawing the projected section wherein a diameter of the die hole is less than a bottom diameter of the projected section which is not drawn;

a punch vertically provided in a base of said lower die, an upper end section of said punch for entering the die hole; and

a lifter provided in said lower die, said lifter being biased toward said upper die by elastic means, said lifter having a through-hole which the upper end section of said punch passes when said lifter is moved toward the base of said lower die by said upper die, said lifter having an accommodating space, which faces the die hole and which accommodates a slackened section of the projected section, which is formed in the vicinity of a base of the projected section while drawing the projected section.

5,797,292

DOMER APPARATUS FOR A CAN BODY MAKING APPARATUS

Bert E. Johansson, and Connie M. Grims, Sr., both of Golden, Colo., assignors to Coors Brewing Company, Golden, Colo.

Filed May 1, 1996, Ser. No. 640,671

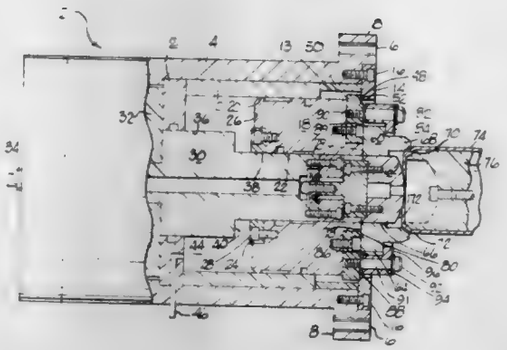
Int. Cl.[6] B21D *22/00*

U.S. Cl. 72—348 **20 Claims**

1. Apparatus for use in positioning a domer apparatus for use in forming desired surface contours on the closed end portion of a can body comprising:

domer apparatus having a longitudinal axis;

said domer apparatus having at least one axially movable outer member and at least one inner member;



said at least one axially movable outer member having a central opening having an inner surface;

said at least one inner member being located in said central opening for permitting relative sliding movement between said axially movable member and said at least one inner member;

said at least one axially movable member and said at least one inner member having coinciding longitudinal axes extending in the same direction as said longitudinal axis of said domer apparatus;

mounting means for mounting said at least one axially movable member and said at least one inner member for permitting movement thereof in generally radial directions relative to said longitudinal axis of said domer apparatus to a new location when a sufficient force is applied thereto;

said domer apparatus having a central cavity having an inner surface having a longitudinal axis coinciding with said longitudinal axis of said domer apparatus;

an axially slidable member having an outer surface in contact with said inner surface;

said axially slidable member having an axially inner surface and an axially outer surface;

said at least one axially movable member having an axially inner surface and an axially outer surface;

said axially outer surface of said at least one axially movable member being located to contact at least a portion of said bottom surface of said can body;

at least a portion of said axially inner surface of said at least one axially movable member being in slidable contact with at least a portion of said axially outer surface of said axially slidable member for permitting movement of said at least one axially movable member in radial directions;

said at least one inner member having an axially inner surface and an axially outer surface;

said axially outer surface of said at least one inner member being located to contact at least another portion of said closed end portion of said can body; and

at least a portion of said axially inner surface of said at least one inner member being located for movement in radial directions into slidable contact with at least a portion of said at least a portion of said axially outer surface of said axially slidable member.

5,797,293

PLASTIC DRIVE BLOCK FOR VEHICLE SEAT ADJUSTER

Philip A. Chaban, Grass Lake, Mich., assignor to Lear Corporation, Southfield, Mich.

Filed Dec. 19, 1996, Ser. No. 770,583

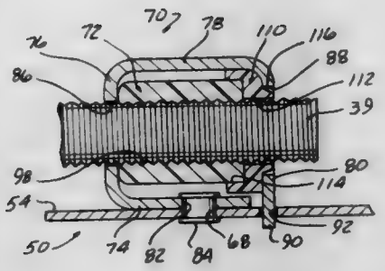
Int. Cl.[6] F16H *25/24*

U.S. Cl. 74—89.15 **20 Claims**

1. A drive apparatus comprising:

first and second members, the first member movable relative to the second member;

a threaded shaft carried with the first member;



means, coupled to the threaded shaft, for imparting rotation to the threaded shaft;

a drive block having a threaded bore engagable with the threaded shaft;

a metal housing fixedly mounted on the second member and having an internal cavity for receiving the drive block threadingly coupled to the threaded shaft; and

means, carried on the housing and normally spaced from the threaded shaft and having a portion freely movable relative to and normally non-contacting the second member and movably responsive to axial movement of the drive block, due to forces exerted on the threaded shaft for forming a contact path between the threaded shaft and the second member through the housing upon axial movement of the drive block.

5,797,294

SHIFT VALVE

Ulrich Bohner, Uhldingen-Mühlhofen, and Winfried Fideler, Friedrichshafen, both of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

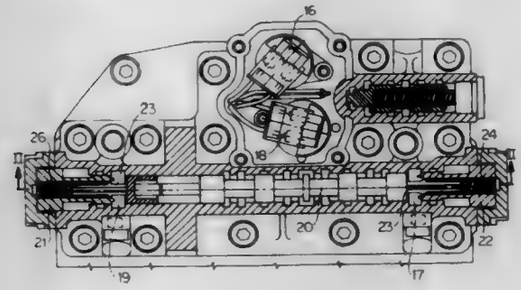
PCT No. PCT/EP95/02265, § 371 Date Dec. 12, 1996, § 102(e) Date Dec. 12, 1996, PCT Pub. No. WO95/34774, PCT Pub. Date Dec. 21, 1995

PCT Filed Jun. 12, 1995, Ser. No. 750,680

Claims priority, application Germany, Jun. 16, 1994, 44 21 115.5

Int. Cl.[6] F16H *59/00*

U.S. Cl. 74—335 **12 Claims**



1. A powershaft transmission with shift valve device for switching a travel direction of a vehicle, said shift valve device comprises:

a slide valve, within a valve housing, that can be adjusted between one of a forward, a reverse and a neutral gear position,

said slide valve (**20**) is adjusted between said gear positions by means of an electro-hydraulic device; and

at least two centering pistons (**21**, **22** and **210**, **220**) within said valve housing (**1**) which, during normal operation, are moved to an actuated position such that the normal operation of the electromagnetic device is bypassed so as to adjust said slide valve (**20**), to a desired one of said gear positions.

5,797,295

SHIFT LOCK MECHANISM FOR SHIFT LEVER DEVICE

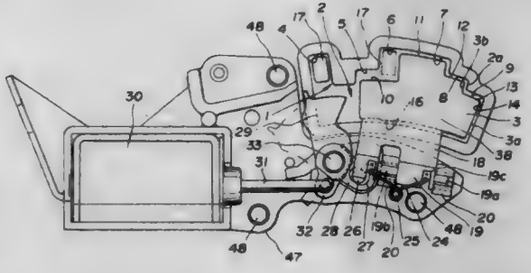
Yoshimasa Kataumi, Fukaya, and Yasuyuki Ikegami, Kosai, both of Japan, assignors to Fuji Kiko Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1996, Ser. No. 663,978

Claims priority, application Japan, Jun. 15, 1995, 7-148958

Int. Cl.[6] F16H *59/10*

U.S. Cl. 74—483 R **11 Claims**



1. A shift lever device for an automatic transmission, comprising:

a position plate formed with a detent recess;

a position pin engagable with said detent recess;

a pair of supports arranged below said detent recess;

a lock plate rotatably supported by said pair of supports, said lock plate being formed with a first step that cooperates with said detent recess to prevent vertical and longitudinal movements of said position pin at at least in a neutral range, said lock plate being rotatable to engage said detent recess when said position pin is moved to said neutral range;

a lock cam rotatable to a position below said position pin when said position pin is moved to a parking range, said lock plate being rotatable together with said lock cam to engage said detent recess when said position pin is moved to said parking range; and

a flexible means comprising a flexible portion arranged between two divided portions of said lock plate.

5,797,296

BICYCLE SPEED CHANGE OPERATION ASSEMBLY

Nobuo Ozaki, Osaka, Japan, assignor to Sugino Cycle Industries, Ltd., Nara, Japan

PCT No. PCT/JP96/00907, § 371 Date Nov. 1, 1996, § 102(e) Date Nov. 1, 1996, PCT Pub. No. WO96/30250, PCT Pub. Date Oct. 3, 1996

PCT Filed Mar. 29, 1996, Ser. No. 737,352

Claims priority, application Japan, Mar. 31, 1995, 7-100491; Jul. 27, 1995, 7-212807

Int. Cl.[6] B62K *23/04*

U.S. Cl. 74—489 **18 Claims**

1. A bicycle speed change operation assembly which has an operation member rotatable around an axis of a handlebar of a bicycle, the assembly being connected to a speed change device of the bicycle via a control cable,

the assembly including a first link and a second link,

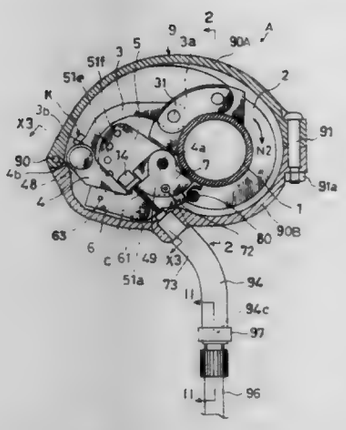
an end of the first link and an end of the second link being connected to each other for relative pivotal movement about a common pivotal axis,

another end of the first link being supported so as to be moved circumferentially of the operation member upon rotation thereof,

the first link having a concave surface for partially surrounding the handlebar,

another end of the second link being supported at a fixed point for pivotal movement about a stationary pivotal axis,

the common pivotal axis and the stationary pivotal axis extending in parallel to said axis of the handlebar.



an end of the control cable being connected to the second link at an intermediate portion between the common pivotal axis and the stationary pivotal axis.

5,797,297

DAMPING FLYWHEEL, NOTABLY FOR MOTOR VEHICLES

Ayman Mokdad, Saint-Ouen, France, assignor to Valeo, France

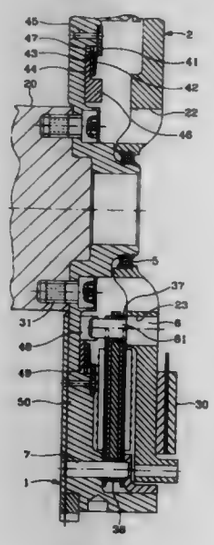
PCT No. PCT/FR95/01654, § 371 Date Aug. 16, 1996, § 102(e) Date Aug. 16, 1996, PCT Pub. No. WO96/18832, PCT Pub. Date Jun. 20, 1996

PCT Filed Dec. 13, 1995, Ser. No. 693,303

Claims priority, application France, Dec. 16, 1994, 94 15367

Int. Cl.[6] F16F *15/10*

U.S. Cl. 74—574 **5 Claims**



1. A Damping flywheel comprising two coaxial masses (1, 2) mounted so as to be movable with respect to one another said flywheel having an elastic means (3) having at least one elastic member (34) disposed between and rotatable with respect to said masses and an axially acting friction means (4), wherein a first mass (1) of the masses (1, 2) is adapted to be fixed with respect to rotation to a drive Shaft, and a second mass (2) of the masses (1, 2) is rotatably mounted on said first mass (1), and the elastic means (3) is pivotally mounted at an external periphery of the first mass (1) by means of a first pivot means (7) and pivotally mounted at an internal periphery of the second mass (2) by means of a second pivot means (6), said friction means (4) extends radially beyond the second pivot means (6), wherein the friction means (4) is carried by the first mass (1) and being located axially between said first mass and said elastic means (3), and the friction means (4) comprises at least one friction washer (44) and the friction means (4) is located by means of an excess thickness (50) in the first mass (1), the mass having at its internal periphery a portion (14) of reduced thickness.

5,797,298

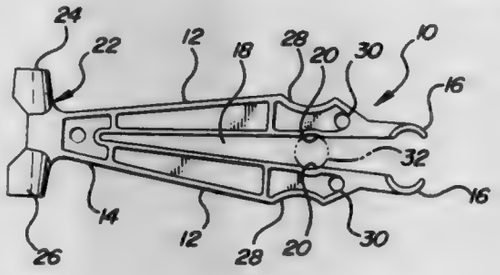
FUSE PULLING DEVICE HAVING SAFETY BLOCKOUT AND FUSE HOLDER FEATURES

Gerald A. Grevel, P.O. Box 453, Pinconning, Mich. 48650

Filed Dec. 30, 1996, Ser. No. 774,518

Int. Cl.[6] B25B *27/14*

U.S. Cl. 81—3.8 **15 Claims**



1. A one-piece fuse handling tool comprising:

a base portion;

a pair of laterally spaced resilient spring arms extending from said base portion to free ends thereof;

fuse gripping jaws provided adjacent said free ends and closable about a fuse removably installed in a retainer clip of a fuse block by extending said free ends over the fuse and bodily forcing said arms laterally inwardly the body so as to capture the fuse between said jaws enabling subsequent removal of the fuse from the retainer clip by exerting a bodily pulling force on said tool outwardly of the fuse block;

laterally opposed fuse retaining seats provided on said arms intermediate said base portion and said gripping jaws to receive and self-retain the removed fuse between said seats in response to bodily forcing the removed fuse along said arms into position between said retaining seats; and

a fuse clip block-out portion installable within the vacant fuse clip from which the fuse was removed to support the removed fuse in close proximity to the corresponding fuse clip while temporarily disabling the fuse clip to prevent inadvertent reinstallation of the fuse said block-out portion comprising a pair of aligned cylindrical projections extending from said base portion.

5,797,299

WIRE CUTTING AND STRIPPING MECHANISM

Alden Owen Long, Jr., Carlisle, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Filed Nov. 27, 1996, Ser. No. 753,626

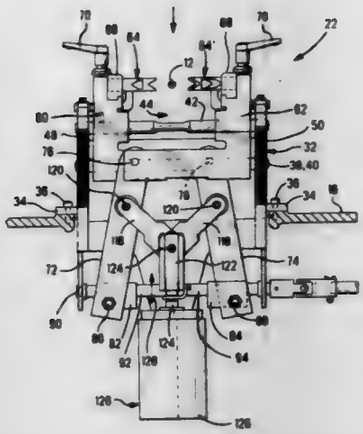
Int. Cl.[6] H02G *1/12*

U.S. Cl. 81—9.51 **20 Claims**

1. In an apparatus for processing an insulated wire, to sever said wire into a feed end and an eject end, and to remove a selected portion of insulation from at least one of said feed end and said eject end, the combination comprising:

(1) a wire cutting and stripping unit including a left blade having first and second spaced cutting edges associated therewith and a right blade having third and fourth spaced cutting edges associated therewith;

(2) means for moving said wire along a wire path between said left and right blades in a first direction and in a second opposite direction;



(3) means for moving said left and right blades in converging directions toward each other so that said first and third cutting edges effect said severing of said wire;

(4) means for further moving said left and right blades in said converging directions so that said second and third cutting edges move into insulation cutting engagement with said eject end.

5,797,300

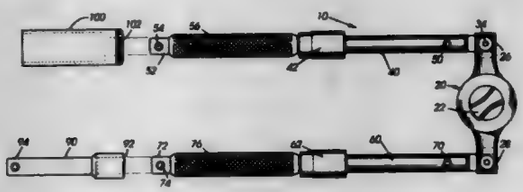
COLLAPSIBLE RATCHETING SOCKET WRENCH

Jeffery N. Fairbanks, Rte. 2, Box 86-D, Mullins, S.C. 29574

Filed Jul. 22, 1996, Ser. No. 681,321

Int. Cl.[6] B25B *13/46;23/16;* **B25G** *1/00*

U.S. Cl. 81—60 **20 Claims**



1. A wrench comprising:

a ratcheting member;

a first rod pivotally carried by said ratcheting member;

a second rod pivotally carried by said ratcheting member; and

means for locking said first rod and said second rod in a locked position with respect to said ratcheting member, so that said first rod and said second, rod are in a non-pivotal position, said ratcheting member having a mounting stub, said mounting stub having an axis of rotation; and wherein when said first rod and said second rod are in said locked position, said first rod, said second rod, and said rotational axis of said mounting stub define a first plane, so that said first rod and said second rod pivot in a second plane perpendicular to said first plane.

5,797,301

WHEEL HUB HAND WRENCH

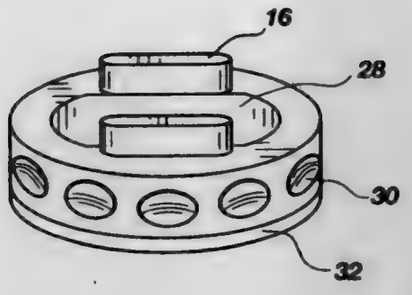
Mark Huenke, P.O. Box 858, Liberty, Utah 84310

Filed Jun. 23, 1996, Ser. No. 717,542

Int. Cl.[6] B25B *13/48*

U.S. Cl. 81—176.15 **5 Claims**

1. A wheel hub wrench for four wheel axle drive exterior engaged wheel hubs having two opposed semi-circular finger depressions opposite a turn bar to allow the fingers of a hand to be inserted therein to grasp the turn bar to turn the wheel hub to engage and disengage a wheel axle drive, comprising:



a circular disc shaped hand grip having a perimeter sized to be grasped by the fingers of a hand, and defining finger depressions to provide a better grip, and

two centrally located corresponding extending opposed prongs structured to removably insert within the finger depressions and engage the turn bar of the exterior engaged wheel hubs to enable a user to apply added torque to the turn bar to hand turn the wheel hub, and

a universal socket adapter with sides defining slots structured for engagement with the prongs of the handgrip, and a universal square end adapted to removably secure to sockets.

5,797,302

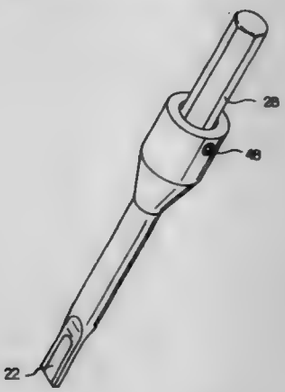
SCREWDRIVER ADAPTED TO BE COUPLED TO AN ELECTRIC DRILL FOR AUTOMATIC ROTATION THEREOF

Joseph F. Khoury, 3383 West 150, Cleveland, Ohio 44111

Filed Nov. 25, 1996, Ser. No. 754,940

Int. Cl.[6] B25B *23/08*

U.S. Cl. 81—454 **1 Claim**



1. A screwdriver adapted to be coupled to an electric drill for automatic rotation thereof comprising, in combination:

an interior member having a lower extent with a circular cross-section and a screwdriver tip at its end, the interior member having an upper extent of an enlarged cylindrical shape with a Hexagonal component adapted to be supported and rotated by an electric drill, the upper extent having a recess extending thereinto;

an exterior cylindrical member having a lower extent of a reduced diameter and an upper extent of an enlarged diameter and having an interior bore extending through an entire extent thereof, the bore of the upper extent adapted to receive the upper extent of the interior member and the lower extent of the exterior cylindrical member adapted to receive the lower extent of the interior member with the screwdriver tip extending into the lower extent thereof for contacting and rotating a head of a screw, the upper extent of the exterior cylindrical member having a threaded aperture extending therethrough, the threaded aperture aligning with the recess of the interior

member when the interior member is received within the exterior cylindrical member;

a threaded screw extending between the threaded aperture and the recess for securement of the interior member within the exterior cylindrical member, the recess having a radial width which is larger than a diameter of the screw for allowing only partial rotation of the interior member within the exterior cylindrical member in coaxial relationship therewith and further precluding sliding of interior member within the exterior cylindrical member alone an axis associated therewith;

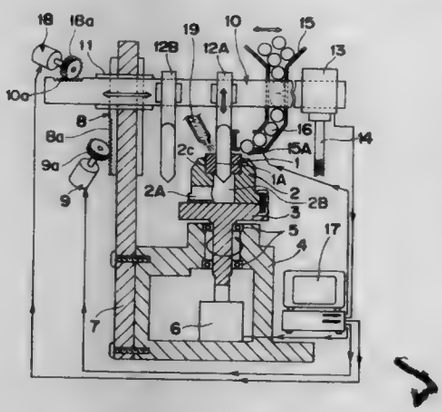
whereby the screwdriver tip is engaged with the head of the screw and one of the extents of the exterior cylindrical member is hand held thereby creating a locking effect between the screw, interior member and the exterior cylindrical member which holds the screw in place during rotation of the same by the drill.

5,797,303

SLEEVE BORE MACHINING APPARATUS AND SLEEVE BORE MACHINING METHOD

Takafumi Asada, Hirakata, and Masato Morimoto, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 679,447, Jul. 12, 1996, Pat. No. 5,718,155. This application Nov. 25, 1997, Ser. No. 978,484
Claims priority, application Japan, Jul. 14, 1995, 7-178522
Int. Cl.[6] B23B *3/00*
U.S. Cl. 82—1.11 **12 Claims**



1. A sleeve bore machining apparatus comprising:

a sleeve holding member for holding a sleeve which is to be machined;

a plurality of reamers positioned on an axis coaxial with or parallel to an axis of the sleeve held by the sleeve holding member;

a drive member for rotating at least one of one of the plurality of reamers and the sleeve holding member to machine the bore of the sleeve by the reamer;

a moving member for relatively moving at least one of one of the plurality of reamers and the sleeve holding member in a direction of the axis of the sleeve and a direction perpendicular to the direction of the axis;

a measurement element supplying member for supplying a measurement element into the bore of the sleeve;

a pusher for pushing the measurement element into the bore;

a load cell for measuring a push-in load due to the pusher; and

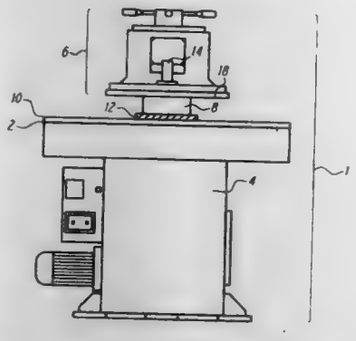
a calculation unit for performing calculation to select a reamer from among the plurality of reamers, in response to a magnitude of the push-in load.

5,797,304

DIE CUT CONFETTI AND A METHOD OF MANUFACTURING

Ardina K. Sterr, Sherman Oaks, and S. Clark Bason, North Hollywood, both of Calif., assignors to Artistry In Motion Entertainment, Inc., Van Nuys, Calif.

Continuation-in-part of Ser. No. 639,249, Apr. 23, 1996, Ser. No. 53,517, Apr. 23, 1996, Ser. No. 53,622, Apr. 23, 1996, and Ser. No. 53,516, Apr. 23, 1996. This application May 31, 1996, Ser. No. 658,834
Int. Cl.[6] B26D *7/06*
U.S. Cl. 83—27 **20 Claims**



1. A method of manufacturing a stack of confetti comprising:

(a) stacking a plurality of sheets of lightweight sheet material into a first stack;

(b) placing an open ended die onto said first stack;

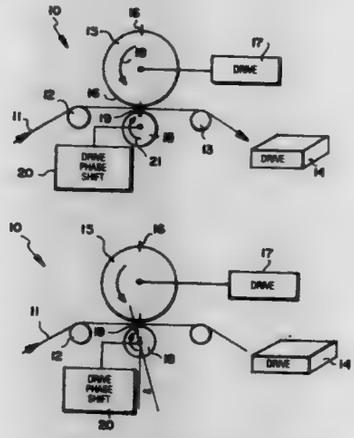
(c) applying sufficient force to said die to cut said first stack into a second stack of lightweight material having the shape of the cavity of said die without fusing said sheets of lightweight material to each other.

5,797,305

ON DEMAND CROSS WEB PERFORATION

Jimmie A. Harrod, Grand Island, and Dennis R. Bernard, Amherst, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Feb. 12, 1996, Ser. No. 600,065
Int. Cl.[6] B26D *1/62;5/20;* B26F *1/20*
U.S. Cl. 83—37 **17 Claims**



1. A method of acting on a moving web to effect perforation or cutting thereof, using a knife cylinder having at least one cutting or perforating knife blade and an anvil cylinder having at least one raised anvil surface for cooperating with the knife blade to effect cutting or perforation, and at least one depression adjacent the raised surface which does not effect perforation or cutting when cooperating with the knife blade, comprising the steps of:

(a) substantially continuously rotating the knife cylinder in substantial registration with the moving web;

(b) substantially continuously rotating the anvil cylinder; and

(c) while practicing steps (a) and (b), positively controlling the position of the anvil cylinder with respect to the knife cylinder so that selectively said one raised anvil surface or said one depression is brought into operative association with the knife blade to selectively effect perforation or cutting of the web, or no perforation or cutting, respectively.

5,797,306

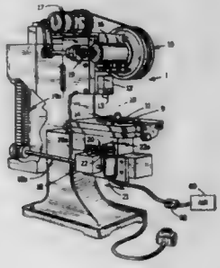
LAMINATION NOTCHING APPARATUS

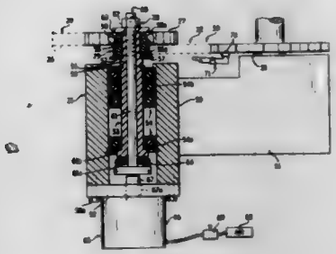
Larry I. Kufahl, Wausau, Wis., assignor to Marathon Electric Mfg. Corp., Wausau, Wis.

Continuation of Ser. No. 432,076, May 1, 1995, abandoned. This application Jul. 7, 1997, Ser. No. 887,722

Int. Cl.[6] B26D *5/20*; F16H *7/02*

U.S. Cl. 83—257 **9 Claims**





9. A notching apparatus drive system for translating a drive operated in synchronous with a punch unit having a continuous reciprocal motion for sequentially rotating a lamination blank through the punch mechanism, comprising a drive unit for operating the punch unit, a lamination support for the lamination blank, an indexing unit having an input member connected to said drive unit for rotating the lamination support through the punch unit and producing successive notches within the blank with successive notches in equally spaced array, said indexing unit moving said lamination blank through the punch unit in equal and predetermined stepped relationship to define a spacing between adjacent notches within a preset distance, said indexing unit having a rotating output member, a coupling unit interconnecting said rotating output member of said indexing unit to said lamination support, said coupling unit including at least first and second sprockets mounted on a common shaft to establish a one-to-one rotation thereof, a passive and keyless clamping unit having a resilient member establishing a pressure engagement between the sprockets to said shaft, and a powered release unit coupled to said passive and keyless clamping unit for releasing said resilient member for removal of said first and second sprockets.

5,797,307

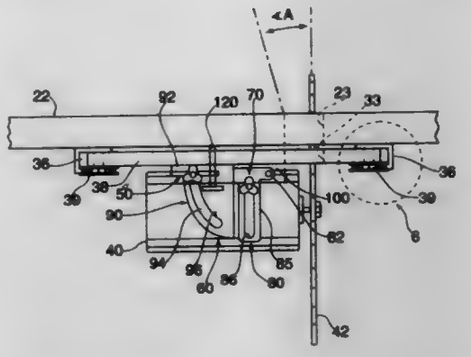
PORTABLE COMBINATION TABLE, CROSS-CUT, RIP-CUT, AND MITER SAW

Edward H. Horton, 7 Seneca St., Ocean Bay Park, N.Y. 11706

Filed Dec. 10, 1996, Ser. No. 762,995

Int. Cl.[6] B26D *1/04*

U.S. Cl. 83—471.3 **16 Claims**



9. A portable universal bench for use with a motor and a saw blade so as to provide a table saw, cross-cut and rip-cut saw, and miter saw configurations, said portable universal bench comprising:

(a) a generally horizontally disposed work platform having a circular opening formed through said platform;

(b) a circular support rotatably mounted within said circular opening of said platform and having an elongated slot formed through said circular support, said elongated slot having a longitudinal axis;

(c) means for movably mounting a motor beneath said circular support wherein when a blade is attached to the motor, the blade extends upwardly through said slot and the blade is movable linearly along said longitudinal axis of said slot;

(d) a fence mountable across an upper surface of said platform and said circular support, said fence having an cutout to provide clearance for the blade when the blade is moved along said slot;

(e) first means for releasably locking said circular support in a fixed position relative to said platform; and

(f) second means for releasably locking the motor in a fixed position relative to said slot.

5,797,308

HOLE PUNCH HAVING A SLIDABLE SLIPPER AND ADJUSTABLE PUNCHES

Alfred J. Evans, Lake In the Hills, and Balaji Kandasamy, Chicago, both of Ill., assignors to ACCO Brands, Inc., Lincolnshire, Ill.

Division of Ser. No. 516,022, Aug. 17, 1995. This application Sep. 3, 1996, Ser. No. 697,934

Int. Cl.[6] B26F *1/02*

U.S. Cl. 83—618 **6 Claims**

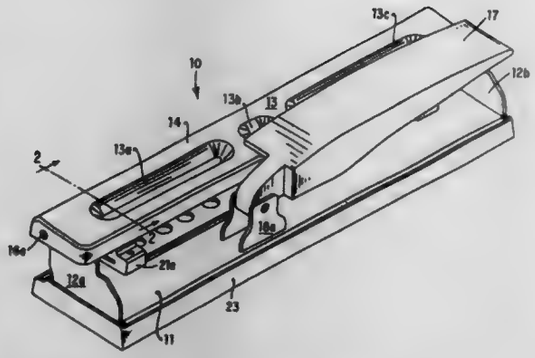
1. A hand operated punch comprising:

a) a base having an elongated length with an upper surface and a bottom facing opposite said upper surface;

b) at least one elongated slot passing through the base from the upper surface to the bottom of said base and extending along the length of said base;

c) a plurality of adjustable punch assembly heads slidably mounted on the upper surface of said base and selectively positionable along said at least one slot;

d) a slipper slidably positioned on said base in covering relation to said bottom of said base; and



e) an elongated opening extending through said slipper and aligned with and exposing said slot, whereby the punch assembly heads are adjustable with the slipper on said base.

5,797,309

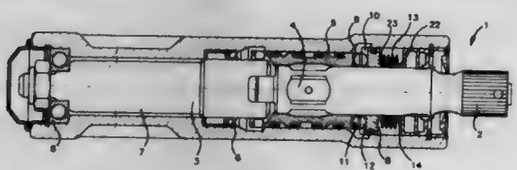
STEERING VALVE

Eugen Eberhart, Dusseldorf, Germany, assignor to TRW Fahrwerksysteme GmbH & Co. KG, Dusseldorf, Germany

Filed Mar. 9, 1995, Ser. No. 401,349

Int. Cl.[6] F15B *5/10*

U.S. Cl. 91—375 A **11 Claims**



1. A steering valve for supplying an actuator with hydraulic pressure, said steering valve comprising:

an input shaft;

an output shaft;

a torsion rod connected between said input shaft and said output shaft;

a valve sleeve surrounding said input shaft;

a reaction piston axially movable relative to said input shaft, said reaction piston partially defining a chamber for receiving a fluid pressure for biasing said reaction piston;

rotary driver means interconnecting said reaction piston and said valve sleeve for transmitting rotational force between said reaction piston and said valve sleeve; and

a torsion-proof, axially elastic element having one end fastened to said input shaft and its other end fastened to said reaction piston for holding said reaction piston against rotation relative to said input shaft;

said rotary driver means including a face side of said valve sleeve and at least one ball engaging said face side of said valve sleeve.

5,797,310

DUAL SELF LEVEL VALVE

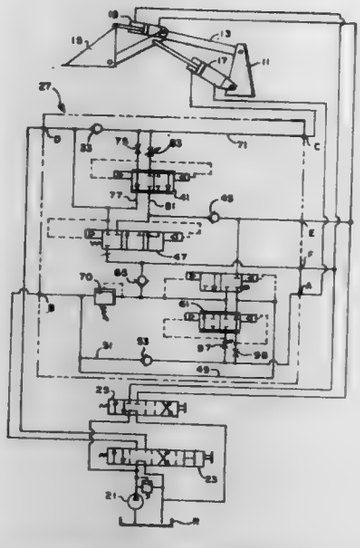
Todd Casey, Victoria, Minn., and Alan Jackson, Halstead, Kans., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 29, 1997, Ser. No. 792,726

Int. Cl.[6] F15B *11/00;13/00*

U.S. Cl. 91—515 **5 Claims**

1. A self-leveling hydraulic system controlling at least two functions including a boom and a bucket; double acting cylinders for said boom and bucket, said cylinders controlled by separate boom and bucket directional control valves, and a circuit with the boom cylinder disposed upstream of the bucket cylinder, and a



source of pressure supplying said control valves; a first self-leveling valve section including a flow dividing valve in fluid communication with the rod end of said boom cylinder, whereby the flow from the rod end of the boom cylinder is divided into first and second flows; a first passage means communicating the first of the flows to the head end of said bucket cylinder to supply a sufficient flow to maintain said bucket at a level position as said boom is raised, and a second passage means communicating the second of the flows back to said control valves; characterized by:

(a) a second self-leveling valve section including a flow dividing valve in fluid communication with the head end of said boom cylinder, whereby the flow from the head end of the boom cylinder is divided into first and second flows;

(b) a third passage means communicating the first of the flows to the rod end of said bucket cylinder to supply a sufficient flow to maintain said bucket at a level position as said boom is lowered; and

(c) a fourth passage means communicating the second of the flows back to said control valves.

5,797,311

PISTON/LINER ARRANGEMENT FOR A RECIPROCATING-PISTON INTERNAL COMBUSTION ENGINE

Herbert Gasthuber, Ulm; Bernd-Eric Lübbing, Ebersbach; Martin Schulz, Plochingen, and Michael Wiesner, Fellbach, all of Germany, assignors to Daimler Benz AG, Stuttgart, Germany

Filed Jul. 8, 1997, Ser. No. 889,699

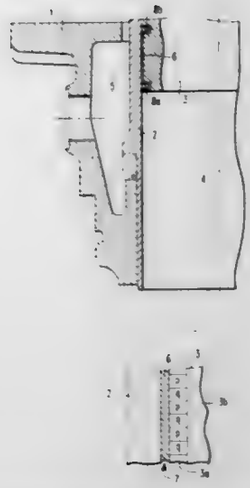
Claims priority, application Germany, Jul. 8, 1996, 196 27 418.4

Int. Cl.[6] F01B *31/10*

U.S. Cl. 92—158 **2 Claims**

1. Piston/liner arrangement for a reciprocating-piston internal combustion engine comprising a cylinder liner and a piston with a piston skirt axially movably supported in said cylinder liner and forming a friction pair and a lubrication system for the friction pair formed by the piston skirt, on the one hand, and by the cylinder liner, on the other hand, at least one of said piston skirt said cylinder liner having, at least in certain sections, an open-pore surface structure in which a lubricant with a high affinity for the material of said open-pore surface structure is disposed so as to form a life-time lubrication structure.

2. A piston/liner arrangement for a reciprocating-piston internal combustion engine comprising a cylinder liner and a piston axially movably supported in said cylinder liner and forming a friction and a lubrication system for the friction pair formed by the piston skirt, on the one hand, and by the cylinder liner, on the other hand, at



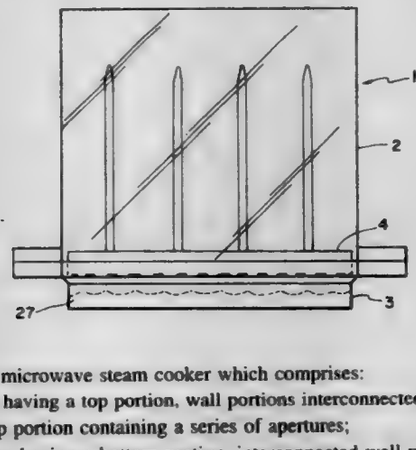
least one of said piston skirt said cylinder liner having at least in certain sections an open-pore surface structure comprising a material with a high affinity to a lubricant disposed in said open-pore surface structure so as to form a lifetime lubrication said lubricant being a ferro fluid captured in said open pore surface structure, and said open pore surface structure being bounded in the axial direction at opposite ends by annular permanent magnets which are integrated into the piston skirt and said cylinder liner.

5,797,312

MICROWAVE STEAM CHAMBER COOKER

Dody Lynn Brant, Rd. #1, Box 167, Berlin, Pa. 15530

Filed Sep. 28, 1995, Ser. No. 535,943
Int. Cl.[6] H05B *6/80;* **A47J** *37/12*
U.S. Cl. 99—415 **8 Claims**



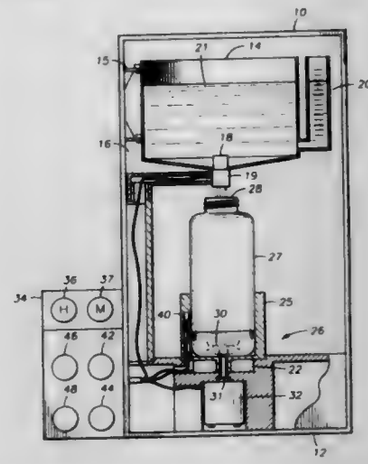
1. A microwave steam cooker which comprises:
a lid having a top portion, wall portions interconnected, and the top portion containing a series of apertures;
a base having a bottom portion, interconnected wall portions, a cavity and a support means; and
a tray having a base portion, a support portion, a series of apertures extending through said tray from the base portion to the support portion, and a series of cylindrical food support members attached to the tray and extending a a substantial distance from and perpendicular to the base, and parallel to each other, the tray being supported within the base on the support means.

5,797,313

ELECTRONIC BABY FORMULA PREPARATION AND STORAGE DEVICE

Tamara Rothley, 16318 Summer Dew La., Houston, Tex. 77095

Filed Feb. 11, 1998, Ser. No. 21,805
Int. Cl.[6] A47J *27/00;43/27;* **B01F** *9/00;9/10*
U.S. Cl. 99—483 **5 Claims**



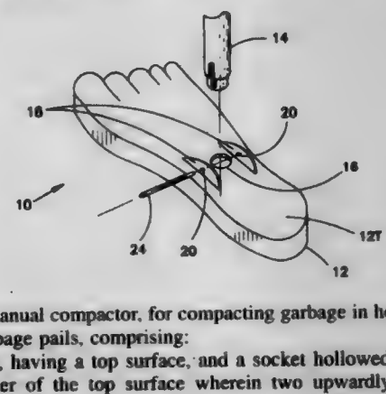
1. An electronic baby-formula preparation and storage device, comprising:
a housing having a base;
a formula dispensing bottle;
a support means mounted on said base for supporting said formula dispensing bottle;
a reservoir, supported by said housing and in fluid communication with said formula dispensing bottle, for containing a volume of liquid;
a transfer means, controlled by a timer, for transferring said volume of liquid from said reservoir into said formula dispensing bottle;
an agitating means, operatively associated with said timer and said formula dispensing bottle, for agitating said liquid simultaneously with the transfer of said liquid from said reservoir into said formula dispensing bottle; and
a warming means, operatively associated with said timer, for warming said transferred liquid to a preselected temperature.

5,797,314

MANUAL TRASH COMPACTOR

Paul Hendrick, 37290 W. Menlo, Hemet, Calif. 92545

Filed Aug. 20, 1997, Ser. No. 915,452
Int. Cl.[6] B30B *15/06*
U.S. Cl. 100—265 **5 Claims**



1. A manual compactor, for compacting garbage in household or yard garbage pails, comprising:
a base, having a top surface, and a socket hollowed out of the center of the top surface wherein two upwardly extending flanges extend perpendicular to the top surface of the base, each on opposite sides of the socket, said flanges each having

a bore extending through the flange wherein the bores are aligned with each other; and

a handle, having a proximal end and a distal end, wherein the proximal end fits into the socket on the top surface of the base, the handle shape is selected from the group consisting of a T-shaped handle and an L-shaped handle.

5,797,315

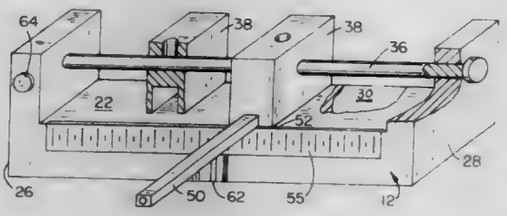
MARKING PUNCH GUIDE DEVICE

Keith E. Norris, 305 Biddle St., Greenville, Tenn. 37745

Filed Jun. 25, 1997, Ser. No. 882,278

Int. Cl.[6] B31F *1/07*

U.S. Cl. 101—28 **8 Claims**



1. A guide device for one or more character punches wherein said device comprises a base means, rod means mounted on said base means, one or more punch guide block means slidably mounted on said rod means, wherein each said block means has a surface which slidably contacts said base means, each said block means having a punch guide slot formed into said surface for slidably mounting a character punch, a series of ruler markings provided on a portion of said base means, alignment edge means provided on each said block means or on each punch mounted therethrough, said edge means lying contiguous the series of said ruler markings whereby each block means and any punch mounted in its guide slot can be precisely positioned on the device with respect to any selected one of said markings by sliding of said block means along said rod means and said base means, and wherein permanent magnet means is provided on said base means for removably securing said device to a workpiece.

5,797,316

TRANSFER ROLLING DEVICE FOR PRODUCING BANNERS

Park Kyoung Ho, Seoul, Rep. of Koren, assignor to Lee Whal-Sun, Chungnam, Rep. of Korea

Division of Ser. No. 740,467, Oct. 29, 1996. This application Jun. 20, 1997, Ser. No. 880,138

Claims priority, application Rep. of Korea, Nov. 15, 1995, 41491/95

Int. Cl.[6] B51D *7/00*

U.S. Cl. 101—33 **1 Claim**

1. A transfer roll device for producing a banner comprising:

a housing;

paper roll mounted to a side wall of said housing;

a cloth roll mounted to said side wall of said housing;

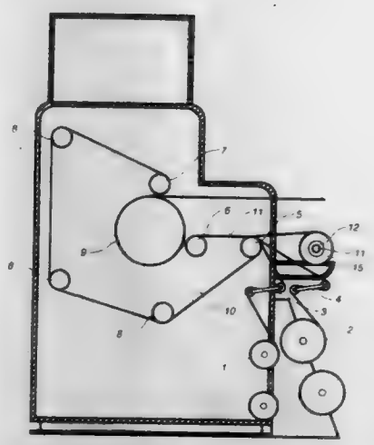
a first tension control means connected to said housing and positioned above said paper roll, said first tension control means for controlling a tension of paper unwound from said paper roll;

a second tension control means connected to said housing and positioned above said cloth roll, said second tension control means for controlling a tension of cloth unwound from said cloth roll;

a belt table holding roller affixed to said housing in a position above said paper roll and said cloth roll;

a heating drum connected to housing;

a first tension roller connected to said housing adjacent one side of said heating drum;



a second tension roller connected to said housing adjacent another side of said heating drum;

a plurality of guide rollers rotatable connected to said housing;

an endless belt passing over said belt table holding roller and over a surface of said first tension roller and over said heating drum and over a surface of said second tension roller and over a surface of said plurality of guide rollers;

a longitudinal bar connected to a rotation controller means and positioned in front of both of said belt table holding roller and the first tension roller, said rotation controller means for rotating said longitudinal bar;

a torsionless pipe fitted over said bar; and

a transfer sheet having releasable stencil characters thereon, said transfer sheet being wound around said torsionless pipe such that said stencil characters are directed radially inwardly, said transfer sheet and cloth from said cloth roll and paper from said paper roll extending in overlapping relationship so as to be interposed between said endless belt and said heating drum.

5,797,317

UNIVERSAL CHUCK FOR HOLDING PLATES OF VARIOUS SIZES

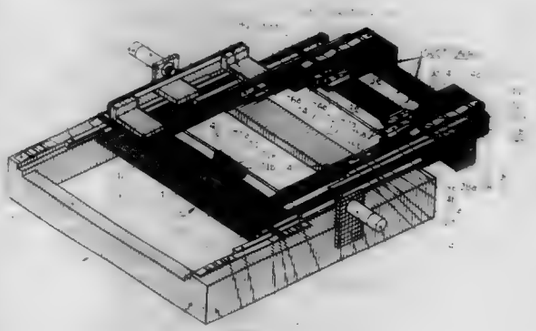
Eitan Lahat, Rishon le Zion, and Nissim Zafrani, Yavne, both of Israel, assignors to Orbot Instruments Ltd., Yavne, Israel

Filed Mar. 14, 1997, Ser. No. 818,312

Claims priority, application Israel, Sep. 6, 1996, 119213

Int. Cl.[6] B05C *17/08*

U.S. Cl. 101—127.1 **22 Claims**



1. A universal chuck for holding plates, comprising:

a base having a longitudinal axis and a transverse axis;

a lower carriage movable on said base along said longitudinal axis;

an upper carriage movable on said lower carriage along said longitudinal axis;

a first plate mounting assembly carried by said lower carriage at one side thereof for mounting one edge of a plate to be held by the universal chuck; and

a second plate mounting assembly carried by said upper carriage and oriented to oppose said first plate mounting assembly, for mounting the opposite edge of the plate to be held by the universal chuck, such that moving the lower carriage and the upper carriage with respect to each other and with respect to said base along said longitudinal axis, changes the distance between said lower carriage and upper carriage plate mountings to thereby enable the chuck to hold plates of different longitudinal dimensions.

5,797,318

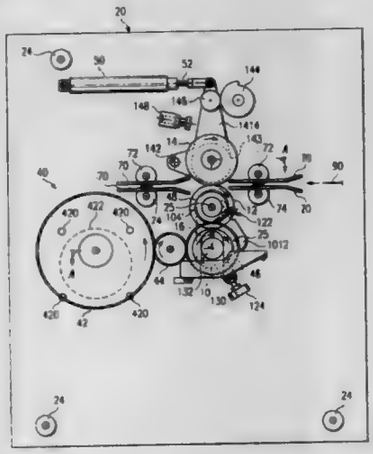
LIQUID APPLICATOR FOR CUT SHEETS

James E. Taylor, Dallas; Brian M. Bargenquest, Carrollton, and Richard W. Carlson, Grapevine, all of Tex., assignors to Dahlgren USA, Inc., Carrollton, Tex.

Filed Sep. 17, 1996, Ser. No. 714,982

Int. Cl.[6] B41L *23/00*

U.S. Cl. 101—148 **46 Claims**



1. A device for applying a preselected continuous controllable quantity of liquid to a selected side of a cut sheet comprising:

a first roll having a friction surface for contacting a first side of the sheet;

a second roll disposed substantially adjacent to the first roll and having a surface for carrying an uninterrupted uniform film of liquid to a second side of the sheet, wherein the surface of the first roll and the surface of the second roll simultaneously apply substantially uniform pressure to the first and second sides of the sheet as the sheet moves between the first and second rolls;

means for feeding and guiding a leading edge of the sheet into a first cusp formed by the surfaces of the rolls for enabling the friction surface of the first roll to frictionally move the sheet between the first and second rolls at a predetermined line speed, and the surface of the second roll to apply a portion of the film at a rate sufficient to continuously apply the preselected continuous controllable quantity of liquid over substantially the entire second side of the cut sheet;

means for guiding the free leading edge of the sheet exiting from a second cusp formed by the surfaces of the first and second rolls;

means for rotating the rolls relative to each other; and

means for spacing the roll surfaces during the absence of a sheet passing between the rolls.

5,797,319

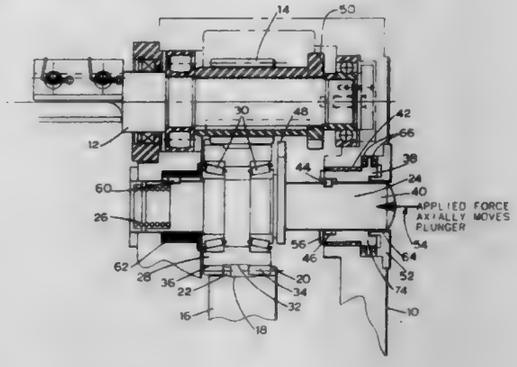
DRIVE DEVICE FOR A FOLDER IN A PRINTING PRESS

Charles Tomczak, Naperville, Ill., assignor to Goss Graphic Systems, Inc., Westmont, Ill.

Continuation-in-part of Ser. No. 530,559, Sep. 19, 1995, abandoned. This application Jul. 14, 1997, Ser. No. 891,742

Int. Cl.[6] B41F *5/00; 1/08*

U.S. Cl. 101—216 **11 Claims**



1. A folder in a printing press, comprising:

a folding blade mounted to a folding blade shaft;

a folding blade shaft gear mounted to the folding blade shaft for driving the folding blade;

a drive gear for driving the folding blade shaft gear;

coupling means for coupling the drive gear to the folding blade shaft gear, the coupling means including an intermediate gear;

the coupling means being slidable between a first longitudinal position and a second longitudinal position, the coupling means engaging the drive gear to the folding blade shaft gear while the coupling means is in the first longitudinal position; and

means for biasing the engaging means in the first longitudinal position;

the intermediate gear meshing with the folding blade shaft gear and the drive gear to drive the folding blade shaft while the coupling means is in the first longitudinal position, and the intermediate gear being out of mesh with the drive gear to prevent the drive gear from driving the folding blade shaft gear while the coupling means is in the second longitudinal position.

5,797,320

METHOD AND APPARATUS FOR FORM-PROCESSING PAPER IN A PRINTING PRESS

Rainer Buschulte, Bad Schönborn; Clemens Rensch, Heidelberg, and Erich Zahn, Eppelheim, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Nov. 29, 1995, Ser. No. 564,417

Claims priority, application Germany, Nov. 29, 1994, 44 42 411.6

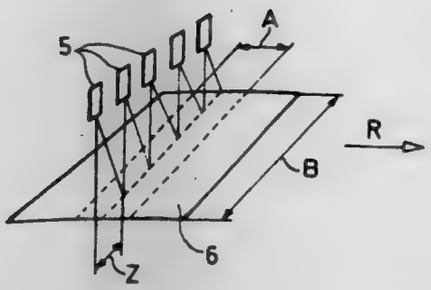
Int. Cl.[6] B41F *13/56*

U.S. Cl. 101—226 **7 Claims**

1. Method for form-processing paper in a printing press, which comprises:

providing a printing press having at least one processing tool and a computer;

generating with the printing press digital data for representing processing geometries, transmitting the digital data to the computer for calculating the signals for the at least one processing tool, performing the generation of the digital data within the context of a printed product layout in an electronic printing precursor stage, and adding color information to the digital data in such a manner that one color, respectively, is assigned to each type of processing; and



converting the digital data representing the processing geometries into signals in the computer, and controlling the at least one processing tool with the signals so as to obtain the processing geometries.

5,797,321

PAPER GUIDE APPARATUS FOR SHEET-FED OFFSET PRINTING PRESS

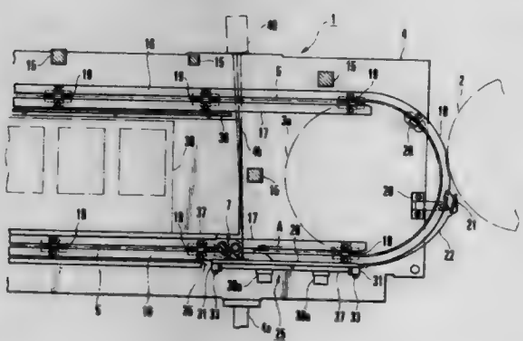
Satoshi Shibata, Ibaragi, Japan, assignor to Komori Corporation, Tokyo, Japan

Filed Jul. 22, 1997, Ser. No. 898,581

Claims priority, application Japan, Jul. 23, 1996, 8-193125

Int. Cl.[6] B41F *21/00*

U.S. Cl. 101—246 **7 Claims**



1. A paper guide apparatus for a sheet-fed offset printing press, comprising:

conveying means for conveying a printed sheet delivered from a printing unit;

a gripper unit, supported by said conveying means for gripping one end of said sheet, said gripper unit having a plurality of sets of grippers and gripper pads, said gripper pads having a paper gripper surface coupled to said gripper to grip said sheet;

a paper guide unit having a guide surface, said paper guide unit arranged along a sheet conveying route to guide said sheet which is being conveyed with said guide surface arranged to be substantially flush with said paper gripper surface of said gripper pads, said paper guide unit having a plurality of suction holes for drawing said sheet on said guide surface by suction, and a plurality of grooves formed on traveling routes of said grippers; and

inspection means for inspecting a printed state of said sheet which is conveyed while being drawn on said guide surface of said paper guide unit by suction.

5,797,322

PRINTING SLEEVE FOR A FLEXOGRAPHIC OR GRAVURE PRINTING ROLL

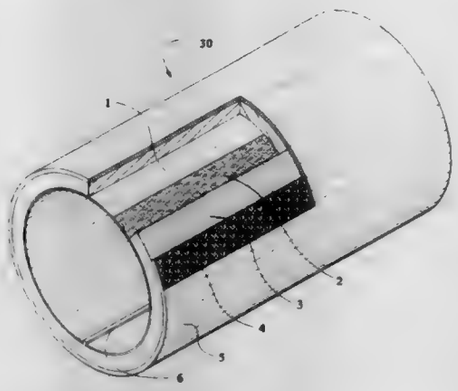
Heinz-W. Lorig, Legden, and Karl Sauressig, Vreden, both of Germany, assignors to Polywest Kunstofftechnik, Sauressig & Partner GmbH & Co. KG, Ahaus, Germany

Continuation-in-part of Ser. No. 788,186, Jan. 24, 1997. This application Mar. 7, 1997, Ser. No. 812,527

Claims priority, application Germany, Jan. 31, 1996, 196 03 500.7

Int. Cl.[6] B41F *27/00*

U.S. Cl. 101—375 **19 Claims**



1. A sleeve for a printing roll comprising:

a base sleeve comprising a first end, a second end and an inside surface disposed therebetween, the inside surface of the base sleeve defining a tapered inside diameter of the base sleeve wherein the base sleeve is conical in shape with the inside diameter at the first end of the base sleeve being larger than the inside diameter at the second end of the base sleeve,

the base sleeve further comprising an outer surface with a layer of compressible material attached to the outer surface of the base sleeve, a layer of foam material attached to the layer of compressible material, and the layer of foam material being coated with a layer of casting compound, and a layer of engravable copper material being attached to the layer of casting compound, and

the base sleeve further comprising a fiberglass-reinforced UP resin having a thickness ranging from about 1.0 mm to about 1.5 mm, a glass content of about 65%, a tensile strength of about 700 N/mm^2, an E-modulus of about 30.000 N/mm^2, and a flexural strength of about 800 N/mm^2.

5,797,323

PRINTING CYLINDER FOR A PRINTING PLATE MADE OF A MAGNETIZABLE CARRIER MATERIAL

Rolf Beck, Pliezhausen, Germany, assignor to Kocher + Beck GmbH & Co., Pliezhausen, Germany

Filed Jan. 14, 1997, Ser. No. 783,002

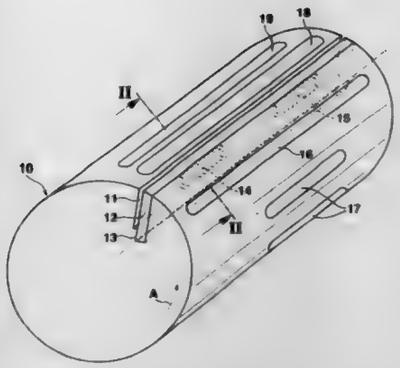
Claims priority, application Germany, Jan. 26, 1996, 196 02 746.2

Int. Cl.[6] B41F *27/00*

U.S. Cl. 101—389.1 **17 Claims**

1. A printing cylinder for a printing plate made of a magnetizable carrier material, having:

a roller-shaped basic body which is provided on its circumference with a slot for receiving a bent edge of the start of the printing plate, with at least two circumferential holding magnet distributed along the circumference, and at least one end holding magnet for the end of the printing plate adjacent to the slot,



said at least one end holding magnet extending approximately along the whole axial length of the basic body, the slot having a wall formed from a strip, the strip being provided with the at least one holding magnet for holding the bent edge of the printing plate.

5,797,324

DRYING DEVICE FOR A SHEET-FED ROTARY PRINTING MACHINE

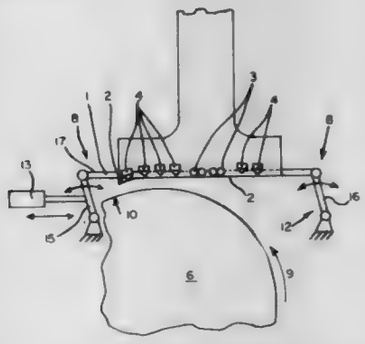
Herbert Schoppe, Neusass; Jurgen Schneider, Frankfurt am Main; Michael Rother, Rodermark, and Ulrich Jung, Limburg, all of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Mar. 28, 1995, Ser. No. 411,485

Claims priority, application Germany, Mar. 28, 1994, 9405223 U

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—424.1 **9 Claims**



1. A sheet-fed rotary printing machine for printing variable weight, flexible sheet material comprising an impression cylinder and an associated form cylinder which together define a printing zone for sheets passing through the printing machine and about the impression cylinder, a dryer device for drying sheets being conveyed through said printing machine and printing zone, said drying device including a radiant drying system and a hot air drying system operable for drying sheets directed about the impression cylinder, a frame upon which said radiant drying system and hot air drying system are removably mounted adjacent the perimeter of the impression cylinder, and a guide mechanism for moving the frame and the drying system supported thereon so as to permit selected positioning of the drying systems relative to the impression cylinder and sheets being transferred thereon for optimum sheet drying.

5,797,325

CYLINDER CLEANING APPARATUS FOR PRINTING PRESS

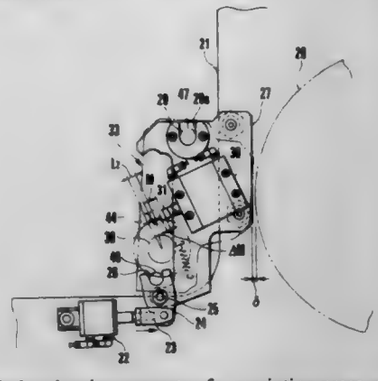
Toshihiko Ebina, and Takeshi Asai, both of Ibaragi, Japan, assignors to Komori Corporation, Japan

Filed Jul. 10, 1996, Ser. No. 677,509

Claims priority, application Japan, Jul. 11, 1995, 7-174626

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—425 **17 Claims**



1. A cylinder cleaning apparatus for a printing press, comprising:

a cleaning unit supported by a printing press frame, said cleaning unit having a cleaning web, said cleaning unit mounted to be movable between a cleaning position where said cleaning web is in contact with a circumferential surface of a cylinder and a retreat position where said cleaning web is separate from said circumferential surface of said cylinder, said cleaning unit having a supply portion for supplying said cleaning web to said circumferential surface of said cylinder and a take-up roll for taking up said cleaning web supplied from said supply portion, said cleaning unit having a first cleaning mode and a second cleaning mode for cleaning said cylinder in which said cleaning web is taken up;

a first actuator fixed to said printing press frame to pivot said take-up roll, thereby taking up said cleaning web;

moving means coupled to said first actuator for moving said cleaning unit to one of said cleaning position and said retreat position in accordance with whether said cylinder is in one of said first and said second cleaning mode, wherein in said first cleaning mode, said cleaning unit is moved to said cleaning position, and wherein in said second cleaning mode, said cleaning unit is moved to said retreat position; and

control means for controlling said first actuator in said first cleaning mode and at least one of said first actuator and said moving means in said second cleaning mode to set take-up amounts of said cleaning web to be taken up by said take-up roll in said first and second cleaning modes to be substantially equal to each other.

5,797,326

METHOD FOR APPLYING SPACING MATERIAL TO A PRINTED SHEET OF PAPER, AND A SHEET-FED PRINTING PRESS EQUIPPED FOR PERFORMING THE METHOD

Rainer Buschulte, Bad Schoenborn; Juergen Kern, Mauer; Michael Mueller, Biblis, and Harald Schwahn, Heidelberg, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Dec. 20, 1995, Ser. No. 575,491

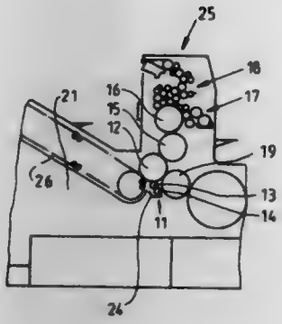
Claims priority, application Germany, Dec. 20, 1994, 44 45 457.0

Int. Cl.[6] B41F *35/00*

U.S. Cl. 101—483 **16 Claims**

1. Method for applying spacing material to a sheet printed by a printing press, which comprises:

providing spacing material which is solid at least at ambient temperature;



spotwise applying individual spacing material particles formed from the spacing material onto a surface of the sheet, the spacing material being formed of wax which is applied onto the surface of the sheet as wax particles;

forming each of the wax particles of a core formed of a first wax, and a coating formed of a second wax surrounding the core, the second wax having a melting point lower than the melting point of the first wax; and

fixing the applied spacing material particles to the sheet.

5,797,327

DEVICE AND METHOD FOR GUIDING SHEET MATERIAL IN A PRINTING PRESS, PARTICULARY IN A SHEET-FED ROTARY OFFSET PRESS

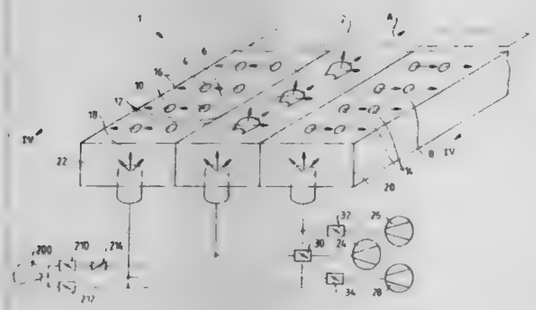
Michael Gieser, Oftersheim, and Stephan Günter, Wiesloch-Baiertal, both of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Feb. 28, 1997, Ser. No. 808,783

Claims priority, application Germany, Feb. 28, 1996, 196 07 397.9

Int. Cl.[6] B41F *5/00*

U.S. Cl. 101—483 **14 Claims**



14. A method for guiding sheets in a sheet-fed offset rotary printing press which can be operated in both recto and recto/verso printing modes, and in which sheets are transported at least in sections across a guide surface having nozzles arranged in zones within the guide surface, the zones including a first zone extending along a longitudinal axis of the guide surface and having nozzles which blow air generally in a transport direction of the sheets and, on respective sides of the first zone, a second and a third zone wherein air is blown in a direction generally away from the longitudinal axis of the guide surface, which comprises supplying blast air to the nozzles of the second and the third zones in both the recto and the recto/verso printing modes, and supplying blast air to the nozzles of the first zone in the recto/verso printing mode and interrupting the supply of blast air to the nozzles of the first zone during the recto printing mode.

5,797,328

DEVICE AND METHOD FOR PURIFICATION AND RECIRCULATION OF CLEANING AGENT IN A PRINTING MACHINE

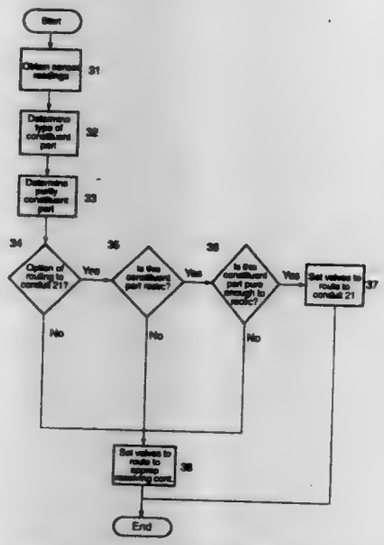
Andreas Lippold, Nidderau, and Edgar Dorsam, Obertshausen, both of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Apr. 11, 1997, Ser. No. 832,727

Claims priority, application Germany, Apr. 12, 1996, 196 14 395.0

Int. Cl.[6] B01D *21/00*

U.S. Cl. 101—483 **7 Claims**



6. A method for purifying and recirculating contaminated washing agent in a printing machine with a washing device, comprising the steps of:

collecting the contaminated washing agent, which comprises two or more constituent parts, in a first sedimentation device;

holding the contaminated washing agent in the first sedimentation device until gravitational forces separated the agent into at least two of its constituent parts;

draining the contaminated washing agent into a second sedimentation device having a separate holding tank for each of the separate constituent parts from the first sedimentation device;

the method further comprising passing the contaminated washing agent through at least one sensor and at least one valve to route the separate constituent parts into separate holding tanks of the second sedimentation device;

storing one or more of the separated constituent parts of the contaminated washing agent in a disposal storage;

returning to the washing device the remaining separated constituent parts of the contaminated washing agent as purified washing agent.

5,797,329

HOT MELT INK PRINTER AND METHOD PRINTING

Akihiro Okada, Woodland Hills, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed May 16, 1995, Ser. No. 442,391

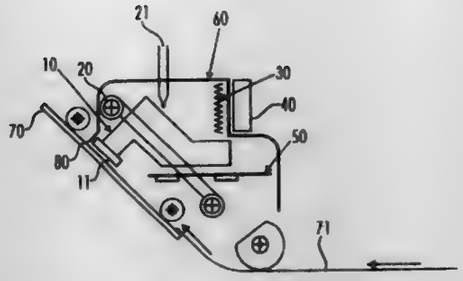
Int. Cl.[6] B41L *35/14*

U.S. Cl. 101—488 **14 Claims**

1. A printer for applying a hot melt material onto a front surface of a medium, the print comprising:

an ink jet printhead for ejecting droplets of hot melt material in an ink droplet flow path toward and onto the front surface of the medium;

an enclosure surrounding said ink jet printhead, the enclosure defining an opening adjacent to the front surface of the medium;



a heater mounted in a location separate from the ink jet printhead within the enclosure for heating air within the enclosure; and

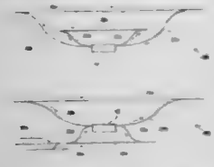
a fan mounted in a location separate from the ink jet printhead for directing the heated air towards the front surface of the medium, wherein said fan is located external to the ink droplet flow path and is oriented to direct the heated air within the enclosure and along an air flow path external to the printhead and at least partially external to the ink droplet flow path.

5,797,330

MASS TRANSIT SYSTEM

Zhengzhong Li, 62-61 Dieterle Crescent, Rego Park, N.Y. 11374

Filed Jul. 31, 1996, Ser. No. 688,842
Int. Cl.° B61B 1/00
U.S. Cl. 104—28 **19 Claims**



1. An on-demand mass transit system to enable the non-stop transport of individuals from a first location to a second location, both locations within an area serviced by the system, the system comprising:

a) a plurality of self-propelled mass transit passenger vehicles, each passenger vehicle suitable to transport passengers from the first location to the second location;

b) a network of interconnected tracks including main tracks and holding tracks, the main tracks provided as the main conduits for the passenger vehicles to move within the network and the holding tracks provided to hold unoccupied vehicles that are available to be dispatched to transport passengers;

c) a plurality of passenger stations, including a first station at the first location and a second station at the second location, each passenger station removed and decoupled from the main track, located adjacent to at least one portion of the main track, and configured to support the pick-up and drop-off of passengers while not affecting the flow of vehicular traffic on the main track;

d) ramp means to enable passenger vehicles to move between the respective passenger stations and at least one of a portion of the main track and the holding track at each of the stations;

e) a plurality of station interface units, at least one installed in each of the plurality of passenger stations to enable individuals to request a pickup at the first station by one of the passenger vehicles and to specify the second station to be transported to; and

f) computing means provided to control and coordinate the activities of the mass transit system, the computing means in communication with each station interface unit to enable the exchange of information between the computing means and the station interface units so as to process and coordinate the requests by individuals for transport, and further to process information received related to the position and speed of the plurality of the passenger vehicles in operation on the network of tracks to determine and provide appropriate control information;

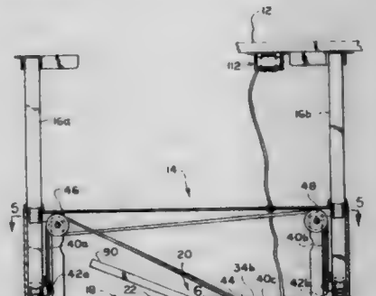
g) the ramp means provided to (1) enable passenger vehicles that are not presently in use to be dispatched by the computing means from the holding track to the first station to pick up at least one passenger who has requested transport, (2) enable occupied passenger vehicles to move from the first station to the main track to commence transport to the second station, (3) to enable passenger vehicles to move from the main track to the second station to drop-off passengers, and (4) enable passenger vehicles to be moved from the second station to the associated holding track until the passenger vehicle is needed to transport additional passengers.

5,797,331

COUNTERBALANCED TABLE MECHANISM

Richard L. Watt, Jamestown, N.Y., assignor to Weber Knapp Company, Jamestown, N.Y.

Filed Mar. 28, 1997, Ser. No. 827,306
Int. Cl.° A47B 9/00
U.S. Cl. 108—146 **10 Claims**



1. The combination comprising:

surface means;

base means;

means for supporting said surface means for movement between lower and upper positions relative to said base means;

a counterbalance mechanism for counterbalancing at least a part of the weight of said surface means during vertical movement between said positions and including a member coupled to said base means for movement about a first axis and said means for supporting said surface means, and spring means having a first end coupled to said base means and a second end coupled to said member by a rack and gear assembly for opposing movement of said surface means from said upper position towards said lower position, by varying a moment arm through which the spring acts about said first axis said rack and gear assembly having a rack having one edge and teeth extending along said one edge, said rack being supported by said member, first and second gears rotatable about each of two parallel axes respectively and having teeth arranged for engagement with each other and with said teeth of said rack, first and second link means having first ends connected with said first and second gears respectively for relative rotation about said two parallel axes and second ends connected to said spring for pivotal movement about a common axis disposed parallel to said two parallel axes, said two parallel axes and said common axis are on opposite sides of said rack, said spring tends to move said common axis trans-

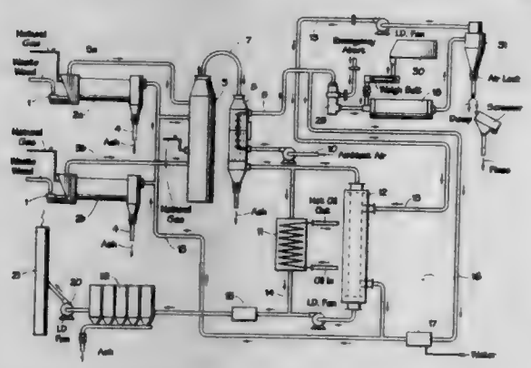
versely away from said rack and to bias said gears into releasably locking engagement with each other and with said rack to prevent movement of said further axis lengthwise of said rack, means for releasing said gears from locking engagement with each other and said rack to effect moment arm adjustment, and a brake mechanism for releasably opposing movement of said surface means from said upper position towards said lower position.

5,797,332

CLOSED LOOP GASIFICATION DRYING SYSTEM

Michael R. Keller, Tulsa; John R. Petersen, Pawnee, and David Caffey, Tulsa, all of Okla., assignors to Callidus Technologies, Inc., Tulsa, Okla.

Filed Aug. 11, 1995, Ser. No. 514,117
Int. Cl.[6] F23D 14/00
U.S. Cl. 110—226 17 Claims



1. An emissions reduction system for a wood or biomass dryer generating dryer exhaust having emissions therein, comprising:

(a) a rotary gasifier connected to the dryer exhaust and to a waste wood supply, the rotary gasifier adapted to blend and partially combust the waste wood and dryer exhaust; and

(b) a secondary combustion chamber adapted to receive and combust output from the rotary gasifier and provide a flue gas output having reduced content of volatile organic compounds, particulate and carbon monoxide below that of the dryer exhaust, wherein the temperature of the secondary combustion chamber controls the combustion rate of the rotary gasifier;

(c) a heat exchanger connected to an air source and receiving the flue gas output from the secondary combustion chamber, the heat exchanger heating the air source and forcing a first portion of the heated air to the wood or biomass dryer; and

(d) secondary means for cooling a second portion of the heated air.

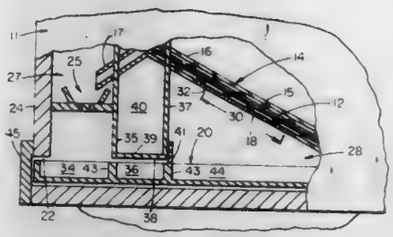
5,797,333

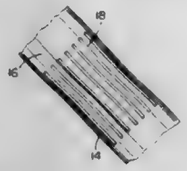
FUEL PELLET FINES COLLECTION SYSTEM

Carroll G. Hensley, 3769 Highway 11 E., Limestone, Tenn. 37681

Filed Mar. 11, 1997, Ser. No. 814,712
Int. Cl.[6] F23B 7/00
U.S. Cl. 110—233 15 Claims

11. A sieving combination for removing fuel pellet fines from the pellet feed mechanism of a wood pellet burning stove, wherein said mechanism consists of an auger shaft means adapted for connection to an electric drive motor for being rotated thereby, said shaft means being mounted in and surrounded by an auger barrel formed by a round tubular wall means which is structurally independent from and isolated from any fired portion of said stove, said wall means being provided with a sieve means comprising aperture means for allowing only the passage of pellet fines from said barrel





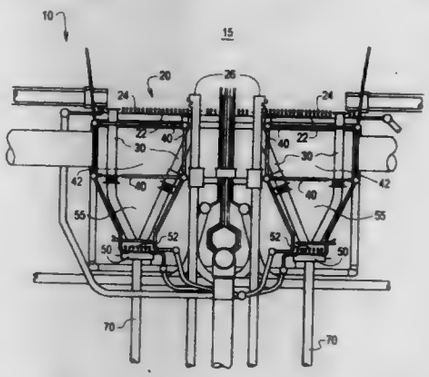
and into a fines collection means, said aperture means being of a structural form selected from the group consisting of (a) a plurality of small holes through at least the lower diametrical portion of said wall means, (b) at least one continuous spiral slot through said wall means, (c) at least one non-continuous spiral slot through said wall means, (d) a series of circumferentially spaced slots through said wall means and oriented axially thereof, or (e) a series of longitudinally spaced slots through said wall means and oriented angularly with respect to the barrel means axis.

5,797,334

FLUIDIZED BED BOILER WITH BED DRAIN ASH COOLING AND TRANSFER

Paul S. Weitzel, Canal Fulton, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 12, 1997, Ser. No. 799,724
Int. Cl.[6] F23G 5/00;7/00
U.S. Cl. 110—245 7 Claims



1. An ash cooling and removal system for a fluidized bed boiler, the system comprising:

a boiler tube panel floor;

a boiler bed region above the boiler tube panel floor or containing a hot ash;

a plurality of bubble caps projecting above the boiler tube panel floor for providing a fluidizing air to the boiler bed region;

a windbox beneath the boiler tube panel floor;

a plurality of ash hoppers beneath the windbox, each ash hopper having a cooling trough at a lower end, for concentrating the ash into smaller cooling regions which require less cooling air to control ash flow and cooling of ash by fluidization mixing in the cooling trough;

a plurality of standpipes extending from above the boiler tube panel floor through the windbox and into the ash hoppers, each standpipe having a lower end positioned above the cooling trough, each standpipe for transporting hot ash from the boiler bed region to one of the ash hoppers;

fluidizing means at each cooling trough for providing cooling air to cool the ash by fluidization mixing and for controlling a rate of flow of hot ash through each standpipe; and

ash removal means connected at the cooling trough of each ash hopper for draining cooled ash from each ash hopper.

5,797,335

Patent Not Issued For This Number

5,797,336

PROCESS FOR THE COMBUSTION OF WASTE MATERIAL WITH PRODUCTION OF THERMAL ENERGY

Patrick Müller, Schaffhausen, and Hans Rüegg, Wohlen, both of Switzerland, assignors to Von Roll Umwelttechnik AG, Zürich, Switzerland

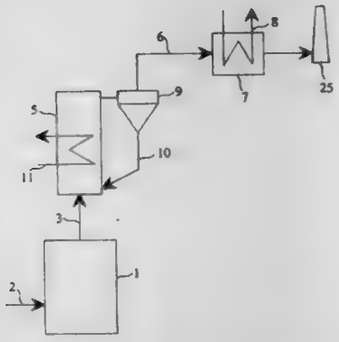
PCT No. PCT/CH96/00006, § 371 Date Oct. 24, 1996, § 102(e) Date Oct. 24, 1996, PCT Pub. No. WO96/21825, PCT Pub. Date Jul. 18, 1996

PCT Filed Jan. 8, 1996, Ser. No. 702,550

Claims priority, application Switzerland, Jan. 10, 1995, 52/95

Int. Cl.[6] F23J *11/00*

U.S. Cl. 110—345 **19 Claims**



1. A process for the combustion of waste material with production of thermal energy, the waste material being burnt in (I) a combustion step with a primary air feed containing an amount of oxygen at least necessary for complete combustion with the production of flue gases containing oxygen and unburnt substances and the gases from the combustion then being fed to (II) an afterburning step, wherein the afterburning of the oxygen-containing gases from the combustion (I) proceeds in a circulating fluidized bed of solids solely with the oxygen present in the flue gases from the combustion process to achieve complete burnup of the flue gases and to produce a flue gas stream containing solids discharged from the fluidized bed, which solids are, separated off from the flue gas stream and at least some of the solids discharged from the afterburning step are directed to and cooled in an external fluidized-bed cooler with heat recovery and at least a portion thereof are passed back to the afterburning step wherein the temperature in the afterburning step (II) is 700° C. to 1100° C. and is controlled independently of the operating state of the combustion step (I) by controlling the solids mass flow rates diverted into the fluidized-bed cooler and passed back to the afterburning step (II) and by this means, also, by controlling the rate of heat removed from the afterburning step, the remaining solids discharged from the afterburning step and separated off from the fluid gas stream being recycled to the afterburning step (II).

5,797,337

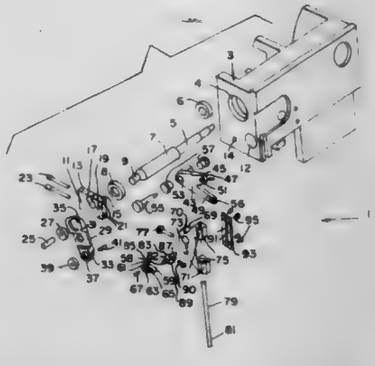
NEEDLE BAR DRIVE FOR A BUTTONHOLE SEWING MACHINE

Rudy Papajewski, and Gerd Papajewski, both of Stutensee, Germany, assignors to AMF Reece, Inc., Mechanicsville, Va.

Filed Apr. 8, 1996, Ser. No. 629,408

Int. Cl.[6] D05B *69/00; 3/06*

U.S. Cl. 112—221 **10 Claims**



1. A needle bar drive for a button hole sewing machine comprising a driving means, a drive shaft connected to the driving means, having a drive section and a crank end, a crank with a counter-weighted side and a smaller side, where the counter-weighted side has a large aperture passing through it and the smaller side has a smaller aperture passing through, and the drive shaft is connected to the crank with the crank end of the drive shaft passing through the large aperture, a crank link having a first end and a second end, where the crank is connected, through the smaller aperture of the crank to the first end of the crank link through a larger hole in the first end of the crank link, a fixed pin, a V-shaped rocker having a base, a crank leg, and a needle leg, where the rocker pivots on the fixed pin through a first opening in the base of the rocker, and the rocker is pivotally connected through a second opening in the crank leg to a smaller hole in the second end of the crank link, a needle bar with a needle end and a middle section, where the middle section is pivotally connected to the rocker through a third opening in the needle leg of the rocker, and a main needle, connected to the needle holder at the needle end, where the main needle carries thread through a workpiece in creating stitches.

5,797,338

ALTERNATING SEAM FOR GARMENTS AND METHOD OF SEWING THE ALTERNATING SEAM

Nancy A. Stone, P.O. Box 241, Stillwater, Minn. 55082

Filed Jan. 7, 1997, Ser. No. 779,531

Int. Cl.[6] D05B *93/00; A41D 1/06*

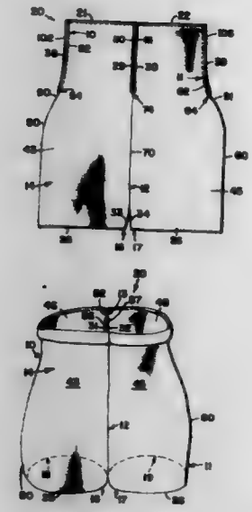
U.S. Cl. 112—475.13 **22 Claims**

1. An alternating seam for joining first and second pieces of stretchable fabric, each of the first and second fabric pieces having inner and outer sides, an upper edge and at least one longitudinal edge, said alternating seam comprising:

a non-inverted seam joining the first and second fabric pieces, said non-inverted seam extending from a seam inversion point to a desired length below said seam inversion point, said seam inversion positioned at a predetermined location below the upper edge of at least one of the first and second fabric pieces;

said outer side of said first fabric piece and said outer side of said second fabric piece in opposing contact with each other along said non-inverted seam;

an inverted seam joining the first and second fabric pieces, said inverted seam extending upwardly from said seam inversion point toward the upper edges of the first and second fabric pieces; and



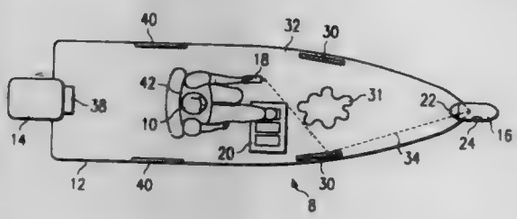
said inner side of said first fabric piece and said inner side of said second fabric piece in opposing contact with each other along said inverted seam.

5,797,339

OPTICAL REMOTE CONTROL FOR TROLLING MOTORS AND METHOD OF CONTROL

Prentice Gean Moore, Starkville, Miss., and Stephen P. Malak, Tulsa, Okla., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Dec. 12, 1996, Ser. No. 766,571
Int. Cl.[6] B63H *25/00*
U.S. Cl. 114—144 A 12 Claims



1. A system for controlling the direction and speed of a trolling motor mounted on a boat from a remote position, the system comprising:

a steering motor coupled to the trolling motor for turning the trolling motor relative to the boat for directional control thereof;

a throttle coupled to the trolling motor for controlling the speed of the trolling motor;

an optical transmitter for developing an optical signal representing the desired direction and speed for the trolling motor;

an optical receiver coupled to the steering motor and to the throttle on the trolling motor, the optical receiver for receiving the optical signal and activating the steering motor in response to the desired direction represented by the optical signal and for activating the throttle on the trolling motor in response to the desired speed represented by the optical signal; and

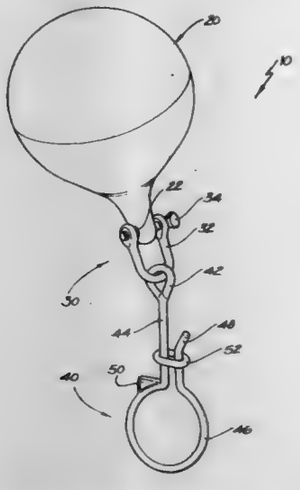
a reflecting surface on a portion of the boat capable of reflecting the optical signal to the optical receiver.

5,797,340

ANCHOR RETRIEVAL SYSTEM AND DEVICE

William Henry Peeters, 68 Mayers Drive, Tuncurry, New South Wales 2428, Australia

Filed Feb. 5, 1997, Ser. No. 795,977
Claims priority, application Australia, Feb. 5, 1996, PN7899
Int. Cl.[6] B63B *21/24*
U.S. Cl. 114—221 R 19 Claims



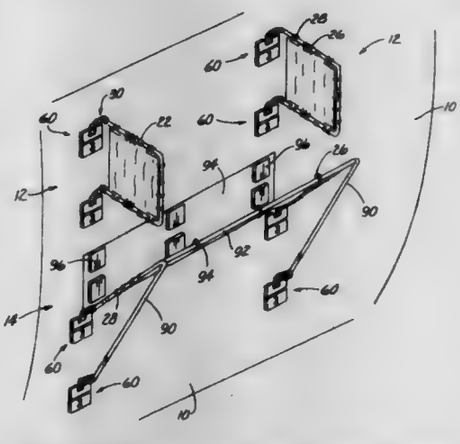
1. An anchor retrieval system comprising a buoy from which their depends an anchor retrieval device comprising an aperture through which an anchor chain and/or rope can pass, which anchor chain or rope in use has one end attached to a vessel and the other end attached to an anchor wherein said retrieval device comprises a connecting ring adapted for securing the retrieval device to the buoy, the retrieval device further comprising an anchor line ring depending from the connecting ring and having a neck situated therebetween, the anchor line ring terminating with a stem which is situated alongside said neck and retained in close proximity thereto by means of a locking ring.

5,797,341

DEBRIS COLLECTION APPARATUS FOR USE DURING BOAT HULL CLEANING

William L. Hood, 9950 S. Ocean Dr. Suite #1603, Jensen Beach, Fla. 34957

Filed May 6, 1997, Ser. No. 851,659
Int. Cl.[6] B63B *59/00*
U.S. Cl. 114—222 11 Claims



1. A debris collection apparatus for use during the cleaning of boat hulls, comprising:

(a) a debris collection tray comprising a sheet of flexible material suspended along three sides by a tubular support frame wherein said tubular support frame includes first and second V-shaped vertical end brackets connected by a horizontal cross member; and

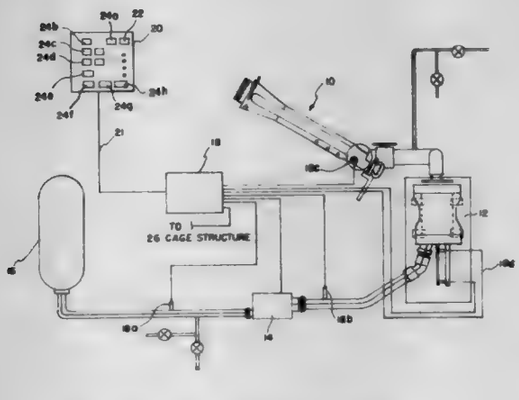
(b) means for temporary attachment of said tray to the boat hull.

5,797,342

SUBMERSIBLE DEVICE LAUNCHER

Delfino D. Ferreira, Middletown, and Nicholas O. Venier, Tiverton, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 10, 1997, Ser. No. 891,370
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—239 **9 Claims**



1. A submersible device launcher comprising:

an external cage structure;

a launcher barrel mounted to said external cage structure;

an impulse cylinder mounted to said external cage structure and in communication with said launcher barrel;

a firing valve joined to said cage structure and in communication with said impulse cylinder;

an air flask mounted on said cage structure and joined to said firing valve; and

a control device electrically joined to said launcher barrel, said impulse cylinder, and said firing valve.

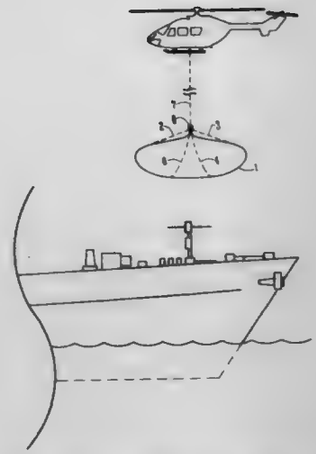
5,797,343

SYSTEM FOR ESTABLISHING A TOWING CONNECTION BETWEEN A MARINE CASUALTY AND A SALVAGE VESSEL

Gustav E. Piene, Oslo, Norway, assignor to Bukser og Bjergning AS, Norway

PCT No. PCT/NO94/00172, § 371 Date Aug. 9, 1996, § 102(e) Date Aug. 9, 1996, PCT Pub. No. WO95/12518, PCT Pub. Date May 11, 1995
PCT Filed Oct. 28, 1994, Ser. No. 637,772
Claims priority, application Norway, Nov. 4, 1993, 933989
Int. Cl.[6] B63B *21/56*
U.S. Cl. 114—242 **13 Claims**

1. A system for establishing a towing connection between a marine casualty and a salvage vessel, characterized in that it comprises a loop-forming arrangement which is held distended in the horizontal plane and which is connected to a towline, the towline being releasably connected to a distending system by means of a device whereby the connection is released and the



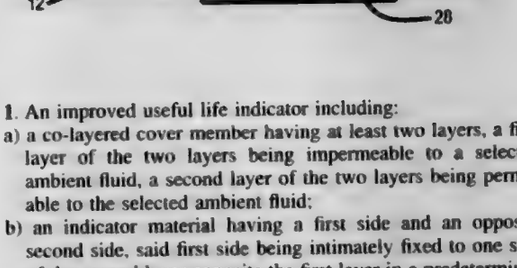
distending system loses its distending effect, the loop-forming arrangement defining an open and unobstructed space being adapted to be brought in over and around a strong structural member on the casualty.

5,797,344

ON-DEMAND USEFUL LIFE INDICATOR AND METHOD OF MAKING SAME

Joseph W. Ramsey, 11 Great Meadow La., East Hanover, N.J. 07936, and Peter L. Gill, 1 Kenley Way, Hackettstown, N.J. 07840

Filed Mar. 13, 1997, Ser. No. 816,970
Int. Cl.[6] G01D *21/00*
U.S. Cl. 116—206 **18 Claims**



1. An improved useful life indicator including:

a) a co-layered cover member having at least two layers, a first layer of the two layers being impermeable to a selected ambient fluid, a second layer of the two layers being permeable to the selected ambient fluid;

b) an indicator material having a first side and an opposite second side, said first side being intimately fixed to one side of the second layer opposite the first layer in a predetermined pattern so that any abutting surfaces of said one side and said first side being absent any voids therebetween, said indicator material having a selected composition providing a visual indication when exposed to a predetermined active component of the ambient fluid;

c) an adhesive applied with a predetermined pattern on a same side of the second layer of the cover member as the indicator material, said adhesive being impermeable with respect to the active component of said ambient fluid;

d) a base member being fixed to the adhesive while fully covering the opposite side of selected portions of the predetermined pattern of the indicator material; and

wherein the second layer provides a membrane between the ambient fluid and the indicator material, the first layer is selectably removable from said second layer for exposing said second layer, thus enabling the predetermined active component of the ambient fluid to permeate through the exposed

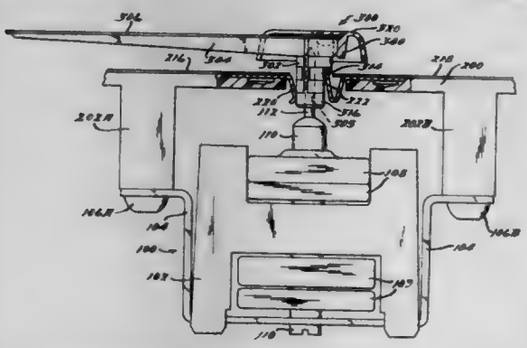
second layer thereby equally and uniformly exposing a selected portion of the predetermined pattern of the indicating material to the selected ambient fluid, to provide a visual indication being observable through the exposed surface of the second layer, the visual indication beginning after removal of said first layer and being completed near the end of a predetermined period of time.

5,797,345

ILLUMINATED POINTER FOR INSTRUMENT GAGE

William J. Evans, II, Brighton, and Michael J. Kowalski, Troy, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Nov. 13, 1996, Ser. No. 748,078
Int. Cl.[6] G01D *13/28*; G04B *19/04*;*19/32*
U.S. Cl. 116—286 **8 Claims**



5. An instrument gauge comprising:

a shaft mounted on said gauge for rotation about its longitudinal axis, and

an indicator mounted on said shaft to rotate with said shaft and to be swept over a predetermined arcuate rotational range along a plane that is transverse to said axis, wherein said indicator includes:

a base formed at one end of said indicator;

an elongated and generally narrow pointer portion formed to extend in a radial direction from said base;

an electrically energizable light source mounted on and extending along said pointer portion and said light source having first and second contact areas at one end thereof;

a socket formed in said base having a cylindrical opening formed about a central axis that is concentric with said axis of said shaft when mounted on said shaft and having an outer cylindrical surface that contains first and second electrically conductive areas that extend over separate portions of the circumference of said surface and are respectively interconnected to said first and second source contact areas; and

said gauge contains first and second electrical wiper contacts that make continual electrical interconnection to said first and second conductive areas of said socket over its rotational range.

5,797,346

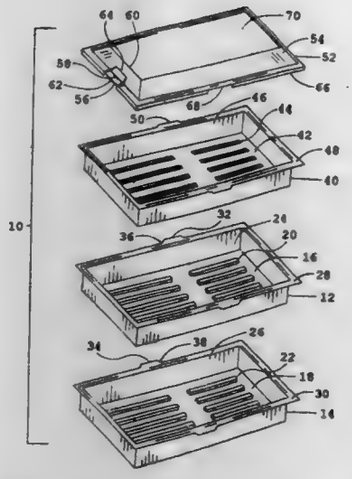
ODOR FREE LITTER SYSTEM

Michael R. Lewis, 16520 S. Tamiami Trail #18-281, Fort Myers, Fla. 33908

Continuation-in-part of Ser. No. 673,555, Jul. 1, 1996, abandoned. This application Jun. 4, 1997, Ser. No. 869,207
Int. Cl.[6] A01K *1/035*
U.S. Cl. 119—166 **3 Claims**

1. An odor free litter system for collecting, separating, and disposing of solid and clumped liquid pet waste while retaining the usable portion of the litter material comprising:

a first open top litter receptacle having an annular wall portion with an integrally formed handle means for lifting and gripping receptacle, and a solid bottom portion, the bottom portion having a plurality of raised projections formed thereon;



a substantially identical second open top litter receptacle having an annular wall portion with an integrally formed handle means for gripping and lifting receptacle, and a solid bottom portion, the bottom portion having a plurality of raised projections formed thereon, said first and second litter receptacles being interchangeable in a nestably stacked relationship;

an open top sifting receptacle having an annular side wall portion with an integrally formed handle means for lifting and gripping receptacle, and a bottom portion having a plurality of perforations through which clean, clumping type litter material may pass, said perforations being sufficiently small to block the passage of solid and clumped liquid pet waste therethrough, said sifting receptacle having a shape and dimensions substantially identical to said litter receptacles so that the sifting receptacle can be received by said litter receptacles in a nestably stacked relationship, said perforations being arranged such that they are interengagable with raised projections in an upper selected one of the stacked litter receptacles, whereby the projections fill the cavities which would otherwise be created by the perforations, and would otherwise be filled by litter material and then become clogged when litter material is wetted and agglomerates; whereby the sifting receptacle is lifted from said stacked litter receptacles and clean clumping type litter material is sifted through perforations into upper one of the stacked litter receptacles to separate waste from clean litter, said waste being disposed of from the sifting receptacle, and clean litter being reintroduced from upper litter receptacle into the sifting receptacle with other litter receptacle stacked below sifting receptacle so that clean litter can be reused.

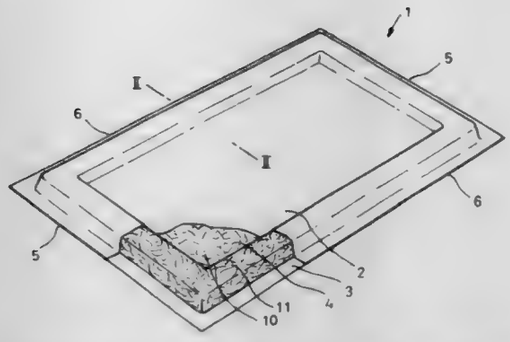
5,797,347

ABSORBENT PANEL FOR PET ANIMALS

Kengo Ochi, Ehime-ken, Japan, assignor to Uni-Charm Corporation, Ehime-ken, Japan

Filed Aug. 1, 1996, Ser. No. 691,048
Claims priority, application Japan, Aug. 2, 1995, 7-197730
Int. Cl.[6] A01K *1/035*; A61F *13/15*
U.S. Cl. 119—169 **12 Claims**

1. An absorbent panel for pet animals, comprising a liquid-permeable topsheet, a liquid-impermeable backsheet and a liquid-absorbent core panel disposed between said topsheet and backsheet, wherein said core panel comprises a relatively thin central region and a relatively thicker side edge region , an upper surface of said absorbent panel exposed to ambient environment being defined by said topsheet which is profiled such that a periphery thereof overlying said thicker side edge region is raised relative to a center portion of said topsheet overlying said central region, said



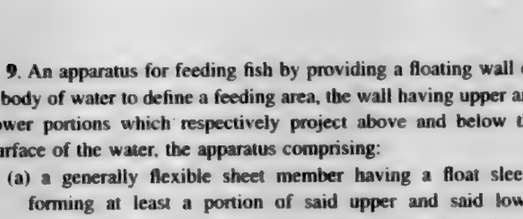
center portion thereby being depressed, wherein said side edge region contains superabsorptive polymer powders at least of 30 g/m^3 , wherein said polymer powders are distributed with an unevenly high density adjacent said backsheet.

5,797,348

FEED METHOD AND APPARATUS FOR FISH FARMS

Mesbah Taherzadeh, West Vancouver, Canada, assignor to Pacific Pool Water Products Ltd., Langley, Canada

Filed Sep. 7, 1995, Ser. No. 524,686
Int. Cl.[6] A01K *61/00*
U.S. Cl. 119—230 **30 Claims**



9. An apparatus for feeding fish by providing a floating wall on a body of water to define a feeding area, the wall having upper and lower portions which respectively project above and below the surface of the water, the apparatus comprising:

(a) a generally flexible sheet member having a float sleeve forming at least a portion of said upper and said lower portions of the wall, and a first structural sleeve formed in at least a portion of said upper portion of said wall,

(b) a float received and held within said float sleeve to create buoyancy forces on said flexible sheet member sufficient to float on the water, and

(c) a relatively stiff first structural member received and held within said first structural sleeve, the first structural member being sufficiently stiff to define shape of the wall;

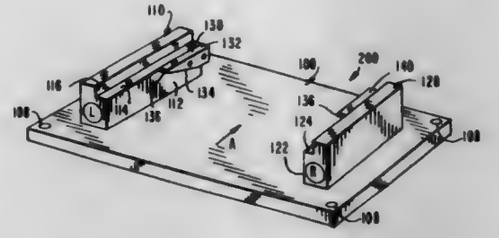
so that the upper portion of the wall can project sufficiently above the surface of the water to generally protect said feeding area from wind to restrict feed within said feeding area from being blown by the wind, while providing access to supply food to said feeding area; and the lower portion of the wall can project sufficiently below the surface of the water to reduce chances of openings occurring between said wall and surface of the water due to surface disturbances on the water, but not projecting sufficiently far below the surface to generally inhibit first access to said feeding area.

5,797,349

FILTER TOP CHANGE STATION FOR AN ANIMAL CAGE

Chin Soo Park, Salisbury, Md., assignor to Lab Products, Inc., Seaford, Del.

Filed Nov. 1, 1996, Ser. No. 742,992
Int. Cl.[6] A01K *1/035*
U.S. Cl. 119—419 **6 Claims**



1. A filter top change station for animal cages comprising:

a base board;

a first guide support;

a second guide support separated from said first guide support to define a cage top slide path; and

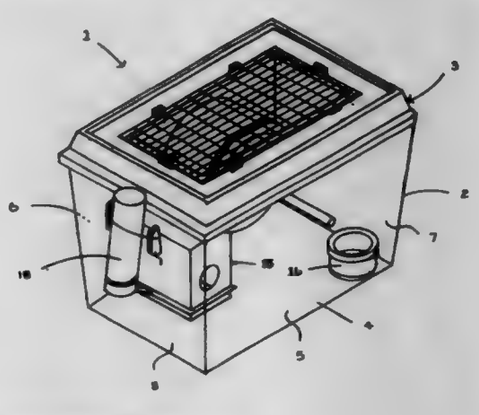
a first separator mounted on said first guide support along said cage slide path for separating a filter retainer from a cage top when said cage top is moved along said first guide support and second guide support along said cage top slide path.

5,797,350

ENCLOSURE FOR SMALL ANIMALS

Stephen L. Smith, 7907 Brown Dr., Knoxville, Tenn. 37998

Filed Apr. 10, 1997, Ser. No. 838,578
Int. Cl.[6] A01K *1/00*
U.S. Cl. 119—475 **3 Claims**



1. An enclosure, comprising:

a base unit, said base unit being comprised of a base and a first and second pair of opposed upwardly depending walls, (said first and second pair of opposed upwardly depending walls being fastened to said base,) said base having a plurality of receiving means, wherein said base comprises a structure being removably fastened to at least one of said receiving means; said first and second pair of opposed upwardly depending walls having a plurality of receiving means, said base being comprised of a thermoplastic material, said first and second pair of opposed upwardly depending walls being comprised of a thermoplastic material; and

a lid being removably fastened to said first and second pair of opposed upwardly

depending walls, said lid being comprised of a thermoplastic material.

5,797,351

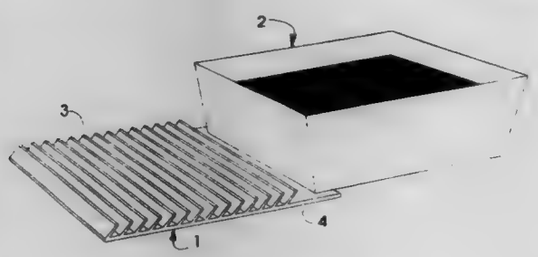
Patent Not Issued For This Number

5,797,352

PAW CLEANING LITTER MAT

Michael Adrian Ebert, R.R. #4, Thamesford, Canada, N0M 2M0

Filed Dec. 22, 1995, Ser. No. 576,908
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—652 13 Claims



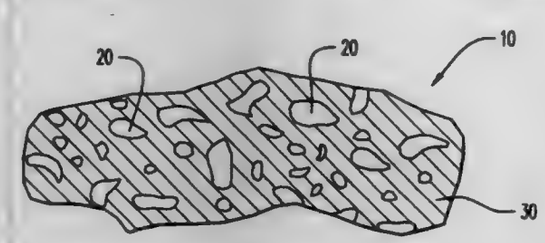
1. A mat that sits in front of a litter box which animals step on while exiting the litter box whose function is to collect the litter particles which are trapped on the animals paws comprising of a series of evenly distributed inclined raised louvers spaced at such a distance between the louvers to permit a supportive walking surface for an animal yet enough height and distance apart for the collection of litter particles between each louver.

5,797,353

OBJECT IMPREGNATED WITH CATNIP FOR ATTRACTING A CAT AND A PROCESS FOR MAKING SAME

Arthur B. Leopold, 129 Sandpiper Key, Secacus, N.J. 07094

Filed Nov. 14, 1995, Ser. No. 557,612
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—710 28 Claims



1. A plastic object for attracting a cat, comprising:

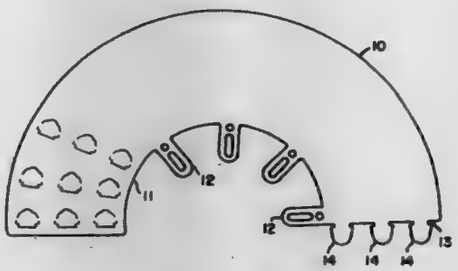
catnip particles dispersed throughout a pliable base material that does not mask an odor of said catnip particles dispersed therein, said pliable base material being selected from the group consisting of a styrene-butadiene-styrene block copolymer, an ethylene vinyl acetate copolymer, a polyethylene homopolymer and a flexible polyvinyl chloride compound.

5,797,354

COLLAR FOR MOUNTING AROUND THE NECK OF AN ANIMAL

Peter Hoegh Marschall, Faaborg, Denmark, assignor to Jorgen Kruuse A/S, Marslev, Denmark

PCT No. PCT/DK95/00086, § 371 Date Oct. 24, 1996, § 102(e) Date Oct. 24, 1996, PCT Pub. No. WO95/22891, PCT Pub. Date Aug. 31, 1995
PCT Filed Feb. 27, 1995, Ser. No. 700,478
Claims priority, application Denmark, Feb. 28, 1994, 0238/94
Int. Cl.[6] A01K *15/04*
U.S. Cl. 119—815 4 Claims



1. A collar for mounting around the neck of an animal, the collar comprising:

web of a flexible material;

a protruding tongue contiguous with the web;

a first through slot through which the tongue is passed when the collar is mounted around the neck of the animal, the first slot having a length permitting the entire tongue to be passed through the first slot;

a second through slot spaced from the first slot by a distance less than the length of the tongue;

the tongue being contiguous with the web being a rib having a specific width, the tongue having a central part of a width greater than the width of the rib and an outer end of a width smaller than the width of the central part;

the first slot having portions at opposed ends thereof, said opposed portions being angled towards the second slot and having a distance between them which is greater than the width of the rib and smaller than the width of the central part; and

the spacing of the first and second slots and the length of the tongue being such that when the rib is present in the first slot, and the central part of the tongue has its inner end adjacent the opposed angled portions, the outer end of the tongue can be positioned in the second slot.

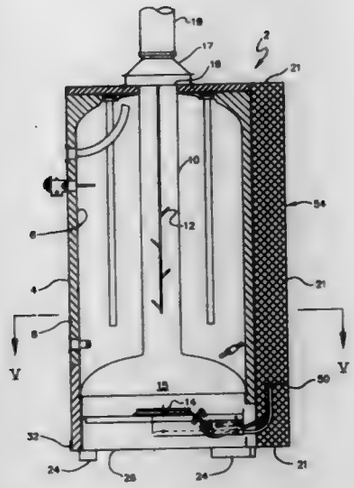
5,797,355

IGNITION INHIBITING GAS WATER HEATER

Brendan Vincent Bourke, Gordon; Zoran Valcic, Chatswood, and Geoffrey Mervyn Whitford, Dundas, all of Australia, assignors to SRP 687 Pty Ltd, Australia

Filed Apr. 3, 1996, Ser. No. 626,844
Claims priority, application Australia, Apr. 4, 1995, PN2136; Sep. 22, 1995, PN5591
Int. Cl.[6] F22B *5/00*
U.S. Cl. 122—13.1 29 Claims

1. A gas water heater comprising a water container adapted to be heated by a gas burner; and an enclosure surrounding said burner,



said enclosure having at least one entry means adapted to allow air and extraneous fumes to enter said enclosure and prevent ignition of extraneous fumes outside of said enclosure.

5,797,356

SIMPLEST HIGH EFFICIENCY UNIVERSAL WATER HEATER

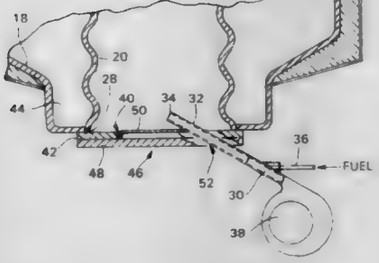
Adam Khizh, New York, N.Y., assignor to AGA Technologies, Inc., Langhorne, Pa.

Filed Jan. 29, 1996, Ser. No. 593,037

Int. Cl.[6] F22B *5/00*

U.S. Cl. 122—17 **18 Claims**





1. A high efficiency water heater comprising:

a water tight tank adapted to contain hot water under pressure, said tank including a tank walls, top and bottom head members, and a flue pipe with a circle-shaped cross section extending vertically through the tank from the bottom to the top, the flue pipe having a top end and a bottom end with an opening defined at each end;

a low pressure plenum blower which supplies air for combustion of fuel under a pressure of at least approximately 100 Pa (10 mm W.C.);

a burner which is adapted to receive fuel from a fuel source and air from said plenum blower in an amount equal to at least 100% of the stoichiometric requirement for complete combustion of the fuel, which mixes the fuel and the air and issues a fuel/air mixture through the bottom end of the flue pipe into the fuel pipe through the use of a nozzle, said nozzle has a tangential direction to the inside surface of the flue pipe and is directed aslant up from horizontal at an angle of about 5° to about 45°; and

a cold water inlet tube which passes through and is fixed to said tank.

5,797,357

APPARATUS FOR FORMING PROTECTIVE FILMS IN WATER FEED PIPES OF BOILER

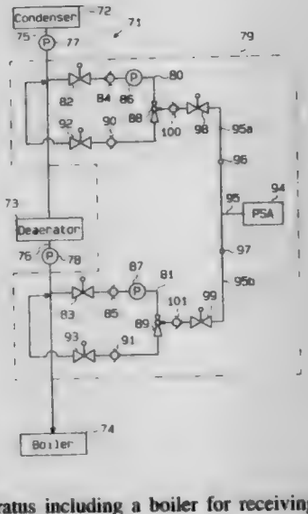
Atsushi Kawachi, Kani; Norifumi Matsuda, Inuyama, and Akiyoshi Hayashi, Gifu, all of Japan, assignors to Energy Support Corporation, Japan

Filed Oct. 20, 1995, Ser. No. 545,972

Claims priority, application Japan, Oct. 21, 1994, 6-257121; Dec. 22, 1994, 6-320660; Dec. 27, 1994, 6-326129; May 22, 1995, 7-122599; May 12, 1995, 7-144787

Int. Cl.[6] F22B *37/48*

U.S. Cl. 122—398 **11 Claims**



1. An apparatus including a boiler for receiving water from a water feed pipe and heating the water into steam and a condenser for condensing, said steam into condensate, wherein said condensate is fed back to the boiler through the water feed pipe, said apparatus comprising:

a solute source including a solute selected from a group consisting of oxygen, hydrogen peroxide and ozone;

means for generating an aqueous solution by dissolving the solute supplied from the solute source into water;

means for supplying the aqueous solution to the water feed pipe to form a protective film made of iron oxide on an inner surface of the water feed pipe;

wherein said supplying means includes a bypass pipe for receiving the condensate from the water feed pipe and feeding the condensate to the water feed pipe, and wherein said generating means includes means for introducing the solute into the bypass pipe to mix the solute with the condensate; and

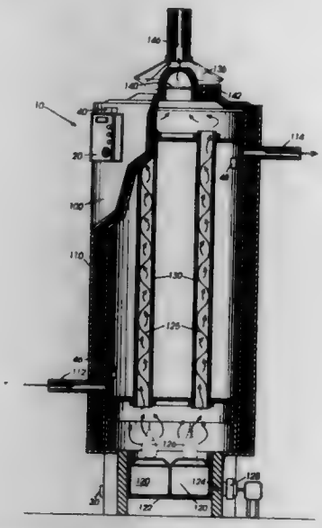
wherein said introducing means includes a solute feed pipe connected to the bypass pipe to supply the solute to the bypass pipe, and second generating means for generating negative pressure at a junction of the bypass pipe and the solute feed pipe to draw the solute to the bypass pipe from the solute feed pipe.

5,797,358

CONTROL SYSTEM FOR A WATER HEATER

John H. Brandt, Carrollton; Randall T. Meyer, Garland, and Bradley N. Plank, Dallas, all of Tex., assignors to AOS Holding Company, Wilmington, Del.

Filed Jul. 8, 1996, Ser. No. 677,645
Int. Cl.[6] F22B 37/42
U.S. Cl. 122—448.1 25 Claims



1. A water heater, comprising:
a tank dimensioned for containing a quantity of water, said tank having a top and a bottom;
a heat exchanger positioned in said tank;
means for combusting a mixture of gas and air, said combusting means being positioned proximate to said bottom of said tank, said combusting means in operational connection with said heat exchanger;
a draft hood positioned on said top of said tank, said draft hood being in fluid communication with said heat exchanger;
a vent pipe extending from said draft hood;
an air intake channel, said air intake channel being in fluid communication with said combusting means; and
means for controlling said water heater, said controlling means comprising:
a control panel supported by said exterior of said tank, said panel being in operational connection with said combusting means,
means carried by said water heater for sensing the presence of flammable gases, said flammable gases sensing means being in electrical connection with said control panel, said sensing means issuing a signal to said control panel when said flammable gases sensing means senses a preselected concentration of a flammable gas, said control panel discontinuing the operation of said combusting means upon receipt of said signal from said flammable gases sensing means, and wherein said flammable gases sensing means is positioned proximate to said air intake channel to sense flammable gases before said flammable gases reach said combusting means.

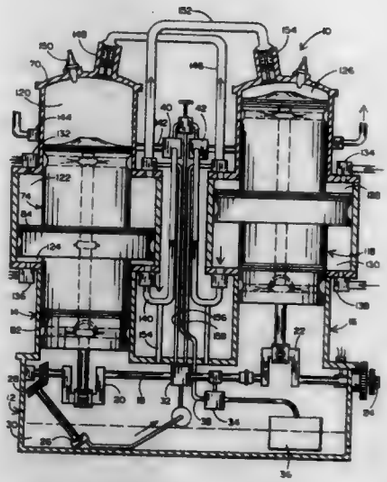
5,797,359

STEPPED PISTON TWO-CYCLE INTERNAL COMBUSTION ENGINE

Quilla H. Freeman, 1048 Gardner St., Los Angeles, Calif. 90046

Filed Jun. 13, 1997, Ser. No. 874,945
Int. Cl.[6] F01M 3/04
U.S. Cl. 123—58.5 20 Claims

1. A stepped piston internal combustion engine comprising:



a crankshaft rotatably mounted in said engine, said crankshaft having first and second cranks, said first and second cranks being angularly related with respect to each other;
first and second cylinder assemblies on said engine, said first and second cylinder assemblies each being stepped cylinder assemblies defining first and second combustion spaces and first and second compression spaces respectively in said first and second cylinder assemblies;
first and second stepped piston assemblies respectively mounted in said first and second cylinder assemblies, said first and second piston assemblies each having a piston for reciprocating in said combustion space and a piston for reciprocating in said compression space, each said piston assembly comprising a lower piston, a center piston and an upper piston, said upper and lower pistons being of the same diameter, each of said pistons having a skirt and having a lubrication opening through each of said skirts, each of said pistons having piston rings thereon on the side of said lubrication opening toward said upper piston;
first and second poppet valves respectively mounted on said first and second cylinder assemblies for permitting passage into said combustion spaces;
an air tube connecting said first compression space to said second combustion space and an air tube connecting said second compression space to said first combustion space so that said first compression space delivers air to said second combustion space and said second compression space delivers air to said first combustion space; and
first and second connecting rods connected to be actuated by said crankshaft and respectively connected to reciprocate said first and second piston assemblies in said first and second cylinder assemblies.

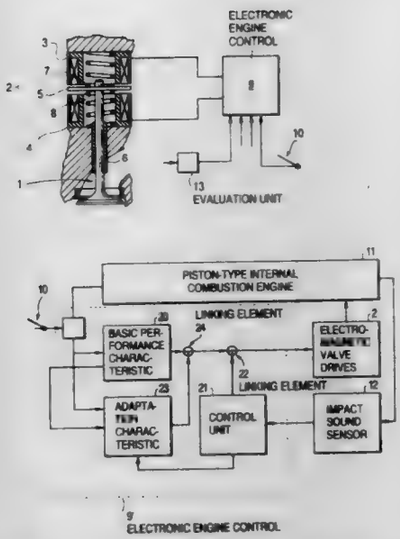
5,797,360

METHOD FOR CONTROLLING CYLINDER VALVE DRIVES IN A PISTON-TYPE INTERNAL COMBUSTION ENGINE

Franz Pischinger, Aachen; Matthias Schneider, Aldenhoven; Guenter Schmitz, Aachen; Martin Pischinger, Aachen, and Thomas Esch, Aachen, all of Germany, assignors to FEV Motorentechnik GmbH & Co KG, Aachen, Germany

Filed Jun. 13, 1997, Ser. No. 874,224
Claims priority, application Germany, Jun. 14, 1996, 196 23 698.3
Int. Cl.[6] F01L 9/04
U.S. Cl. 123—90.11 13 Claims

1. A method for controlling a cylinder valve drive operatively arranged for driving a cylinder valve of a cylinder in a piston-type internal combustion engine, comprising:
detecting vibration signals generated during operation by at least one of the cylinder valve drive and the cylinder valve; and



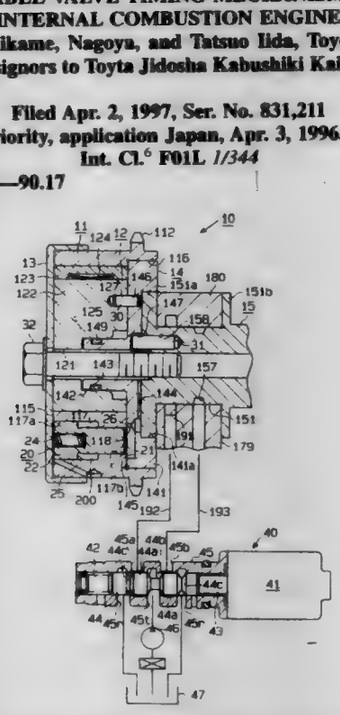
actuating the cylinder valve drive in dependence on a value of the detected vibration signals which corresponds to at least one of impact time and impact speed of the cylinder valve.

5,797,361

VARIABLE VALVE TIMING MECHANISM FOR INTERNAL COMBUSTION ENGINE

Kazuhisa Mikame, Nagoya, and Tatsuo Iida, Toyota, both of Japan, assignors to Toyta Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 2, 1997, Ser. No. 831,211
Claims priority, application Japan, Apr. 3, 1996, 8-81456
Int. Cl.[6] F01L *1/344*
U.S. Cl. 123—90.17 **31 Claims**



1. A variable valve timing mechanism for an internal combustion engine, the engine having a drive shaft, a driven shaft driven by the drive shaft, and at least one valve driven by the driven shaft, the mechanism varying the rotational phase of the driven shaft with respect to the drive shaft to vary the timing of the valve, the mechanism including a first rotary member for a rotation in synchronism with the drive shaft and a second rotary member for a rotation in synchronism with the driven shaft, wherein the position of the second rotary member with respect to the first rotary member varies to change the rotational phase of the driven shaft with respect to the drive shaft, the mechanism comprising:

an actuating member movable in a first direction and a second direction opposite to the first direction, the actuating member moving in the first direction to advance the valve timing, the actuating member moving in the second direction to retard the valve timing, wherein the movement of the actuating member rotates the second rotary member with respect to the first rotary member to change the rotational phase of the driven shaft with respect to the drive shaft;

the actuating member having a first side and a second side opposite to the first side;

a first hydraulic chamber located on the first side of the actuating member;

a second hydraulic chamber located on the second side of the actuating member;

means for supplying hydraulic pressure to one of the first hydraulic chamber and the second hydraulic chamber to move the actuating member in one of the first direction and the second direction, the supplying means being selectively activated and deactivated based on an operation state of the engine;

a lock member for locking the second rotary member to the first rotary member in a predetermined position to fix the rotational phase of the driven shaft with respect to the drive shaft, wherein the lock member is movable between a first position and a second position, wherein the lock member immovably holds the actuating member with respect to the hydraulic chambers to lock the second rotary member with respect to the first rotary member in the first position, and wherein the lock member releases the actuating member to unlock the second rotary member with respect to the first rotary member in the second position; and

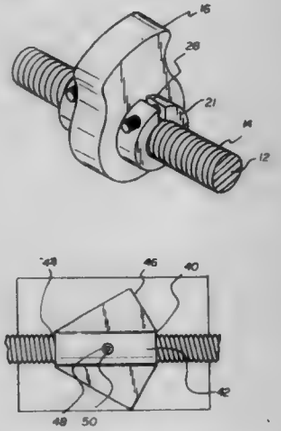
the lock member being held in the first position when the engine is out of operation, the lock member being moved to the second position based on the hydraulic pressure supplied by the supplying means upon the operation of the engine, wherein the hydraulic pressure maintains the lock member in the second position.

5,797,362

COMBUSTION ENGINE WITH ADJUSTABLE CAM AND LUBRICATION MEANS

Myron S. Taller, 1270 N. Ave. M2, New Rochelle, N.Y. 10804

Filed Mar. 24, 1997, Ser. No. 823,338
Int. Cl.[6] F01L *1/34*; F01M *9/10*
U.S. Cl. 123—90.17 **4 Claims**



2. A combustion engine with adjustable cam comprising:

a cam shaft;

at least one cam having an adjustable cam securement means for allowing the cams to be adjusted along the cam shaft thereby adjusting the timing in which the cams abut associated cam followers;

wherein the adjustable cam securement means includes a plurality of threads formed in the cam shaft with the threads being serpentinely configured along the cam shaft and further a threaded bore formed in a first end of each cam, the threaded bore of each cam adapted to be threadedly coupled with the threads of the cam shaft; and

wherein the adjustable cam securement means further includes a plurality of cam securement mechanisms each being ring-shaped and having an outer circumference, an inner circumference with a plurality of threaded grooves formed therein, and a slot formed between the inner circumference and the outer circumference defining two free ends for allowing the inner circumference to be adjusted, each adjustable cam securement mechanism further having a pair of axially aligned threaded apertures formed in the free ends and an adjustment bolt for allowing a user to manually adjust the inner circumference of each adjustable cam securement mechanism, wherein the threaded grooves of the inner circumference of the adjustable cam securement mechanisms are screwably engaged with the threads of the cam shaft on opposite sides of each cam with the adjustment bolts each having a first tightened orientation for precluding the adjustability of the associated cam and a second loosened orientation for allowing the adjustability of the associated cam.

4. A combustion engine with lubrication means comprising a cam shaft having a plurality of threads formed in the cam shaft with the threads being serpentinely configured along the cam shaft, the lubrication means further including a central portion having a cylindrical configuration, the central portion having a threaded bore axially formed therein with a pair of fins integrally coupled to an outer surface thereof and extended radially outward therefrom, each fin having a triangular configuration, the oil agitator further having a threaded aperture formed in the central portion thereof between the outer surface and threaded bore for allowing a set bolt to be screwably inserted therein, the threaded bore of each oil agitator adapted to be threadedly engaged with the threads of the cam shaft for allowing the adjustability thereof, the adjustment bolt of each oil agitator each having a first tightened orientation for precluding the adjustability of the associated oil agitator and a second loosened orientation for allowing the adjustability of the associated oil agitator.

5,797,363

ENGINE VALVE ADJUSTER

Hideo Nakamura, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 11, 1997, Ser. No. 927,997
Claims priority, application Japan, Sep. 13, 1996, 8-243604
Int. Cl.° F01L *1/344;13/00;* **F02D** *13/02*
U.S. Cl. 123—90.17 **13 Claims**

1. An apparatus for adjusting the valve performance of an internal combustion engine valve, the apparatus having a pressure chamber for receiving oil, wherein the apparatus is hydraulically driven by the oil pressure, the apparatus comprising:

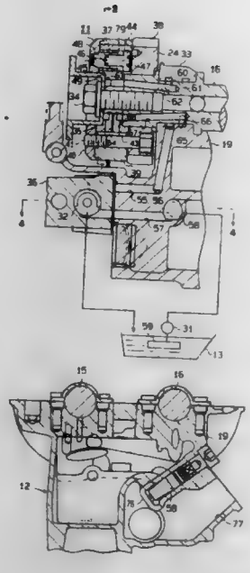
a reservoir for reserving oil;

a pump for discharging the oil from the reservoir;

a control valve for controlling the oil flow from the pump;

a passage for connecting the control valve to the pressure chamber to supply the oil to the pressure chamber;

a filter positioned in the passage for filtering the oil; and



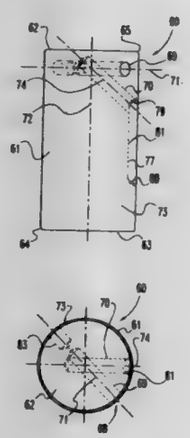
a heater for heating the filter to a temperature that is approximately the same as that of an interior part of the engine.

5,797,364

TOP TROUGH CAM ROLLER PIN

Matthew P. Meek, and Frank M. Hager, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Nov. 1, 1996, Ser. No. 740,698
Int. Cl.° F01M *9/10*
U.S. Cl. 123—90.36 **10 Claims**



1. A cam roller pin comprising:

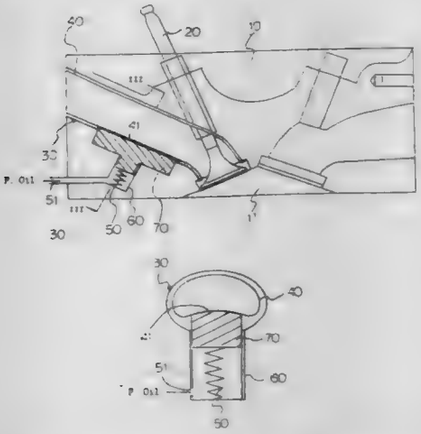
a substantially cylindrical pin body bounded by a pair of oppositely-disposed ends and having a length which extends from one end to the opposite end, said pin body defining an oblong trough therein which has a length that is at least 30 percent of the length of the pin body, said pin body having an outer surface and defining a passageway extending from said outer surface, through said pin body and into said oblong trough, wherein said passageway includes a first portion which extends into said pin body from a first entry location and a second portion which extends into said pin body from a second entry location, said first and second entry locations being separated from each other circumferentially and axially, said first portion intersecting said second portion.

5,797,365

INTAKE PORT DEVICE FOR AN ENGINE OF A VEHICLE

Yoon-Taek Kim, Kyungki-do, Rep. of Korea, assignor to Hyundai Motor Co., Ltd., Seoul, Rep. of Korea

Filed Jul. 5, 1996, Ser. No. 674,569
Int. Cl.[6] F02M *35/00*
U.S. Cl. 123—184.56 **17 Claims**



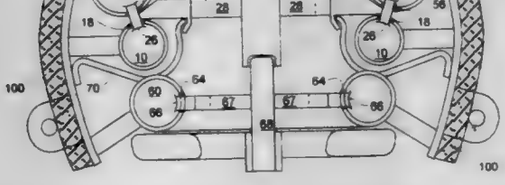
1. An intake port device for an engine of a vehicle, comprising:
a cylinder head having an intake port therein;
an intake valve, disposed at an end of said intake port leading to an engine cylinder, for opening and closing said intake port; and
cross-section control means for controlling a cross-sectional area of a portion of said intake port, said cross-section control means including,
an elastic member disposed about an inner circumference of said intake port;
a piston member forming a portion of an inner wall of said intake port, and being covered by said elastic member.

5,797,366

TOROIDAL INTERNAL COMBUSTION ENGINE

Victor Isaevich Adamovski, Petah Tikvah, Israel, assignor to New Devices Engineering A.K.O. Ltd., Petah Tikvah, Israel

Filed Nov. 1, 1996, Ser. No. 743,434
Int. Cl.[6] F02B *53/00*
U.S. Cl. 123—237 **35 Claims**



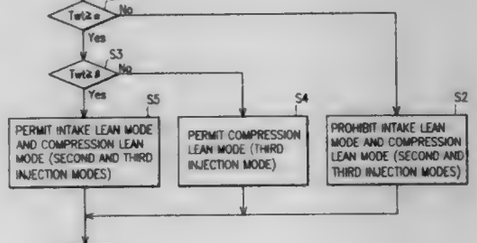
1. An internal combustion engine for driving a power shaft having an axis of rotation, comprising:
(a) a substantially toroidal combustion chamber housing having an inner surface and a circumferential, longitudinal combustion housing slot;
(b) at least one combustion chamber housing piston, having a peripheral surface, slidably mounted within said combustion chamber housing;
(c) a substantially annular combustion chamber housing seal, rigidly attached to said at least one combustion chamber housing piston, slidably mounted within said combustion chamber housing slot so as to substantially fill said combustion chamber housing slot, and operationally connected to the power shaft so as to transmit force from said at least one combustion chamber housing piston to the power shaft;
(d) a plurality of ring seal cooling channels within said combustion chamber housing ring seal;
(e) a plurality of piston cooling channels within said at least one combustion chamber housing piston; and
(f) a labyrinth seal between said combustion chamber housing ring seal and said inner surface of said combustion chamber housing.

5,797,367

CONTROL APPARATUS FOR AN IN-CYLINDER INJECTION INTERNAL COMBUSTION ENGINE

Kazumasa Iida; Katsuhiko Miyamoto; Hitoshi Kamura, all of Kyoto; Hiroki Tamura, Aichi, and Atsuyoshi Kojima, Toyota, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1997, Ser. No. 907,510
Claims priority, application Japan, Aug. 9, 1996, 8-210805; Nov. 12, 1996, 8-300483
Int. Cl.[6] F02B *17/00;5/00*
U.S. Cl. 123—295 **6 Claims**



1. A control apparatus for an in-cylinder injection internal combustion engine, the engine having a fuel injection device for injecting fuel directly into a combustion chamber and operable in an intake-stroke injection mode where the fuel is injected mainly in an intake stroke and in a compression-stroke injection mode where the fuel is injected mainly in a compression stroke, comprising:
injection mode selection means for selecting an injection mode in accordance with an operating state of the internal combustion engine;
injection timing setting means for setting a reference injection timing, indicative of a fuel injection start or termination timing, in accordance with the injection mode selected by said injection mode selection means, and for correcting the thus set reference injection timing so as to obtain such a fuel evaporation rate and a fuel stratification degree as to ensure stabilized combustion of the fuel injected into the combustion chamber when said injection mode selection means selects the compression-stroke injection mode, the fuel evaporation rate and the fuel stratification degree varying in dependence on an engine temperature; and
fuel injection control means for controlling the fuel injection device in accordance with the reference injection timing set or corrected by said injection timing setting means.

5,797,368

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE HAVING AT LEAST ONE CYLINDER

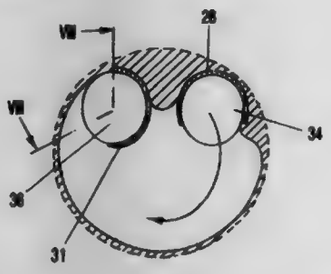
Peter Kreuter, and Peter Heuser, both of Aachen, Germany, assignors to Meta Motoren- und Energie-Technik GmbH, Herzogenrath, Germany

Filed Sep. 23, 1996, Ser. No. 717,972

Claims priority, application Germany, Sep. 21, 1995, 195 35 147.9

Int. Cl.[6] F02B *31/08*

U.S. Cl. 123—308 **15 Claims**



1. A reciprocating piston internal combustion engine, comprising:

at least one cylinder with a spark plug and at least one piston reciprocating within said at least one cylinder;

at least two intake ducts, each having a mouth connected to said cylinder and a valve seat located at said mouth;

at least two intake valves, each resting at one of said valve seats in a closing position of said intake valves;

a control device for controlling the lift action of said intake valves;

wherein a wall portion of a first one of said intake ducts is located downstream of said valve seat and extends along the entire circumference of said first intake duct parallel to a direction of movement of said intake valve correlated with said first intake duct over a length matching the length of small valve lifts.

5,797,369

AIR-FUEL RATIO CONTROL SYSTEM HAVING FUNCTION OF AFTER-START LEAN-BURN CONTROL FOR INTERNAL COMBUSTION ENGINES

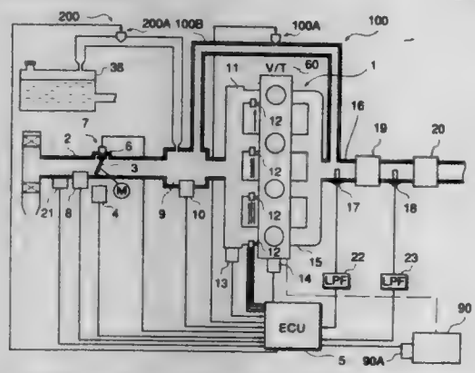
Norio Suzuki; Koichi Fujimori; Yusuke Hasegawa; Hiroki Munakata; Shusuke Akazaki, and Masuhiro Yoshizaki, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 603,278, Feb. 20, 1996, Pat. No. 5,715,796. This application Aug. 13, 1997, Ser. No. 910,154

Claims priority, application Japan, Feb. 24, 1995, 7-61784; Feb. 27, 1995, 7-38870

Int. Cl.[6] F02D *41/06;41/14*

U.S. Cl. 123—436 **1 Claim**



1. An air-fuel ratio control system for an internal combustion engine, said control system controlling an air-fuel ratio of a mixture supplied to said engine to a value leaner than a stoichiometric air-fuel ratio immediately after start of said engine, comprising:

rotation change-detecting means for detecting a change in rotational speed of said engine;

misfire-detecting means for detecting occurrence of a misfire of said engine; and

air-fuel ratio-changing means for changing said air-fuel ratio of said mixture supplied to said engine to a value richer than said leaner value when at least one of a condition that the detected change in the rotational speed of said engine is larger than a predetermined value and a condition that said occurrence of said misfire of said engine has been detected is fulfilled.

5,797,370

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

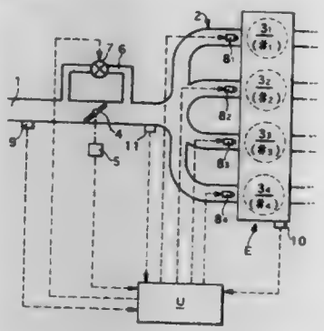
Eisuke Kimura; Toru Yano; Kohei Hanada; Yusuke Tatara; Takashi Haga, and Masanori Hayashi, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1997, Ser. No. 804,008

Claims priority, application Japan, Feb. 21, 1996, 8-033337

Int. Cl.[6] F02D *41/04;* F02M *25/07*

U.S. Cl. 123—478 **20 Claims**



1. An air-fuel ratio control system for an internal combustion engine, comprising: fuel injection valves provided for cylinders, a target air-fuel ratio setting means for setting a target air-fuel ratio based on an operational state of the internal combustion engine, a fuel injection amount control means for changing the amount of fuel injected from said fuel injection valves for every cylinder based on the target air-fuel ratio, and a drawn-air amount control means for controlling the amount of air drawn into the internal combustion engine, wherein said drawn-air amount control means corrects a basic drawn-air amount in accordance with the change in the amount of fuel injected into each of the cylinders.

5,797,371

CYLINDER-DISABLING CONTROL SYSTEM FOR MULTI-CYLINDER ENGINE

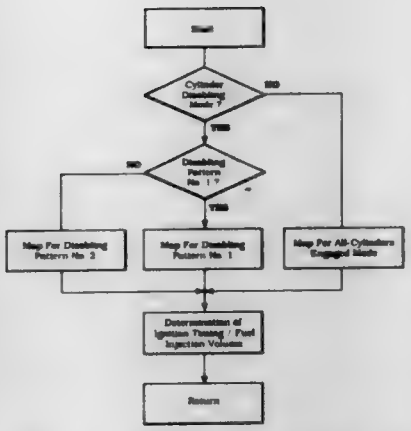
Kimihiro Nonaka, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 11, 1996, Ser. No. 613,890

Int. Cl.[6] F02D *17/02*

U.S. Cl. 123—481 **21 Claims**

1. A cylinder-disabling control system for a multi-cylinder engine V-type engine having plural cylinders on each of two banks, each of said banks having a plurality of exhaust ports for discharging exhaust products through an exhaust manifold to which each exhaust port is connected, said control system comprising an engine performance sensor for sensing the engine performance, an operation mode selector for selecting either a cylinder-disabling mode in which at least one but not all of said cylinders are disabled, or an all-cylinders-engaged mode in which all of said cylinders are operated depending on the engine performance and a resuming controller for resuming cylinder operation by resuming operation of said at least one disabled cylinder one at a time, when



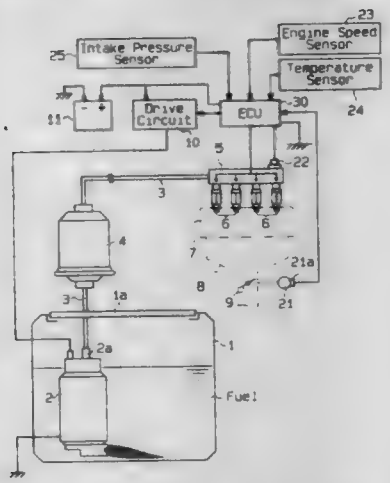
switching from the cylinder-disabling mode toward the all-cylinders-engaged mode and for controlling said engine during the resumption period in such a way as to minimize the perception of a change in engine speed by alternately resuming the operation of said at least one disabled cylinder between the two banks in sequence.

5,797,372

FUEL SUPPLYING APPARATUS FOR INTERNAL COMBUSTION ENGINE

Tomojiro Sugimoto, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 9, 1997, Ser. No. 826,365
Claims priority, application Japan, Apr. 10, 1996, 8-088112
Int. Cl.[6] F02M *51/00*
U.S. Cl. 123—491 **20 Claims**



1. An apparatus for supplying fuel to an internal combustion engine including a selectively opened and closed injector and a pump for discharging the fuel to the injector from a fuel reservoir, wherein an amount of fuel to be injected is adjusted based on an operating state of the engine, said apparatus comprising:

pressure detecting mean's for detecting the pressure of the fuel supplied to the injector;

means for computing a target pressure of the fuel supplied to the injector;

speed change determining means for determining a change of engine speed that is presumed based on the operating state of the engine; and

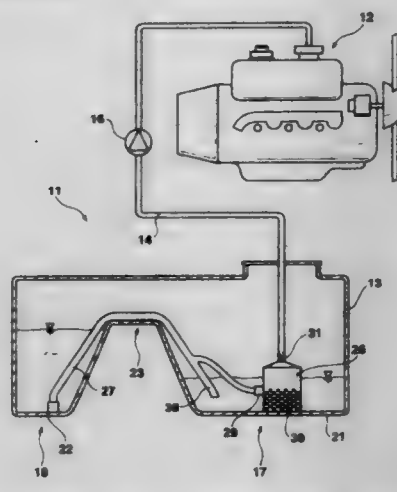
pump control means for controlling the pump based on the presumed change of the engine speed, said pump control means including calculating means for calculating a difference between the target pressure and the detected pressure of the fuel, wherein said pump is driven to selectively increase and decrease the amount of fuel discharged to the injector based on the calculated difference between the target pressure and the detected pressure of the fuel so as to substantially equalize the target pressure and an actual pressure of the fuel supplied to the injector.

5,797,373

FUEL FEEDING DEVICE OF MOTOR VEHICLE

Stefan Kleppner, Bretten, and Willi Strohl, Beilstein, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 14, 1997, Ser. No. 818,700
Claims priority, application Germany, May 9, 1996, 196 18 649.8
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—495 **6 Claims**



1. A fuel feeding device for a motor vehicle, comprising a fuel container having a plurality of parts with bottoms separated from one another; a fuel feeding aggregate operating for supplying fuel from said supply container to an internal combustion engine; fuel withdrawing means provided in one part of said fuel container and connected with a fuel conduit so that said fuel withdrawing means aspirate fuel from said one part of said fuel container and through a suction conduit also from at least another part of said fuel container which does not have said fuel withdrawing means, said fuel withdrawing means having an outlet connected with said fuel conduit and formed as a Venturi-nozzle having a narrowest section; and a supply pipe connecting said suction conduit with said fuel withdrawing means and having an outlet arranged in said narrowest section of said Venturi-nozzle.

5,797,374

FUEL SUPPLY APPARATUS FOR ENGINES

Kazuji Minagawa, Tokoname, and Kiyotoshi Oi, Toyohashi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

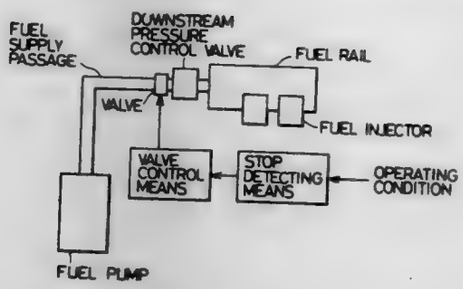
Filed Aug. 8, 1996, Ser. No. 694,065
Claims priority, application Japan, Aug. 9, 1995, 7-203225
Int. Cl.[6] F02M *37/04*
U.S. Cl. 123—497 **15 Claims**

1. A method of controlling a fuel supply system for an internal combustion engine, said method comprising:

pumping fuel into a first end of a fuel supply passage to a fuel injector supply rail fed via the opposite second end of the passage;

automatically closing said second end of said passage to reduce fuel leakage from said rail under stopped engine conditions, including closure of an on-off valve in response to reduced fuel pressure in said rail;

trapping pressurized fuel within the fuel supply passage when said on-off valve is closed; and



regulating fuel pressure downstream of said on-off valve using a pressure-regulating valve that is also disposed to control actuation of said on-off valve.

5,797,375

METHOD OF DETECTING AND DOCUMENTING EXHAUST-GAS RELEVANT MALFUNCTIONS OF A VEHICLE

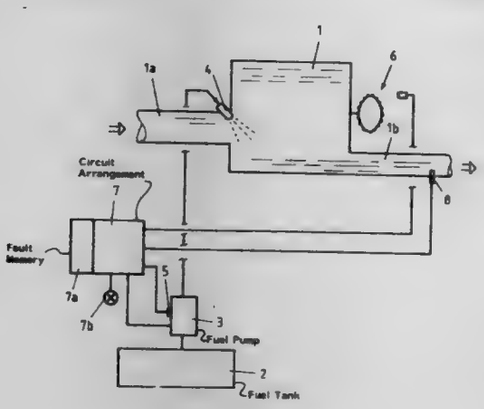
Alfred Kratt, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 26, 1997, Ser. No. 806,410

Claims priority, application Germany, Feb. 27, 1996, 196 07 284

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—497 **11 Claims**



1. A method for detecting and documenting exhaust-gas relevant malfunctions of a vehicle having an internal combustion engine, the method comprising the steps of:

evaluating the operating state of at least one component of said internal combustion engine in a circuit arrangement to delimit faults, which are caused by improper operation of the vehicle, relative to faults based on defects of the vehicle system; and,

outputting a fault announcement and storing said fault announcement in a fault memory in dependence upon said operating state of said component.

5,797,376

DEVICE FOR RECEIVING FUEL FEEDING AGGREGATE IN FUEL CONTAINER

Kurt Frank, Schorndorf, and Wolfgang Wuerl, Sachsenheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

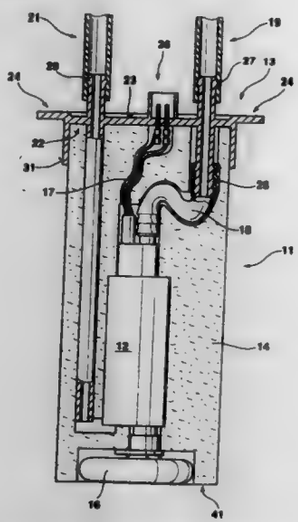
PCT No. PCT/DE96/00302, § 371 Date Oct. 28, 1996, § 102(e) Date Oct. 28, 1996, PCT Pub. No. WO97/01704, PCT Pub. Date Jan. 16, 1997

PCT Filed Feb. 23, 1996, Ser. No. 732,490

Claims priority, application Germany, Jun. 29, 1995, 195 23 634.3

Int. Cl.[6] F02M *33/04*

U.S. Cl. 123—509 **12 Claims**



1. A device for receiving a fuel delivery unit inside a fuel tank of a motor vehicle, comprising at least one damping element which is adapted to essentially completely enclose the fuel delivery unit; a holding device attachable to the damping element to be arranged in the fuel tank, said damping element being formed as a foam body which is adapted to interlockingly enclose at least the fuel delivery unit.

5,797,377

FUEL FEEDING DEVICE FOR MOTOR VEHICLES

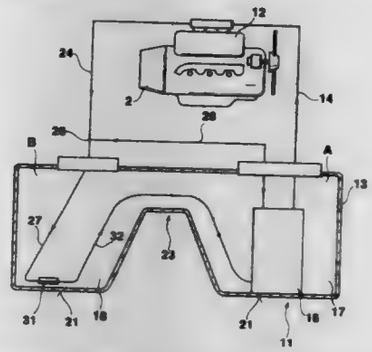
Rolf Fischerkeller, Walheim, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 6, 1997, Ser. No. 813,380

Claims priority, application Germany, May 8, 1996, 196 18 454.1

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—514 **8 Claims**



1. A fuel feeding device for a motor vehicle, comprising a fuel container having a plurality of parts with bottoms separated from

one another; a fuel feeding aggregate arranged to supply fuel from said fuel container to an internal combustion engine; a jet pump, said parts of said fuel container including a first part in which said fuel feeding aggregate is arranged and a second part in which said jet pump is arranged separately from said first part; a fuel return conduit and a suction conduit having a connection portion, said jet pump being formed in said connection portion; a nozzle arranged in said fuel return conduit; and a mixing tubular portion provided in said suction conduit and connected with said nozzle immediately downstream in a fuel feeding direction, said nozzle being inserted directly into an end of said fuel return conduit, and said end of said fluid return conduit together with said nozzle inserted in it being inserted into an end of said suction conduit.

5,797,378

FUEL SUPPLY SYSTEM

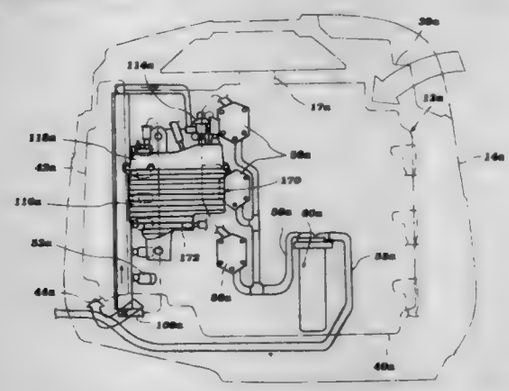
Masahiko Kato, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Nov. 27, 1996, Ser. No. 757,193

Claims priority, application Japan, Nov. 27, 1995, 7-307698

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—516 **11 Claims**



1. An outboard motor comprising an internal combustion engine with a protective cowling that surrounds said internal combustion engine, a fuel supply system including at least one charge former which supplies a fuel charge for the internal combustion engine, a cooling system juxtaposing at least a portion of said fuel supply system and including at least one cooling fin, an air inlet provided in said protective cowling, an induction system provided for said internal combustion engine, said induction system including an air inlet which receives air from said cowling air inlet, and said vapor separator positioned between the cowling air inlet and the induction system air inlet so as to lie within the air flow between the cowling air inlet and induction system air inlet.

5,797,379

FUEL DELIVERY SYSTEM

Leigh William Sharples, Mordialloc, Australia, assignor to Gasresearch Australia Pty. Ltd., Australia

Continuation of Ser. No. 557,698, Nov. 13, 1995, which is a continuation of Ser. No. 204,282, Mar. 7, 1994, abandoned.

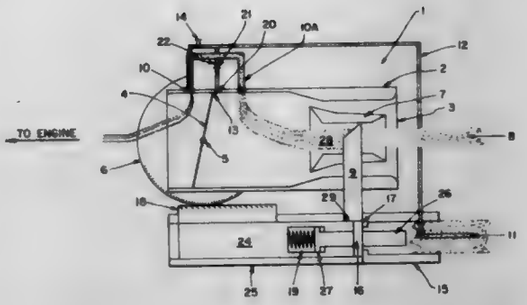
This application Sep. 19, 1996, Ser. No. 715,768

Claims priority, application Australia, Oct. 16, 1991, PK 8950

Int. Cl.[6] F02M *21/04*

U.S. Cl. 123—527 **19 Claims**

1. An apparatus for mixing gaseous fuel with air passing through a carburetor of an internal combustion engine, the carburetor having a hollow main body portion through which a stream of air is adapted to enter at one end, the hollow main body having an interior surface defining in part a carburetor interior volume, comprising:



a venturi diffuser disposed in the carburetor, said venturi diffuser having an inlet end, an outlet end, an interior surface defining a bore and an exterior surface;

a first air stream passage defined in part by said bore through which a first air stream passes;

an induction tube having an inlet and an outlet, said induction tube inlet adapted to be connected to a source of gaseous fuel, said induction tube extending into and being disposed inside said bore whereby gaseous fuel from said induction tube outlet is directly introduced into said first air stream; and

a second air stream passage defined in part by said venturi diffuse exterior surface and a portion of the carburetor interior surface through which a second air stream passes, said second air stream passage having a low pressure zone located downstream, in the flow direction of said second air stream, of said induction tube outlet, whereby said second air stream is accelerated through said second air stream passage to mix with the fuel and said first air stream.

5,797,380

AIR INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE

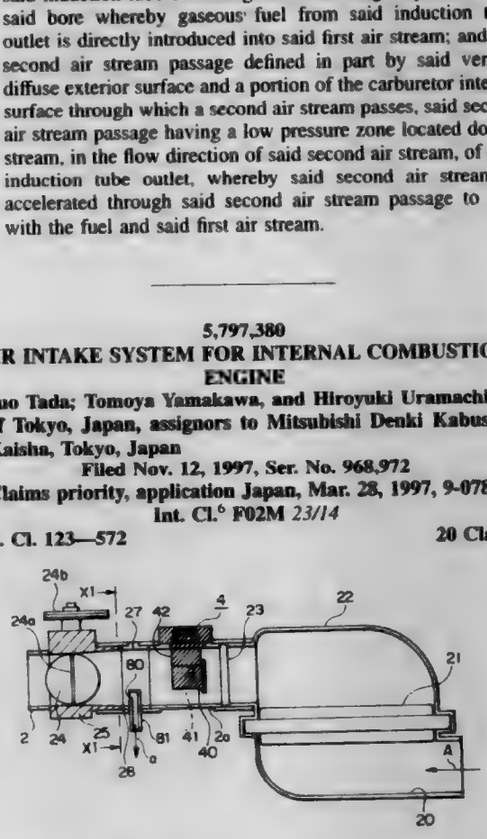
Yasuo Tada; Tomoya Yamakawa, and Hiroyuki Uramachi, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1997, Ser. No. 968,972

Claims priority, application Japan, Mar. 28, 1997, 9-078390

Int. Cl.[6] F02M *23/14*

U.S. Cl. 123—572 **20 Claims**



1. An air intake system for an internal combustion engine, comprising:

an intake air passage for supplying air into a cylinder of an internal combustion engine;

an air cleaner disposed in said intake air passage at a position near to an intake port of said intake air passage;

a flow sensor disposed within said intake air passage at a position downstream of said air cleaner for detecting an intake air flow fed to said cylinder;

a throttle valve disposed within said intake air passage at a position downstream of said flow sensor and adapted to be opened and closed for adjusting said intake air flow; and

positive crankcase ventilation means for recirculating a blow-by gas leaking into a crankcase connected to said cylinder into said intake air passage;

wherein said positive crankcase ventilation means includes:

a communicating passage for communicating an interior of said crankcase with that of a head cover assembly of said cylinder;

a recirculating passage for introducing said blow-by gas from said head cover assembly into said intake air passage at a location downstream of said throttle valve; and

a recirculating air passage for introducing recirculating air into said head cover assembly from said intake air passage at a location intermediate between said flow sensor and said throttle valve;

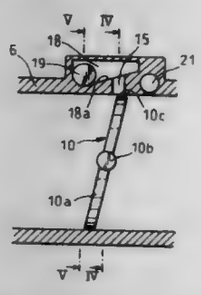
wherein said recirculating air passage has a suction member having one end portion disposed within said intake air passage, said end portion defining an air inlet passage having an inlet port disposed downstream from a midpoint of an entry of said suction member into said intake air passage.

5,797,381

AIR ASSIST DEVICE OF AN ENGINE

Mamoru Yoshioka, and Yasuhiro Ooi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 30, 1997, Ser. No. 902,697
Claims priority, application Japan, Aug. 1, 1996, 8-203770
Int. Cl.[6] F02M *23/12*
U.S. Cl. 123—585 **20 Claims**



1. An air assist device of an engine having an intake passage and a fuel injector arranged in the intake passage, said device comprising:

an assist air passage for feeding assist air to fuel injected from the fuel injector;

a throttle valve arranged in the intake passage upstream of the fuel injector;

an air intake port formed in an upper inner wall of the intake passage and connected to said assist air passage, an opening area of an opening of said air intake port being controlled by said throttle valve; and

liquid substance deposition preventing means for preventing a liquid substance from being deposited in said air intake port.

5,797,382

AIR ASSIST DEVICE OF AN ENGINE

Mamoru Yoshioka, and Yasuhiro Oi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

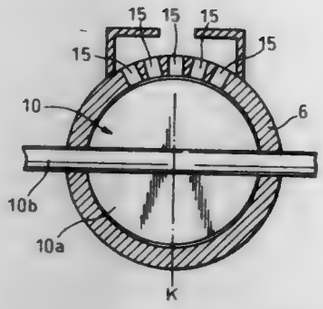
Filed Jul. 28, 1997, Ser. No. 901,448
Claims priority, application Japan, Jul. 29, 1996, 8-199111
Int. Cl.[6] F02M *23/03*
U.S. Cl. 123—586 **12 Claims**

1. An air assist device of an engine having an intake passage and a fuel injector arranged in the intake passage, said device comprising:

an assist air passage for feeding assist air to fuel injected from the fuel injector;

a throttle valve arranged in the intake passage upstream of the fuel injector; and

a plurality of circular cross-section air intake ports formed in an inner wall of the intake passage and arranged to be aligned along an outer peripheral edge of the throttle valve when the throttle valve is positioned at an idling position, said air intake



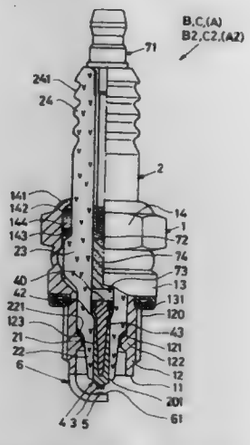
ports being connected to said assist air passage and being at least partially covered at the same time by an outer peripheral end face of the throttle valve when the throttle valve is positioned at an idling position, an amount of assist air fed into said assist air passage being controlled by said throttle valve.

5,797,383

DUAL POLARITY TYPE IGNITION SYSTEM FOR A SPARK PLUG GROUP

Yoshihiro Matsubara, and Katsutoshi Nakayama, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Apr. 4, 1997, Ser. No. 834,525
Claims priority, application Japan, Apr. 5, 1996, 8-84270
Int. Cl.[6] F02P *29/04; 1/00*
U.S. Cl. 123—594 **8 Claims**



1. A dual polarity ignition system comprising:

an ignition coil to establish a high voltage in a secondary coil;

a positive polarity spark plug group in which each spark plug includes a center electrode having a first tip formed of one of a noble metal and a noble metal alloy, and a ground electrode having a second tip formed of one of a noble metal and a noble metal alloy so as to form a spark discharge gap between the first tip and the second tip, wherein a positive high voltage is applied by the secondary coil to the center electrode of each spark plug of the positive polarity spark plug group; and

a negative polarity spark plug group in which each spark plug includes a center electrode having a first tip formed of one of a noble metal and a noble metal alloy, and a ground electrode having a second tip formed of one of a noble metal and a noble metal alloy so as to form a spark discharge gap between the first tip of the center electrode of the negative polarity spark plug group and the second tip of the ground electrode of the negative polarity spark plug group, wherein a negative high voltage is applied by the secondary coil to the center electrode of each spark plug of the negative polarity spark plug group;

wherein the first tip of the center electrode of the positive polarity spark plug group is dimensionally smaller than the first tip of the center electrode of the negative polarity spark plug group, and

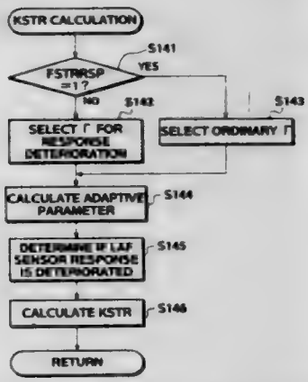
further wherein the second tip of the ground electrode of the negative polarity spark plug group is dimensionally smaller than the second tip of the ground electrode of the positive polarity spark plug group.

5,797,384

AIR-FUEL RATIO CONTROL SYSTEM BASED ON ADAPTIVE CONTROL THEORY FOR INTERNAL COMBUSTION ENGINES

Hiroshi Kitagawa, and Hidetaka Maki, both of Wako, Japan, assignors to Honda Giken Koygo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 604,650
Claims priority, application Japan, Feb. 24, 1995, 7-061778
Int. Cl.[6] F02D *41/14*
U.S. Cl. 123—674 **12 Claims**



1. An air-fuel ratio control system for an internal combustion engine having an exhaust system, comprising:

an air-fuel ratio sensor arranged in said exhaust system;

feedback control means for controlling an amount of fuel to be supplied to said engine in a feedback manner based on an output from said air-fuel ratio sensor by using an adaptive controller of a recurrence formula type, such that an air-fuel ratio of air-fuel mixture supplied to said engine becomes equal to a desired air-fuel ratio; and

response characteristic deterioration-detecting means for detecting deterioration of a response characteristic of said air-fuel ratio sensor, based on at least one adaptive parameter used by said feedback control means,

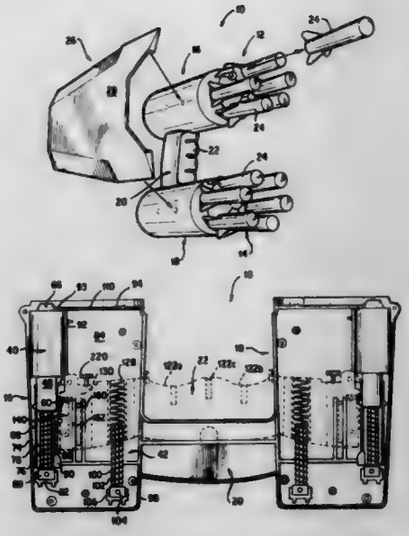
wherein said adaptive controller includes a self-tuning regulator controller for setting an adaptive control correction coefficient (KSTR) based on a plurality of adaptive parameters ($\theta(k)$) including said at least one adaptive parameter (r1, r2) by using a recurrence formula, such that said air-fuel ratio of said air-fuel mixture supplied to said engine becomes equal to said desired air-fuel ratio, and a parameter adjusting mechanism for setting said plurality of said adaptive parameters by using a recurrence formula, said at least one adaptive parameter (r1, r2) determining responsiveness of said parameter adjusting mechanism.

5,797,385

DOUBLE-BARREL TOY GUN

Douglas Thai, Kowloon, Hong Kong, assignor to Placo Toys International, Ltd., Hong Kong

Filed Mar. 26, 1997, Ser. No. 827,351
Int. Cl.[6] F41B *11/14*
U.S. Cl. 124—66 **19 Claims**



1. A toy gun for firing at least one soft ammunition, comprising:

a handle section including a trigger, the trigger having a first end and an opposing second end;

a first barrel holding at least one ammunition;

a second barrel holding at least one ammunition;

a first housing adjacent the first end of the trigger and coupled to the first barrel, the first housing having a firing mechanism coupled to the trigger for firing the ammunition from the first barrel; and

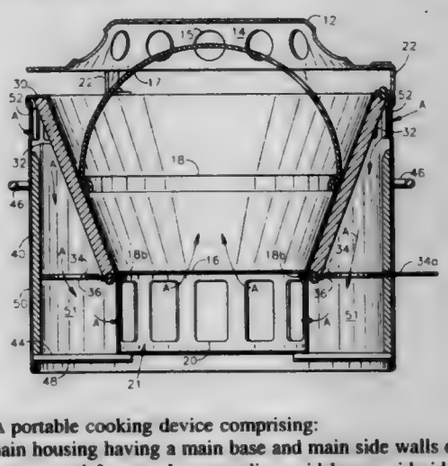
a second housing adjacent the second end of the trigger and coupled to the second barrel, the second housing having a firing mechanism coupled to the trigger for firing the ammunition from the second barrel.

5,797,386

PORTABLE COOKING DEVICE

Max Stroble Orr, 4917 Woodfield Dr., Carmel, Ind. 46033

Filed May 13, 1997, Ser. No. 855,180
Int. Cl.[6] F24B *3/00*
U.S. Cl. 126—25 R **21 Claims**



1. A portable cooking device comprising:

a main housing having a main base and main side walls extending upward from and surrounding said base, said side walls including a plurality of apertures therein located at distal points from said main base;

a burner housing including a horizontal burner grate having a plurality of holes therein, said burner housing further including burner side walls enclosing said burner grate and extending upward and downward from said burner grate, said burner side walls including apertures located below said burner grate, and wherein said burner housing is disposed within said main

housing to define an air flow passage between said main housing and said burner housing;

a cooking grate;

grate support means for supporting said cooking grate in a horizontal position over said burner housing, said grate support means attached to said burner side walls; and

flue means disposed within the air flow passage and between the apertures in said main side walls and the holes in said burner side walls, said flue means restricting air flow between the apertures in said main side walls and the holes in said burner side walls.

5,797,387

ABSORBER

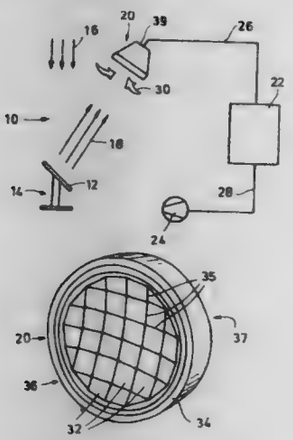
Thomas Fend, Cologne; Bernhardt Hoffschmidt, Bergisch Gladbach; Robert Pitz-Paal, Cologne, and Peter Rietbrock, Haltern, all of Germany, assignors to Deutsche Forschungsanstalt fur Luft-und Raumfahrt e.V., Bonn, Germany

Filed Sep. 6, 1996, Ser. No. 708,237

Claims priority, application Germany, Sep. 27, 1995, 195 35 896.1

Int. Cl.[6] F24J *2/02*

U.S. Cl. 126—680 **9 Claims**



1. An absorber, comprising:

a plurality of absorber modules, at least one of the plurality of absorber modules comprising:

an absorption member, the absorption member having formed therein passage means for absorption of radiation and for vacuum intake of a heat transport medium, and

a mixing chamber in communication with the passage means, the mixing chamber comprising at least one flow-restricting outlet orifice connectable to a vacuum source,

wherein the at least one of the plurality of absorber modules, the absorption member and the mixing chamber are all formed from a unitary ceramic body,

wherein the passage means defines a direction, and

wherein the mixing chamber comprises a plurality of mutually intersecting channels extending substantially transversely to the direction defined by the passage means.

5,797,388

WIRE-BONDING APPARATUS AND METHOD USING A COVERED WIRE

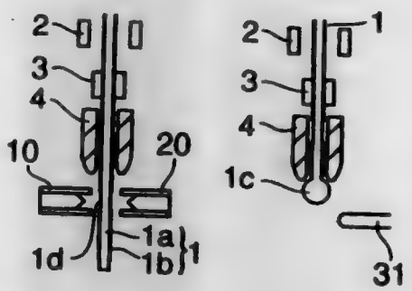
Osamu Nakamura, Kokubunji, and Kazumasa Susakura, Musashimurayama, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Nov. 25, 1996, Ser. No. 755,784

Claims priority, application Japan, Nov. 24, 1995, 7-329523

Int. Cl.[6] H01L *21/60*

U.S. Cl. 228—180.5 **2 Claims**



2. A wire bonding method which uses a covered wire wherein:

a covered wire formed by covering a circumference of a core wire made of a conductive metal with an insulating covering-film and passed through a capillary is used, and

a ball formed at the tip portion of the covered wire is joined to a first bonding point, and a covering-film removed portion that is fed out from the capillary is joined to a second bonding point, so that the first bonding point and the second bonding point are electrically connected,

said method being characterized in that:

removing the covering-film on a portion of the wire corresponding to an intended second bonding point beforehand by an electric discharge from a pair of discharge electrodes for covering-film removal;

positioning a discharge electrode for ball formation to one side of the covered wire when said pair of discharge electrodes for covering-film removal have been withdrawn from the covered wire;

pulling the covered wire into the interior of the capillary so that the tip of the covered wire remains protruding from the tip of the capillary by a tail length;

raising the capillary to a ball formation level so that the tip of the covered wire is positioned to one side of said discharge electrode for ball formation; and

in this state, forming a ball at the tip of the covered wire by an electric discharge from the discharge electrode for ball formation.

5,797,389

VARIABLE OXYGEN CONCENTRATION HIGH-FLOW NEBULIZER

Steven L. Ryder, 4432 Bogart Way, Antelope, Calif. 95843

Continuation-in-part of Ser. No. 524,278, Sep. 6, 1995, abandoned. This application Sep. 3, 1996, Ser. No. 706,943

Int. Cl.[6] A61M *11/02*

U.S. Cl. 128—200.21 **32 Claims**

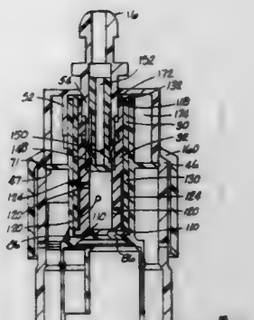
1. A nebulizer for providing a select rate of flow of a gas entraining a nebulized liquid, the nebulizer comprising:

at least two gas nozzles, each gas nozzle having a gas outlet;

gas connecting means for connecting in fluid communication a pressurized carrier gas supply and each gas nozzle;

a liquid outlet corresponding to each gas nozzle positioned proximate to the gas outlet of the corresponding nozzle for nebulization of liquid from the liquid outlet in a stream of carrier gas flowing from the gas outlet of each nozzle;

means for connecting in liquid communication each liquid outlet and a liquid supply;



gas adjustment means in fluid communication with at least one of the gas nozzles for selectively recruiting the at least one gas nozzle and preventing gas from flowing from the at least one gas nozzle; and

at least one other gas nozzle being independent of the gas adjustment means to provide a continuous flow of gas.

5,797,390

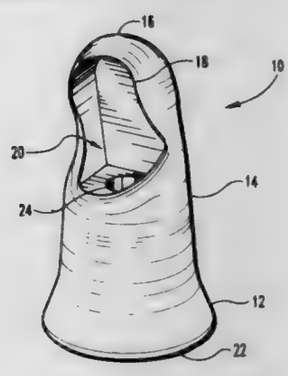
NASAL INHALER HAVING A DIRECTED SPRAY PATTERN

Thomas E. McSoley, 6477 N. Chester, Indianapolis, Ind. 46220

Filed Mar. 6, 1996, Ser. No. 611,727

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.23 **16 Claims**



1. A nasal inhaler having a directed spray pattern, comprising:

a container adapted to hold a quantity of medication and including a container spray outlet; and

an attachment coupled to the container spray outlet, the attachment comprising:

a body member having a proximal end, a distal end, a first side and a second side, the body member tapering from the proximal end to the distal end such that the body member is sized and shaped to fit into the nose;

an opening formed into the first side of the body member proximal of the distal end, the opening forming a hooded cavity within the body member; and

an axial bore formed in the body member from the proximal end to the cavity;

wherein medication exiting the container spray outlet is directed through the axial bore, into the hooded cavity, and out of the opening such that the medication is directed toward the lateral sidewall of the nose when the body member is inserted into the nose, and the body member substantially prevents the medication from contacting a septum of the nose and a back of a nasal cavity of the nose.

5,797,391

INHALER

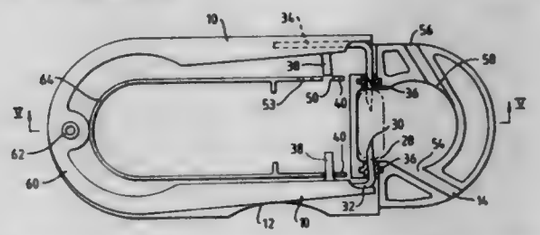
Robert Stanley Cook; Michael Anthony Hobbs; Ann-Marie Leighton; Gordon Thomas Simpkin, and Roy Trunley, all of Dagenham, United Kingdom, assignors to Rhone-Poulenc Rorer Limited, Kent, United Kingdom

Filed Sep. 28, 1993, Ser. No. 128,447

Claims priority, application United Kingdom, Mar. 28, 1991, 9106648; Mar. 28, 1991, 9106649

Int. Cl.[6] A61M *11/00;15/00*

U.S. Cl. 128—203.15 **16 Claims**



1. An inhaler for inhaling powdered medicament from capsules which are opened in the inhaler, comprising: a swirling chamber for holding a capsule from which the powdered medicament is extracted by rotation of the opened capsule about the transverse axis of the capsule in inhalation airflow through the swirling chamber; means in the swirling chamber for opening a capsule inserted in the swirling chamber for inhalation; a closure member movable between a first position closing the swirling chamber and a second position providing access to the swirling chamber for insertion of the capsule; and interlock means responsive to positioning of the closure member in said second position for inhibiting operation of said capsule opening means, wherein said capsule opening means comprise at least one pin driveable for piercing the capsule to provide an opening through which the powdered medicament can be released during swirling.

5,797,392

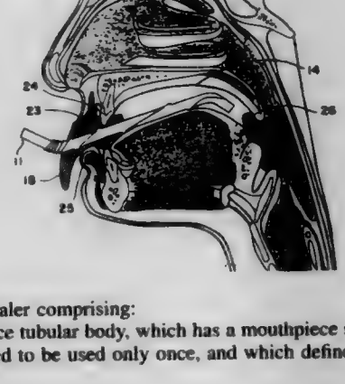
INHALER

Erik Keldmann, Odense, and John Reipur, Klampenborg, both of Denmark, assignors to Direct-Haler A/S, Odense, Denmark

Filed Jan. 22, 1997, Ser. No. 785,960

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—203.15 **44 Claims**



1. An inhaler comprising:

a one piece tubular body, which has a mouthpiece section and is intended to be used only once, and which defines an air flow

passage therein, the tubular body having substantially rectilinear sections, at least one intermediate bendable section comprising peripherally extending corrugations; and

a single dose only of an active, inhalable, particulate substance being arranged within the air flow passage, said dose being sealed or closed in relation to an ambient atmosphere by closure means which are to be removed or opened by a user prior to use, and a cross-sectional area of the flow passage defined in the tubular body being unobstructed and not exceeding 75 mm^2.

5,797,393

METHOD FOR CONTROLLING THE RESPIRATING PHASE IN A VENTILATING APPARATUS

Hans-Joachim Kohl, Lübeck, Germany, assignor to Dräger-werk Aktiengesellschaft, Lübeck, Germany

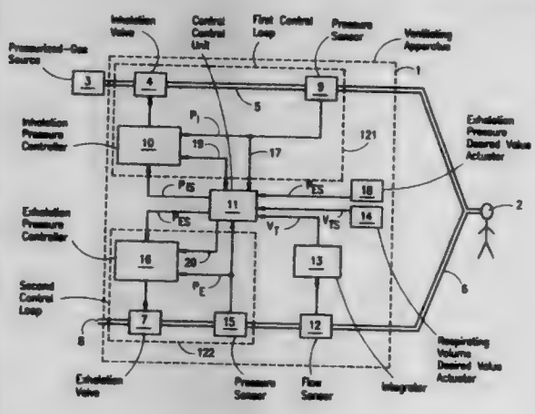
Filed May 3, 1996, Ser. No. 642,761

Claims priority, application Germany, May 5, 1995, 195 16 536.5

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—204.23

3 Claims



1. A method for adjusting the respiratory pressure during respirating phases in a ventilating apparatus including: an inhalation line; an exhalation line; a respiratory flow sensor for measuring the respirating volume V_T; an inhalation pressure sensor for measuring the inhalation pressure P_I; an inhalation valve for adjusting the respirating gas flow; an exhalation valve for adjusting a preselected exhalation pressure P_{ES} in said exhalation line; and, a central control unit; and, the method comprising the steps of:

fixing a respirating volume desired value V_{TS};

fixing an inhalation pressure desired value P_{IS} for a first inhalation stroke as a start value;

actuating said inhalation valve during said first inhalation stroke to adjust said inhalation pressure P_I to said inhalation pressure desired value P_{IS};

comparing said respiratory volume V_T at the end of said first inhalation stroke to said respirating volume desired value V_{TS} and, if said respirating volume V_T is less than said respirating volume desired value V_{TS}, then,

during the subsequent inhalation strokes following said first inhalation stroke, incrementally increasing, in a stepwise manner, said inhalation pressure desired value P_{IS} by a pressure increment ΔP in each of said subsequent inhalation strokes until said respirating volume V_T is greater than or equal to said respirating volume desired value V_{TS}; and,

during each inhalation stroke, comparing continuously said inhalation pressure P_I to said inhalation pressure desired value P_{IS} and, if said inhalation pressure P_I increases to a value greater than P_{IS} because of an intended exhalation, then,

opening said exhalation valve to an extent so that said inhalation pressure desired value P_{IS} is reestablished as said inhalation pressure P_I.

5,797,394

TRACHEAL TUBE SECURING STRAP

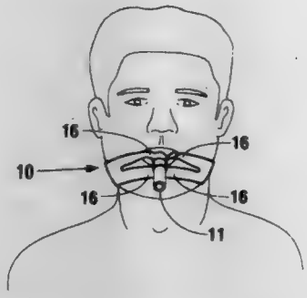
Michael S. Boyd, Euless, Tex., assignor to Avail Medical Products, Inc., Dallas, Tex.

Filed Feb. 4, 1997, Ser. No. 794,486

Int. Cl.[6] A61M *16/00*; A62B *9/06*

U.S. Cl. 128—207.17

11 Claims



1. A tracheal tube securing strap, comprising:

an elongated strip having a surface coated with an adhesive material continuous from one end to another, a pair of spaced apart ends each having a slot extending inwardly from each of said ends and thereby forming a bifurcated end portion at each of said ends, a central portion disposed substantially midway between each of said ends, and a pair of intermediate portions each member of said pair being respectively disposed between said central portion and a respective one of said bifurcated end portions;

a layer of release liner removably attached to the adhesive coated surface of the each member of each of said pair of bifurcated end portions of the elongated strip;

a layer of nonadhesive material adhesively attached to the adhesive coated surface of the central portion of the elongated strip; and

a layer of release liner removably attached to the adhesive coated surface of each of said intermediate portions of the elongated strip;

wherein said layer of release liner of said intermediate portion is separate from said layer of release liner of said end portions and said non-adhesive material of said central portion, and said strip is configured to secure a tracheal tube around a human head.

5,797,395

CONTINUOUS CARDIAC OUTPUT DERIVED FROM ARTERIAL PRESSURE WAVEFORM USING PATTERN RECOGNITION

James F. Martin, Carmel, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 72,038, Jun. 3, 1993, Pat. No. 5,390,679. This application Dec. 22, 1994, Ser. No. 362,204

Int. Cl.[6] A61B *5/215*

U.S. Cl. 128—673

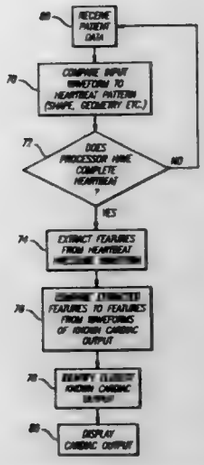
28 Claims

13. A method for determining the cardiac output of a cardiovascular system from the blood pressure developed by the cardiovascular system, comprising the steps of:

sensing the blood pressure developed by the cardiovascular system and providing a pressure signal representative of that blood pressure;

converting the pressure signal representative of sensed blood pressure into a digitized pressure signal;

storing a plurality of representative pressure waveforms, each representative pressure waveform comprising a set of values of selected features of a respective pressure signal developed by a cardiovascular system having a known cardiac output, and storing the known cardiac output corresponding to each representative pressure waveform;



extracting at least one feature of the selected set of features from the digitized pressure signal and determining the value of each extracted feature;

comparing the value of each extracted feature from the digitized pressure signal to the value of each corresponding feature of representative pressure waveforms stored in the memory;

based on the comparison, selecting the representative pressure waveform most similar to the digitized pressure signal; and

providing the cardiac output value corresponding to the selected representative pressure waveform as the cardiac output of the cardiovascular system.

5,797,396

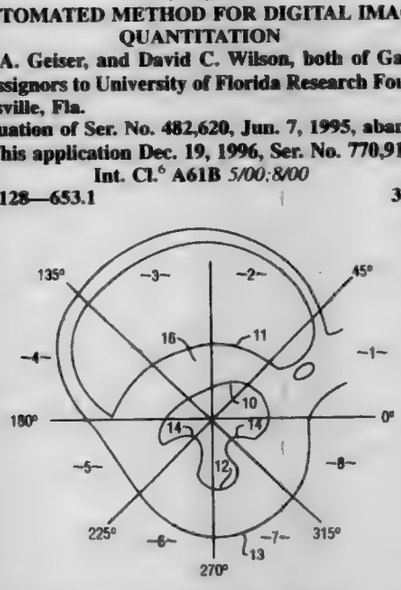
AUTOMATED METHOD FOR DIGITAL IMAGE QUANTITATION

Edward A. Geiser, and David C. Wilson, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Gainesville, Fla.

Continuation of Ser. No. 482,620, Jun. 7, 1995, abandoned. This application Dec. 19, 1996, Ser. No. 770,912

Int. Cl.[6] A61B *5/00; 8/00*

U.S. Cl. 128—653.1 **38 Claims**



1. A method for quantitatively analyzing a diagnostic image of a left ventricle including the steps of:

a. generating a diagnostic image frame in a digital format containing rows and columns of pixels of a left ventricle having a posterior epicardial border, and an anterior epicardium;

b. determining a first tentative center-point for the left ventricle and the position of the posterior epicardial border of the left ventricle depicted in the diagnostic image by frame repeatedly filtering the image frame with a set of circular arc filters until a maximum value for the set of filters is obtained;

c. determining a second tentative center-point for the left ventricle and the position of the anterior epicardium of the left ventricle depicted in the diagnostic image frame by repeatedly filtering the image frame with a set of matched elliptical arc filters until a maximum value for the set of matched filters is obtained;

d. determining a final center-point for the left ventricle depicted in the diagnostic image frame as midway between the anterior epicardial border and the posterior epicardial border along a line through the first and second tentative center-points; and

e. indicating the position of the final center-point in connection with the diagnostic image frame of the left ventricle.

5,797,397

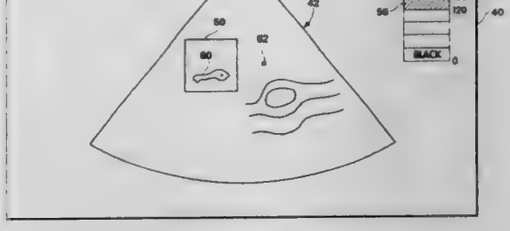
ULTRASOUND IMAGING SYSTEM AND METHOD USING INTENSITY HIGHLIGHTING TO FACILITATE TISSUE DIFFERENTIATION

Mark Rosenberg, Mashua, N.H., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 25, 1996, Ser. No. 756,298

Int. Cl.[6] A61B *8/00*

U.S. Cl. 128—660.04 **15 Claims**



1. A method for displaying an ultrasound image in an ultrasound imaging system, comprising the steps of:

generating an ultrasound image that represents ultrasound intensity as a function of position within an object;

selecting an ultrasound intensity range of interest; and

highlighting one or more areas of the ultrasound image which represent ultrasound intensities within the selected intensity range, said ultrasound imaging system including a video display screen for displaying said ultrasound image and a pointing device, the step of selecting an ultrasound intensity range of interest including selecting a feature of interest in said ultrasound image with said pointing device and defining said ultrasound intensity range of interest as including the ultrasound intensity of the selected feature of interest.

5,797,398

METHOD AND APPARATUS FOR MEASURING CONTINUOUS BLOOD FLOW AT LOW POWER

Harry Frederick Bowman, Needham, Mass., assignor to Thermal Technologies, Inc., Cambridge, Mass.

Filed Aug. 13, 1993, Ser. No. 106,068

Int. Cl.[6] A61B *5/00*

U.S. Cl. 128—692 **53 Claims**

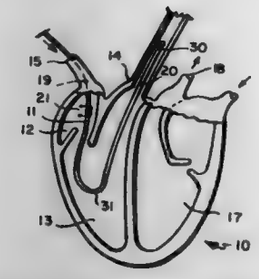
1. A method for determining blood flow in a living body comprising the steps of:

changing the thermal energy level by a predetermined amount at a site in a blood flow path of said living body;

detecting the temperatures at a first location upstream of said site and a second location downstream of said site;

determining the temperature difference between said first and second locations at one energy level;

determining the temperature difference between said first and second locations at the changed energy level; and



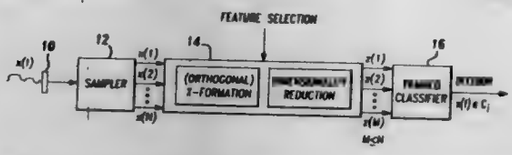
calculating blood flow as a function of the change in energy level and of the temperature differences measured prior to and following the change in energy level.

5,797,399

METHOD AND APPARATUS FOR IDENTIFYING AND CORRECTLY RESPONDING TO ABNORMAL HEART ACTIVITY

Milton M. Morris; Janice M. Jenkins, and Lorenzo A. DiCarlo, all of Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Apr. 19, 1996, Ser. No. 639,859
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 128—705 **36 Claims**



29. A system for correctively responding to abnormal activity of the heart, the system comprising:

a sampler portion for receiving an intracardiac electrogram signal and for producing a sampler signal including a plurality of signals;

a feature selector portion for selecting a particular featured signal based on said sampler signal;

means for delivering said sampler signal to said feature selector;

a classifier portion for classifying said selected featured signal as representing either sinus rhythm or abnormality;

means for delivering said selected featured signal to said classifier means for producing a template standard;

means for identifying a threshold;

means for producing a counter value based on identification of the number of samples outside said template standard; and

means, responsive to said classifier portion, for correctively responding to an abnormality.

5,797,400

Patent Not Issued For This Number

5,797,401

POST SURGICAL PENIS PROTECTOR APPLIANCE

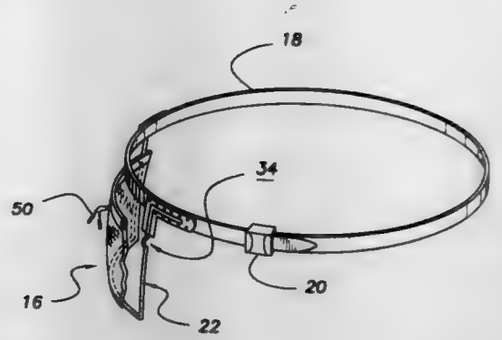
Lila C. Knight, 940 Warren Morrow Rd., Lawrenceville, Ga. 30243

Filed Apr. 24, 1997, Ser. No. 847,458
Int. Cl.[6] A61F *6/02*
U.S. Cl. 128—842 **20 Claims**

1. A post surgical penis protector appliance comprising:

an attachment belt securable about a waist of a user;

a shield support constructed from a length of a formable strand material secured to and extending from said attachment belt,



said shield support including a left and a right drawstring attachment notches, said shield support being affixed to said attachment belt; and

a fabric shield constructed in a bag shape, said fabric shield having a drawstring closure mechanism including a drawstring positioned around a perimeter of an insertion opening thereof, said fabric shield defining a compartment therein sized to receive at least a portion of said shield support;

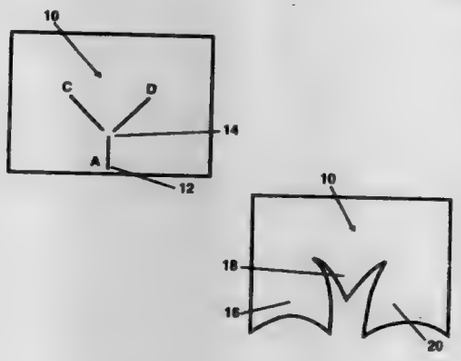
said left and right drawstring attachment notches of said shield support being positioned on said length of formable strand material in a manner such that said drawstring of said drawstring mechanism is positionable in registration with said attachment notches when a portion of said shield support is positioned into said compartment.

5,797,402

DISPOSABLE DRAPE FOR MEDICAL EXAMINATION

Raymond O. West, P.O. Box 1137, Belfair, Wash. 98528

Continuation of Ser. No. 271,030, Jul. 6, 1994, abandoned. This application May 19, 1997, Ser. No. 859,791
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—849 **6 Claims**



1. A medical examination drape comprising:

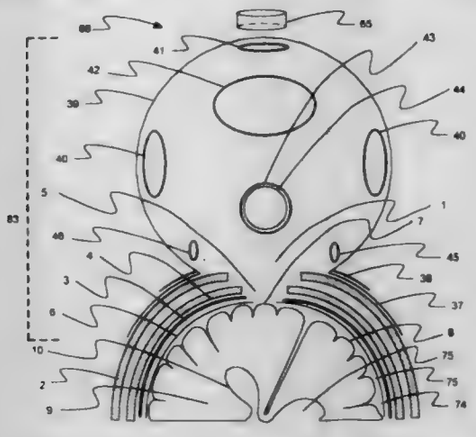
a nonsterile sheet of nonwoven material sized to cover the central portion of a human body, said nonsterile sheet having a first incision extending inward from the periphery of said nonsterile sheet, said nonsterile sheet having second and third incisions branching from the termination of said first incision, wherein said first, second, and third incisions collectively form a "Y" shape.

5,797,403

METHOD FOR REDUCTION OF NEUROSURGICAL EDEMA, HEMORRHAGE, AND RESPIRATION-INDUCED TISSUE MOVEMENT

Daniel J. DiLorenzo, 148 Allston St., Cambridge, Mass. 02139

Filed Dec. 29, 1995, Ser. No. 581,166
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—856 **2 Claims**



1. A surgical procedure for maintaining intracranial pressure on a human patient comprising:

creating a surgical incision in the human scalp which penetrates up to the surface of a human brain;

placing a container in surrounding relationship to the incision, and sealing the container to portions of the human scalp immediately adjacent to the incision so as to create an enclosed space between the scalp and the container, said container further including means for pressurizing the enclosed space and means for accessing the enclosed space and incision;

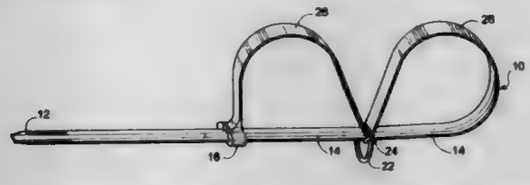
raising the pressure in the enclosed space to at least 14 mmHG so as to reduce the pressure gradient between the intracranial pressure and the local ambient pressure.

5,797,404

DISPOSABLE HANDCUFF

Emery John Stanchin, II, 9617 Yarmouth Ct., Louisville, Ky. 40272

Continuation-in-part of Ser. No. 26,479, Jul. 29, 1994, Pat. No. Des. 366,733. This application Jan. 29, 1996, Ser. No. 591,928
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—869 **11 Claims**



1. A disposable cuff for providing a double loop restraining device from a single strap, comprising:

means for separating and holding having an aperture therethrough;

an elongated flexible strap having a tip end and a unidirectional locking head end, said flexible strap being inserted through said locking head end locking in sliding cooperative engagement therewith forming a first loop, said first loop being substantially flattened for insertion through said aperture of said means for separating and holding to a selected position forming a second loop of reduced diameter and a third loop of reduced diameter extending on each side of said means for separating and holding;

removable retaining means for biasing said flexible strap against a side of said means for separating and holding;

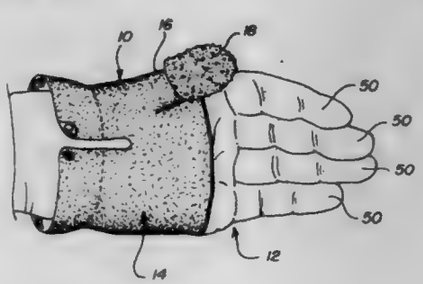
whereby inserting a first object through said second loop, and inserting a second object through said third loop, and pulling on said tip end of said flexible elongated strip slides said flexible elongated strip through said locking head and though said means for separating and holding contracting said second loop around said first object and simultaneously contracting said third loop around said second object holding said first object and said second object securely on opposing sides of said means for separating and holding.

5,797,405

THUMB SUCKING DETERRENT DEVICE AND METHOD

Lunetta R. Brock, 108 N. Bayview Dr., Fairhope, Ala. 36532

Filed May 13, 1997, Ser. No. 855,403
Int. Cl.[6] A61C *5/37*
U.S. Cl. 128—878 **17 Claims**



1. A thumb sucking deterrent device comprising:

a palm cover structure having a palm chamber formed therein for receiving said palm area of a hand, said palm cover structure being constructed from a cloth material and including an insertion opening and a finger extension opening in connection with said palm chamber;

a thumb shield structure having a thumb receiving chamber formed therein and in connection with said palm chamber of said palm cover structure that is constructed of a terry cloth fabric having at least one surface covered with a plurality of outwardly extending terry cloth loops, said plurality of terry cloth loops extending outwardly, said thumb shield structure having a tip portion at a terminal end thereof; and

an anti-sucking latex rubber coating covering said tip portion of said thumb shield structure, said anti-sucking latex rubber coating some of said terry cloth loops covering said tip portion to form sucking deterrent protrusions, each said sucking deterrent protrusion including at least one terry cloth loop.

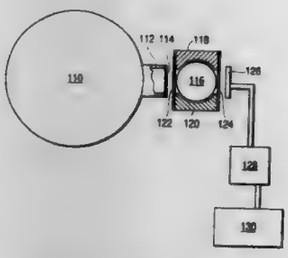
5,797,406

CIGARETTE MANUFACTURE

John Dawson, High Wycombe, England, assignor to Molins PLC, Bucks, United Kingdom

PCT No. PCT/GB95/01142, § 371 Date Nov. 18, 1996, § 102(e) Date Nov. 18, 1996, PCT Pub. No. WO95/31908, PCT Pub. Date Nov. 30, 1995
PCT Filed May 19, 1995, Ser. No. 737,581
Claims priority, application United Kingdom, May 19, 1994, 9410013; Oct. 1, 1994, 9419810
Int. Cl.[6] A24C *5/14*
U.S. Cl. 131—84.1 **13 Claims**

1. A scanning device for a cigarette making machine, comprising a low-energy X-ray beam emitter for passing an X-ray beam through the cigarette rod and towards a first X-ray detector which produces an output signal responsive to the strength of the X-ray



beam reaching the detector, which signal is fed to a control circuit for the cigarette making machine, characterised in that the scanning device includes a second X-ray detector as a reference detector, that both detectors are mounted on a heat-conducting member whereby they are maintained at substantially the same temperature, and that outputs from both detectors are fed to the control circuit, which is arranged to compensate for temperature-induced variations in the output from the first detector by reference to the output from the second detector.

5,797,407

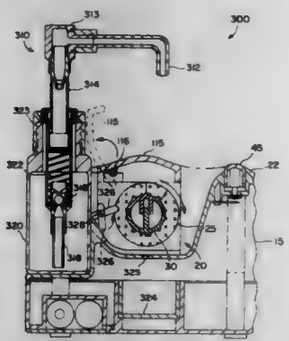
AUTOMATED NAIL POLISH REMOVER

Aaron L. Davis, and Mary B. Davis, both of Minnetonka, Minn., assignors to Sofspin, San Francisco, Calif.

Continuation-in-part of Ser. No. 668,408, Jun. 21, 1996. This application Sep. 19, 1996, Ser. No. 716,026

Int. Cl.[6] A45D *29/05*

U.S. Cl. 132—73.6 **24 Claims**



1. A device capable of removing fingernail polish simultaneously from a plurality of fingernails of a first hand, said device

a base having a first area capable of simultaneously receiving a plurality of fingers of the first hand

a scrubbing member;

a container coupled to the base for holding fingernail polish removing fluid, the container holding the fingernail polish removing fluid separate from the first area of the base;

a downwardly extending nozzle coupled to the reservoir and adapted for selectively delivering fingernail polish removing fluid to the scrubbing member; and

a pump connected to the reservoir for selectively pumping fingernail polish removing fluid from the reservoir and through the downwardly extending nozzle to the scrubbing member.

5,797,408

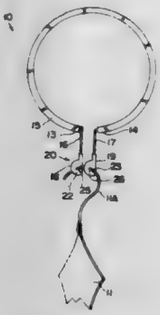
HAIR ACCESSORY WITH PIERCEABLE ORNAMENT HOLDER

Jackie Ann Wilson, 4226 Highway 18 S., Morganton, N.C. 28655

Filed Aug. 8, 1997, Ser. No. 908,991

Int. Cl.[6] A45D *8/00*

U.S. Cl. 132—275 **11 Claims**



1. A hair accessory adapted for being retained in the hair of a wearer to support an ornament therefrom, said hair accessory comprising:

(a) a body; and

(b) attachment means cooperating with said body for suspending the ornament therefrom, said attachment means comprising an elongate leg extending outwardly from said body, and a foot formed at a free end of said leg and having an opening defining an insertion site for receiving a semi-rigid attachment member of the ornament, said foot including a pierceable coating covering the opening at the insertion site and being pierced by an end of the attachment member to secure the ornament to the accessory during wear.

5,797,409

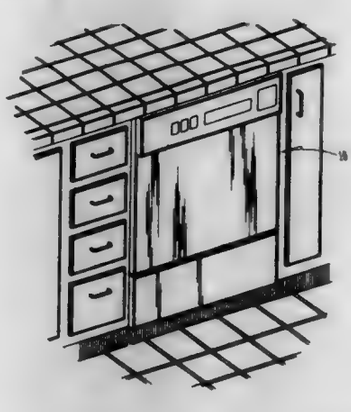
ENHANCED DRAINING AND DRYING CYCLES FOR AN AUTOMATIC DISHWASHER

Randall L. Cooper, Newton; Mitchell N. Corbett, Clive, and Mark A. Cracraft, Urbandale, all of Iowa, assignors to Maytag Corporation, Newton, Iowa

Division of Ser. No. 488,742, Jun. 8, 1995, Pat. No. 5,669,983. This application May 9, 1997, Ser. No. 853,635

Int. Cl.[6] B08B *7/04*

U.S. Cl. 134—18 **3 Claims**



1. A method of controlling a wash cycle of a dishwasher having a pump and at least one rotating wash arm comprising the steps of:

(a) causing the pump to pump a washing liquid to said at least one rotating wash arm to cause the rotating wash arm to rotate with a rotational speed, whereby the pump consumes a current;

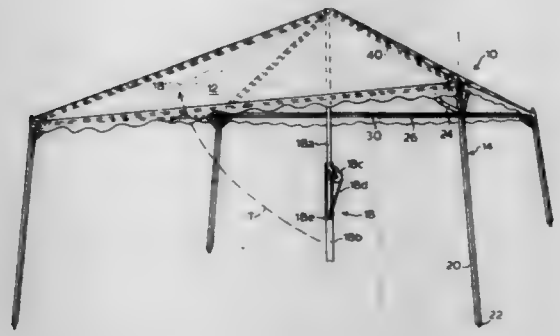
(b) monitoring the rotational speed to determine if the rotational speed has decreased;
(c) monitoring the consumed current to determine if the consumed current has decreased;
(d) draining the washing liquid from the dishwasher upon the determination that the rotational speed has decreased and the consumed current has decreased; and
(e) filling the dishwasher with water and operating the pump during at least a portion of the filling.

5,797,410
CLEAR VIEW WASH SHIELD
Steven C. Gates, P.O Box 1904, Elfers, Fla. 34680
Filed Jun. 2, 1997, Ser. No. 867,055
Int. Cl.[6] B08B *3/02*
U.S. Cl. 134—138 **9 Claims**



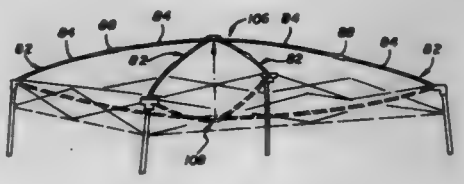
1. A wash shield for washing a paint roller having a handle, comprising:
first and second shield halves, each shield half including a generally flat portion and a semi-cylindrical raised portion within the flat portion, said semi-cylindrical raised portions forming a cylindrical housing for the paint roller when the shield halves are connected together, one of said semi-cylindrical raised portions including a water inlet flap thereon through which water is introduced into the cylindrical housing.

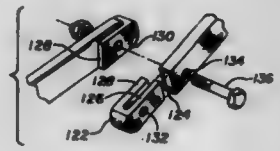
5,797,411
TENT FRAMEWORK
Alonzo E. Parker, 1031 S. Plum St., Durham, N.C. 27701
Filed Apr. 8, 1997, Ser. No. 835,767
Int. Cl.[6] E04H *15/46*
U.S. Cl. 135—136 **6 Claims**



1. A tent framework for supporting a tent canopy and for improved erecting and collapsing a tent, comprising:
(a) a center post having a top end and a bottom end and adapted to be adjusted in length;
(b) a plurality of roof beams each of which being pivotally connected at a first end thereof to said top end of said center post;
(c) a plurality of legs, each being pivotally connected at a first end thereof to a second end of each of said roof beams so as to be pivotable between a first orientation at a first selected angle and a second orientation in which said leg is parallel and adjacent to said roof beam and wherein each said leg includes apparatus adapted to rigidly maintain said leg at said first selected angle to said respective roof beam;
(d) a pair of side bars connected to each of said legs adjacent said first end thereof so as to be pivotable between a first orientation at a second selected angle and a second orientation in which said side bar is parallel and adjacent to each respective said leg and each side bar including apparatus adapted to maintain each said side bar at said second selected angle with respect to each respective said leg; and
(e) means for rectilinearly connecting each said side bar to a mating side bar extending from an adjacent leg when each said side bar and mating side bar are oriented at said second selected angle to each said respective leg.

5,797,412
COLLAPSIBLE SHELTER WITH FLEXIBLE, COLLAPSIBLE CANOPY
Mark C. Carter, 10131 Kenwood Ct., Alta Loma, Calif. 91737
Continuation of Ser. No. 604,801, Feb. 23, 1996, Pat. No. 5,632,293, which is a continuation of Ser. No. 279,476, Jul. 25, 1994, Pat. No. 5,511,572. This application Mar. 25, 1997, Ser. No. 823,616
Int. Cl.[6] E04H *15/50*
U.S. Cl. 135—145 **4 Claims**





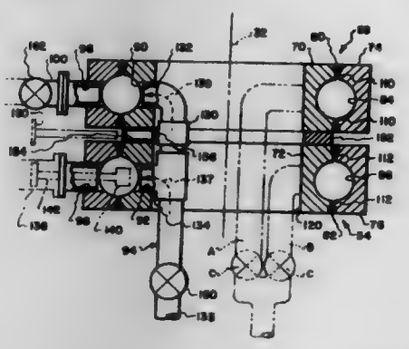
1. A collapsible shelter, comprising:
at least three legs, each of said legs having an upper end and a lower end;
at least two perimeter truss pairs of link members connected to each of said legs, each of said perimeter truss pairs of link members including first and second link members, said first and second link members each having inner ends having a surface defining an opening, a reinforcing plug disposed in each of said openings of said inner ends of said first and second link members, a first bolt pivotally connecting each of said inner ends of said first link members on a side of the collapsible shelter through said reinforcing plugs, and a second bolt pivotally connecting each of said inner ends of said second link members on a side of the collapsible shelter through said reinforcing plugs, whereby said first and second bolts can be tightened on said inner ends of said first and second link members without compromising the structural integrity of the first and second link members.

5,797,413

OFFSHORE FLUID SWIVEL SPARE

Jack Pollack, Calabasas Hills, Calif., assignor to Imodco, Inc., Calabasas Hills, Calif.

Filed Jan. 8, 1997, Ser. No. 780,579
Int. Cl.[6] F16L 27/06
U.S. Cl. 137—1 9 Claims



1. A method for use with a fluid swivel arrangement that includes a plurality of fluid swivels lying in a stack along an axis, with a plurality of said fluid swivels having holes, and a plurality of pipes extending through said holes for carrying fluid up to said fluid swivels, which enables a second of a pair of said fluid swivels to be substituted for a first of the pair, comprising:

flowing fluid from a first of said pipes which extends through a hole of at least one of said fluid swivels of said pair, to said first fluid swivel of said pair;

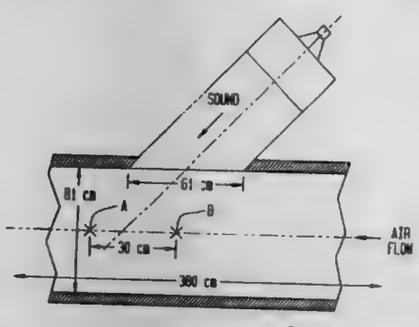
blocking flow from said first pipe to said first fluid swivel and instead flowing fluid from said first pipe to said second swivel of said pair, whereby to enable one pipe to provide fluid for two fluid swivels.

5,797,414

METHOD AND APPARATUS FOR CONTROLLING TURBULENCE IN BOUNDARY LAYER AND OTHER WALL-BOUNDED FLUID FLOW FIELDS

Lawrence Sirovich, New York, N.Y.; Eugene Levich, Tel-Aviv, and Lucien Y. Bronicki, Yavne, both of Israel, assignors to Orlev Scientific Computing Ltd., Yavne, Israel

Continuation of Ser. No. 393,381, Feb. 23, 1995, abandoned, which is a continuation-in-part of Ser. No. 387,567, Feb. 13, 1995. This application Jun. 25, 1997, Ser. No. 903,190
Int. Cl.[6] F15C 1/04
U.S. Cl. 137—13 20 Claims



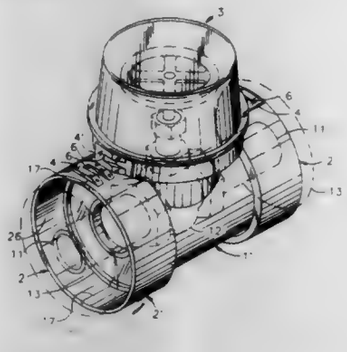
1. A method for controlling turbulence in boundary layer or other wall-bounded fluid flow fields having a turbulent wall region characterized by a system of roll pairs or steaks whose diameter is functionally related to the strength of the flow, and which extend in the direction of flow, and by propagating structures of coherent patterns that propagate obliquely to the direction of flow at a substantially constant group speed, said method including using a linear, or two dimensional array of fine-scale mechanical systems capable of controlled mechanical motion to introduce into the turbulent wall region disturbances that are effective in said region to produce a composite disturbance field having a component due to the static presence of said systems and a component due to their controlled mechanical motion, said composite field being strongly coupled to and modifying the obliquely propagating structures in a manner that increases or decreases the interaction of the propagating structures with the system of roll pairs for locally increasing or decreasing the turbulence in the flow field.

5,797,415

INSULATING JACKET FOR HOT AND COLD PIPING SYSTEMS AND THE METHOD OF USE

R. Kent Nicholson, Phoenix; Norman Somerville, Columbia, and James L. Beckstrom, Parkton, all of Md., assignors to Horizon Resources Corp., Hunt Valley, Md.

Division of Ser. No. 184,013, Jan. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 136,126, Oct. 15, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,845
Int. Cl.[6] F16L 7/00; 9/14
U.S. Cl. 137—15 23 Claims



1. A method of heat insulating an element of a hot or cold fluid distribution system comprising the following steps,

providing an insulation system formed by a thin plastic jacket material around the element,

choosing the jacket material thickness such that the insulation value of the jacket material is insignificant relative to the overall insulation value of the insulation system,

forming an air space around the element by the use of the plastic jacket and means within the jacket for abutting the element to allow for the formation and the maintenance of the air space between the jacket and the element, the air space forming substantially all of the insulation value of the insulation system,

omitting other kinds of solid insulation from the air space,

providing a translucent portion in the jacket so that one of the element, the interior portions of the jacket or the interior wall of the jacket can be inspected without removing the jacket, and

providing at least one joint along the length of the jacket for ease of installation, the jacket carrying a seal that allows an installer to install the jacket by closing the joint to thereby effect sealing of the joint.

5,797,416

FAUCET AND WATER PIPE FREEZE-PROTECTION DEVICE

John D. Wilcox, 775 Spring Hill Rd., Talladega, Ala. 35160

Filed Jan. 2, 1997, Ser. No. 778,368
Int. Cl.[6] E03B 7/12; F16L 55/00
U.S. Cl. 137—60 17 Claims

1. A hollow nipple composed of material a) capable of withstanding maximum pressure of water received from and retained



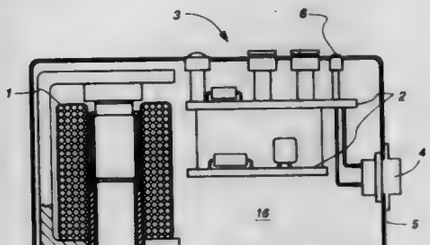
by an open faucet and b) capable of expansion to accommodate complete freezing of water contained therein without turning off the faucet, the nipple having only one opening which is in an end provided with means for secure and water-tight direct attachment to an outlet of the faucet.

5,797,417

ELECTRIC DEVICE FOR MANAGING OVER TIME THE OPERATION OF ELECTROVALVES

Sylvain DeLattre, 304 Chemin du Bellet, 06200 Nice, and Gilles DeLattre, 6 Bd Kennedy, 06800 Cagnes sur Mer, both of France

Filed Sep. 27, 1995, Ser. No. 533,999
Claims priority, application France, Sep. 27, 1995, 94 11773
Int. Cl.[6] A01G *25/16*
U.S. Cl. 137—78.3 **18 Claims**



1. An automatic pilot for managing over time the operation of an associated valve by way of on-site or remote control of said automatic pilot, said automatic pilot comprising:

a coupling for physically attaching said automatic pilot in operative relation to an associated fluid flow control valve;

a solenoid having a bistable actuator movable between a stable valve-closed position and a stable valve-open position, for respectively closing and opening the associated valve;

a permanent magnet associated with said actuator for biasing said actuator to one of said stable positions;

circuit means including a coil associated with said actuator and operative upon energization of said coil to overcome said biasing of said actuator by said magnet, whereupon said actuator assumes the other of said stable positions;

first means enabling an on-site control input to said circuit means; and

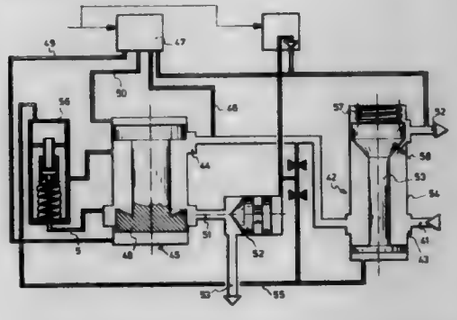
second means enabling a remote control input to said circuit means from a remote location.

5,797,418

DIFFERENTIAL PRESSURE DETECTOR WITH REDUCED REACTION FORCES

Michel Marie André Albert Lechevalier, Bombon, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "Snecma" , Paris, France

Filed Dec. 27, 1995, Ser. No. 578,911
Claims priority, application France, Jan. 11, 1995, 95 00239
Int. Cl.[6] G05D *7/03*
U.S. Cl. 137—115.07 **5 Claims**



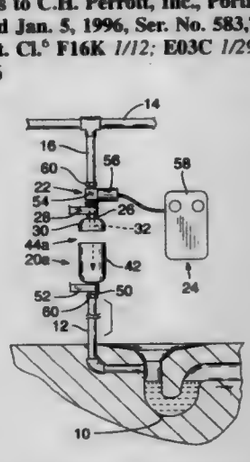
1. A differential pressure detector having reduced reaction forces for providing to main fuel relief valve an output pressure modulated as a function of the pressure drop between the pressures measured upstream and downstream of a fuel metering device, said detector comprising first and second input chambers for connection respectively to said pressures upstream and downstream of said fuel metering device, a modulated pressure output chamber connected to said main fuel relief valve for supplying said modulated output pressure to said main fuel relief valve for actuating said main fuel relief valve, a sleeve which is linearly movable in response to changes in the difference between the pressures in said first and second input chambers, and a fixed slide valve which is partly received within said sleeve, said slide valve having a bore opening into said output chamber and at least one side port for communicating said first input chamber with said bore of said slide valve, and hence with said output chamber, the aperture of said side port being varied by said sleeve during linear movement of said sleeve to control the communication between said first input chamber and said output chamber.

5,797,419

SEWER LINE RAP PRIMING ASSEMBLY AND ANTISIPHONING CONDUIT COMPONENT THEREFOR

Charles H. Perrott, and Frank W. Dowdican, both of Portland, Oreg., assignors to C.H. Perrott, Inc., Portland, Oreg.

Filed Jan. 5, 1996, Ser. No. 583,723
Int. Cl.[6] F16K *1/12*; E03C *1/296*
U.S. Cl. 137—216 **8 Claims**



1. A gap-type anti-siphoning conduit component, comprising:

a) a shield segment of enlarged diameter,

b) a pipe of restricted diameter within and secured to the shield segment,

c) upper connecting means for connecting said pipe to an upstream supply conduit containing fluid under pressure,

d) a funnel segment of enlarged diameter positioned below the shield segment for receiving fluid discharged from said pipe,

e) lower connecting means for coupling the funnel segment to a downstream discharge conduit for conveying the fluid to a predetermined processing location, and

f) means for supporting the shield and funnel segments in vertically aligned and spaced apart relation for forming an uninterrupted gap therebetween opening to the exterior and isolating the shield and funnel components from each other for preventing bacteria transfer across said uninterrupted gap.

5,797,420

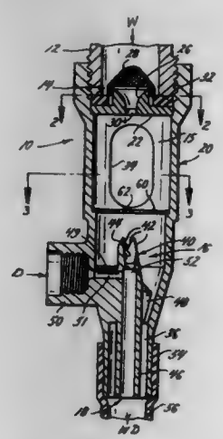
PROPORTIONER

Michael L. Nowicki, House Springs, and Paul E. Naslund, St. Louis, both of Mo., assignors to Dema Engineering Co., St. Louis, Mo.

Continuation of Ser. No. 259,631, Jun. 14, 1994, Pat. No. 5,518,020. This application May 20, 1996, Ser. No. 650,755

Int. Cl.[6] E03C *1/10*

U.S. Cl. 137—216 **9 Claims**



8. A liquid proportioner comprising:

(a) a valve body including an inlet, an outlet and an air gap chamber disposed between said inlet and said outlet, said air gap chamber including side opening means communicating with atmosphere;

(b) partition means disposed in said inlet and including an inlet nozzle; and

(c) venturi means disposed in said outlet and at least partially spaced from said body to define outer passage means, said venturi means including a venturi nozzle, a venturi tube and an intermediate venturi throat, said venturi nozzle being axially aligned with said inlet nozzle and including an outer surface which tapers toward a point in the direction of said inlet nozzle.

5,797,421

DRY HYDRANT SIPHON ASSEMBLY

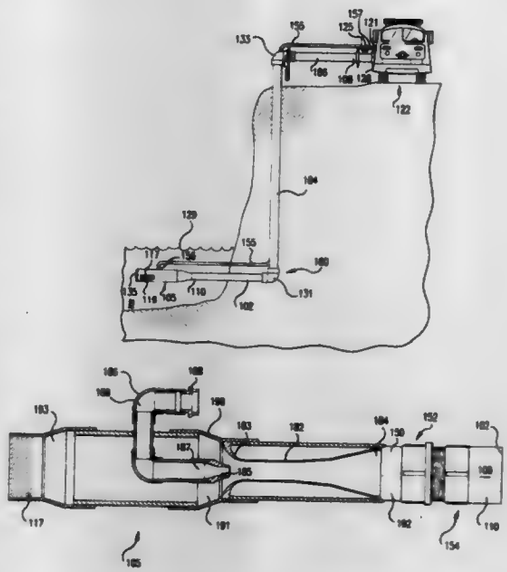
Stanley Leo Merrett, Dadeville, Ala., assignor to Schlumberger Industries, Inc., Norcross, Ga.

Continuation-in-part of Ser. No. 180,406, Jan. 12, 1994, Pat. No. 5,509,437. This application Jun. 7, 1995, Ser. No. 473,908

Int. Cl.[6] E03B *9/02*

U.S. Cl. 137—236.1 **25 Claims**

1. An above-ground dry hydrant in fluid communication with an open body of water, comprising:



(a) a hydrant pipe having a submerged end located within said open body of water and an unsubmerged end located elevationally above the body of water, said submerged end being disposed substantially horizontally, and said unsubmerged end including attachment means for connecting to a pump contained on a fire truck;

(b) a siphon assembly comprising a housing defining therein an inner chamber having a first end in fluid communication with the submerged end of the hydrant pipe and an opposite second end in fluid communication with the body of water, a nozzle jet mounted within the inner chamber and having an upstream end adjacent the first end of the housing and an opposite downstream end, and a venturi tube having a first venturi end located within the inner chamber intermediate the second end of the inner chamber and the downstream end of the nozzle jet, a second venturi end disposed outside the housing, and a conduit connecting the first venturi end and the second venturi end and allowing fluid communication therebetween, said housing being submerged and oriented along said horizontally disposed portion of said hydrant pipe; and

(c) a pressurized fluid source in communication with the venturi tube of the siphon assembly wherein the pressurized fluid enters the second venturi end of the venturi tube, exits the first venturi end, and then enters the downstream end of the nozzle jet,

whereby the siphon assembly is operable to force water in a first direction through the hydrant pipe and out of the unsubmerged end and impede the flow of water through the hydrant pipe in an opposite second direction.

5,797,422

FAUCET HANDLE ASSEMBLY

Steven John Tokarz, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.

Filed Dec. 20, 1996, Ser. No. 770,672

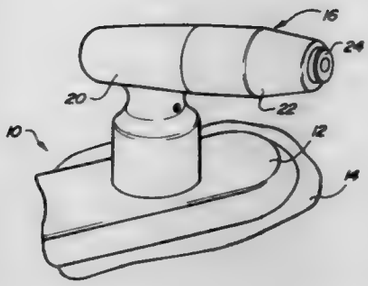
Int. Cl.[6] F16K *31/60;43/00*

U.S. Cl. 137—315 **8 Claims**

1. A faucet handle kit assembly for selectively controlling the flow of fluid through a faucet, said handle kit assembly comprising:

a base adapted to cooperate with a valve of the faucet, said base including a seat having first and second threaded bores coaxially disposed within said seat of said base, said first bore having a larger diameter than said second bore;

a plurality of handle bodies adapted to be disposed within said seat of said bore; and



means for securing said plurality of handle bodies on said seat of said base, said means threadably cooperating with one of said first and second threaded bore to secure interchangeable handle bodies in said seat;

said first and second threaded bore adapted to receive interchangeable plurality of handle bodies, an exterior portion of said plurality of handle bodies abuttingly engaging an exterior surface of said base adjacent said first bore, one of said handle bodies being threadably received in said first threaded bore and the other of said handle bodies being received in said second threaded bore for fixedly securing the handle bodies in their respective bores.

5,797,423

DEVICE FOR CUTTING OFF A FLOW IN A CONDUIT FOR FLUIDE

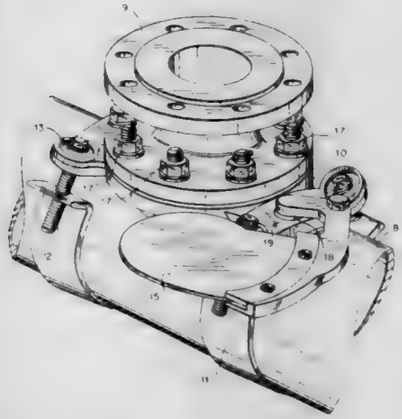
Marcelo Hombravella Abbad, Emancipacio, 26-4th floor, 2a door, 08022 Barcelona, Spain, and Daniel Guillo Vive, Roger de Lluria 128, 08037 Barcelona, Spain

Filed Sep. 27, 1995, Ser. No. 534,462

Claims priority, application Spain, Sep. 27, 1994, 9402028

Int. Cl.[6] F16K *43/00;3/06*

U.S. Cl. 137—315 **3 Claims**



2. For use on a conduit which may be under pressure of a fluid, an assembly which permits mounting of an additional conduit, said assembly comprising:

a tubular body having a flanged bottom and configured for mounting on a conduit; said tubular body having a top formed as a flange, a first and a second tabs arranged on opposite sides of the flange, each tab having an opening near the tab ends and at least one tab having a central hole serving as a bearing;

a first gasket providing a seal between the conduit and the tubular seat bottom;

a second gasket inserted into a circular groove of the flange;

a pair of fastening means for pressing said tabs and thus said tubular body against the conduit;

a reel having flanges on its bottom and top ends;

a sluice having a valving portion movable between the flanged ends of said tubular body top portion and said reel bottom portion, said sluice including a radially extending external pivot arm portion including an axle inserted into said hole, through said radially extending tab to act as a bearing to permit rotary motion of the sluice relative to said flanged ends so that fluid flow is cut off in a first sluice position by said valving portion when it extends across said conduit between said flanged ends and fluid can flow through the conduit in a second sluice position when said valving portion is moved externally of said flanged ends; and

a plurality of bolts and nuts for pressing the tubular seat flange and the reel bottom flange together.

5,797,424

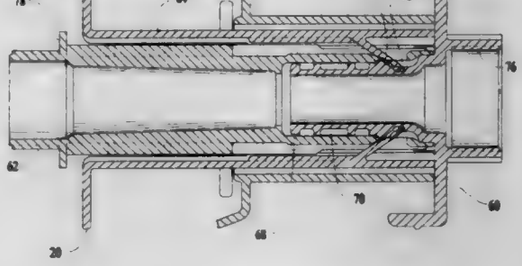
HOSE REEL

Thomas A. Tisbo, Barrington Hills; Stephen P. Whitehead, Elgin, and Brian Moon, Sycamore, all of Ill., assignors to Suncast Corporation, Batavia, Ill.

Continuation of Ser. No. 514,471, Aug. 11, 1995. This application Feb. 28, 1997, Ser. No. 808,878

Int. Cl.[6] B65H *75/34*

U.S. Cl. 137—355.27 **3 Claims**



1. An improved spool attachment apparatus comprising:

a hose coupler insertable through a first side surface of a hub of a hose reel, said hose coupler forming a flange with a centrally disposed threaded inlet opening and outlet opening, said hose coupler having a flange means with alignment tabs for securing to a first side surface of the hub;

a hose connector having and inlet and an outlet, said inlet forming a receptacle for coupling to said hose coupler, said receptacle extending through said hub with said outlet extending from a second side surface of said hub;

a coupling sleeve secured to said hose connector for releasably securing said hose connector to said hose coupler, said coupling sleeve including a plurality of inwardly biased tabs for securing said hose connector to said hose coupler and a finger actuated pull lever for moving said biased tabs outwardly allowing disengagement of said biased tabs for disengaging said hose connector from said hose coupler;

at least one o-ring secured to said hose coupler for fluidly sealing said hose coupler to said hose connector;

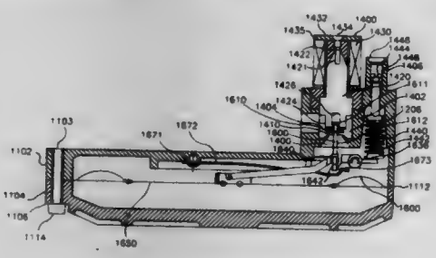
whereby said hub forms a portion of a reel flange providing a fluid coupling between the inlet and outlet during rotation of the reel flange.

5,797,425

THREE STAGE GAS PRESSURE REGULATOR

Stephen A. Carter, and Michael A. Knappers, both of Mississauga, Canada, assignors to Sherex Industries, Ltd., Ontario, Canada

Filed Nov. 28, 1995, Ser. No. 563,391
Int. Cl.[6] G05D *16/06*
U.S. Cl. 137—505.46 7 Claims



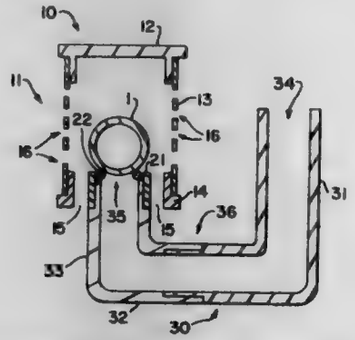
1. A pressure regulator comprising:
(a) a housing comprised of first and second housing members;
(b) a diaphragm disposed within said housing between said first and second housing members;
(c) a lever assembly pivotally mounted on said first housing member, one end of said lever assembly being hingedly connected to said diaphragm;
(d) valve means for regulating the flow of fluid into said housing, said value means, comprising a pintle assembly pivotally mounted on said lever assembly; and
(e) spring means engaging the other end of said lever assembly and acting to urge said valve means into an open position.

5,797,426

CHECK VALVE AND TRAP ASSEMBLY

Edwin O. Powell, 6479 Bagley Rd., Millwood, Ga. 31552

Filed Apr. 10, 1997, Ser. No. 838,729
Int. Cl.[6] F16K *15/04;31/20*
U.S. Cl. 137—533.11 7 Claims



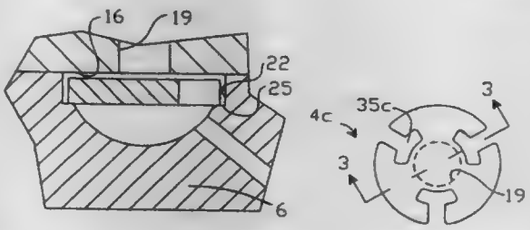
1. A combination one way check valve and fluid trap device for use with fluid drain systems used to remove condensate moisture from apparati such as air conditioners, coolers and ice makers, the device comprising a float housing directly connected to a generally U-shaped fluid trap, said float housing containing a ball float positioned on a float seat, a float seal contained within said float seat, said float seal comprising an O-ring, said fluid trap comprising an inflow conduit segment having an inflow opening for connection to the outflow opening of a fluid drain system, an outflow conduit segment connected to said inflow conduit segment, said outflow conduit segment having an outflow outlet connected to said float seat, whereby said ball float is sealingly seated only on said float seal within said float seat unless water flows through said fluid trap, such that no water or gas can enter said fluid trap through said outflow opening.

5,797,427

FUEL INJECTOR CHECK VALVE

Alfred J. Buescher, 17001 Shaker Blvd., Shaker Heights, Ohio 44120

Filed Oct. 11, 1996, Ser. No. 728,752
Int. Cl.[6] F16K *15/00*
U.S. Cl. 137—533.17 5 Claims



1. In a high output high pressure diesel unit injector of the EMD type having an injector nozzle, a plunger bushing, a check valve cage, a check valve within the cage, and a spacer interposed between the bushing and cage, said check valve comprising a disc with upper and lower parallel flat disc surfaces parallel to each other, said check valve having fuel delivery passages opening therethrough and annularly spaced at equal intervals around its annular extent, said fuel delivery passages being formed as slot or notch openings through the parallel flat surfaces, said cage and check valve defining a diametral clearance between the check valve outside diameter and cage inside diameter for free movement of the check valve, the spacer having a flat surface to serve as the check valve seat to prevent fuel from leaking back into the plunger bushing when the check valve is seated against the spacer flat surface, the spacer having a central inlet hole through which fuel flows from the plunger bushing bore, the valve having a sealing width defined by the radial distance from said inlet hole to the closest points on said fuel delivery passages when the valve is centered over the inlet hole, the fuel flowing from said central inlet hole generally radially outward and between said spacer flat surface and said disc upper flat surface, said flow between said latter two flat surfaces being interfacial with respect to the faces presented by said latter two flat surfaces, fuel then flowing non-interfacially down through said fuel delivery passages, the check valve cage having an internal shoulder at the outer edge of the check valve to limit the check valve lift, said check valve cage also having a fuel chamber below said shoulder, said fuel chamber receiving fuel which has flowed through said fuel delivery passages, said shoulder being sufficiently narrow to permit said flow of fuel through said fuel delivery passages to said fuel chamber, the valve cage having outlet passages connecting said fuel chamber with downstream passages leading to conduits for delivering fuel to the injector nozzle, said interfacial flow of said fuel including flow along relatively short paths of interfacial flow at relatively high flow velocities and through-put rates as compared to flow along any remaining paths included in said interfacial flow, said short paths together sweeping out areas of relatively high velocity interfacial flow, the improvement wherein the radially innermost edges of said fuel delivery passages themselves, as distinguished from the edges of the solid discs in which they are formed, are concave along a major part of their annular extents.

5,797,428

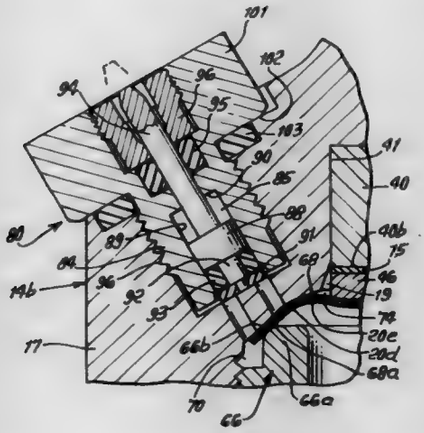
POP-ALERT DEVICE

Robert F. Miller, Arcadia, Calif., assignor to Vemco Corporation, San Dimas, Calif.

Continuation of Ser. No. 583,786, Jan. 11, 1996, Pat. No. 5,669,414. This application Jul. 1, 1997, Ser. No. 886,355

Int. Cl.[6] F16K *37/00*

U.S. Cl. 137—557 10 Claims



1. In a valve unit to control the flow of high-pressure fluid, the combination comprising

a) a housing having a fluid inlet and a fluid outlet,

b) a flow port in the housing communicating between the inlet and outlet, and a seat about said flow port,

c) stem structure in the housing, and a stopper carried by the stem structure to be moved therewith longitudinally axially along a first axis toward and away from said seat,

d) a stack of metallic diaphragms connected to the stem structure and to the housing, to flex and seal off therebetween as the stem structure moves, there being a flow chamber in the housing at one side of the diaphragms, and a control chamber in the housing at the opposite side of the diaphragms,

e) control means carried by the housing and extending into the control chamber to effect said movement of the stem structure, the control means being movable relative to the housing,

f) signal means carried by the housing to signal presence or absence of pressurized fluid leakage from the flow chamber, and from the control chamber, said signal means including a signaling element movable along a second axis extending at an angle relative to said first axis,

g) said stack of metallic diaphragms having central portions thereof carried by the stem structure so that said diaphragm stack flexes as aforesaid.

5,797,429

LINEAR SPOOL VALVE DEVICE FOR WORK EXCHANGER SYSTEM

Scott Shumway, Hamilton, Bermuda, assignor to DesalCo, Ltd., Hamilton, Bermuda

Filed Mar. 11, 1996, Ser. No. 613,994

Int. Cl.[6] F16K *11/07*

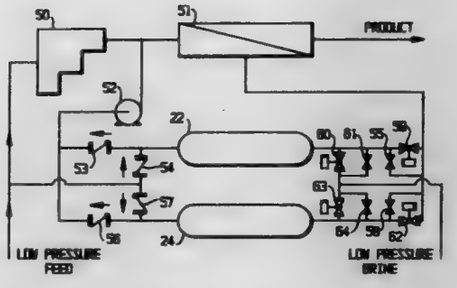
U.S. Cl. 137—625.69 18 Claims

1. A work exchanger system, comprising:

a first work exchanger,

a second work exchanger, and

linear spool valve means connected to said first work exchanger and to said second work exchanger for directing fluid under high pressure to said first and second work exchangers and for directing fluid under low pressure from said first and second work exchangers.



5,797,430

ADAPTIVE HYDROPNEUMATIC PULSATION DAMPER

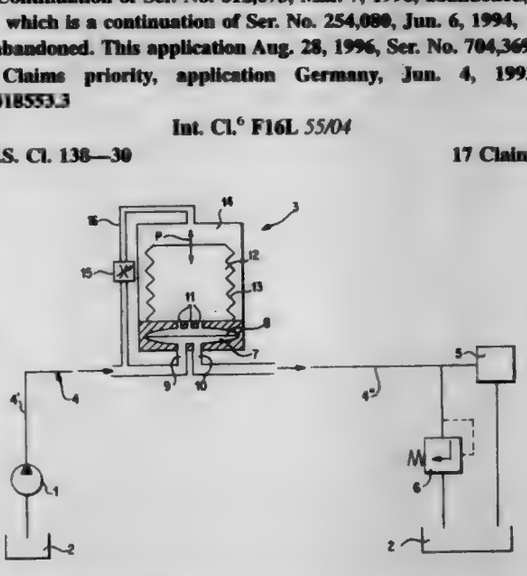
Wolfgang Backé; Joachim Esser, both of Aachen; Heiko Bublitz; Uwe Kooths, both of Stuttgart, and Oliver Trecker, Wiesbedau, all of Germany, assignors to Mercedes-Benz AG, United Kingdom

Continuation of Ser. No. 612,073, Mar. 7, 1996, abandoned, which is a continuation of Ser. No. 254,080, Jun. 6, 1994, abandoned. This application Aug. 28, 1996, Ser. No. 704,369

Claims priority, application Germany, Jun. 4, 1993, 4318553.3

Int. Cl.[6] F16L *55/04*

U.S. Cl. 138—30 17 Claims



1. A hydropneumatic pulsation damper for hydraulic systems subject to pulsations of hydraulic medium with variable operating pressure, comprising a chamber configured to be coupled with the hydraulic system and a vapor or gas medium enclosed in said chamber and exposed to the hydraulic medium pulsations, said vapor or gas medium forming a volumetrically elastic cushion being impacted by the hydraulic pressure via a relatively unthrottled first connection so as to permit displacement of only a minimum quantity of the hydraulic medium, and via a throttled second connection to permit displace of quantities of the hydraulic medium substantially greater than the minimum quantity of the hydraulic medium, and said chamber being operatively configured as a hydraulic area connected with the hydraulic system via at least the throttled second connection and a gaseous area divided from the hydraulic area by a separator having substantial movability and low movement resistance.

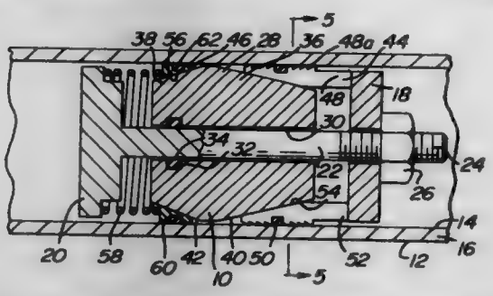
5,797,431
INNER DIAMETER PIPE PLUG

Robert B. Adams, Valley Forge, Pa., assignor to EST Group, Inc., Harleysville, Pa.

Continuation of Ser. No. 494,099, Jun. 23, 1995, Pat. No. 5,676,174. This application Oct. 7, 1997, Ser. No. 946,086

Int. Cl.[6] F16L *55/10*

U.S. Cl. 138—89 **20 Claims**



20. An inside-diameter pipe plug for creating a fluid-tight seal along an inner periphery of a pipe adjacent an open end of the pipe, comprising:

a shaft extending axially between and connecting together a distal end plate and a proximal end plate;

means for displacing said end plates toward one another along said shaft;

a camming element having a pair of frustum-shaped segments which floatingly engage said shaft between said end plates, one of said frustum-shaped segments providing said camming element with a distal outer peripheral frustoconical wall facing said distal end plate and the other of said frustum-shaped segments providing said camming element with a proximal outer peripheral frustoconical wall facing said proximal end plate;

a set of grippers radially spaced from said shaft and extending between said proximal outer peripheral wall of said camming element and said proximal end plate, each of said grippers having a gripping surface for engaging the inner periphery of the pipe, an end portion for engaging the proximal end plate, and a tapered portion for slidably engaging said camming element;

a compressible O-ring for engaging the inner periphery of the pipe;

a resilient annular seal element having an inner peripheral tapered wall slidably engaging said distal outer peripheral frustoconical wall of said camming element and having an outer peripheral groove for retaining said O-ring; and

a driving insert for engaging said seal element and for urging said seal element toward said distal outer peripheral frustoconical wall of said camming element so that said seal element and said O-ring are compressed against the pipe.

5,797,432
PIPE REPAIR CLAMP

Peter George Bennett, Kirkhill, and William Edgar Robinson, Chapel Park, both of England, assignors to British Gas plc, London, England

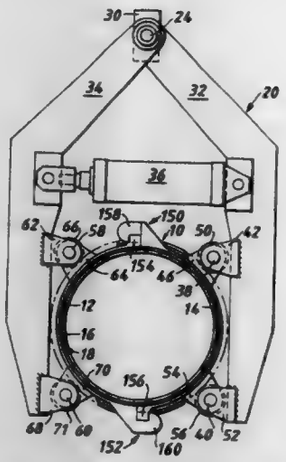
Filed Dec. 11, 1996, Ser. No. 762,752

Claims priority, application United Kingdom, Dec. 14, 1995, 9525590

Int. Cl.[6] F16L *55/168*

U.S. Cl. 138—99 **3 Claims**

1. A clamp for repairing a pipe comprises two half-shells held together about said pipe, by two sets of interlocking formations, both half-shells being separated from said pipe by a gap, comprising in each set a series of abutments integral with a said half-shell arranged in a castellated formation and providing first surfaces facing away from the neighbouring half-shell and a series of hooks integral with said neighbouring half-shell and providing second surfaces opposed to and engaging said first surfaces of said abutments, the gap being closed by two longitudinal seals between the half-shells and by two 180° degree seals between the half-shells and the pipe at each end of the clamp, said gap being fillable with grout, said formations having been initially positioned by relative movement of said half-shells in a first direction transversely approaching said pipe, said hooks passing between said abutments in each set, then subsequently positioned by relative movement of said half-shells in a second direction parallel to the length of said pipe to bring said first surfaces and said second surfaces into opposition, and finally said first surfaces and said second surfaces being engaged by relative movement of said half-shells in a third direction transversely leaving said pipe.



5,797,433
WEAVING APPARATUS WITH MOTOR CONTROLLED WEFT INSERTION

Carlos Matas Gabalda, Ardéche, France, assignor to ICBT Diederichs, France

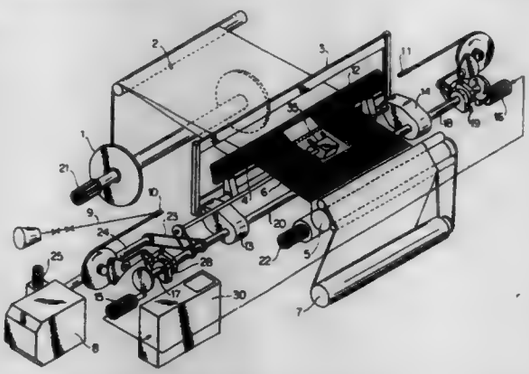
PCT No. PCT/FR95/01528, § 371 Date Jun. 3, 1997, § 102(e) Date Jun. 3, 1997, PCT Pub. No. WO96/17985, PCT Pub. Date Jun. 13, 1996

PCT Filed Nov. 21, 1995, Ser. No. 849,580

Claims priority, application France, Dec. 7, 1994, 37 14951

Int. Cl.[6] D03D *47/18;51/00*

U.S. Cl. 139—449 **3 Claims**



1. Weaving machine, in which the insertion of a weft (**9**) is carried out by means of two grippers (**10**, **11**) introduced simultaneously into a shed (**4**) from each side of the machine, one gripper (**10**) serving for delivering weft yarn, taken from a bobbin located on one side of the machine, as far as the middle of the width of the shed where there is then a transfer to a second gripper (**11**) which, during a retraction thereof delivers yarn on a side opposite to a feed side, a pick put in place subsequently and being beaten up against a last pick of the fabric by means of a reed carried by a

batten (12), characterized in that the control of the grippers (10, 11) and of the batten (12) is carried out by two electric motors (15, 16) arranged on each side of the machine:

each motor (15, 16) driving a machine shaft (17, 18) controlling the grippers (10, 11) and batten-carrying housing (13, 14) located on the same side as the said motor;

said two motors (15, 16) being supplied in parallel by means of one or more frequency converters (30) and being connected to one another by synchronizing means.

5,797,434

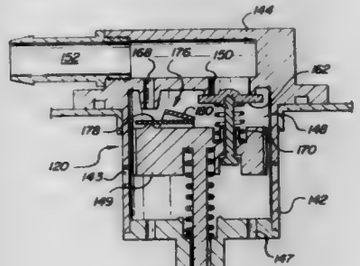
ONBOARD VAPOR RECOVERY SYSTEM WITH TWO-STAGE SHUTOFF VALVE

Robert P. Benjey, Dexter, and Rudolph Bergsma, Ann Arbor, both of Mich., assignors to G.T. Products, Inc., Ann Arbor, Mich.

Division of Ser. No. 295,196, Aug. 24, 1994, Pat. No. 5,590,697. This application Sep. 13, 1996, Ser. No. 713,584

Int. Cl.[6] F16K *17/04*

U.S. Cl. 141—59 **6 Claims**



1. In a vehicle fuel system having a fuel tank, a dynamically-sealed filler pipe, and onboard vapor recovery apparatus, a fuel vapor venting control system comprising:

control valve means in the fuel tank for venting fuel vapor from the tank to the vapor recovery apparatus at a first higher rate when the fulel level in the tank is below a first level, at a second lower rate when the fulel level in the tank reaches the first level, and for closing when a second higher fuel level in the tank is reached, the control valve means comprising two stage offset valve means responsive to the level of liquid fuel in the tank, the offset valve means further comprising liquid level responsive float means, first and second valve means associated with the float means, and first and second vent outlet means, the float means being responsive to liquid fuel reaching the first level to force the first valve means to a position closing the first vent outlet means, the first valve means further including means for biasing the first valve means from the second valve means, the float means being responsive to liquid fuel level above the first level to force the second valve means against the bias of the first valve means into sealing engagement with the second vent outlet means to close the control valve means;

valve means in the fuel tank for maintaining a pressure head in the tank sufficient to induce filler nozzle shutoff when the control valve means is closed and for selectively venting fuel vapor to the vapor recovery apparatus independently of the control valve means; and

check valve means in a lower end of the filler pipe to close the filler pipe with respect to the fuel tank between refueling activity.

5,797,435

APPARATUS FOR FILLING POWDER

Yasutaro Wada, Suita, Japan, assignor to Carbone Industrie, Villeurbanne Cedex, France

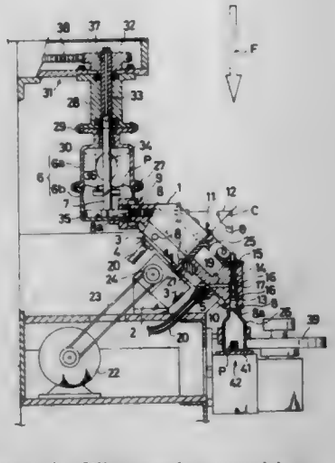
PCT No. PCT/JP95/01645, § 371 Date Feb. 13, 1997, § 102(e) Date Feb. 13, 1997, PCT Pub. No. WO96/06009, PCT Pub. Date Feb. 26, 1996

PCT Filed Aug. 22, 1995, Ser. No. 776,837

Claims priority, application Japan, Aug. 23, 1994, 6-233992

Int. Cl.[6] B65B *1/10*

U.S. Cl. 141—81 **6 Claims**



1. An apparatus for filling powder, comprising:

a rotary disk with a peripheral edge portion having a plurality of receiving holes equidistantly arranged therealong, a vacuum sucking portion and a discharging and filling portion; said rotary disk having a rotational axis which is inclined with respect to a support surface, said receiving holes each having a center axis arranged on an imaginary conical surface having said rotational axis as a center axis and an apex angle within a range of 60° to 120°;

an intermittent rotation driving device interlockingly connected to said rotary disk;

a powder hopper having an agitator arranged therein which is rotatably supported for rotation about an agitator rotational axle and a boss portion located above said powder hopper, said boss portion supporting said agitator for rotation about said agitator rotational axle; and

a slide valve having a sucking port selectively connectable so as to be in communication with a first one of said receiving holes that is positioned at said vacuum sucking portion and a discharging port selectively connectable so as to be in communication with a second one of said receiving holes positioned at said discharging and filling portion; said first and second ones of said receiving holes having a first opening and a second opening, respectively; said first opening located on a lateral side of said first one of said receiving holes and said powder hopper disposed on said lateral side of said first one of said receiving holes; said second opening located at a lower portion of said second one of said receiving holes;

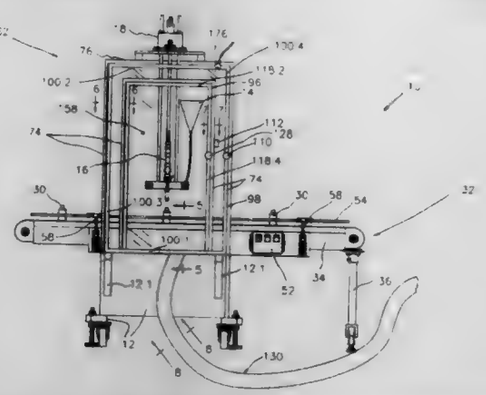
wherein said first opening is positionable to face an interior of said powder hopper so as to enable introduction of a powder within said powder hopper into said first one of said receiving holes by a centrifugal force resulting from agitation of said agitator and a vacuum pressure from said sucking port and said second opening is openable above a powder container adapted to be positioned therebelow on said support surface so as to enable discharge of an amount of powder accommodated in said second one of said receiving holes by a discharge flow from said discharging port to fill said amount of powder into said powder container.

5,797,436

LIQUID FILLING MACHINE TECHNICAL FIELD

Iver J. Phallen, Youngstown; Richard J. Jezuit, Lancaster, and Steven D. Payne, Lockport, all of N.Y., assignors to Oden Corporation, Buffalo, N.Y.

Filed Jun. 26, 1995, Ser. No. 494,918
Int. Cl.[6] B65B 31/00
U.S. Cl. 141—82 9 Claims



1. A liquid filling machine for filling containers with materials which are either solid at room temperatures or highly viscous; the filling machine comprising:

a product reservoir;

a filling nozzle;

flow control means for controlling the flow of product from the reservoir to the nozzle;

an enclosure about the product reservoir and the filling nozzle, the sides of the enclosure being formed of spaced apart inner and outer walls, there being a trapped air space between the inner and outer walls to provide insulation so that heat loss from the enclosure will be minimized, at least a portion of the side walls being formed of a clear material so that the filling operation within the enclosure cam be observed;

an endless conveyor having upper and lower flights, which upper flight supports containers to be filled via the filling nozzle, the upper flight entering and exiting the enclosure; and

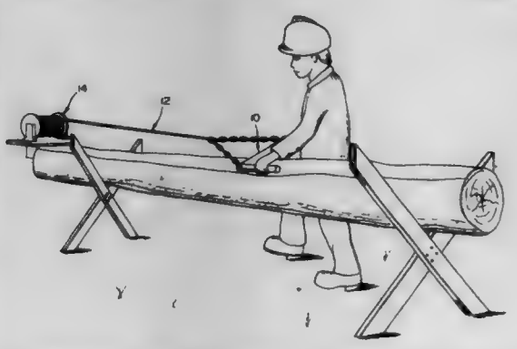
heating means for heating the enclosure, wherein the heating means includes a hot air heater disposed outside of the enclosure, and a hot air duct which interconnects the heater with the enclosure, wherein the hot air duct is formed of two concentric silicone tubes which are separated from each other by ceramic fiber insulation material.

5,797,437

LOG PEELER

Greg Beeson, P.O. Box 121, Somers, Mont. 59932

Filed Apr. 3, 1997, Ser. No. 832,520
Int. Cl.[6] B27L 1/06
U.S. Cl. 144—208.1 17 Claims



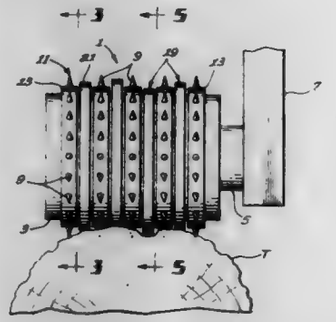
1. A log peeler system comprising a log peeling knife means adapted to be held by an operator and guided by the operator along the surface of a log to debark or shape a log; powered cable drum means including a pulling cable and a cable drum with said pulling cable extending from a cable drum to cable attachment means on said knife means; mounting means for detachably mounting said cable drum means to an end of a log so that winding said pulling cable onto said drum will cause said knife means to be pulled along the log toward said mounting means, said mounting means being constructed and arranged to position and hold said cable drum means near the log when said knife means is pulled along the log; and control means locatable near said knife means for controlling said cable drum means such that cable winding onto said drum can be controlled by the operator near said knife means.

5,797,438

TOOTHED ROLLER

Stanley E. Dye, Latah, Wash., assignor to Denharco Inc., St. Hyacinthe, Canada

Filed May 13, 1997, Ser. No. 855,398
Int. Cl.[6] B27B 31/00
U.S. Cl. 144—246.1 12 Claims



1. A toothed roller having a main body rotatable about a longitudinal axis; circumferential rows of teeth on the outer surface of the main body, each row extending transverse to the longitudinal axis; and cleaning means mounted on the main body to automatically push debris out from between the rows of teeth when the roller is rotated against an object from which it picks up debris.

5,797,439

GOLF BAG COVER AND METHOD FOR USING

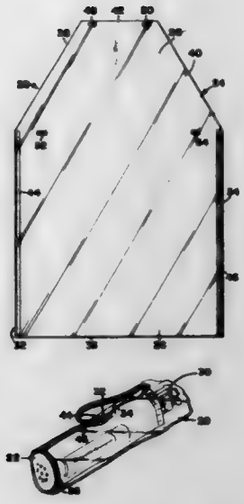
David S. Brandriet, 1408 Sixth Ave. SE., Watertown, S. Dak. 57201

Filed Jan. 17, 1997, Ser. No. 784,358
Int. Cl.[6] A63B 55/00
U.S. Cl. 150—159 15 Claims

1. An article for covering a golf bag including golf clubs, the golf bag having a top opening through which heads of the golf clubs project, the article comprising:

a cover member including a substantially rectangular main portion integral with a flap portion, the main portion including substantially parallel first and second longitudinal edges and a transverse edge positioned opposite from the flap portion and extending generally transversely between the first and second longitudinal edges; and

a first fastening structure constructed and arranged for holding the first longitudinal edge adjacent to the second longitudinal



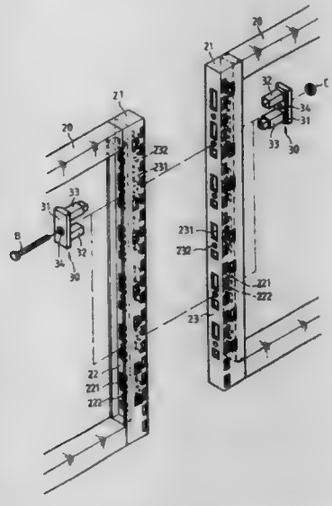
edge such that the main portion of the cover member is adapted for surrounding the golf bag and the flap portion is adapted for covering the heads of the golf clubs.

5,797,440

PARTITION FRAMEWORK FOR DIVIDING A SPACE INTO SMALL COMPARTMENTS

Chi-Cheng Tsai, No. 9, Kungyeh North 3rd., Nankang Ind. Zone, Nantou, Taiwan

Filed Nov. 19, 1996, Ser. No. 752,083
Int. Cl.[6] A47G *5/00*
U.S. Cl. 160—135 **2 Claims**



1. A partition framework comprising:

a plurality of frame parts each having an upright support which is provided with a plurality of fastening holes and through holes;

a plurality of connection heads each comprising a base, a hollow projection perpendicular to said base, and a stepped hollow projection perpendicular to said base and located on an opposite portion of said base from said hollow projection, said base being provided with a screw hole located between said hollow projection and said stepped hollow projection;

said frame parts being joined together by said connection heads in such a manner that each of said connection heads is fastened with adjacent said upright supports with a fastening screw which engages said screw hole of said base of said connection head with respective, said through holes of said adjacent upright supports of said frame parts, and that said hollow projection of one of two connection heads is engaged with said stepped hollow projection of the other, one of said two connection heads via said fastening holes of said adjacent upright supports, and further that said stepped hollow projection of said other said other one of said two connection heads is engaged with said hollow projection of said one of said two connection heads via said fastening holes of said adjacent upright supports.

5,797,441

DEVICE FOR MANUALLY OPERATING A BLIND

Siegfried Benthin, Bremerhaven, Germany, assignor to Benthin Aktiengeseilschaft, Bremerhaven, Germany

Filed Mar. 26, 1997, Ser. No. 824,826
Claims priority, application Germany, May 28, 1994, 44 18 735.1
Int. Cl.[6] E06B *9/30*
U.S. Cl. 160—173 V **12 Claims**



1. A device for operation of a blind, the device comprising:

a pull cord including a leading end portion and a return end portion;

a rail accommodating said pull cord, said pull cord being movably positioned in, and guided by, said rail defining an access opening for providing access by an operator for griping and moving said pull cord through said rail, said rail blocking access to said pull cord in areas other than said access opening, said rail includes a first cover between a first end of said rail and said access opening, said rail includes a second cover between a second end of said rail and said access opening.

5,797,442

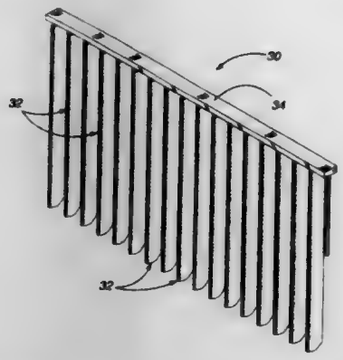
VANE FOR AN ARCHITECTURAL COVERING AND METHOD OF MAKING SAME

Wendell B. Colson; Paul G. Swiszcz, both of Boulder, and James M. Anthony, Denver, all of Colo., assignors to Hunter Douglas Inc., Upper Saddle River, N.J.

Continuation-in-part of Ser. No. 437,959, May 10, 1995. This application Apr. 24, 1996, Ser. No. 639,889
Int. Cl.[6] E06B *9/36*
U.S. Cl. 160—236 **35 Claims**

1. An architectural covering comprising:

a) a plurality of vertically oriented, separate, elongated hollow vanes suspended along a path in horizontally spaced relationship to each other;



b) each vane being defined by a hollow body having a tubular shape, an upper end by which it is suspended, a lower end, and wall sections extending between said ends and defining a width of each said vane, at least one of said wall sections being arcuate;

c) said hollow body being constructed solely of at least one piece of flexible material and being oriented to define both said tubular shape and said wall sections and to further define longitudinally extending front and rear vane sections and such that the body will inherently bend transversely of its lenght if the body were disposed horizontally;

d) said flexible material having opposing longitudinal, free edges being joined together along at least one line extending longitudinally of said front and rear vane sections from said upper end to said lower end of said hollow body; and

e) the wall sections being spaced from each other between said front and rear vane sections and the space therebetween being uninterrupted over a major portion of its length and width.

5,797,443

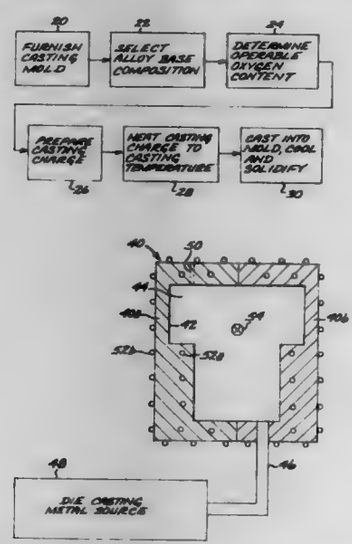
METHOD OF CASTING ARTICLES OF A BULK-SOLIDIFYING AMORPHOUS ALLOY

Xianghong Lin, Laguna Niguel; William L. Johnson, Pasadena, and Atakan Peker, Aliso Viejo, all of Calif., assignors to Amorphous Technologies International, Laguna Niguel, and California Institute of Technology, Pasadena, both of Calif.

Filed Sep. 30, 1996, Ser. No. 720,483

Int. Cl.[6] B22D *46/00;27/04;* **C22C** *45/10;45/00*

U.S. Cl. 164—4.1 **19 Claims**



1. A method for casting an article of a bulk-solidifying amorphous metallic alloy, comprising the steps of:

furnishing a closed casting mold having a die cavity defining the shape of the article;

selecting an amorphous metallic alloy base composition which may be cooled from the melt yet retain an amorphous metallic structure, and whose crystallization behavior during cooling is dependent upon its oxygen content;

determining an operable oxygen content of the base composition for casting the base composition in the casting mold while retaining an amorphous state;

preparing a casting charge of the base composition having an oxygen content of no greater than the operable oxygen content;

heating the casting charge to a casting temperature greater than the crystallized melting temperature of the casting charge; and

casting the casting charge into the casting mold and permitting the casting charge of metal to cool and solidify at a cooling rate sufficiently high to retain the amorphous state in the metallic alloy.

5,797,444

INGOT MOLD FOR THE CONTINUOUS CASTING OF METALS

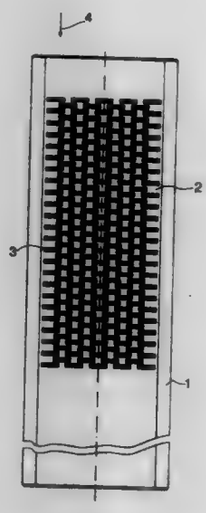
Hector Villanueva, and Dirk Rode, both of Osnabruck, Germany, assignors to KM Europa Metal Aktiengesellschaft, Osnabruck, Germany

Filed Mar. 8, 1996, Ser. No. 612,640

Claims priority, application Germany, Mar. 8, 1995, 195 08 169.2

Int. Cl.[6] B22D *11/00*

U.S. Cl. 164—418 **23 Claims**



1. An ingot mold having a central longitudinal axis in a casting direction for the continuous casting of metals, including steel, comprising:

a mold cavity having a first opening at a pour-in side and a second opening at an opposite side from which the billet emerges, the cross-sectional area of the mold cavity at the pour-in-side being larger than at the end where the billet emerge, wherein the mold cavity has a multiple conical design; and

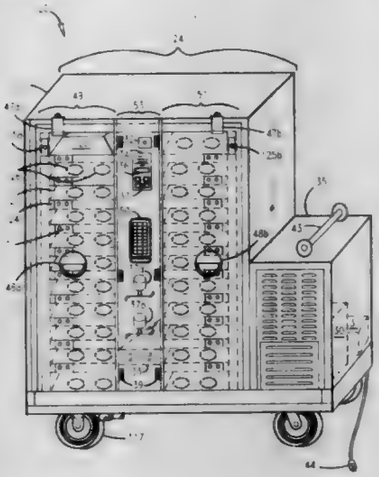
an outer surface, said outer surface of said ingot mold having at least one region of axially interrupted depressions into said outer surface that define a cooling surface of elevated heat transfer.

5,797,445

REFRIGERATED RETHERMALIZATION CART

John Walter Westbrooks, Jr., Christiana, and Sara Coffield Hurt, Nashville, both of Tenn., assignors to Standex International Corporation, Salem, N.H.

Continuation-in-part of Ser. No. 251,840, May 31, 1994, Pat. No. 5,454,427, and Ser. No. 310,710, Sep. 21, 1994, which is a continuation-in-part of Ser. No. 980,376, Nov. 23, 1992, abandoned, said Ser. No. 251,840 is a division of Ser. No. 980,376.
This application Jun. 6, 1995, Ser. No. 470,629
Int. Cl.[6] F25B 29/00
U.S. Cl. 165—11.1 4 Claims



1. An integrated refrigeration and rethermalization system for refrigerating and rethermalizing foods, for maintaining the foods in a refrigerated state until they are rethermalized, and heating certain foods to a desired temperature at a serving time while maintaining certain other foods in a chilled condition, comprising:

a plurality of trays for supporting food items thereon including food items to be rethermalized;

a refrigeration-rethermalization cart having at least one outer surface and at least one inner compartment, said plurality of trays disposed in the inner compartment;

a plurality of heater shelves having heaters disposed in the inner compartment under the trays for supporting the trays and selectively rethermalizing desired foods located on the trays;

a refrigerator for providing refrigerated air to the inner compartment of the cart to maintain foods on the trays in a refrigerated state until the foods are rethermalized;

a power supply for supplying power to said heaters and said refrigerator;

an integrated control system continuously connected to said refrigerator and said heaters for controlling the refrigeration and rethermalization of foods on the trays by controlling the power supplied to said heaters and said refrigerator;

at least one operation sensor disposed within the cart, having an ON state and an OFF state, a different one of each operation sensor associated with a different one of each of the heaters, for sensing electrical current through the associated heater, being in an ON state when electrical current through the associated heater is sensed, and being in an OFF state when electrical current through the associated heater is not sensed;

at least one comparator disposed within the cart, a different one of each of the comparators associated with a different one of each of the heaters;

for comparing the state of the controller associated with the heater against the state of the operation sensor associated with the heater;

for generating a high comparator signal associated with the heater when the state of the controller associated with the heater is on and the state of the operation sensor associated with the heater is on;

for generating a mid comparator signal associated with the heater when the state of the controller associated with the heater is off and the state of the operation sensor associated with the heater is off;

for generating a low comparator signal associated with the heater when the state of the controller associated with the heater is different from the state of the operation sensor associated with the heater; and

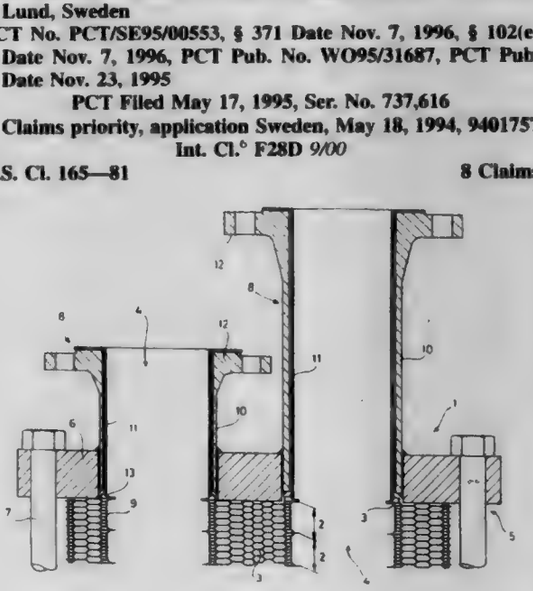
at least one status indicator, a different one of each of the status indicators associated with a different one of each of the heaters, for providing a status output based on the comparator signal associated with the heater.

5,797,446

PLATE HEAT EXCHANGER

Ralf Blomgren, Skanör, Sweden, assignor to Alfa Laval AB, Lund, Sweden

PCT No. PCT/SE95/00553, § 371 Date Nov. 7, 1996, § 102(e) Date Nov. 7, 1996, PCT Pub. No. WO95/31687, PCT Pub. Date Nov. 23, 1995
PCT Filed May 17, 1995, Ser. No. 737,616
Claims priority, application Sweden, May 18, 1994, 9401757
Int. Cl.[6] F28D 9/00
U.S. Cl. 165—81 8 Claims



1. Plate heat exchanger (1) for heat transfer between two fluids, comprising two frame plates (6) and between these several permanently joined heat transfer plates (3), which have inlet and outlet openings (9) for respective fluids in their corner portions, communicating with connections (8) through at least one of the frame plates (6), characterized in that the connections (8) are formed of outer extending pipes (10) provided with internal linings (11), that the outer pipes (10) are permanently fastened to the frame plate (6) and that the internal linings (11) are permanently fastened to an adjacent first heat transfer plate (3), whereby the internal linings (11) are movable or extendable independently of the outer pipes (10).

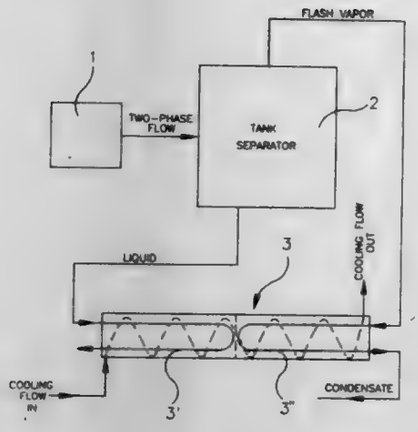
5,797,447

HEAT RECOVERY SYSTEM

Ari Nir, 2600 Netherlands Ave., Bronx, N.Y. 10463

Continuation-in-part of Ser. No. 615,809, Mar. 14, 1996, Pat. No. 5,626,102. This application Jan. 9, 1997, Ser. No. 780,365
Int. Cl.[6] F28D 7/10
U.S. Cl. 165—140 6 Claims

1. A method of heat recovery, comprising the steps of providing a heat exchanger with a first tube bundle and a second tube bundle as well as a shell which accommodates the tube bundles arranged in series in the shell; circulating a first fluid which does not change its phase state through the first tube bundle, circulating a second fluid which changes its phase state through the second tube bundle; and circulating a third fluid through the shell so that the third fluid successively contacts the tube bundles for a successive heat transfer between the third fluid and a respective one of the two first-



mentioned fluids, the third fluid being a cold fluid to be heated by heat transfer with the first and second fluids; and supplying the third fluid so that it first contacts the first tube bundle and is brought in a heat transfer first with the first fluid which does not change its phase state, and thereafter contacts the second tube bundle and is brought in heat transfer with the second fluid which changes its phase state.

5,797,448

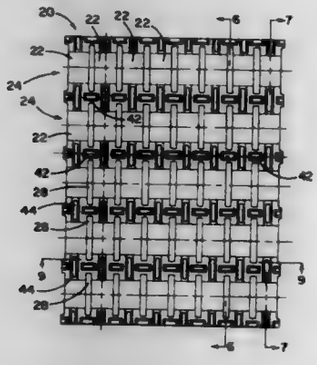
HUMPED PLATE FIN HEAT EXCHANGER

Gregory G. Hughes, Milwaukee, and Brian P. Gilner, Sturtevant, both of Wis., assignors to Modine Manufacturing Co., Racine, Wis.

Filed Oct. 22, 1996, Ser. No. 734,881

Int. Cl.[6] F28D *1/053*

U.S. Cl. 165—151 **8 Claims**



1. A plate fin heat exchanger including a plurality of tubes and a plurality of plate fins, said plate fins comprising:

a plurality of arced deformations extending in at least two spaced rows substantially across the length of the plate fin, said arced deformations having a plurality of tube holes disposed therein; and

a plurality of stiffening beads integral with the plate fin, said stiffening beads being disposed between said arced deformations, the stiffening beads comprising short and long stiffening beads.

5,797,449

HEAT EXCHANGER

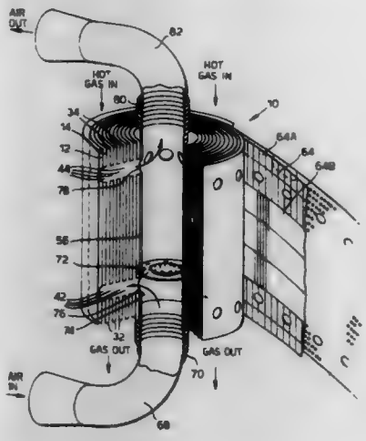
James I. Oswald, and David A. Dawson, both of Burbage, Great Britain, assignors to Rolls-Royce plc, London, England

Filed Jul. 9, 1996, Ser. No. 677,301

Claims priority, application United Kingdom, Jul. 12, 1995, 9514236; Jul. 12, 1995, 9514237

Int. Cl.[6] F28D *7/04*; F28F *3/12*

U.S. Cl. 165—165 **34 Claims**



1. An annular heat exchanger comprising a first continuous sheet of material and a second continuous sheet of material, wherein the first and second continuous sheets of material have longitudinally extending edges,

the first continuous sheet of material is arranged in a spiral about an axis, the first continuous sheet of material has a first surface and a second surface,

the second continuous sheet of material is arranged in a spiral about said axis, the second continuous sheet of material has a third surface and a fourth surface,

a first axially extending passage is defined between the first surface of the first continuous sheet of material and the third surface of the second continuous sheet of material, the first axially extending passage has a first axial end and a second axial end, the first and second axial ends of the first axially extending passage are sealed at the edges of the first and second continuous sheets of material,

a second axially extending passage is defined between the second surface of the first continuous sheet of material and the fourth surface of the second continuous sheet of material, the second axially extending passage has axial ends, the axial ends of the second axially extending passage are open,

at least one first radially extending passage extending through one of the first and second continuous sheets of material to supply a first fluid radially outwardly into the first axially extending passage at the first axial end of the first axially extending passage,

at least one second radially extending passage extending through the one of the first and second continuous sheets of material to remove the first fluid radially inwardly from the first axially extending passage at the second axial end of the first axially extending passage,

a space defined within the annular heat exchanger

means to define at least one space around the annular heat exchanger,

means to supply the first fluid to the space within the annular heat exchanger such that the first fluid is supplied to the at least one first radially extending passage,

means to remove the first fluid from the space within the heat exchanger such that the first fluid is removed from the at least one second radially extending passage,

a blanking member within the space within the annular heat exchanger to separate the inlet flow and outlet flow of the first fluid,

and means to pressurize the interior of the at least one space around the annular heat exchanger and the interior of the space within the annular heat exchanger to apply a radial compressive load on the annular heat exchanger.

5,797,450

OIL COOLER FOR AUTOMOBILES

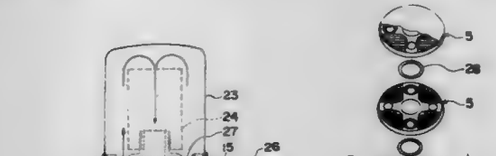
Tsuyoshi Kawabe; Hiroshi Yoneguchi; Atsushi Arisaka; Takahiro Kuwabara, all of Wako, and Tadamichi Aoyama, Hadano, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, and Toyo Radiator Co., Ltd., both of Tokyo, Japan

Filed Apr. 29, 1997, Ser. No. 848,057

Claims priority, application Japan, May 2, 1996, 8-135907; May 2, 1996, 8-135908

Int. Cl.[6] F28D *9/00*; F28F *3/08*

U.S. Cl. 165—167 **5 Claims**



1. An oil cooler for automobiles comprising:

a core in the form of a stack of a multiplicity of plates each having the same shape, each of the plates having an oil inlet communication hole and an oil outlet communication hole in pairs, and a cooling water inlet communication hole and a cooling water outlet communication hole in pairs, the core having an oil flow passage and a cooling water defined between the adjacent plates and alternately in the direction of stacking; and

a base plate superposed on one end of the core and having on its outer surface at the periphery an annular groove for receiving a sealing element, the base plate having an oil inflow port formed inside and in the vicinity of the annular groove, the oil inflow port being positioned in such a manner that its edge closer to the annular groove partly closes the oil inlet communication hole of the plate in plan view, the base plate having a thickness larger than that of the plate; wherein

the oil inflow port formed in the base plate is in the form of a planar through-hole including an area overlapping the oil inlet communication hole inside the annular groove, the oil inflow port extending outward in the circumferential direction beyond the opening edge of the communication hole within a region inside the annular groove; and wherein

the base plate is joined to the outer surface of an engine block by way of the sealing element in such a manner that an oil supply hole of the engine block communicate with the oil inflow port.

5,797,451

REFRIGERATION APPARATUS

Alexander Grant, Watten, Great Britain, assignor to Norfrost Limited, Caithness, Great Britain

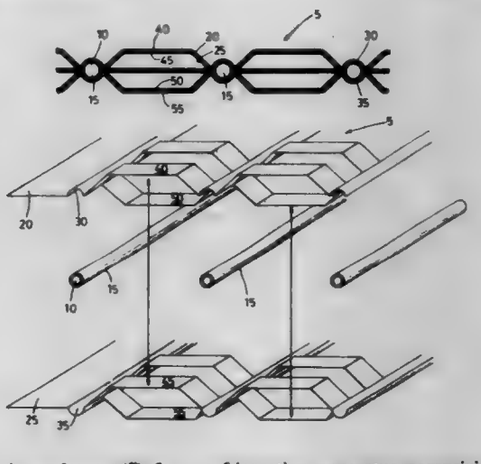
PCT No. PCT/GB95/02035, § 371 Date Apr. 24, 1997, § 102(e) Date Apr. 24, 1997, PCT Pub. No. WO96/07064, PCT Pub. Date Mar. 7, 1996

PCT Filed Aug. 30, 1995, Ser. No. 793,596

Claims priority, application United Kingdom, Sep. 1, 1994, 9417551; European Pat. Off., Sep. 16, 1994, 94306784

Int. Cl.[6] F28F *1/22*

U.S. Cl. 165—171 **8 Claims**



1. A condenser (**5**) for a refrigeration apparatus comprising a pipe (**10**) for containing a refrigerant, one or more adjacent portions (**15**) of the pipe (**10**) being connected by baffle means, characterised in that the baffle means comprise first and second baffles (**20**, **25**) located on respective first and second opposing sides of the pipe, each baffle providing a plurality of wall portions (**40**, **45**, **50**, **55**), at least some wall portions of each baffle being disposed in opposing directions relative to a plane extending between respective adjacent portions of the pipe.

5,797,452

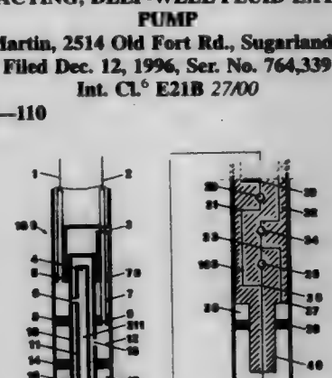
DOUBLE-ACTING, DEEP-WELL FLUID EXTRACTION PUMP

John Kaal Martin, 2514 Old Fort Rd., Sugarland, Tex. 77479

Filed Dec. 12, 1996, Ser. No. 764,339

Int. Cl.[6] E21B *27/00*

U.S. Cl. 166—110 **16 Claims**



1. A double-acting, deep-well fluid extraction pump assembly, for producing fluid from a formation located downhole in a borehole, comprising:

(a) a power piston having a tubular casing and housing an outer tubular piston rod, an inner tubular piston rod, a number of double-acting, lineal, fluid motor pistons and gland membranes, with the outer tubular piston rod coaxially extending and forming a crescent space around the inner tubular piston rod that provides an inner conduit, with the gland membranes being in a permanently-joined relationship with the tubular casing and in a slidable relationship with the outer tubular piston rod and dividing the power piston into pressure chambers and into one manifold opening into the inner conduit and another manifold opening into the crescent space, with each fluid motor piston being in a permanently-joined relationship with the outer tubular piston rod and in a slidable relationship with the tubular casing, sliding upwards through an upper pressure chamber of the power piston that is topped by an upper gland membrane and connected to the inner conduit through a port and sliding downwards through a lower pressure chamber of the power piston that is bottomed by a lower gland membrane and that is connected to the crescent space through a port, thereby resulting in switching of entrance path of hydraulic power fluid and complementary switching of exit path of pumped fluid between a first path connected to one manifold and a second path connected to the other manifold; and

(b) a pumping piston being housed below and coupled with the power piston, being divided into an upper portion and a lower portion that houses a suction tube and having a tubular casing in a slidable relationship with the upper portion that houses gravity-biased poppet-type check valves interconnected by fluid-flow passages and that extends between an upper pressure chamber of the power piston and a lower pressure chamber of the power piston, with the upper pressure chamber of the power piston being topped by the lowest gland membrane of the power piston and with the lower pressure chamber of the power piston being bottomed by a gland membrane which is in a permanently-joined relationship with the tubular casing of and is in a slidable relationship with the lower portion of the pumping piston;

whereby in each upstroke resulting from exertion of upward pressure under each fluid motor piston by hydraulic power fluid flowing through the crescent space, pumped fluid flows through the suction tube into the lower pressure chamber of the pumping piston and previously-collected pumped fluid in the upper pressure chamber of the pumping piston and in the upper pressure chamber of each fluid motor piston flow through the inner conduit and the associated path out of the fluid extraction pump assembly; and

whereby in each downstroke resulting from exertion of downward pressure above each fluid motor piston by hydraulic power fluid flowing through the inner conduit, pumped fluid flows through the suction tube into the upper pressure chamber of the pumping piston and previously-collected pumped fluid in the lower pressure chamber of the pumping piston and in the lower pressure chamber of each fluid motor piston flow through the crescent space and the associated path out of the fluid extraction pump assembly.

5,797,453

APPARATUS FOR KICKING OVER TOOL AND METHOD

Jack C. Hissw, Carencro, La., assignor to Specialty Machine & Supply, Inc., Scott, La.

Filed Oct. 12, 1995, Ser. No. 542,444
Int. Cl.[6] E21B *7/06*
U.S. Cl. 166—117.5 **4 Claims**

1. An apparatus for use in a well bore comprising:

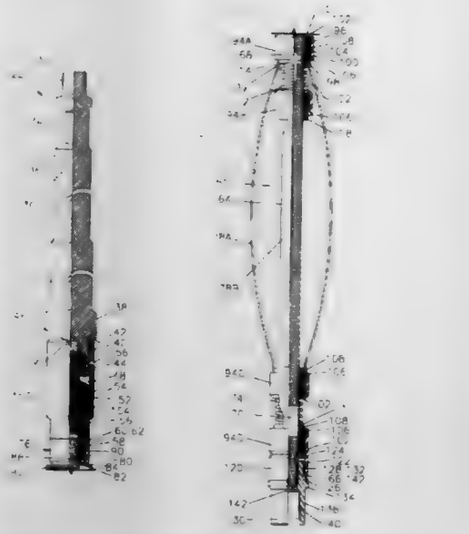
a body;

a first joint attached to said body, said first joint having a shifting barrel attached thereto, and first selective means for selectively releasing said shifting barrel from attachment with said first joint;

a mandrel attached to said flexible joint;

a first coil spring having an initial tension therein, with said first coil spring being disposed about said mandrel;

a first expanded bow spring having a first end and a second end, with the first end being operatively associated with said first coil spring;



spring adjusting means for adjusting the tension in said first coil spring comprising a first housing disposed about said mandrel and operatively associated with said first coil spring;

a second coil spring disposed about said mandrel;

a second expanded bow spring having a first end and a second end, with the first end being operatively associated said second coil spring;

a second joint attached to said body; and,

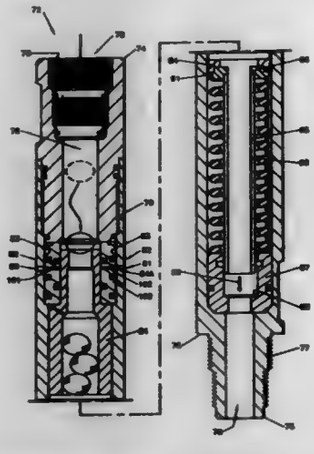
second selective means for selectively releasing said shifting barrel from attachment with said second joint.

5,797,454

METHOD AND APPARATUS FOR DOWNHOLE FLUID BLAST CLEANING OF OIL WELL CASING

James E. Hipp, New Iberia, La., assignor to Sonoma Corporation, Lafayette, La.

Continuation-in-part of Ser. No. 550,866, Oct. 31, 1995. This application Jul. 26, 1996, Ser. No. 687,633
Int. Cl.[6] E21B *23/00*
U.S. Cl. 166—196 **30 Claims**



1. A downhole oil well pulling and running tool comprising:

a) an elongated tool body having an upper end portion with means thereon for forming a connection with a drill string or workstring;

b) the tool body comprising a main body portion that is tubular, having upper and lower end portions, said main body having a bore;

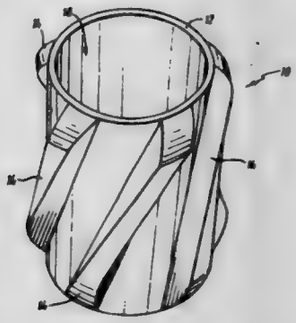
c) an elongated generally tubular piston slidable within the main body bore;
d) piston locking means for locking the piston in a first running position;
e) the piston having a valve seat portion;
f) a deformable ball valving member sized and shaped to register upon the valve seat and that can be transmitted into the tool bore from the well surface area via the workstring for engaging the valve seat;
g) a cage member disposed below the valve seat;
h) a channel that extends between the valve seat and the cage member;
i) means for transporting the ball valving member from the seat to the cage member, wherein the ball valving member is sized to fit the seat forming a seal therewith, and wherein the ball valving member is deformable to conform to the channel during transport to the cage member.

5,797,455

CASING CENTRALISER

William Barron; Ian Alistair Kirk, and Alistair Bertram Clark, all of Aberdeen, United Kingdom, assignors to Downhole Products (UK) Limited, Aberdeen, United Kingdom

Continuation of Ser. No. 401,860, Mar. 10, 1995, abandoned. This application May 2, 1997, Ser. No. 850,655
Claims priority, application United Kingdom, Mar. 12, 1994, 9404857
Int. Cl.[6] E21B *17/10*
U.S. Cl. 166—241.6 **8 Claims**



1. A casing centraliser comprising an annular body, a substantially cylindrical bore extending longitudinally through the body, the annular body being manufactured from a material comprising zinc alloy, the bore being a clearance fit around tubular casing intended to be centralised by the casing centraliser.

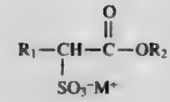
5,797,456

SURFACTANT ADDITIVE FOR OIL FIELD ACIDIZING

Anita R. Mokadam, Houston, Tex., assignor to Nalco/Exxon Energy Chemicals,L.P., Sugarland, Tex.

Filed Aug. 8, 1995, Ser. No. 512,474
Int. Cl.[6] E21B *43/27*
U.S. Cl. 166—307 **12 Claims**

1. In a method of acidizing a subterranean oil-bearing formation wherein an aqueous acid solution is injected into the formation, the improvement wherein the aqueous acid solution contains an effective amount of a surfactant to reduce sludge or emulsion formation resulting from the acid solution contacting formation oil, said surfactant having the following formula:



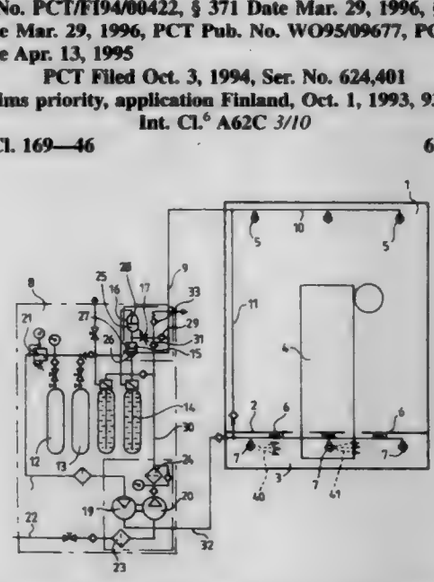
where R_1 is a linear or branched alkyl group having from 4 to 24 carbon atoms; R_2 is selected from an alkyl group having from 1 to 12 carbon atoms or M^+; and M^+ is selected from ammonium, amines, ethanol amines or a metal mono or di cation.

5,797,457

METHOD FOR FIGHTING FIRE IN A NARROW SPACE

Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland

PCT No. PCT/FI94/00422, § 371 Date Mar. 29, 1996, § 102(e) Date Mar. 29, 1996, PCT Pub. No. WO95/09677, PCT Pub. Date Apr. 13, 1995
PCT Filed Oct. 3, 1994, Ser. No. 624,401
Claims priority, application Finland, Oct. 1, 1993, 934340
Int. Cl.[6] A62C *3/10*
U.S. Cl. 169—46 **6 Claims**



1. A method for fighting a fire in a narrow space comprising:
fog-form spraying (40) an extinguishing medium in a direction along the narrow space from a first nozzle (7); and
fog-form spraying (41) the extinguishing medium in the direction along the narrow space from a second nozzle (7) spaced from the first nozzle (7) in the direction along the narrow space for the fog-form sprayings (40, 41) from the nozzles (7) to strengthen each other in capacity and penetration from availability of air behind and close to each of the nozzles.

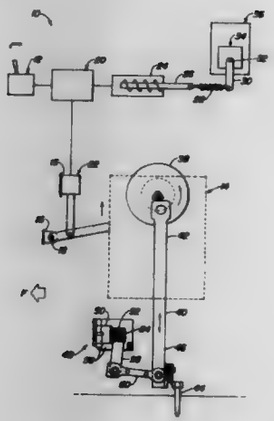
5,797,458

AERATOR CONTROL MECHANISM

Merlin Emmet Simon, Cascade, Iowa; Michael Timothy Teiga, New Albany, Ohio, and Mark Edward Lamb, Mayville, Wis., assignors to Deere & Company, Moline, Ill.

Filed Feb. 5, 1997, Ser. No. 795,093
Int. Cl.[6] A01B *45/02*
U.S. Cl. 172—2 **20 Claims**

1. A mechanism adapted for use with a vehicle having a vehicle power source, said mechanism comprising:
an aerator mechanism having tines operatively driven by the power source up and down into and out of engagement with the ground during operation, said aerator mechanism being shiftable between a raised transport position and a lowered operating position,
a position control mechanism engagable by an operator for shifting the aerator mechanism between the transport and operating positions, and



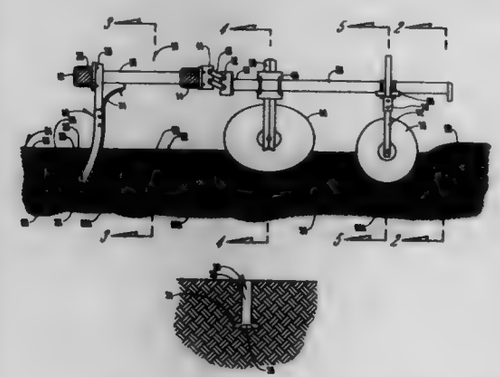
power source control means coupled with the vehicle power source for automatically slowing the vehicle power source when said aerator mechanism shifts between the transport and operating positions, and said power source control means is deactivated when the aerator mechanism reaches the transport and operating positions.

5,797,459

METHOD AND TOOL TO INCREASE IN-USE EFFICIENCY AND REDUCE LEACHING

Robert Horton; Daniel E. Ressler; Thomas C. Kaspar, and James L. Baker, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 6, 1997, Ser. No. 870,561
Int. Cl.[6] A01C *23/00*
U.S. Cl. 172—133 **8 Claims**



1. A field device for injecting nitrogen into the soil to increase nitrogen use efficiency and to reduce nitrogen leaching, comprising;

a tool bar comprising forward and rearward parallel laterally extending bar members,

at least one nitrogen injection knife having upper and lower ends rigidly secured by its upper end to said forward bar member,

a nitrogen injection tube secured to said at least one nitrogen injection knife and in communication with a source of nitrogen and terminating at a lower end adjacent the lower end of said at least one nitrogen injection knife,

a substantially horizontal cutting blade secured to the lower end of said at least one nitrogen injection knife whereupon the lower end of said at least one nitrogen injection knife and said cutting blade will create an inverted T-shaped furrow comprising a vertical portion and a lower horizontal portion into which nitrogen can be deposited through said injection tube when said at least one nitrogen injection knife is submerged into soil and moved in a forwardly direction, to create an elongated horizontal band of fertilizer in said horizontal portion following said cutting blade;

a rearwardly extending beam having a forward end vertically pivotally secured to said rearward bar member, said beam being parallel to said fertilizer band and spaced above said fertilizer band and being laterally offset therefrom,

a coulter operatively rotatably secured to said rearward bar member and being positioned in an inclined position so that a lower portion thereof intersects said vertical portion of said inverted T-shaped furrow above said fertilizer band to create a second furrow in place of said inverted T-shaped furrow,

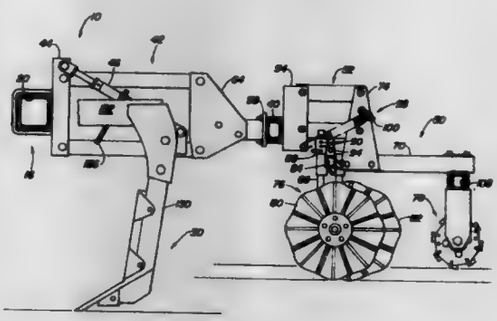
a covering disk secured to said beam rearwardly from said coulter and being laterally offset from said beam in a direction opposite to that of said coulter so that a lower portion thereof can penetrate soil above and to one side of said fertilizer band so that said covering disk can push soil into and over said second furrow to create a dome of soil over said second furrow and said fertilizer band to create a third furrow above and laterally spaced from said fertilizer band.

5,797,460

STRAIGHT BAR TILLAGE IMPLEMENT

Paul David Parker, Ankeny, and Jason Daniel Wattonville, Maxwell, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Oct. 22, 1996, Ser. No. 734,936
Int. Cl.[6] A01B *13/08*
U.S. Cl. 172—151 **17 Claims**



1. A tillage implement having a transversely extending main frame tube adapted for forward movement over the ground, a strip tillage device connected to the main frame tube, the strip tillage device including:

a fore-and-aft extending four-bar linkage having a forward end connected to the main frame tube, and an aft end movable vertically relative to the main frame tube;

a tool support fixed to the aft end and movable vertically with the aft end, the four-bar linkage maintaining a substantially constant tool support attitude relative to the ground;

a pair of transversely spaced coulters supported from the tool support for operation at a preselected depth of penetration of the ground;

a rotating clod-eliminating tool connected to the tool support rearwardly of the pair of coulters, whereby the four-bar linkage and tool support maintain the coulters at a substantially constant angle of attack relative to the ground and maintain a substantially constant vertical distance between the coulters and the clod-eliminating tool; and

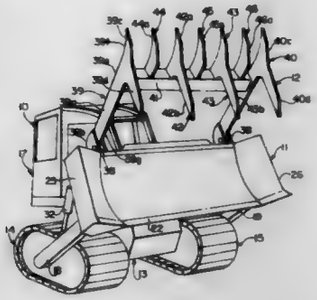
wherein the strip tillage device includes a secondary toolbar, a toolbar linkage connecting the secondary toolbar to the main frame tube and selectively facilitating vertical movement of the secondary toolbar relative to the main frame tube, and wherein the forward end of the four-bar linkage is connected to the toolbar linkage.

5,797,461

LAND CLEARING ATTACHMENT FOR BULLDOZERS

Terry B. Noble, Park Hill, Okla., assignor to Rockland Manufacting, Inc., Bedford, Pa.

Filed Jan. 22, 1997, Ser. No. 786,249
Int. Cl.[6] E02F 3/28
U.S. Cl. 172—200 12 Claims



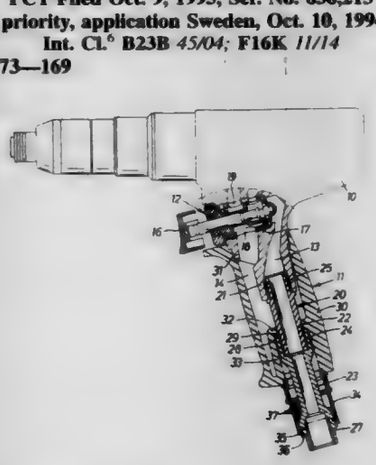
1. A land clearing attachment mountable on a moldboard of a bulldozer comprising:
- a pair of transversely spaced, end tines, each having a first tooth portion, a second tooth portion, and a shank portion pivotally connected to an upper end of said moldboard,
- a reinforcing member being secured between said end tines apart from said upper end of said moldboard forming a non-overlapping open space therebetween;
- at least one first intermediate tine being secured to said reinforcing member, having a first intermediate tooth portion disposed in transverse alignment with said first tooth portion and a second intermediate tooth portion disposed in transverse alignment with said second tooth portion; and
- means operatively interconnecting said moldboard and said end tines for angularly displacing said attachment relative to said moldboard.

5,797,462

PNEUMATIC POWER TOOL

Erik Roland Rahm, Väsby, Sweden, assignor to Atlas Copco Tools AB, Nacka, Sweden

PCT No. PCT/SE95/01154, § 371 Date Jun. 10, 1996, § 102(e) Date Jun. 10, 1996, PCT Pub. No. WO96/11090, PCT Pub. Date Apr. 18, 1996
PCT Filed Oct. 9, 1995, Ser. No. 656,213
Claims priority, application Sweden, Oct. 10, 1994, 9403425
Int. Cl.[6] B23B 45/04; F16K 11/14
U.S. Cl. 173—169 4 Claims



1. A pneumatic power tool, comprising:
- a housing having a pneumatic motor therein;
- a pressure air inlet passage in said housing;
- an air inlet opening adapted to be in fluid communication with said air inlet passage and defining an edge shaped valve seat; and
- a manually operable throttle valve assembly which is shiftable between a closed condition and an open condition, said throttle valve assembly including:
  - a longitudinally displaceable valve stem having an outer end which carries a push button and an inner end which extends through said air inlet opening; and
  - a valve unit for controlling the air flow through said air inlet opening;

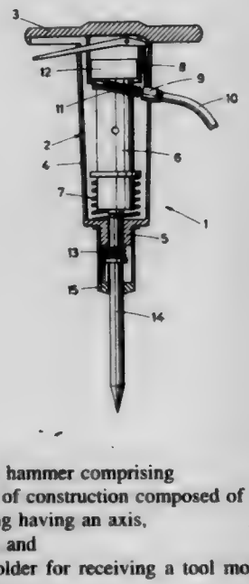
said valve unit including:
- a shoulder on said valve stem;
- a first valve element rigidly attached to said valve stem at a distance from said shoulder; and
- a second valve element displaceably guided on said valve stem between said shoulder and said first valve element, said second valve element including a non-resilient annular washer having a beveled contact surface for sealing cooperation with said edge shaped
- valve seat which is defined by said inlet opening; and said valve stem is formed with a passage extending axially through said second valve element and past said shoulder;
- wherein, when said throttle valve assembly is in said closed condition, said first valve element is arranged to cooperate sealingly with said second valve element, and said second valve element is arranged to cooperate sealingly with said edge shaped valve seat defined by said air inlet opening.

5,797,463

PNEUMATIC HAMMER

Udo Winter, Losensteinerstrasse 23, A-4020 Linz; Johann Schabelreiter, Kirchdorf 37, A-8132 Pernegg, and Werner Martin, Simchenagsse 2, A-8020 Graz, all of Austria

PCT No. PCT/AT94/00023, § 371 Date Aug. 28, 1995, § 102(e) Date Aug. 28, 1995, PCT Pub. No. WO94/20267, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 8, 1994, Ser. No. 513,827
Claims priority, application Australia, Mar. 8, 1993, A-441/93
Int. Cl.[6] B25D 17/24
U.S. Cl. 173—211 5 Claims



1. A pneumatic hammer comprising
(a) a rigid unit of construction composed of
  (1) a ho using having an axis,
  (2) a handle, and
  (3) a tool holder for receiving a tool movable in a striking direction,
(b) an operating cylinder resiliently supported in the housing and axially movable in the housing relative to the tool holder for moving the tool in the striking direction,

(c) a longitudinal guide for the axially movable operating cylinder,

(d) means for resiliently supporting the operating cylinder adjacent the tool holder,

(e) a damping means acting upon the tool holder in a direction opposite to the striking direction, and

(f) means for supplying compressed air to the operating cylinder.

5,797,464

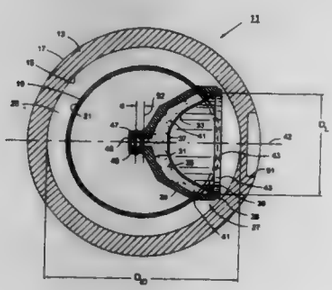
SYSTEM FOR PRODUCING HIGH DENSITY, EXTRA LARGE WELL PERFORATIONS

Dan W. Pratt, Fort Worth; David S. Wesson, Waxahachie; Kevin R. George, Cleburne, and James A. Rollins, Fort Worth, all of Tex., assignors to Owen Oil Tools, Inc., Fort Worth, Tex.

Continuation of Ser. No. 601,105, Feb. 14, 1996, abandoned. This application May 1, 1997, Ser. No. 847,244

Int. Cl.[6] E21B *43/11*

U.S. Cl. 175—4.6 **4 Claims**



1. An improved tubular perforating system used to complete wells, comprising:

a tubular carrier adapted to be lowered into or raised from an oil well;

a tubular charge tube adapted to be mounted generally concentrically within the tubular carrier;

a plurality of shaped charges mounted at sequential elevations and angular orientations in the charge tube to form, when detonated, a selected pattern of perforations in said well said pattern of perforations being characterized by a perforation density of at least ten shots per foot;

a primer cord connected with each shaped charge inside the charge tube;

each shaped charge having a generally frusto conical case;

each said case having an arcuate liner to confine an explosive charge against the interior of the case, the liner having an open end facing the wall of the charge tube with a selected minimum outside diameter determined by the following formula:

$$D_L=2.625-0.3571\ (6 - D_{ID})$$

Where:

D_L=Liner Outside Diameter

D_{ID}=Carrier Inside Diameter.

5,797,465

MULTI-SHAFT DRILLING UNIT

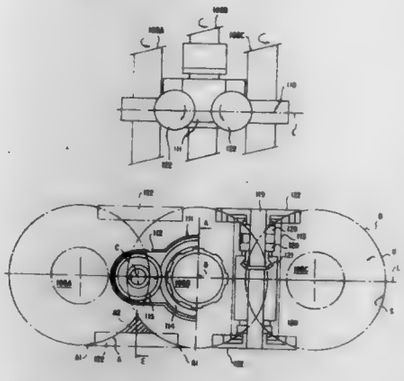
Mitsuhiro Shibasaki; Hiroaki Kubo, both of Tokyo; Akira Mori, Kawasaki; Hachiro Hatakeda, Tokyo; Tsutao Takahashi, Yokohama, and Tetsuo Nakamura, Soka, all of Japan, assignors to Chemical Grouting Company, Ltd., Tokyo, Japan

PCT No. PCT/JP93/01529, § 371 Date Nov. 15, 1994, § 102(e) Date Nov. 15, 1994, PCT Pub. No. WO95/11349, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 22, 1993, Ser. No. 335,693

Int. Cl.[6] E21B *7/00*

U.S. Cl. 175—108 **2 Claims**



1. A multi-shaft drilling unit comprising:

a plurality of drilling shafts used to develop a continuous wall under the ground, center lines of said drilling shafts being arranged in a single line and;

a guide shaft provided on one side of said single line, said unit including a housing for maintaining a pitch between said drilling shafts;

said housing comprising:

a primary gear rotating around a central drilling shaft of said plurality of drilling shafts;

a pair of secondary gears engaging with said primary gear;

a primary bevel gear integral to said primary gear;

a secondary bevel gear engaging with said primary bevel gear and being fixed to a rotary shaft which rotary shaft is perpendicular to a straight line connecting respective center lines of said drilling shafts; and

cutters fixed at opposite ends of said rotary shaft for making a continuous groove for developing a continuous wall, a horizontal section of which groove is a rectangular shape.

5,797,466

POWERED IN-LINE SKATE

Timothy A. Gendle, 29560 Lone Tree Rd., Oakdale, Calif. 95361

Filed Mar. 5, 1997, Ser. No. 811,678

Int. Cl.[6] A63C *17/12*

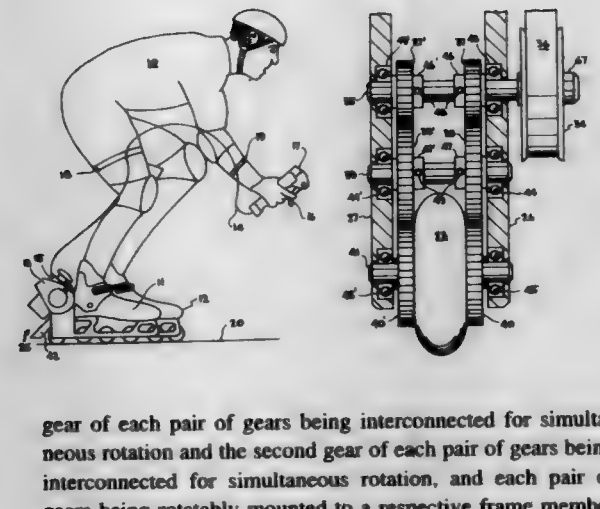
U.S. Cl. 180—181 **18 Claims**

1. In a pair of in-line skates, each skate having a frame with two laterally spaced frame members and a single row of wheels rotatably mounted between the two frame members, the improvement comprising:

power drive means mounted to the frame of at least one of said pair of in-line skates;

a hand-held control unit connected to said drive means for controlling said drive means; and

a reduction gear train operatively connected between said drive means and a rearmost wheel of said skate, said reduction gear train including two pairs of gears with each pair of gears being positioned alongside a respective frame member, each pair of gears having a first gear and a second gear with the first and second gears being drivingly interconnected, the first



gear of each pair of gears being interconnected for simultaneous rotation and the second gear of each pair of gears being interconnected for simultaneous rotation, and each pair of gears being rotatably mounted to a respective frame member and drivingly connected to said rearmost wheel.

5,797,467

DEVICE FOR PREVENTING AN ACCELERATOR OF A VEHICLE FROM BEING ERRONEOUSLY OPERATED

Masaei Watanabe, 61-13 Mitsufuji 1-chome, Musashimurayama-shi, Tokyo, Japan

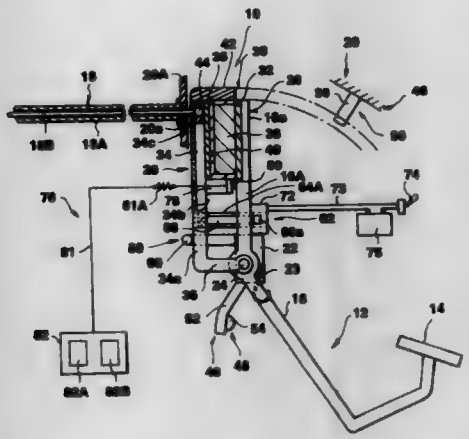
PCT No. PCT/JP95/00939, § 371 Date Jan. 11, 1996, § 102(e) Date Jan. 11, 1996, PCT Pub. No. WO95/31349, PCT Pub. Date Nov. 23, 1995

PCT Filed May 17, 1995, Ser. No. 581,515

Claims priority, application Japan, May 17, 1994, 6-137772

Int. Cl.[6] B60D *1/12*

U.S. Cl. 180—271 **33 Claims**



1. A device for preventing an accelerator from being erroneously operated for a motor vehicle comprising magnetic coupling means including an accelerator interlocking member interlocking with an accelerator pedal (14) of said motor vehicle and a throttle interlocking member associated with a throttle valve so as to open and close said throttle valve and being magnetically coupled with said accelerator interlocking member, said magnetic coupling means being so magnetically set that said accelerator interlocking member is released from said throttle interlocking member as soon as a pedalling force equal to or more than a pedalling force applied to a brake pedal is abruptly applied to said accelerator pedal.

5,797,468

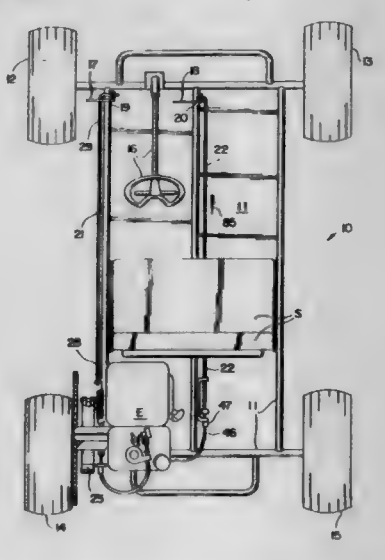
ACCELERATOR PEDAL OVERRIDE FOR SELF-PROPELLED MOTORIZED CART WITH ALIGNED BRAKE AND ACCELERATOR PUSHROD TYPE OPERATOR PEDALS

Charles Brister, Rte. 3, Box 18-P Ellis Rd., Amite, La. 70422, and Dale Schenkel, Yankton, S. Dak., assignors to Charles Brister, Amite, La.

Continuation of Ser. No. 577,842, Dec. 22, 1995, Pat. No. 5,597,048, which is a continuation of Ser. No. 370,107, Jan. 9, 1995, Pat. No. 5,477,940. This application Jan. 27, 1997, Ser. No. 789,556

Int. Cl.[6] B60K *1/00*

U.S. Cl. 180—292 **6 Claims**



1. A method of protecting motorized cart and its driver from a collision when the brake pedal and accelerator are simultaneously depressed as when the cart driver panics, comprising the steps of:

a) providing a brake on at least one of the rear wheels of the motorized cart for braking at least one of the rear wheels;

b) using a throttle for controlling a cart motor drive;

c) providing a pair of movable pedals positioned on the frame in front of a cart seat at the front end position of the frame, adjacent the front wheels, each of the pedals being inclined relative during use and positioned to be operated by the driver's feet, one of the pedals defining an accelerator pedal, the other pedal defining a brake pedal;

d) using a brake pushrod that extends from the brake pedal to the brake for operating the brake so that when the brake pedal is depressed, the brake pedal pushrod activates the brake;

e) using a throttle pushrod that extends from the accelerator pedal to the throttle for operating the throttle so that when the accelerator pedal is depressed, the throttle is activated;

f) automatically placing the throttle in the idle position with a linkage member when the brake pedal and accelerator are simultaneously depressed as when the cart driver panics.

5,797,469

STEERING VALVE

Hans-Willi Gerigk, Oberhausen, Germany, assignor to TRW Fahrwerksystems GmbH & Co. KG, Dusseldorf, Germany

Filed Mar. 6, 1996, Ser. No. 611,755

Claims priority, application Germany, Mar. 8, 1995, 195 08 096.3

Int. Cl.[6] B62D *5/083*

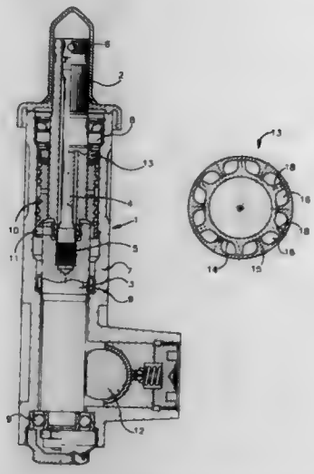
U.S. Cl. 180—441 **6 Claims**

1. A steering valve supplying hydraulic fluid to a hydraulic motor, said steering valve comprising:

an input shaft;

an output shaft;

a spring element connecting said input shaft to said output shaft;



a valve casing surrounding said input shaft and connected to said output shaft;

a housing surrounding said valve casing; and

means for damping torsional vibration, said means comprising a ring-shaped chamber element connected with one of said shafts and a ring-shaped piston element connected with the other of said shafts, said chamber element and said piston element being disposed coaxially and concentrically and being relatively rotatable;

said chamber element and said piston element defining a series of chambers spaced circumferentially around said input shaft, said series of chambers being isolated from the hydraulic fluid of the steering valve, each of said series of chambers having incompressible fluid therein;

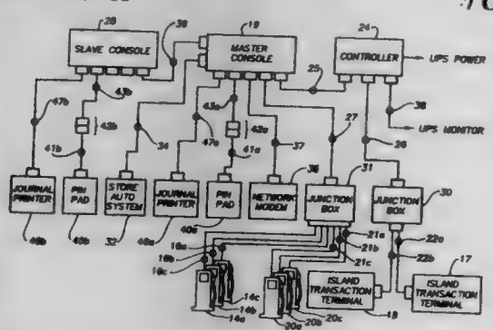
each of said series of chambers being defined in part by interdigitated portions of said chamber element and said piston element which are movable circumferentially of said input shaft and relative to each other to cause said incompressible fluid to flow from at least one of said series of chambers to an adjacent one of said chambers in an arc-shaped flow path defined by one of said interdigitated portions and one of said chamber element and said piston element.

5,797,470

SYSTEM FOR TRANSACTING FUEL PURCHASES USING AN ISLAND TRANSACTION TERMINAL

Michael H. Bohnert, Anaheim Hills, and Ronald R. Lien, Brea, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 1, 1995, Ser. No. 566,012
Int. Cl.[6] G07F *13/00*
U.S. Cl. 186—53 **7 Claims**



1. A system for transacting fuel purchases comprising:

a first plurality of fuel dispensing pumps disposed at a first island location, each dispensing pump at the first island location comprising independent means for dispensing fuel and means for enabling each pump to dispense fuel in response to a dispensing signal;

a second plurality of fuel dispensing pumps disposed at a second island location, each dispensing pump at the second island location comprising independent means for dispensing fuel and means for enabling each pump to dispense fuel in response to a dispensing signal;

a first island transaction terminal disposed at the first island location, the first island transaction terminal comprising means for receiving a request for purchasing fuel at a specified dispensing pump located at either of the island locations, means for receiving payment for such fuel purchase in the form of money or money equivalent, and means for emitting a first payment signal containing information regarding the amount of payment received, the form of payment and the specified dispensing pump for which such fuel purchase is requested;

a second island transaction terminal disposed at the second island location, the second island transaction terminal comprising means for receiving a request for purchasing fuel at a specified dispensing pump located at either of the island locations, means for receiving payment for such fuel purchase in the form of money or money equivalent, and means for emitting a second payment signal containing information regarding the amount of payment received, the form of payment and the specified dispensing pump for which such fuel pump is requested;

a payment station disposed away from the first and second island locations, the payment station comprising means for receiving a request for purchasing fuel at a specified dispensing pump, means for receiving payment for such fuel purchase and means for emitting a third payment signal containing information regarding the amount of payment received, the form of payment and the specified dispensing pump for which such fuel purchase is requested;

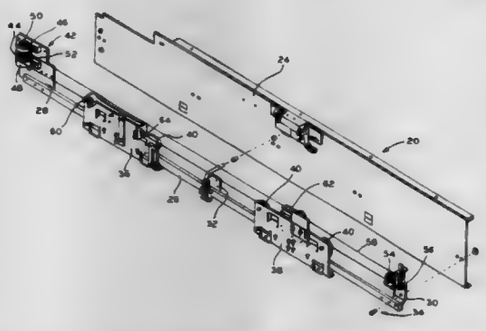
a master terminal comprising means for receiving the first, second, and third payment signals, means for storing the information contained in such signals, means for communicating with a financial verification center to verify the payment of money equivalent payments, means for choosing between contemporaneous requests for fuel purchases from the same dispensing pump and means for emitting a dispensing signal to the requested dispensing pump to enable the dispensing of fuel from that dispensing pump.

5,797,471

LINEAR DOOR DRIVE OPERATOR

John Princell, Moline, Ill., assignor to Montgomery Kone Inc., Moline, Ill.

Filed Jul. 19, 1996, Ser. No. 684,153
Int. Cl.[6] B66B *13/06*
U.S. Cl. 187—324 **20 Claims**



1. In an elevator system having a car provided with a doorway and a door movable across said doorway, an improved mechanism to move said door selectively to open and closed positions comprising:

a header mounted to the car above the doorway, the header supporting a linear drive carrying the door, the drive including a spool means rotationally mounted to the header for driving a cable wound about the spool means, the cable being operatively connected to a hanger carrying the door for moving the hanger linearly across the header responsive to rotational

movement of the spool means, the spool means further including a vertically extending axial opening;

a door operator comprising a motor, the motor driving an output shaft;

means for securing the door operator to the header so that the output shaft is received in the spool means axial opening, whereby operation of the motor causes rotation of the spool means.

5,797,472

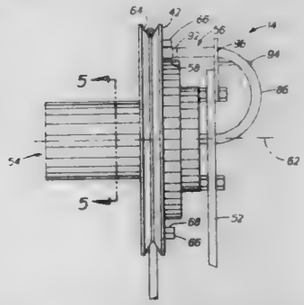
REACTIVE GOVERNOR

Sanjay Kamani, Unionville, Conn., and John K. Salmon, deceased, late of Windsor, Conn., by Lucy Mary Salmon, executor, assignors to Otis Elevator Company, Farmington, Conn.

Filed Jan. 26, 1996, Ser. No. 592,782

Int. Cl.[6] B66B *5/16*

U.S. Cl. 187—373 **26 Claims**



1. A governor for a moving device, the governor including:

a primary assembly including a element that generates a magnetic field; and

a secondary assembly extending through the magnetic field;

wherein one of the primary or secondary assemblies is a stator biased into a first position, wherein the other of the primary or secondary assemblies is a rotor that is rotatable at a rotational speed dependent upon the speed of the moving device, such that if the rotational speed of the rotor exceeds a predetermined speed the stator is moved from the first position.

5,797,473

WINDER SHAFT

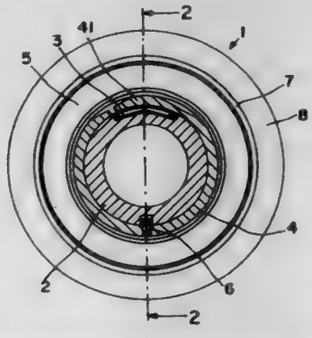
Reiner Schulze, and Gerd Hebbel, both of Hamburg, Germany, assignors to Beiersdorf AG, Hamburg, Germany

Filed Apr. 18, 1996, Ser. No. 634,451

Claims priority, application Germany, May 11, 1995, 195 17 225.6

Int. Cl.[6] F16D *13/14;25/04;* B65G *75/18*

U.S. Cl. 192—77 **2 Claims**



1. A winder shaft (2) having one or more core carriers mounted thereon, said shaft having means for producing a radially outwardly acting force, said core carriers each comprising a running bush over said shaft and a transmission element over said running bush, said running bush having a running surface provided with at least one cutout and being drivably connected to said winder shaft and having at least one adjustable friction tongue (41) which is arranged in said at least one cutout in the running surface of the running bush for adjustably frictionally engaging said transmission element, and is connected inseparably to said running bush, whereby in operation, said means for producing a radially outwardly acting force exerts a radially outwardly acting force against said friction tongue and causes said friction tongue to frictionally engage said transmission element, so that when said shaft is caused to rotate, rotational torque is adjustably transmitted from said rotating shaft to said transmission element.

5,797,474

CLUTCH DISC

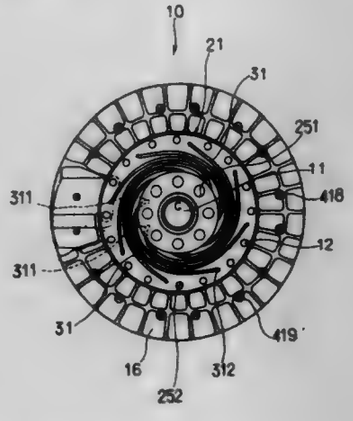
Mototaka Nakane, Toyota, and Kiyonori Kobayashi, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 19, 1996, Ser. No. 665,813

Claims priority, application Japan, Jun. 30, 1995, 7-188645

Int. Cl.[6] F16D *13/64;1/06*

U.S. Cl. 192—207 **20 Claims**



12. A clutch disc, constituting a friction clutch, comprising:

a clutch hub for being connected with an output shaft, a disc spring having a clutch facing mounted on a peripheral side thereof, and a damper member interposed between the clutch hub and the disc spring, thus applying a torsional characteristic to the clutch disc,

the damper member having at least one elastically deformable damper plate;

said damper plate being formed as an annulus of elastic material, a surface of which is substantially perpendicular to a clutch axis and has at least one arc-like slit formed thereon centrifugally spirally in a range from an inner peripheral side of the annulus toward an outer peripheral side of the annulus; and

the arc-like slit having a curved portion formed by centrifugally curving a portion of the slit proximate to an outer end of the slit such that the curved portion is curved towards a radial direction.

5,797,475

COIN VALIDATION

Richard Guy Bointon, Plymouth; Richard Douglas Allan, Reading, and Nicola Marie Funnell, Wokingham, all of United Kingdom, assignors to Mars Incorporated, McLean, Va.

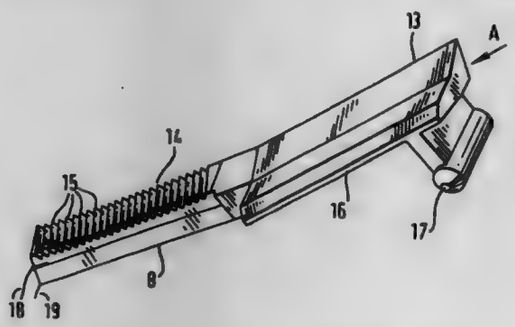
PCT No. PCT/GB95/00595, § 371 Date Mar. 4, 1996, § 102(e) Date Mar. 4, 1996, PCT Pub. No. WO95/26540, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 17, 1995, Ser. No. 553,465

Claims priority, application United Kingdom, Mar. 29, 1994, 9406164

Int. Cl.[6] G07D *5/04*

U.S. Cl. 194—317 **31 Claims**



25. A method of validating a coin comprising the steps of:

causing said coin to undergo multiple impacts in a coin path;

transducing said multiple impacts with an impact transducer to generate an output signal;

analyzing temporal portions of the output signal corresponding to said plurality of impacts;

performing statistical processing on said portions of the output signal, to generate a measure signal; and

utilizing said measure signal to determine the validity of said coin.

5,797,476

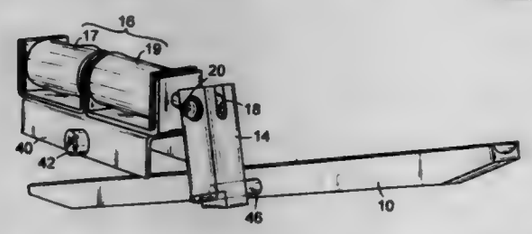
DUAL DELIVERY COIN/TOKEN DISPENSER

Michael F. Jones, Mt. Vernon, N.H., and Paul O. Stump, Topsfield, Mass., assignors to Telequip Corporation, Hollis, N.H.

Filed Nov. 7, 1996, Ser. No. 744,370

Int. Cl.[6] G07D *1/00*

U.S. Cl. 194—346 **14 Claims**



8. A means for delivering coin-like objects to either side of a dispensing mechanism, comprising, in combination:

a ramp means, said ramp means having left and right ends;

a means for pivoting said ramp means, said means for pivoting said ramp means being pivotably attached to said ramp means and controlled by said dispensing mechanism; and

means for controlling said means for pivoting, said means for controlling comprising, in combination:

means for accepting an activation signal from said dispensing mechanism;

means for actively determining from the content of said activation signal a specified end of said ramp means to be pivoted downwards;

means for producing a high voltage pulse for causing said means for pivoting to begin the pivoting of said specified end of said ramp means downwards, said high voltage pulse lasting at least until said ramp means has actually begun to pivot;

means for reducing said high voltage pulse to a medium voltage after said ramp means has begun to pivot, allowing said ramp means to coast freely in the desired direction of pivoting;

means for maintaining application of said medium voltage level to said means for pivoting until said ramp means has pivoted fully and ceased any bouncing, and one of said coin-like objects has been successfully dispensed; and

means for returning to an initial voltage state in readiness for a next activation signal from said dispensing mechanism.

5,797,477

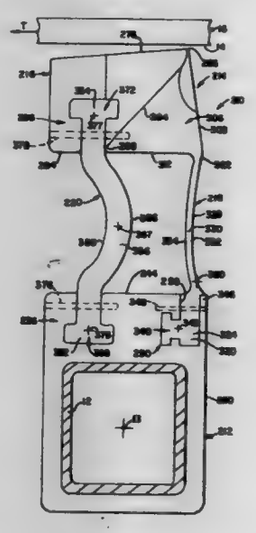
CONVEYOR BELT SCRAPER BLADE

Willem D. Veenhof, Brevard, N.C., assignor to Martin Engineering Company, Neponset, Ill.

Continuation-in-part of Ser. No. 430,394, Apr. 28, 1995, Pat. No. 5,647,476, which is a continuation-in-part of Ser. No. 269,568, Jul. 1, 1994, Pat. No. 5,413,208. This application Dec. 12, 1996, Ser. No. 764,122

Int. Cl.[6] B65G *45/00*

U.S. Cl. 198—499 **44 Claims**



25. A scraping head for use with a conveyor belt scraper including a mounting base having a first mounting member and a resiliently flexible and collapsible first arm member having a first end and a second end, the first end of the first arm member being connected to the mounting base, the second end of the first arm member including a second mounting member, said scraping head including:

a scraping member having a first surface defining a scraping edge and a first attachment means for selectively attaching the second mounting member of the first arm member to said scraping member; and

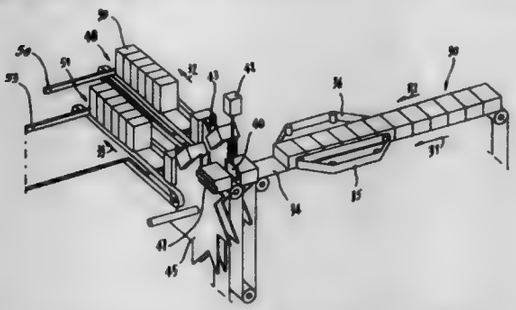
a second attachment means attached to said scraping member for selectively attaching the first mounting member of the mounting base to said scraping member.

5,797,478

SYSTEM FOR THE ORDERED TRANSFER OF OBJECTS BETWEEN AT LEAST TWO CONVEYOR LINES DISPOSED SUBSTANTIALLY AT A RIGHT ANGLE TO ONE ANOTHER

Mario Gambetti, Bologna, Italy, assignor to Baumer S.R.L., Castelfranco Emilia, Italy

Filed Oct. 16, 1995, Ser. No. 543,594
Claims priority, application Italy, Oct. 21, 1994, BO94A0464
Int. Cl.[6] B65G 29/00
U.S. Cl. 198—441 9 Claims



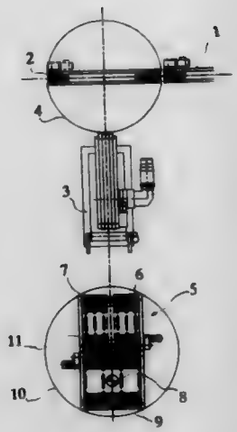
1. A transporting device for conveying objects, comprising:
a first closed loop conveyor delivering a plurality of objects placed in a row next to one another on the first conveyor along a first linear path lying in a first plane toward a downstream end of the first conveyor;
spacer means for spacing the objects apart from one another along the first path upstream from the downstream end;
at least one second conveyor transporting the objects delivered by the first conveyor along a second linear path lying in a plane substantially horizontally perpendicular to the first plane, the second conveyor being formed with a pair of spaced apart parallel closed-loop belts having respective upstream ends;
rotary means downstream from the spacer means and between the first and second conveyors and rotatable about an axis extending parallel to the first path for transporting the objects between the conveyors along a circular path, the rotary means being formed with a plurality of angularly spaced apart uniform cells; and
sensor means for controllably actuating the rotary means upon receiving each of the objects by a respective cell from the first conveyor, a width of each object being greater than a width of the respective cell, so that each of the objects extends laterally in opposite directions over the respective cell while being transported along the circular path, the two closed-loop belts flanking the rotary means and extracting the objects from each of the cells in the vicinity of the upstream ends of the closed-loop belts upon rotation of the rotary means through the second plane.

5,797,479

LOADING/UNLOADING METHOD AND APPARATUS FOR A CRANE-ASSISTED STORAGE

Ismo Hyyryläinen, Hollola, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Jul. 3, 1996, Ser. No. 675,571
Claims priority, application Finland, Jul. 11, 1995, 953386
Int. Cl.[6] B65G 47/26
U.S. Cl. 198—456 11 Claims



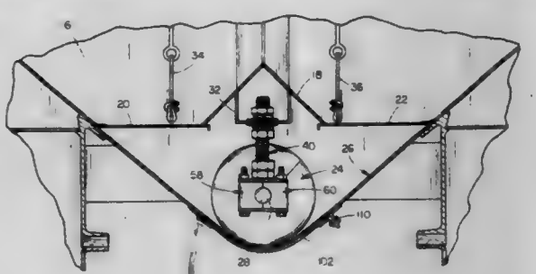
1. An apparatus for transporting a roll to be stored from a transport conveyor to a pickup point of a crane of a crane-assisted storage apparatus, comprising:
a first conveyor operable to receive a roll from the transport conveyor and for centering the roll to be stored at first centering position;
a second conveyor operable to at least one of (a) receive a roll from the transport conveyor and center the roll to be stored at a centering position, and (b) receive a roll delivered by the crane from storage; and
a means for alternatingly moving the first conveyor and the second conveyor to the pickup point of the crane so that, when the first conveyor is at the pickup point of the crane, the centering position of the roll received by the first conveyer to be stored is centered at the pickup point of the crane and the second conveyor is positioned to at least one of (a) receive a roll from the transport conveyor and (b) transfer a roll delivered from storage to the transport conveyor.

5,797,480

HANGER BEARING

Donald L. Gaddis; Roy Gaddis, both of Solon, and Myland D. Hepker, Urbana, all of Iowa, assignors to Courtesy Enterprises, Inc., Cedar Rapids, Iowa

Filed Apr. 8, 1996, Ser. No. 629,013
Int. Cl.[6] B65G 33/32
U.S. Cl. 198—672 12 Claims



1. In combination:
a substantially horizontally disposed conveyor comprising an elongated trough having a semi-circular bottom, a conveyor auger rotatably positioned in said trough and which includes an elongated shaft having auger flighting thereon;
at least one bearing support positioned above said conveyor auger;
a substantially vertically disposed hanger bearing for rotatable supporting said conveyor auger in said trough, said hanger bearing having an upper end operatively secured to said bearing support and having a lower end which rotatably supports said auger shaft;
said trough having an access opening formed therein below said hanger bearing to provide access to said hanger bearing;
and an access door operatively movably mounted on said trough for selectively closing said access opening;

said hanger bearing including a vertically disposed support member having upper and lower ends, said upper end of said vertically disposed support member being removably secured to said hanger support, said lower end of said vertically disposed support member having a horizontally disposed top plate secured thereto;

said hanger bearing including a split bearing member at its lower end which selectively removably receives said auger shaft therein;

said split bearing member including first and second bearing portions positioned beneath said top plate, each of said first and second bearing portions having a semi-circular opening formed therein which rotatably receives said auger shaft;

a bottom plate positioned below said first and second bearing portions; and

connector means extending through said bottom plate, said bearing portions and said top plate.

5,797,481

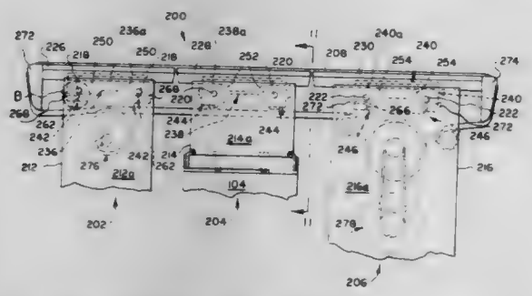
MODULAR CONVEYOR SYSTEM

John E. Uber, Trumansburg, N.Y.; Carl A. Matson, Warren Center, Pa., and Eugene A. Helmetsie, Spencer, N.Y., assignors to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed Jan. 29, 1996, Ser. No. 591,932

Int. Cl.[6] B65G *15/00*

U.S. Cl. 198—813 **33 Claims**



1. A modular conveyor system comprising in combination:

a framework, said framework including a horizontally elongated spine, a pair of supports depending one from each end of said spine, a pair of standards upstanding one from each of said supports and each of said standards including at least one mounting portion disposed above said spine in a horizontally offset relationship relative thereto, and at least one elongated rail having opposite ends thereof fixed one to each of said mounting portions;

at least one conveyor system art device;

mounting means for adjustably mounting said art device on said rail; and

at least one modular conveyor unit having a conveyor element supported for movement along a path of travel and conveyor unit mounting means for adjustably mounting said conveyor unit on said spine in a selected position lengthwise thereof.

5,797,482

ELECTROLUMINESCENT KEYPAD

Bradley J. LaPointe, Shorewood, Minn., and David G. Sime, Boulder, Colo., assignors to Metro-Mark, Inc., Minnetonka, Minn.

Filed Nov. 25, 1996, Ser. No. 753,386

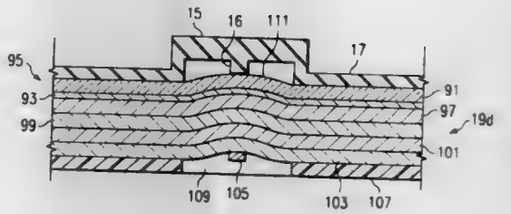
Int. Cl.[6] H01H *9/26;1/10;9/00*

U.S. Cl. 200—314 **12 Claims**

1. An electroluminescent lamp, which comprises:

a flexible transparent substrate;

a transparent conducting layer adhered to said transparent substrate;



an electroluminescent layer adhered to said transparent conducting layer;

a dielectric layer adhered to said electroluminescent layer;

a conducting layer adhered to said dielectric layer;

a first insulating layer adhered to said conducting layer; and,

at least one conducting shunt adhered to said first insulating layer, said conducting shunt being arranged to engage contacts of a circuit board upon deformation of said electroluminescent lamp.

5,797,483

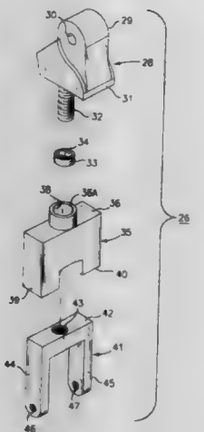
OPERATING MECHANISM LINKAGE ASSEMBLY FOR HIGH AMPERE-RATED CIRCUIT BREAKERS

James I. Smith, Avon, and Roger N. Castonguay, Terryville, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Feb. 6, 1997, Ser. No. 796,709

Int. Cl.[6] H01H *9/00*

U.S. Cl. 200—401 **12 Claims**



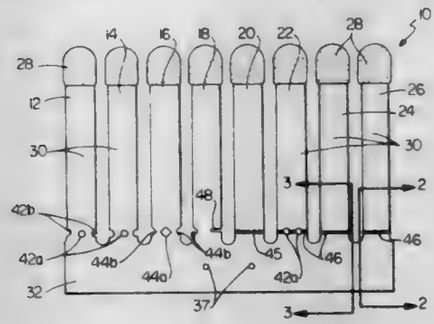
1. An industrial-rated circuit breaker for high level overcurrent protection comprising:

an insulative base;

a pair of separable contacts within said base, one of said contacts being attached to a movable contact arm; and

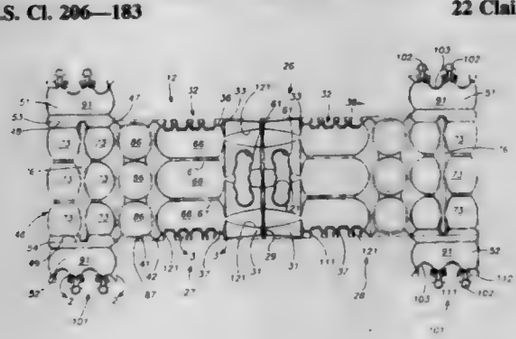
a contact arm drive link connecting with a contact arm crank and an operating mechanism at one end thereof and with said moveable contact arm whereby said contact arm drive link rotates said contact arm to separate said contacts upon occurrence of an overcurrent condition within a protected circuit, said drive link comprises an electrically-insulative top having a threaded shank extending from a bottom part thereof.

5,797,484
BOOK OF MATCHES
Andrew Sentementes, 147 Woodridge Dr. S., Stamford, Conn. 06902
Filed Mar. 5, 1997, Ser. No. 813,010
Int. Cl.[6] A24F *27/00*
U.S. Cl. 206—104 16 Claims



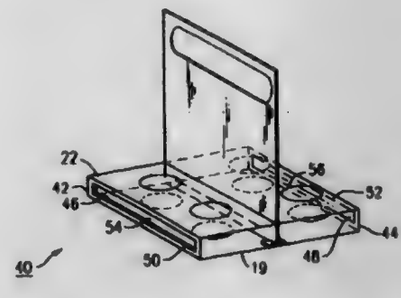
1. A book of matches, comprising:
(a) a plurality of matches, each of said plurality of matches including a flammable match tip attached to a first end of a match base, said match base having a remaining end disposed opposite to said first end;
(b) a central strip, each of said plurality of matches attached at a remaining end of said match base to said central strip;
(c) a matchbook cover, said central strip attached to said matchbook cover; and
(d) means for facilitating the removal of each of said plurality of matches apart from said central strip, said means included with said match base and wherein said means for facilitating includes at least one score line disposed in said match base and at least one perforation passing through said match base and disposed along said at least one score line wherein said at least one score line includes a second score line, said second score line being disposed on an opposite side of said match base with respect to said at least one score line and parallel with respect thereto.

5,797,485
CARRIER FOR BEVERAGE CONTAINERS AND FLAT FOR USE IN MAKING SAME
Gregory W. Gale, 3380 Atlas Peak Rd., Napa, Calif. 94558
Filed May 30, 1997, Ser. No. 866,336
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—183 22 Claims



1. A carrier for beverage containers in which the beverage containers are of a type which have a bottom wall, an upstanding side wall and an openable top, said carrier being formed of a one piece member formed of a non-plastic material formed into first and second halves adjoining each other at a first fold line, each half being comprised of counting from the first fold line a handle segment forming the first fold line, a first side wall segment adjoining the handle segment at a second fold line and having first and second side margins, a bottom wall segment adjoining the first side wall segment along a third fold line, a second side wall segment adjoining the bottom wall segment along a fourth fold line and having first and second side edges, first and second end wall segments adjoining respectively the first and second side edges of the second side wall segment and cooperative interlocking mating means carried by the first and second end margins and the first and second side margins for fastening together the first and second end wall segments of one half to the corresponding first and second end wall segments of the other half after the first and second end wall segments have been folded along the fold lines with the wall segments aligned in planes parallel to each other, said handle segments having holes therein adapted to receive the fingers of the hand.

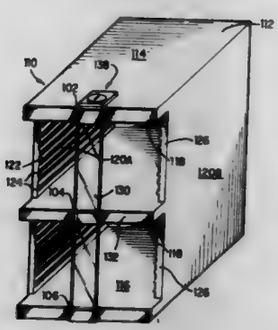
5,797,486
FOOD AND BEVERAGE CARRIER
Frank J. Picciolo, 7325 - 14th Ave., Brooklyn, N.Y. 11228
Filed Oct. 7, 1996, Ser. No. 731,195
Int. Cl.[6] B65D *75/00*
U.S. Cl. 206—194 17 Claims

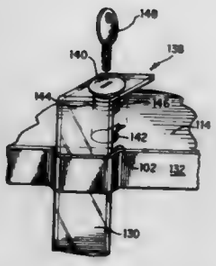


1. A carrier for transporting food and beverage containers, comprising:
first means for supporting an upper portion of a food and beverage container;
second means for supporting a lower portion of a food and beverage container;
a plurality of apertures disposed in said first and second means for enabling said carrier to receive a food and beverage container; and
a plurality of reinforcement panels extending between said first and second means for rigidifying said carrier, wherein at least one of said reinforcement panels includes a recessed panel portion therein.

5,797,487
LOCKABLE COMPACT DISK STORAGE APPARATUS
Alan Young, 505 Masters Dr., Blackwood, N.J. 08012
Filed Sep. 27, 1996, Ser. No. 722,474
Int. Cl.[6] B65D *85/57*
U.S. Cl. 206—308.2 2 Claims

1. A lockable storage apparatus for recorded media comprising:
a) a housing having top, bottom, back and sidewalls; the interior of said housing being adapted with retention means for the storage of recorded media in an organized manner;
b) receiving means fixedly attached to the front of said housing;
c) a security bar capable of removable insertion into said receiving means thereby preventing the removal of recorded media stored within the storage apparatus; and





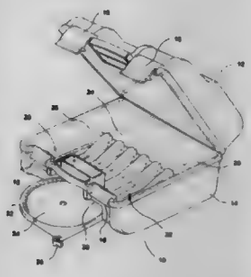
d) locking means to prevent the removal of said security bar when said security bar is inserted into said receiving means.

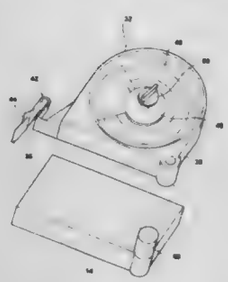
5,797,488

CASE FOR A CIRCULAR SAW

Zvi Yemini, Tel Aviv, Israel, assignor to Zag Ltd., Rosh Haayin, Israel

Filed Aug. 21, 1996, Ser. No. 700,908
Int. Cl.[6] A45C *11/26*
U.S. Cl. 206—349 **5 Claims**





1. A case for storing a circular saw and extra blades, comprising:
(a) a cover;
(b) a base hingeably connected to said cover, said base featuring a recess; and
(c) a compartment, said compartment holding at least one of the extra blades in a horizonal position, said compartment being pivotably mounted on said base, and said compartment being dimensioned to be accommodated by said recess, such that when said compartment is closed, at least a portion of said compartment is accommodated by said recess, and when said compartment is open, at least a portion of said compartment projects outwardly, substantially horizontally, from said base, said compartment featuring:
(i) a seat;
(ii) a spacer for being able to separate at least two of the extra blades, said spacer including an opening;
(iii) a tightener for securing said at least one of the extra blades, said tightener being dimensioned to be accommodated by said opening of said spacer and by said seat of said compartment; and
(iv) a ridge for gripping said at least one of the extra blades.

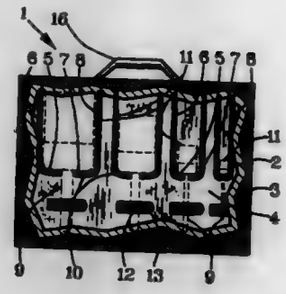
5,797,489

PAINTBRUSH CASE

Richard Baker, 1141 S. Alhambra Cir., Naples, Fla. 34103

Filed Jul. 7, 1997, Ser. No. 903,277
Int. Cl.[6] A46B *17/00*; B65D *77/76*
U.S. Cl. 206—362 **20 Claims**

1. A paintbrush case comprising:



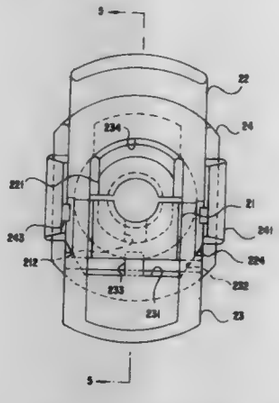
a center plate having a top edge proximate a top of the paintbrush case, a bottom edge proximate a bottom of the paintbrush case, a first end proximate a first end of the paintbrush case, and a second end proximate a second end of the paintbrush case;
a first-side wall hinged to a first side of the bottom of the paintbrush case;
a second-side wall hinged to a second side of the bottom of the paintbrush case;
at least one air vent in at least one wall of the paintbrush case;
a plurality of first-side brush holders that are sized and shaped to hold a select plurality, type, size and shape of paintbrushes in handle-down attitude in a first side of the paintbrush case;
a plurality of second-side brush holders that are sized and shaped to hold a select plurality, type, size and shape of paintbrushes in handle-down attitude in a second side of the paintbrush case; and
a case handle proximate a top of the paintbrush case.

5,797,490

HOLDER FOR A BLOOD COLLECTION NEEDLE

Tsuguo Fujii, Ootsu; Keizo Matsumura, Ibaragi, and Toshihiro Kikuchi, Osaka, all of Japan, assignors to Nissho Corporation, Osaka, Japan

Filed Oct. 9, 1996, Ser. No. 728,146
Claims priority, application Japan, Nov. 22, 1995, 7-304855
Int. Cl.[6] A61M *5/32*; B65D *85/00*
U.S. Cl. 206—365 **7 Claims**



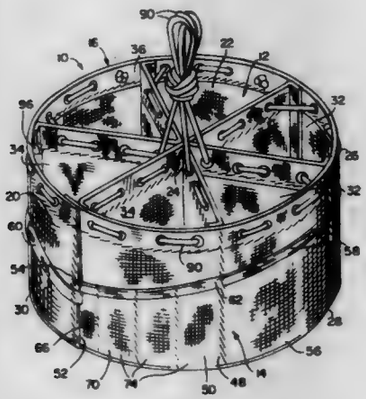
1. A holder for a blood connection needle comprising:
a cylinder having an open proximal end, a distal end closed by an end wall, and an aperture formed in said end wall; and
a needle fixing mechanism disposed at said distal end of said cylinder, said mechanism including first and second sliders, said sliders being respectively movable toward each other along said end wall, wherein when said first slider is moved toward said second slider said mechanism is brought into a closed state, and when said second slider is moved toward said first slider said mechanism is brought into an open state.

5,797,491

TOOL CARRIER-ORGANIZER

David P. Fierek, Mounds View, and Jack J. Hubert, Duluth, both of Minn., assignors to Fiskars Inc., Madison, Wis.

Filed May 6, 1996, Ser. No. 643,176
Int. Cl.[6] B65D 30/22;39/16
U.S. Cl. 206—373 27 Claims



1. A carrier-organizer comprising:

a. a parts organizer comprising

a sleeve made of soft fabric material having oppositely facing inner and outer surfaces and spaced apart top and bottom edges;

a substantially planar bottom surface joined along its periphery to the bottom edge to form a cavity having a center; and

a plurality of web panels extending inwardly from the inner surface at spaced intervals along the sleeve, each panel having a lower margin and a distal upper margin, the panels being attached to the bottom surface along the lower margins, the panels being joined at a point located about the center thereby creating a plurality of substantially pie-shaped compartments; and

b. a tool carrier formed by

a polygonal blank having oppositely facing inner and outer face s, the blank being bounded by generally parallel first and second side edges, a lower edge substantially perpendicular to the first and second side edges, and an upper edge having two sides extending upwardly respectively from the first and second side edges and meeting in an apex region, the first and second side edges being joined together a long a seam;

the lower edge of the blank being attached to the outer surface proximate the bottom edge with the inner face facing the outer surface; and

the blank being further attached to the sleeve along lines extending between the blank upper and lower edges, the lines being formed at spaced intervals along the blank upper edge thereby forming a plurality of pockets having openings directed toward the top edge of the sleeve.

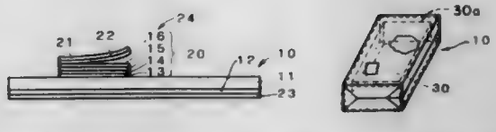
5,797,492

INFORMATION STORAGE MEDIUM PACKAGING BODY

Seizo Seki; Masayuki Kawajiri, and Takashi Asakura, all of Tokyo-To, Japan, assignors to Sony Corporation, and Dai Nippon Printing Co., Ltd., both of Japan

Filed Aug. 30, 1996, Ser. No. 705,629
Claims priority, application Japan, Sep. 8, 1995, 7-231537
Int. Cl.[6] B65D 85/672
U.S. Cl. 206—387.1 7 Claims

1. An information storage medium packaging body comprising an information storage medium for storing audio information or video information, a case for containing the information storage medium, and a packaging film for packaging the case, the packaging film comprising:



a heat shrinkable film;

a hologram layer formed on one surface of the heat shrinkable film; and

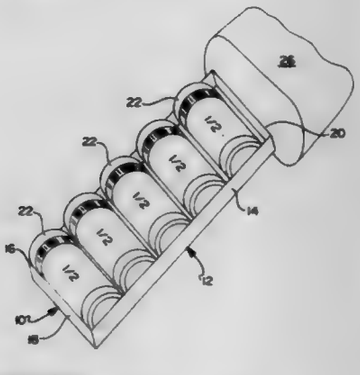
an offset preventing layer formed on the other surface of the heat shrinkable film, for preventing an offset of the hologram layer.

5,797,493

PLUMBING FITTINGS AND METHOD OF PACKAGING THEREFOR

Thomas J. Watson, 44 Bershire Mews, N.W., Calgary, Alberta, Canada, T3K 1Z6

Filed Oct. 28, 1996, Ser. No. 739,001
Int. Cl.[6] B65D 85/62
U.S. Cl. 206—443 3 Claims



1. In combination:

(a) an opened toped container having a bottom wall, a pair of opposed end walls, and a pair of opposed, separated side walls, the container being dimensioned to removably seat therewithin a plurality of plumbing fittings;

(b) a heat shrunk transparent covering enclosing the top of the container;

(c) an indicia bearing label adhered to the exterior of the container, and

(d) a plurality of plumbing fittings removably disposed within the container, each fitting including a removable indicia bearing label adhered thereto.

5,797,494

FOOD PACKET AND METHOD FOR FORMING A PACKET FOR A FOOD PRODUCT

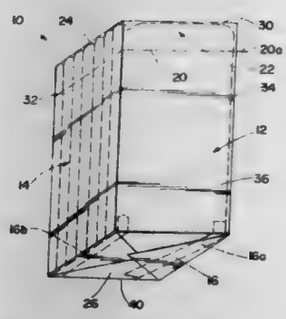
T. Thomas Balling, Lagny Sur Marne, and Pascal C. Godard, Villemomble, both of France, assignors to Kraft Jacobs Suchard France, France

Continuation of Ser. No. 203,069, Feb. 28, 1994, abandoned.
This application Mar. 21, 1996, Ser. No. 621,148
Int. Cl.[6] B65D 83/10
U.S. Cl. 206—460 16 Claims

1. A food package comprising:

(a) an outer wrap including an inside surface having first and second opposite edges, and folded into an elongated regular hexahedron shaped packet forming an interior having longitudinal, transverse and depth dimensions, said longitudinal dimension being longer than both the transverse and depth dimensions, said packet including

i) opposing and parallel top and bottom panels, said top and bottom panels being spaced apart and defining said longitudinal dimension,



ii) opposing and parallel left and right side panels connected to and extending between the top and bottom panels, said left and right side panels being spaced apart and defining the transverse dimension, and

iii) opposing and parallel front and back panels connected to and extending between the left and right side panels and connected to and extending between the top and bottom panels, said front and back panels being spaced apart and defining the depth dimension,

wherein the top, bottom, left side, right side, front and back panels define and enclose the interior of the outer wrap;

(b) a plurality of food products disposed in the interior of the packet, each of the food products including

i) opposing and parallel top and bottom edges,

ii) opposing and parallel left and right edges connected to and longitudinally extending between the top and bottom edges, and

iii) opposing and parallel front and back sides connected to and transversely extending the left and right edges and connected to and longitudinally extending between the top and bottom edges,

wherein the food products are parallel to each other and are positioned one behind another, and wherein the front and back sides of the food products are parallel to the front and back panels of the outer wrap, the bottom edges of the food product are adjacent and parallel to the bottom panel, and the food products longitudinally extend upward from said bottom panel to a position adjacent the top panel of the outer wrap;

wherein the top panel of the outer wrap is removable to form a top opening, opposite the bottom panel, to provide access to the interior of the outer wrap and the food products located therein; and

(c) a substantially continuous adhesive strip extending along substantially the complete length of the inside surface of the outer wrap, between said first and second edges thereof, and forming an adhesive strip section on the bottom panel, and

wherein each of the food products transversely extends across the interior of the outer wrap, between the left and right side panels thereof, and the bottom edge of each of the food products laterally extends across and engages the adhesive strip section on the bottom panel to hold the food products releasably in the interior of the wrapping material after the top panel of the packet is removed.

5,797,495

SERVING TRAY

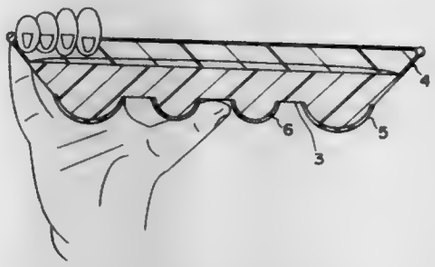
Andrew J. Lerrick, 323 N. Kings Hwy., #813, St. Louis, Mo. 63108

Continuation of Ser. No. 33,330, Jan. 12, 1993, abandoned. This application Mar. 17, 1994, Ser. No. 210,078

Int. Cl.[6] A47G *23/00*

U.S. Cl. 206—554 **12 Claims**

1. A tray comprising a substantially planar portion having a rigid first surface adapted to receive articles to be carried on said tray, a second surface, and a side surface extending between said first surface and said second surface, said tray including a gripping surface substantially perpendicular to a plane defined by said first surface, and at least one base ring extending from said second surface in a direction away from said first surface,



said gripping surface and said base ring being positioned on said tray whereby, when one of said gripping surface and said base ring is gripped by the fingertips of a server's hand, the other can be engaged by the thumb thereof, said gripping surface being a surface against which a gripping force sufficient to support said tray can be applied in a direction substantially parallel to said plane,

said at least one base ring having a surface substantially parallel to said plane comprising a first portion and a second portion, said first portion being closer to said gripping surface than said second portion.

5,797,496

METHOD FOR THE UTILIZATION OF ASH FROM COAL-FIRED PLANTS

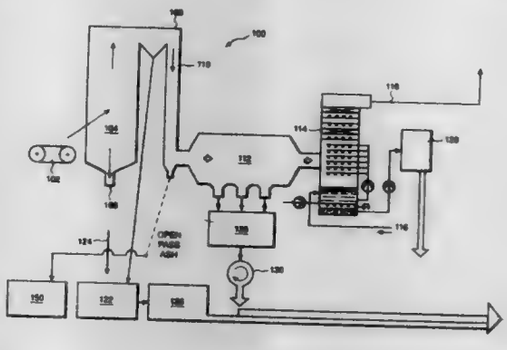
Gunther Kirchen, Wurselen, and Jurgen Lehrke, Herzogenrath, both of Germany, assignors to Sicowa Verfahrenstechnik Fur Baustoffe GmbH & Co., KG, Aachen, Germany, and ProMineral Gesellschaft Zur Verwendung von Mineralstoffen mbH, Bergheim, Germany

Filed Oct. 17, 1996, Ser. No. 733,703

Claims priority, application Germany, Oct. 18, 1995, 195 38 710.4

Int. Cl.[6] B03B *9/00*

U.S. Cl. 209—2 **16 Claims**



1. A method of producing cement from starting materials comprising open-pass ash obtained from a coal-fired plant or the like, said method comprising the steps of:

removing dry open-pass ash comprising mineral constituents and combustible constituents from at least one coal-fired plant or lignite-fired plant; and

producing cement from starting materials comprising at least the mineral constituents of the dry open-pass ash,

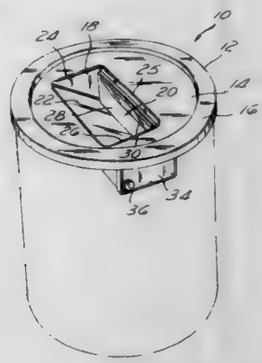
wherein more than 90% of the mineral constituents of the dry open-pass ash removed from the coal-fired plant or lignite-fired plant is in a range between about 100 μm and 500 μm, and wherein said mineral constituents include at least silica sand, aluminum, iron, and calcium.

5,797,497

FLATWARE TRAP FOR WASTE CONTAINERS

Richard E. Edwards, 1750 Ocean Ave., Long Beach, Calif. 90806

Filed Feb. 22, 1996, Ser. No. 603,910
Int. Cl.[6] B07C 5/344
U.S. Cl. 209—570 11 Claims



1. A device for trapping densely metallic objects present in food waste prior to entry into a trash container, the device comprising:

a housing adapted to be supported proximate the entrance of the trash container;

the housing having a downwardly sloping surface to a lower opening at a lower end, to form a chute for passing of the food waste into the trash container;

a door disposed proximate the lower opening, the door movable between an open position and a closed position obstructing the lower opening;

a spring-loaded mechanical linkage connected to the door, operative upon release to move the door from the open to the closed position such that the door remains in the closed position until manually opened;

a metal detector disposed proximate the housing sloping surface and physically isolated from contact with the passing food waste, the detector operative to detect dense metal objects and transmit a signal upon detection;

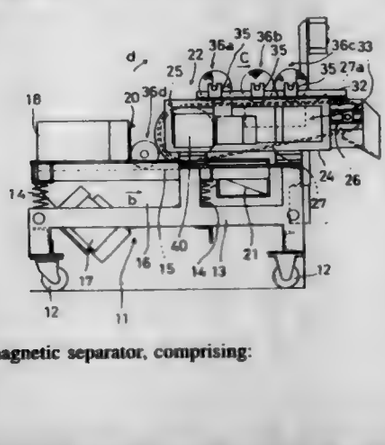
an actuator connected to the mechanical linkage and in communication with the metal detector, operative upon receiving the transmitted signal from the detector to cause the mechanical linkage to be released.

5,797,498

MAGNETIC SEPARATOR AND SWEEPING BRUSH USED THEREIN

Hisamine Kobayashi, and Katsuhiro Izuhara, both of Nagoya, Japan, assignors to Tipton Corp., Nagoya, Japan

Filed Nov. 29, 1995, Ser. No. 564,728
Claims priority, application Japan, Nov. 30, 1994, 6-323690
Int. Cl.[6] B07C 5/344
U.S. Cl. 209—636 12 Claims



1. A magnetic separator, comprising:

an infeed passage for conveying a mixture of a magnetic substance and a nonmagnetic substance;

a rotary drum that is rotatable about an axis that crosses said infeed passage, said rotary drum having a circumferential surface; and

a magnet arrangement in said rotary drum capable of attracting the magnetic substance from said infeed passage to said circumferential surface;

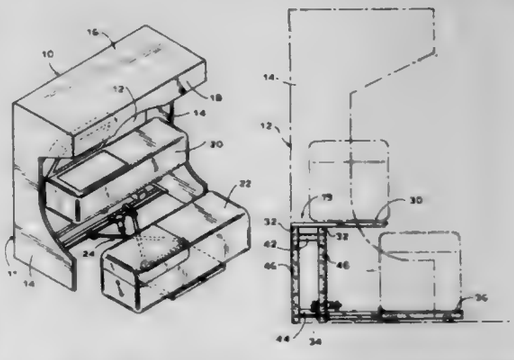
wherein said magnet arrangement defines a magnetic field that extends circumferentially of said rotary drum such that the attitude of the magnetic substance, when conveyed along the infeed passage and attracted to said circumferential surface of said rotary drum, is corrected to be directed circumferentially of said rotary drum.

5,797,499

CASKET DISPLAY SYSTEM AND CONSTRUCTION METHOD

Frank Pinco, Staten Island, N.Y., assignor to South Brooklyn Casket Co., Inc., Brooklyn, N.Y.

Filed Sep. 10, 1996, Ser. No. 709,806
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—13.1 22 Claims



1. A casket display system for displaying an upper and lower casket comprising:

a back wall;

two side walls connected to said back wall;

an upper horizontal support connected between said side walls, a portion of said upper horizontal support being spaced from said back wall and extending between the upper and lower caskets;

cantilever arms connected to said upper horizontal support for supporting the upper casket;

a movable casket support for the lower casket; and

each side wall having a floor-engaging support extending beyond said cantilever arms for supporting the upper casket beyond its center of gravity.

5,797,500

GUN RACK APPARATUS

Marvin Lacoste, P.O. Box 292, Kiln, Miss. 39556

Filed Sep. 19, 1996, Ser. No. 715,761
Int. Cl.[6] A47F 7/00
U.S. Cl. 211—64 12 Claims

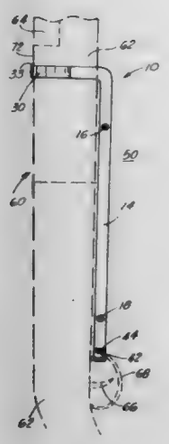
1. An improved support apparatus comprising:

a. a gun to be supported;

b. a principal frame mountable on an upright surface such as a wall, having a central body portion in a substantially vertical orientation, said central body portion further comprising:

i. an upper end and a lower end;

ii. a first continuous circulate support arm extending out from the upper end of the central body, and positioned off center from a center line of the vertical orientation of the central



body portion and having a free end, said free extending back towards said center line.

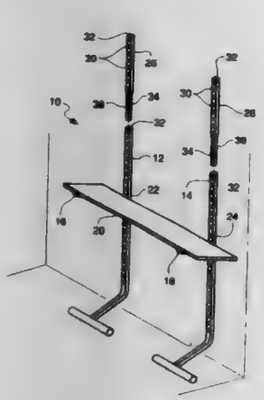
iii. a foot member extending out from the lower end of the central body portion, for engaging a trigger housing of the gun to be supported so that the gun rests against the arcuate support arm of the frame portion, in a substantially vertical orientation in line with the orientation of said central body portion.

5,797,501

GRAVITY SHELF STRUCTURE SUPPORT

Lee Louis Von Gunten, 64 Newton Dr., Buffalo Grove, Ill. 60090

Filed Dec. 31, 1996, Ser. No. 777,876
Int. Cl.[6] A47F *5/08*; F16B *7/00*
U.S. Cl. 211—90.01 **31 Claims**



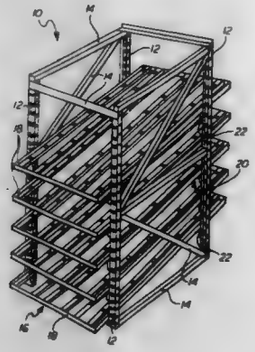
1. A joinder piece for connection of sectional or segmental support members, at least one of said support members having a plurality of aligned slots to receive seating hooks of a cantilever bracket, comprising an elongate body having an opening, said elongate body having a base portion, a first side portion, and a second side portion, said first and second side portions each having a contour at least partially inwardly curved toward each other which is capable of contact with a substantially linear interior surface of at least one of said support members, said first and second side Portions being resilient and capable of inward movement towards each other to foster an interference fit within at least one of said support members, said first and second side portions bordering said base portion to form said opening, said opening being capable of being disposed in open communicative alignment with said plurality of aligned slots of said support member.

5,797,502

UNIVERSAL, HEIGHT-ADJUSTABLE HANGER BRACKET

Timothy D. Brady, Ventura, Calif.; Brian F. Russell, Georgetown, Ky., and Michael P. Kelly, Oreland, Pa., assignors to Western Pacific Storage Systems, Inc., Georgetown, Ky.

Filed Oct. 10, 1996, Ser. No. 728,816
Int. Cl.[6] A47H *1/00*
U.S. Cl. 211—183 **5 Claims**



1. A universal, height-adjustable bracket for mounting a gravity flow rack system to an upright post of a support framework, comprising:

an elongated body defining a longitudinal axis;

a first set of at least two fastening tabs projecting outwardly from said longitudinal axis in a first direction from a first sidewall of said elongated body for selectively engaging in cooperating apertures formed in the upright post; and

a second set of at least two fastening tabs projecting outwardly from said longitudinal axis in a second different direction from a second sidewall of said elongated body for selectively engaging in the cooperating apertures formed in the upright post, said first and second set of at least two fastening tabs being offset from one another along said longitudinal axis so that either of said first and second sets of at least two fastening tabs may be fastened in the apertures in the upright post in order to provide height adjustment.

5,797,503

MODULAR STORAGE SYSTEM WITH AN ACTIVE STORAGE LEVEL FEATURE

Kenneth A. Stevens, Harleysville; Jonathan M. Daugherty, Wilkes-Barre; David R. McGovern, Wilkes-Barre, and Joseph P. Jones, Wilkes-Barre, all of Pa., assignors to Metro Industries, Inc., Reno, Nev.

Filed Apr. 21, 1995, Ser. No. 426,654
Int. Cl.[6] A47B *43/00*
U.S. Cl. 211—187 **47 Claims**

1. A storage system comprising:

(a) a plurality of support assemblies, each of said plurality of support assemblies including:

(i) a post having at least one pair of radially extending flanges formed along a length of said post, said pair of flanges defining a longitudinal slot therebetween;

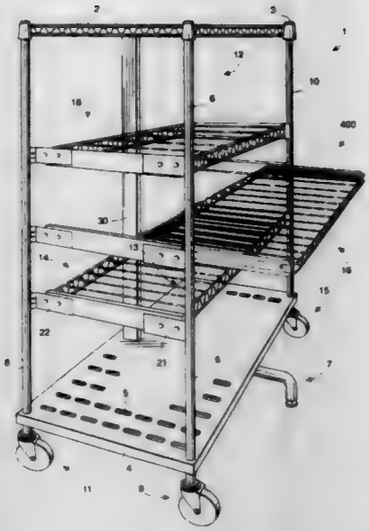
(ii) a post insert having an array of mounting slots formed therein, said post insert being disposed within said longitudinal slot; and

(iii) a lock assembly for securing said post insert within said longitudinal slot;

(b) a lower frame assembly engaged to said plurality of support assemblies;

(c) an upper frame assembly engaged to said plurality of support assemblies;

(d) a pair of mounting assemblies, each of said pair of mounting assemblies being engaged to a pair of said support assemblies; and



(e) an active-level storage unit suspended at each of two opposing sides by a respective one of said pair of mounting assemblies,

wherein said active-level storage unit is slidably movable relative to said plurality of support assemblies.

5,797,504

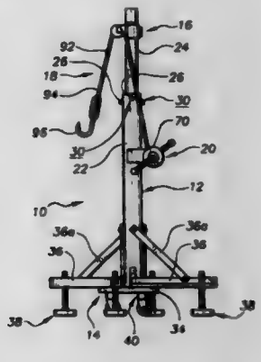
PORTABLE HOISTING SYSTEM

Burney Mangum, 182 Daytona Dr., San Antonio, Tex. 78227

Filed Jun. 16, 1997, Ser. No. 876,861

Int. Cl.[6] B60P *1/14*

U.S. Cl. 212—303 **1 Claim**



1. A portable hoisting system comprising:

a base assembly;

a telescoping pole assembly carried on said base assembly;

a slidably positionable line guide assembly slidably mounted to said telescoping pole assembly;

a hoisting line assembly having a hoisting line threaded through a guiding aperture of said line guide assembly; and

a winch assembly mounted onto said telescoping pole assembly and including a take up reel upon which a length of said hoisting line is wound;

said base assembly including a base plate, four legs, each leg being coextensive along a different side of the base plate and extending from said base plate, and four swivel mounted rollers mounted to an underside surface of said base plate, each leg including a user adjustable leveling support;

said telescoping pole assembly including a lower pole rigidly mounted to an upper side surface of said base plate and an upper pole telescopically positionable with respect to said lower pole, said upper pole being lockable in a fixed position with respect to said lower pole with at least one pole locking pin assembly;

said slidably positionable line guide assembly including a tubular slide portion slidably positionable over an end of said upper pole, a U-shaped pulley housing rigidly secured to said tubular slide portion, a line guide including a pulley rotatably mounted within said U-shaped pulley housing, and at least one line guide assembly locking pin, said tubular slide portion having a rear assembly locking pin hole and a forward assembly locking pin hole formed through said sidewalls thereof, said line guide assembly locking pin being sized in a manner to be insertable through said rear assembly locking pin hole, said forward assembly locking pin hole and a pair of said number of concentrically aligned forward and rear pole locking pin holes;

said ratcheting winch assembly including an elongated handle section attached to said take up reel and of a length sufficient to extend past said side edge of said lower pole of said telescoping pole assembly.

5,797,505

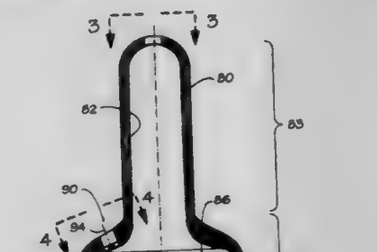
DEBRIS IMMUNE ANIMAL FEEDING NIPPLE

Kam Kaura, 30 Coronado Pointe, Laguna Niguel, Calif. 92677

Filed May 31, 1996, Ser. No. 655,968

Int. Cl.[6] A61J *11/02;11/04*

U.S. Cl. 215—11.5 **4 Claims**



1. A nipple configured for animal feeding when mounted upon an animal feeding bottle, the nipple comprising:

(A) a tube of an elastic material, closed at one end by a dome shaped terminus, the other end forming an open nipple annular rim suitable for fitting tightly over the neck of the animal feeding bottle;

(B) the dome shaped terminus providing a pair of first linear, through slits, the slits mutually intersecting at an angle of less than 90 degrees;

(C) a sidewall of the tube providing a vent comprising a planar disk shaped flexible membrane having an axis of motion oriented normal to the membrane, the membrane having a plurality of equally spaced, non-intersecting, radially oriented, second linear, through slits, defining a central membrane portion and relative thereto, a plurality of circumferentially adjacent interconnect membrane portions, so that with a pressure differential across the membrane, the flexible membrane stretches into a concave shape, the second slits thereby being widened for relieving pressure from within the feeding bottle;

(D) an annular flexible skirt extending from the sidewall and terminating in a skirt annular rim, the skirt generally positioned and shaped so that the skirt annular rim contacts the exterior surface of a bottle when the nipple is mounted thereon so as to prevent debris from moving into contact with

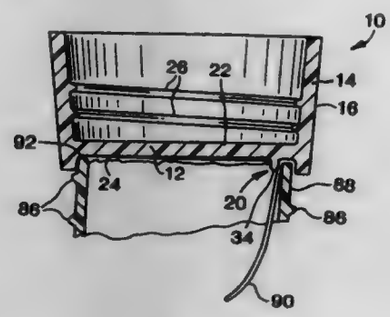
the nipple annular rim; and wherein the sidewall has an interior surface and an exterior surface, the flexible membrane being positioned adjacent the interior surface in a circular well within the sidewall, and wherein the axis of motion of the flexible membrane is coaxial with a central axis of the circular well and forms an angle of approximately 20 degrees with a longitudinal axis of the nipple.

5,797,506

CLOSURE WITH SEAL OPENING MEMBER

Bradley P. Lehmkuhl, Rockford, and Mark F. Mettler, Grand Rapids, both of Mich., assignors to Amway Corporation, Ada, Mich.

Filed Jan. 27, 1997, Ser. No. 790,771
Int. Cl.[6] B65D *41/00*
U.S. Cl. 215—228 **16 Claims**



1. A container comprising:
a body;
a neck extending the body, said neck having a land defining a plane and an opening;
a seal tautly secured across said land, covering said opening and lying parallel to said plane, said seal including a layer of foil and a layer of plastic; and
a closure having a generally circular top wall with a periphery, a generally semi-circular nub with a blunt peripheral edge extending upwardly from said top wall, and an upper wall extending upwardly around the periphery of said top wall, said top wall, said nub having a substantially planar outer surface facing said upper wall and an axis extending parallel to a radius of said top wall;
said nub defining a tearing means for tearing away from the container only a partial portion of the seal,
said nub further defining a means assisting in the downward movement of the seal upon rotation of the closure beyond a predetermined circumferential distance to prevent the seal from being completely separated from said land upon rotation of the closure more than 360 degrees.

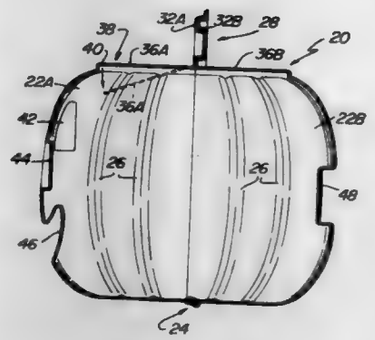
5,797,507

NESTABLE HOLIDAY CONTAINER

Stanley Kramer, 404 Fireside La., Cherry Hill, N.J. 08003

Filed Sep. 19, 1996, Ser. No. 716,118
Int. Cl.[6] B65D *8/18*
U.S. Cl. 220—4.23 **9 Claims**

1. A nestable container for holding a plurality of items, said nestable container comprising:
a first member having a holiday ornamentation incorporated therein and having a first periphery surface;
a second member pivotally coupled to said first member and having a second periphery surface;
said first periphery surface and said second periphery surface having mating surfaces to form a friction fit for locking said first member and said second member in a closed condition to form a container;



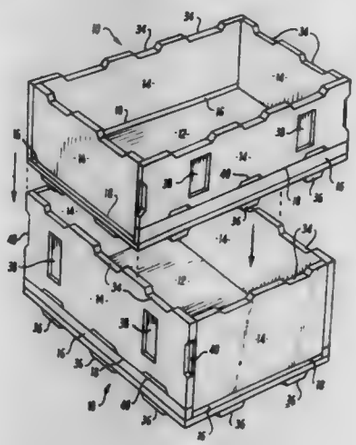
said ornamentation comprising recesses in said first member; and
wherein said container further comprises decorative stickers to be applied within said recesses.

5,797,508

COLLAPSIBLE CONTAINER

Stephen Clive Loftus, and Marcus Hoggarth, both of West Midlands, United Kingdom, assignors to McKechnie UK Limited, West Midlands, United Kingdom

Filed Aug. 27, 1996, Ser. No. 703,486
Int. Cl.[6] B65D *6/18*
U.S. Cl. 220—6 **24 Claims**



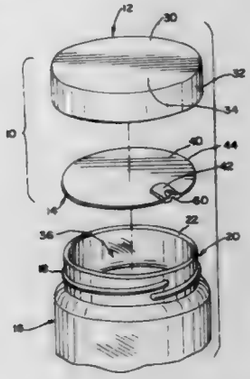
1. A collapsible container comprising a base, at least one side wall which may move to a stowed position when the container is not in use, an intermediate member, hinge means connecting the intermediate member with a first one of the side wall and the base, and attachment means operable to releasably attach the intermediate member to a second one of the side wall and the base, the intermediate member and the second one of the side wall and the base being manufactured separately, and subsequently assembled by means of the attachment means; the attachment means comprising a hook formation for introduction into a recess in a first direction, movement in a second direction serving to engage the hook with the walls of the recess, thereby locking the hook and recess together.

5,797,509

CLOSURE PACKAGE HAVING A CRIMPED LINER PULL TAB AND FORMING METHOD THEREFOR

Michael Crim Fitch, Kankakee, Ill., assignor to Phoenix Closures, Inc., Naperville, Ill.

Filed Feb. 18, 1997, Ser. No. 802,534
Int. Cl.[6] B65D 51/20
U.S. Cl. 220—258 15 Claims



1. A closure package for use with an associated container, the container having a finish portion having a sealing surface at an uppermost portion thereof, the package comprising:

a closure cap having a top wall portion and a depending skirt portion depending from said top wall portion, said top wall portion being adapted to coact with the container sealing surface to form a seal therebetween; and

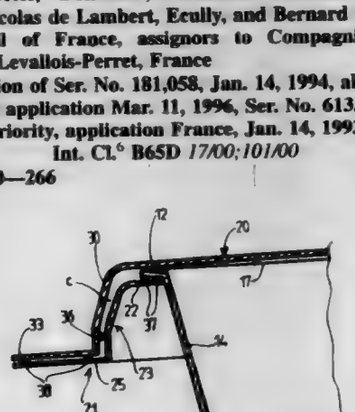
a liner disposed in said cap and positioned intermediate said top wall portion and the sealing surface when said cap is positioned on the container, said liner having a central portion and a tab portion integral with said central portion, said tab extending outwardly from a periphery of said central portion and being folded thereover into a folded position to define a hinge region at a juncture thereof, said hinge region having a hinge length, said tab being folded over said central portion to reside within said periphery thereof, said tab and liner having a deformation area formed that is smaller than and across said hinge region, transverse thereto, so as to lock said tab into said folded position.

5,797,510

PLASTICS MATERIAL PACKAGING FOR LONG-TERM STORAGE OF FOOD

André Carrier, Donzenac; Bruneau Couvrat-Desvergnes, Brive; Nicolas de Lambert, Ecully, and Bernard Pommaret, Brive, all of France, assignors to Compagnie Gervais Danone, Levallois-Perret, France

Continuation of Ser. No. 181,058, Jan. 14, 1994, abandoned.
This application Mar. 11, 1996, Ser. No. 613,551
Claims priority, application France, Jan. 14, 1993, 93 00282
Int. Cl.[6] B65D 17/00;101/00
U.S. Cl. 220—266 10 Claims



1. A reclosable four-part plastics material packaging comprising:

a receptacle having a bottom and a sidewall including an annular rim around an edge remote from the bottom, said rim having a top face, a bottom face and an outward face;

a skirt secured to said bottom face of said rim and comprising a first sidewall extending outwardly and downwardly from said rim and having a first peripheral edge, said skirt including breakable skirt lugs protecting outwardly from said first peripheral edge;

a substantially flat closure membrane sealed on a top face of said rim; and

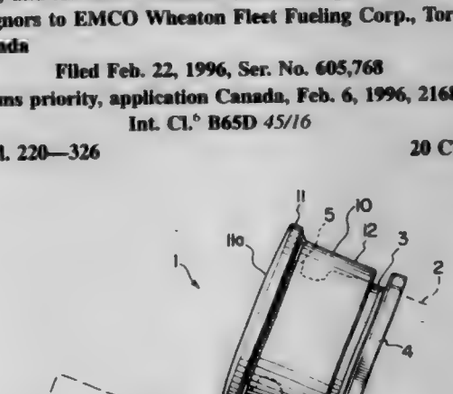
a cover applied to the receptacle over said membrane and said skirt, the cover enclosing the membrane and including a disk, a second sidewall extending outwardly and downwardly from said disk and having a second peripheral edge, said second sidewall having substantially the same shape as said first sidewall, and breakable cover lugs protecting outwardly from said second peripheral edge, wherein the skirt lugs and the cover lugs are secured to one another and wherein the cover is secured to the skirt only by said skirt breakable lugs and said cover breakable lugs, said lugs forming tampering indicators for the opening of the cover when the lugs are broken off from the cover, further comprising spacing means for keeping the cover at a distance from the skirt during assembly so as to create chimney gaps.

5,797,511

CAP WITH FLEXIBLE RETAINING MEANS

Stanley Robert Elsdon, Islington; Gordon Elford Fairies, Toronto, and Arthur S. Cornford, Mississauga, all of Canada, assignors to EMCO Wheaton Fleet Fueling Corp., Toronto, Canada

Filed Feb. 22, 1996, Ser. No. 605,768
Claims priority, application Canada, Feb. 6, 1996, 2168797
Int. Cl.[6] B65D 45/16
U.S. Cl. 220—326 20 Claims

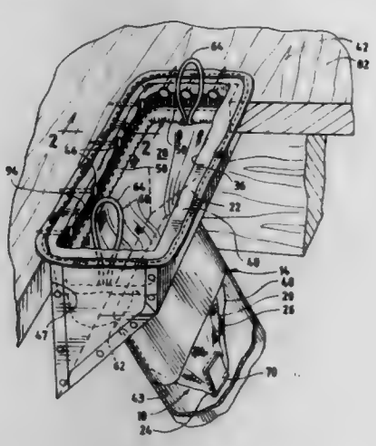


1. A cap arrangement for covering a necked opening comprising: a cap, the cap having an open and a closed position; flexible retaining means for securing the cap to the neck in proximity to the opening, the flexible retaining means extending between the cap and the neck and arranged to provide a non-fixed pivot point in a plane laterally spaced from the cap and neck so that the cap pivots between its open and closed positions, and the cap having internal spring means for engaging the necked opening, the internal spring means positioned to engage the necked opening with sufficient tension to retain the cap in its closed position but to permit easy withdrawal of the cap upon application of suitable pressure to the cap.

5,797,512
DEVICE FOR COLLECTING DEBRIS ENTERING INTO A DUCT

Michael P. Boland, 9812 S. Ridgeway Ave., Evergreen Park, Ill. 60805

Filed Feb. 10, 1997, Ser. No. 797,410
Int. Cl.[6] B65D *33/00*
U.S. Cl. 220—404 **23 Claims**



1. A collection device for collecting debris entering into an opening of a duct in a building the collection device comprising:

(a) a basket including an open end, a closed end, an outer surface extending from the open end toward the closed end, and an inner surface extending from the open end toward the closed end and defining a chamber extending from the open end toward the closed end, the basket further including a collecting portion for receiving the debris and a fastening portion, unitary with said collecting portion adapted to be engaged with the duct such that the collecting portion extends into the duct opening and the closed end is within the duct, the collecting portion being detachably secured to the fastening portion by perforations for detaching and removing the collecting portion from the fastening portion; and

(b) a strap associated with the basket for removing the collecting portion from the duct after a predetermined amount of the debris has been received by the collecting portion.

5,797,513
INSULATED VESSELS

John L. Olinger, Newark, and Jean E. Schelhorn, Granville, both of Ohio, assignors to Owens Corning Fiberglas Technology, Inc., Summit, Ill.

Filed Feb. 29, 1996, Ser. No. 608,871
Int. Cl.[6] B65D *5/00*
U.S. Cl. 220—421 **14 Claims**

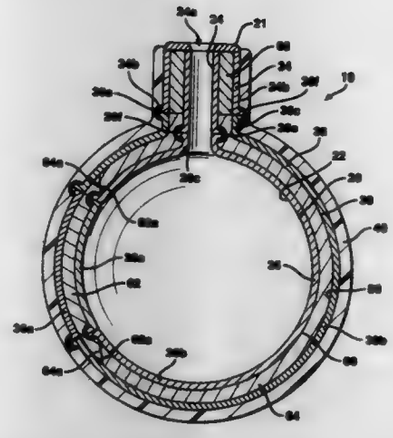
1. An insulated vessel adapted to receive a low or high temperature material to be insulated from the environment comprising:

an inner membrane which defines an inner cavity for receiving the low or high temperature material and having a first portion defining an entrance into said inner membrane;

an outer membrane which encases said inner membrane such that a space is defined between said inner and outer membranes and including a second portion which is positioned adjacent to said first portion, at least one of said inner and outer membranes having a thickness of between about 5 to about 15 mils;

an insulating material located in said space between said inner and outer membranes;

said inner and outer membranes being joined together so as to seal off said space from the environment, said space being evacuated to less than atmospheric pressure and said insulating material supporting said inner and outer membranes so as



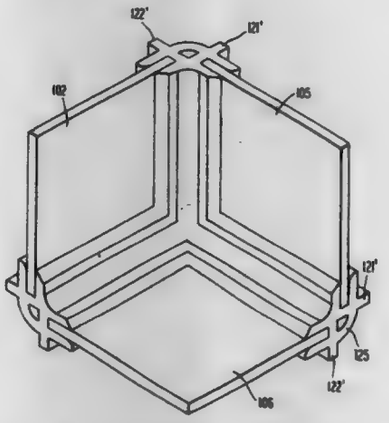
to prevent said membranes from collapsing when said space is evacuated to less than atmospheric pressure; and

an outer casing which surrounds said outer membrane, said outer casing having sufficient strength for providing structural and abuse-integrity to said vessel.

5,797,514
ICE BIN LINER WITH SANITARY JOINT

Andrew J. Twiggar, Bethlehem, and Dale S. Berger, Nazareth, both of Pa., assignors to Follett Corporation, Easton, Pa.

Filed Sep. 25, 1996, Ser. No. 719,931
Int. Cl.[6] B65D *7/32*
U.S. Cl. 220—683 **23 Claims**

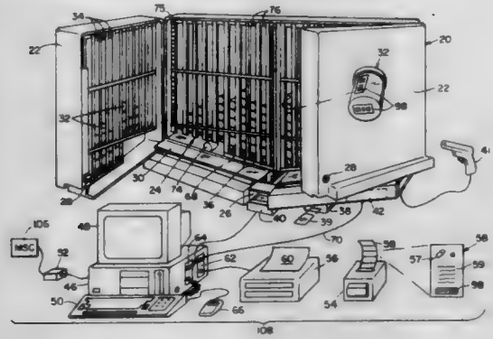


1. An ice bin for storing manufactured ice therein, comprising four walls and a floor and provided with a sanitary bin liner disposed in said ice bin adjacent said four walls of said ice bin, said sanitary liner comprising a plurality of generally planar panels forming inner walls of the sanitary bin liner, and connected by at least one sanitary edge joint, said sanitary edge joint comprising means for holding two adjacent liner panels at generally right angles to one another comprising two slots formed at right angles to one another, each slot formed by an inside leg and an outside leg, each leg having an inner and an outer surface, said outer surface of said inside leg tapering to said inner surface of said inside leg to form generally sharp edges on each inside leg to provide a smooth transition between the two adjacent liner panels which form the inner walls of the sanitary bin liner, said sanitary edge joint having a smooth contoured inner surface adjacent the inner walls of the bin liner to facilitate cleanliness and wherein the slots of the edge joint have at least one leg that converges toward the other whereby slight interferences with said panels are maintained to facilitate cleanliness and structural integrity.

5,797,515
METHOD FOR CONTROLLING A DRUG DISPENSING SYSTEM

Harold J. Liff, Lexington; Brian T. Hart, Bedford; Robert L. Wallace, Pepperell, all of Mass., and Arthur A. Berube, Hampstead, N.H., assignors to ADDS, Inc., N. Billerica, Mass.

Continuation-in-part of Ser. No. 544,623, Oct. 18, 1995, Pat. No. 5,713,485. This application May 3, 1996, Ser. No. 642,484
Int. Cl.[6] G07F *11/00*
U.S. Cl. 221—2 **27 Claims**



24. A method for dispensing packages and of loading packages in the housing comprising;

storing a plurality of coded packaged items in a housing;

receiving request signals to dispense a package at a controller;

generating dispense signals in response to the received request signals;

displaying package information on a computer display;

dispensing a package from the housing in response to the dispense signal;

reading the code of a dispensed package with a code reader;

verifying that the requested package was dispensed monitoring an amount of packages within the housing;

generating a reload signal;

opening the housing;

scanning packages with a bar code reader as the packages are loaded into the housing; and

recording data in a memory regarding the loaded packages.

5,797,516
FILLING DEVICE FOR THE PROPORTIONED DELIVERY OF VERY VISCOUS MATERIALS

Franz Brandl, St. Martin, Austria, assignor to Ludwig Schwerdtel GmbH, Karlsfeld, Germany

Filed Dec. 30, 1996, Ser. No. 774,637
Int. Cl.[6] B65B *3/00*
U.S. Cl. 222—80 **36 Claims**

1. A filling device for the proportioned delivery of very viscous materials, comprising the following features:

a filling pipe (**3**) having a material outlet end (**6**) in the vicinity of a front (**16**) and a central longitudinal axis (**12**),

a cutting head (**22**, **22'**, **22"**, **22"'**),

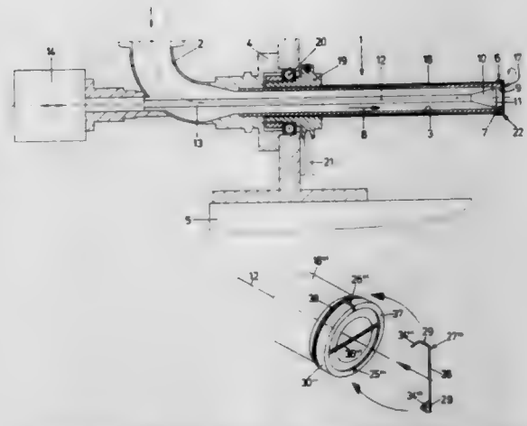
which is disposed at the material outlet end (**6**), and

which is rotatable relative to the filling pipe (**3**) about said central longitudinal axis (**12**), and

on which a cutting knife (**27**, **27'**, **27"**, **27"'**) is mounted tightly, but detachably and replaceably, in the direction of said central longitudinal axis (**12**) and radially thereto and tangentially to said cutting head (**22**, **22'**, **22"**, **22"'**),

wherein the cutting head (**22**, **22'**, **22"**, **22"'**) is provided with radial grooves (**25**, **25'**, **25"**, **25"'**) extending radially to said central longitudinal axis (**12**), and wherein the cutting knife (**27**, **27'**, **27"**, **27"'**) is arrested in said radial grooves (**25**, **25'**, **25"**, **25"'**), and

wherein the cutting knife (**27**, **27'**, **27"**, **27,"'**) is provided with bent off, radial tangential holding sections (**29**), wherein the

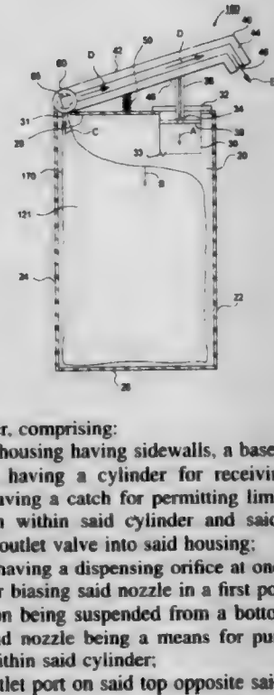


cutting head (**22**, **22'**, **22"**, **22"'**) is provided with longitudinal grooves (**26**, **26'**, **26"**, **26"'**) extending parallel to said central longitudinal axis (**12**), and wherein said holding sections (**29**) are arrested in said longitudinal grooves (**26**, **26'**, **26"**, **26"'**).

5,797,517
LIQUID PUMP DISPENSER WITH TRI-PURPOSE NOZZLE

Jack Weinstein, Manchester Township Ocean County, N.J., assignor to Primary Delivery Systems, Inc., Easton, Pa.

Filed Oct. 25, 1996, Ser. No. 738,336
Int. Cl.[6] B65D *35/28*
U.S. Cl. 222—95 **20 Claims**



1. A dispenser, comprising:

(a) a hollow housing having sidewalls, a base and a top;

(b) said top having a cylinder for receiving a piston, said cylinder having a catch for permitting limited movement of said piston within said cylinder and said cylinder further having an outlet valve into said housing;

(c) a nozzle having a dispensing orifice at one end;

(d) means for biasing said nozzle in a first position;

(e) said piston being suspended from a bottom surface of said nozzle, said nozzle being a means for pumping said piston slidably within said cylinder;

(f) a fluid outlet port on said top opposite said cylinder;

(g) means for rotatably connecting said nozzle with respect to said top, said means for rotatably connecting aligned with said fluid outlet port; and

(h) means for fluidly connecting said fluid outlet port to said nozzle;

wherein when said nozzle is pumped downward and moved from said first position to a second position, said means for fluidly connecting aligns with said fluid outlet port to permit a fluid to travel from said housing, through said fluid outlet

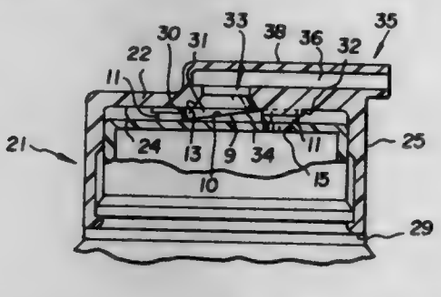
port, through said nozzle and out said dispensing orifice, and when said nozzle springs back to said first position, said means for fluidly connecting is not in alignment with said fluid outlet port, thereby preventing air and said fluid from flowing out said housing, said nozzle and said means for fluidly connecting acting as a valve.

5,797,518

TWIST CAP DISPENSING FLEXIBLE TUBE

Ronald E. Kieras, Woodstock, Ill., assignor to Courtaulds Packaging, Woodstock, Ill.

Filed Dec. 18, 1996, Ser. No. 768,962
Int. Cl.[6] B65D *35/00*
U.S. Cl. 222—107 **22 Claims**



1. A thermoplastic squeeze tube having a dispensing closure comprising:

a tubular member having an upper end, a bottom wall, a side wall extending between said upper end and said bottom wall, and a closure engaging means on said side wall adjacent said upper end;

a flexible diaphragm extending across and closing the upper end of said tubular member, said flexible diaphragm having an upper surface with a plurality of circumferentially spaced diaphragm ramps, a centrally located upwardly extending closure plug thereon, and at least one dispensing aperture therethrough;

a dispensing closure cap having a top wall and a downwardly depending annular skirt, said skirt having a tubular member engaging means thereon engageable with said closure engaging means on said tubular member to retain said closure cap on said tubular member while permitting rotation of said closure cap thereon;

said top wall having an underside having thereon a plurality of closure cap ramps, and a centrally located dispensing orifice formed therethrough;

whereby when said dispensing closure cap is secured to the upper end of said tubular member with said closure plug sealing said dispensing orifice, rotation of said closure cap will cause said closure cap ramps to contact said diaphragm ramps to force said diaphragm inwardly relative said tubular member and away from said top wall and form an opening for passage of contents of said tubular member through said at least one dispensing aperture of said diaphragm and outwardly through said dispensing orifice of said closure cap.

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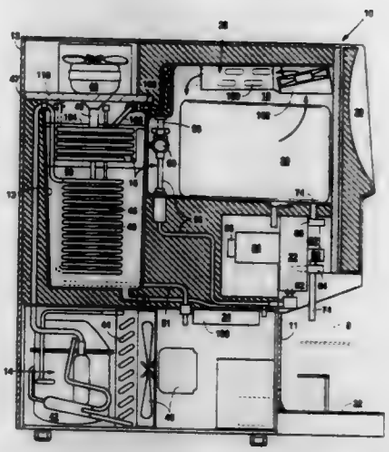
POSTMIX BEVERAGE DISPENSER

Alfred A. Schroeder, San Antonio, Tex.; Gary V. Paisley, Lilburn, Ga., and Michael T. Romanyszyn, Jr., San Antonio, Tex., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Mar. 14, 1997, Ser. No. 818,054
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129.1 **17 Claims**

1. A postmix beverage dispenser comprising:

(a) a housing;



(b) a water bath tank in said housing for holding an ice-water bath;

(c) a refrigeration system in said housing for forming an ice bank in said tank;

(d) a potable water circuit in said housing including a potable water cooling coil located in said tank;

(e) a concentrate compartment in said housing including a plurality of concentrate package stations, each adapted to hold a removable concentrate package of the type having a flexible dispensing tube;

(f) a plurality of concentrate pumping units in said housing;

(g) said concentrate pumping units each including a peristaltic pump driven by a variable speed gearhead motor with an encoder;

(h) said potable water circuit including a solenoid/water meter assembly;

(i) a control system in said housing receiving signals from said water meter for varying the speed of said motor to provide the desired ratio of water to concentrate;

(j) means for inputting into said control system the desired water to concentrate ratio of the product in each of any concentrate packages located in said compartment; and

(k) wherein said inputting means includes a removable ratio card for each concentrate package, a separate slot in said housing corresponding one each to said concentrate package stations, and said control system including means for reading the ratio stored on said ratio cards.

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METERING SYSTEM AND METHOD FOR USE WITH FLUIDS HAVING A HIGH SOLID CONTENT

Lawrence J. Donahue, Rancho Palos Verdes, Calif., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Sep. 24, 1996, Ser. No. 718,889
Int. Cl.[6] G01F *5/42;11/00*
U.S. Cl. 222—386.5 **23 Claims**

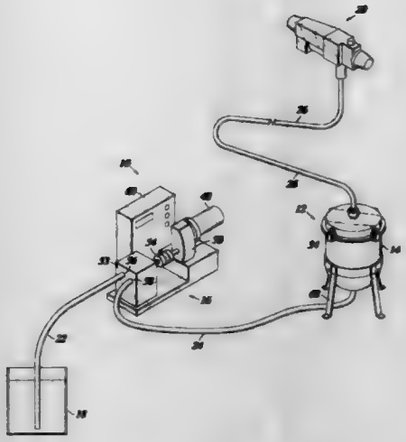
1. The apparatus for dispensing a fluid to be dispensed at a predetermined flow rate by metering a metering liquid, the apparatus comprising:

a tank including a substantially rigid outer portion defining an interior, a first aperture and a second aperture;

a deformable inner liner, located substantially within the interior of the outer portion, defining first and second sides and adapted to store a fluid to be disposed in such a manner that the fluid is associated with the first side, the first side of the inner liner being associated with the first aperture of the outer portion of the tank and the second side of the inner liner being associated with a second aperture of the outer portion of the tank;

a dispenser adapted to dispense fluid;

a dispensing conduit operably connected to the dispenser and to the first aperture;



a metering liquid container for storing a metering liquid; and

a metering pump operably connected to the second aperture and the metering liquid container such that the metering liquid will be drawn from the metering liquid container and pumped through the second aperture between the rigid outer portion of the tank and the second side of the deformable inner liner, thereby deforming the inner liner and forcing the fluid to be dispensed through the first aperture, the dispensing conduit and the dispenser at a predetermined flow rate as determined by metering the flow rate of the metering liquid through the metering pump.

5,797,521

DISPENSING CAP FOR VACUUM BOTTLES

João Fernando Sobral, São Paulo, Brazil, assignor to Sobral Invicta S.A., São Paulo-SP, Brazil

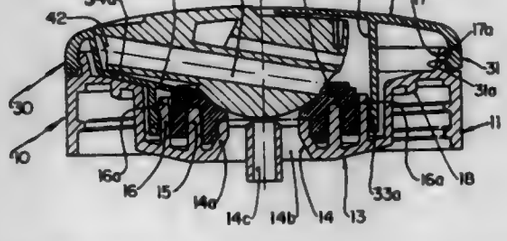
PCT No. PCT/BR95/00042, § 371 Date Mar. 22, 1996, § 102(e) Date Mar. 22, 1996, PCT Pub. No. WO96/15705, PCT Pub. Date May 30, 1996

PCT Filed Sep. 28, 1995, Ser. No. 619,577

Claims priority, application Brazil, Nov. 24, 1994, 9404733

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—531 **6 Claims**



1. A dispensing cap for vacuum bottles, comprising a cap body (**10**) in the form of an inverted glass, which is coupled to the nozzle of the vacuum bottle (B) and which has a liquid discharge axial opening (**14**); an annular gasket (**20**), which is mounted at the upper part of the cap body (**10**) around the liquid discharge axial opening (**14**) and which defines a concave-spherical surface portion; and a spout (**40**) having an end inlet (**41**) in the form of a spherical surface portion which is constantly tightly seated against the annular gasket (**20**), and an outlet end (**42**) maintained in communication with the inlet end (**41**) through an axial throughbore (**43**), the spout (**40**) being tiltable around an axis orthogonal to the longitudinal axis of the vacuum bottle (B) between a closed position, in which the spherical surface portion of the inlet end (**41**) of the spout (**40**) seals the liquid discharge axial opening (**14**) and an open position, in which the outlet end (**42**) of the spout (**40**) is spaced away from the cap body and the end inlet (**41**) of the spout maintains the axial throughbore (**43**) in direct fluid communication with the liquid discharge axial opening (**14**), said dispensing cap being characterized in that it further comprises a support member (**30**) mounted onto the cap body (**10**) in an axially locked but freely rotating manner around the axis of the liquid discharge axial opening (**14**), the spout (**40**) being articulated to the support member (**30**) around said axis orthogonal to the longitudinal axis of the vacuum bottle, so that it may rotate with said support member and tilt between its closed and open positions, maintaining the spherical surface portion of its inlet end (**41**) constantly seated against the annular gasket (**20**).

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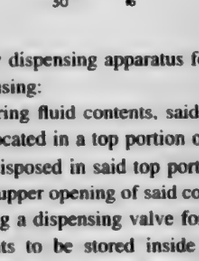
AEROSOL SPRAY DISPENSER WITH SWINGING DOWNTUBE

Robert M. Evans, Washington, D.C., and William L. Klima, Stafford, Va., assignors to FVNX Technologies, Inc., Stafford, Va.

Continuation-in-part of Ser. No. 974,106, Nov. 10, 1992, Ser. No. 978,381, Nov. 18, 1992, Ser. No. 987,147, Dec. 8, 1992, and Ser. No. 1,763, Jan. 7, 1993, Pat. No. 5,381,961. This application May 4, 1994, Ser. No. 237,905

Int. Cl.[6] B67D *5/00*

U.S. Cl. 222—464.4 **41 Claims**



1. An aerosol spray dispensing apparatus for dispensing a fluid, said apparatus comprising:

a container for storing fluid contents, said container having an upper opening located in a top portion of said container;

a dispensing unit disposed in said top portion of said container and sealing said upper opening of said container, said dispensing unit including a dispensing valve for selectively dispensing fluid contents to be stored inside said container, said dispensing valve configured for selectively releasing fluid from said container when actuated by a user and sealing fluid contents inside said container when non-actuated; and

a plastic downtube flexibly connected to said dispensing unit to allow said plastic downtube to substantially swing freely inside said container, said downtube having a main portion extending substantially from said dispensing unit to a position in close proximity to a bottom of said container, said main portion having a stiffness along a length of said main portion from semi-rigid to rigid,

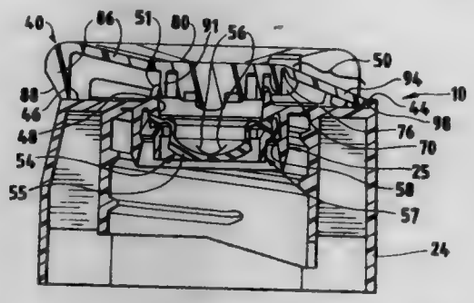
wherein said downtube is freely connected to said dispensing unit by a flexible tubing connector having a peripheral groove reducing a thickness of said flexible tubing connector to enhance the flexibility of said flexible connector.

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SNAP-ACTION CLOSURE WITH DISENGAGED COMPRESSION MEMBER WHEN LID IS CLOSED

Richard A. Gross, Oconomowoc, Wis., assignor to Aptargroup, Inc., Crystal Lake, Ill.

Filed Feb. 6, 1997, Ser. No. 796,908
Int. Cl.[6] B65D 43/14
U.S. Cl. 222—498 15 Claims



1. A dispensing closure for use on a container defining an opening communicating with the container interior, said closure comprising:

a body for being mounted to said container over said container opening and defining a dispensing orifice for communicating through said container opening with said container interior, said body defining a pair of spaced-apart bearing cavities and defining a rear abutment wall;

a lid including a pair of trunnions for each being received in one of said bearing cavities and defining an axis of rotation about which said lid can be pivoted through a range of movement between a fully closed position occluding said dispensing orifice and a fully open position spaced away from said dispensing orifice;

a compression member extending from said lid toward said rear abutment wall, said compression member having a distal first end adapted to be moved into engagement with said abutment wall and having a second end pivotally connected to said lid at a location spaced from said trunnion axis, said compression member having a length such that said compression member distal first end is spaced from said body rear abutment wall when said lid is in said fully closed position but such that said distal first end is engaged with said rear abutment wall when said lid is pivoted away from said fully closed position; and

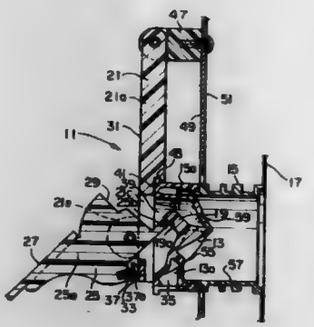
said bearing cavities being larger than trunnions and located relative to said rear abutment wall so as to provide clearance at least on opposite sides of each said trunnion when said lid is in said fully closed position wherein said compression member is substantially unstressed.

5,797,524

SPIGOT ACTUATOR ASSEMBLY AND METHOD

Roger W. Lentz, Warminster, Pa., assignor to Rapid Cartridge Dispensing Systems, Inc., Lionville, Pa.

Filed Sep. 18, 1996, Ser. No. 710,458
Int. Cl.[6] B67D 3/00
U.S. Cl. 222—505 10 Claims



1. An actuator assembly for dispensing liquid from a spigot mounted on a projecting spout of a container for actuating a dispensing lever on the spigot to move the dispensing lever from a horizontal closed position to an upwardly projecting open position, said dispensing lever having a lower surface adapted for engagement by a finger of a user for moving said dispensing lever upwardly to open the spigot, comprising

a holder member having a top portion and a forked bottom portion with two legs spaced apart and defining a slot between them,

an actuating arm member having a body portion pivotally connected to the holder member and positioned between said legs in said slot,

an actuating finger projecting axially inwardly from said body portion of the arm member and adapted to contact and open the dispensing lever of the spigot,

a handle projecting axially outwardly from said body portion of the holder member,

a stop shoulder at the top of the body portion for contacting the axially outward face of the holder member for limiting movement of the actuating arm member and the actuating finger,

a stop shoulder at the bottom of the body portion for limiting movements of the actuating body portion and the actuating finger,

and adjustable means on the bottom stop shoulder for adjusting the movement of the actuating body portion and the actuating finger to adjust and vary the size of the opening in the spigot and vary the volume of flow of liquid through the spout and spigot.

9. A method of using a spigot actuating assembly for dispensing liquid from a spigot mounted on a spout of a container, said spigot comprising an integral elastomeric member of generally cup shape having a peripheral wall adapted to fit within the spout axially inwardly of the lip of the spout, said spigot peripheral wall having at least one sealing bead on the outer surface thereof for sealing engagement with the inner surface of the spout axially inwardly from the lip of the spout, a transverse wall at the inner end of said spigot peripheral wall for closing the spigot and the spout, manipulative means extending from said spigot transverse wall for flexing said transverse wall and a portion of said peripheral wall and sealing bead to move said portion of said peripheral wall and sealing bead radially inwardly away from the spout to form an opening in the spigot to permit the dispensing of the contents of the container while other portions of said sealing bead remain against said spout, a holder member having a top portion and a forked bottom portion with two legs spaced apart and defining a slot between them, an actuating arm member having a body portion pivotally connected to the holder member and positioned between said legs in said slot, an actuating finger projecting axially inwardly from said body portion of the arm member and adapted to contact and to open the dispensing lever of the spigot, a handle projecting axially outwardly from said body portion of the holder member, a stop shoulder at the top of the body portion for contacting the axially outward face of the holder member for limiting movement of the actuating arm member and the actuating finger, a stop shoulder at the bottom of the body portion for limiting movement of the actuating body portion and the actuating finger, and adjustable means on the bottom stop shoulder for adjusting the movement of the actuating body portion and the actuating arm to adjust and vary the size of the opening of the spigot and vary the volume of flow of liquid through the spout and spigot, said adjustable means comprising a screw mounted on the bottom stop shoulder and adapted to contact the front face of the holder and adapted to be rotated to vary the distance the head of the screw is from the stop shoulder, a rear chamber formed by an axial back face and a circular wall of said forked bottom portion for receiving the spigot, said rear chamber having an open bottom for dispensing liquids, means for holding the spigot in the chamber, said spigot holding means in the chamber comprising tabs which radially extend inwardly from the axially inward edges of the wall of the chamber, and a bracket pivotally connected to the top portion of

the holder member and adapted to be mounted on the face of a front door panel of a cartridge which holds the container,

pushing up on the handle to position the actuating finger below the dispensing lever,

snapping the holder onto the spigot by pushing the rear chamber onto the spigot by flexing the outer wall of the spigot,

adjusting the adjustment screw to set the desired flow from the contents of the container,

pushing down on the handle to push the actuating finger up on the dispensing lever and open the spigot and cause the liquid in the container to flow out of the spigot,

releasing the handle to cause the dispensing lever to automatically return to closed position,

removing the spigot from said holder when the container is empty, or when the container needs to be changed for another container, by snapping the rear chamber away from the spigot,

leaving the holder assembly attached to the front door panel of the cartridge holding the container so that the holder does not get lost,

replacing the container with another container,

and snapping the chamber onto the spigot of the other container.

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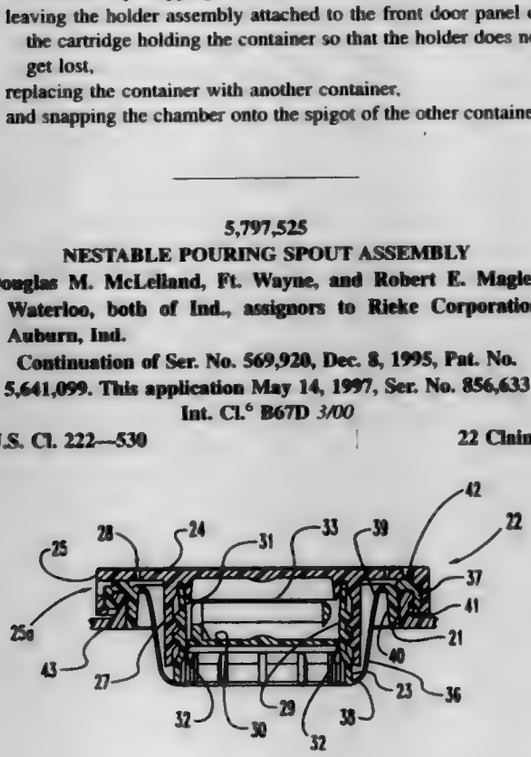
NESTABLE POURING SPOUT ASSEMBLY

Douglas M. McLelland, Ft. Wayne, and Robert E. Magley, Waterloo, both of Ind., assignors to Rieke Corporation, Auburn, Ind.

Continuation of Ser. No. 569,920, Dec. 8, 1995, Pat. No. 5,641,099. This application May 14, 1997, Ser. No. 856,633

Int. Cl.[6] B67D *3/00*

U.S. Cl. 222—530 **22 Claims**



1. An all-plastic closure for snap-fit attachment to a raised neck finish of a container, said neck finish having an inner surface defining an opening and having a lip portion with a recessed area axially beneath said lip portion, said closure comprising:

a unitary dispensing spout having an outer flange, a centertube portion through which container contents are dispensed, and a connecting body portion disposed between the outer flange and the centertube portion, said outer flange including inner and outer walls joined by an upper wall which together define an inverted channel and said centertube being threaded;

a unitary, threaded closing cap arranged and constructed to be threadedly assembled onto said centertube portion for closing said dispensing spout;

a unitary, outer ring assembled onto and around said outer flange with a snap-fit arrangement; and

wherein the channel of said outer flange is designed and constructed to snap over and around the raised neck finish, said inner and outer walls being sized relative to said raised neck so as to create a compressive fit against said raised neck for establishing a liquid-tight interface between said closure and said container.

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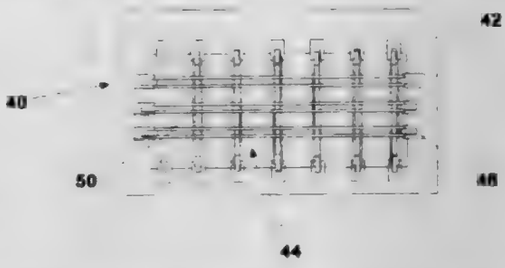
METHOD FOR CREATING A DECORATIVE BOW

Jeannette M. Wells, Coral Springs, Fla., assignor to Wenzer Group, Inc., Coral Springs, Fla.

Filed Aug. 9, 1996, Ser. No. 689,413

Int. Cl.[6] A41M *43/00*

U.S. Cl. 223—46 **6 Claims**



1. A method for creating a finished decorative article with a bow from a fabric, comprising:

(a) providing a frame member having a central opening and at least two hook members disposed on said frame member around said central opening;

(b) positioning at least one band between a selected pair of said at least two hook members across said central opening;

(c) providing said fabric in the form of an elongated piece of material folded with at least one resulting fold; and

(d) forming loops of said fabric between sides of said at least one band, between at least one band and another band, and optionally between at least one of said bands and said frame member, wherein two or more of said loops of fabric form said bow;

and said frame member and said loops of fabric together forming a finished decorative article that may be used as an accessory to dress apparel or as package ornamentation.

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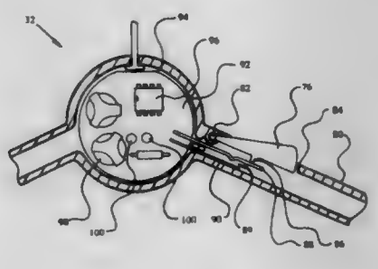
GARMENT HANGER CONFIGURED TO PROVIDE ELECTRICAL INFORMATION

Peter Ar-Fu Lam, 20104 Wayne Ave., Torrance, Calif. 90503

Continuation-in-part of Ser. No. 273,311, Jul. 11, 1994, abandoned. This application Mar. 18, 1996, Ser. No. 617,435

Int. Cl.[6] A47G *25/14*

U.S. Cl. 223—85 **24 Claims**



18. An apparatus configured to support a garment and to provide electrically controlled responses comprising:

a frame including a suspension member, a first arm having inner and outer ends, and a second arm having inner and outer ends, said arm inner ends and said suspension member being structurally interconnected at a medial portion of said frame with said arms extending outwardly therefrom in opposite directions, said arms disposed relative to one another in a space relationship appropriate for supporting a garment;

at least one electrically energizable information transducer; and

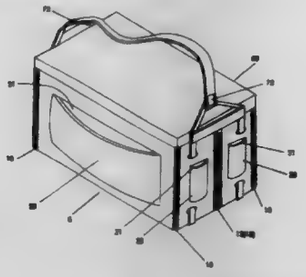
electronic control circuit means comprising of semiconductor or logic circuitry to drive said electrically energizable information transducer.

5,797,528

ADJUSTABLE ENCLOSURE FEATURING DRY STORAGE

Steve McDuffie, Rte. 5, Box 505, Lumberton, N.C. 28358

Filed Mar. 1, 1996, Ser. No. 609,606
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—148.4 **11 Claims**



1. An adjustably sized storage enclosure for use with various sized box-shaped cooler containers, each of the containers having insulation, a base having a bottom and upstanding walls extending from the bottom, an openable top, and a size sufficient to receive at least six beverage cans therein such that the beverage cans stored therein are kept at a colder temperature than the ambient temperature surrounding the container by placing the cans into the container with a coolant material, the enclosure comprising:

an enclosure sized and shaped to complementally enclose the walls of one of the cooler containers;

means for adjusting the size and shape of said enclosure whereby said enclosure may be adjusted to complementally enclose the walls of one of the box-shaped cooler containers and may be adjusted to complementally enclose the walls of another of the box-shaped cooler containers of another size different than the one container; and

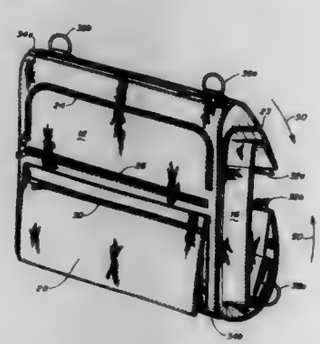
at least one pocket disposed on a surface of said enclosure distal to any cooler container enclosed within said enclosure, whereby items subject to damage by dampness caused by the coolant material in the container may be carried outside of the container in said pocket.

5,797,529

CONVERTIBLE MULTI-USE BAG

Edward L. Lavine, 830 Greensward Ct. #H-215, Delray Beach, Fla. 33445-9038

Filed Nov. 20, 1996, Ser. No. 753,179
Int. Cl.[6] A45C *15/00;* **A45F** *4/00*
U.S. Cl. 224—575 **25 Claims**



1. A backpack which is convertible to a totebag and to a fanny pack, the backpack comprising:

parallel front and rear panels each having upper and lower edges, means for joining peripheries of said panels to form a compartment therebetween, at least one closeable opening in said front panel to allow access to said compartment, first fastening means disposed along the upper edge of said rear panel, second fastening means disposed along the lower edge of said front panel, third fastening means disposed along the upper edge of said front panel and fourth fastening means disposed on said front panel intermediate said second and third fastening means;

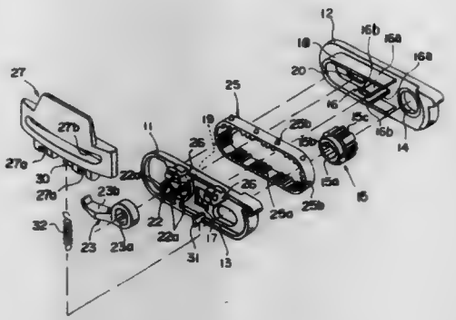
wherein said backpack is converted to said totebag when said first and second fastening means are fastened together proximate a midline of said rear panel, and further converted to said fanny pack when said totebag is folded in half and said third and fourth fastening means are fastened together.

5,797,530

SHEET FEED TRACTOR

Sadao Unuma, and Tohru Hamamoto, both of Ohbu, Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Jan. 27, 1997, Ser. No. 789,546
Int. Cl.[6] G03B *1/30*
U.S. Cl. 226—74 **14 Claims**



1. A sheet feed tractor comprising a pair of first and second frames which are arranged in a face-to-face relationship and in substantial parallel with each other;

a drive sprocket rotatably held by said pair of first and second frames;

a pair of drive side bearing bores formed respectively in said first and second frames, extending therethrough, at positions where they face to each other, for rotatably journalling said drive sprocket;

a looped transferring belt wound around spanning the space between the first and second frames so as to mesh with said drive sprocket;

a belt guide for slidably supporting the inner surface side of the transferring belt;

a drive shaft extending through said pair of drive side bearing bores, for transmitting a rotating drive force to said drive sprocket;

a pair of positioning side bearing bores formed respectively in said first and second frames, being spaced from said pair of drive side bearing bores by a predetermined distance and extending therethrough at positions where they face to each other; and

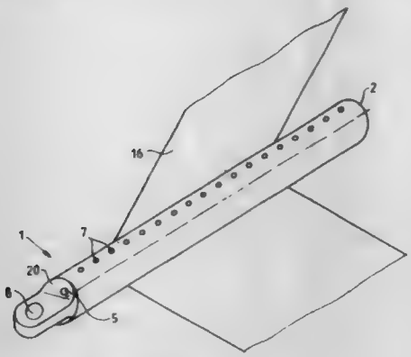
a positioning shaft extending through the pair of positioning side bearing bores in substantially parallel with the drive shaft, being spaced by a predetermined distance from the drive shaft,

wherein the first and second frames are fitted on both shafts so as to be displaceable in a direction of connection of both shafts, and the drive side bearing bore formed in the second frame is formed therethrough in a substantially true-circular shape so as to hold said drive sprocket to the second frame with no positional deviation, and the positioning bearing bores formed in the second frame and the drive bearing bore formed in the first frame are elongated in the specific direction of diameter through their respective frames so as to allow variation in the inter shaft distance between both shafts, and the belt guide is integrally formed with the second frame.

5,797,531
DIFFERENTIAL-PRESSURE TURNER BAR CONFIGURATION

Jean-Claude Marmin, Estrees-Saint-Denis, France, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany, and Heidelberg Harris S.A., Montataire Cedex, France

Filed Oct. 24, 1996, Ser. No. 736,375
Claims priority, application France, Oct. 24, 1995, 95 12506
Int. Cl.[6] B65H *23/32;20/00*
U.S. Cl. 226—97 10 Claims



1. A turner bar, comprising:

a turner bar body;

a turner bar jacket enclosing said turner bar body, said turner bar jacket having closable and openable air outlet openings formed therein;

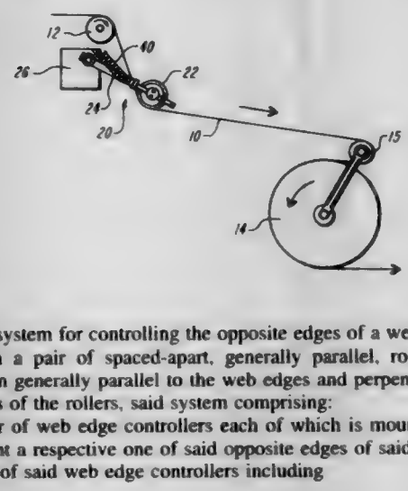
a hollow space formed within said turner bar jacket to be connected to a compressed air source for conveying compressed air for deflecting a printed web of material;

a movable opening and closing element disposed in said turner bar body for selectively opening and closing said air outlet openings from within the interior therein, said opening and closing element having a conduit formed therein and being moved to an open position by a pressure gradient caused by a presence of a web of material above said air outlet openings.

5,797,532
WEB EDGE CONTROL SYSTEM

Richard Edward Flagg, Wareham, Mass., assignor to Double E Company, Inc., Westbridgewater, Mass.

Continuation of Ser. No. 281,211, Jul. 27, 1994, abandoned.
This application Apr. 14, 1997, Ser. No. 839,411
Int. Cl.[6] B65H *20/24*
U.S. Cl. 226—119 10 Claims



1. A system for controlling the opposite edges of a web moving between a pair of spaced-apart, generally parallel, rollers in a direction generally parallel to the web edges and perpendicular to the axes of the rollers, said system comprising:

a pair of web edge controllers each of which is mounted adjacent a respective one of said opposite edges of said web, each of said web edge controllers including

(a) a cylindrical web edge control roll freely rotatable about the central axis thereof, and

(b) a longitudinally-extending support arm having a first portion thereof attached to a fixed support and, longitudinally spaced therefrom, a second portion thereof attached to said control roll,

said first portion of said support arm of each of said web edge controllers being pivotally connected to said fixed support such that said arm is freely pivotal relative to said fixed support about an axis generally parallel to the axes of said rollers,

said web edge control roll of each of said web edge controllers being attached to said second portion of said support arm thereof with the central axis of said roll generally parallel to the axes of said rollers,

said web edge control roll of each of said web edge controllers being arranged to engage the upper surface of said web in a region including a respective one of said edges of said web and extending inwardly of said web from said respective one edge,

said pivotal connection between said first portion of said support arm and said fixed support permitting movement of the said web control roll attached thereto towards and away from the upper surface of said web and being such that gravity causes said support arm of said web edge controller to pivot towards the vertical and to cause said roll of said web controller to bear downwardly against and engage said upper surface of said web,

the central axis of said web edge control roll of one of said web edge controllers being generally coaxially aligned with the central axis of the said roll of the other of said systems,

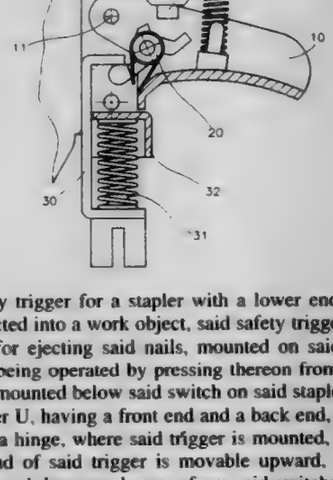
the said roll of each of said web edge controllers being movable towards and away from, and to be against and engage, said web independently of the said roll of the other of said web edge controllers, and

the roll of each of said web edge controllers bearing against a respective portion of said web with a relatively small force that is less than the weight of the said roll.

5,797,533
STAPLER SAFETY TRIGGER

Yun-Chung Lee, 3F No. 117, Yuchoko Tan, Shui Jen Taipei Hsien, Taiwan

Filed Jan. 21, 1997, Ser. No. 784,596
Int. Cl.[6] B25C *1/04*
U.S. Cl. 227—8 5 Claims



1. A safety trigger for a stapler with a lower end, from where nails are ejected into a work object, said safety trigger comprising:

a switch for ejecting said nails, mounted on said stapler, said switch being operated by pressing thereon from below;

a trigger, mounted below said switch on said stapler, shaped like the letter U, having a front end and a back end, said front end having a hinge, where said trigger is mounted, such that said back end of said trigger is movable upward, closer to said switch, and downward, away from said switch;

a safety-catch, rotatably mounted on said trigger, operating in an enabled state and a disabled state, said safety-catch having a

first projection extending outward for operating said switch, said first projection pointing to said switch in said enabled state and pointing beside said switch in said disabled state, said safety-catch further having a second projection extending towards said front end of said trigger;

a first spring for moving said safety-catch into said enabled state;

a second spring for moving said safety-catch into said disabled state; and

a glide bar, vertically movable mounted on said stapler, said glide bar, when said stapler is set on an object, being pushed upward, contracting said second spring and allowing said first spring to move said safety-catch into said enabled state, and said glide bar, when said stapler is removed from said object, being pushed down by said second spring and moving said safety-catch into said disabled state;

wherein in said enabled state of said safety catch, moving said trigger upwards presses said first projection on said switch, thus operating said switch, and in said disabled state of said safety catch, moving said trigger upwards moves said first projection beside said switch, without operating said switch, and wherein after first moving said trigger upward in said disabled state, then pushing up said glide bar, said first projection stays beside said switch, preventing said safety-catch to turn into said enabled state, such that said switch is not operated.

5,797,534

PLUG DRIVING APPARATUS WITH A RISER RETURNING AUTOMATICALLY TO THE FIRING POSITION

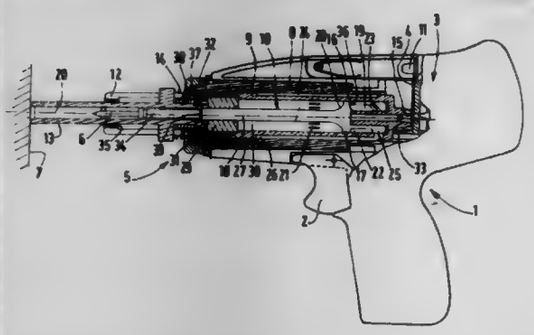
Roland Almeras, and Patrick Herelier, both of Tournon, France, assignors to Societe de Prospection et d'Inventions Techniques (S.P.I.T.), Bourg-les-Valence, France

Filed Mar. 26, 1997, Ser. No. 825,038

Claims priority, application France, Mar. 26, 1996, 96 03722

Int. Cl.[6] B25C *1/14*

U.S. Cl. 227—10 **16 Claims**



1. Apparatus for driving a fastener into a substrate, comprising:

a combustion chamber;

barrel means defining a longitudinal axis and having an inner peripheral wall defining an interior space therein;

first exhaust port means defined within said barrel means for fluidically connecting said interior space of said barrel means to exhaust space external of said barrel means;

second port means defined within said barrel means; and

a riser, adapted to be driven by combustion gases developed within said combustion chamber so as to in turn drive a fastener into a substrate, having first means for engaging a fastener so as to drive a fastener into a substrate, having second means disposed within said barrel means so as to divide said interior space of said barrel means into a first upstream space and a second downstream space, and axially movable within said barrel means between a first axial position at which said second means of said riser prevents said first upstream space of said barrel means from being fluidically connected to said second downstream space of said barrel means whereby said combustion gases from said combustion chamber can act upon said riser so as to drive said riser in a downstream direction, a second axial position at which said second means of said riser cooperates with said second port means of said barrel means so as to permit said first upstream space of said barrel means to be fluidically connected to said second downstream space of said barrel means whereby said combustion gases from said combustion chamber can flow from said first upstream space of said barrel means into said second downstream space of said barrel means, and a third axial position at which said second means of said riser again prevents fluidic communication between said first upstream space of said barrel means and said second downstream space of said barrel means so as to cause said combustion gases disposed within said second downstream space of said barrel means to be compressed by said axial movement of said second means of said riser whereupon subsequent expansion of said compressed combustion gases within said second downstream space of said barrel means, said riser and said second means of said riser are automatically returned toward said first axial position while said combustion gases disposed within said first upstream space of said barrel means are exhausted through said first exhaust port means of said barrel means.

5,797,535

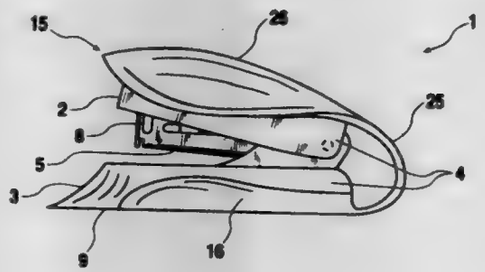
STAPLER WITH STORAGE COMPARTMENT AND COVER SLIPPER

Ross Nigel Lovegrove; Luke Neil Pearson, and Peter Granville Russell-Clarke, all of London, England, assignors to Acco USA, Inc., Wheeling, Ill.

Filed May 14, 1997, Ser. No. 855,955

Int. Cl.[6] B25C *5/02*; B27F *7/00*

U.S. Cl. 227—120 **10 Claims**



1. In a stapler having a head and a base, with the base including a top facing said head, opposite sides, and a bottom, and with the head and base being pivotally connected to each other at one end thereof, the improvement comprising:

a) a storage compartment in the bottom of said base; and

b) a slipper having a cover portion removably attached in overlying relation to said compartment, said slipper further having a loop portion extending around said end of the stapler and a top portion connected in overlying relation to said head.

5,797,536

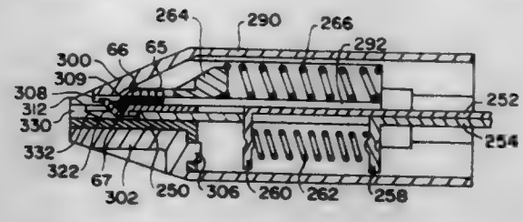
ENDOSCOPIC SURGICAL INSTRUMENT WITH PIVOTABLE AND ROTATABLE STAPLE CARTRIDGE

Jack Edward Smith, Dayton; James J. Bedi, Cincinnati; Thomas J. Sierocuk, Blue Ash, and Thomas Howard Graves, Jr., Milford, all of Ohio, assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 80,462, Jun. 21, 1993, Pat. No. 5,431,323, which is a continuation-in-part of Ser. No. 959,184, Oct. 9, 1992, Pat. No. 5,381,943. This application Mar. 30, 1995, Ser. No. 413,654

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—175.1 8 Claims



8. A surgical stapling instrument for applying one or more surgical staples to tissue, said instrument comprising:

a support shaft having a longitudinal axis;

a staple cartridge containing a plurality of staples and mounted on said support shaft for pivotal movement about a transverse axis of articulation perpendicular to said shaft longitudinal axis to at least one articulated position, said cartridge containing a staple advancing and forming mechanism for effecting application of one of said staples to said tissue, said cartridge also being rotatable relative to said shaft about a cartridge axis defined along the length of said cartridge;

an operating rod generally traversing the length of said shaft longitudinal axis extending along said support shaft to said cartridge and connected with said staple advancing and forming mechanism, said rod including a flexible portion adjacent said transverse axis to accommodate the articulation of said instrument;

a knob connected to said rod proximally of said cartridge to rotate said cartridge relative to said shaft; and

a staple actuator mechanism connected to said rod and operable from a location proximally of said cartridge to move said rod longitudinally for actuating said staple advancing and forming mechanism in said cartridge and to accommodate the rotation of said cartridge relative to said shaft;

wherein each said staple has

(A) a generally U-shaped body including a crown, and

(B) a pair of legs each depending from opposite end of said crown;

said staples are arranged in a side-by-side stack oriented transversely to the cartridge axis with the staple legs oriented perpendicularly to the cartridge axis; and

said staple advancing and forming mechanism engages the distalmost staple to advance the distalmost staple distally to effect engagement of part of said staple crown with a part of said cartridge whereby the staple rotates about ninety degrees to an orientation with the staple legs oriented parallel to the cartridge axis.

5,797,537

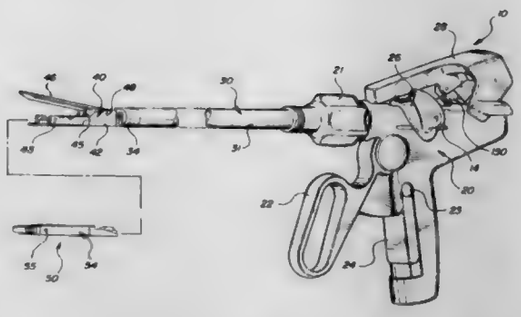
ARTICULATED SURGICAL INSTRUMENT WITH IMPROVED FIRING MECHANISM

Jeffrey R. Oberlin, Augusta; Christopher L. Johnson, Plainwell, and David A. Dunlap, Portage, all of Mich., assignors to Richard-Allan Medical Industries, Inc., Richland, Mich.

Filed Feb. 20, 1996, Ser. No. 603,938

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—176.1 20 Claims



20. In an articulated surgical instrument for use in laparoscopic surgical procedures including a handle; an elongated shaft having a distal end and a proximal end, the proximal end of the shaft being coupled to the handle; a tip pivotally coupled to the distal end of said shaft for articulation at an articulation joint; and a flexible compression drive member extending from the shaft into the tip; the improvement comprising:

a gap extending longitudinally between the shaft and the tip;

wherein the flexible drive member bends through said gap in a plane of articulation when the tip is articulated; and

a flexible support attached at one end to the shaft and at another end to the tip, wherein said support is slidably attached to at least one of the shaft and tip, and extending through the articulation joint adjacent to the flexible drive member in said plane of articulation such that said support bends through said gap in said plane of articulation and the flexible drive member bends against said support when the tip is articulated in one direction from its aligned position.

5,797,538

ARTICULATING APPARATUS FOR APPLYING SURGICAL FASTENERS TO BODY TISSUE

Lisa W. Heaton, Norwalk; Mitchell J. Palmer, New Milford; Keith L. Milliman, Bethel, all of Conn., and Richard C. McClure, Claremont, Calif., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 318,593, Oct. 5, 1994, abandoned. This application Mar. 13, 1997, Ser. No. 815,632

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—176.1 16 Claims



1. An apparatus for applying a plurality of surgical fasteners to body tissue comprising:

a) a handle assembly;

b) an elongated body extending from the handle assembly and defining a longitudinal axis;

c) a cartridge housing pivotably connected to a distal end portion of the elongated body;

d) a fastener cartridge containing a plurality of surgical fasteners and positionable in the cartridge housing;

e) an anvil pivotally mounted adjacent relative to the cartridge housing and defining a fastener forming surface against which surgical fasteners are driven when ejected from the fastener cartridge, the anvil being pivotable relative to the cartridge housing between a first position in longitudinal alignment with the cartridge housing and a second position skewed relative to a longitudinal axis of the cartridge housing;

f) a fastener driving mechanism operatively associated with the fastener cartridge and actuatable from the handle assembly to eject fasteners from the fastener cartridge;

g) a single rod link member in direct operative association with the cartridge housing, which pivotably moves the cartridge housing between a first position in alignment with the longitudinal axis of the elongated body, and a second position out of alignment with the elongated body longitudinal axis; and

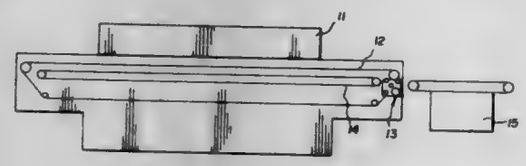
h) a pivotable control lever in direct operative association with the single rod link member and pivotable between a position corresponding to the first position of the cartridge housing and a position corresponding to the second position of the cartridge housing, the relative pivotable position of the control lever providing visual indication of the position of the cartridge housing relative to the elongated body.

5,797,539

CIRCUIT BOARD REFLOW OVENS

Mark A. Wilde, Brockport, and Mark D. Romeo, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1996, Ser. No. 701,261
Int. Cl.[6] B23K *37/04;37/047*
U.S. Cl. 228—180.1 13 Claims



1. A method of conveying a printed circuit board assembly from a reflow soldering station to further treatment comprising the steps of:

i) conveying the assembly through a soldering zone, wherein a plurality of electronic components are mounted in associated solder areas; and

ii) conveying the circuit board assembly for a further treatment by an output conveyor the length of which is less than that of the conveyor in step i) the improvement comprising transporting said assembly from step i) to step ii) on an intermediate reflow oven conveyor, the length of which is less than that of each of the conveyors in steps i) and ii) and which is driven by the equipment used to drive the conveyor in step i), said intermediate reflow oven conveyor bridging the gap between the reflow oven conveyor and the output conveyor.

5,797,540

METHOD OF MAKING A POWER-TRANSMITTING COUPLING

Robert D. Kern, Waukesha, Wis., assignor to Generac Corporation, Waukesha, Wis.

Filed Jan. 27, 1997, Ser. No. 789,695
Int. Cl.[6] B23P *15/14*
U.S. Cl. 228—182 10 Claims

1. A method for making a power-transmitting coupling including the steps of:

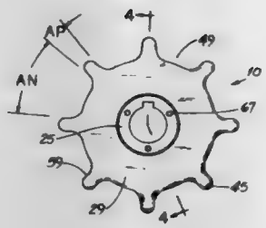
providing a hub having first and second guide portions terminating in first and second shoulders, respectively;

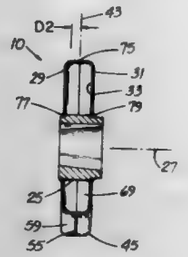
forming first and second coupling components to have (a) substantially planar first and second body portions, respectively, and (b) first and second edges, respectively;

and wherein:

the first and second edges define respective planes substantially parallel to the first and second body portions, respectively;

and wherein the method includes:





assembling the components and the drive hub to one another by urging the first and second components over the first and second guide portions, respectively, and against the first and second shoulders, respectively;

welding the first and second body portions to the first and second guide portions, respectively, while retaining the edges in contact with one another;

and

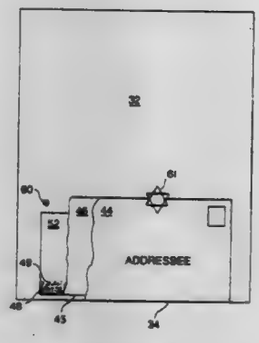
joining the components to one another by welding along the contacting edges.

5,797,541

DIRECT MAIL ARTICLE COMPRISING OVERSIZED CARD AND INTEGRAL ENVELOPE AND REPLY DEVICE AND METHOD OF MANUFACTURE

John W. Stenner, Orange, Conn., assignor to Kurt H. Volk, Inc., Milford, Conn.

Filed May 24, 1995, Ser. No. 449,345
Int. Cl.[6] B65D *27/06*
U.S. Cl. 229—92.8 11 Claims



1. A direct mail article produced from mailable card stock for transmission via the United States Postal Service without an outer wrapper comprising:

a first rectangular card panel having a height and a width approximating the size of a magazine cover, a lateral edge of which card panel defines a first transverse parting line corresponding to the width of said first card panel,

a second card panel defined by at least a portion of said first transverse parting line and a second transverse parting line, and by longitudinal edges extending between said parting lines, the width of said second card panel not exceeding the width of the first card panel,

a third card panel defined by said second transverse parting line and a third transverse line, and by longitudinal edges extending between said parting lines, the width of said third card panel not exceeding the width of the first card panel, and the distance between the first and second transverse parting lines and the distance between the second transverse parting line and the third transverse line are each less than about one-half the height of the first card panel, where the third card panel is separably joined to the second card panel along the second transverse parting line and the second and third card panels are folded along said first and second transverse parting lines to superpose said second and said third card panels on said first card panel, and

releasable bonding means securing said second card panel and said third card panel in superposed position on said first card panel, whereby said direct mail article can be transmitted through the mail without folding said first card panel and without an envelope or other outer wrapper.

5,797,542

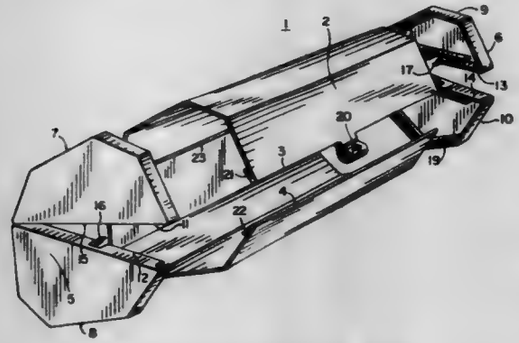
LONGITUDINALLY-OPENING TUBULAR CONTAINER HAVING SPLIT END CAPS

Fiona O'Connor, 111 E. 88th St., New York, N.Y. 10128

Filed Oct. 1, 1996, Ser. No. 724,446

Int. Cl.[6] B65D *3/04;5/12;5/66*

U.S. Cl. 229—109 **23 Claims**



1. A tubular container, said container comprising:

a sheet of material having two side edges, said sheet forming a tubular body having a longitudinal opening having two longitudinal edges and two end openings having two perimeter edges;

two end caps, each end cap having a perimeter, said end caps being secured to said end openings; and

a central axis on each end cap, said end caps being split along said central axis so as to form respective end cap sections, said end-cap sections having confronting edges along said central axis,

whereby the tubular body is longitudinally divided into two trays connected by a living hinge, each tray being bounded by respective end sections.

5,797,543

THREE-DIMENSIONAL CONTOUR SURFACE BOX

Johannes Fredericus Spronk, deceased, late of Lelystad-Haven, and by Anna Dik, administratrix, Beemster 61, 8244 CE Lelystad-Haven, both of Netherlands

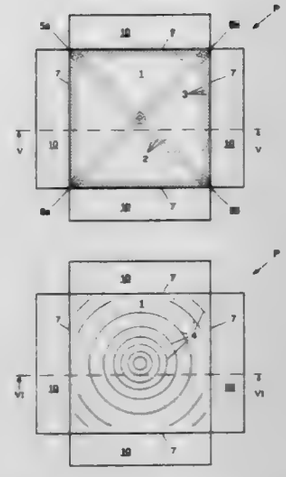
Filed May 10, 1996, Ser. No. 651,337

Claims priority, application Netherlands, May 12, 1995, 1000350

Int. Cl.[6] B65D *5/42*

U.S. Cl. 229—116.1 **7 Claims**

1. A box manufactured from a foldable material through folding and adhesion, the box comprising:



a plurality of wall panels, at least one of the walls panels being provided with a three-dimensional surface contour, the three-dimensional surface contour including a plurality of creases which at least locally are slightly spaced apart and extend parallel to each other, the plurality of creases giving the three-dimensional surface contour a concave or convex curvature.

5,797,544

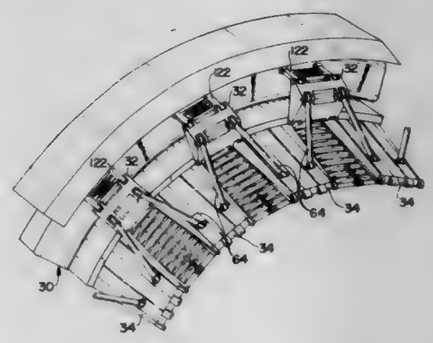
C/D NOZZLE WITH SYNCHRONIZING RING LINK SUSPENSION

Eric J. Ward, West Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 27, 1996, Ser. No. 721,889

Int. Cl.[6] B64C *15/08*

U.S. Cl. 239—265.37 **4 Claims**



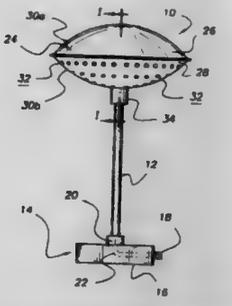
1. For a C/D exhaust nozzle for turbine engine power plants powering aircraft, said exhaust nozzle includes a plurality of convergent flaps and a plurality of divergent flaps, a synchronization ring means for positioning said convergent flaps and said divergent flaps, means for actuating said exhaust nozzle to change its C/D configuration, said means includes an actuator connected to said synchronization ring means, said synchronization ring means defining piston means for balancing the loads created by said convergent flaps and said divergent flaps, at least two fulcrum links adjacent to each other operatively connected to said synchronization ring, at least one first link interconnecting said at least one of said two fulcrum links to one of said plurality of convergent flaps and a second link interconnecting said at least said other of said two fulcrum links to another of said plurality of convergent flaps that is adjacent to said one of said plurality of convergent flaps.

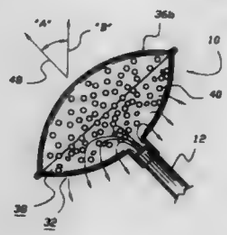
5,797,545

SELF-RIGHTING RISING SPRINKLER HEAD

Vladimir A. Asinovsky, 12322 Ella Lee Ln., Houston, Tex. 77077

Filed Jun. 11, 1996, Ser. No. 661,646
Int. Cl.[6] B05B 15/06
U.S. Cl. 239—279 3 Claims





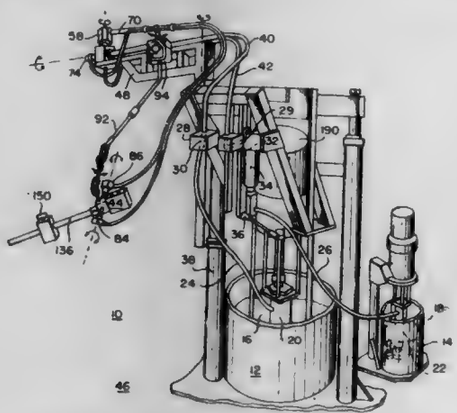
1. A self-righting rising sprinkler head comprising:
a sprinkler head housing that defines a buoyant body chamber therein;
at least one buoyant body disposed within said buoyant body chamber; and
a connecting fitting in connection with said sprinkler head housing adapted for securing said sprinkler head to a source of pressurized water in a manner to supply said buoyant body chamber with pressurized water;
said at least one buoyant body being of sufficient size to decrease water flow through the region in which it is located, said sprinkler head housing including a plurality of water discharge ports, each said water discharge port providing a fluid passageway between said buoyant body chamber and the exterior of said sprinkler head housing;
said water discharge ports being oriented in a manner such that the sum of forces created by water discharging from said water discharge ports creates a lifting force acting against said sprinkler head in a first direction.

5,797,546

WEIGHT-SUPPORTED ADJUSTABLE MIXING AND DISPENSING GUN FOR TWO CHEMICALLY REACTIVE MATERIALS

Jeffrey S. Reed, Alexandria, Ky., and Richard L. Frazier, Williamsburg, Ohio, assignors to Morton International, Inc., Chicago, Ill.

Filed Oct. 29, 1996, Ser. No. 739,696
Int. Cl.[6] B05B 7/04
U.S. Cl. 239—280.5 19 Claims



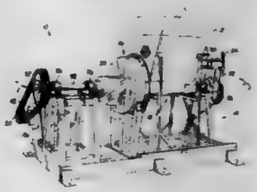
12. A mixing and dispensing system for two chemically reactive fluids, comprising:
pump means for separately dispensing two chemically reactive fluids from separate storage vessels through two separate flexible hoses;
a pivotal support for supporting said two flexible hoses above a generally horizontal plane having a front end of each of said two flexible hoses suspending below said support;
a mixing and dispensing gun attached to said front ends of said two flexible hoses, said mixing and dispensing gun including a body having two spaced inlets and outlets for separately receiving and dispensing said two fluids, and a dispensing valve in said body for controlling said two fluids dispensed through said two outlets, said spaced inlets being disposed on opposite lateral sides of said gun body and said front ends of said flexible hoses being separately pivotally attached to said two spaced inlets respectively with first and second swivel connectors having internal flow channels, said first and second swivel connectors being rotatable about a common generally horizontal pivot axis and in flow communication with said flexible hoses and said inlets in all rotative positions;
a disposable motionless mixer including an elongated mixing tube having an inlet at one end removably connected to said two spaced outlets of said gun body and a dispensing outlet nozzle at the opposite end, and motionless mixing elements disposed within said mixing tube;
a push button actuating trigger mounted on top of said mixing tube in close proximity to said dispensing outlet nozzle, said actuating trigger controlling said dispensing valves in said gun body.

5,797,547

METHODS AND APPARATUS FOR DELAMINATING SEDIMENTARY MICA

Donald H. Duncan, Spruce Pine, N.C., assignor to Duncan Technologies, Spruce Pine, N.C.

Filed Jun. 12, 1996, Ser. No. 661,881
Int. Cl.[6] B02C 19/12
U.S. Cl. 241—4 19 Claims





18. A method of delaminating minerals into flakes, comprising rotating a plurality of arcuate blades within a continuous cylindrical chamber containing a mineral, such that said mineral is forced between an outer portion of each blade and said continuous cylindrical chamber, wherein said outer portion of each one of said arcuate blades is spaced from any portion of said cylindrical chamber between about 0.05 inches and 3.0 inches.

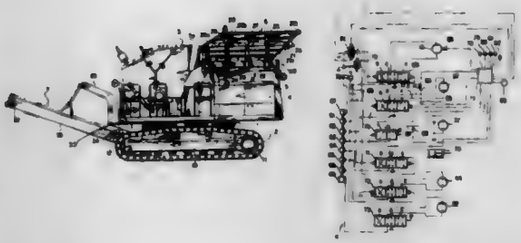
5,797,548

SELF-PROPELLED CRUSHING MACHINE

Yukio Tamura; Mitsuhisa Sakae; Satoru Koyanagi, and Toru Nakayama, all of Kawasaki, Japan, assignors to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP94/01787, § 371 Date Apr. 4, 1996, § 102(e) Date Apr. 4, 1996, PCT Pub. No. WO95/11756, PCT Pub. Date May 4, 1995
PCT Filed Oct. 25, 1994, Ser. No. 624,458
Claims priority, application Japan, Oct. 25, 1993, 5-266522
Int. Cl.[6] B02C 21/02;23/02
U.S. Cl. 241—35 35 Claims

2. A self-propelled crushing machine comprising:
a vehicle body;



a travelling body mounted on a lower portion of said vehicle body;

a crusher mounted on an upper portion of said vehicle body;

a hopper mounted on the upper portion of said vehicle body and having a feeder for supplying an object to be crushed to an inlet of said crusher;

a discharge conveyor mounted on the lower portion of said vehicle body and receiving crushed pieces from an outlet of said crusher;

a crusher driving unit for driving said crusher, said crusher driving unit comprising a crusher motor and a switching valve for the crusher, said switching valve controlling supply of a pressurized fluid to said crusher motor;

a first excessive load detector for detecting whether or not an excessive load is acting on said crusher driving unit, said first excessive load detector comprising a revolution sensor for detecting revolution of said crusher motor and for detecting a revolution speed thereof lower than or equal to a predetermined revolution speed as an excessive load condition;

a discharge conveyor driving unit for driving said discharge conveyor, said discharge conveyor driving unit comprising a conveyor motor and a switching valve for the conveyor, said switching valve for the conveyor controlling supply of a pressurized fluid to said conveyor motor;

a second excessive load detector for detecting whether or not an excessive load is acting on said conveyor driving unit, said second excessive load detector comprising a pressure sensor for detecting a hydraulic driving pressure of said conveyor motor so as to detect a hydraulic driving pressure which is higher than or equal to a predetermined hydraulic pressure as an excessive load condition;

a feeder driving unit for driving said feeder, said feeder driving unit comprising a feeder motor and a feeder switching valve, said feeder switching valve controlling supply of a pressurized fluid to said feeder motor; and

a control unit for stopping said feeder driving unit when an excessive load is detected by at least one of said first and second excessive load detectors, and actuating said feeder driving unit when an excessive load is not detected by both of said first and second excessive detectors, said control unit comprising a controller which switches said feeder switching valve into a closed position when the revolution speed detected by said revolution sensor is lower than or equal to the predetermined revolution speed and/or when the hydraulic pressure detected by said pressure sensor is higher than or equal to the predetermined pressure, and which switches said feeder switching valve into an open position when the detected revolution speed exceeds said predetermined revolution speed and said detected hydraulic pressure is lower than the predetermined pressure.

5,797,549

APPARATUS FOR SEPARATING PLASTICS FROM PAPER FIBER

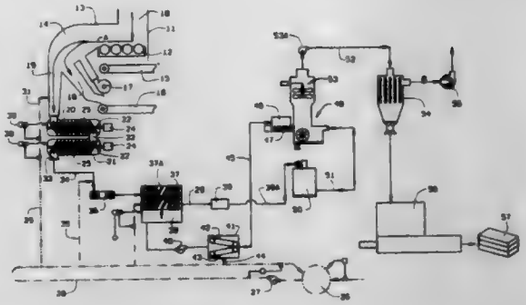
Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Jun. 6, 1996, Ser. No. 659,277

Int. Cl.[6] B02C *19/12*

U.S. Cl. 241—46.01 **9 Claims**

1. Apparatus for recovery of paper from waste by subjecting paper contaminated with waste and plastic materials to a cleaning



process for preparing the paper for recovery by recycling, the apparatus having components which include:

a) conveying means having an inlet end for contaminated paper material, a discharge end spaced from said inlet end, and waste extracting means positioned adjacent said conveying means;

b) paper pulping means connected to said conveying means outlet end;

c) a source of water connected to said conveying means outlet end adjacent said connection to said paper pulping means to initiate paper pulping for supplying water thereto, said water being as much as 32 percent of the volume of said pulping means;

d) a pulp separating screen connected to said paper pulping means for effecting the separation of pulped paper, said separating screen being formed with holes of a size to pass pulp from remaining contaminants;

e) paper pulp collecting means at said pulp separating screen;

f) an impact mill connected to said paper pulp collecting means;

g) furnace means connected between said separating screen and said hammer mill for burning the separated contaminants to generate heat for said hammer mill to dry said recovered paper pulp; and

h) a device for packaging said dried paper pulp in bales.

5,797,550

ATTRITION MILL

Peter Woodall, Moulden, Australia, and Udo Enderle, Marktredwitz, Germany, assignors to Mount ISA Mines Limited, Queensland, Australia, and Erich Netzsch GmbH & Co. Holding KG, Selb, Germany

PCT No. PCT/AU95/00204, § 371 Date Oct. 11, 1996, § 102(e) Date Oct. 11, 1996, PCT Pub. No. WO95/27563, PCT Pub. Date Oct. 19, 1995

PCT Filed Apr. 11, 1995, Ser. No. 727,433

Claims priority, application Germany, Apr. 11, 1994, 44 12 408.2; Australia, Jun. 22, 1994, PM6394; Dec. 20, 1994, PN0166

Int. Cl.[6] B02C *17/14*

U.S. Cl. 241—171 **38 Claims**

1. An attrition mill apparatus comprising:

a grinding chamber having at least one grinding stage;

an axial impeller;

said grinding chamber having a chamber inlet for admitting coarse particles;

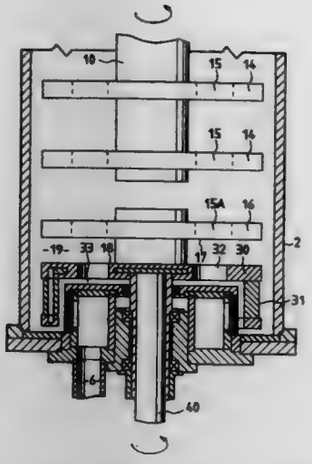
said grinding chamber having a chamber outlet through which fine particles exit from the chamber;

a separator stage comprising a separator inlet and said chamber outlet through which fine particles exit from the chamber;

a classification stage within the grinding chamber, said classification stage being upstream of the separator inlet for classifying between coarse and fine particles based on mass of the coarse and fine particles;

wherein said classification stage comprises a classifier element defining a first surface driven in rotation about an axis, and

a second surface spaced from and facing the first surface so as to define a radially extending separation passage therebetween, said first and second surfaces are substantially flat annular disks which are of substantially equal outer diameter; and



wherein the separator stage is devoid of a separator screen or comprises a screen which has orifices of larger dimension in comparison with the dimensions of fine particles exiting the chamber at the outlet.

5,797,551

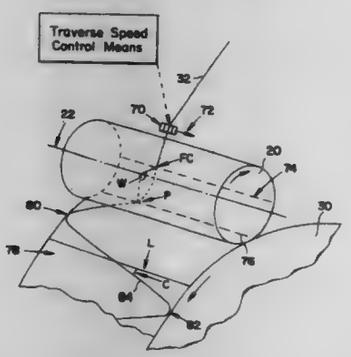
METHODS AND APPARATUS FOR THE WINDING OF FILAMENTS

Armin Wirz, Ossingen, and Peter Busenhart, Wiesendangen, both of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Continuation of Ser. No. 151,888, Nov. 15, 1993, Pat. No. 5,533,686. This application May 23, 1996, Ser. No. 653,699

Int. Cl.[6] B65H *54/00;51/30*

U.S. Cl. 242—18 **23 Claims**



1. A method of winding into a package a thread supplied by a threadline upstream of a winder of the type in which a thread to be wound has a substantial angle of wrap around the circumference of a motor driven contact roller in substantially rolling contact with the outer surface of a motor driven filament thread package and in which said contact roller can apply a rotationally driving or restraining force to the package surface while the speed of rotation of the roller is regulated by regulating the speed of rotation of the package, said method comprising winding thread passing from the outer surface of the contact roller into a cylindrical thread package, and changing the torque output of a motor driving said contact roller while said contact roller is in substantially rolling contact with said package surface and while said roller is rotating at a constant speed to maintain a constant threadline tension upstream from the winder, said change being sufficient to exert lengthwise force on the thread to change the tension in the portion of the thread delivered from the outer surface of said contact roller into said package surface.

5,797,552

DEVICE FOR GUIDING FILAMENTS IN TEXTILE MACHINES

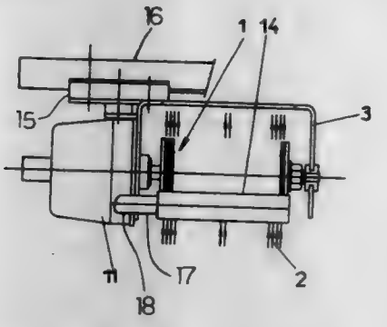
Robert Enderlin, Morschwiller-Le-Bas, France, assignor to SUPERBA Societe Anonyme a Directoire et Conseil de Surveillance, Mulhouse, France

Filed May 14, 1997, Ser. No. 856,004

Claims priority, application France, May 20, 1996, 96 06383

Int. Cl.[6] B65H *57/00;* **D02H** *5/02;13/16*

U.S. Cl. 242—157 R **22 Claims**



1. A device for guiding filaments comprising:

a chassis;

a comb mounted on said chassis and comprising a stack of disks separated by spacers; and

bearing means for removably and rotatably mounting said comb on said chassis.

5,797,553

Patent Not Issued For This Number

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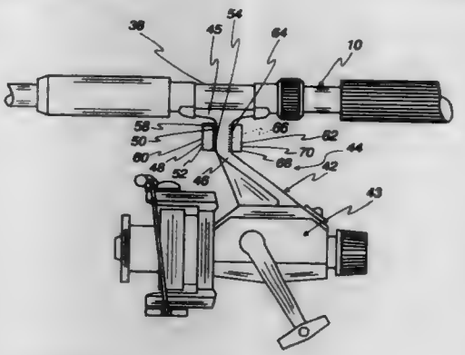
CUSHION GRIP FOR FISHING REEL

Randy Atherton, Anniston, Ala.; Roy Stiner; Frank Cooper, both of Tulsa, Okla., and Jack Robbins, Derby, Kans., assignors to Brunswick Corporation, Tulsa, Okla.

Filed Oct. 9, 1996, Ser. No. 728,058

Int. Cl.[6] A01K *87/06*

U.S. Cl. 242—316 **13 Claims**



1. In combination:

a fishing rod having an elongate body with a cylindrical gripping portion;

a fishing reel mounted in an operative position on the fishing rod body,

said fishing reel having a main body, an elongate mounting foot, and an elongate mounting stem projecting angularly to the length of the mounting foot and connecting between the mounting foot and the main body,

said fishing reel in the operative position being situated so that a user's hand extends around a portion of the fishing rod and against the fishing reel to hold the fishing rod and reel for operation thereof, the mounting stem residing between adjacent fingers on a user's hand with a user holding the fishing rod for operation thereof; and

at least one cushion member on the mounting stem, the at least one cushion member having an exposed compressible surface facing lengthwise of the fishing rod and engageable by one of the adjacent fingers of the hand of a user holding the fishing rod and reel for operation thereof,

wherein the exposed compressible surfaces on the totality of cushion members on the mounting stem extend only partially around the mounting stem.

5,797,555

TAPE CASSETTE

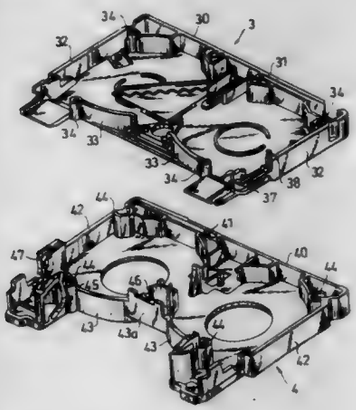
Motohiko Shima, and Masaru Ikebe, both of Nagano, Japan, assignors to TDK Corporation, Japan

Filed Nov. 10, 1997, Ser. No. 966,063

Claims priority, application Japan, Nov. 11, 1996, 8-312644

Int. Cl.[6] G11B *23/087*

U.S. Cl. 242—347 **11 Claims**



1. A tape cassette comprising:

a casing including an upper casing member and a lower casing member, said upper and lower casing members being respectively provided thereon with tapping bosses, said upper and lower casing members being joined to each other by means of screws inserted into said tapping bosses from said lower casing member, to thereby provide said casing;

a pair of tape reels rotatably received in said casing and having a tape wound thereon so as to extend therebetween, said tape being arranged so as to travel between said tape reels while being guided along a front surface of said casing, to thereby be led out of one of said tape reels and taken up on the other tape reel; and

a lid structure arranged on said casing in a manner to be opened and closed so as to permit said tape to be selectively exposed therethrough from said casing;

said upper and lower casing members each including a peripheral wall, said peripheral walls having the same height;

said tapping bosses of said upper casing member each having the same height as said peripheral wall of said upper casing member;

said tapping bosses of said lower casing member being formed with a height greater than said peripheral wall of said lower casing member and arranged so that at least one of said tapping bosses of said lower casing member also functions as a reference hole into which a reference pin of a recording/reproducing apparatus is fitted when the tape cassette is inserted into the recording/reproducing apparatus;

said peripheral walls of said upper and lower casing members including front walls respectively, each of which is connected with a respective one of said tapping bosses through a connection section, said connection section between said front wall and the tapping boss of one of said upper and lower casing members being formed therein with a cutout;

said cutout being arranged so as to fit therein a portion of said connection section of the other one of said upper and lower casing members when said upper and lower casing members are combined with each other.

5,797,556

TAPE CARTRIDGE AND METHOD FOR PRODUCING SAME

Shuichi Kikuchi, Miyagi, Japan, assignor to Sony Corporation, Japan

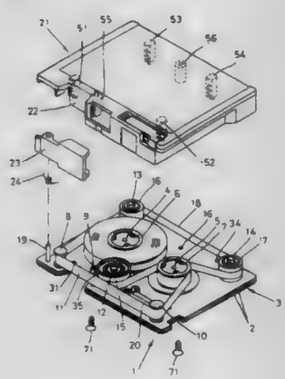
PCT No. PCT/JP95/00923, § 371 Date Mar. 13, 1996, § 102(e) Date Mar. 13, 1996, PCT Pub. No. WO95/31808, PCT Pub. Date Nov. 23, 1995

PCT Filed May 15, 1995, Ser. No. 578,661

Claims priority, application Japan, May 13, 1994, 6-100024

Int. Cl.[6] G11B *23/087*

U.S. Cl. 242—340 **11 Claims**



1. A producing method of a tape cartridge which executes a driving of a magnetic tape by a drive belt, comprising the steps of:

a step for forming a hard protective coat layer on a surface of a base plate material sheet;

a step for punching the base plate material sheet coated by the hard protective coat layer into a predetermined shape of the base plate and forming a hole at a predetermined position on the base plate;

a step for embedding a plurality of tape guides, roller shafts rotatably supporting a plurality of belt rollers, and reel shafts rotatably supporting a pair of tape reels on the base plate;

a step for installing roller shafts to the belt rollers, the pair of tape reels to the reel shafts, a tape to the tape reels and a drive belt to the belt rollers; and

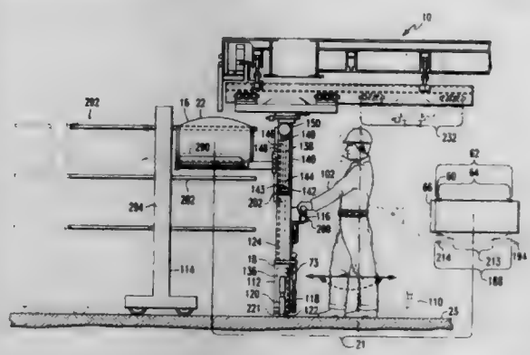
a step for installing a cover to the base plate and screwing down the cover to the base plate through holes.

5,797,557

APPARATUS, SYSTEMS AND METHODS FOR TRANSPORTING A CYLINDRICAL PACKAGE

Songhao Wang, Pittsburgh, and William L. Schaefer, Butler, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 15, 1997, Ser. No. 784,168
Int. Cl.[6] B65H *54/02;19/30;* **B65G** *1/00;* **B66C** *3/00*
U.S. Cl. 242—35.5 A **21 Claims**



13. A system for transporting a generally cylindrical package from a first predetermined location to a second predetermined location horizontally spaced apart from the first predetermined location, the system comprising:

(a) a support having a generally horizontal member;

(b) a generally cylindrical package which is removably telescoped upon at least a portion of the generally horizontal member of the support at a first predetermined location;

(c) an apparatus for transporting the generally cylindrical package from the first predetermined location to a second predetermined location spaced apart from the first predetermined location, the apparatus comprising:

(i) a frame comprising a support device comprising at least one compressible support member and a pivot device for pivoting the support device about a generally vertical axis, the support device being movable along the generally vertical axis between (1) a first predetermined position spaced apart from and below an outer surface of the generally cylindrical package and (2) a second predetermined position in which the compressible support member contacts, is compressed and supports at least a portion of the outer surface of the generally cylindrical package; and

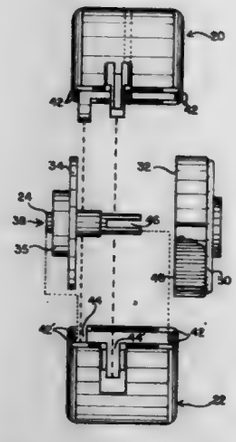
(ii) a carriage assembly connected to and supporting the frame, the carriage assembly comprising a carriage for moving the frame between (1) a first predetermined position proximate the support and (2) a second predetermined position horizontally spaced apart from the first predetermined position such that the generally cylindrical package is removed from the first predetermined location upon the generally horizontal member of the support and transported to a second predetermined location horizontally spaced apart from the first predetermined location.

5,797,558

UNI-DIRECTIONAL CORD TAKE-UP DEVICE

Edwin R. Peterson, Boise, and Edwin L. Wheeler, Meridian, both of Id., assignors to Preco New Products Corp., Boise, Id.

Continuation-in-part of Ser. No. 600,406, Feb. 12, 1996, Pat. No. 5,655,726. This application Nov. 18, 1996, Ser. No. 751,878
Int. Cl.[6] B65H *75/48*
U.S. Cl. 242—373 **5 Claims**



1. A dual reel cord take-up device for flat wire cable which comprises:

(a) a generally semi-cylindrical upper case half with two parallel compartments in a direction perpendicular to the axis of the cylinder, the first compartment being adapted to receive the first end of a dual-purpose shaft, and the second compartment being adapted to receive the second end of said dual-purpose shaft and a spring cup, said upper case half having snap-fit means for receiving a lower case half and means for receiving a flat wire cable;

(b) a generally semi-cylindrical lower case half, also with two compartments which correspond to first and second compartments of the upper case half, said lower case half also having snap-fit means for receiving and cooperating with said upper case half snap-fit means for receiving and retaining said upper case half in fixed relationship, said lower case half having means for receiving a flat wire cable and said second compartment having means for holding said spring cup in said second compartment against rotation in one direction but not the other;

(c) a dual-purpose shaft supported and held in rotatable relationship by both the upper and lower case halves, the dual-purpose shaft being provided on its first end in the first compartment of the upper and lower case halves with a slotted disk which divides the first end of the dual-purpose shaft into two adjacent reels for receiving flat wire cable, in which the two adjacent reels are called a cable extension and take-up reel and a captive cable reel;

(d) the slotted disk further dividing the first compartment into two adjacent compartments, the flat wire cable extending through two apertures, with one cable end fixed in an aperture and the other cable end free to extend and retract through its aperture, the dual-purpose shaft being provided on its second end in the second compartment of the upper and lower case halves with a slot in the dual-purpose shaft for receiving a spring within the spring cup;

(e) a generally cylindrical spring cup within the second compartment of the upper and lower case halves, the spring cup having an outer surface perpendicular to its axis of rotation, means cooperating with the holding means to hold the cup against rotation relative to the upper and lower case halves in one direction but not in the other direction and spring stop means on its inner cylindrical surface for fixing one end of the spring to the spring cup; and

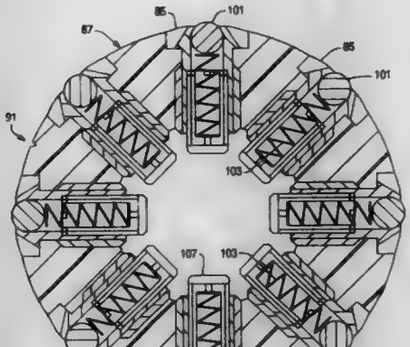
(f) a flat coil spring within the spring cup, the spring being fixed on its outer end to the stop means of the spring cup and being fixed on its inner end to the slot of the second end of the dual-purpose shaft, the flat coil spring being sized in relation to the length of the flat wire cable so that when the flat coil spring is completely wound on the dual purpose shaft, the flat wire cable from the cable extension and take-up reel still has several winds remaining around the dual purpose shaft, and the flat wire cable on the captive cable reel is pressed against the walls of the upper and lower case halves, and has not begun to reverse wind.

5,797,559

WINDING ARBOR HAVING A PLURALITY OF AIR VALVES FOR MAKING CORELESS PAPER ROLLS AND METHOD FOR USING

James B. Coffey, Vandalia, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 18, 1996, Ser. No. 715,512
Int. Cl.[6] B65H *35/04*
U.S. Cl. 242—527.6 19 Claims



1. A surface winding slitting machine for producing coreless, tuckless paper rolls, said machine comprising:

a pair of bed rolls;

a rider roll;

a winding arbor having a tube portion and being positioned above said bed rolls and beneath said rider roll;

a plurality of two-way air valves positioned around and along the surface of the winding arbor, wherein each of said two-way air valves extends through the tube portion of said winding arbor and wherein each of said two-way air valves has an open position and a closed position to control the passage of air from the central cavity through each of said air valves;

a groove in said winding arbor for guiding a cutter for removing a pretucked tail;

a compressed air supply;

a vacuum supply;

an air valve having positions for regulating the supply of compressed air or vacuum to said winding arbor; and

a connector for connecting said air valve and said winding arbor.

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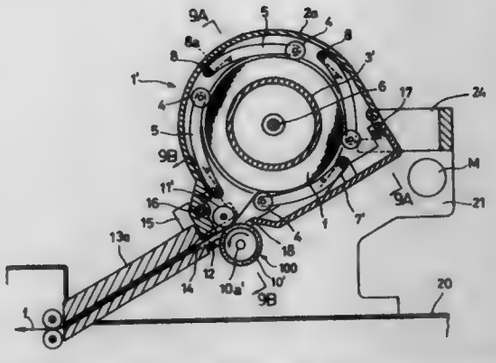
METHOD AND DEVICE FOR CONTINUOUSLY FEEDING FILM

Takuji Kishi; Motoaki Murakami, and Kimiharu Ohtani, all of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama, Japan

Continuation of Ser. No. 261,033, Jun. 14, 1994, abandoned. This application Jul. 31, 1996, Ser. No. 688,969
Claims priority, application Japan, Jun. 15, 1993, 5-143690; Mar. 30, 1994, 6-060568
Int. Cl.[6] B65H *39/14;20/02;27/00;75/48*
U.S. Cl. 242—528 4 Claims

1. A method of preparing a plurality of separate films for continuous successive feed thereof and of then continuously successively feeding said separate films, said method comprising:

winding said plurality of separate films in a winding direction one after another around a film core that is rotatably supported in a case, said winding comprising overlapping adjacent ends of adjacent said films by inserting a leading end, relative to said winding direction, of a succeeding film of each adjacent pair of said films beneath a trailing end of a preceding film of said pair of films, while maintaining all of said films separate from and not integrally attached to any other of said films;



pressing said films toward a center of said film core by rollers;

sandwiching a trailing end of an outermost said film wound on said film core, relative to said winding direction, between a one-way driving feed roller and an idler roller, said driving feed roller being operable to be positively driven in a feeding direction of rotation thereof and to idle in said feeding direction of rotation thereof when said outermost film is pulled in an unwinding direction, that is opposite to said winding direction, at a speed that is greater than a speed at which said driving feed roller is driven;

activating said driving feed roller to rotate in said feeding direction and thereby feeding said outermost film toward an external film feed device in said unwinding direction, at which time said end of said outermost film becomes a leading end thereof;

when said leading end of said outermost film, relative to said unwinding direction, reaches said external film feed device, grasping said leading end by said external film feed device and pulling said outermost film thereby in said unwinding direction at said speed greater than a driving speed on said driving feed roller;

while said outermost film remains sandwiched between said driving feed roller and said idler roller and during said pulling of said outermost film by said external film feed device, causing said driving feed roller to idle in said feeding direction; and

when said driving feed roller begins to idle, deactivating said driving feed roller.

5,797,561

UNWINDING STATION FOR FIBER WEBS INCLUDING A DEVICE FOR PERFORMING A FLYING SPLICE

Zygmunt Madrzak, Heidenheim, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

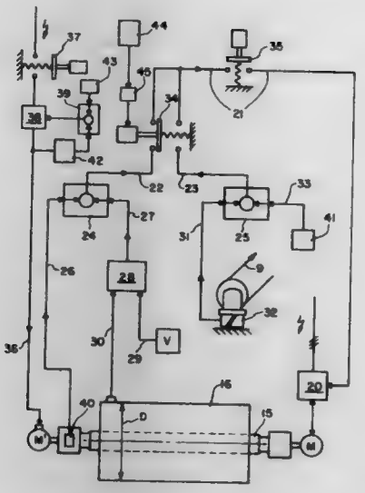
Continuation of Ser. No. 498,094, Jul. 5, 1995, Pat. No. 5,647,556. This application Jul. 14, 1997, Ser. No. 892,212
Int. Cl.[6] B65H *21/00*
U.S. Cl. 242—554.6 5 Claims

5. An unwinding station for fiber webs, including a primary roll and a secondary roll, and a system for splicing on the fly a web leader of the primary roll to a web end of the secondary roll, said unwinding station comprising:

a drive unit coupled to the primary roll for rotating the primary roll, said drive unit selectively operable as one of a motor and brake to respectively increase and decrease an RPM of the primary roll, said drive unit operable as a motor to substantially match a peripheral speed of the primary roll with an unwinding speed of the secondary roll;

a drive unit control for controlling said selective operation of said drive unit;

an RPM control operatively associated with and selectively interconnected to said drive unit control for providing a control signal representing the RPM of the primary roll to the drive unit control;



a switching system for selectively interconnecting said RPM control with said drive unit control; and

an additional drive unit coupled to the primary roll independent from said drive unit, a means for activating said additional drive unit to increase the RPM of the primary roll above the unwinding speed of the secondary roll prior to splicing;

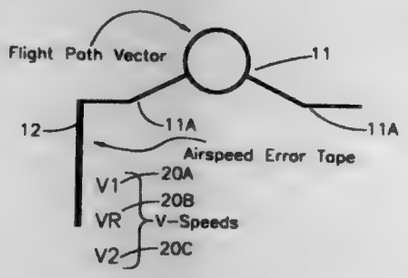
wherein said selective operation of said drive unit as a brake is dependent upon said increased RPM of the primary roll caused by said additional drive unit.

5,797,562

AIRCRAFT DISPLAY COMBINING ERROR TAPE AND REFERENCE BUGS

Ivan Sandy Wyatt, Scottsdale, Ariz., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Jul. 26, 1995, Ser. No. 506,743
Int. Cl.[6] G01C *21/00*
U.S. Cl. 244—1 R **21 Claims**



1. A display apparatus for an aircraft comprising:

a) an electronic display unit having,

1) a display screen,

2) a flight path vector symbol displayed on said screen,

3) a speed error tape displayed on said screen, said tape having a first end and a second end, said first end adjacent said flight path vector symbol, said tape extending from said symbol to said second end,

4) at least one speed bug positioned adjacent to said tape, each of said bugs representative of an associated reference speed, and,

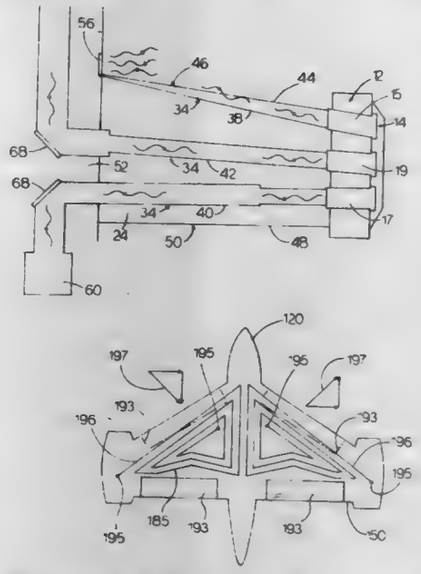
5) whereas the position of said speed bug relative to said first end of said tape is indicative of the difference between a current speed of said aircraft and said associated reference speed and once the associated reference speed is achieved said bug vanishes.

5,797,563

SYSTEM FOR INCREASING THE AERODYNAMIC AND HYDRODYNAMIC EFFICIENCY OF A VEHICLE IN MOTION

Ronald F. Blackburn, 9546 S. Harford Ct., Highlands Ranch, Colo. 80126; Barry M. Warmkessel, 767 Chopin Dr., Sunnyvale, Calif. 94087, and Sonja M. Kawamoto, 6850 Glenview Dr., San Jose, Calif. 95120

Continuation-in-part of Ser. No. 504,056, Jul. 18, 1995. This application Apr. 1, 1996, Ser. No. 625,914
Int. Cl.[6] B64C *1/38*
U.S. Cl. 244—130 **29 Claims**



1. A system for increasing the dynamic efficiency of a vehicle in a fluid medium, comprising:

a source of electromagnetic radiation;

means for transmitting electromagnetic radiation from said source to desired surface portions of the vehicle, said surface portions including leading edges, said means for transmitting receiving the radiation from said source;

means for emitting a beam of the radiation outwardly and away from the desired surface portions, the leading edges and the vehicle in order to heat the fluid medium thereby reducing mass density of the fluid medium to reduce dynamic drag on the vehicle, said means for emitting receiving the radiation from said means for transmitting, said desired surface portions adjacent to areas of the fluid medium heated by the radiation;

means for producing a magnetic field proximal to the vehicle in order to provide a force for propelling molecules of the fluid medium in a direction generally perpendicular to the vehicle.

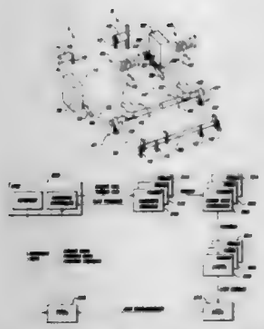
5,797,564

SYSTEM FOR BACKDRIVE OF FLIGHT DECK CONTROLS DURING AUTOPILOT OPERATION

Daniel H. Cartmell, Bellevue; David B. Borgens, Auburn; Henning Buus; Keith S. Duffy, both of Woodinville, all of Wash.; Mark E. Gast, Seabrook, Tex.; Neal V. Huynh; David W. Lochtie, both of Bellevue, Wash., and Clifton A. Piersbacher, Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 15, 1995, Ser. No. 441,681
Int. Cl.[6] B64C *13/16*
U.S. Cl. 244—223 **12 Claims**

1. A backdrive system for positioning a flight deck controller of an aircraft having a fly-by-wire primary aircraft control system, when the aircraft is flying under control of an autopilot flight director computer, the backdrive system comprising:



(a) a backdrive controller for receiving signals from the autopilot and converting the received signals to signals for positioning the flight deck controller;

(b) an actuator in electrical communication with the backdrive controller, the actuator mechanically coupled to the flight deck controller to move the controller in response to electrical communication from the backdrive controller;

(c) a position transducer in mechanical communication with the actuator for sensing movement of the flight deck controller and for supplying an electrical signal representative of the movement; and

(d) an electronic control unit in electrical communication with the position transducer, the electronic unit receiving the signal supplied by the position transducer and processing that signal for sending electrical signals to a primary flight computer, the primary flight computer in communication with an autopilot flight director computer.

5,797,565

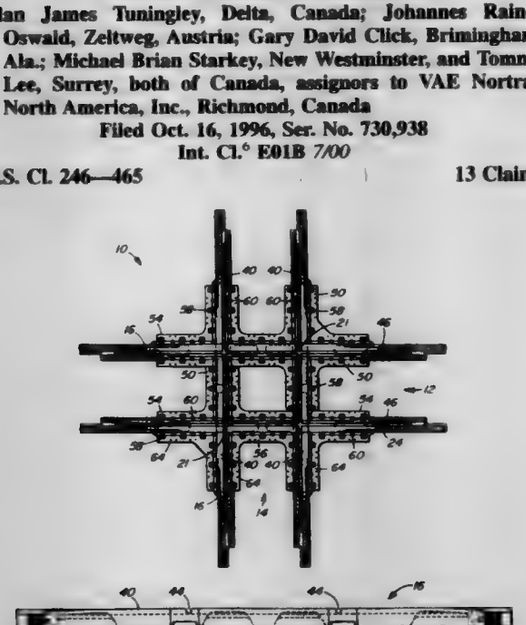
RAILWAY DIAMOND CROSSING

Alan James Tuningley, Delta, Canada; Johannes Rainer Oswald, Zeltweg, Austria; Gary David Click, Brimingham, Ala.; Michael Brian Starkey, New Westminster, and Tommy Lee, Surrey, both of Canada, assignors to VAE Nortrak North America, Inc., Richmond, Canada

Filed Oct. 16, 1996, Ser. No. 730,938

Int. Cl.[6] E01B *7/00*

U.S. Cl. 246—465 **13 Claims**



1. A railway crossing comprising:

four substantially identical crossing beams, each of said crossing beams having a flangeway groove extending along at least a portion of a beam length, each of said crossing beams having an integral rail shaped end for connection to a standard rail section;

two of the crossing beams, representing bottom beams for a first railway line, having top cutouts;

the two remaining crossing beams, representing top beams for a second railway line, having bottom cutouts fitting over the top cutouts in the bottom beams, and flangeway grooves in the top surface thereof for the first railway line, the cutouts in the top and bottom beams set for a predetermined crossing angle;

at least two base plates shaped to the predetermined crossing angle, at least one of the two plates positioned under one of the beams and a portion of another of the beams; and

boltless locator pins preventing horizontal movement of the top and bottom beams on the plates and elastic fasteners holding the top and bottom beams to the plates to restrict vertical movement between the top and bottom beams and the plates.

5,797,566

WIRE HOLDER AND A WIRE HOLDER ASSEMBLY

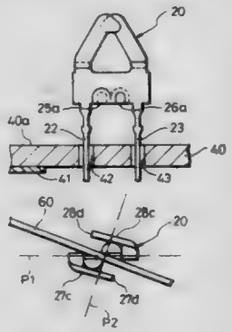
Kyotaro Sato, Tokyo, Japan, assignor to Kyoshin Kogyo Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1995, Ser. No. 377,248

Claims priority, application Japan, Aug. 24, 1994, 6-199364

Int. Cl.[6] H02B *3/00*

U.S. Cl. 248—49 **17 Claims**



1. A wire holder comprising:

a plate-shaped holder body having a first side and a second side;

a leg portion extending from said first side of said holder body; and

a wire holding portion extending from said second side of said holder body, said leg portion being arranged so as to be insertable into a hole formed in a circuit board, said wire holding portion being provided so as to be able to introduce a wire into a substantially triangular wire holding space defined by said wire holding portion and to hold the wire introduced into said substantially triangular wire holding space, said wire holding portion includes first and second wire holding pieces defining said wire holding space in cooperation with each other, both said wire holding pieces having free distal ends, individually, such that said wire can be introduced from between said two free distal ends, said plate-shaped holder body, said leg portion, and said wire holding portion being formed from a single planar sheet of material whereby automatic assembly efficiency of said wire holder is substantially increased.

5,797,567

EASY FILL LOCKING BAG HOLDER

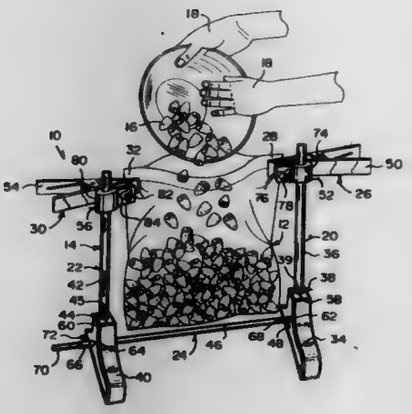
Bill Magnafici, 115 W. Sunset Dr., Amboy, Ill. 61310-1167

Filed May 23, 1996, Ser. No. 653,706

Int. Cl.[6] A63B *55/04*

U.S. Cl. 248—97 **11 Claims**

1. A holder for a locking bag comprising means for supporting the locking bag in a vertical opened position, so that articles can be deposited into the locking bag by two free hands of a person, wherein said supporting means includes:



a) a first stanchion assembly including:
  i) a first base member having a top to rest upon a flat horizontal surface;
  ii) a first elongated post having a lower end; and
  iii) first means for attaching the lower end of said first elongated post to said top of said first base member, so that said first elongated post will extend up vertically, said first attaching means including said first base member having a threaded hole in the top thereof and said first elongated post having the lower end threaded so that said lower end can thread into said top threaded hole in said first base member;
b) a second stanchion assembly having a lower end and an upper end;
c) a crossbar extending horizontally between lower ends of said first stanchion assembly and said second stanchion assembly;
d) means on an upper end of said first stanchion assembly, for engaging with a first upper corner of the locking bag, said first engaging means including:
  i) a first spring clip; and
  ii) means for affixing said first spring clip transversely to the upper end of said first stanchion assembly in an adjustable manner;
  and
e) means on the upper end of said second stanchion assembly, for engaging with a second upper corner of the locking bag, so that the locking bag can hang down in the vertical opened position.

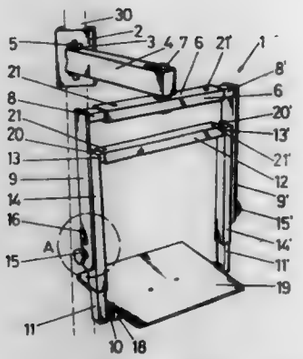
5,797,568

MULTI-POSITION TELEVISION MONITOR STAND

Antonio Canton Gongora; Carlos Jesús Cruz Fernandez; José María Munagorri Enriquez, and Juan Carlos Rayo Ortigüela, all of Madrid, Spain, assignors to Telefonica de Espana S.A., Madrid, Spain

Filed Nov. 18, 1996, Ser. No. 751,489
Claims priority, application Spain, May 30, 1996, 9601480
Int. Cl.[6] A47G *35/00*
U.S. Cl. 248—122.1 **7 Claims**

1. A multi-position television monitor stand, comprising:
a vertical support having a convex outer surface;
a first pin having a longitudinal axis;
a second pin having a longitudinal axis parallel to the longitudinal axis of the first pin;
first and second pieces each having a rectangular footprint, an inner surface, and an outer surface opposite the inner surface, the inner surface of the first piece having a deep, semicircular, concave depression to mate with the outer surface of the vertical support, the outer surface of the second piece having a U-shaped projection which is bored through to accommodate the first pin;
a hollow element projecting from the second piece, the hollow element having a first end held on the second piece by the first pin and a second end opposite the first end;



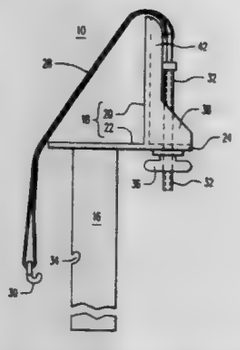
a first transverse tubular element having a bore therethrough and first and second opposite ends, the second pin being inserted through the bore to connect the first transverse tubular element to the second end of the hollow element;
first and second horizontal tubular extensions inserted into the first and second ends, respectively, of the first transverse tubular element and fixed at a predetermined distance;
first and second vertical plates extending out from the first and second horizontal tubular extensions, respectively, at a 90° angle, the first and second vertical plates each having two angled slots having a circular area at their inside end;
first and second vertical tubular elements having upper and lower ends, and outside surface with lugs and projections with tightening joints, the angled slots accommodating the lugs and the projections with tightening joints;
third and fourth horizontal tubular extensions extending at a 90° angle from the upper ends of the first and second vertical tubular elements, respectively; and
a second transverse tubular element parallel to and downwardly offset from the first transverse tubular element, the third and fourth horizontal tubular extensions being inserted into the second transverse tubular element and fixed to extend at a predetermined distance from the ends of the second transverse tubular element.

5,797,569

APPARATUS FOR CLAMPING A MUSICAL INSTRUMENT

Richard Simons, Pomona, N.Y., assignor to Latin Percussion, Inc., Garfield, N.J.

Filed Jul. 20, 1995, Ser. No. 504,904
Int. Cl.[6] F16M *11/04*
U.S. Cl. 248—187.1 **13 Claims**



1. An apparatus for clamping a musical instrument having a mounting member with a generally rectangular cross-section to a metallic mounting post, comprising:
a receiving member attached to said metallic mounting post, said receiving member having a first receiving surface and a second receiving surface intersecting virtually at a right angle to form an L-shape;

a retaining strap arranged to detachably clamp said mounting member to said receiving member, said retaining strap including a detachable engaging member at one end thereof and a tensioning member at the other end thereof; and

means for attaching said retaining strap to said receiving member.

5,797,570

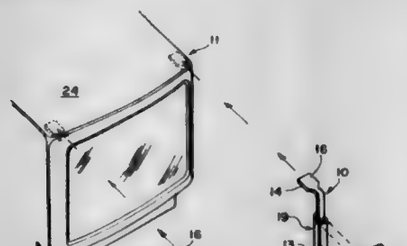
PORTABLE DEVICE AND METHOD FOR MOUNTING AN ANTI-GLARE FILTER ON A MONITOR

Norman E. Dolan, Santa Rosa, and Dean A. Davis, Forestville, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 227,965, Sep. 11, 1993, abandoned, which is a continuation of Ser. No. 845,510, Feb. 27, 1992, abandoned, which is a continuation of Ser. No. 657,689, Feb. 15, 1991, abandoned. This application Oct. 28, 1997, Ser. No. 963,263

Int. Cl.[6] A47G *1/17*

U.S. Cl. 248—205.3 **18 Claims**



1. A holder for mounting a first article on a second article, comprising:

a hanger comprising a pair of legs forming a generally L-shaped configuration;

an elongated sleeve sized for a sliding fit along a first one of the legs;

means for securing the sleeve to the first article;

means on the second one of the legs for frictionally engaging the second article to prevent movement of the second leg where resting on the second article; and

cooperating latching means formed on the first leg and on the sleeve, comprising spaced-apart transverse-extending teeth on the first leg and a cooperating tooth on the sleeve, whereby the sleeve tooth engages the teeth of the first leg for selectively positioning the sleeve along the first leg.

5,797,571

COMBINED LADDER HOOK AND BRACKET ASSEMBLY

Hugh Joseph Brophy, 9 Garrison Ave., West Somerville, Mass. 02144-1710

Filed Sep. 19, 1996, Ser. No. 716,478

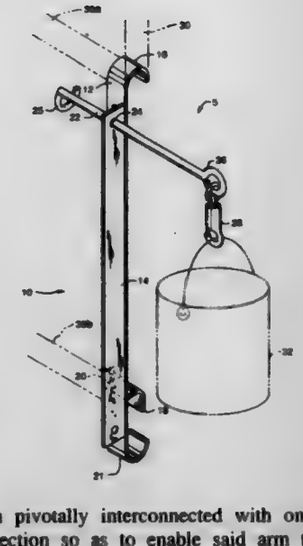
Int. Cl.[6] F06C *7/14*

U.S. Cl. 248—210 **9 Claims**

1. A combined ladder hook and bracket assembly comprising:

a bracket section including a first face angled with respect to a second face;

a pair of opposing rung engaging gaffs on opposite distal ends of said bracket section; and



a rigid arm pivotally interconnected with one face of said bracket section so as to enable said arm to pivot into a position essentially parallel to said bracket section, said bracket section including an intermediate rung engaging gaff disposed between said opposing gaffs, said arm including hook means on one end thereof for attaching an article to said arm and a rung engaging gaff on the other end thereof.

5,797,572

PLUMBING FIXTURE MOUNTING DEVICE USING A THREADED ROD WITH INTERRUPTED THREADS

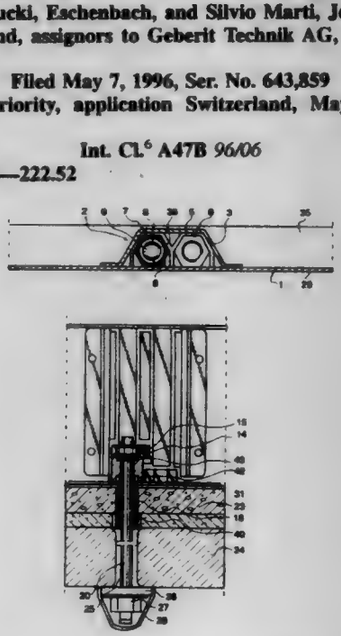
Peter Schmucki, Eschenbach, and Silvio Marti, Jona, both of Switzerland, assignors to Geberit Technik AG, Jona, Switzerland

Filed May 7, 1996, Ser. No. 643,859

Claims priority, application Switzerland, May 23, 1995, 1515/95-3

Int. Cl.[6] A47B *96/06*

U.S. Cl. 248—222.52 **11 Claims**



1. A plumbing fixture mounting device comprising:

a holding device mountable on a support and defining an opening, said holding device including a nut coaxial with said opening of said holding device, said nut being rotationally fixed and axially displaceable in said holding device,

a threaded rod longitudinally movable through said opening of said holding device without rotation of said threaded rod; and

carrier means positioned in said holding device for detachably fixing said threaded rod to said holding device at a plurality of longitudinal positions of said threaded rod, said threaded rod being longitudinally slidable through said nut and said carrier

means without rotation of said carrier means, said carrier means being rotatable with said threaded rod and rotably connected to said nut, said carrier means being movable between a first position where said threaded rod is displaceable in a longitudinal direction of said threaded rod and a second position where said threaded rod is axially and rotationally secured, said carrier means being movable from said first position to said second position by first a rotation of said carrier means and then an axial movement of said carrier means.

5,797,573

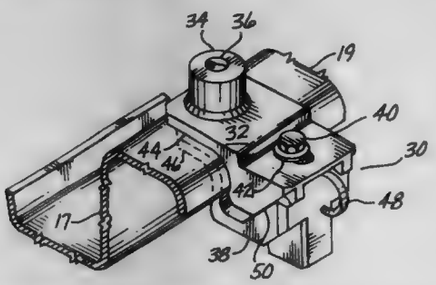
NON-PENETRATION CLIP ATTACHMENT

Keyle H. Nasu, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 373,135, Jan. 12, 1995, abandoned. This application Feb. 25, 1997, Ser. No. 805,798

Int. Cl.[6] A47B *96/66*

U.S. Cl. 248—231.31 **6 Claims**



1. Clip apparatus for attaching an element to a flange comprising:

a first part having a first smooth and straight inclined surface a first gripping surface;

a second part having a second smooth and straight inclined surface a second gripping surface;

connection means for connecting said first part with said second part such that said first inclined surface contacts said second inclined surface and said first gripping surface contacts said flange on a first side of said flange and said second gripping surface contacts said flange on the opposite side of said flange;

and wherein an upstanding boss provides support for a clamp element.

5,797,574

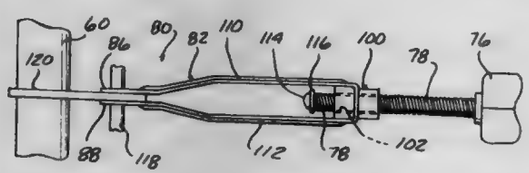
DRIVE NUT APPARATUS FOR VEHICLE SEAT ADJUSTER

Stephen R. Brooks, Farmington Hills, and Dean L. Ruger, Manitou Beach, both of Mich., assignors to Lear Corporation, Southfield, Mich.

Filed Dec. 23, 1996, Ser. No. 771,971

Int. Cl.[6] A47C *1/00*

U.S. Cl. 248—398 **15 Claims**



1. A drive apparatus for a vehicle power seat adjuster having spaced track assemblies, at least one torsion tube extending between the track assemblies, a seat support mounting means coupled to the track assemblies and a seat for elevating the seat upon rotation of the torsion tube, and a drive motor rotatably coupled to a lead screw, the drive apparatus comprising:

a drive nut having a threaded through bore adapted for threadingly receiving a lead screw;

a one-piece strap having a central portion and first and second opposed ends;

an aperture formed in the central portion of the strap;

the first and second opposed ends of the strap folded over into substantially parallel relationship extending from the central portion;

the drive nut carried on the central portion of the strap, with the through bore in the drive nut coaxially aligned with the aperture in the central portion of the strap; and

means adapted for mounting the strap to a torsion tube to effect rotation of the torsion tube upon translation of the strap resulting from rotation of the lead screw relative to the drive nut.

5,797,575

VEHICLE SEAT LOCKING SYSTEM

Edvin List Clausen, Tønder, Denmark, assignor to Norsk Hydro A.S., Oslo, Norway

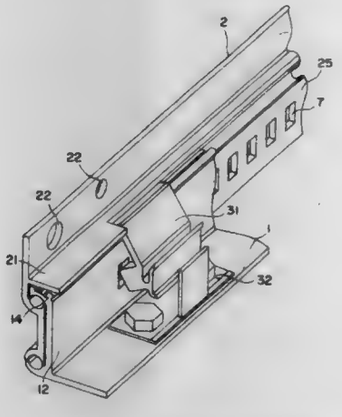
PCT No. PCT/NO94/00124, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/02520, PCT Pub. Date Jan. 26, 1995

PCT Filed Jul. 11, 1994, Ser. No. 591,555

Claims priority, application Norway, Jul. 12, 1993, 932534

Int. Cl.[6] A47G *29/02*

U.S. Cl. 248—429 **17 Claims**



1. A vehicle seat locking and adjustment system comprising:

a first rail to be connected to a vehicle floor, said first rail having a wall, and said first rail having extending along the entire length thereof a fastening structure that is formed unitarily and in one piece with said first rail;

a second rail to be connected to a vehicle seat, said second rail having a wall;

said walls of said first and second rails having therein respective apertures;

said second rail being slidably mounted on said first rail with said walls adjacent each other; and

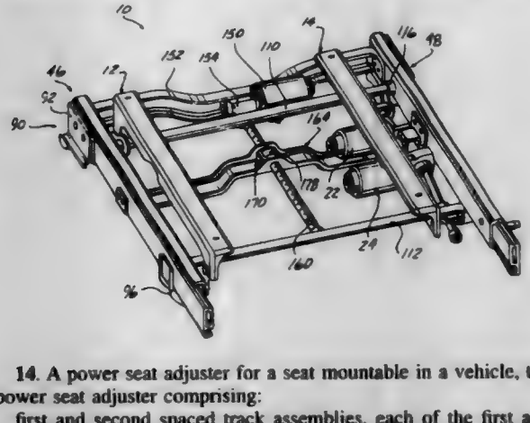
a tiltable anchoring member fastened to said fastening structure and being pivotable relative to said first rail between a locked position whereat said first and second rails are locked relative to each other by said tiltable anchoring member interacting with said apertures in said walls of said first and second rails, and an unlocked position, whereat said tiltable anchoring member is withdrawn from said apertures such that said second rail is slidable relative to said first rail.

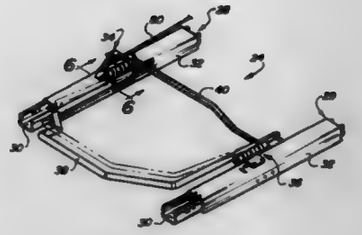
5,797,576

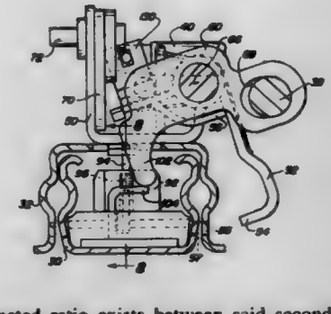
VEHICLE POWER SEAT ADJUSTER WITH CENTER HORIZONTAL DRIVE SCREW ACTUATION

Derek K. Gauger, Ann Arbor, Mich., assignor to Lear Corporation, Southfield, Mich.

Filed Jun. 6, 1996, Ser. No. 659,301
Int. Cl.[6] B60N 2/06
U.S. Cl. 248—429 **14 Claims**







14. A power seat adjuster for a seat mountable in a vehicle, the power seat adjuster comprising:

first and second spaced track assemblies, each of the first and second track assemblies formed of a fixed track adapted to be stationarily mounted in a vehicle, and a movable track movably mounted on the fixed track for bi-directional movement along the fixed track;

a single threaded drive shaft;

a single electric drive motor, the drive shaft coupled to and bi-directionally rotated by the drive motor;

a drive motor mounting member fixedly connected at opposite ends to one of the fixed and movable tracks of each of the first and second track assemblies, the drive motor mounted on the drive motor mounting member;

a single drive nut threadingly engaged with the drive shaft;

a drive nut mounting member fixedly connected at opposite ends to the other of the fixed and movable tracks of each of the first and second track assemblies, the drive nut carried on the drive nut mounting member; and

the drive motor mounted on the drive motor mounting member and the drive nut mounted on the drive nut mounting member in a location to dispose the drive shaft substantially centrally between the first and second track assemblies.

5,797,577

SEAT TRACK WITH CONTINUOUS ENGAGEMENT AND MEMORY EASY ENTRY MECHANISM

Pascal Garrido, Gravehurst, Canada, assignor to Meritor Automotive Canada, Inc., Canada

Filed Dec. 11, 1996, Ser. No. 762,010
Int. Cl.[6] F16M 13/00
U.S. Cl. 248—429 **19 Claims**

1. An assembly for mounting a seat within a vehicle, comprising:

a first track having a side wall including a plurality of spaced slots through said side wall, said slots each having a first operative dimension and being spaced apart by a first distance;

a second track in moveable mating engagement with said first track;

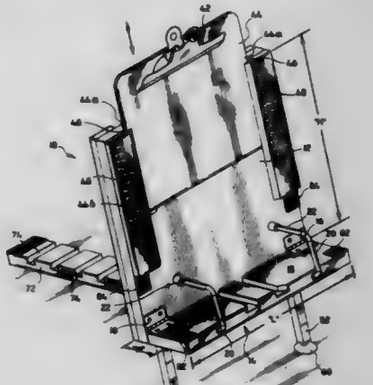
a plurality of locking pawls each having a second operative dimension and being supported on said second track for movement between a first position where said pawls are adapted to be received within one or more of said slots such that said second track does not move relative to said first track and a second position where said second track is free to move, said locking pawls being spaced apart by a second distance that is not equal to said first distance; and wherein a preselected ratio exists between said second dimension and each of said first dimension, said first distance and said second distance, respectively, such that said first operative dimension is twice said second dimension, said second distance is three times said second operative dimension and said first distance is equal to said first dimension and at least one of said locking pawls is partially received within at least one of said slots whenever said locking pawls are in said first position.

5,797,578

COLLAPSIBLE ARTICLE SUPPORT

Robert Graffeo, 1150 Vollkommer Pl., N. Bellmore, N.Y. 11710, and David Pickow, 141 Ocean Ave., Massapequa Park, N.Y. 11762

Filed Jan. 29, 1997, Ser. No. 790,389
Int. Cl.[6] A47G 1/24
U.S. Cl. 248—453 **28 Claims**



1. An apparatus for supporting a reading article in an open position, which comprises:

a base member having a base supporting surface for supporting a reading article along a lower edge of the reading article when in an open position of the reading article, said supporting surface appropriately dimensioned to accommodate reading articles of varying sizes;

a backing member operatively connected to said base member and extending at least in a vertical direction relative to said

base member, said backing member having a backing support surface for supporting the reading article;

at least one leg member telescopically received within a correspondingly dimensioned bore of said backing member, said one leg member movable within said bore relative to said backing member to selectively adjust at least the vertical positioning of said base member to thereby at least adjust the position of the reading article: and

said base member being foldable to a closed position thereof to be in superposed relation with respect to said backing member.

5,797,579

TREE STAND

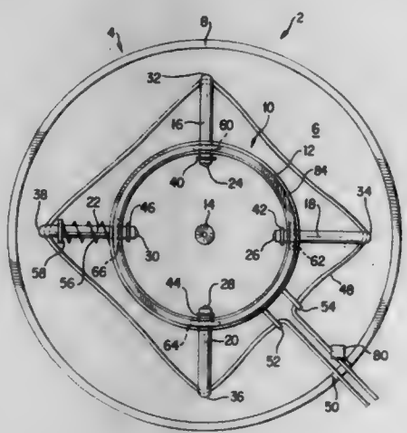
Klaus Krinner, Strasskirchen, Germany, assignor to Krinner GmbH, Germany

Filed Nov. 13, 1995, Ser. No. 555,647

Claims priority, application Germany, Nov. 11, 1994, 9418163 U; Apr. 20, 1995, 295 06 736 U

Int. Cl.[6] F16M *13/00*

U.S. Cl. 248—523 **15 Claims**



1. Tree stand comprising:

a base;

a receiving part for a tree trunk arranged at said base, said receiving part having a plurality of essentially pin-shaped retaining elements arranged around an axis of symmetry, said retaining elements being guided essentially by horizontal sliding within said receiving part and having first end portions pointed toward said axis of symmetry and second end portions pointed away from said axis of symmetry, each of said retaining elements being movable between a retaining position and a released position such as to approach or move away from said axis of symmetry;

a single clamping means which acts on all of said retaining elements via a load transmission element and moves said retaining elements into their respective retaining positions with an adjustable retaining force, said load transmission element comprising a flexible, substantially inextensible connecting part having tensile strength which acts on said first or second end portions of said retaining elements and under influence of tensile load moves said retaining elements into their respective retaining positions, wherein said connecting part is adapted to initially move all of said retaining elements essentially free of a retaining force into contact with a tree trunk, and then simultaneously press all of said retaining elements with an essentially identical retaining force against the tree trunk; and

at least one locking mechanism for preventing said retaining elements from moving from their respective retaining positions back into their released positions.

5,797,580

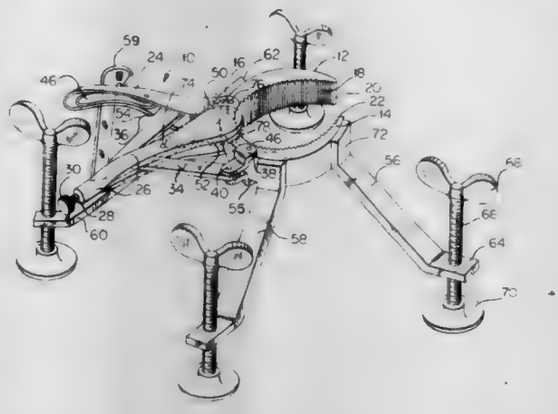
STAND FOR SUPPORTING A CUT TREE TRUNK

Roben Ryberg, 5500 Huntington Pky., Bethesda, Md. 20814

Filed Sep. 3, 1996, Ser. No. 706,895

Int. Cl.[6] A47G *7/02*

U.S. Cl. 248—523 **1 Claim**



1. A stand for supportjng a cut tree trunk in vertical position comprising:

a. a tree trunk encircling clamp, further including:

i. a first curvate locking jaw and a second curvate locking jaw each having a free end and a base end, said base ends pivotally connected to each other at a base, said locking jaws having a serrated inner surface convexly curvate in a radially inward direction facing each other and being adapted for closure with a tree trunk;

ii. a locking clamp including a rigid handle fixedly secured to the base end of said first locking jaw and a pivoting handle pivotally secured to said second pivoted jaw adjacent the base end thereof, said rigid handle and said pivoting handle extending radially outward to respective distal free ends of said first and second curvate locking jaws;

iii. an adjustable locking shaft threadedly mounted within said rigid handle and extending radially inwardly thereof;

iv. a pair of elongated locking toggles pivoted at a respective inner pivot end in said first curvate locking jaw and in said pivoting handle, each locking toggle having a free end extending radially outwardly and engaging said locking shaft within said locking handle, a first of said locking toggles being pivoted within said pivoting handle and including a locking shoulder at its mid-portion to engage said pivoting handle when said pivoting handle and said locking clamp are compressed together, a second of said locking toggles being supported within said rigid handle and engaging said adjustable locking shaft at its outer free end and at its inner pivot end being pivoted upon a lug secured to said first locking jaw;

v. a release lever pivoted at one end within said pivoting handle with a free end engaging the locking shoulder of said locking toggle pivoted within said pivoting handle,

b. resilient means releasably securing the free ends of said pivoting handle and said rigid handle together, and

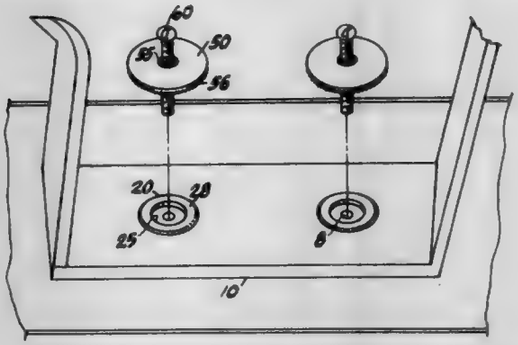
c. a plurality of support legs extending peripherally downwardly from said locking clamp, each leg including a floor engaging free end supported upon a threaded leveling shaft and having a foot pad assembly, said support legs fixed to and extending from the free end and the pivoted end of each said locking jaw, at least two support legs extending from each said locking jaw.

5,797,581

APPARATUS FOR POSITIONING AND MOUNTING FIXTURES

Norman Sherman, 22 Caribou Road, Toronto, Canada

Filed Aug. 17, 1995, Ser. No. 516,085
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—544 **21 Claims**



1. A mounting fixture supported on a mounting surface having an apparatus positioning and mounting said fixture, wherein the fixture is adjustable relative to the mounting surface, the mounting surface having at least one hole receiving a fastening device, said apparatus comprising:

a) at least one ring being fittedly inserted into an opening in the fixture, said ring having a thickness greater than said fixture whereby a raised surface extends above the plane of said fixture, said ring further comprising an opening within which the fastening device radially adjustable relative to the mounting surface; and

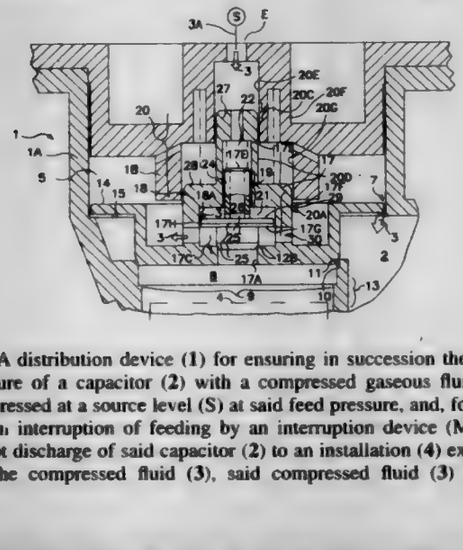
b) at least one disc securedly engaging a respective one of said raised surface of said at least one ring and said fixture, wherein each disc has an opening receiving the fastening device, and an upper surface and a lower surface.

5,797,582

DISTRIBUTION DEVICE FOR FEEDING A CAPACITOR WITH GASEOUS FLUID

Herve Simoens, 40, avenue Foch, F-59100 Roubaix, France

PCT No. PCT/FR94/01318, § 371 Date Jul. 17, 1996, § 102(e) Date Jul. 17, 1996, PCT Pub. No. WO95/13973, PCT Pub. Date May 26, 1995
PCT Filed Nov. 10, 1994, Ser. No. 646,258
Claims priority, application France, Nov. 15, 1993, 93 13809
Int. Cl.[6] F16K *31/12*
U.S. Cl. 251—38 **21 Claims**



1. A distribution device (1) for ensuring in succession the feed pressure of a capacitor (2) with a compressed gaseous fluid (3) compressed at a source level (S) at said feed pressure, and, following an interruption of feeding by an interruption device (M), an abrupt discharge of said capacitor (2) to an installation (4) exploiting the compressed fluid (3), said compressed fluid (3) being routed to a feed inlet (E) of the distribution device (1) by a feed pipe (3A) in which the interruption device (M) is located, the distribution device (1) further comprising:

a body (1A) having a variable volume feed chamber (5), said chamber (5) having a feed orifice for feeding the gaseous fluid (3) compressed at said feed pressure, a passage (7) in said body (14) for passing said gaseous fluid (3) to the capacitor (2), and

a variable volume discharge chamber (8) in said body (1A) for discharging to the installation (4), said chamber (8) having a cut (9) delimiting a passage channel for the fluid (3) accumulated in the capacitor (2), said cut being bordered by a sealing seat (10) adapted to cooperate imperviously with a bearing surface (11) of a sealing member (12) having a specific weight, and said chamber (8) being connected to the installation (4) by an evacuation pipe (13) extending from said sealing seat (10), the sealing member (12) being mobile between two opposing positions including a first position in which the sealing member cooperatively engages said bearing surface (11) with the seat (10) of the evacuation pipe (13), and in which the sealing member (12) is disengaged from the seat of said pipe;

said sealing member (12) further including a first face (14) exposed to the action of the fluid (3) at the pressure when said fluid is in the feed chamber (5),

a second face (15) opposite the first face (14) and exposed to the action of the fluid (3) at the pressure when said fluid is in the capacitor (2), and

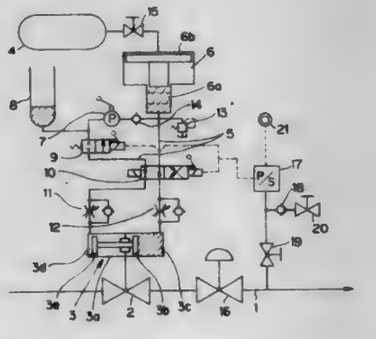
a third face (16) opposite the first face (15) and exposed to the action of the fluid (3) at the pressure when said fluid is located in the evacuation pipe (13), wherein, so as to reduce the pressure in the fluid feed chamber and thus obtain the abrupt opening of the sealing member (12) approximately at the end of interrupting the feeding with fluid (3) under pressure of the distribution device (1), instead of emptying into the atmosphere, the pressurized fluid (3) contained in the feed chamber (5) and a feed circuit portion (P1) between the feed chamber (5) and the interruption device (M), the pressurized fluid (3), contained at least in the feed chamber (5) and which until then would keep the seal (12) in support on a sealing seat (10), is freed into said evacuation pipe (13).

5,797,583

VALVE DRIVING APPARATUS

Kiyoshi Murata, Sakai; Takashi Komiya, Ibaraki; Sadayuki Nakanishi, Itami; Yoshiharu Sato, Nakakoma-gun, and Akio Fukunaga, Kakogawa, all of Japan, assignors to Kitz Corporation, Chiba, Japan

Filed Aug. 9, 1995, Ser. No. 513,085
Claims priority, application Japan, Aug. 10, 1994, 6-209248
Int. Cl.[6] F16K *31/122;* **F15B** *1/02;3/00*
U.S. Cl. 251—57 **11 Claims**



1. A valve driving apparatus, comprising:

a pipeline valve capable of being opened and closed;

a gas to oil booster comprising an oil chamber and a gas chamber;

a valve driving actuator comprising a cylinder and two piston surfaces, said valve driving actuator being connected to said pipeline valve such that movement of one of said two piston surfaces in one direction causes said valve to be opened and movement of the other of said two piston surfaces causes said valve to be closed;

a tank connected to said gas chamber of said gas to oil booster, said tank having a compressed gas sealed therein, said compressed gas being usable as a power source by decompressing said compressed gas to cause the oil pressure exerted by said booster to drive said valve driving actuator for actuating the valve;

an oil pump fluidly connected with said oil chamber of said gas to oil booster and capable of producing an oil pressure sufficient to recompress said compressed gas in said gas chamber;

a selector valve fluidly connected between said cylinder of said valve driving actuator and said oil chamber of said booster;

an oil tank connected to said oil pump and to said selector valve providing a source of oil for said pump and a reservoir for oil discharged from said valve driving actuator; and

first and second fluid passages extending from said two piston surfaces, respectively, to said selector valve, a third fluid passage extending from said selector valve to said oil chamber of said gas to oil booster, and a fourth fluid passage extending from said selector valve to said oil pump;

wherein said selector valve can alternately communicate said first fluid passage with: a) said third fluid passage while said second fluid passage communicates with said fourth fluid passage; and b) with said fourth fluid passage while said second fluid passage communicates with said third fluid passage.

5,797,584

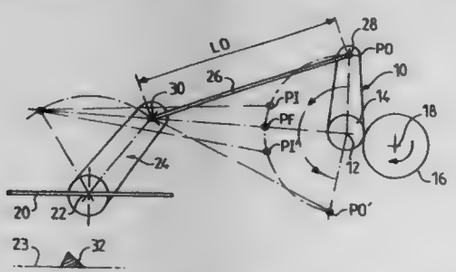
Patent Not Issued For This Number

5,797,585

CONTROL DEVICE FOR A PIVOTING VALVE FLAP FOR A HEATING AND/OR AIR CONDITIONING INSTALLATION IN A MOTOR VEHICLE

Michel Auvity, Velizy, France, assignor to Valeo Climatisation, La Verriere, France

Filed Dec. 17, 1996, Ser. No. 768,311
Claims priority, application France, Dec. 19, 1995, 95 15076
Int. Cl.[6] F16K *31/44;31/53*
U.S. Cl. 251—80 **5 Claims**



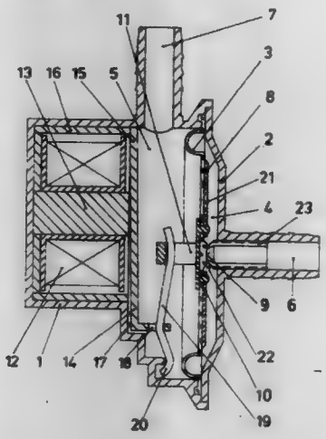
1. A flap valve comprising a valve flap mounted for pivoting movement between an open position and a closed position thereof, and a control device coupled to the flap for actuating the flap in displacement the open and closed positions, the control device comprising: a driving lever having a first end defining a pivot axis and a second end; a driven lever having a first end fixed to the valve flap and a second end; a link coupling the second end of the driving lever to the second end of the driven lever; and actuating means for rotating the driving lever through a course of angular displacement between an open position of the driving lever and a closed position of the driving lever, the valve flap being so oriented that the valve is open and closed when the driving lever is in the open and closed positions, respectively, of the driving lever, wherein the geometry of the control device is such that, when the driving lever is rotated from its open position towards its closed position, the valve flap reaches the closed position of the valve when the driving lever reaches an intermediate position just short of the closed position of the driving lever, whereby to define, between said intermediate and closed positions of the driving lever, a course of dead travel of the driving lever during which the valve is in its closed position, the link being adapted to bend under compression and being subjected to compression over the course of dead travel.

5,797,586

FLOW REGULATING VALVE

Franz Schulte, Siemensstrasse 7, 59557 Lippstadt, Germany

Filed Jan. 14, 1997, Ser. No. 782,253
Int. Cl.[6] F16K *31/02*
U.S. Cl. 251—129.02 **13 Claims**



1. Flow regulating valve for negative pressures, which has at least a two piece housing with a supply inlet and an outlet opening, a valve seat and an electromagnetically operated shutting plug, wherein:

the housing is divided into two chambers by a membrane;

the first chamber has the outlet opening and the second chamber has the supply inlet;

both chambers communicate with each other through a restriction opening;

the valve seat is arranged in the outlet opening;

the shutting plug is affixed to a central area of the membrane; an electromagnet is positioned in the second chamber and includes a disc armature;

the disc armature is linked to the central area of the membrane via a force-transmitting lever, the lever being arranged as a one-arm lever, a first end portion of which abuts against a fixed edge of a first housing piece and a second end portion of which engages the central area of the membrane, the disc armature engaging the lever between the first and second end portions.

5,797,587

HYDRAULIC UNIT WITH ELECTROMAGNETIC REGULATOR AND CLOSING PART

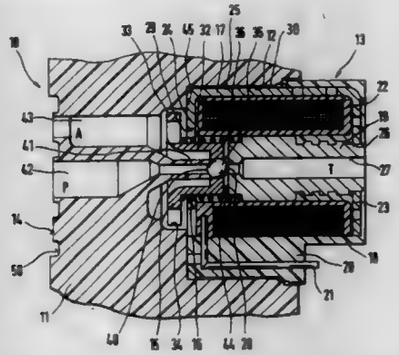
Steffen Schumacher, Renningen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 3, 1996, Ser. No. 656,810

Claims priority, application Germany, Jun. 13, 1995, 195 21 510.9

Int. Cl.[6] F16K *31/06*

U.S. Cl. 251—129.21 11 Claims



1. A hydraulic unit, comprising a closing plate having at least one recess in which a supply passage and a discharge passage for pressure medium open; an electromagnetic regulator inserted in said recess and having a magnetic part composed of a housing, a magnetic coil with a coil core, a flux conducting element and an armature, said closing plate having a supply projection extending in said recess of said closing plate and receiving said supply passage, said supply projection having an end extending in said magnetic part of said regulator and ending in a sealing seat, said sealing seat cooperating with said armature of said magnetic part for controling said discharge passage.

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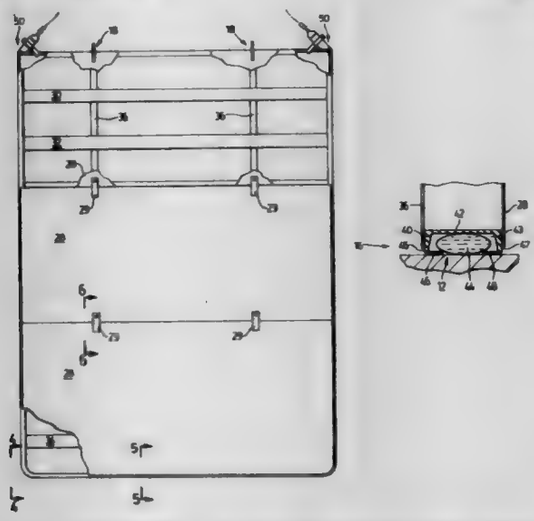
CLOSURE GATE

Colin W. Bennett, Flamborough, Canada, assignor to B.N.W. Valve Manufacturing, Millgrove, Canada

Continuation of Ser. No. 434,982, May 4, 1995, abandoned. This application Dec. 19, 1996, Ser. No. 770,064

Int. Cl.[6] F16K *3/00*

U.S. Cl. 251—175 15 Claims



1. A vertically sliding closure gate for use in association with an open conduit having a perimeter surface, said closure gate comprising:

a closure element for closing off the conduit to fluid flow, and having a perimeter, said perimeter having top, bottom and two sides; and

a sealing mechanism having a channel frame attached to said closure element adjacent to the bottom and two side segments only of the perimeter of said closure element said channel frame defining an open channel, a flexible, elongate, collapsible tube extending along the open channel and having a generally uniform wall thickness and a generally rounded exterior when distended, and means for connecting the tube to an external fluid source, for distending and collapsing said flexible tube,

so that when said closure gate is inserted into a conduit, said flexible tube can be distended to contact the perimeter surface of said conduit and seal said closure element to said conduit, and the flexible tube can be collapsed to permit movement of the closure gate.

5,797,589

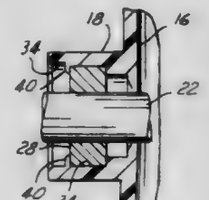
THROTTLE BODY WITH CAPTURED BEARINGS

Christopher Joseph Kalebjian, Belleville; Stephen Joseph Hamby, Redford, and Wade Coots, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 9, 1997, Ser. No. 890,538

Int. Cl.[6] F16K *1/22*

U.S. Cl. 251—305 8 Claims



1. A throttle body comprising:

a housing, formed of a thermoplastic type of material, including a main wall defining a main bore therethrough and a pair of bosses extending from the main wall and defining a throughbore therethrough;

the bosses each including a bearing pocket adjacent the throughbore defined by a generally cylindrical pocket wall and a stop member extending radially inward into the corresponding pocket;

a pair of bearings having generally cylindrical outer surfaces, one each mounted in a respective one of the bearing pockets and abutting a respective one of the stop members; and

each of the pockets including retention lips extending from and being integral with the wall about a portion of the respective bearing opposite the side of the bearing abutting the stop member.

5,797,590

PISTON VALVE

Gunter Börner, Mülhausen, and Jörg Sopka, Schwetzingen, both of Germany, assignors to ABB Research Ltd., Zurich, Switzerland

Filed May 22, 1997, Ser. No. 861,856

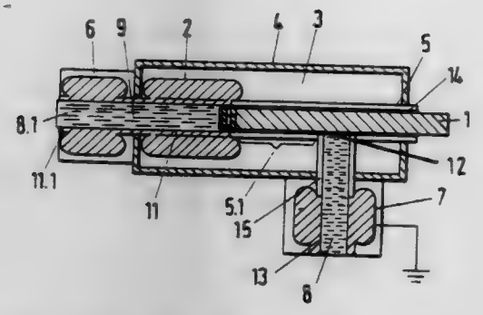
Claims priority, application Germany, May 24, 1996, 196 20 949.8

Int. Cl.[6] F16K *3/24*

U.S. Cl. 251—324 16 Claims

1. A piston valve for controlling throughflow of an electrically conductive liquid, comprising:

a cylinder having an extension;



a piston movable in said cylinder between an open and a closed position;

a seal between said cylinder and said piston;

a liquid inlet and a liquid outlet;

electrical insulation insulating said liquid inlet from said liquid outlet for isolating a liquid at earth potential from a liquid at high-voltage potential in terms of potential, in said closed position; and

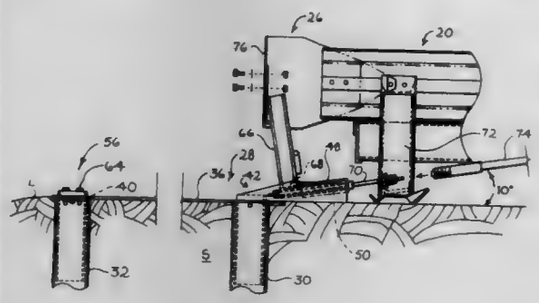
at least one control electrode disposed at said extension for carrying the same electric potential as a liquid at said liquid outlet.

5,797,591

GUARDRAIL WITH IMPROVED GROUND ANCHOR ASSEMBLY

William G. Krage, Fair Oaks, Calif., assignor to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Apr. 25, 1997, Ser. No. 846,123
Int. Cl.[6] E01F *15/00*
U.S. Cl. 256—13.1 **13 Claims**



1. In a guardrail assembly of the type comprising an array of interconnected guardrails and a tension member secured to the guardrail assembly, wherein the guardrail assembly comprises an end portion and a central portion, and wherein the central portion is situated downstream of the end portion in an anticipated direction of motion of an impacting vehicle, an improved ground anchor assembly comprising:

first and second spaced ground anchors; and

a connecting element interconnected between the first and second ground anchors;

said tension member connected to the ground anchor assembly adjacent the first ground anchor;

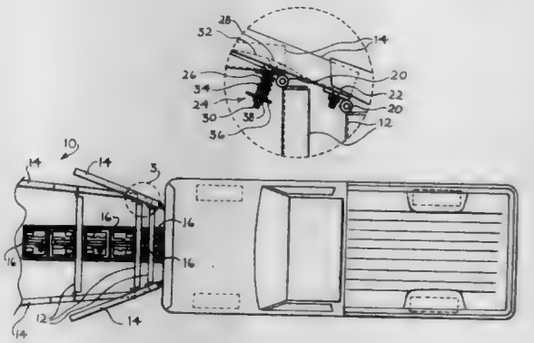
said second ground anchor being situated farther from the central portion of the guardrail assembly than the first ground anchor.

5,797,592

ROADSIDE ENERGY ABSORBING BARRIER WITH IMPROVED FENDER PANEL FASTENER

John V. Machado, Antelope, Calif., assignor to Energy Absorption Systems, Inc., Chicago, Ill.

Filed Jun. 16, 1997, Ser. No. 876,645
Int. Cl.[6] E01F *15/00*
U.S. Cl. 256—13.1 **10 Claims**



1. In a roadside energy absorbing barrier comprising a plurality of diaphragms arranged along a center line, a plurality of fender panels coupled to the diaphragms, and a plurality of energy absorbing elements interposed between the diaphragms, wherein a first one of the fender panels comprises a slot, the improvement comprising:

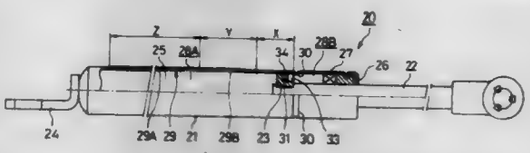
a fastener mounted between the first fender panel and a second component of the barrier, said fastener comprising a shank extending through the slot and said second component, said shank comprising an enlarged portion at each end of the shank, said fastener further comprising a spring reacting against one of the enlarged portions of the shank to bias the first fender panel toward the second component while permitting a selected separation therebetween, said spring oriented to bias at least part of the first fender panel toward the center line.

5,797,593

GAS SPRING

Hiroshi Oyaizu, Shizuoka, Japan, assignor to Showa Coporation, Gyoda, Japan

Filed Dec. 4, 1996, Ser. No. 753,996
Claims priority, application Japan, Dec. 6, 1995, 7-344394
Int. Cl.[6] F16F *5/00*
U.S. Cl. 267—64.12 **2 Claims**



1. An extendable and compressionable gas spring comprising:

a hollow, elongate cylinder in which a seal and a guide member is contiguously arranged in an opening provided at one end of the cylinder for enclosing a gas therein, the other end of the cylinder being closed, the cylinder having an inner surface and an outer surface, said cylinder including an annular recession in said outer surface near said one end, thereby forming a stopper within said cylinder for stopping movement of a piston therein,

said cylinder further including a cylinder groove formed by externally extending said inner cylinder surface in an axial direction of the cylinder, said groove extending between a pair of terminal ends, said cylinder defining three operating areas along the length of said cylinder in a direction from said closed end towards said stopper.

a first area corresponding to an air-damping area, wherein said cylinder groove has a substantially square cross-section with a constant width and depth, said air-damping area terminating at said cylinder groove terminal end nearest said closed end,

a second area corresponding to an air-damping reduction area, wherein said cylinder groove has a substantially square cross-section with a constant groove width and a changing groove depth, said groove depth becoming shallower in a direction from said closed end toward said stopper, said cylinder groove in said air-damping reduction area terminating at said terminal end nearest said stopper,

a third area corresponding to an airlock area, wherein said airlock area is defined as the area of the cylinder extending between said stopper and said terminal end of said groove located within said air-damping reduction area, said airlock area free of said cylinder groove;

a rod having a piston attached to one end thereof, said rod extending through the seal and guide members and slidably movable such that said piston travels within said cylinder between said closed end and said stopper, a movement of said rod and piston towards said closed cylinder end corresponding to a spring compression and movement towards said stopper corresponding to a spring extension, said piston dividing the cylinder into a rod-side chamber and a piston-side chamber, said piston a unitary member formed from a porous sintered alloy having open pores therein and defined by an outer peripheral edge, said piston including at least one passage formed between the inner surface of the cylinder and the outer edge of the piston for communicating the gas between each of the chambers on either side of the piston, said piston including an annular groove formed around the outer periphery, said annular groove intersecting said at least one passage and receiving therein an O-ring as a check valve for opening and closing said at least one passage during the spring compression and extension movements,

wherein when said rod and piston is adapted to undergo spring compression, said check valve is in said open position, whereby gas within said piston-side chamber is simultaneously communicated under no damping force to said rod-side chamber through said at least one passage and said cylinder groove, and whereby when said rod and piston is adapted to undergo spring extension, said check valve is in said closed position, wherein gas within said rod-side chamber is communicated under a variably decreasing damping force to said piston-side chamber, wherein when said piston is in said air-damping area, said communication of gas occurs only through said cylinder groove such that said gas communicated in said piston-side chamber assists said spring extension into said air-damping reduction area, whereby said piston is gradually decelerated upon said piston travels through said air-damping reduction area into said airlock area, whereby when said piston is in said airlock area, said gas is solely communicated from said rod-side chamber to said piston-side chamber through said piston pores without said piston experiencing a damping rebound shock, said spring fully extended when said piston is in contact against said stopper.

5,797,594

HYDRAULIC SHOCK ABSORBER

Chigaya Sekine, and Hiromi Machida, both of Kanagawa-ken, Japan, assignors to Tokico, Ltd., Kawasaki, Japan

Filed Jul. 18, 1996, Ser. No. 683,419

Claims priority, application Japan, Jul. 22, 1995, 7-207785; Sep. 13, 1995, 7-260709; Feb. 15, 1996, 8-055265; Apr. 11, 1996, 8-114184

Int. Cl.[6] B60G *17/00*; F16F *9/14*

U.S. Cl. 267—64.17 **20 Claims**

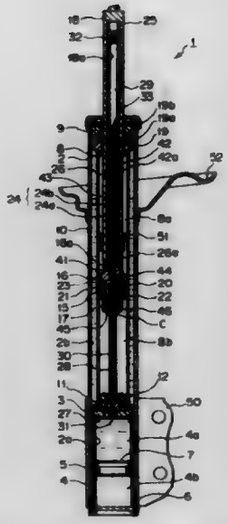
1. A hydraulic shock absorber comprising:

a cylinder having an interior containing oil sealed therein;

a case located around said cylinder such that a reservoir chamber is defined between said cylinder and said case;

a piston slidably fitted in said cylinder dividing the interior of said cylinder into two chambers;

a guide member closing one end of said cylinder and said case;



a piston rod having a hollow portion, one end connected to said piston and another end that extends outside of said-cylinder and said case through said guide member;

an oil passage between said reservoir chamber and the interior of said cylinder for allowing communication of oil there between;

a base member closing the other end of said cylinder and said case;

a pump tube located in the hollow portion of said piston rod;

a pump rod having one end connected to said base member and an other end extending into said piston, said pump rod being slidably fitted in said pump tube so as to form a pump chamber in said pump tube;

a first pump passage extending in said pump rod from one end thereof to the other;

a cylindrical oil tank connected to one end of said first pump passage, said cylindrical oil tank comprising a partition dividing said cylindrical oil tank into an oil chamber storing oil therein and a gas chamber containing gas sealed therein;

a first check valve located in said first pump passage for communicating said oil chamber of said cylindrical oil tank with said pump chamber and allowing only the flow of oil from said oil chamber to said pump chamber;

a second pump passage located in said piston rod for communicating said pump chamber with the interior of said cylinder;

a second check valve for allowing only the flow of oil from said pump chamber through said second pump passage to the interior of said cylinder;

first means for directly communicating said pump chamber with the interior of said cylinder when said piston rod is extended relative to said cylinder to a first predetermined location such that said pump tube and said pump rod are at a predetermined relative location, said first means being located between said pump tube and said pump rod; and

second means for communicating the interior of said cylinder with said first pump passage when said piston rod is extended to a second predetermined position.

5,797,595

AIR SUSPENSION DEVICE OF INPUT FORCE SEPARATION TYPE OF VEHICLE, HAVING AIR CHAMBER COMBINED BELOW SHOCK ABSORBER

Shuuichi Buma; Katsuyuki Sano, and Tetsuaki Kawata, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

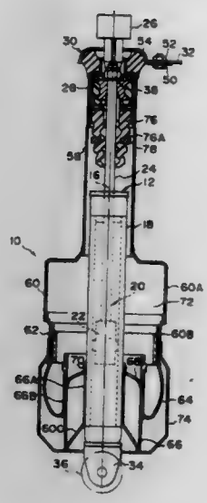
Filed Apr. 4, 1996, Ser. No. 627,994

Claims priority, application Japan, Apr. 19, 1995, 7-117790

Int. Cl.[6] F16F *9/04*

U.S. Cl. 267—64.27 **11 Claims**

1. An air suspension device of a vehicle, comprising a housing means having an upper half cylindrical portion of a first diameter



and a lower half cylindrical portion of a second diameter substantially larger than said first diameter and coaxially connected with said upper half cylindrical portion along an axis and open downward at a lower end thereof, a first elastic cushion means, a shock absorber, said shock absorber including a cylinder and a piston engaged with one another to be shiftable relative to one another and coaxially disposed in said housing means along said axis with a piston rod being axially extended upward out of said cylinder such that an upper axial end of said piston rod is connected with an upper end of said housing means via said first elastic cushion means and at least an upper end portion of said cylinder is telescopically received within said upper half cylindrical portion of said housing means, while a lower axial end of said cylinder is axially extended downward out of the lower end of said lower half cylindrical portion of said housing means to be connected with a wheel suspension member of the vehicle, an annular flange means coaxially mounted to said lower axial end of said cylinders an annular rolling diaphragm means extended between said open lower end of said lower half cylindrical portion of said housing means and said annular flange means so as to define a closed air chamber with said housing means, and a second elastic cushion means attached to the upper end of said housing means for mounting the upper end of said housing means to a body of the vehicle.

5,797,596

FINISHER WITH A STAPLING FUNCTION

Yuusuke Morigami, Toyohashi; Tadashi Kobayashi, Toyokawa; Misao Nishikawa, Kani; Hiroyuki Yoshikawa, Aichi-Ken; Kazuhito Ozawa, Toyokawa; Ryo Hirano, Toyohashi; Shinobu Seki, Toyokawa, and Shinji Wakamatsu, Toyokawa, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Apr. 17, 1996, Ser. No. 633,452

Claims priority, application Japan, Apr. 27, 1995, 7-103819; Apr. 27, 1995, 7-103821; Apr. 28, 1995, 7-104945; Apr. 28, 1995, 7-105240; May 1, 1995, 7-107186; Aug. 24, 1995, 7-216300

Int. Cl.[6] **B65H** *39/02*

U.S. Cl. 270—58.11 **17 Claims**

1. A finisher in which sheets discharged from an image forming apparatus are collected through a predetermined path of sheet transport, and in which a stapling finish is given to a set of collected sheets, comprising:

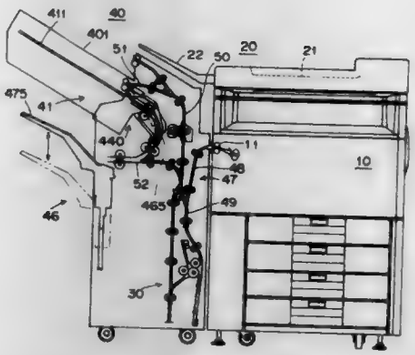
sheet stacking means for receiving sheets discharged from the image forming apparatus and stacking them one over another;

transport means for transporting a set of sheets from the sheet stacking means; and

stapling means for driving staples with respect to the set of sheets transported by the transport means from the sheet stacking means;

wherein the stapling means includes a sheet set transport section, a staple head, a staple anvil and a connector for interconnecting the staple head and the staple anvil, the staple head and the staple anvil being disposed across the sheet set transport section, and

the staple head and the staple anvil having some positions set at a corner stapling position, the connector having a home position set at a location offset outward from a track of sheet set transport, the staple head, the staple anvil and the connector being integrally reciprocally shiftable from their respective home positions in a direction perpendicular to a direction of sheet set transport.



5,797,597

AUTOMATIC DOCUMENT CONVEYING DEVICE

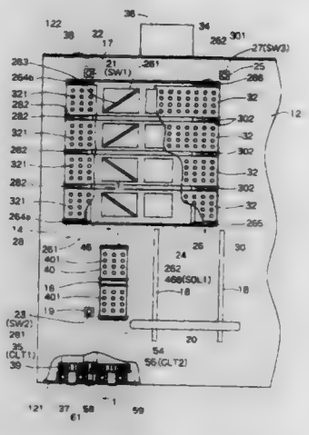
Masayuki Kakuta, and Yoshiaki Tabata, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 17, 1996, Ser. No. 731,584

Claims priority, application Japan, Nov. 14, 1995, 7-295442; Nov. 14, 1995, 7-295443; Dec. 19, 1995, 7-330293; Feb. 6, 1996, 8-019221; Feb. 6, 1996, 8-019222; Feb. 6, 1996, 8-019223

Int. Cl.[6] **B65H** *3/12*

U.S. Cl. 271—96 **4 Claims**



1. A document separating/feeding mechanism for an automatic document conveying device, said document separating/feeding mechanism comprising:

a document table having a first opening at a front part thereof in the document conveying direction, and

vacuum separating/feeding means including a vacuum chamber disposed below said first opening of said document table such that an upper surface thereof is nearly coplanar with the upper surface of said document table, the upper surface of said vacuum chamber having an opening; a drive roller and a driven roller disposed parallel to each other ahead of and behind said vacuum chamber in the document conveying direction; and a feed belt passed over said drive roller, said driven roller and said vacuum chamber and having a plurality of holes; wherein

said document table has a second opening laterally of a front part of said first opening in the document conveying direction, and

said document separating/feeding mechanism further includes a feed drum disposed below said second opening of said document table such that an outer peripheral surface thereof is situated slightly above the upper surface of said document table; driving means for rotationally driving said feed drum at nearly the same peripheral speed as the moving speed of said feed belt; a duct for connecting said feed drum and said vacuum chamber; and

opening/closing means for making said vacuum chamber and said feed drum communicate with each other via said duct or cut off from each other.

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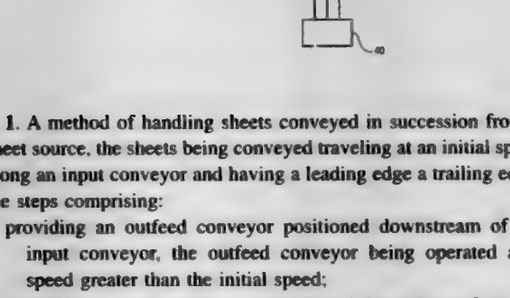
METHOD FOR SHINGLING AND STACKING CONVEYED SHEET MATERIAL

Carl R. Marschke, and Dennis W. Rodewald, both of Phillips, Wis., assignors to Marquip, Inc., Phillips, Wis.

Filed Oct. 16, 1996, Ser. No. 780,933

Int. Cl.[6] B65H *29/66;29/68;29/32*

U.S. Cl. 271—202 **14 Claims**



1. A method of handling sheets conveyed in succession from a sheet source, the sheets being conveyed traveling at an initial speed along an input conveyor and having a leading edge a trailing edge, the steps comprising:

providing an outfeed conveyor positioned downstream of the input conveyor, the outfeed conveyor being operated at a speed greater than the initial speed;

providing a vacuum conveyor positioned downstream from the outfeed conveyor for receiving the sheets from the outfeed conveyor;

supplying a source of vacuum slightly downstream from an upstream end of the vacuum conveyor to pull the sheet into contact with the vacuum conveyor;

shingling the sheets by operating the vacuum conveyor at a speed less than the outfeed conveyor; and

positioning a slowdown device above and out of contact with the vacuum conveyor, the slowdown device contacting the leading edge of each sheet exiting the outfeed conveyor prior to contact between the sheet and the vacuum conveyor, such that the slowdown device slows the speed of the sheet before the sheet is pulled into contact with the vacuum conveyor by the source of vacuum.

5,797,599

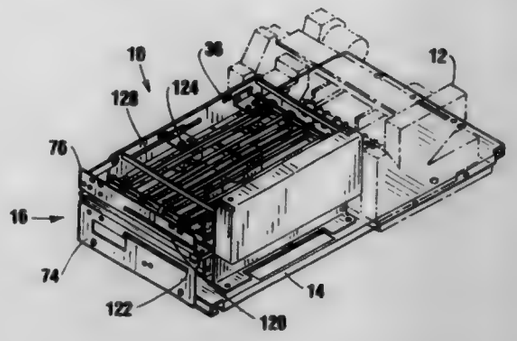
PASSBOOK TRANSPORT MECHANISM FOR AUTOMATED TELLER MACHINE

Jerry L. Meyer, North Canton; Wayne D. Wellbaum, Massillon, and H. Thomas Graef, Bolivar, all of Ohio, assignors to InterBold, North Canton, Ohio

Continuation of Ser. No. 589,094, Jan. 23, 1996, abandoned, which is a division of Ser. No. 258,040, Jun. 10, 1994, Pat. No. 5,507,481. This application Mar. 7, 1997, Ser. No. 813,134

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—272 **17 Claims**



1. A passbook transport apparatus for moving a passbook in an open condition along a path without skewing, said passbook comprising a plurality of attached sheets, said passbook being transportable in said apparatus when open to any one of said sheets, said open passbook having a maximum thickness when open to at least one of said sheets, said passbook having a first side spanning said open sheets, and a second side opposed of said first side, said apparatus comprising:

a plurality of first belt flights extending in a longitudinal direction along said path, said first belt flights being generally co-planar and transversely disposed from one another, wherein each first belt flight is in supporting connection with at least one first belt supporting member along said path, and wherein each of said first flights includes a first engaging face engageable with said first side of said passbook and a first opposed face opposed of said first engaging face, said first opposed face in supporting connection with the first belt supporting member, and wherein a first open area extends adjacent to each said first belt flight longitudinally along said entire path, said first to open area extending in a first clearance direction normal of said first engaging face;

at least one second belt flight extending in said longitudinal direction along said path, said second belt flight generally co-planar with said first belt flights and transversely disposed between an adjacent pair of said first belt flights, wherein said second belt flight is in supporting connection with at least one second belt supporting member along said path, and wherein said second belt flight includes a second engaging face engageable with said second side of said passbook and a second opposed face opposed of said second engaging face, said second opposed face in supporting connection with the second belt supporting member, and wherein a second open area extends adjacent said second belt flight along said entire path, and wherein said second open area extends in an opposed clearance direction from said second engaging face, wherein said second open area extends beyond said first opposed faces along said entire path, and wherein said first open area extends in the first clearance direction from said first engaging face beyond the second opposed face along said entire path; and

a drive moving said first and second belt flights in the longitudinal direction, whereby said passbook is enabled to be carried on said belt flights in said open condition without skewing.

5,797,600

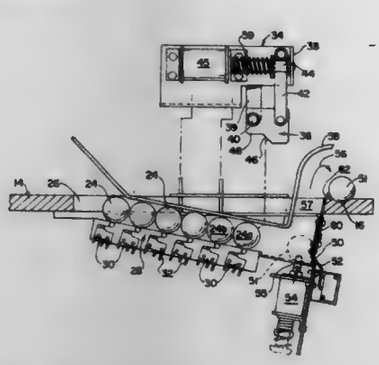
MULTIPLE BALL FEED UNIT FOR PINBALL MACHINE

Edwin Cebula, West Chicago, and Joseph E. Kaminkow, Arlington Heights, both of Ill., assignors to Sega Pinball, Inc., Melrose Park, Ill.

Division of Ser. No. 237,124, May 3, 1994, abandoned, which is a division of Ser. No. 79,458, Jun. 18, 1993, Pat. No. 5,364,096. This application Nov. 14, 1994, Ser. No. 338,238

Int. Cl.[6] A63F *7/34*

U.S. Cl. 273—121 A 7 Claims



1. A pinball machine which comprises a frame which carries a playfield; a chute and driver for launching balls onto the playfield; a spent ball-receiving aperture in the playfield communicating with a sloped trough positioned under the playfield, said trough being of a length to hold a plurality of balls; an upper end of said trough communicating with said aperture, and a trough lower end positioned adjacent to and below said chute and driver; a device for elevating a ball occupying said trough lower end, to place said ball into the chute; sensors aligned with the trough for sensing the number of a plurality of balls that are in the trough and electronic circuitry for actuating said elevating device for automatically providing balls to the chute and driver.

5,797,601

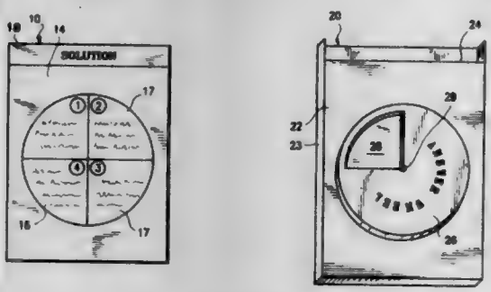
USER SELECTIVE SOLUTION SYSTEM AND METHOD FOR FLASHCARDS, PUZZLES, AND THE LIKE

William A. Ritchie, 703 Timberbranch Dr., Alexandria, Va. 22302

Filed Jul. 18, 1996, Ser. No. 683,201

Int. Cl.[6] A63F *9/18*; G09B *3/02*

U.S. Cl. 273—431 15 Claims



1. A method of using a flashcard system employing a flashcard providing a question or problem on one face and concealing the answer thereto on the opposite face where the answer or solution is divided into a plurality of discrete answer segments arranged to progressively reveal the correct answer or solution to the problem, the method comprising the steps of:

a) exposing the user with the question contained on the flashcard;

b) providing the user the opportunity to answer the question;

c) allowing the user to select and reveal at least one segment of the plurality of discrete answer segments of the answer to confirm that the user's answer is correct or in error;

d) providing the user with a further opportunity to answer; and

e) allowing the user to reveal a select additional portion of the plurality of segments to progressively reveal the answer.

5,797,602

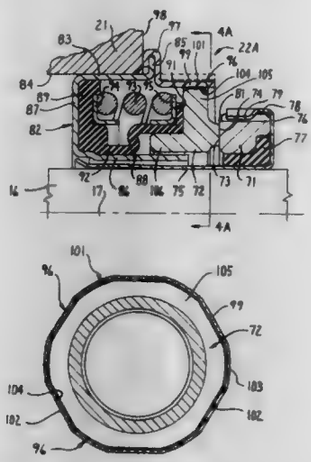
MECHANICAL SEAL FOR WATER PUMP OF HEAVY DUTY VEHICLE

Steven C. Less, Orland Park, Ill., assignor to Pac-Seal Inc. International, Burr Ridge, Ill.

Filed Oct. 10, 1996, Ser. No. 728,998

Int. Cl.[6] F16J *15/34*

U.S. Cl. 277—372 8 Claims



1. In a recirculating coolant system for a diesel engine, said system including recirculating pump means having a pump casing defining a fluid chamber therein and a rotary pumping member disposed in said chamber and supported on a rotatable shaft which is rotatable about its longitudinal axis and which projects outwardly of said casing through a stationary sleeve-like casing part which substantially concentrically surrounds said shaft, and a contacting face-type mechanical seal assembly concentrically interposed between said shaft and said casing part to seal said fluid chamber from the surrounding environment, the improvement wherein said mechanical seal assembly comprises:

first and second seal rings disposed in axially adjacent and surrounding relationship to said shaft and respectively defining thereon first and second annular axially-opposed seal faces which are normally maintained in relatively rotatable contacting engagement to create a seal radially thereacross;

first mounting means connected between said shaft and said first ring for non-rotatably mounting said first seal ring with respect to said shaft;

second mounting means connected between said casing part and said second seal ring for non-rotatably mounting said second seal ring on said casing part;

said second mounting means including an annular mounting member disposed in generally concentrical relationship to said shaft and being stationarily seated generally concentrically within said sleeve-like casing part, said mounting member having a generally cup-like configuration including an outer sleeve-like annular wall which is seated within said casing part and which in turn joins to a radially inwardly projecting base wall which surrounds said shaft, said outer wall including at least an axially elongate sleeve part thereof which is formed of a rigid metal, said sleeve part being provided with an interior coaxially-aligned opening of generally hexagonal configuration defined by an inner hexagonal wall defined on said sleeve part, said inner hexagonal wall having a plurality of circumferentially-extending inner surface

sections which are serially joined together so as to define said hexagonal configuration, said second sealing ring being positioned within said sleeve part in axially spaced relation from said base wall, said second seal ring having an annular flange which projects radially outwardly from said second seal face and which has a surrounding external surface of generally hexagonal configuration defined by a plurality of circumferentially-extending ring surface sections which are serially joined together, said hexagonal configuration of said second seal ring corresponding to said hexagonal configuration of said inner hexagonal wall such that each of said inner surface sections faces toward an opposing one of said ring surface sections, said inner surface sections including a plurality of circumferentially elongate first flats which are serially joined together circumferentially around said inner hexagonal wall, said ring surface sections including a plurality of circumferentially elongate second flats which are serially joined together circumferentially around said external surface, each of said first flats being disposed in opposing contacting relation with a respective one of said second flats and having a circumferential length which is substantially the same as the circumferential length of the opposing second flat to define a contact area therebetween which extends circumferentially along substantially the entire circumferential lengths of said opposing first and second flats, a plurality of said contact areas being defined about said second seal ring wherein said contact areas extend circumferentially along a majority of the outer diameter of said external surface, said surrounding external surface being non-rotatably but axially slidably engaged with the inner hexagonal wall of said sleeve part;

a spring positioned in surrounding relationship to said shaft within said annular outer wall and having opposite ends thereof cooperating between said second seal ring and said base wall for axially urging said second seal ring axially toward said first seal ring; and

an axially elongate, elastomeric flexible membrane positioned in surrounding relationship to said shaft and having one end thereof sealingly engaged with said second seal ring and the other end thereof sealingly engaged with said base wall.

5,797,603

SEALING RING AND A METHOD OF MOUNTING IT

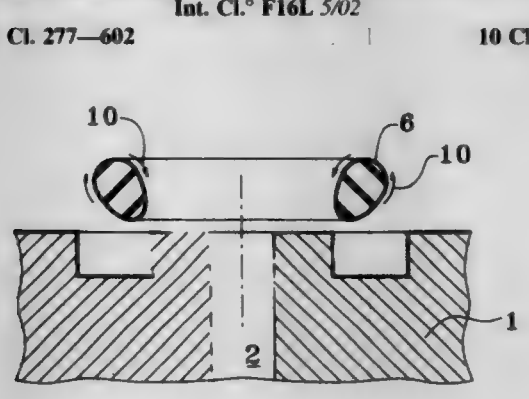
Bernard Voirol, Cormeilles en Parisis; Didier Cochin, Clamart, and Thierry Travers, Chateau-Gontier, all of France, assignors to Le Joint Francais SNC, Paris, France

Filed Apr. 10, 1996, Ser. No. 630,453

Claims priority, application France, Apr. 13, 1995, 95 04445

Int. Cl.[6] F16L *5/02*

U.S. Cl. 277—602 **10 Claims**



1. A sealing ring in the form of a body of revolution about an axis, wherein an axial section thereof is defined on either side of the axis by a semicircle that is extended radially by a projection in the form of a half-ellipse whose minor axis coincides with the diameter of the semicircle, its length being greater than the radius of the semicircle wherein said sealing ring is twisted symmetrically in zones of the ring that are diametrically opposite one another.

5,797,604

METAL GASKET

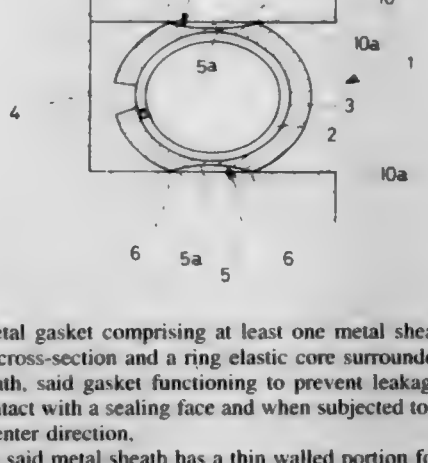
Toshiyasu Inagaki; Yoshinori Morooka, and Akihiro Kojima, all of Komaki, Japan, assignors to CKD Corporation, Japan

Filed Dec. 16, 1996, Ser. No. 764,879

Claims priority, application Japan, Dec. 25, 1996, 7-351467

Int. Cl.[6] F16J *15/08*

U.S. Cl. 277—618 **14 Claims**



1. A metal gasket comprising at least one metal sheath with a C-shaped cross-section and a ring elastic core surrounded by said metal sheath, said gasket functioning to prevent leakage of fluid during contact with a sealing face and when subjected to a force in the axis center direction,

wherein said metal sheath has a thin walled portion formed at a location on the periphery of said metal sheath which is to be contacted by the sealing face, said thin-walled portion of said metal sheath being thinner at the center thereof, and

when a force is exerted upon said metal gasket to deform the sheath, a deflection occurs in the axis center direction as a result of the stress concentration on said thin walled portion which causes projections to be formed at both sides of the deflection, which projections are pressed onto said sealing face to prevent leakage of fluid.

5,797,605

WORKHOLDING APPARATUS

William E. Gross, Ontario, and Charles G. Ellwanger, Rochester, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Dec. 13, 1996, Ser. No. 766,918

Int. Cl.[6] B23B *31/32;23/04*

U.S. Cl. 279—4.05 **20 Claims**

1. A chuck for mounting a workpiece for machining on a machine tool, said chuck having an axis extending the length thereof and comprising:

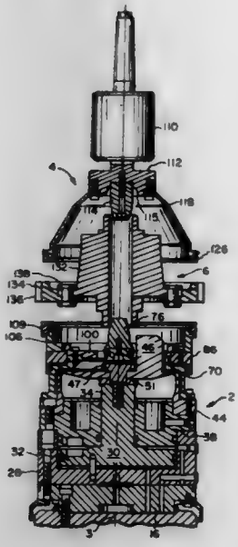
a generally disc-shaped base portion having opposed first and second sides with said first side mountable adjacent a spindle of a machine tool,

a generally cup-shaped body portion mounted adjacent said second side of said base portion, said cup-shape body portion opening in a direction away from said base portion,

a piston member positioned in said cup-shaped body portion, said piston comprising a disc-shaped base and narrower axially-extending portion having an end, said disc-shaped base being in sealing and slidable engagement with said cup-shaped body portion, said axially-extending portion projecting beyond said cup-shaped body portion opening,

a nose portion secured to said cup-shaped body portion, said nose portion comprising a central opening in which said axially-extending portion of said piston member is in sealing and slidable engagement, said axially extending portion projecting beyond said nose portion,

a diaphragm attached to said nose portion, said diaphragm having an outer surface from which a plurality of jaws protrude, said diaphragm including a central opening through



which passes means to secure said diaphragm to said end of said axially-extending portion of said piston member whereby axial movement of said piston member in said cup-shaped body portion effects flexing of said diaphragm to open and/or close said jaws,

a backing plate attached to said diaphragm, said backing plate comprising a ring portion and a face portion and including a plurality of openings in said face portion to permit passage of said jaws therethrough, said face portion also including a centering locator guide for centering and stopping a workpiece when positioned in said chuck,

a damping and sealing means for sealing the area between said chuck and said workpiece and dampen vibrations brought about by a machining process.

20. A tailstock mechanism for positioning a workpiece on a machine tool, said tailstock mechanism having an axis and comprising:

a rotatable tailstock support having an inner surface at least a portion of which comprises at least one curved face for contacting an end surface portion of a workpiece,

a centering locator guide extending axially away from said tailstock support, said locator having a generally curved outer surface,

a housing cover extending in a flared manner from said tailstock support along said axis, said cover including an end flange to which is attached a sealing means whereby contact with a workpiece provides for said cover to fit over said workpiece with said sealing means contacting a surface of said workpiece radially inward of that portion of said workpiece being machined, said sealing means preventing the introduction of contaminants into said workpiece and providing for dampening of vibrations from a machining process.

5,797,606

TRANSPORTER FOR PATIENT'S EMERGENCY ESCAPE

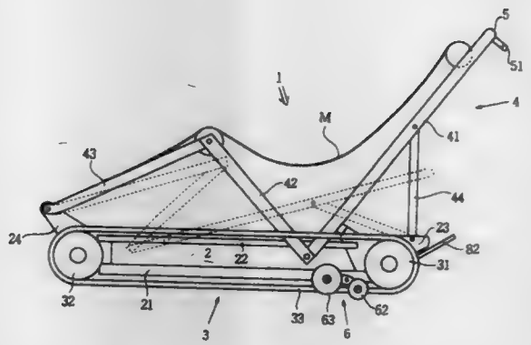
Rintaro Misawa, Saitama-ken, Japan, assignor to Sunwa Ltd., Tokyo, Japan

Filed Oct. 31, 1996, Ser. No. 741,978
Int. Cl.[6] B62B 9/02
U.S. Cl. 280—5.22 **19 Claims**

1. A transporter for patient's emergency escape, comprising:

a transporter main body including a main body frame structure;

a pair of crawler devices disposed on opposite sides of the transporter main body, each crawler device having a ground contacting surface extending for at least two steps of a stairway;



a load-carrying frame structure provided above the transporter main body, said load-carrying frame structure being adapted to serve as a chair for carrying a person;

a pair of tandem wheel structures each having a pair of ground contacting wheels arranged in the longitudinal direction of the transporter main body, said pair of tandem wheel structures being provided on opposite sides of the transporter main body near the rear ends of the crawler devices;

a single tandem wheel structure having a pair of ground contacting wheels arranged in the longitudinal direction of the transporter main body, said single tandem wheel structure bing provided on the bottom of the transporter main body at a substantially central position thereof;

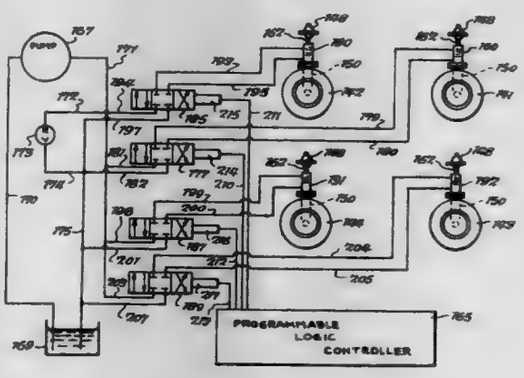
a stand structure provided on the rear end of the transporter main body, said stand structure being pivotable such that when the stand structure is in its vertical position the transporter main body will be slightly raised up causing all the ground contacting wheels to be raised up from ground surface, and when the stand structure is in its inclined position all the ground contacting wheels may become in contact with ground surface so that the transporter itself may begin to move.

5,797,607

VEHICLE WITH VERTICALLY MOVABLE AND VERTICALLY PULSATING WHEELS

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y. 14120

Filed Aug. 30, 1995, Ser. No. 521,546
Int. Cl.[6] B60S 9/00
U.S. Cl. 280—6.11 **31 Claims**



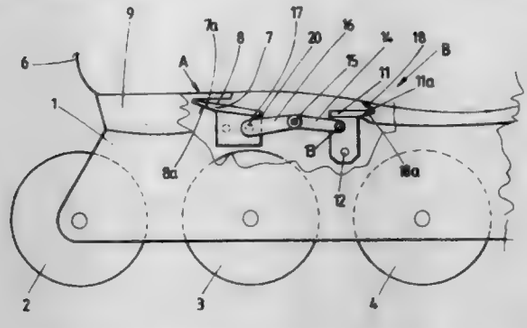
1. A vehicle comprising a body, a plurality of wheel supports on said body, a plurality of wheels on said wheel supports, and selectively actuatable pulsating motor means coupled between said body and at least one of said wheel supports for pulsating at least one of said wheels substantially only in a vertical direction.

5,797,608

IN-LINE ROLLER SKATE WITH RELEASABLE BOOT

Gaston Haldemann, Burgenstock, Switzerland, assignor to Skis Rossignol S.A., France

Filed Sep. 11, 1997, Ser. No. 927,835
Claims priority, application France, Sep. 12, 1996, 96 11345
Int. Cl.[6] A63C *17/04*
U.S. Cl. 280—11.3 **15 Claims**



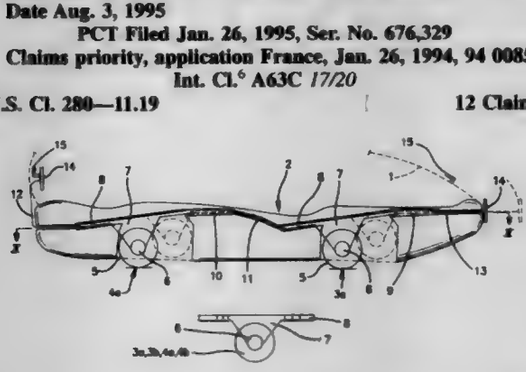
1. A roller skate comprising a chassis (1) consisting of at least one part equipped with rollers (2, 3, 4, 5) and a boot (6) fixed releasably to this chassis by fastening means which secure the boot to the chassis, at a first location (A) by hooking effected by the mutual longitudinal engagement of a part of the boot (9) and a part of the chassis (7), and at a second location (B) by a toggle-effect fastening device, wherein the toggle-effect fastening device is located in the chassis under the boot and comprises a latch (11; 23; 35) which is articulated to the chassis about a transverse pin and has a pointed end (11*a*; 23*a*; 35*a*) that interacts with a housing on the boot, this latch being capable of occupying two stable positions, namely an obliquely raised position in which its point is out of the housing on the boot, and a lowered position in which its point is engaged in the housing on the boot, in the opposite direction to the engagement at the first hooking location, and kept engaged by the blocking of the toggle joint by exerting, a vertical pressure and a longitudinal thrust in the opposite direction.

5,797,609

SHOE WITH RETRACTABLE ROLLERS

Frederic Fichepain, 16, rue de Flandro, F-75019 Paris, France, assignor to Claude Allouche; Daniel Amar, and Frederic Fichepain, all of Paris, France, part interest to each

PCT No. PCT/FR95/00093, § 371 Date Jul. 22, 1996, § 102(e) Date Jul. 22, 1996, PCT Pub. No. WO95/20424, PCT Pub. Date Aug. 3, 1995
PCT Filed Jan. 26, 1995, Ser. No. 676,329
Claims priority, application France, Jan. 26, 1994, 94 00859
Int. Cl.[6] A63C *17/20*
U.S. Cl. 280—11.19 **12 Claims**



1. Shoe with rollers, comprising at least one front roller (3*a*, 3*b*; 34*a*, 34*b*) and at least one rear roller (4*a*, 4*b*; 35*a*, 35*b*); the front rollers (3*a*, 3*b*; 34*a*, 34*b*) and rear rollers (4*a*, 4*b*; 35*a*, 35*b*) being displaceable between a first position in contact with the ground and a second raised position, characterized in that the front rollers (3*a*, 3*b*; 34*a*, 34*b*) and rear rollers (4*a*, 4*b*; 35*a*, 35*b*) are interconnected by at least one flexible link (11, 26), so as to displace simultaneously the front rollers (3*a*, 3*b*; 34*a*, 34*b*) and rear rollers (4*a*, 4*b*; 35*a*, 35*b*) with the aid of traction means (12–14; 16, 17, 27–30) coacting with said flexible link (11, 26).

5,797,610

VENTILATED IN-LINE SKATE

Dodd H. Grande, Seattle, Wash.; Antonin A. Meibock, Calgary, Canada, and John E. Svensson, Vashon, Wash., assignors to K-2 Corporation, Vashon, Wash.

Filed Feb. 13, 1997, Ser. No. 799,858
Int. Cl.[6] A63C *17/06*
U.S. Cl. 280—11.22 **38 Claims**



1. A ventilated sport shoe including a lower frame portion mounting a bearing member, wherein the ventilated sport shoe comprises:

an upper shoe portion defining an interior adapted to receive a foot; and

a foot bed including a base secured to the upper shoe portion, the foot bed defining an upper surface capable of receiving the foot and the base defining a lower surface capable of mounting the lower frame thereon, the foot bed defining a ventilation channel formed within or bellow the upper surface of the foot bed and at least partially traversing the foot bed from an inlet aperture defined on an exterior of the tower surface of the base to an outlet aperture defined on the exterior of the lower surface of the base, the apertures providing ambient airflow into and out of the foot bed from the exterior of the base during use, wherein the ventilation channel is in moisture transport communication with the interior of the upper shoe portion, thereby providing ventilation and moisture transfer from the received foot to the channel and out the outlet aperture.

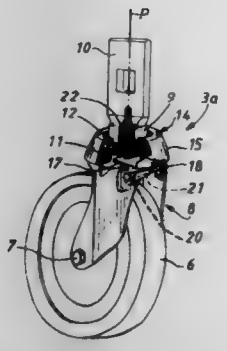
5,797,611

CART INCLUDING A FRAME MOUNTED ON CASTORS AND A CASTOR IN PARTICULAR FOR A CART OF THIS KIND

Alice Joseph, Schiltigheim, and Alain Le Marchand, Reichstett, both of France, assignors to Ateliers Reunis Caddie, France

Filed Aug. 1, 1996, Ser. No. 691,067
Claims priority, application France, Sep. 1, 1995, 95 10310
Int. Cl.[6] B62D *39/00*
U.S. Cl. 280—33.991 **14 Claims**

1. Cart including a frame mounted on castors, at least two castors being provided at a first end of said cart on respective opposite sides of a mean longitudinal axis of said cart, each of said castors at said first end including means for locking said castor against pivoting, said locking means of each castor at said first end of said cart acting unidirectionally to allow said castor to pivot



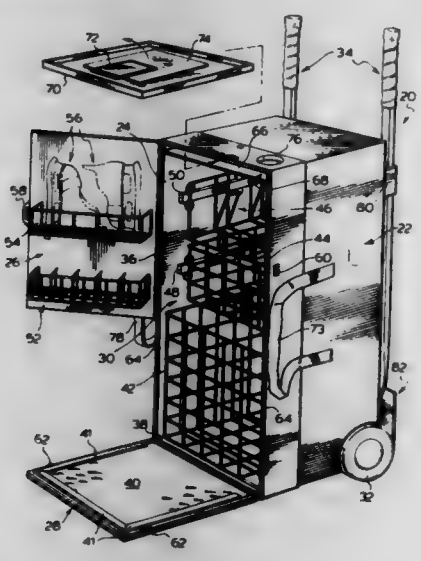
freely in one direction by a sufficient amount and to prevent it from pivoting in the opposite direction, the locking directions being opposite for said two castors at said first end of said cart on opposite sides of said mean longitudinal axis of said cart.

5,797,612

SPORTS EQUIPMENT CARRIER

Aldo Buccioni, R.R. 1, Palgrave, Ontario, Canada, L0N 1P0

Filed Mar. 24, 1995, Ser. No. 409,240
Int. Cl.[6] B62B *1/12*
U.S. Cl. 280—47.26 **13 Claims**



1. A hockey equipment carrier comprising an upright container which includes a container body having an internal space for receiving said equipment, an open front providing access to said space, and door means for closing said front, a lower end provided with ground wheels, at least one receptacle for hockey equipment within said internal space and accessible behind said door means, and means releasably securing to the container body a pair of hockey sticks in generally upright positions in which the sticks provide handle means by which the container can be manipulated and transported on said wheels.

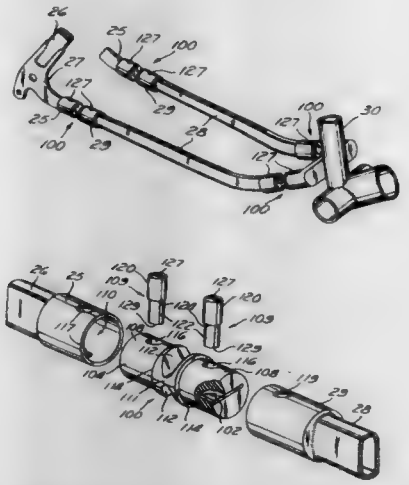
5,797,613

BICYCLE FLEX JOINT

James S. Busby, Costa Mesa, Calif., assignor to GT Bicycles, Inc., Santa Ana, Calif.

Filed Jun. 14, 1996, Ser. No. 662,249
Int. Cl.[6] B62K *25/28*
U.S. Cl. 280—284 **29 Claims**

11. A bicycle frame comprising:
(a) a pair of rear wheel axle receiving members;



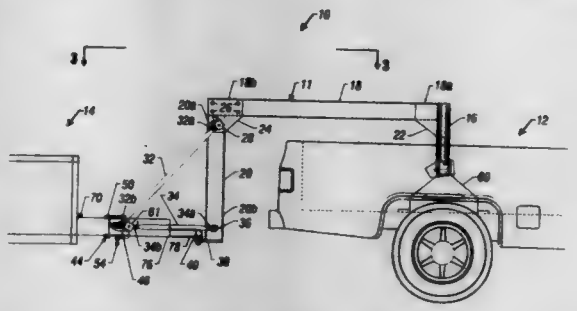
(b) a pair of chain stays;
(c) a seat tube;
(d) a first pair of flex joints for flexibly attaching said rear wheel axle receiving members to respective ones of the chain stays;
(e) a second pair of flex joints for flexibly attaching said chain stays to said seat tube;
(f) wherein said flex joints of said first and second pairs each comprise:
(i) a flexible member;
(ii) a body formed upon said flexible member and including a pair of notches disposed within opposite sides thereof so as to define a neck through which the flexible member extends, said neck facilitating a desired bending of said flexible member; and
(iii) wherein at least one of said flexible member and said body is configured for attachment to two vehicle frame members, so as to interconnect said frame members and so as to facilitate movement of one of said frame members relative to the other of said frame members substantially according to the desired bending defined by said body.

5,797,614

CONVERTIBLE FOLDING GOOSENECK TRAILER HITCH

Weldon M. Hord, 10 Country Club Estates, Brenham, Tex. 77833, and Richard W. Balcom, 680 Stimpson La., Oroville, Calif. 95965

Filed Feb. 23, 1996, Ser. No. 606,545
Int. Cl.[6] B62D *63/00*
U.S. Cl. 280—417.1 **16 Claims**



1. A convertible folding gooseneck trailer hitch apparatus for towing a trailer behind a vehicle, the trailer including a conventional A-frame having two frame members converging toward a ball socket and the vehicle having a fifth-wheel type towing base platform, the trailer hitch apparatus, comprising:
a gooseneck assembly having an aft vertical member coupled to an aft end of a horizontal member and a forward vertical member fixed to a fore end of said horizontal member;

a mounting plate rigidly attached to said aft vertical member, said mounting plate having a conventional hitch ball attached thereon;

a horizontal pair of anti-sway braces and an inclined pair of anti-sway braces, each of said horizontal and inclined anti-sway braces having a fore end and an aft end;

means for attaching said aft end of said horizontal and inclined anti-sway braces to the trailer A-frame; and

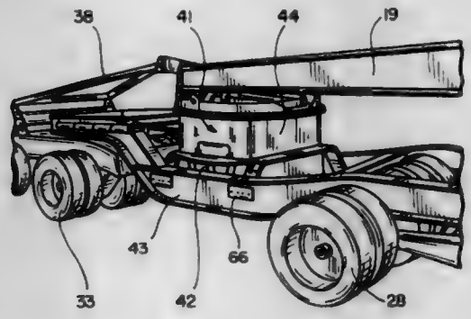
a pair of upper brackets for fastening said fore end of said inclined anti-sway braces to said aft vertical member.

5,797,615

HEAVY EQUIPMENT TRAILER WITH ADJUSTABLE TOWER

Douglas Glen Murray, Stockton, Calif., assignor to Harley Murray, Inc., Stockton, Calif.

Filed Dec. 31, 1996, Ser. No. 777,828
Int. Cl.[6] B60D 1/44
U.S. Cl. 280—441.2 **6 Claims**



1. In a trailer for carrying loads such as heavy equipment: a main deck having a rearwardly extending gooseneck, a dolly positioned to the rear of the main deck having a pair of longitudinally extending side rails supported by ground engaging wheels toward the front and rear of the dolly, a lifting tower mounted in a box suspended between the side rails, a turntable carried by the lifting tower, means connecting the gooseneck to the turntable so that the rear portion of the deck is supported by the tower, means for raising/lowering the tower relative to the box, and means mounting the box to the side rails in a manner permitting the box to be shifted longitudinally of the rails to adjust weight distribution between the wheels at the front and rear of the dolly.

5,797,616

UNIVERSAL COUPLER GUIDE SYSTEM

David Clement, 4231 Pascal Pl., Palos Verdes Estates, Calif. 90274

Filed May 3, 1996, Ser. No. 642,741
Int. Cl.[6] B60D 1/36
U.S. Cl. 280—477 **15 Claims**

3. A guide system attachable to a tow vehicle hitch, having a hitch receiver, a draw bar and a ball mountable on the draw bar by a shaft, which may accept the coupler of a trailer vehicle, the guide system positioning the coupler over the ball to allow the coupler to be removably attached to the ball, and comprising, in combination:

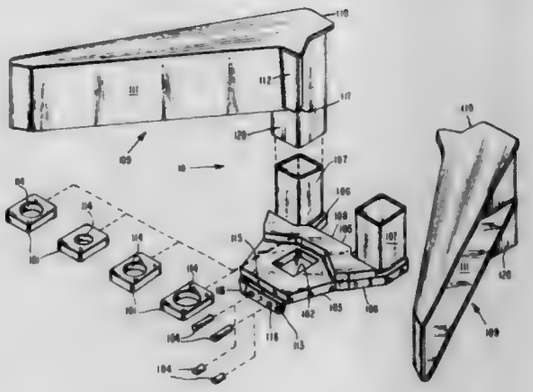
an offset insert having first walls forming a hole preselected to accept the shaft of said ball;

a base plate mountable in a preselected position on said draw bar of said hitch around said offset insert having, in combination;

a rear most edge;

a torque plate mounted on said rear most edge;

a plurality of second walls forming set screw holes in said torque plate;



a set screw mounted in each said set screw hole, the tip of each said set screws positionable against an edge of said draw bar;

whereby, under the condition of said shank of said ball mounting said offset insert and said base plate on said draw bar and said set screws positioned, rotational movement of said base plate is prevented during the guiding of said coupler over said ball;

a front edge shaped to allow said base plate to fully engage the upper surface of said draw bar;

pillar mounts formed in said base plate on each side of said front edge thereby being to the side and in front of said ball;

a pillar formed in a preselected non-rotatable cross section mounted on each said pillar mount and placed in a preselected position to not interfere with the mounting of said base plate onto the upper surface of said draw bar;

wings, having a first end and a second end;

a guide surface formed between said first and said second end;

said first end forming a non-rotatable channel removably mountable over one of said pillars so that said guide surfaces are in opposing configuration to form a V channel;

stop means having a preselected stepped shape mounted near said first end;

whereby under the condition of at least two of said wings being installed over said pillars, said V channel being engagable by said coupler and as said coupler is being guided along said guide surface toward the apex of said V channel as said tow vehicle is moved toward said trailer vehicle, said coupler is positioned over, to be engagable with, said ball with a step wise, vertical movement of said coupler along said stop means whereupon said plurality of wings may be removed from said pillars.

5,797,617

LUGGAGE SYSTEM AND FOLDING DOLLY THEREFOR

Shiou Chang Lin, 207 S. Second Ave., Arcadia, Calif. 91006

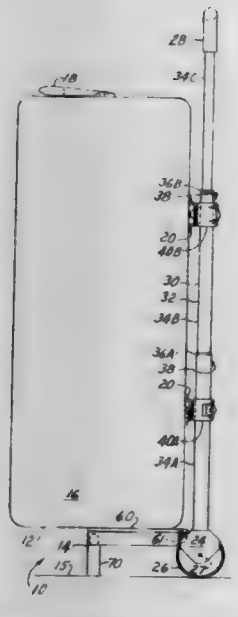
Filed Jan. 4, 1996, Ser. No. 582,921
Int. Cl.[6] B62B 1/14
U.S. Cl. 280—655 **17 Claims**

1. A luggage system comprising a luggage piece having a dolly connector unit fixably located thereon, the dolly connector unit comprising a rigid latch plate member having a latch plate opening therein; and a dolly, the dolly comprising:

(a) a movable base, a platform fixably located relative to the base;

(b) a handle member fixably locatable relative to the base for manipulation thereof;

(c) a luggage connector unit comprising a latch member, the luggage connector unit being supported relative to the base, the luggage connector unit being selectively coupleable with the dolly connector unit for fixably holding the luggage piece on the dolly, the luggage connector unit comprising a latch frame member connected to the base, the latch member being



connected to the latch frame member and movable between open and closed positions relative to the latch frame member, the latch member in the open position thereof being insertable into the latch plate opening during coupling of the connector units, the latch member having a hook portion for holding the latch plate member proximate the latch frame member in the closed position of the latch member, at least a portion of the latch member being insertable into the latch plate opening during coupling of the connector units.

5,797,618

SPRING STRUT FOR A FRONT WHEEL SUSPENSION OF THE MCPHERSON TYPE FOR MOTOR VEHICLES

Michal Brokholc, Askim, Sweden, assignor to AB Volvo, Sweden

PCT No. PCT/SE95/00798, § 371 Date Mar. 17, 1997, § 102(e) Date Mar. 17, 1997, PCT Pub. No. WO96/00663, PCT Pub. Date Jan. 11, 1996

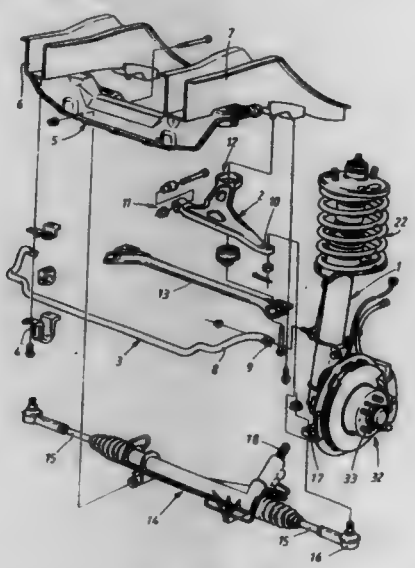
PCT Filed Jun. 27, 1995, Ser. No. 765,317

Claims priority, application Sweden, Jun. 28, 1994, 9402290

Int. Cl.[6] B60G *21/00*

U.S. Cl. 280—689

3 Claims



1. Spring strut for a front wheel suspension of the McPherson type for motor vehicles, which spring strut (1) comprises a shock absorber and is adapted to be mounted in the vehicle body (5) at its upper portion, so as to provide a pivotal movement about its longitudinal axis (21), and to carry a wheel axle (30) at its lower portion for rotatably carrying one wheel of the vehicle about a wheel axis (31) which is essentially transverse in relation to the longitudinal axis of the spring strut, wherein the spring strut is adapted to carry a spring means and at its lower portion presents a carrier (29) for said wheel axis, which carrier is pivotably fixed to the spring strut, and a link bracket (40) for a stabilizer link (35), which link bracket is arranged above the carrier, for pivotably arranging at the spring strut of a stabilizer (3) forming part of the vehicle's front wheel suspension, said link presenting a pivot portion (38) with an attachment means (39) for mounting the link on an attachment point on said link bracket, characterized in that said link bracket (40), with respect to its attachment point, is oriented to adopt a fixed angular position in relation to the angular position of the wheel axis of the wheel axle as determined by the carrier for the wheel axle, the angular position being the same for both of the spring struts in the vehicle's front suspension with respect to a turning angle about the longitudinal axis of the spring strut in relation to the wheel axis and deviates from 180° by an angular deviation (v) which is identical for both the left and the right spring strut as viewed clockwise for both spring struts, and that the angular deviation is chosen so that the pivot portion of the stabilizer link is positioned symmetrically on both sides of the vehicle and essentially directed opposite to the axis direction of the wheel axle (30).

5,797,619

AUTOMOTIVE TRIM PIECE AND METHOD TO FORM AN AIR BAG OPENING

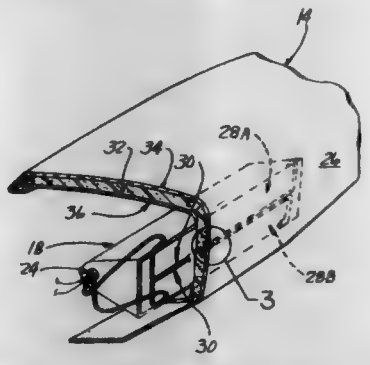
David J. Bauer, deceased, late of West Bloomfield, and John W. Bauer, Jr., executor, Allen Park, both of Mich., assignors to Tip Engineering Group, Inc., Farmington Hills, Mich.

Continuation of Ser. No. 511,327, Aug. 4, 1995, which is a division of Ser. No. 391,336, Feb. 21, 1995, abandoned, which is a division of Ser. No. 934,886, Aug. 24, 1992, Pat. No. 5,217,244, which is a continuation of Ser. No. 471,922, Jan. 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 380,156, Jul. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 303,132, Jan. 30, 1989, Pat. No. 5,080,393. This application May 5, 1997, Ser. No. 851,413

Int. Cl.[6] B60R *21/20*

U.S. Cl. 280—728.3

8 Claims



1. A method of forming an air bag deployment opening within an expanse of a plastic covering layer of an interior trim piece extending within a passenger compartment of a vehicle, said deployment opening occupying a limited area of said expanse at a particular location within said covering layer expanse, said covering layer overlying a folded air bag stored behind said interior trim piece at said particular location, said covering layer smoothly and uninterruptedly overlying said particular location and adjacent regions of said interior trim piece, the method comprising the steps of preweakening the covering layer after the covering layer is first formed by cutting a groove extending partially into the inside of the covering layer in a deployment opening pattern, said deployment opening pattern occupying a limited area within said trim

piece covering layer expanse; and molding a supporting layer of foam against the inside of said covering layer including a region lying beneath said groove cut into the inside of said covering layer, whereby inflation of the air bag causes severing of the covering layer along the groove to form a deployment opening in said covering layer at said particular location within a greater expanse of said plastic covering layer.

5,797,620

KNEE GUARD DEVICE

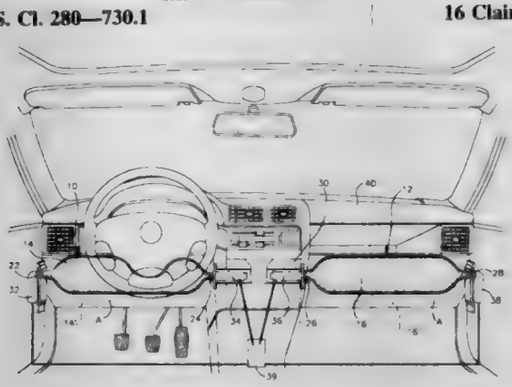
Heinz Eyrainer, Waldstetten, Germany, assignor to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed Nov. 13, 1996, Ser. No. 748,571

Claims priority, application Germany, Nov. 13, 1995, 295 17 953 U

Int. Cl.[6] B60R *21/22*

U.S. Cl. 280—730.1 **16 Claims**



1. A knee guard apparatus arranged in a vehicle having a driver's side and a co-driver's side, a seat at each of the sides, a knee well in front of each seat in which the lower legs and the knees of an occupant sitting on each respective seat extend, a center console, a dashboard, and an A-column, said knee guard apparatus comprising:

at least one gas generator; and

a tube-shaped gas bag inflatable by said at least one gas generator, said gas bag having a flexible wall with axial ends at which said gas bag is secured to the vehicle and, in a non-inflated state, a length along an imaginary center axis in an axial direction enabling said gas bag to extend in a substantially bow-shaped configuration around one of the knee wells in the vehicle,

said length being reduced upon inflation of said gas bag by said at least one gas generator so that said gas bag is tensioned in said axial direction and tightened between its axial ends across said one knee well in front of the knees of an occupant to absorb radial forces exerted on said gas bag by the occupant's knees and to restrain the occupant's knees in the event of a vehicle collision.

5,797,621

AIRBAG CONFIGURATION FOR A SIDE AIRBAG DEVICE

Kazumi Ono, Saitama, Japan, assignor to Kansei Corporation, Japan

Filed May 14, 1997, Ser. No. 856,626

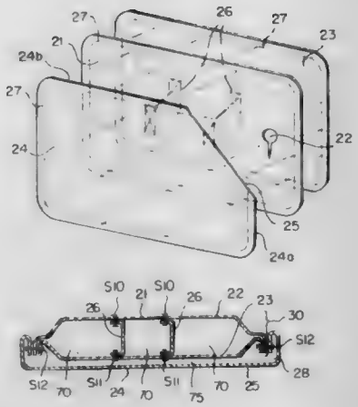
Claims priority, application Japan, May 17, 1996, 8-123553

Int. Cl.[6] B60R *21/22*

U.S. Cl. 280—730.2 **4 Claims**

1. An airbag configuration for an airbag device comprising:

a primary cloth having an inflator attachment hole and an outer perimeter contour;



a secondary cloth having substantially said perimeter contour,

said primary cloth and said secondary cloth connected effective to form an expansion chamber;

at least one tether strip attached at one end to said primary cloth and at an opposite end to said secondary cloth, in said expansion chamber;

a reinforcement cloth having a perimeter including a major portion and a remaining minor portion, said major portion following said perimeter contour, said remaining minor portion formed by a diverging edge from said perimeter contour; and

said reinforcement cloth connected to said expansion chamber proximate to said major portion.

5,797,622

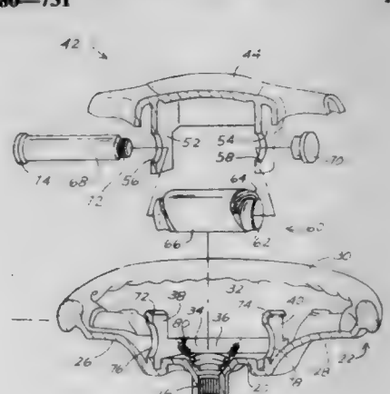
SNAP-ON STEERING WHEEL WITH INTEGRAL AIRBAG HOUSING

Darin James Turner, Warren; Gregory Neil Goestenkors, Waterford, and Daniel Gene Zelenak, Lake Orion, all of Mich., assignors to AlliedSignal Inc., Morristown, N.J.

Continuation of Ser. No. 456,086, May 31, 1995, abandoned. This application Oct. 18, 1996, Ser. No. 733,894

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—731 **19 Claims**



1. A vehicle steering assembly for use with an airbag, comprising:

a steering wheel including a hub, a rim connected to the hub, and an airbag housing formed integrally with the hub, the air bag housing including a pair of flexible flanges extending

from the hub, each said flange having an aperture formed therethrough; said hub being adapted for mating with a steering column shaft;

an airbag module assembly including an inflator and a bag pack assembly, and a cover being engagable with said airbag housing for securing the cover to the steering wheel,

the cover including a pair of legs with apertures formed therethrough for receiving the inflator.

5,797,623

SMART SKIN SENSOR FOR REAL-TIME SIDE IMPACT DETECTION AND OFF-LINE DIAGNOSTICS

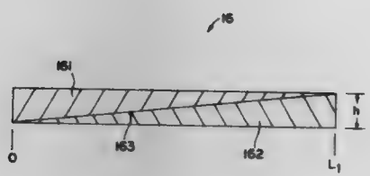
James Edward Hubbard, Derry, N.H., assignor to Trustees of Boston University, Boston, Mass.

Filed Nov. 3, 1995, Ser. No. 552,545

Int. Cl.[6] B60R *21/32*

U.S. Cl. 280—735 **10 Claims**





1. An apparatus for sensing data characteristic of an impact of an object in an impact area comprising:

a ground electrode positioned in the impact area;

a piezo polymer film at least partially disposed on and secured to said ground electrode;

a sensor electrode positioned to overlay at least a portion of said piezo polymer film in the impact area; and

means for sensing total strain energy of the impact on said piezo polymer film based on the potential difference across said ground electrode and said sensor electrode.

5,797,624

INTEGRAL LABEL/GASKET FOR CRIMPED INFLATOR HOUSING

Gregory J. Lang, South Ogden; Brian H. Fulmer, Farr West, both of Utah; Todd S. Parker, Hollister, Calif.; Harry W. Miller, II, Ogden; Scott A. Jackson, Centerville, both of Utah; Steven A. Spear, Denver, Colo., and Graig S. Oba, San Jose, Calif., assignors to Morton International, Inc., Chicago, Ill.

Filed Aug. 28, 1996, Ser. No. 704,280

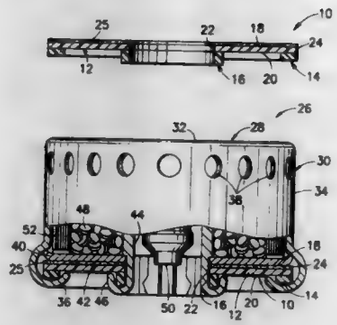
Int. Cl.[6] B60R *21/26*

U.S. Cl. 280—741 **16 Claims**

1. An integral label/gasket for use in crimped sealing engagement with a housing of an airbag inflator, the integral label/gasket comprising:

a flat, generally annular label, the label having a top surface, a bottom surface for printing thereon, an inner edge and an outer edge; and

at least one annular, deformable gasket seal secured to and extending downwardly from the bottom surface of the label adjacent one of the edges of the label.



5,797,625

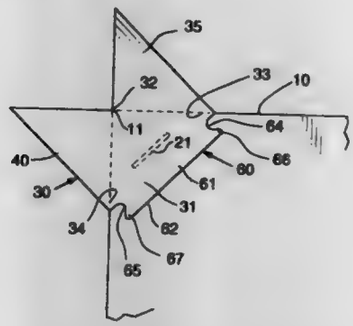
CORNER BIND APPARATUS WITH ANTI-TEAR FEATURE

Joe D. Giulie, 924 Chevy Way, Medford, Oreg. 97504

Continuation-in-part of Ser. No. 232,715, Apr. 25, 1994, Pat. No. 5,570,906. This application Aug. 23, 1996, Ser. No. 702,108

Int. Cl.[6] B42D *1/106*

U.S. Cl. 281—42 **9 Claims**



1. A corner bind apparatus for binding together a plurality of sheets, said sheets having front and back surfaces, side edges and wherein said sheets have one corner aligned with each other, comprising:

anti-shear means for application to the aligned corner region of each sheet to prevent said sheets from sliding relative to each other,

anti-peel means for application to the aligned corner after application of said anti-shear means, said anti-peel means being adapted to extend fully around and grip the aligned corner to resist said sheets separating by at least one sheet being lifted off the remaining sheets, wherein said anti-peel means comprises a planar body and first and second planar tabs connected to said body, said body and said first and second tabs having upper and lower surfaces and wherein said body is adapted to be applied to said front side of said plurality of sheets at said aligned corner and said first and second tabs are adapted to extend around the back side of said aligned corner whereby said first tab overlaps said second tab on said back side of said aligned corner,

anti-tear means for increasing resistance to tearing of said sheets along a side of said body, and

adhesive means carried by said lower surfaces of both of said tabs and said body so that said body and both tabs will adhere to and form a continuous surface around said aligned corner.

5,797,626

AUTOMATIC FAST-ACTION COUPLING FOR DOMESTIC IRRIGATION SYSTEMS

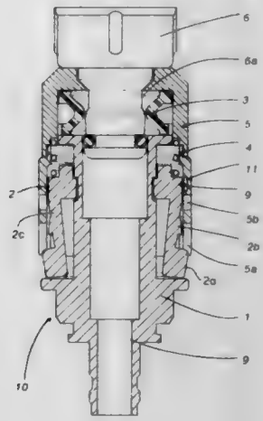
Ferrari Ruggero, Parma, Italy, assignor to Ferrari Group S.r.l., Parma, Italy

Filed Jul. 24, 1996, Ser. No. 685,661

Claims priority, application Italy, Jul. 26, 1995, PR95 A 000022

Int. Cl.[6] **F16L** *55/00*

U.S. Cl. 285—5 **5 Claims**



1. Automatic fast-action coupling for domestic irrigation systems, comprising:

a fixed central body;

an external body displaceable along the longitudinal axis of the coupling;

a fastening element, fixed to the fixed central body, by coating means therebetween which is arranged between the said fixed central body and said external body and has a plurality of radially flexible longitudinal lugs which have, respectively formed thereon, a plurality of teeth and a corresponding plurality of protuberances to which a first and second plurality of slits, formed on the external body correspond, respectively; and

an extension spring which is compressed between the external body and the fastening element wherein said teeth are respectively engageable with said first plurality of slits so as to couple said external body to said fixed body with said spring being compressed therebetween.

5,797,627

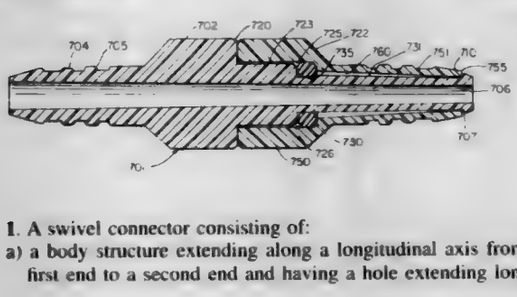
SWIVEL

Peter W. Salter, Tehachapi; James N. Curti, Bakersfield; Duane D. Kazal, Tehachapi, and Laurence McGann, Woodland Hills, all of Calif., assignors to Salter Labs, Arvin, Calif.

Continuation-in-part of Ser. No. 485,881, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 395,984, Feb. 28, 1995, Pat. No. 5,573,280. This application Apr. 30, 1997, Ser. No. 841,259

Int. Cl.[6] **F16L** *35/00*

U.S. Cl. 285—38 **1 Claim**



1. A swivel connector consisting of:

a) a body structure extending along a longitudinal axis from a first end to a second end and having a hole extending longitudinally through said body structure and between said first and second ends and being oriented centrally about said longitudinal axis, said body structure having an outer body structure extending longitudinally along and radially from said longitudinal axis at a first radial distance and said body structure includes a first body member piece having a bore and a second body member piece having a larger tapered bore, said first body member piece terminating at one end in a tube structure which is received within said second body member piece and extends beyond the end of said second body member piece, said extension having a slightly larger diameter than the smallest diameter of the bore of the second body member piece which receives the tube structure, and means for joining said tube structure and extension so that said tube structure and extension are permanently received in rotational relationship with said second body member piece and sealing means located between the tube of the first body member piece and the bore of the second body member piece to prevent gases from leaking through the bore of the second body member piece, said sealing means including a shoulder formed by a larger diameter untapered portion of the tube located in a complimentary diameter bore of said second body member piece, said bore diameter extending sufficiently toward the tip of said structure to receive an O-ring seal, and said body members on said body structure including a pair of conical end portions and a central body portion which includes a plurality of V-shaped ridges extending longitudinally along and projecting radially outwardly from the central body portion relative to said longitudinal axis and wherein the space between said conical end portion and said central body portion contains a plurality of collars having annular-shaped channels there between.

5,797,628

CONDUIT VIBRATION-DECOUPLING DEVICE

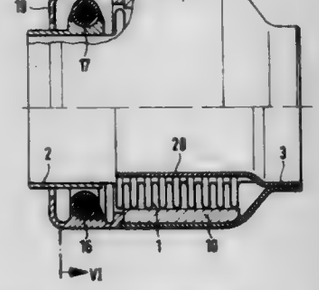
Rainer Kuhn, Germaringen, Germany, assignor to Feodor Burgmann Dichtungswerke GmbH & Co., Wolfratshausen, Germany

Filed Jun. 3, 1996, Ser. No. 657,305

Claims priority, application Germany, Jun. 8, 1995, 259 09 434.6 U

Int. Cl.[6] **F16L** *55/033*

U.S. Cl. 285—49 **27 Claims**



1. A conduit vibration-decoupling device for installation in exhaust conduit systems of internal combustion engines, comprising

a pair of axially spaced first and second conduit connector members connected to each other by a flexible bellows sealing conduit element, and

a force transfer means having at least axial pliancy for transferring forces between the first and second conduit connector members, said force transfer means comprising a rigid housing extending between the first and second conduit connector members and over and along the flexible bellows sealing conduit element, said housing having first and second end

portions with a first end portion being adjacent said first conduit connector and said second end portion being adjacent said second conduit connector, wherein at least said first end portion is connected by an articulated spring assembly comprising at least one spring element to the adjacent first conduit connector member of said conduit connector members,

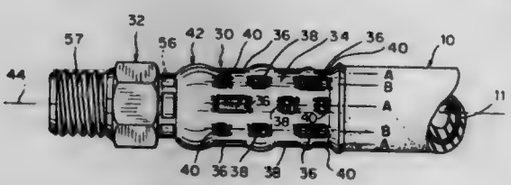
said spring element having an annular configuration and extending continuously around the periphery of said first conduit connector member and being attached at a plurality of peripherally spaced mounting portions to said housing and at another plurality of peripherally spaced mounting portions to said first conduit connector member, said mounting portions to said first conduit connector member being peripherally offset to said mounting portions to said housing.

5,797,629

HOSE COUPLING AND METHOD OF SECURING A HOSE TO THE COUPLING BY CRIMPING

Leo Beagle, Payne, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Apr. 16, 1996, Ser. No. 633,085
Int. Cl.[6] F16L *33/22*
U.S. Cl. 285—256 **2 Claims**



1. A hose coupling having a nipple with an internal insertion tube and a collar coaxially disposed around the insertion tube in spaced relation thereto to form an annular space for receiving an end of a hose, the hose coupling comprising:

an array of crimps in the collar, wherein each crimp is spaced both axially and circumferentially from adjacent crimps to deform the collar into the hose and to hold the hose in engagement with the insertion tube, the array of crimps being arranged with first and second alternating lines of three crimps each,

wherein each of the crimps in the lines of crimps is longitudinally spaced from the adjacent crimps and wherein the crimps of the first line of crimps are staggered with respect to the crimps of the second line of crimps,

wherein in each line there is a relatively long crimp and two relatively short crimps with the long crimp being at an end of the line, and wherein the ends of alternating crimps lines have a long crimp proceeding the short crimps in the first lines and the long crimps trailing the short crimps in the second lines.

5,797,630

METHOD AND SYSTEM FOR GENERATING, STORING AND MANAGING RECORDS

Ralph F. Conley, Jr., Miamisburg, Ohio, assignor to Direct Business Technologies, Inc., Miamisburg, Ohio

Continuation-in-part of Ser. No. 586,190, Jan. 16, 1996. This application Mar. 8, 1996, Ser. No. 613,249
Int. Cl.[6] B65D *37/00*; **B42D** *1/00*
U.S. Cl. 281—15.1 **21 Claims**

1. A file management system comprising:

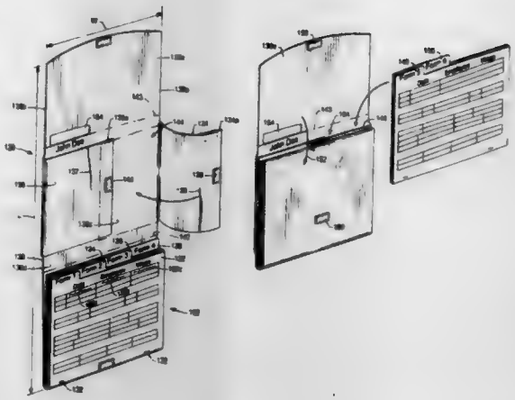
a first panel;

a second panel foldably coupled to said first panel;

a third panel foldably coupled to said first panel;

a plurality of predetermined record members detachably secured to said second panel; and

at least one flap coupled to said first panel such that when said at least one flap and said second panel are folded from an open position to a closed position a pocket is defined for receiving said plurality of record member after they are detached from said second panel.



5,797,631

BOOK LEAF HOLDER AND MARKER

Joel Lander, 5580 E. Second St. #201, Long Beach, Calif. 90803

Filed Aug. 11, 1995, Ser. No. 514,008
Int. Cl.[6] B42D *9/00*
U.S. Cl. 281—42 **12 Claims**



1. A book leaf holder and marker device adapted to be stored engaged over the top and bottom edges of a spine of a book and to be removed from said spine to be selectively used to grasp the opposite sides of an open book to hold the book open to selected leaves and comprising:

a support frame including a tubular body formed with an elongated track open at one end and formed at its opposite end with a first distal end;

an elongated slider formed on one end with a slider extremity to be slidably received in said track and on its opposite end with a second distal end; and

first and second resilient retainer fingers, no greater than about one eighth inch wide, carried cantileverally from the respective said first and second distal ends and formed with respective stems projecting laterally outwardly away from said support frame and then formed with respective sweeping curves to curve proximally toward one another and to then angle proximally toward one another and laterally toward said support frame to form respective pressure pads confronting said support frame and then projecting proximally and laterally outwardly from said support frame, said fingers having sufficient flexibility to enable said support frame to, with said book open to expose confronting open pages, be positioned along said spine with said fingers aligned with said top and bottom edges of said spine so said fingers can be flexed to space said pads away from said boy to form respective bights and said slider slid into said track to draw said stems toward said top and bottom edges of said spine for receipt of said top and bottom edges on the respective said bights as said fingers are translated between said open pages so said book can be closed to trap said fingers in place to hold said device to said spine.

5,797,632

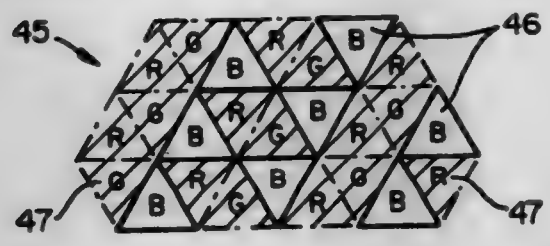
PRINTED COLOR IMAGE

Vic G. Rice, Santa Clara, Calif., assignor to Collor, Hayward, Calif.

Division of Ser. No. 401,464, Mar. 9, 1995, Pat. No. 5,555,800, which is a continuation of Ser. No. 949,570, Sep. 23, 1992, Pat. No. 5,396,839. This application Sep. 6, 1996, Ser. No. 708,944

Int. Cl.[6] B42D *15/00*

U.S. Cl. 283—114 14 Claims



1. A printed color image comprising a substrate having a surface, a medium printed on the surface, three color separated halftones of the image formed from the medium, each of the color separated halftones of the image having a distinct diffraction grating which reflects a different primary color when viewed at a specific angle, each diffraction grating formed from a plurality of substantially parallel grooves each having a cross section that is substantially symmetrical about a centerline whereby the three color separated halftones create a color copy of the image.

5,797,633

HOSE CONNECTOR, PARTICULARLY FOR THE CONNECTION OF HOSES, SUCH AS GARDEN HOSES

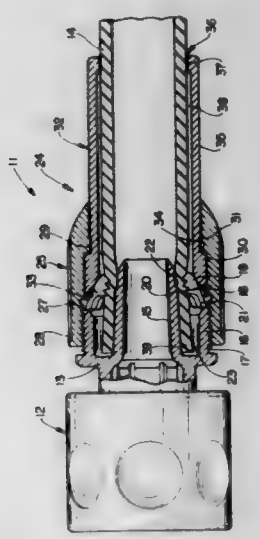
Johann Katzer, Neu-Ulm; Wolfgang Lindermeir, Untermarchtal, and Franz Lopic, Nersingeu, all of Germany, assignors to Gardena Kress + Kastner GmbH, Ulm, Germany

Filed Jan. 31, 1996, Ser. No. 594,589

Claims priority, application Germany, Feb. 4, 1995, 195 03 722.7

Int. Cl.[6] F16L *33/10*

U.S. Cl. 285—243 13 Claims



1. A hose connector for connecting hoses to hose couplings, the hose connector comprising:

a basic body having a circular socket extending along an axis, over which a hose end of a hose can be fitted, and a bush, the bush at least partially, radially surrounding the hose end and the socket;

gripping elements formed at a free end of the bush, the gripping elements being movable towards the socket for engaghement with a hose end;

an external thread proveded at an outer circumference of the basic body;

a two-part sleeve screwably connected to the thread, the two-part sleeve having a screw part, a sleeve part and connecting means between the sleeve part and the screw part, the connecting means allowing the sleeve part to remain rotationally stationary and to be driven along the axis by the screw part as the screw part is rotated and thereby screwably connected to the thread;

the sleeve part having a surrounded portion, the surrounded portion having an actuating surface urging the gripping elements towards the socket to press against a hose fitted on the socket;

the sleeve part further comprises an extension portion having a length projecting axially beyond a free end of the socket;

and wherein the length is at least equal to the outer diameter of the socket.

5,797,634

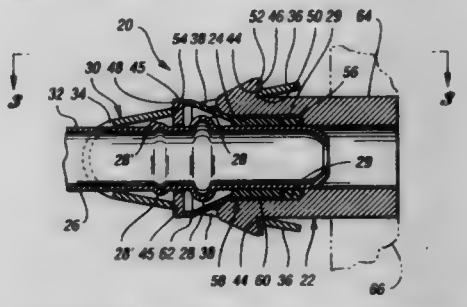
QUICK CONNECT FLUID COUPLING HAVING ATTACHMENT

Harvey S. Bonser, Redford, Mich., assignor to STMC-LLC, Farmington, Mich.

Filed Jun. 25, 1997, Ser. No. 881,973

Int. Cl.[6] F16L *39/00*

U.S. Cl. 285—319 10 Claims



1. In a quick connect fluid coupling including a female connector member having a central passage and also including a tube member that has an annular flange and is received by the passage of the female connector member in fluid communication therewith, the invention comprising:

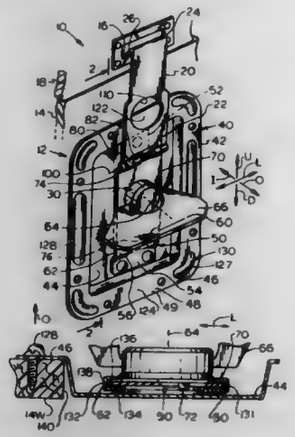
an attachment clip having a central portion including an opening for receiving the tube member and having a plurality of flat attachment legs extending from the central portion in a diverging relationship from each other, each leg having a window including an attachment edge located within the plane of the flat shape thereof, each attachment edge having opposite ends and an intermediate portion that extends between the ends thereof and that projects from the ends thereof toward the central portion, and the window of each leg also including a locating edge positioned toward the central portion of the attachment clip from the attachment edge of the window; and

the female connector member and the annular flange of the tube member each having an associated attachment surface, the attachment surface of the tube member being engaged by the locating edges of the windows of the attachment legs of the attachment clip, the attachment surface of the female connector member having an inner portion that is engaged by the intermediate portions of the attachment edges of the windows in the legs of the attachment clip to secure the female connector member and the tube member to each other, and the attachment surface of female connector member having an outer portion that is located outwardly from the inner portion thereof and farther from the central portion of the attachment clip than its inner portion.

5,797,635
LATCH

Roger Peter Willems, Penn, England, assignor to Penn Fabrication Inc., Moorpark, Calif.

Filed Feb. 5, 1997, Ser. No. 795,075
Int. Cl.[6] F05C *5/02*
U.S. Cl. 292—111 **4 Claims**



1. A latch for mounting on a first case part (**14**) to secure it to a strike (**16**) on a second case part (**18**), comprising:

a frame (**40**) for mounting on said first case part, said frame including a dish (**42**) and a bracket (**50**) fixed to said dish, said bracket forming a cam follower (**71**); a slide (**70**) that is vertically slidable on said bracket and that has upper and lower ends (**74**, **76**);

a bolt (**30**) rotatably mounted on said slide, said bolt having a cam (**72**) engaged with said cam follower of said bracket and having a handle (**66**) that can be turned to turn said bolt and cam to vertically slide said bolt and said slide along said bracket;

a hasp (**20**) having a first end (**22**) pivotally mounted on said slide upper end (**74**) to enable said hasp to pivot about a hasp axis (**100**), said hasp having a second end (**24**) forming a catch (**26**) for engaging said strike;

said bracket being formed of sheet metal with a strip-shaped middle portion (**56**) having parallel opposite vertical side edges (**60**, **62**) and said bracket having upper and lower ends (**52**, **54**) each fixed to said dish, and said slide having opposite sides (**131**, **132**) each extending around one of said vertical side edges to closely position said slide in vertical movement along said bracket.

5,797,636
DISPOSABLE PET EXCREMENT COLLECTION DEVICE

Jari Hämynen, Korppaanmäentie 11 B 16, Helsinki, Finland, 00300

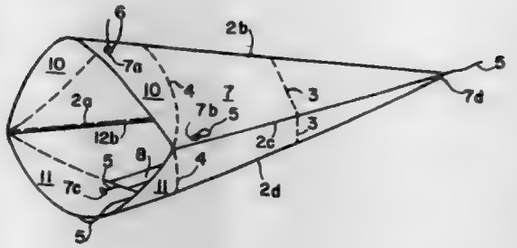
PCT No. PCT/FI94/00458, § 371 Date Jun. 24, 1996, § 102(e) Date Jun. 24, 1996, PCT Pub. No. WO95/10666, PCT Pub. Date Apr. 20, 1995
PCT Filed Oct. 11, 1994, Ser. No. 628,623
Claims priority, application Finland, Oct. 11, 1993, 930501
Int. Cl.[6] A01K *29/00;* **E01H** *1/12*
U.S. Cl. 294—1.3 **10 Claims**

1. A collection device for loose material, comprising:

a mantle piece foldable to a substantially funnel-shaped form having a broadmouthed open end, an inner space to receive loose material being collected and a closed tip at an end of the mantle piece opposite said broad-mouthed open end;

said mantle piece being collapsible into a flat storage form and expandable from said flat storage form to said funnel-shaped form for use;

said mantle piece comprising a foldable shutter hingedly connected at the open end for movement from an open position



allowing ingress of the loose material into said inner space through said opening and a closed position preventing egress of loose material from the inner space through said opening; and

an elongated cord having one end connected to said foldable shutter and an other end operatively positioned in said mantle piece for operatively moving said foldable shutter to said closed position when the other end of said cord is operatively pulled by a user.

5,797,637
ROLL MOVER AND METHOD OF USING

Scott P. Ervin, 984 Copella Rd., Bath, Pa. 18014

Filed Feb. 21, 1997, Ser. No. 803,622
Int. Cl.[6] B25G *7/12*
U.S. Cl. 294—17 **19 Claims**



1. A leverage device for moving a large roll of material comprising:

a. an elongated, rigid, handle member having a first gripping end and a second stabilizing end,

b. the second stabilizing end of the handle member terminating in a first foot pad fastenably connected to the handle member,

c. a rigid force distributing member secured to and extending at an angle away from the second end of the handle member and displaced from the first foot pad,

d. a second foot pad connected to the force distributing member displaced from the first foot pad, the second foot pad being connected to the force distributing member via an angle member for increased stability,

e. the second foot pad being rotatably connected to the angle member so that the second foot pad acts as a fulcrum member remaining in continuous contact with the floor during the operation of the leverage device, and

f. a curved plate, hingedly mounted to the end of the force distributing member away from the handle member, adapted to contact the outer surface of a roll of material and urge the roll forward without marring the outer surface of the roll.

5,797,638
HOIST APPARATUS FOR ANNULAR MEMBER

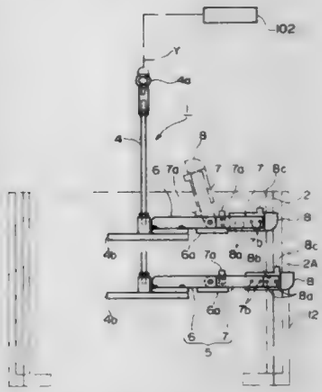
Masakazu Yamazaki; Michio Yanaba; Hiroaki Taguchi; Takashi Atami, and Hisashi Furuya, all of Tokyo, Japan, assignors to Mitsubishi Materials Silicon, and Mitsubishi Materials Corporation, both of Tokyo, Japan

Filed Mar. 24, 1997, Ser. No. 822,489

Claims priority, application Japan, Mar. 25, 1996, 8-068852; May 23, 1996, 8-128800

Int. Cl.[6] B66C *1/62*

U.S. Cl. 294—97 10 Claims



1. An annular member hoist apparatus which is attached to a carrier apparatus fitted with an elevator mechanism, for lifting and carrying an annular member and positioning the annular member at a predetermined location, said hoist apparatus comprising:

a suspension member suspended below the elevator mechanism of said carrier apparatus, and

a plurality of support arms which extend out radially in a horizontal plane from said suspension member, and each of said support arms has an engagement tip portion for supporting said annular member from inside the annular member,

wherein said annular member is a cylindrical heater for positioning inside a gas tight container of a semiconductor single crystal pulling apparatus and comprises a plurality of vertical slits which are closed at least at the top end, said support arms being set longer than the radius of said heater, and wherein

said engagement tip portions each comprises an engagement tongue at the extremity of each support arm, which slots into one of said vertical slits from inside the heater and engages at the top edge of the slit, and are made so as to be foldable only in an upwards direction.

5,797,639
LOCK BOX

Peter P. Zorzenon, 33 Park Place, Patchogue, N.Y. 11772

Filed Apr. 7, 1997, Ser. No. 835,328

Int. Cl.[6] B66C *3/04*

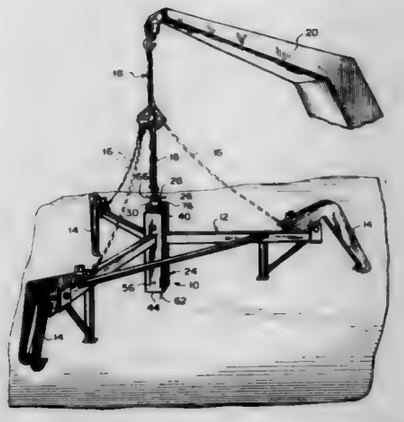
U.S. Cl. 294—110.1 16 Claims

1. A lock box connected to a lifting device having a plurality of claw-like appendages radially therealong that is suspended on the ends of chains of a chain lift extending from a crane, said lock box is for shortening and lengthening the chains of the chain lift as needed to maintain balance and tension, by locking into place and then unlocking in a cycle during the lifting and releasing process of the claw-like appendages of the lifting device with a large object, wherein said lock box includes:

a) a casing connected vertically and centrally with the lifting device;

b) an elongated shaft having an upper end with a shackle hole connected to one of the chains of the chain lift;

c) means for guiding a lower end of said elongated shaft vertically within said casing, so that the upper end of said elongated shaft will extend out above said casing; and



d) means for locking and unlocking said elongated shaft within said casing, so that when said shaft goes to the bottom of said casing it will be locked therein to create a downward tension on one of the chains of the chain lift to hold the claw-like appendages of the lifting device in a released open position, until said elongated shaft is unlocked at the bottom of said casing to release tension on the chain of the chain lift to allow the claw-like appendages of the lifting device to close around the large object when lifted.

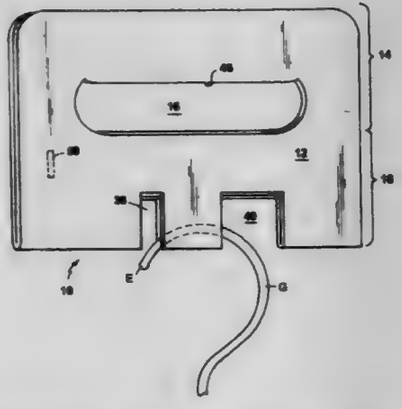
5,797,640
GARMENT CARRIER

E. Kevin Schopfer, 474 Glen Rd., Weston, Mass. 02193

Filed Apr. 29, 1997, Ser. No. 841,196

Int. Cl.[6] A45C *13/26;* A47G *25/06*

U.S. Cl. 294—152 29 Claims



1. A garment carrier formed of a thin piece of material, comprising

a body having an upper region defining a handle opening extending therethrough, and a lower region defining a third orifice and a fourth orifice for receiving a free end of one or more garment hanger hooks therethrough,

said body formed by an upper portion defining a first orifice extending therethrough and a lower portion defining a second orifice extending therethrough, said upper portion and said lower portion being joined in a hinged connection along a first edge and fold line, said first orifice and said second orifice being disposed in overlapping relationship and defining said handle opening, and

said third orifice having a first region defined by said upper portion and a second region defined by said lower portion, said third orifice being intersected by said first edge and fold line, said third orifice having its said first region and its said

second region generally in overlapping relationship and defining a first hanger opening, and

said fourth orifice having a first region defined by said upper portion and a second region defined by said lower portion, said fourth orifice being intersected by said first edge and fold line, said fourth orifice having its said first region and its said second region generally in overlapping relationship and defining a second hanger opening.

5,797,641

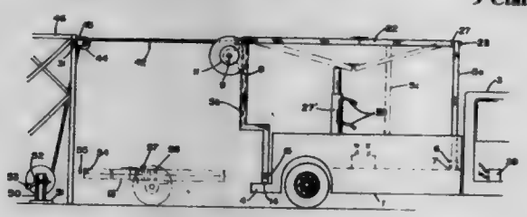
X-10 DOE-RACK TRAILER

Michael H. Lincoln, 821 Jubal Way, Frederick, Md. 21701

Filed May 22, 1996, Ser. No. 651,566

Int. Cl.[6] B60P *3/00*

U.S. Cl. 296—3 **9 Claims**



1. A rack for carrying loads above the bed of a vehicle, said rack being convertible to a trailer comprising:

a) a pair of front vertical posts and a pair of rear vertical posts having tops, standards welded to an upper end of said rear posts at a far side thereof with respect to the rear of said vehicle, an axle running transversely through an aperture of said standards and extending outwardly beyond said rear posts, bearings for receiving said axle, said bearings being journaled in a pair of wheels, each said rear post carrying a telescopic member extending substantially the length of said rear post, said telescopic members having upper ends that are in the same horizontal plane as said front posts,

b) said rack having a front segment and a rear segment, each segment having a plurality of tubular bars that include a pair of end longitudinal bars having upper surfaces positioned between said tops of said posts, a pair of longitudinally spaced bars therebetween, front and rear trans verse bars between said posts, a transverse bar for each said front rack and rear rack segment medially of each said rack, said end longitudinal bars of said front segment having means for detachably connecting said bars to said posts, said longitudinal bars of said front segment being welded to said medial transverse bar for said front rack segment, said longitudinal bars of said rear segment being welded to said medial transverse bar for said rear rack segment, said rear transverse bar being welded to said rear vertical posts, said rear rack segment being fastened to said telescopic members,

c) a first steel wire mesh welded over said front segment along said longitudinal bars and said transverse bars, means for detachably securing a second steel wire mesh to said transverse bar adjacent said rear post, each segment with said first and second wire mesh being connected by hinges placed on said upper surfaces of said front and rear longitudinal end bars located between said posts, such that said front segment can be folded over said rear segment,

d) means pivotally mounting said rear segment and said folded over front segment with respect to said rear vertical posts, a pair of jacks placed under said rear segment and folded over front segment to allow a controlled pivotal movement, said segments moving to a vertical position inwardly of and adjacent said rear vertical rear posts,

e) means for pivotally mounting said rear vertical posts so that said rear posts with said telescopic members, its axle and attached wheels ans accompanying front and rear segments are translated from a vertical position to a horizontal position,

f) said rear posts, wheels mounted thereto and said telescopic members being in ground position after said pivoting, said rack segments overlying said rear posts, means for extending said telescopic members and said attached rear rack segment rearwardly from said rear posts, said front rack segment being unfolded so that said front rack segment is positioned forwardly of said rear segment, said telescopic members and said rear posts having spaced apertures and pins inserted through corresponding apertures to secure said telescopic members to said posts.

5,797,642

LUGGAGE COMPARTMENT CONSTRUCTION

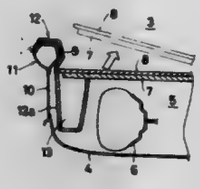
Toshiaki Takanishi; Yuzuru Kimura; Nobuhiko Hara, and Shingo Katsura, all of Hamamatsu, Japan, assignors to Suzuki Motor Corporation, Hamamatsu, Japan

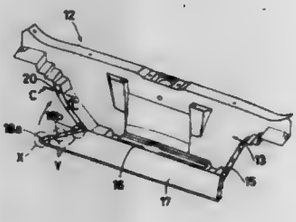
Filed Sep. 13, 1996, Ser. No. 713,744

Claims priority, application Japan, Jan. 23, 1996, 8-008804

Int. Cl.[6] B62D *43/06*

U.S. Cl. 296—37.3 **3 Claims**





1. A luggage compartment construction, comprising:

a luggage compartment having a floor;

a spare tire housing underneath said luggage compartment and defined by a depression in said luggage compartment floor, said spare tire housing having an opening at the top thereof;

a spare tire housing cover covering said opening and defining a portion of said luggage compartment floor;

a back panel member disposed at a lower rear portion of said luggage compartment;

a back panel trim member covering the interior surface of said back panel member, said back panel trim member having an end portion extending into said spare tire housing, said end portion being substantially U-shaped to thereby define front and rear walls of a storage compartment body, said storage compartment comprising,

a hinge portion pivotally connecting said front wall to said storage compartment body; and

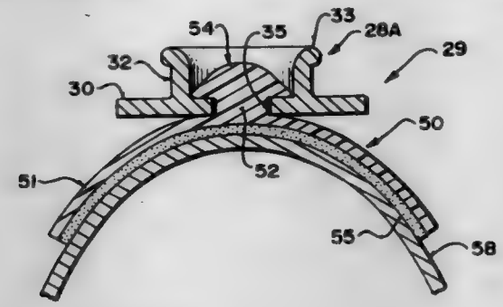
at least one of a locking claw and a locking hole being provided on said front wall, and a cooperating one of said locking claw and locking hole being provided on said storage compartment body to secure said front wall to said storage compartment body.

5,797,643

FASTENING A FABRIC COVER TO A VEHICLE SURFACE

Lloyd Demedash, Lockport, Canada, assignor to FIA Inc., Winnipeg, Canada

Filed Jan. 19, 1996, Ser. No. 588,855
Int. Cl.[6] B60P 7/04
U.S. Cl. 296—100 2 Claims



1. A vehicle comprising:
a vehicle body having at least one opening therein to be covered;
a plurality of vehicle surfaces arranged around said at least one opening;
a fabric cover for engaging over the opening and having edge portions for engaging respective ones of the vehicle surfaces;
and a plurality of fastening elements for fastening the edge portions to the respective vehicle surfaces;
each fastening element comprising:
a female cap member having portions thereof attaching the female cap member to a respective edge portion of the fabric cover and having a female receptacle;
and a male projecting member separate from the fabric cover comprising a male portion and a thin flexible mounting pad with a layer of adhesive on an exposed surface thereof;
the male portion having a rigid flat disk with a hole therein and a peripheral rim of the male portion standing upwardly from the rigid flat disk and engageable into the female receptacle of the cap member as a readily releasable and reengageable snap fastener;
the layer of adhesive having one surface adhesively fastened to the exposed surface of the flexible mounting pad and an opposed surface fastened to the respective vehicle surface;
the thin flexible pad having a stud member projecting therefrom in a direction opposite to said exposed surface and projecting into said hole in the rigid flat disk so as to fasten the rigid flat disk to the flexible attachment member;
the thin flexible pad being flexible in a direction such that edges thereof are flexible toward and away from the rigid flat disk and such that at least one of the fastening elements has the thin flexible pad thereof flexed away from the rigid flat disk thereof and is attached by said adhesive layer thereof to a surface portion of the vehicle which is arcuate.

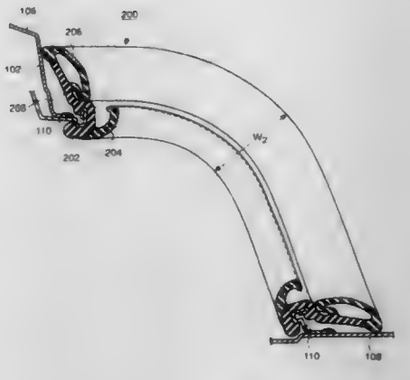
5,797,644

WEATHER STRIP FOR A MOTOR VEHICLE

Mitsuo Hamabata, Aichi-ken, Japan, assignor to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Jun. 3, 1996, Ser. No. 656,935
Claims priority, application Japan, Jun. 2, 1995, 7-159979
Int. Cl.[6] B60J 10/08
U.S. Cl. 296—146.9 15 Claims

1. A weather strip for use on a body to seal a gap between a door and a door opening of the body, comprising:
first and second weather strip portions integrally formed as a unit;
wherein each of said first and second weather strip portions includes a sealing portion to seal said gap, an attached portion, and a connecting web connecting said sealing portion and said attached portion.



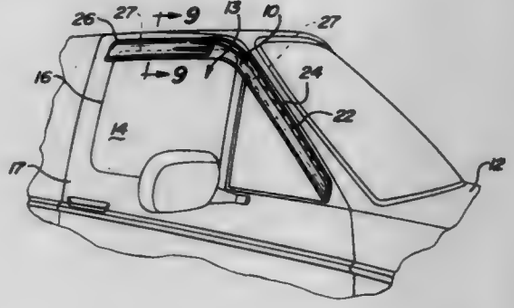
said sealing portion of said second weather strip portion is deformed to attach said attached portion at least in a curved area of the door assembly; and
said sealing portion of said first weather strip portion is to close said gap and said sealing portion of said second weather strip portion is not to seal said gap.

5,797,645

VEHICLE WINDOW VISOR AND VENTILATOR

Mitchell V. Schenk, Elkhart; John C. Ray, Bristol, and Bradley S. Howard, Elkhart, all of Ind., assignors to Plastic Form, Inc., Elkhart, Ind.

Filed Oct. 23, 1996, Ser. No. 735,854
Int. Cl.[6] B60J 1/20
U.S. Cl. 296—152 3 Claims



1. A visor for a side window of a vehicle having a side door and a passenger compartment, the side window movable within a window opening of the side door to a lower partially open position providing a gap between the top of the window and the top of the window opening, the visor comprising:
means for attaching the visor to the side door of the vehicle with the visor disposed in part above and extending generally horizontally along the top of the window opening;
a portion of the visor curving outwardly from the side door and extending downwardly below the level of the top of the window when the window is lowered to said lower partially open position to shield moisture and noise from entering the passenger compartment of the vehicle through said gap;
a wall forming an inward depression in the visor to lower the air pressure in said depression as the vehicle travels forward; said wall also forming an inner pocket on the inside of the visor; and
a plurality of small round holes extending through said wall to cause a venturi effect which withdraws stale air from the passenger compartment through said inner pocket and in turn through said plurality of small round holes.

5,797,646

RAIL OR ROAD VEHICLE AND A METHOD OF ASSEMBLING IT

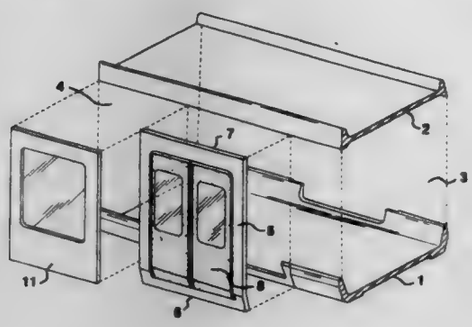
Sylvie Jeunehomme, Salles sur Mer; Patrick Evennou, St Hilaire des Loges, and Joël Hachet, Clavette, all of France, assignors to GEC Alsthom Transport SA, Paris, France

Continuation of Ser. No. 476,568, Jun. 7, 1995, abandoned. This application Jul. 16, 1997, Ser. No. 895,568

Claims priority, application France, Jun. 13, 1994, 94 07196

Int. Cl.[6] B61D *17/00;* **B60J** *7/00*

U.S. Cl. 296—197 **14 Claims**



1. A rail or road vehicle comprising:

a chassis which is a one-piece, unitary structural element;

a roof which is a one-piece, unitary structural element, said chassis and said roof defining a right side wall portion and a left side wall portion;

at least one structural side frame disposed between said chassis and said roof on each of said right side wall portion and said left side wall portion and having a bottom secured to said chassis and a top secured to said roof; and

at least one non-structural, nonload-bearing face framework disposed next to said at least one structural side frame on each of said right side wall portion and said left side wall portion, thereby to define face zones which do not participate in providing mechanical strength for said vehicle,

wherein said at least one structural side frame on said right side wall portion and said at least one structural side frame on said left side wall portion are the only self-supporting face structures of said vehicle, and further wherein said chassis, said roof, and said structural side frames are fully prefabricated independently of one another.

5,797,647

VEHICLE BODY

Sigrid Mehrkens, Königsbach-Stein; Friedhelm Söffge, Leonberg, and Michael Preiss, Vaihingen, all of Germany, assignors to Dr. Ing. h.c.F. Porsche AG

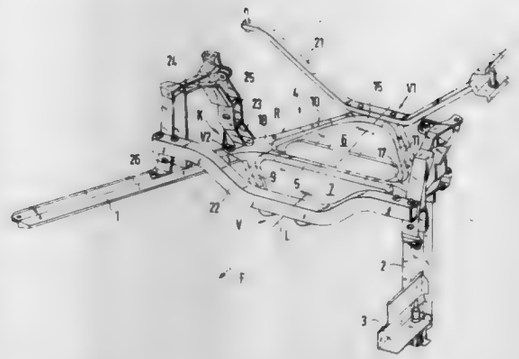
Filed Sep. 3, 1996, Ser. No. 706,942

Claims priority, application Germany, Sep. 2, 1995, 195 32 531.1; Feb. 22, 1996, 196 06 506.2

Int. Cl.[6] B62D *21/00*

U.S. Cl. 296—204 **21 Claims**

1. Vehicle body comprising elements connected with side rails of the body in a reinforcing manner, which elements consist of two struts which taper in a V-shape toward the rear of the vehicle and which are connected with one another by way of at least one cross member, wherein free ends of the V-shaped struts are connected with a one-piece carrier plate which comprises two trapezoidal



segments which are connected with one another by way of an integrated cross member, one of said segments having profiled side edges which extend as a lengthening of the V-shaped struts.

5,797,648

ROOF, HATCH, PARTICULARLY IN INTENDED FOR VEHICLE ROOFS

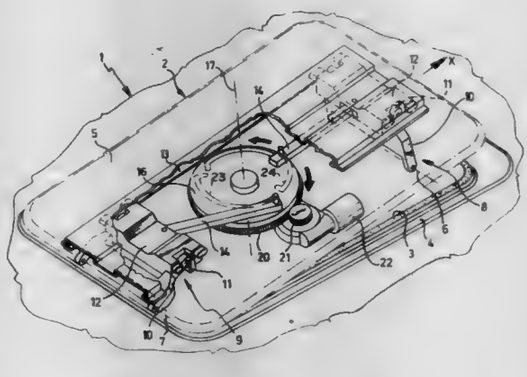
Gunnar Fiegel, Starnberg; Ulf Plettrichs, Hattenhofen; Alexander Walter, Munich; Thomas Schröferl, Hofenschäftlarn, and Hossein Soltanmoradi, Gauting, all of Germany, assignors to Webasto Thermosysteme Gmbh, Stockdorf, Germany

Filed Apr. 1, 1996, Ser. No. 625,138

Claims priority, application Germany, Oct. 1, 1993, 43 33 514.4

Int. Cl.[6] B60J *7/057*

U.S. Cl. 296—223 **16 Claims**



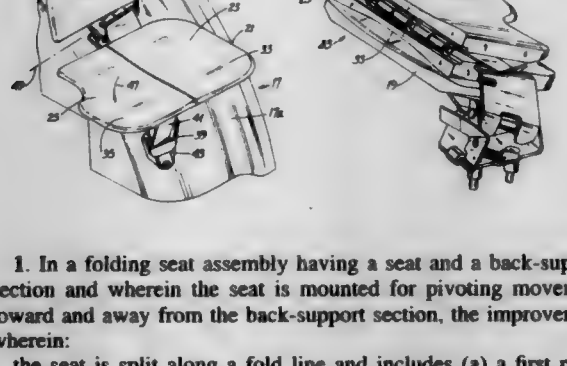
1. A roof hatch for vehicle roofs, comprising a frame disposed in a fixed roof and having an inner edge which defines a roof opening, a cover for said roof opening, and tilting devices constituting a means for selectively opening and closing the cover; wherein the cover is supported at two opposite sides of the frame via a respective one of the tilting devices; wherein an actuating device is connected to the tilting devices which comprises a cam disk with at least two cam surfaces, said cam disk being rotatably supported for rotation about an axis, centrally at an underside of the cover, and pushrods, each of which extends between the cam disk and a respective one of the tilting devices; wherein a first end of each pushrod is pivotally supported at the respective one of the tilting devices and a second end of each pushrod being in engagement with a respective one of the cam surfaces and also being guided in a respective guideway which is fixed with respect to the cover; and wherein the respective guideway for one of the pushrods is approximately semicircular, and the respective guideway for the other pushrod is approximately quadrantal.

5,797,649

FOLDING AUXILIARY SEAT FOR A VEHICLE

Richard A. Snell, Jr.; Bryan L. Nannet, both of Naperville, and Ralph D. Price, Plainfield, all of Ill., assignors to Case Corporation, Racine, Wis.

Filed Dec. 2, 1996, Ser. No. 759,010
Int. Cl.[6] B60N 2/02
U.S. Cl. 297—14 18 Claims



1. In a folding seat assembly having a seat and a back-support section and wherein the seat is mounted for pivoting movement toward and away from the back-support section, the improvement wherein:

the seat is split along a fold line and includes (a) a first panel having an underside, and (b) a second panel mounted for lateral pivoting movement about a panel hinged axis generally perpendicular to the back-support section, such movement being against and away from the underside for the first panel and in directions generally parallel to the back-support section;

when the second panel is against the underside of the first panel, the second panel substantially covers the underside; and

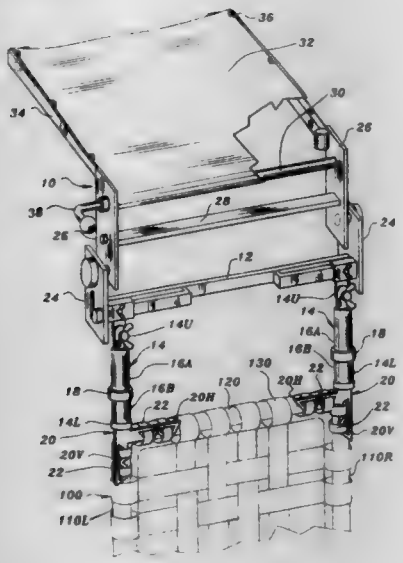
the seat and the back-support section pivot about a single seat axis.

5,797,650

SUN SHADE ATTACHMENT

Ralph Gonzalez, Jr., and Alessandra Pili-Gonzalez, both of 120-31G Benchley Pl., Bronx, N.Y. 10475

Filed Aug. 20, 1997, Ser. No. 915,459
Int. Cl.[6] A47C 31/00
U.S. Cl. 297—184.1 3 Claims



1. A sun shade for securing to a chair and providing shade therefor, comprising:

a) a rigid horizontal cross member having opposite ends;

b) a telescoping vertical arm assembly having an upper end and an opposite lower end, the upper end pivotally and slideably secured to each said end of the horizontal cross member;

c) a splint assembly, secured to the lower end of each said telescoping vertical arm assembly, having a vertical splint member for securing to a vertical member of the chair, and a horizontal splint member for securing to a horizontal member of the chair, and further having securing means comprising hook and loop fasteners secured to the vertical and horizontal splint members which respectively are adapted to engage the vertical member and horizontal member of the chair;

d) a first side plate secured to and extending upward from each said end of the horizontal cross member;

e) a second side plate secured to and extending outward horizontally from each said first side plate, and a stabilizing bracket extending between said second side plates parallel to the horizontal cross member;

f) a rotating shade pin rotateably secured between the second side plates;

g) a shade screen telescoping rail extending outward horizontally and parallel to each said second side plate; and

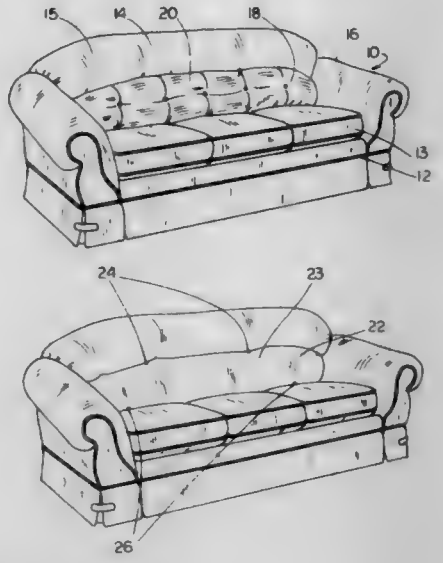
h) a shade screen, secured to the rotating shade pin between the second side plates, capable of extending fully outward therefrom between the two shade screen rails and provide shade therebelow.

5,797,651

SOFA WITH REVERSIBLE UPHOLSTERY

Carol Christa, Duluth, Ga., assignor to England/Corsair, Inc., New Tazewell, Tenn.

Filed Oct. 15, 1996, Ser. No. 731,221
Int. Cl.[6] B68G 5/00
U.S. Cl. 297—283.1 19 Claims



1. A seat comprising

a frame, including a bench and a back

padded upholstery on said frame covering said bench and said back with a pocket in said padded upholstery as it covers said back formed as an indentation in a portion of the padded upholstery of said back,

a cushion having first and second sides and sized to fit in said pocket in said upholstery to fill said pocket and having first and second differing upholstery fabrics on said first and second sides, respectively, and

complementary retainers on said cushion and in said pocket cooperative with one another to retain said cushion in said pocket in a first orientation showing said first upholstery fabric on said cushion and a second orientation showing said second upholstery fabric.

5,797,652

LUMBAR SUPPORT ADJUSTMENT

Paul Darbyshire, Moorabbin, Australia, assignor to Henderson'Industries Pty Ltd., Australia

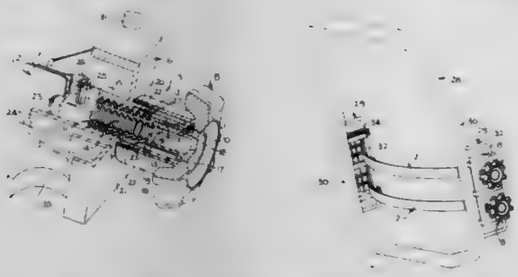
PCT No. PCT/AU95/00421, § 371 Date Jan. 15, 1997, § 102(e) Date Jan. 15, 1997, PCT Pub. No. WO96/02166, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 12, 1995, Ser. No. 765,700

Claims priority, application Australia, Jul. 20, 1994, PM6941

Int. Cl.[6] A47C *7/46*

U.S. Cl. 297—284.4 **5 Claims**



1. A lumbar support assembly including, a support band, a mounting at least at one end of said band, drive mechanism interconnecting said mounting and said one end and being operable to adjust said band between relaxed and tensioned conditions when said assembly is in use, said mechanism including a first part connected to said mounting and a second part connected to said band, said first and second parts having a combined axial extent which reduces or increases according to whether said mechanism is operated to increase or reduce respectively the tension in said band, said first part including a tubular member having an external screw thread of one hand and an internal screw thread of the opposite hand, said external thread cooperatively engaging with a complementary threaded portion of said mounting, said second part including a screw threaded spindle which cooperatively engages with said internal thread, means connecting said spindle to said band one end for movement therewith during said adjustment of band tension, an actuator rotatably mounted on said mounting and connected to said mechanism, said actuator being held against axial movement relative to said mounting by means therefor while being operable to cause rotation of said tubular member about the longitudinal axis thereof relative to both said spindle and said threaded portion, said tubular member being responsive to said rotation to move axially relative to both said threaded portion and said actuator, said spindle being responsive to said rotation to move axially relative to said tubular member and the direction of said axial movement is the same for both said tubular member and said spindle so as to thereby cause said combined axial extent to increase or decrease according to the rotational direction of said tubular member.

5,797,653

CHAIR, IN PARTICULAR OFFICE CHAIR

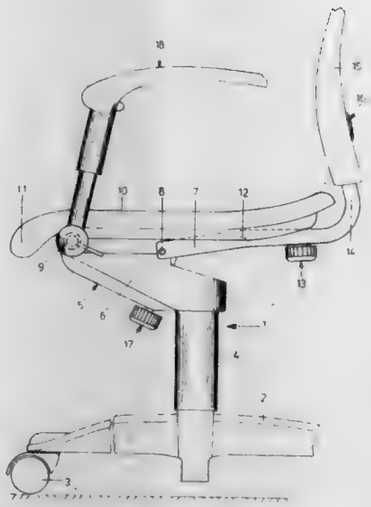
Manfred Elzenbeck, Steinheim/Murr; Klaus Haar, Weinstadt, and Harald Nathmann, Worms, all of Germany, assignors to Dauphin Entwicklungs - u. Beteiligungs-GmbH, Neukirchen, Germany

Filed Jul. 21, 1994, Ser. No. 277,275

Claims priority, application Germany, Jul. 22, 1993, 43 24 542.0

Int. Cl.[6] A47C *3/00*

U.S. Cl. 297—300.5 **8 Claims**



1. A chair, in particular an office chair, comprising

a pedestal (**2**)

a chair column (**4**) projecting upwards from the pedestal (**2**)

a seat support (**5**) supported on the chair column (**4**) and having a front seat support member (**6**) joined to the chair column (**4**) and a rear seat support member (**7**) joined to the front, seat support member (**6**) by way of a pivot axle (**8**)

a seat (**10**) pivotably supported on the seat support members (**6, 7**)

a back-rest (**15**) secured to the rear seat support member (**7**)

an energy storing device (**48**), of which one end is positioned on the front seat support member (**6**) by means of a pivot hinge (**59**) and of which the other end is pivotably supported on the rear seat support member (**7**) at a distance (a) from the pivot axle (**8**), and

a blocking mechanism (**61**) for arresting the rear seat support member (**7**) in relation to the front seat support member (**6**), wherein the blocking mechanism (**61**) has a blocking lever (**62**) articulated on the rear seat support member (**7**) at a distance from the pivot axle (**8**) by means of a pivot joint (**63**) and provided with a stop face (**64**) which is pivotable into bearing engagement with a blocking face (**65**) stationary relative to the front seat support member (**6**) and releasable from this bearing engagement by means of a blocking actuator arm (**67**).

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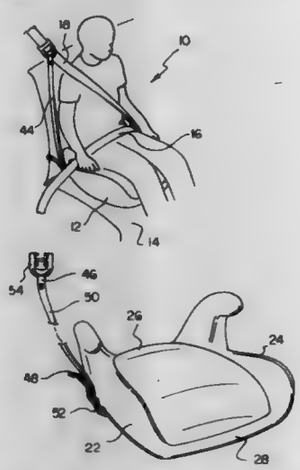
BELT BUCKLE/TETHER STRAP FOR BOOSTER CAR SEAT

David J. Stroud, 360 Mappletrace Trail, Dayton, Ohio 45458

Filed Oct. 25, 1996, Ser. No. 736,741

Int. Cl.[6] A47D *15/00;* **B60R** *21/00;22/30*

U.S. Cl. 297—483 **4 Claims**



1. A seat system for use in safely and conveniently supporting a child upon a vehicle seat that has both a lap belt and a shoulder belt, the seat system comprising in combination:

a booster seat having a first side, a second side, a rearward portion and a forward portion, both the first and second sides including an integrally formed upwardly extending rearward side portion, both the first and second sides further including an integrally formed upwardly extending forward side portion and a lap belt receiving channel formed intermediate the rearward and forward side portions of the first and second sides, a first clip receiving groove with a stop plate thereabove positioned on the first side rearward portion of the seat, a second clip receiving groove with a stop plate thereabove positioned on the second side rearward portion of the seat;

a shoulder belt positioning strap, the strap having a first end, a second end and an intermediate extent therebetween;

a booster seat clasp secured to the first end of the strap;

a shoulder belt clasp secured to the second end of the strap ;

the booster seat clasp having a strap engaging portion and a booster seat engaging portion, the strap engaging portion being slidably secured to the first end of the strap, the seat engaging portion adapted to be removably secured within either of two clip receiving grooves of the seat; and

the shoulder belt clasp having a semicircular recess at a lower extent adapted to receive the second end of the strap, the shoulder belt clasp having an opened upper extent, an aperture with diametrically opposed inwardly directed protrusions, the aperture formed intermediate the upper and lower extents of the shoulder belt clasp, the opened upper extent and the aperture together adapted to removably engage the shoulder belt.

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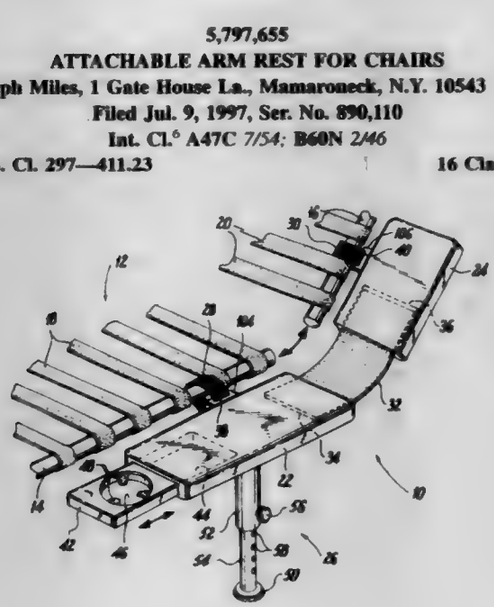
ATTACHABLE ARM REST FOR CHAIRS

Ralph Miles, 1 Gate House La., Mamaroneck, N.Y. 10543

Filed Jul. 9, 1997, Ser. No. 890,110

Int. Cl.[6] A47C *7/54;* **B60N** *2/46*

U.S. Cl. 297—411.23 **16 Claims**



1. An adjustable arm rest device comprising:

a lower arm rest;

an upper arm rest adjustable to a selected angular orientation relative to the lower arm rest;

an intermediate member connecting the lower arm rest to the upper arm rest;

a pair of fasteners, each connected to a respective one of the upper and lower arm rests, for removably securing the lower and upper arm rests to a frame of a chair in the selected angular orientation; and

a leg connected to the lower arm rest for supporting the lower arm rest on a surface.

5,797,656

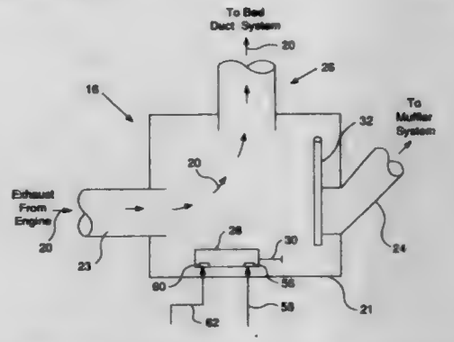
APPARATUS FOR DIVERTING A FLOW OF EXHAUST FROM AN ENGINE OF A TRUCK

Zachary A. Kauk, and Richard D. Walker, both of Decatur, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed May 2, 1996, Ser. No. 641,981

Int. Cl.[6] B60P *1/60*

U.S. Cl. 298—1 H **16 Claims**



1. An apparatus for diverting a flow of exhaust from an engine of a truck having a truck bed and a muffler system, with the truck bed having a duct system, comprising:

a diverter member positionable between a first position and a second position, wherein (1) the flow of exhaust is prevented from being advanced into the muffler system and allowed to be advanced into the duct system when said diverter member is positioned in the first position, and (2) the flow of exhaust is prevented from being advanced into the duct system and allowed to be advanced into the muffler system when said diverter member is positioned in the second position;

a sensor which detects raising of the truck bed and generates an electrical signal in response to raising of said truck bed; and

an actuator for moving the diverter member between the first position and the second position in response to said electrical signal.

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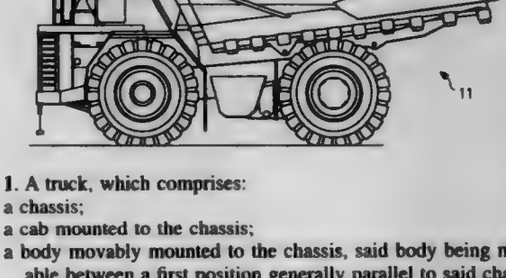
TRUCK WITH RETRACTABLE CANOPY

John A. D'Amico, and Ted M. Atchley, both of Casper, Wyo., assignors to Western Technology Services International, Inc., Casper, Wyo.

Filed Feb. 24, 1997, Ser. No. 804,581

Int. Cl.[6] B60P *1/28*

U.S. Cl. 298—17 R **25 Claims**



1. A truck, which comprises:

a chassis;

a cab mounted to the chassis;

a body movably mounted to the chassis, said body being movable between a first position generally parallel to said chassis and a second generally upright position with respect to said chassis; and,

a canopy movably mounted to said body, said canopy being movable between an extended position and a retracted position, said canopy extending outwardly of said body when said

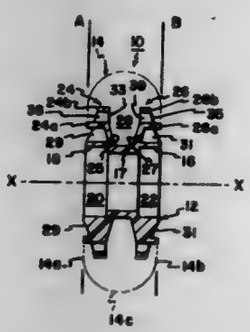
canopy is in said extended position to cover said cab when said body is in said first position, and said canopy being moveable upwardly and away from said cab to extend over a portion of said body in said retracted position.

5,797,658

SKATE WHEEL

Henry Larrucea, Huntington Beach, Calif., assignor to Rollerblade, Inc., Minneapolis, Minn., and Elasco, Inc., Garden Grove, Calif.

Continuation of Ser. No. 494,472, Jun. 26, 1995, abandoned. This application Feb. 4, 1997, Ser. No. 795,696
Int. Cl.[6] B60C 7/24
U.S. Cl. 301—5.3 **14 Claims**



1. A wheel for a skate comprising:

a hub having a central core with a center axis, said core defining a bore axially extending therethrough for passing an axle;

at least a first and a second anchor each having first and second rings radially spaced apart and connected by a plurality of circumferentially spaced ribs;

each of said first and second anchors extended to predetermined first and second radial distances, respectively, from said core, said first and second anchors disposed in axially spaced apart relation and defining a material receiving volume between said anchors;

a synthetic plastic material molded to said core, surrounding each of said first and second anchors, and at least partially filling said material receiving volume; and

at least a portion of said material forming a radial thickness disposed between said first and second anchors, said thickness extending to a third radial distance from said core, said third radial distance greater than said first and second radial distances and of said first and second anchors, respectively, said third radial distance being the greatest radial distance of said material from said core and disposed at an axially centered mid-point of said hub.

5,797,659

LUG NUT APPARATUS WITH SQUARE DRIVE

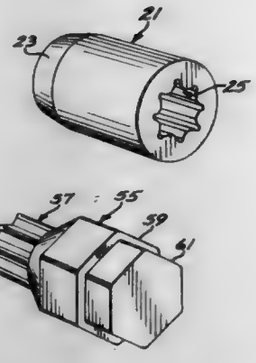
Everett Fuller, Orange, Calif., assignor to Coyote Enterprises, Inc., Anaheim, Calif.

Filed Dec. 3, 1996, Ser. No. 758,700
Int. Cl.[6] B60B 3/16
U.S. Cl. 301—35.62 **23 Claims**

1. Lug nut apparatus for use with a conventional drive tool having a solid drive lug with a predetermined square cross section, said apparatus comprising:

a wheel formed with a plurality of lug nut bores for fitting in close spaced relationship over the lug studs of a wheel hub and respective axially outwardly facing peripheral wheel chamfers;

a plurality of lug nuts formed with cylindrical peripheral surfaces and terminating on their respective axial inner ends with



respective nut chamfers configured to complementally abut the respective said wheel chamfers; and

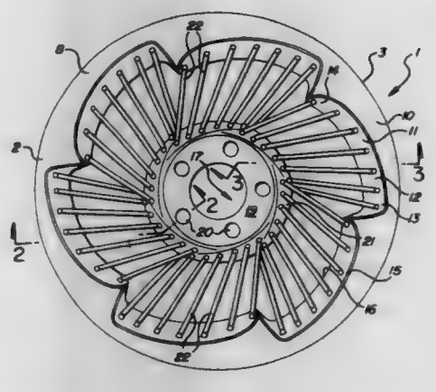
said lug nuts being further formed in their respective axial outer extremities with axially outwardly opening lug sockets of said predetermined square cross section configured for complemental free telescopical receipt of said solid drive lug whereby said lug nuts may be screwably threaded out the respective said studs and said conventional drive tool positioned to selectively engage said lug freely in the respective said sockets so that rotation of said tool will cause said lug to rotate said lug nuts on the respective studs.

5,797,660

AUTOMOTIVE WIRE SPOKE WHEELS

Donald A. Johnson, 4015 Pfeiffer Ct., Midland, Mich. 48640

Filed Aug. 19, 1996, Ser. No. 699,422
Int. Cl.[6] B60B 1/06
U.S. Cl. 301—73 **33 Claims**



1. A wheel comprising an annular rim member having a center and a web of such axial width as to support an inflatable tire, said web having axially inner and outer peripheral edges each of which is of uniform, constant radius; a hub member at the center of said rim member and having a radially outer peripheral wall spaced from and confronting said rim member, said rim member having adjacent said outer peripheral edge and radially inward thereof an annular wall portion inclined axially and radially inwardly of said outer peripheral edge, said wall portion having a plurality of circumferentially spaced zones each of which has a corresponding surface confronting said hub member, each said corresponding surface having each portion thereof located at a different radial distance from the center of said annular rim member; and a plurality of spokes, corresponding ends of which are secured to said hub member and opposite corresponding ends of which are secured to said rim member at said zones, the lengths of the respective spokes being so selected that each of said spokes spans said members and maintains said members concentric.

5,797,661
WHEEL OF A VACUUM CLEANER

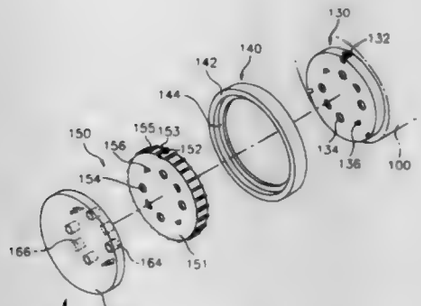
Jin Bang Lee, Incheon; Seon Kyu Kim, and Suk Gu Kim, both of Seoul, all of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 28, 1995, Ser. No. 430,606

Claims priority, application Rep. of Korea, Jul. 14, 1994, 1994-17412 U; Jul. 14, 1994, 1994-17416 U; Jul. 14, 1994, 1994-17417 U

Int. Cl.[6] B60B *19/00*

U.S. Cl. 301—111 **12 Claims**



1. A wheel of a vacuum cleaner, the wheel comprising:

a hollow cylindrical hub formed integrally with a body of the vacuum cleaner, and having a front surface and a peripheral surface integrally formed between the front surface and the body;

a roller for supporting the body of the vacuum cleaner while rolling on a floor, the roller having an annular rim and an annular flange protruding radially inward from the annular rim;

a first means for supporting the roller rotatable, the first means being in sliding contact with the roller, the first means including a support member having a first disc plate, and a cylindrical support ring protruding perpendicularly alone the periphery of the first disk plate and inserted between the hub and the annular rim; wherein the hub has a plurality of L-shaped locking holes formed on the peripheral surface thereof, and a plurality of first engagement holes and a plurality of first snap holes formed in the front surface thereof, the locking holes, the first engagement holes, and first snap holes respectively being spaced apart at regular circumferential intervals from each other,

the first disc plate has a plurality of second engagement holes and a plurality of second snap holes formed therein and respectively corresponding to the first engagement holes and snap holes, the second engagement holes and second snap holes respectively being spaced apart at regular circumferential intervals from each other, and the first means includes a plurality of key protuberances protruding radially inward from the cylindrical support ring so as to be engaged with the locking holes,

and the second means includes a cap having a second disc plate, and a plurality of engagement protuberances and a plurality of snap protuberances formed on a surface of the second disc plate, the engagement protuberances and the snap protuberances respectively being spaced apart at regular circumferential intervals from each other so as to be inserted respectively through the first engagement holes and the second engagement holes and through the first snap holes and the second snap holes.

5,797,662
PRESSURE-MODIFYING VALVE AND ELECTRIC BYPASS

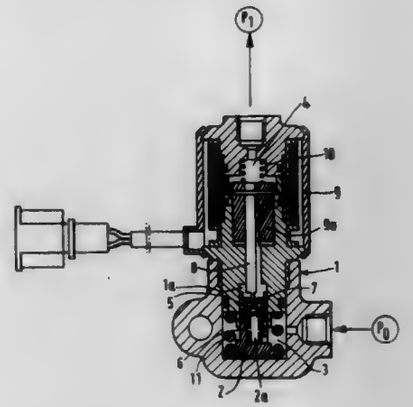
Philippe Castel, Paris, France, assignor to Bosch Systems de Freingae, Drancy, France

Continuation of Ser. No. 664,373, Jun. 14, 1996, abandoned. This application Jul. 8, 1997, Ser. No. 889,871

Claims priority, application France, Feb. 12, 1993, 93 01564

Int. Cl.[6] B60T *8/26*

U.S. Cl. 303—119.2 **2 Claims**



1. A hydraulic solenoid valve capable of producing an outlet pressure modified relative to an inlet pressure supplied by a source of pressurized fluid, said valve comprising: a casing having a bore therein; a piston slideably located in a leaktight manner in said bore, said piston engaging casing to define an inlet chamber and an outlet chamber, said inlet chamber being connected to the source of pressurized fluid and said outlet chamber being connected to a use circuit for the outlet pressure; said piston having a passage through which said inlet chamber is connected to said outlet chamber, a valve located in said passage for controlling flow of fluid therethrough, said valve including a shut-off member which is stressed elastically toward a seat formed in said passage of said piston; and a needle projecting from said outlet chamber into said passage for lifting said shut-off member off said seat to correspondingly establish communication between said inlet chamber and said outlet chamber through said passage, said communication being established when pressure in said inlet chamber exceeds a predetermined threshold, characterized in that a core of an electromagnet linearly moves said needle counter to a spring to hold associated with said shut-off member off said seat and to establishes communication through said passage in response to an input signal, said spring continually urging said shut-off member off said seat as long as said electromagnet is not activated to instantaneously position said needle to correspondingly control the communication between said inlet chamber and outlet chamber.

5,797,663
BRAKE SYSTEM HAVING PUMP TO START BY FORECAST OF BRAKING

Hiroshi Kawaguchi; Akio Okada, both of Mishima, and Masashi Ohta, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

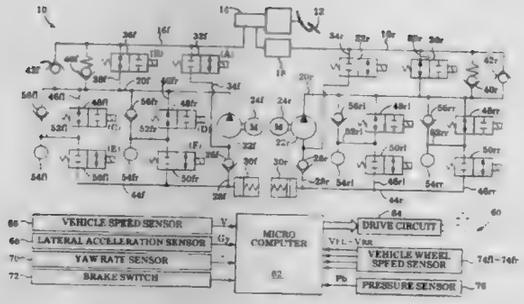
Continuation of Ser. No. 754,749, Nov. 21, 1996, abandoned, which is a continuation of Ser. No. 520,430, Sep. 30, 1995, abandoned. This application Nov. 24, 1997, Ser. No. 976,620

Claims priority, application Japan, Sep. 28, 1994, 6-258657; Jul. 14, 1995, 7-201779

Int. Cl.[6] A60T *8/86*

U.S. Cl. 303—146 **9 Claims**

1. A brake system of a vehicle having a vehicle body and a plurality of vehicle wheels, said brake system comprising a reservoir, a plurality of wheel cylinders each adapted to apply a braking force to a corresponding one of said plurality of vehicle wheels



when supplied with a working fluid at a raised pressure, an inlet passage means adapted to supple the working fluid to said plurality of wheel cylinders, a pump means for pumping the working fluid from said reservoir to said inlet passage means to provide a predetermined raised pressure source of the working fluid in said inlet passage means, fluid circuit means including fluid flow control valves for selectively conducting the working fluid from said inlet passage means to each one of said wheel cylinders, and an automatic control means for controlling said pump means and said fluid flow control valves, wherein said automatic control means comprises means for estimating a parameter related with running of the vehicle, said parameter relating to a probable requirement for applying braking to at least one selected from said plurality of vehicle wheels by approaching a predetermined value thereof, said automatic control means controlling said pump means and said fluid flow control valves such that, when said parameter approaches said predetermined value with a predetermined proximity thereto, said pump means is started for operation thereof so as to provide said predetermined raised pressure source in said inlet passage means while said flow control valves isolate all of the wheel cylinders from said inlet passage means, and when said parameter reaches said predetermined value, the wheel cylinder or cylinders corresponding to said selected vehicle wheel or wheels are supplied with the working fluid with a rise of pressure thereof available as modified from said predetermined raised pressure source in said inlet passage means under a control of said flow control valves.

5,797,664

ANTI-SKID CONTROL BRAKING SYSTEM FOR FOUR-WHEEL DRIVE VEHICLE WITH FEATURE OF DETERMINATION OF DRIVE STATE

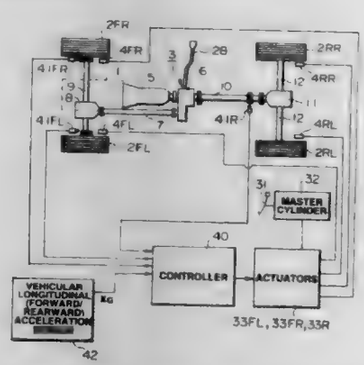
Yukio Tagawa, Tochigi, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 27, 1996, Ser. No. 607,604

Claims priority, application Japan, Feb. 27, 1995, 7-038536; Feb. 27, 1995, 7-038537

Int. Cl.[6] B60T *8/00*

U.S. Cl. 303—190 **10 Claims**



1. An anti-skid control braking system for a four-wheel drive vehicle, said vehicle having mainly driven road wheels and secondarily driven road wheels, and a transfer mechanism which is so arranged and constructed as to be selectable between a two-wheel drive state in which a driving force passed from a power transmission is distributed therethrough only toward the mainly driven road wheels and a four-wheel drive state in which the driving force passed from the power transmission is distributed therethrough toward both of the mainly and secondarily driven road wheels at a predetermined distribution ratio, said anti-skid control braking system comprising:

a plurality of road wheel speed sensors which are so arranged and constructed as to detect road wheel speeds of at least two of the secondarily driven road wheels and one of the mainly driven road wheels, and so as to produce respective road wheel speed signals indicative of the respectively detected road wheel speeds of the mainly and secondarily driven road wheels;

a plurality of braking cylinders associated with the mainly and secondarily driven road wheels;

braking pressure controlling means for independently controlling braking pressures of the respective braking cylinders on the basis of values of the respective road wheel speed signals in an anti-skid control mode; and

drive state determining means for determining whether the four-wheel drive vehicle is running in the two-wheel drive state or in the four-wheel drive state on the basis of the value of at least one of the respective road wheel speed signals of the one of the mainly driven road wheels,

wherein said braking pressure controlling means independently controls the braking pressures of the respective braking cylinders according to a result of the determination by the drive state determining means,

wherein said braking pressure controlling means modifies the anti-skid control mode for the mainly driven road wheels according to a result of determination of whether the four-wheel drive vehicle is running in the two-wheel drive state or in the four-wheel drive state by said drive state determining means,

wherein said mainly driven road wheels are rear left and right road wheels (2RL and 2RR) and said secondarily driven road wheels are front left and right road wheels (2FL and 2FR), wherein said one of road wheels sensors which is so arranged and constructed as to detect the road wheel speed of the one of the mainly driven road wheels is a rear road wheel side road wheel speed sensor located on a rear road wheel side propeller shaft connected to said transfer mechanism for detecting a rotation speed of the propeller shaft as the value of the wheel speed (V_{WR}) of the one of the rear left and right road wheels, and wherein said drive state determining means comprises: rear road wheel side road wheel acceleration or deceleration determining means for determining a rear road wheel side wheel acceleration or deceleration (V_{WR}') as a function of the rear road wheel speed signal detected by the rear road wheel side road wheel speed sensor; and second drive state determining means for determining whether the rear road wheel side road wheel acceleration or deceleration (V_{WR}') is either less than a first predetermined value or greater than a second predetermined value, said second predetermined value being greater than said first predetermined value, said drive state determining means determining that the four-wheel drive vehicle is running in the four-wheel drive state when said second drive state determining means determines that the value of the rear road wheel side acceleration or deceleration (V_{WR}') is greater than said second predetermined value.

5,797,665

FILE HOLDERS WITH FOLDER RETENTION

Jack W. Jeter, Akron, Ohio, assignor to Jeter Systems Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 405,365, Mar. 16, 1995, abandoned, and Ser. No. 405,366, Mar. 16, 1995. This application Jan. 8, 1997, Ser. No. 780,577

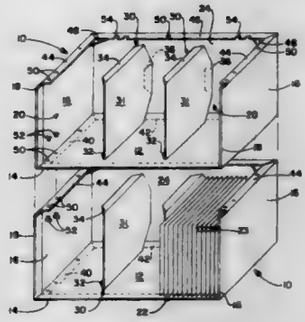
Int. Cl.[6] A47B *87/02*

U.S. Cl. 312—107 **4 Claims**

1. A file holder, comprising:

a support surface for holding a plurality of file folders;

a plurality of panels carried by said support surface and substantially perpendicular thereto, said support surface and said





plurality of panels forming a file folder opening for receiving the plurality of file folders; and

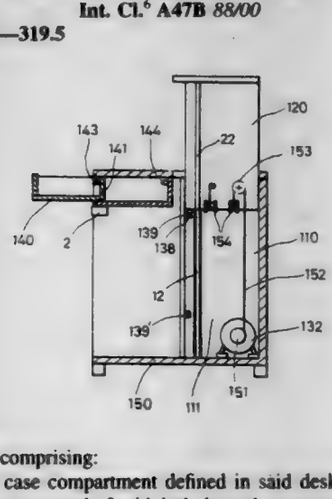
a file retainer integrally extending from said support surface which precludes linear withdrawal movement of any one of said plurality of file folders from said support surface, said file retainer formed by a hemmed support edge at a front edge of said support surface, said hemmed support edge having an inner support surface that is a coplanar continuation of said support surface, said hemmed support edge having an edge portion of said support surface folded directly back onto itself at a top side of said support surface, wherein said hemmed support edge has an outer support surface substantially parallel to and in planar engagement with said inner support surface, said file retainer further comprising a file retention edge at an end of said hemmed support edge, said file retention edge being substantially perpendicular with said support surface and substantially parallel with a front edge of the plurality of file folders, wherein said file retention edge is dimensionally less than said hemmed support edge.

5,797,666

DESK WITH LIFTABLE MONITOR CASE

Kwang-soo Park, 317-22, Kalhyon-dong, Unp'yong-gu, Seoul, Rep. of Korea

Filed Sep. 6, 1996, Ser. No. 706,716
Int. Cl.[6] A47B *88/00*
U.S. Cl. 312—319.5 **5 Claims**



1. A desk comprising:

a monitor case compartment defined in said desk and opening outside a top panel of said desk through an opening formed on said top panel, said compartment being provided with a pair of guide rails vertically extending on both side walls thereof, respectively;

a liftable monitor case received in said compartment to vertically move between monitor-visible and nonvisible positions, each side wall of said case having a guide groove engaging with an associated guide rail of said compartment to guide said case while the case vertically moves relative to the compartment;

means for selectively lifting said monitor case relative to the compartment; and

means for automatically starting said monitor case lifting means to vertically move said monitor case between the monitor-visible and nonvisible positions, wherein said starting means includes:

a contact provided on a keyboard drawer in said desk;

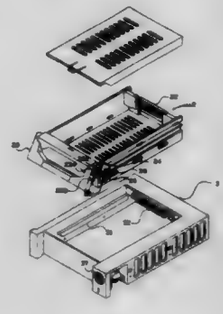
third and fourth limit switches provided in a drawer-receiving cavity inside the desk, said third or fourth limit switch being selectively brought into contact with said contact of the drawer in fully-drawn or fully-retracting position, thus starting said monitor case lifting means in either direction.

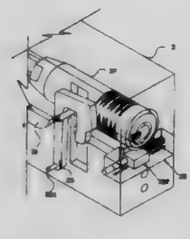
5,797,667

HARD DISK CASE MOUNTING STRUCTURE

Ching Hsiu Wu, 8th Fl. No.957, Chung Shan Rd., Sec. 2, Taishan Hsiang, Taipei Hsien, Taiwan

Filed Jul. 31, 1996, Ser. No. 688,761
Int. Cl.[6] H05K *7/16*
U.S. Cl. 312—332.1 **1 Claim**





1. A hard disk case mounting structure comprising a case provided with a pull handle at a front end thereof, said pull handle being provided with an indented triangular stop portion at either lateral side thereof, said case having an indented securing element provided on both lateral side walls thereof, said securing element receiving a substantially L-shaped auxiliary stop bar which is secured in said securing element by means of a pivot and may rotate through a suitable angle, said securing element having a rear side wall configured to match the shape of said auxiliary stop bar, said auxiliary stop bar being provided with an indented triangular stop portion at an upper lateral side thereof; and a mounting frame provided with two protrudent rails at both inner side walls thereof respectively, said rails being configured to curve downwardly at their extreme ends such that when said pull handle is turned to push said auxiliary stop bar said auxiliary bar in turn presses against said rails to permit smooth removal of the hard disk; said auxiliary stop bar further having an inner side thereof configured to be slanting such that, when a rotary rod of a hard disk lock forces said pull handle to be positioned in the process of locking said

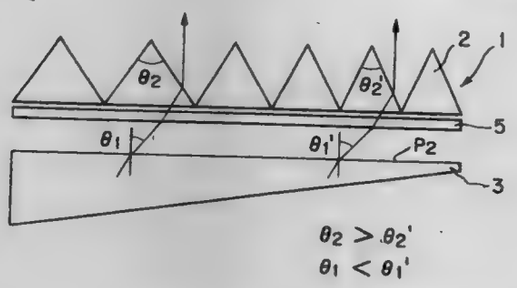
auxiliary stop bar has a notch thereof lying close against said stop portion of said pull handle to prevent said pull handle from being pulled upwardly.

5,797,668

SURFACE ILLUMINATION DEVICE SUITABLE FOR A BACKLIT DISPLAY

Hiroshi Kojima, and Nobuo Naito, both of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo-To, Japan

Filed Apr. 2, 1997, Ser. No. 832,047
Claims priority, application Japan, Apr. 4, 1996, 8-106480
Int. Cl.[6] F21V *5/00;5/04;7/04*
U.S. Cl. 362—31 **5 Claims**



$\theta_2 > \theta_2'$
$\theta_1 < \theta_1'$

1. A surface illuminant device comprising: a light guide plate for emitting light therefrom through a first light exit surface thereof; and a lens film disposed facing said first light exit surface and including a base film, and a plurality of triangular prisms integrally formed in a two-dimensional arrangement on a surface of the base film remote from said light guide plate to form a second light exit surface, each of said prisms having a cross section in the shape of an isosceles triangle;

wherein the shape of the triangular prisms meets conditions expressed by:

$$R=[\sin^{-1}\{n\times\sin[\cos^{-1}\{(1/n)\times\cos(\theta_2/2)\}-\theta_2/2]\}]/\theta_1$$

$0.5 \leqq R \leqq 1.0$

where θ_1 is a peak exit angle at which a major part of the light leaving said first light exit surface of the light guide plate toward the lens film travels is inclined with respect to a normal to a light entrance surface facing said light guide plate of the lens film, where θ_2 is an apex angle of the triangular prisms, and where n is the refractive index of the lens film; and wherein the triangular prisms at different positions on the surface of the lens film have different apex angles θ_2 corresponding to different peak exit angles θ_1, respectively.

5,797,669

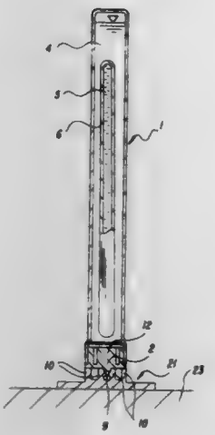
CHEMICAL LUMINESCENCE APPARATUS

Masahiko Fujita, Koga-Machi, Japan, assignor to Nihon Kagaku Hakko K.K., Fukuoka, Japan

Division of Ser. No. 389,824, Feb. 15, 1995, Pat. No. 5,673,988. This application Apr. 22, 1997, Ser. No. 847,667
Int. Cl.[6] F21K *2/00*
U.S. Cl. 362—34 **5 Claims**

1. A chemical luminescence apparatus, comprising:

a tube container having an open top, said tube container containing a first chemical luminous liquid and an ampul, said ampul containing a second chemical luminous liquid chemically reactive with said chemical luminous liquid for forming a luminescent reaction liquid;



a cap hermetically sealing said open top; and

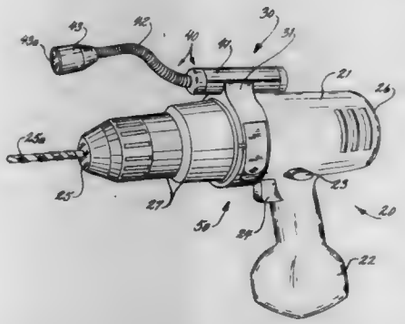
a stand member for standing said tube container, said stand member being detachably mounted to said cap.

5,797,670

PORTABLE POWER TOOL LIGHT, ACCESSORY MOUNTING BELT, AND METHOD OF USING SAME

Phillip Jack Snoke, Atlanta; Michael John Mark, Suwanee; Javier Verdura, Marietta, all of Ga., and Kevin A. Nagatani, San Jose, Calif., assignors to American Industrial Design Co., Inc., Atlanta, Ga.

Filed Aug. 23, 1996, Ser. No. 702,256
Int. Cl.[6] B25B *23/18*
U.S. Cl. 362—119 **53 Claims**

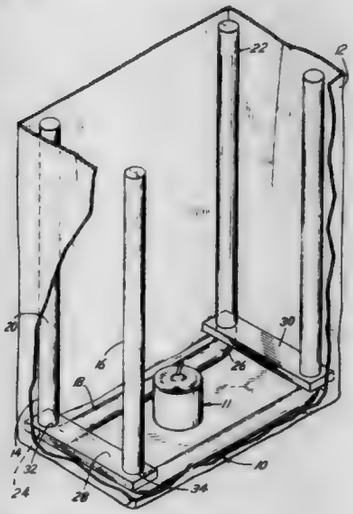


1. A portable power tool light for mounting to a portable power tool, the power tool light comprising:

a belt shaped to detachably mount to and surround a distal portion of a portable power tool, said belt including a fastener for securely fastening said belt to the outer surface of a distal portion of a portable power tool; and

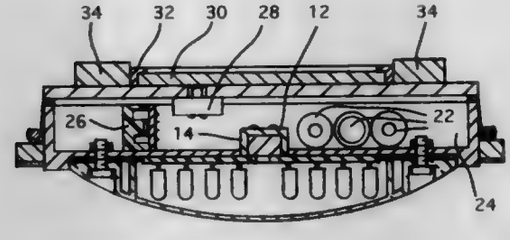
flexible lighting means connected to said belt and extending outwardly therefrom toward a distal portion of a power tool for flexibly positioning a light source to direct radiation from the light source toward an object for using the power tool thereon to thereby illuminate the object for increasing visibility of the object to the user of the power tool, said flexible lighting means including a base connected to said belt, an elongate, flexible arm connected to said base and extending outwardly therefrom, and a light head connected to said flexible arm for casting light onto an object for using the power tool thereon.

5,797,671
LUMINARIA FRAME
Lawrence R. Gess, 523 W. Cossitt Ave., LaGrange, Ill. 60525
Filed Jun. 23, 1995, Ser. No. 494,602
Int. Cl.[6] F21L *19/00*
U.S. Cl. 362—162 6 Claims



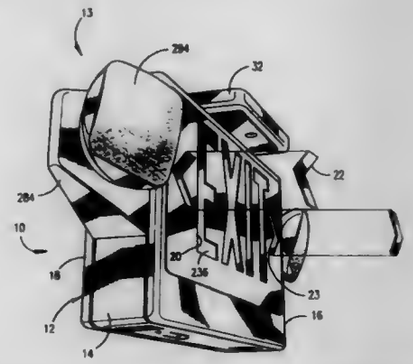
1. A luminaria frame comprising:
supports, each support having upstanding legs; and
braces, each brace defining spaced leg apertures, each brace when assembled with the supports having a leg of each support placed in the leg apertures of the brace, with the other brace when assembled with the supports having other legs of each support placed in the leg apertures of the other brace, the supports and braces thereby forming a unified framework, the supports and braces movable relative to each other such that the framework collapses for storage and expands to hold a bag about the framework to form a luminaria with a candle placed, as desired, inside;
whereby the frame requires assembly once, and otherwise requires only movement of the supports and braces relative to each other to change from collapsed storage to expanded use.

5,797,672
SAFETY LIGHT
Frank C. Dobert, Earlton Gayhead Rd., Box 204, Earlton, N.Y. 12058
Continuation of Ser. No. 401,634, Mar. 9, 1995, abandoned. This application Dec. 13, 1996, Ser. No. 766,357
Int. Cl.[6] B62J *6/00*
U.S. Cl. 362—190 1 Claim



1. A battery-powered light unit comprising:
a housing having an interior battery compartment designed to contain a battery, wherein said housing includes flanges for attaching a panel thereto;
a bulb array releasably secured to a front portion of said housing, said bulb array being in the form of a plurality of light emitting diodes electrically connected together on a board means and wherein said board means includes an electrically conductive connector means adapted for a quick-release type of removable connection of said board to an electrical receiver means secured to said housing wherein said electrically conductive connector means being the only connection between said board and housing;
a switch means; and
electrical connection means for connecting said electrical receiver means to said switch means and to a battery when said battery is located within said battery compartment.

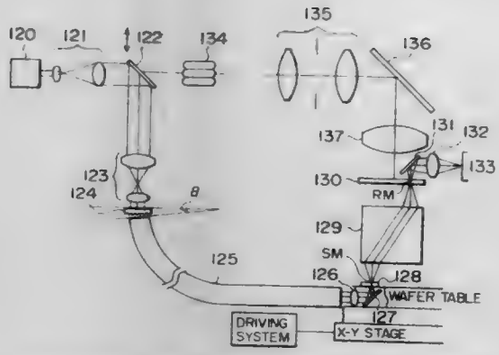
5,797,673
EMERGENCY LIGHTING UNIT/EXIT SIGN COMBINATION
Mark Campbell Logan, Doraville; Andrew Edward Masters, Lawrenceville, and Edwin Lewis Hull, Conyers, all of Ga., assignors to NSI Enterprises, Inc., Atlanta, Ga.
Filed Nov. 22, 1995, Ser. No. 561,956
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—234 56 Claims



1. A combination exit sign and emergency lighting unit having at least one emergency lighting unit assembly mountable to different locations of the exit sign portion of the combination and being repositionable between said locations, the combination comprising first means formed on the exit sign portion of the combination and second means formed on the at least one emergency lighting unit assembly, the first means cooperating with the second means for mounting of said at least one emergency lighting unit assembly to said locations and for removal of said at least one emergency lighting unit assembly from said locations.

5,797,674
ILLUMINATION OPTICAL SYSTEM, ALIGNMENT APPARATUS, AND PROJECTION EXPOSURE APPARATUS USING THE SAME
Tadashi Nagayama, Tokyo, Japan, assignor to Nikon Corporation, Japan
Division of Ser. No. 446,346, May 22, 1995, Pat. No. 5,552,892. This application Mar. 19, 1996, Ser. No. 620,683
Claims priority, application Japan, May 24, 1994, 6-132395; Sep. 6, 1994, 6-212684
Int. Cl.[6] F21V *13/12*
U.S. Cl. 362—268 8 Claims

1. An illumination optical system comprising:
a parallel beam supply system for supplying a parallel beam;
a light guide for guiding the parallel beam from said parallel beam supply system to a target illumination object; and
a diffusion optical system, arranged between said parallel beam supply system and said light guide, for diffusing the parallel beam,
wherein an incident end face of said light guide is arranged to be inclined by a predetermined angle with respect to a plane



perpendicular to a direction of incidence of the parallel beam onto said diffusion optical system.

5,797,675

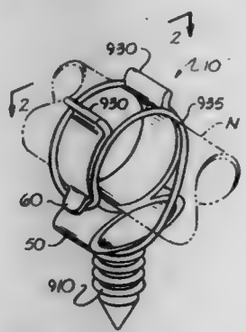
SPRING CLIP FOR NEON BULBS

Walter Keisler Tanner, Jr., Chesnee, S.C., assignor to Fallon Luminous Products Corp., Spartanburg, S.C.

Continuation-in-part of Ser. No. 389,314, Feb. 16, 1995, Pat. No. 5,541,823. This application Feb. 12, 1996, Ser. No. 601,067

Int. Cl.[6] F21V *21/00;* **F16L** *3/00*

U.S. Cl. 362—396 **16 Claims**



1. A tubular bulb clip, comprising:

a stem for supporting said clip in a platform, said stem being rigidly positioned in said platform when in use;

a bulb support; and

a spring extending away from said stem and positioned entirely between said stem and said bulb support;

wherein said spring allows for movement of said bulb support with respect to said stem.

5,797,676

MOBILE CONCRETE MIXING SYSTEM TRANSPORTABLE ONTO TRUCKS

Michele Furlani, Minerbe, Italy, assignor to SIMEM S.p.A., Minerbe, Italy

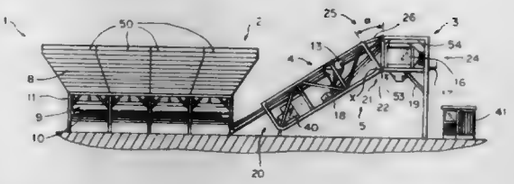
Filed May 14, 1997, Ser. No. 856,396

Claims priority, application Italy, May 15, 1996, VR96A0045

Int. Cl.[6] B28C *5/20*

U.S. Cl. 366—18 **7 Claims**

1. A mobile concrete mixing system transportable onto vehicles of a type comprises:—a feeding unit (2) substantially comprised of an aggregate stocking hopper (8), of a weighing hopper (9) and of an expeller belt (10) positioned below said weighing hopper (9);—a mixing unit (3) which collects, batches, proportions and mixes the aggregate, water and cement, encircled by a walkway (17) used for inspection and maintenance procedures;—a conveyor belt (4) which receives the aggregate from said expeller belt (10) and, in turn, carries said aggregate to the mixing unit (3);—an operating unit (40); a support structure (5) comprised of a first framework (18) supporting said conveyor belt (4), equipped with an upstream end (20) positioned in proximity to the expeller belt (10), and a downstream end (21), positioned in proximity to the mixing unit (3), and of a second framework (19) supporting said mixing unit (3);—a control cabin (41) which allows for both the operative and functional control of said concrete mixing system (1); wherein:



said first (18) and second (19) frameworks are connected to each other by means of a hinge (22), joining said downstream end (21) of said first framework (18) to said second framework (19), said hinge (22) being able to allow for the rotation of the first framework (18) about a substantially horizontal axis (X) in relation to the second framework (19), thus determining a movement of said mixing unit (3) between a transporting position (23), in which said frameworks (18,19) are positioned side-by-side in a minimally encumbering condition, and an operative position (24), in which said frameworks are separated by an angle (alpha) and held by means of a fastening mechanism (25), said rotation about the axis (X) being obtained by keeping the mixing unit (3) in a horizontal position;

said conveyor belt (4) is movable by means of a mechanical actuator (27), between a shortened condition (28), in said transporting position (23) of said mixing unit (3), and a lengthened condition (29), in said operative position (24) of said mixing unit (3);

said feeding unit (2) can be housed in a first vehicle (52) and said mixing unit (3), said conveyor belt (4), said support structure (5) and said operating unit (40) can be housed in a second vehicle (43), said first (52) and said second vehicle (43) being able to fall within the provided for dimensions for normal traffic circulation, when said mixing unit (3) is placed in said transporting position (23), and said conveyor belt (4) is, in turn, placed in said shortened condition (28).

5,797,677

SCREW-TYPE EXTRUDING MACHINE HAVING A SCREW ELEMENT DEFINING A GROOVE WITH AN EXPANSION REGION AT EACH END THEREOF

Gerhard Weihrich; Wolfgang Woerz, both of Illingen; Reinhard Wuttke, Stuttgart, and Rainer Sauter, Remseck, all of Germany, assignors to Werner & Pfleiderer GmbH, Stuttgart, Germany

PCT No. PCT/DE95/00728, § 371 Date Dec. 17, 1997, § 102(e) Date Dec. 17, 1996, PCT Pub. No. WO95/35195, PCT Pub. Date Dec. 28, 1995

PCT Filed Jun. 3, 1995, Ser. No. 750,709

Claims priority, application Germany, Jun. 20, 1994, 44 21 514.2

Int. Cl.[6] B29B *7/48;7/58*

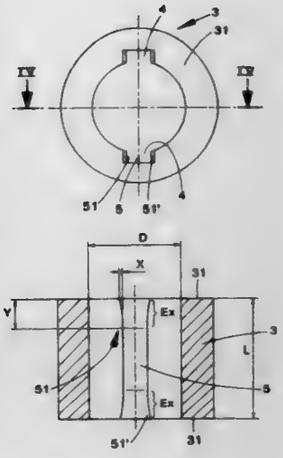
U.S. Cl. 366—85 **8 Claims**

1. A screw-type extruding machine comprising:

a housing;

a driveable shaft disposed inside the housing and including a rotational moment transfer element; and

at least one screw element having two ends and defining a longitudinal groove therein for receiving the rotational moment transfer element of the shaft, the shaft thereby transferring its rotational moment to the at least one screw element, the groove being configured such that it defines two expansion regions, each expansion region having an axial



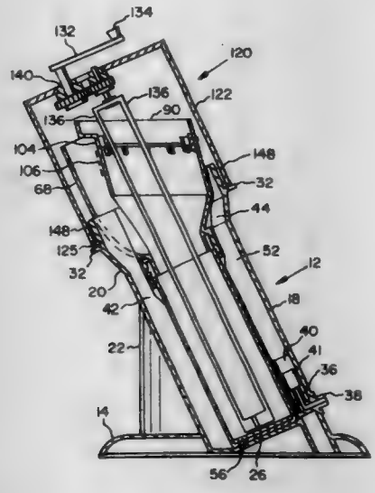
extent y, the groove having side surfaces which diverge with respect to a longitudinal axis of the groove along the axial extent of each expansion region in a direction toward a corresponding one of the two ends of the at least one screw element, a width of the groove thereby increasing in a direction toward its two ends along each expansion region.

5,797,678

BONE CEMENT MIXING DEVICE AND METHOD

William M. Murray, 5020 Ritter Rd., Suite 211, Mechanicsburg, Pa. 17055-4837

Filed Sep. 25, 1995, Ser. No. 533,171
Int. Cl.[6] B01F *13/06*
U.S. Cl. 366—139 **47 Claims**



1. A device for mixing a liquid monomer with a polymer powder to form a bone cement, the device comprising:

a housing having an open top;

a non-rotatable internal chamber located in said housing, wherein said internal chamber is inclined at an angle from a vertical axis;

a syringe cartridge configured to be removably and non-rotatably received in said internal chamber;

a cap configured to fit over said open top of said housing to sealably close said housing; and

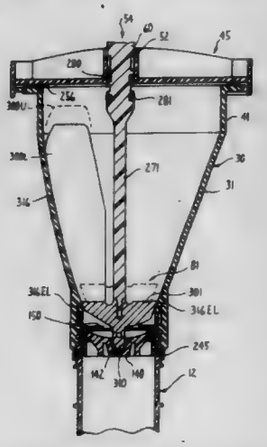
a mixer assembly having at least one stirrer element configured to extend into said syringe cartridge in said internal chamber.

5,797,679

SURGICAL CEMENT MIXER APPARATUS

David H. Grulke, Battle Creek; Richard F. Huyser, Kalamazoo, both of Mich.; Eugene Lautenschlager, Skokie, Ill.; Dennis A. Stratton, Plainwell; Harry A. Wellons, III, Portage, both of Mich., and Richard L. Wixson, Chicago, Ill., assignors to Stryker Corporation, Kalamazoo, Mich.

Continuation of Ser. No. 599,253, Feb. 9, 1996. This application May 17, 1996, Ser. No. 650,383
Int. Cl.[6] B01F *13/06;15/02;7/20*
U.S. Cl. 366—139 **39 Claims**



1. A hard tissue repair cement mixer apparatus, comprising:

a mixing chamber having a conical, upward diverging inner surface, a length axis, and an inlet for receiving cement components to be mixed;

a blade rotatably supported for rotation about the length axis of said conical mixing chamber, said blade having a radially outer edge upwardly converging into contact with an upper portion of said conical mixing chamber, said blade angling divergently upward from a plane containing said axis,

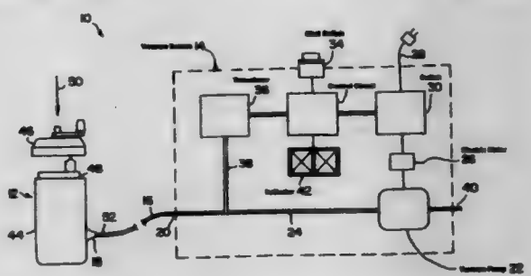
whereby rotation of said blade tends to force cement radially outward toward and up said conical inner surface of said mixing chamber in an upwardly thinning layer and therewith expedite release of trapped gas in the cement mix.

5,797,680

MANUAL BONE CEMENT MIXING SYSTEM WITH VACUUM PUMP START-STOP DEVICE

William M. Murray, 2650 Spring Hill La., Enola, Pa. 17025

Filed Sep. 5, 1996, Ser. No. 707,648
Int. Cl.[6] B01F *13/06*
U.S. Cl. 366—139 **13 Claims**



1. A system for mixing bone cement comprising,

a) a device for mixing bone cement having a hollow mixing chamber and a vacuum port;

b) a vacuum tube having a first end attached to said port and a second end; and

c) a vacuum source including a vacuum pump having an inlet port connected to the second end of the vacuum tube, and a

vacuum pump start and stop device operatively joined to the pump to start the pump in response to a positive pressure pulse above ambient and to automatically stop the pump in response to a positive pressure pulse above a vacuum.

5,797,681

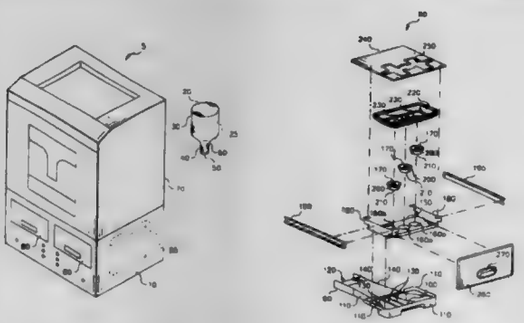
BATCH MIXER

Richard P. Triassi, Walworth; Vincent B. Dethier, and Leroy Brown, Jr., both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1996, Ser. No. 753,074

Int. Cl.[6] B67D *5/60; B01F 15/02*

U.S. Cl. 366—177.1 **14 Claims**



1. A batch mixer for mixing a container of concentrate and diluent, the batch mixer comprising:

(a) a mixing tank; and

(b) a means to provide a diluent into said mixing tank; and

(c) a movable drawer assembly in fluid connection with said mixing tank for delivering the concentrate to said mixing tank, said drawer assembly receiving at least one container including a pouring spout for holding the concentrate, said drawer assembly comprising:

(c1) a multiple position receiving station for permitting the arrangement of a respective pouring spout of each of container of concentrate to be placed in two or more positions in said drawer assembly.

5,797,682

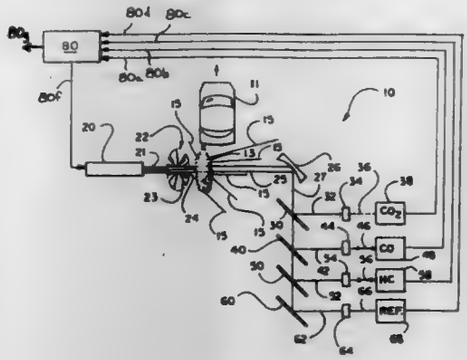
DEVICE AND METHOD FOR MEASURING TEMPERTURE OF VEHICLE EXHAUST

John Kert, Pismo Beach, Calif.; Robert Stephens, Sterling Heights, Mich., and Michael D. Jack, Goleta, Calif., assignors to Envirotest Systems Corp., Sunnyvale, Calif.

Continuation of Ser. No. 364,438, Dec. 27, 1994, abandoned, which is a continuation-in-part of Ser. No. 15,730, Feb. 10, 1993, abandoned. This application Jan. 31, 1997, Ser. No. 797,669

Int. Cl.[6] G01J *5/06;* **G01N** *21/25*

U.S. Cl. 374—123 **15 Claims**



7. A system for simultaneously measuring temperature and CO, CO_2, and HC gas content of vehicle exhaust comprising:

means for projecting a beam of infrared electromagnetic radiation through a plume of vehicle exhaust;

a chopper wheel positioned between said means for projecting a beam of infrared electromagnetic radiation and the plume of vehicle exhaust, said chopper wheel being adapted for intermittently projecting the beam of infrared electromagnetic radiation through the plume of vehicle exhaust;

first means for detecting intensities of wavelengths of infrared electromagnetic radiation characteristically absorbed from the beam of infrared electromagnetic radiation by CO present in the vehicle exhaust;

second means for detecting intensities of wavelengths of infrared electromagnetic radiation characteristically absorbed from the beam of infrared electromagnetic radiation by CO_2 present in the vehicle exhaust;

third means for detecting intensities of wavelengths of infrared electromagnetic radiation characteristically absorbed from the beam of infrared electromagnetic radiation by hydrocarbons HC present in the vehicle exhaust;

fourth means for detecting intensities of wavelengths of infrared electromagnetic radiation that are not characteristically absorbed from the beam of infrared electromagnetic radiation by CO, CO_2, and HC present in the radiation vehicle exhaust;

beam splitting means for directing the beam of infrared electromagnetic radiation after passing through the plume of vehicle exhaust and infrared electromagnetic radiation emitted by the plume of vehicle exhaust, to said first means for detecting intensities of wavelengths of infrared electromagnetic radiation, said second means for detecting intensities of wavelengths of infrared electromagnetic radiation, said third means for detecting intensities of wavelengths of infrared electromagnetic radiation, and said fourth means for detecting intensities of wavelengths of infrared electromagnetic radiation;

means, responsive to detected intensities of wavelengths of infrared electromagnetic radiation output by said fourth means prior to projection of the beam of infrared electromagnetic radiation through the plume of vehicle exhaust, for determining a reference intensity value for normalizing the detected intensities of wavelengths of infrared electromagnetic radiation output from said first, second and third intensity detecting means; and

means for computing the temperature, CO, CO_2, and HC content of the plume based at least in part on the normalized detected intensities.

5,797,683

SEALABLE BAG

Laurence A. Gunzi, and Massimo G. F. Malavasi, both of London, England, assignors to Aquaman (UK) Ltd., London, England

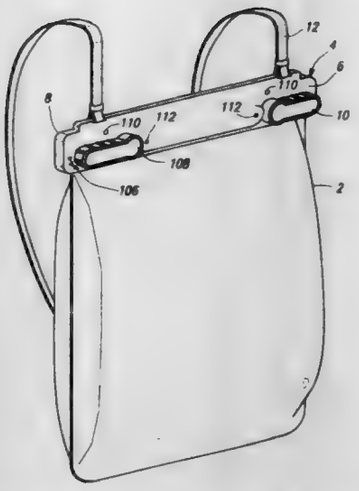
Filed Jul. 31, 1996, Ser. No. 690,064

Claims priority, application United Kingdom, Sep. 4, 1995, 9517991

Int. Cl.[6] B65D *33/17*

U.S. Cl. 383—68 **7 Claims**

1. A bag with an access opening defined by a pair of edges and a closure comprising a first bar releasably secured to at least one part of a first of said edges, a second bar releasably secured to at least one part of a second of said edges, releasable connection means for connecting said first and second bars together with said first and second edges clamped directly together therebetween to close the opening, said releasable connection means including at least one bayonet connector comprising a rotatable bayonet pin attached to one of said bars and a bayonet hole in the other of said bars, and, means for tightening the connection between said first



and second bars to increase the clamping pressure on said first and second edges and thereby to form a waterproof seal across the access opening.

5,797,684

VIBRATION DAMPING APPARATUS HAVING AN OIL SPACE WITH AN OUTFLOW CHOKE

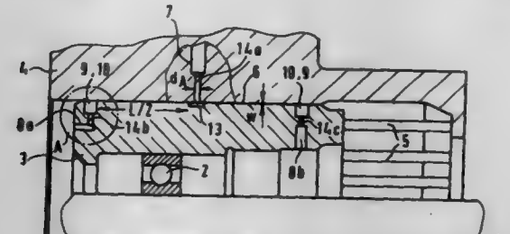
Karl Helmut Becker, Schwabhausen, Germany, assignor to MTU Motoren-und Turbinen-Union München GmbH, München, Germany

Filed Sep. 9, 1997, Ser. No. 925,957

Claims priority, application Germany, Sep. 12, 1996, 196 37 116.3

Int. Cl.[6] F16C 27/00

U.S. Cl. 384—99 9 Claims



1. Apparatus for vibration damping a rotatable shaft supported by a bearing assembly in a stationary support housing, the bearing assembly having a bearing housing which is elastically mounted concentrically within the stationary housing in an axial position therein, said bearing housing and said support housing having opposed circumferential surfaces forming a space, the stationary housing having an inlet bore therein extending to said space for introduction of a viscous liquid under pressure into said space, said bearing housing having axially spaced discharge bores extending from said space on opposite sides of said inlet bore in the stationary housing for discharge of the viscous liquid from said space, sealing rings being provided in the bearing housing to seal ends of said space, the improvement wherein

said discharge bores in said bearing housing have constricted regions therein in the vicinity of said sealing rings, said constricted regions each having a flow cross-section and length related to the flow cross-section of the inlet bore in the stationary housing to constitute a choke.

5,797,685

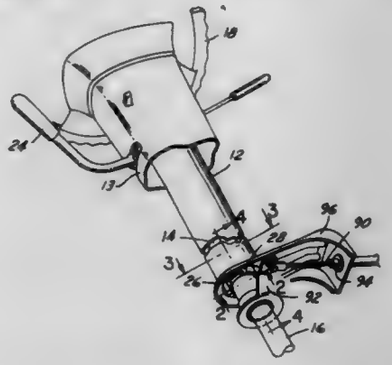
GEAR SHIFT TUBE SUPPORT

Mirjana Jurik; Thomas Dziegielewski, both of Rochester Hills; John Perri, Auburn Hills, and Thomas Grzybowski, Fraser, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 22, 1996, Ser. No. 755,045

Int. Cl.[6] B60K 20/06

U.S. Cl. 384—215 11 Claims



1. A device for rotatably supporting a gear shift tube within a tubular steering column of an automotive vehicle comprising:

a cup adapted to be rigidly secured in the steering column,

said cup having a bottom wall and an annular side wall,

the bottom wall having inner and outer surfaces and formed with a central opening,

a support of integral, one-piece construction made of a flexible, elastomeric, resinous plastic material disposed within said cup,

said support comprising an open-ended bearing sleeve co-axial with said cup having an end portion extending through and having a close fit in said opening,

said sleeve having angularly spaced abutments inside said cup extending radially outwardly from said sleeve and abutting the inner surface of the bottom wall of the cup around said opening, and

angularly spaced tangs outside said cup extending radially outwardly from the end portion of the sleeve and abutting the outer surface of the bottom wall of the cup around the opening therein and cooperating with said abutments in locking said sleeve axially within the cup.

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WHEEL BEARING DEVICE

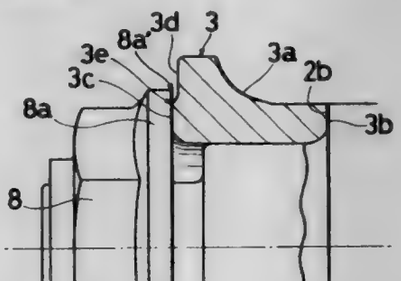
Motoshi Kawamura, and Masaru Goto, both of Nara-ken, Japan, assignors to Koyo Seiko Co., Ltd., Chuo-ku, Japan

Filed Jul. 31, 1997, Ser. No. 903,926

Claims priority, application Japan, Jul. 31, 1996, 8-219359

Int. Cl.[6] F16C 13/00;33/00

U.S. Cl. 384—544 1 Claim



1. A wheel bearing device comprising: an outer race which serves also as a housing; an inner race which serves also as a shaft;

an inner race member which is fittingly fixed to said shaft which is said inner race; rolling elements and a cage which are disposed in an annular space between said outer race, and said inner race and said inner race member; and a nut which fixes said inner race member to said inner race by an axial force, wherein

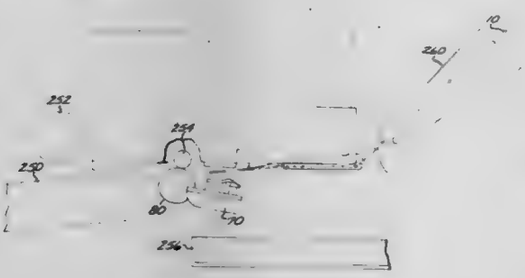
said inner race member is formed so that an area of an end face abutting against a step portion of said shaft of said inner race is substantially equal to an area of an end face abutting against a bearing surface of said nut, and said step portion is formed so that an outer peripheral end of said end face abutting against said bearing surface of said nut is positioned inside an end of said bearing surface of said nut.

5,797,687

PAPER STACKER ACTIVATION FOR PRINTER INPUT/OUTPUT

David M. Petersen, Poway; Jeremy Mayer, San Diego, and Scott M. Nakada, Oceanside, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 11, 1997, Ser. No. 814,564
Int. Cl.[6] B41J *3/28;11/20*
U.S. Cl. 400—23 **17 Claims**



1. A printer for producing hard copy, comprising:

a media path through a print area;

a pen carriage mounted for movement along a scan axis and transverse to the media path at the print area, the carriage holding a pen cartridge having a print head;

a carriage drive system for driving the pen carriage along the scan axis in response to drive signals;

a media drive system for driving the media along the media path in forward as well as in reverse directions in response to media drive signals;

a movable platen structure for providing a platen surface adapted to support the print media at the print area during printing operations at a platen print position and adapted for movement to a platen drop position to clear the platen surface away from the print medium upon completion of printing operations; and

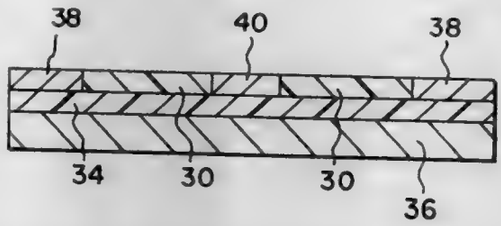
apparatus for activating the platen structure to move between said platen print position and said platen drop position, the activating apparatus including platen engaging apparatus positioned in a first position during printing operations to avoid interference with motion of the pen carriage, said platen engaging apparatus positioned in a second position which interferes with motion of the pen carriage and is engaged by the pen carriage to activate the platen structure for movement from the print position to the drop position.

5,797,688

THERMAL DYE TRANSFER PRINTING OF COMPACT DISC LABELS INCLUDING A CIRCULAR RECESSED CARRIER

Xin Wen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 7, 1997, Ser. No. 779,512
Int. Cl.[6] B41J *3/28*
U.S. Cl. 400—48 **4 Claims**



1. Apparatus for printing labels onto circular discs of predetermined diameter and having a center hole, said apparatus comprising:

a linear printhead having a length equal to at least the diameter of the discs to be printed; and

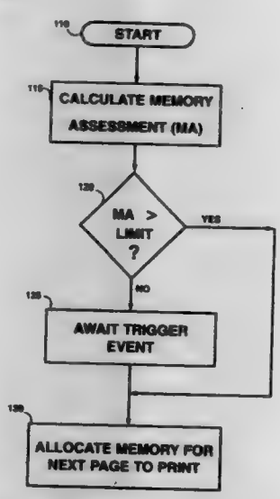
a carrier having a planar surface with a circular recess therein into which one of the circular discs can be tightly inserted, said carrier including a substrate at least partially formed of an elastic material having compliance selected so as to provide a pressure on the printhead optimal for dye transfer, said recess being of a depth equal to the thickness of the disc to be printed, whereby the planar surface and a surface of an inserted disc form a substantially flat surface.

5,797,689

AVOIDING MEMORY FRAGMENTATION IN PRINTERS

Alan J. Oyama; James S. Boyce, both of Boise, and Patrick O. Sandfort, Meridian, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 24, 1996, Ser. No. 591,077
Int. Cl.[6] G06F *12/00*
U.S. Cl. 400—74 **28 Claims**



1. A method, performed by a printer, for avoiding memory fragmentation in the printer wherein the method comprises in sequence:

assessing, prior to processing a next page to be printed, an extent of memory fragmentation to provide a quantitative memory assessment;

comparing the assessment to a limit;

postponing allocation in response to the comparison; and

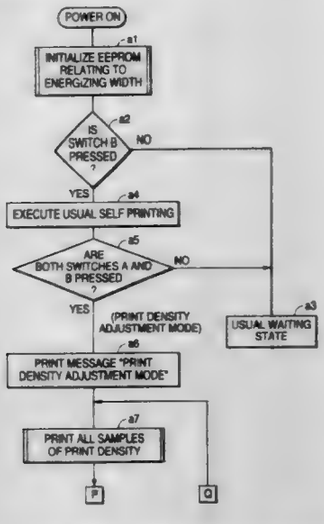
allocating memory for describing a portion of the next page to be printed; whereby further memory fragmentation is avoided by postponing memory allocation when the assessment indicates subsequent memory requests may be denied.

5,797,690

PRINTER AND METHOD OF ADJUSTING PRINT DENSITY

Eiji Iwamura, and Tetsuro Ogino, both of Shizuoka, Japan, assignors to Star Micronics Co., Ltd., Shizuoka, Japan

Filed Jul. 25, 1996, Ser. No. 687,024
Claims priority, application Japan, Jul. 28, 1995, 7-193868
Int. Cl.[6] B41J *2/23*
U.S. Cl. 400—124.01 **8 Claims**



1. A method of adjusting a print density comprising the steps of:

generating print density patterns which can be set at regular steps toward the high and low density sides of a predetermined reference density; and

printing on a recording medium on the basis of the print density patterns by printing means;

wherein the printing means includes a plurality of print heads, and

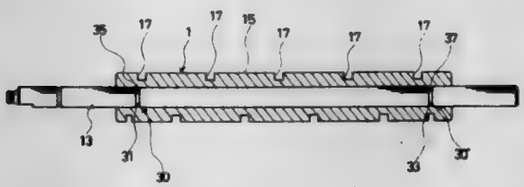
wherein the print density patterns are printed so that a sum of the energizing times of the plurality of print heads is constant.

5,797,691

CARRIAGE DRIVER HAVING A DISTORTION PROHIBITING MECHANISM

Kanji Suzuki, Shizuoka, Japan, assignor to Star Micronics, Co., Ltd., Shizuoka, Japan

Filed Jun. 24, 1997, Ser. No. 881,099
Claims priority, application Japan, Jun. 25, 1996, 8-184064
Int. Cl.[6] B41J *19/20*
U.S. Cl. 400—320 **9 Claims**



1. A carriage driver comprising:

a cam shaft including a shaft, a cylinder provided around said shaft and made of material having a thermal expansion coefficient different from that of said shaft, and a cam groove provided on said cylinder;

a carriage motor which rotatively drives said cam shaft;

a carriage which has a print head mounted thereon and is movably mounted on said cam shaft; and

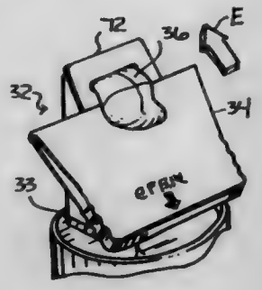
a plurality of prohibiting means respectively provided at boundaries between said shaft and said cylinder of said cam shaft and simultaneously at both ends of a printing area, in order to prohibit distortion of said cam shaft in an axial direction due to a change in temperature.

5,797,692

APPARATUS AND METHOD FOR DISPENSING AND SPREADING FLOWABLE MATERIAL UPON A SURFACE

Daniel L. Poole, 23 E. Surrey, Phoenix, Ariz. 85022, and Robert Poole, P.O. Box 2898, Pinetop, Ariz. 85935

Continuation of Ser. No. 521,318, Aug. 30, 1995, abandoned. This application Jan. 17, 1997, Ser. No. 785,702
Int. Cl.[6] B05C *17/00*
U.S. Cl. 401—266 **9 Claims**



1. The invention claimed is an apparatus for dispensing and dispersing material, said apparatus comprising:

a vessel for holding and dispensing a flowable material and having an open end; and

a dispensing assembly coupled to said open end of said vessel, said dispensing assembly including a dispensing element closing said open end and having a face with an aperture therethrough for dispensing the flowable material, and a carriage having an edge and a planar surface for receiving the flowable material, said carriage movably coupled to said face of said dispensing element, moveable between a closed position covering the aperture and an open position with the edge of the carriage adjacent the aperture, whereby in the open position, the flowable material from the aperture is deposited onto the surface of the carriage proximate the edge to facilitate spreading of the flowable material on another surface.

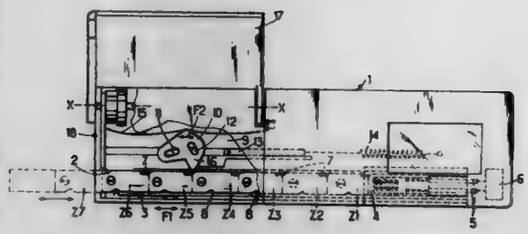
5,797,693

APPARATUS INTENDED FOR DISPENSING SUCCESSIVE ZONES OF A DISPOSABLE STRIP

Gérard Jaeger, Blonay, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Apr. 29, 1996, Ser. No. 639,901
Claims priority, application France, May 2, 1995, 95 05224
Int. Cl.[6] B01L *11/00;* **G01N** *37/00*
U.S. Cl. 403—24 **6 Claims**

1. A dispensing apparatus requiring the use of disposable elements having the shape of strips to operate, each of these strips comprising in the longitudinal direction several successive utilization zones adapted to be detached from the strip after their use, said apparatus comprising:



a case defining a circulation passage for said strips, said passage having, taking account of the direction in which said strips are introduced, an upstream end and a downstream end;

a forward feed mechanism for bringing said strip out of the circulation passage in accordance with a step by step movement after its introduction into the circulation passage by a user;

a sliding unit, mounted so as to move in said passage, operationally coupled to said forward feed mechanism and adapted to be coupled to the downstream end of said strip when it is introduced by the user; and

coupling means carried by said sliding unit and arranged so as to assure the coupling between the latter and said strip;

said sliding unit comprising a cursor mounted so as to slide in said circulation passage and provided with a driving member, said forward feed mechanism comprising ratchet means adapted to co-operate with said driving member to assure said coupling and to enable the step by step forward feed of said cursor, and said ratchet means being coupled to a control button mounted freely in said case to enable said step by step movement to be controlled; and

wherein said ratchet means comprises a ratchet bar mounted in said case parallel to said circulation passage so as to be able to carry out an orbital movement in its own plane, said ratchet bar having means for, during each orbital movement corresponding to one forward step of said cursor, engaging with said driving member of said cursor.

5,797,694

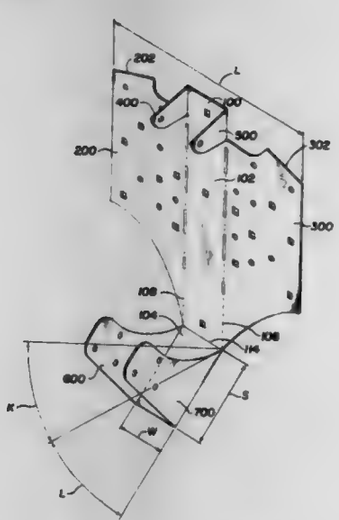
ADJUSTABLE RIDGE CONNECTOR

Arne Norris Breivik, Orlando, Fla., assignor to Alpine Engineered Products, Inc., Pompano Beach, Fla.

Filed Mar. 29, 1996, Ser. No. 624,924

Int. Cl.[6] F16B *7/08*

U.S. Cl. 403—231 **3 Claims**



1. An adjustable hanging bracket comprising:

an elongated spine with a longitudinal axis, said spine having a first portion and a second portion;

first and second opposed ears extending from the first portion of said spine in a direction transverse to the longitudinal axis, each of said ears having distal ends;

first and second opposed flanges extending from said spine in a direction transverse to the longitudinal axis and adjacent to said first and second ears, said first and second flanges forming a side edge and forming an arcuate taper extending from said side edge towards the second portion of said spine;

a first and second seat tab extending from said second portion of said spine in a direction transverse to the longitudinal axis, each of said seat tabs having distal ends; and

a first bending axis formed at the juncture of said first flange and said spine and a second bending axis formed at the juncture of said second flange and said spine, said first and second bending axes being substantially parallel to one another and to the longitudinal axis of the spine.

5,797,695

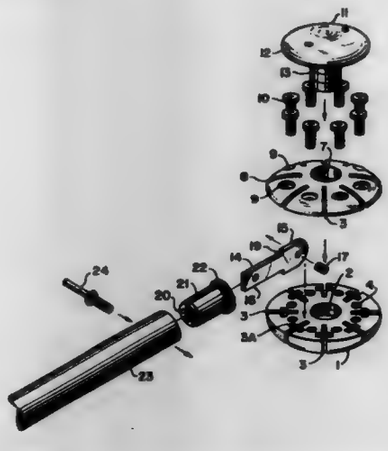
ARTICULATING HUB ASSSEMBLY

A. Jon Prusmack, 74 Omni Parc Dr., Nanuet, N.Y. 10954

Filed Sep. 1, 1995, Ser. No. 522,749

Int. Cl.[6] F16B *7/04*

U.S. Cl. 403—170 **14 Claims**



1. An articulating hub assembly suitable for use in collapsible structures, said assembly comprising:

a hub body having a periphery, a central opening therethrough and a plurality of radial slots extending inwardly from said periphery of said hub body, each of said radial slots in said hub body having a discontinuous groove located perpendicular thereto, said hub body also having a series of openings extending through said hub body, said openings being positioned radially between each of said radial slots and between said periphery and said central opening of said hub body;

a hub cover having a periphery, a central opening therethrough, a plurality of radial slots and a series of openings extending through said hub cover, said hub body and said hub cover being assembled contiguously so that said central opening, said radial slots and said openings of said hub cover are in registry with said central opening, said radial slots and said openings of said hub body;

removable fastening means, said removable fastening means extending through said openings in said hub cover and being secured in said openings in said hub body;

an integrally formed keeper element having a top and a shaft extending downwardly therefrom, wherein said shaft is capable of being inserted and withdrawn from said central openings of said hub body and said hub cover, said shaft having means for securing said hub cover to said hub body;

a plurality of tangs, each of said tangs having a first and second sides, said each tang comprising a head section with a roll pin extending from each of said sides, said head section of said tang being positioned in one of said radial slots of said hub

body and said hub cover in registry therewith, said tang being held in place by said roll pin nested in said discontinuous groove; and

a cylindrical plug having a crown and a structural element secured to said tang.

5,797,696

SNAP CONNECTION SYSTEM

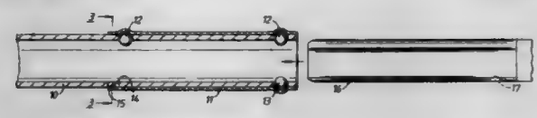
Ian David Baynes, and Michael Thomas Hancock, both of Coventry, England, assignors to Nastech Europe Limited, Coventry, England

Filed Sep. 3, 1996, Ser. No. 706,857

Claims priority, application United Kingdom, Sep. 8, 1995, 9518412

Int. Cl.[6] F16B *7/00*

U.S. Cl. 403—377 **16 Claims**



1. A shaft assembly comprising:

a tube having a spring sleeve mounted externally thereon, said spring sleeve having an inwardly extending tang engaging an aperture in said tube

a shaft slidable within the tube;

a first means for biasing the tube and the shaft into wedging engagement when the tube and the shaft are in a predetermined axial position; and

a second means for biasing the tube and the shaft out of wedging engagement when the tube and the shaft are not in the pre-determined position.

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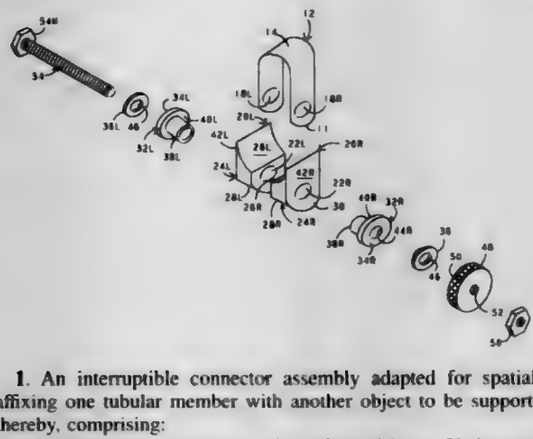
CROSS-CONNECTORS FOR TUBULAR MEMBERS FORMING FRAMEWORKS

Richard D. Keller, 6416 Fourth Ave., Takoma Park, Md. 20912

Filed Aug. 23, 1996, Ser. No. 701,872

Int. Cl.[6] F16B *2/08*

U.S. Cl. 403—384 **7 Claims**



1. An interruptible connector assembly adapted for spatially affixing one tubular member with another object to be supported thereby, comprising:

(a) a flexible band adapted to be deformed into a U-shape and while deformed, to overlap any underlying planar surfaces and with such band also bearing a transverse perforation proximal to each longitudinal end;

(b) a two-component, rigid support means, with each structurally identical support component presenting generally planar outer and inner surfaces, and having an at least partially arcuate, surface located proximal to one end of the generally planar inner surface, with each of the such opposing arcuate surfaces arranged symmetrically adapted to nest a tubular member;

(c) a linear bore hole traversing the planar surfaces of each of the said support components;

(d) two single-flange, cylindrical bushings, with each having an axial bore hole, and further with each having one longitudinal end sized to slidingly engage the bore hole of its associated support component and each bushing having its other longitudinal end forming an inner annular shoulder contacting the planar outer surface of its adjacent longitudinal end of the deformed flexible band;

(e) two washers, each having an axial bore hole sized to approximate the diameter of the bore hole of the associated cylindrical bushing, and with all of the several components being arrayed linearly to form an aligned assembly;

(f) an elongate, assembly fastener means of a diameter sized to slidingly traverse the aligned assembly via the component bore holes, and also being of a length sufficient to extend from one external side of the assembly to the other external side, while leaving a free end projection segment adapted to engage a removable locking means; and

(g) further having the longitudinal ends of the deformed band being interposed between the outer planar surface of the adjacent support component and the inner annular shoulder of the adjacent bushing.

5,797,698

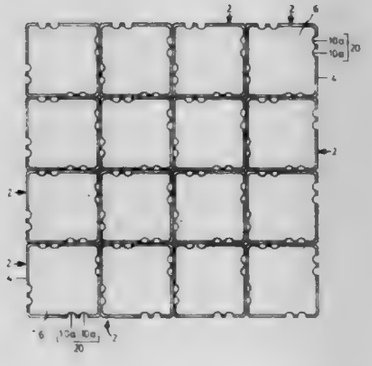
PAVING ELEMENTS FOR THE WATER-PERMEABLE REINFORCEMENT OF SURFACES

Gunter Barth, Buhlertal, and Michael Schmitz, Buhl, both of Germany, assignors to F. von Langsdorff Licensing Ltd., Inglewood, Canada

Filed Apr. 10, 1996, Ser. No. 629,890

Int. Cl.[6] E01C *5/00*

U.S. Cl. 404—39 **24 Claims**



1. A paving element for the water-permeable reinforcement of surfaces, said paving element comprising;

a top surface; and

a plurality of sides, at least one of said sides having at least one vertical recess extending from said top surface, said at least one recess being disposed asymmetrically about a mid point of said at least one side; and, wherein said at least one recess provides a channel for the drainage of water from the top surface.

5,797,699
PROCESS AND APPARATUS FOR DYNAMIC SOIL PACKING

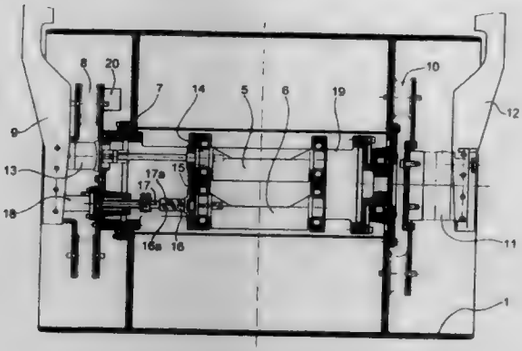
Uwe Blancke, Koblenz, and Karl-Herman Mötz, Nörtershausen, both of Germany, assignors to Bomag GmbH, Boppard, Germany

Continuation of Ser. No. 531,028, Sep. 20, 1995, abandoned. This application Apr. 29, 1997, Ser. No. 841,026

Claims priority, application Germany, Sep. 29, 1994, 44 34 779.0

Int. Cl.[6] E01C *19/28*

U.S. Cl. 404—117 **10 Claims**



1. A process for dynamic soil packing with at least one advancing roller which executes vibratory motions, in which directionally adjustable vibratory force acts upon the roller so that at least one of horizontal shearing forces and vertical compressive forces are electively exerted on the soil, comprising determining a basic vibratory motion of at least one of the at least one advancing roller and a part connected with the at least one advancing roller, determining whether a deviation exists to at least one of an amplitude, an acceleration, and a period of oscillation of the basic vibratory motion, and upon determining that a deviation exists in the at least one of the amplitude, the acceleration, and the period of oscillation of the basic vibratory motion, decreasing a vertical component of the vibratory force and increasing a horizontal component of the vibratory force until the deviation is corrected.

5,797,700
POLYOXYETHYLENE GLYCOL AND POLYGLYCEROL TWIN TAIL SURFACTANT FORMULATIONS FOR DISPERSION OF CRUDE OIL

Ramesh Varadaraj, Flemington; Max Leo Robbins, South Orange; Salvatore James Pace, Milford, and Cornelius Hendrick Brons, Washington, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

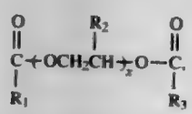
Filed Oct. 25, 1996, Ser. No. 738,671

Int. Cl.[6] E02B *15/00;* **C02F** *1/24*

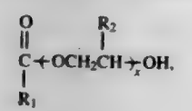
U.S. Cl. 405—60 **5 Claims**

1. A composition for dispersing oil slicks comprising:

a twin tail surfactant or mixture of surfactants having the formula:



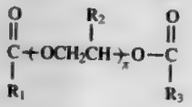
a single tail surfactant having the formula:



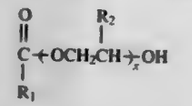
and a hydrocarbon solvent,

wherein R_1 and R_3 are independently selected alkyl or alkenyl groups having from about 8 to about 20 carbon atoms, R_2 is H, and x is an integer ranging from 3 to 15.

2. A method for dispersing an oil slick on water comprising applying a hydrocarbon solution to the oil slick of a surfactant or mixture of surfactants selected from the group consisting of a twin tail surfactant, a mixture of twin tail surfactants and a mixture of a single tail surfactant with a twin tail surfactant, and a mixture of a single tail surfactant with a mixture of twin tail surfactants, the twin tail surfactant or surfactants having the formula:



and the single tail surfactant having the formula:



wherein R_1 and R_3 are the same or different alkyl or alkenyl groups; R_2 is H or OH; and x is from 1 to about 20.

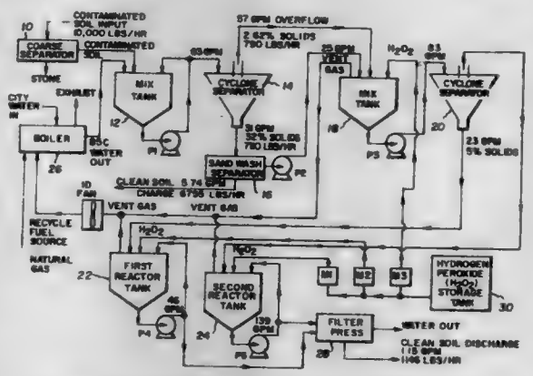
5,797,701
METHOD OF TREATING ORGANIC CONTAMINATED MATERIALS

Lawrence M. Conaway, Youngstown, N.Y., assignor to Continuum Environmental Inc., Youngstown, N.Y.

Filed Feb. 27, 1997, Ser. No. 807,643

Int. Cl.[6] B09C *1/02;1/08*

U.S. Cl. 405—128 **17 Claims**



1. A method of decontaminating soil containing hydrocarbon pollutants comprising the steps of:

(a) providing a series of independent treating stations which include a heated aqueous solution, which solution contains an oxidizing component, said stations being interconnected by piping means for moving fluidized solid particulate material from station to station;

(b) introducing contaminated soil into said heated aqueous solution to form said fluidized solid particulate material;

(c) moving said soil material from station to station; and

(d) oxidizing the hydrocarbons in said soil material by direct chemical reaction with said oxidizing component.

13. An apparatus for remediating contaminated soil, said apparatus including a series of interconnected stations comprising:

(a) means for processing a contaminated soil into a particulate portion having a predetermined size range;

(b) means for treating said particulate portion in an aqueous oxidizing solution to reduce the level of hydrocarbons in said particulate portion;

(c) means for separating said treated particulate portion into first and second components; and

(d) means for further treating said first and second components with aqueous hydrogen peroxide until said contaminated soil reaches an environmentally acceptable level of hydrocarbon content.

5,797,702

INSTALLATION FOR LAYING A PIPELINE ON A FLOOR LOCATED UNDER WATER, BEARING MEANS AND TERMINAL

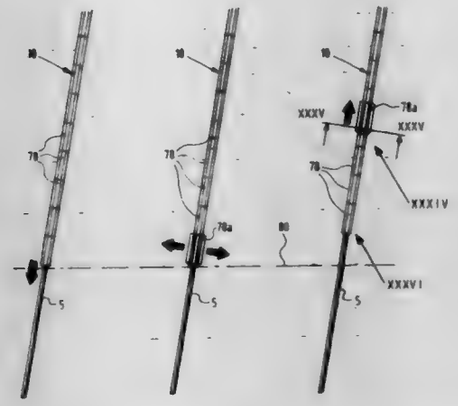
Johannes John Cornelis Isbister Drost, Vlaardingen; Albert Ploeg, Benthuizen, and Erik Jan Rooduijn, Bergschenhoek, all of Netherlands, assignors to Allseas Group S.A., Switzerland

Division of Ser. No. 387,404, Feb. 10, 1995, Pat. No. 5,575,590. This application Oct. 28, 1996, Ser. No. 740,156

Claims priority, application Netherlands, Mar. 31, 1994, 9400517

Int. Cl.[6] **F16L** *1/235*

U.S. Cl. 405—166 **4 Claims**



1. Apparatus for laying a pipeline on a floor located under water comprising a pipe bedding installation with securing means for supporting a pipe string extending between the pipe bedding installation and the floor while said pipe string is lowered into the water, characterized by bearing means which at least partially supports the part of said pipe string situated between the water surface and the floor, said bearing means comprising a plurality of trunk elements which are movable between an engaging condition in which said trunk elements engage on said pipe string and a release position in which said trunk elements are upwardly displaceable relative to said pipe string while in sliding engagement with other trunk elements on the pipe string.

5,797,703

ELEVATING UNIT FOR USE WITH JACK-UP RIG

George Delamatyr, Corpus Christi, Tex., assignor to Searex, Inc., Covington, La.

Filed Feb. 2, 1996, Ser. No. 596,448

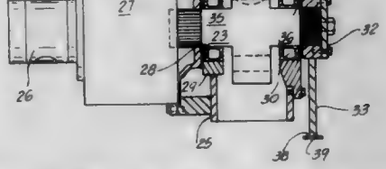
Int. Cl.[6] **E02B** *17/08*

U.S. Cl. 405—198 **12 Claims**

1. An elevating unit for a jack-up rig having a hull and a plurality of legs, each leg having a toothed rack, comprising:

a) an elevating unit support frame positioned on the hull adjacent to a leg;

b) a pinion gear mounted on the support frame and engaging the toothed rack so that rotation of the pinion gear changes the relative elevation between the leg and the hull, the pinion gear defining a plane;



c) the pinion gear being mounted on a pinion gear shaft that extends in opposite directions from the plane of the gear, providing first and second pinion gear shaft end portions;

d) first and second roller bearings mounted on the frame for supporting the pinion gear at the first and second pinion gear shaft end portions;

e) a gear box mounted on the frame for transferring rotary power to the first pinion gear shaft end portion, the first roller bearing being positioned in between the pinion gear and the planetary gear box;

f) a motor drive for powering the planetary gear box;

g) a brake hub attached directly to the pinion gear shaft end portion, the second roller bearing being positioned in between the pinion gear and the brake hub;

h) a brake drum affixed to the brake hub, the drum extending radially and circumferentially about the brake hub; and

i) a brake band extending circumferentially about the brake drum, the band being operable to frictionally engage the brake drum to retard movement of the drum, hub, and pinion gear shaft relative the frame; and

j) wherein the brake can set the pinion gear so that the gear box can be removed for repair.

5,797,704

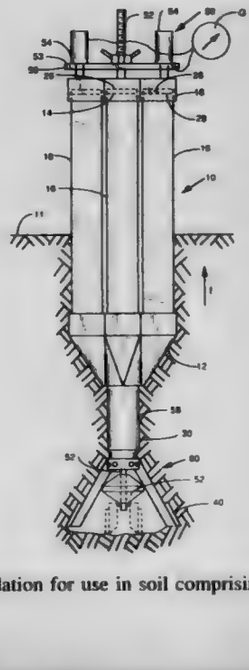
PIER FOUNDATION AND METHOD OF INSTALLATION

James S. Collins, 320 Muskingham Dr., Marietta, Ohio 45750

Division of Ser. No. 420,430, Apr. 12, 1995, Pat. No. 5,622,015. This application Apr. 21, 1997, Ser. No. 840,496

Int. Cl.[6] **E02D** *5/26;5/52;5/54;7/02*

U.S. Cl. 405—237 **22 Claims**



1. A pier foundation for use in soil comprising:

a plug extending along a first longitudinal axis having a first section and a second section, said first section adapted to receive a pushing force and said second section adapted to rest on the soil;

an installation load bearing member extending along the first longitudinal axis having a first end and a second end, said first end of said installation load bearing member received by said first section of said plug;

an installed load bearing member extending along a second longitudinal axis having a first end and a second end, said first end of the installed load bearing member received by the first section of the plug; and

a cap coacting with said second end of said installation load bearing member, said cap adapted to receive a pushing force, whereby the pushing force applied to said cap causes a pushing force to be applied to said installation load bearing member, which causes a pushing force to be applied to said first section of the plug.

5,797,705

METHOD FOR MANUFACTURING A TUBULAR FOUNDATION IN THE GROUND

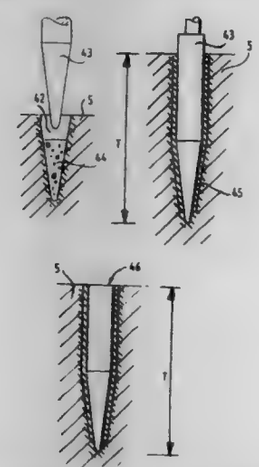
Willibald Kellner, Toni-Egger-Strasse 28, A-9990 Nussdorf-Debant, Austria, assignor to Willibald Kellner, Nussdorf-Debant, Austria

Continuation of Ser. No. 75,465, Sep. 17, 1993, abandoned. This application Oct. 15, 1996, Ser. No. 730,161

Claims priority, application Austria, Dec. 12, 1990, 2520/90; Netherlands, Sep. 6, 1991, 9101507

Int. Cl.[6] E02D *3/068*

U.S. Cl. 405—253 **6 Claims**



1. Method for manufacturing a tubular foundation in the ground comprising the steps of:

(1) providing a tool for making holes in the ground, said tool comprising a ram tip having a free end and coupling means for connecting the ram tip to a drive device;

(2) providing a drive device for successively exciting the ram tip downwardly in the direction of the free end with at least one of vibration and percussion;

(3) coupling the drive device immediately behind the ram tip;

(4) selecting a location for making a hole in the ground;

(5) placing the tool thereat;

(6) setting the drive device into operation such that the tool is excited with at least one of vibration and percussion at a chosen frequency downwardly in the direction of the free end of the ram tip;

(7) penetrating the ground with the ram tip to form a hole;

(8) making the hole having a depth which is smaller than a depth of a tubular foundation to be manufactured;

(9) pulling the ram tip out of the hole;

(10) at least partially filling the hole with pourable concrete;

(11) re-inserting the ram tip in the hole before the concrete has cured;

(12) setting the drive device into operation such that the hole is extended to the desired depth, and the concrete present therein forms a concrete tube round the ram tip and is compacted; and

(13) pulling the ram tip out of the tubular foundation.

5,797,706

EARTH STRUCTURES

Pierre Segrestin, St.Germain-en-Laye, and Jean Marc Jailloux, Sannois, both of France, assignors to Societe Civile des Brevets Henri Vidal, Paris, France

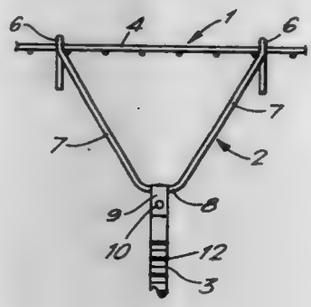
PCT No. PCT/IB94/00209, § 371 Date Jun. 28, 1996, § 102(e) Date Jun. 28, 1996, PCT Pub. No. WO95/00712, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 24, 1994, Ser. No. 578,570

Claims priority, application United Kingdom, Jun. 24, 1993, 9313095

Int. Cl.[6] E02D *29/02*

U.S. Cl. 405—262 **11 Claims**



1. An earth structure comprising a plurality of elongate stabilising elements in an earth mass behind a mesh facing, and a plurality of connectors behind the facing and connecting the facing to the stabilising elements, each connector having a rear attachment portion attached to a respective earth stabilising element, and having at least two spaced apart front attachment portions attached to the mesh facing.

5,797,707

CUTTING INSERT

Erwin Stallwitz, Lichtenau, and Helmut Storch, Rothenburg, both of Germany, assignors to Widia GmbH, Essen, Germany

PCT No. PCT/DE95/00079, § 371 Date Jul. 30, 1996, § 102(e) Date Jul. 30, 1996, PCT Pub. No. WO95/20451, PCT Pub. Date Aug. 3, 1995

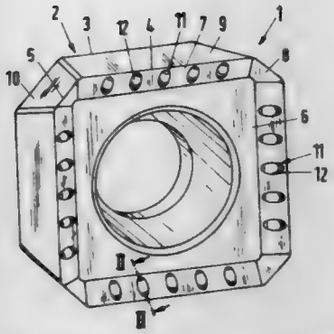
PCT Filed Jan. 23, 1995, Ser. No. 687,368

Claims priority, application Germany, Jan. 31, 1994, 44 02 759.1

Int. Cl.[6] B23B *27/14*

U.S. Cl. 407—114 **4 Claims**

1. A cutting insert comprising a plate having a support surface, a flank rising from said surface and forming a cutting edge at a junction of said flank with a chip face, said chip face being formed with at least two trough-shaped recesses extending to and interrupting said cutting edge and spaced apart along said cutting edge, each of said recesses widening said recesses toward said edge and



opening at said flank at a concave arch, a respective rounded hump-shaped chip-forming element rising from a floor of each of said recesses.

5,797,708

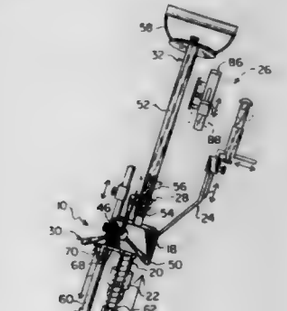
UNIVERSAL DRILL GUIDE

Stjepan Bencic, 72-06 73rd Pl., Glendale, N.Y. 11385

Filed Apr. 2, 1997, Ser. No. 831,818

Int. Cl.[6] B23B *45/14*

U.S. Cl. 408—112 **11 Claims**



1. A universal drill guide comprising:

a) a base being a frame-like configuration having a large central opening;

b) a pair of elongated columns, each said elongated column having a built-in vertical rack therealong;

c) means for pivotally mounting lower ends of said elongated columns parallel to opposite sides of said base, so that said elongated columns can go from upright positions to angled positions;

d) a cross slide which rides upon said elongated columns;

e) a bearing spindle assembly rotatively carried centrally within said cross slide;

f) a guide chuck connected to said bearing spindle assembly above said base;

g) an adjustable cradle affixed to said cross slide to hold an electric drill in a stationary position, so that the drill chuck can engage with said bearing spindle assembly above said cross slide;

h) means between said cross slide and said elongated columns, for moving said cross slide up and down on said elongated columns; and

i) a handle assembly extending upwardly from said elongated columns to allow a person to grip said handle assembly when operating said universal drill guide, so as to drill vertical and angled holes in different shaped work pieces, wherein said moving means comprising a rotatable horizontal shaft carried within said cross slide; a pair of pinions carried on said shaft to engage with said racks on said elongated columns; and a rotatable handle connected to one end of said shaft extending from said cross slide, so that when said rotatable handle is turned, said pinions will rotate on said racks to move said cross slide up and down on said elongated columns.

5,797,709

DRILLS

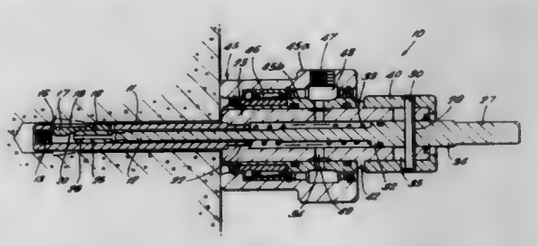
David Patrick Payne, 30 Park Road, Berrylands, Surbiton, Surrey KT5 8QD, United Kingdom

Filed Jan. 22, 1996, Ser. No. 589,740

Claims priority, application United Kingdom, Jan. 23, 1995, 9501257

Int. Cl.[6] B23B *29/034*

U.S. Cl. 408—159 **15 Claims**



1. An expansible drill for drilling and undercutting holes comprising a rotatable tubular drill body having bore cutting means at one end thereof, at least one undercutting arm located within a slot in the drill body attached by hinge means such that at least a part of the arm is pivotal radially outwards, guide means for moving the arm radially outwards, said guide means comprising a shaft which is located within the drill body and constrained to rotate therewith, the drill further comprising locking means for selectively preventing or allowing the shaft to move axially relative to the drill body as force is applied to an end of the shaft.

5,797,710

THREAD FORMING TAP

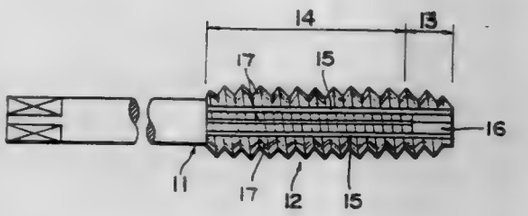
Teruo Sawabe, Tokyo; Isao Yokoyama, Shiraoka-machi, and Kazutoshi Sato, Shichigasyuku-machi, all of Japan, assignors to Tanoi Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 721,373

Claims priority, application Japan, Oct. 2, 1995, 7-255093; Apr. 5, 1996, 8-083552

Int. Cl.[6] B23B *51/00*

U.S. Cl. 408—222 **16 Claims**

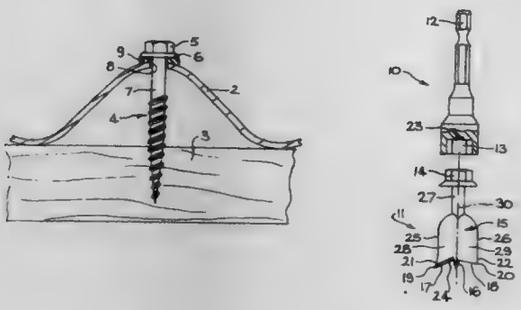


1. A thread forming tap comprising a plurality of radial portions disposed on an outer peripheral surface of a main body to form a thread part, said radial portions on said main body being configured to plastically deform an inner peripheral surface of a material to form an internal thread when said main body is turned in a first direction, wherein at least one cutting part configured for cutting the crest of the internal thread is formed between radial portions in the peripheral direction of the thread part.

5,797,711
ATTACHING SHEET MATERIAL TO A SUPPORT

Mark Doneddu, Mulgrave, and Frank Tovenati, South Oakleigh, both of Australia, assignors to W. A. Deutsher Pty. Ltd., Victoria, Australia

Filed Feb. 20, 1996, Ser. No. 603,114
Claims priority, application Australia, Feb. 17, 1995, PN1192
Int. Cl.[6] B23B *51/00*
U.S. Cl. 408—226 **23 Claims**



1. A method of securing sheet material to a substrate, comprising the steps of:

providing a driving tool with a first drive connection means having a first predetermined size and configuration;

providing a drill bit with a second drive connection means having a second predetermined size and configuration which is substantially the same as said first predetermined size and configuration of said first drive connection means of said driving tool such that said second drive connection means of said drill bit can drivingly mate with said first drive connection means of said driving tool when said drill bit is mounted upon said driving tool so that said drill bit can be driven by said driving tool as a result of a drive connection defined between said first drive connection means of said driving tool and said second drive connection means of said drill bit;

providing a fastener, having a head portion, a shank portion, and a tip portion, with a third drive connection means having a third predetermined size and configuration which is substantially the same as said first predetermined size and configuration of said first drive connection means of said driving tool such that said third drive connection means of said fastener can drivingly mate with said first drive connection means of said driving tool when said fastener is mounted upon said driving tool so that said fastener can be driven by said driving tool as a result of a drive connection defined between said first drive connection means of said driving tool and said third drive connection means of said fastener;

providing means operative for releasably retaining said drill bit attached within said driving tool;

mounting said drill bit upon said driving tool by mating said second drive connection means of said drill bit with said first drive connection means of said driving tool;

operating said driving tool so that said drill bit is rotated about an axis thereof and applying said rotating drill bit to sheet material so as to drill a hole through said sheet material;

removing said drill bit from said driving tool after said hole is drilled within said sheet material;

mounting said fastener upon said driving tool by mating said third drive connection means of said fastener with said first drive connection means of said driving tool;

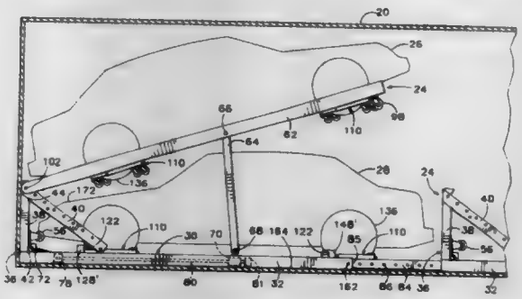
projecting said shank portion of said fastener through said hole drilled within said sheet material by said drill bit so that said tip portion of said fastener engages a substrate; and

operating said driving tool so that said fastener is driven about an axis thereof and into said substrate until said head portion of said fastener engages said sheet material so as to secure said sheet material to said substrate.

5,797,712
AUTOMOBILE TRANSPORTING SYSTEM INCLUDING INSERTABLE TILT-UP RACK

Peter Gearin, and David J. Miller, both of Portland, Oreg., assignors to G & G Intellectual Properties, Inc., Portland, Oreg.

Continuation of Ser. No. 419,006, Apr. 7, 1995, abandoned, which is a division of Ser. No. 175,281, Dec. 28, 1993, Pat. No. 5,567,111. This application Aug. 19, 1996, Ser. No. 698,901
Int. Cl.[6] B60P *3/08*
U.S. Cl. 410—16 **16 Claims**



1. An apparatus for supporting a wheeled vehicle within a defined space, comprising:

(a) a base having opposite first and second ends and including a pair of parallel horizontal longitudinal base members spaced laterally apart from each other and a transverse structure interconnecting said horizontal longitudinal base members with each other at said first end;

(b) a pair of parallel upper tier longitudinal support members located above said parallel horizontal longitudinal base members;

(c) a respective upright support subassembly located adjacent said first end of said base and including an inclined member defining a plurality of positions located therealong at a plurality of available heights for receiving and pivotally supporting a first end of each of said upper tier longitudinal support members spaced upwardly apart from a respective one of said longitudinal base members at a selected one of said plurality of available heights; and

(d) a pair of movable struts interconnecting said horizontal longitudinal base members with said upper tier longitudinal support members, each of said struts having a first end connected pivotably to a respective one of said upper tier longitudinal support members at a location spaced apart from said first end of said respective upper tier longitudinal support members and having a second end movable along a respective one of said horizontal longitudinal base members to a position in which said struts support said upper tier longitudinal support members with a respective second end of each upper tier longitudinal support member at a selected height above said horizontal longitudinal base members.

5,797,713
ORTHOPEDIC SUPPORT UNIT FASTENER

Lisa Anne Gravell Tweardy, Mt. Laurel, N.J., and George Emmer Moore, Jeffersontown, Ky., assignors to The Jerome Group, Inc., Moorestown, N.J.

Division of Ser. No. 438,748, May 10, 1995, Pat. No. 5,632,722. This application Feb. 13, 1997, Ser. No. 799,307
Int. Cl.[6] F16B *21/00*; **A61F** *5/00*
U.S. Cl. 411—339 **3 Claims**

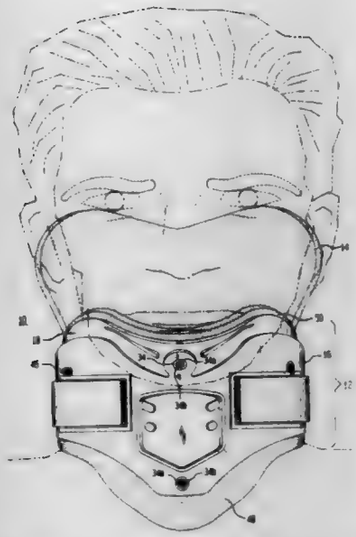
1. A joint in an orthopedic support unit comprising:

a first orthopedic support component;

a female rivet portion molded into said first orthopedic support component and having:

(a) a circular outer ring,

(b) a circular central receptacle, and



(c) a plurality of straight reinforcing ridges extending between said circular outer ring and said circular central receptacle;

a second orthopedic support component; and

a male rivet portion having an end oversized relative to said circular central receptacle of said female rivet portion and extending through said second orthopedic support component into said circular central receptacle of said female rivet portion for a press fit engagement with said female rivet portion.

5,797,714

PLASTIC FASTENER, IN PARTICULAR, A VEHICLE PANEL FASTENER

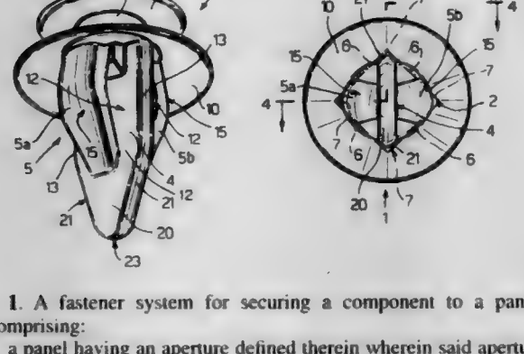
Manrico Oddenino, Buttigliera Alta, Italy, assignor to ITW Fastex Italia S.p.A., Turin, Italy

Filed Nov. 24, 1995, Ser. No. 562,610

Claims priority, application Italy, Nov. 25, 1994, T094 A 000955

Int. Cl.[6] F16B *19/00*

U.S. Cl. 411—508 **14 Claims**



1. A fastener system for securing a component to a panel, comprising:

a panel having an aperture defined therein wherein said aperture has a prismatic configuration defined by sidewalls of said aperture disposed at predetermined angles with respect to each other and having a diagonal dimension defined between opposite corner junctions of pairs of said sidewalls of said aperture;

a head portion of a fastener for engaging a first surface of said panel when said fastener is inserted through said aperture defined within said panel;

a shank portion of said fastener extending away from said head portion of said fastener for insertion through said aperture defined within said panel, said shank portion comprising a rib member having a longitudinal extent, being integrally connected at a first proximal end with said head portion and having a second substantially pointed distal end for facilitating insertion of said fastener through said aperture defined within said panel, and having a substantially rectangular configuration, as viewed in horizontal cross-section and as defined by a pair of parallel faces and a pair of longitudinally inclined, rounded edges disposed upon opposite ends of and interconnecting said pair of parallel faces, defining a predetermined width dimension which is substantially equal to said diagonal dimension of said aperture as defined between first opposite corners of said sidewalls of said aperture, said rounded inclined edges of said rib member defining means for engaging sidewalls of said aperture defined within said panel and for automatically causing pivotable movement of said rib member, said shank portion, and said fastener with respect to said sidewalls of said aperture when said shank portion is inserted through said aperture of said panel so as to automatically cause said fastener to be angularly oriented with respect to said aperture defined within said panel such that said width dimension of said rib member will be aligned with said diagonal dimension of said aperture while said opposite rounded edges of said rib member will engage said first opposite corners of said aperture; and

elastic snap-engaging means, mounted upon said pair of parallel faces of said rib member at longitudinal positions defined between said first and second proximal and distal ends of said rib member, having a predetermined width dimension which is substantially less than said predetermined width dimension of said rib member, and extending outwardly from central portions of said pair of parallel faces of said rib member, as viewed in said width direction, for engaging a second surface of said panel when said fastener is inserted through said aperture defined within said panel, and being disposed within a plane transverse to said width of said rib member so as to snap-engage sidewall portions of said aperture which define second opposite corners of said sidewalls of said aperture.

5,797,715

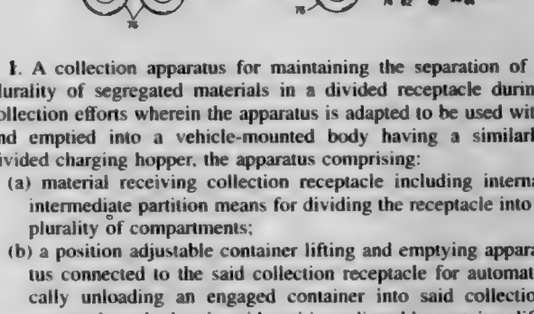
COLLECTION APPARATUS

Ronald E. Christenson, Parsons, Tenn., assignor to McNeilus Truck and Manufacturing, Inc., Dodge Center, Minn.

Filed Jun. 8, 1995, Ser. No. 480,902

Int. Cl.[6] B65F *3/04*

U.S. Cl. 414—408 **15 Claims**



1. A collection apparatus for maintaining the separation of a plurality of segregated materials in a divided receptacle during collection efforts wherein the apparatus is adapted to be used with and emptied into a vehicle-mounted body having a similarly divided charging hopper, the apparatus comprising:

(a) material receiving collection receptacle including internal intermediate partition means for dividing the receptacle into a plurality of compartments;

(b) a position adjustable container lifting and emptying apparatus connected to the said collection receptacle for automatically unloading an engaged container into said collection receptacle and wherein said position adjustable container lifting and emptying apparatus further comprises pivoting means for varying and controlling the point of discharge of said container with respect to the collection receptacle and thereby

enabling said container to be emptied into a selected one of said plurality of compartments; and

(c) handle means connected to said collection receptacle for enabling the lifting and inverting of the collection receptacle into the vehicle body.

5,797,716

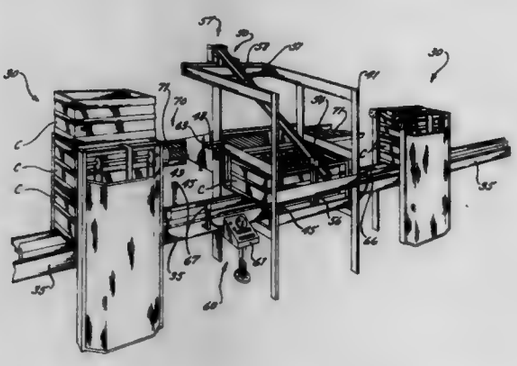
CONTAINER CONTENTS UNLOADING APPARATUS FOR UNLOADING CONTENTS OF A CONTAINER AND METHOD OF UNLOADING SAME

Robert M. Herrin, 5935 Groveline Dr., Orlando, Fla. 32810

Filed Aug. 30, 1996, Ser. No. 697,819

Int. Cl.[6] B65G *65/23*

U.S. Cl. 414—420 33 Claims



1. A container contents unloading apparatus for enhancing the efficiency of unloading contents of open-ended containers, the apparatus comprising:

a frame;

a horizontally extending container conveyor connected to said frame and extending therethrough for conveying one of a plurality of open-ended containers to an upstream end and from a downstream end of said frame along a generally horizontal plane of travel for unloading the contents of the open-ended container through the open end thereof;

container contents discharging means connected to said frame for discharging the contents of an open-ended container, said container contents discharging means including holding means for holding an open-ended container during lifting and lowering thereof, said holding means being positioned to overlie said horizontally extending conveyor during container loading and unloading and being positioned to slidably receive a loaded open-ended container during container loading and to slidably discharge an empty open-ended container during container unloading, pivot means connected to an upper end portion of a proximal end of said holding means for pivoting said holding means and a container positioned therein about an upper end pivot axis, and lifting means connected to a distal lower end portion of said holding means for upwardly lifting said holding means from the distal lower end portion thereof, for pivoting said holding means about the upper end pivot axis to unload the contents of a container being held by said holding means, and for downwardly lowering said holding means and an emptied container held therein to be positioned closely adjacent said container conveyor so that the holding means releases the emptied container to be positioned to overlie and abuttingly contact said container conveyor for conveying the emptied container from said frame along the same generally horizontal plane of travel;

a chute positioned adjacent said container contents discharging means and having an upper end thereof positioned to receive the contents from the open end of an open-ended container during unloading thereof when said lifting means is in the extended position; and

a horizontally extending container-contents conveyor positioned closely adjacent a lower end of said chute for receiving contents of a container from said chute and conveying the contents therefrom.

5,797,717

AIR CONDITIONING CONTROL UNIT

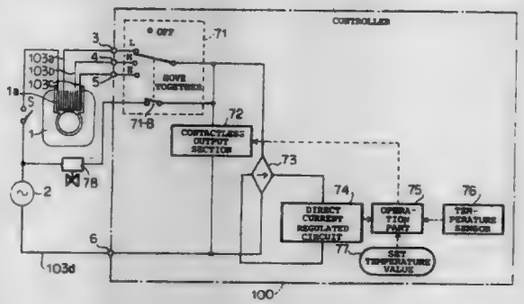
Hitoshi Tanaka, and Shunji Fujita, both of Kanagawa, Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1996, Ser. No. 622,148

Claims priority, application Japan, Mar. 30, 1995, 073810/95

Int. Cl.[6] F04B *49/00*

U.S. Cl. 417—14 11 Claims



1. An air conditioning control unit comprising:

a contactless output section for selectively completing a circuit between an ac power source and a load so as to drive said load in response to a command signal;

current conversion means, coupled to said circuit, for converting ac current flowing through said load from said ac power source to dc current; and

an operation part receiving power from said current conversion means, and comparing a measured room temperature with a set temperature so as to produce and feed the command signal to said contactless output section solely as a function of a predetermined result of said comparison.

5,797,718

FAN UNIT GENERATING GAS STREAMS

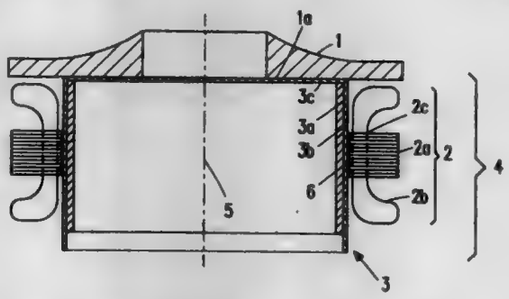
Dieter Gerling, and Peter Lürkens, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 30, 1995, Ser. No. 565,740

Claims priority, application Germany, Dec. 9, 1994, 44 43 844.3

Int. Cl.[6] F04B *49/06*

U.S. Cl. 417—44.11 14 Claims



1. A fan unit for generating gas streams, comprising:

an impeller wheel integral with a rotor;

an induction motor comprising a stator and the rotor;

wherein the rotor comprises coaxial outer and inner cylinders connected together, at least one of the outer and inner cylinders having an axial end face; and,

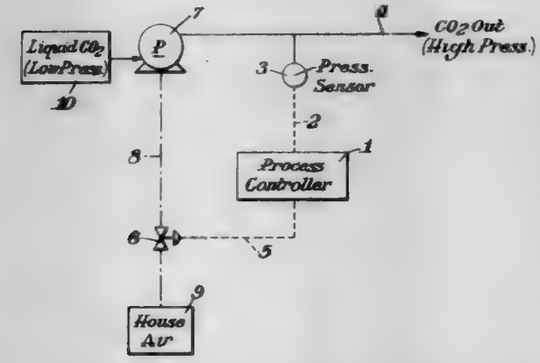
wherein the axial end face of at least one of the outer and inner cylinders is in planar contact with the impeller wheel.

5,797,719

PRECISION HIGH PRESSURE CONTROL ASSEMBLY

Kenneth J. James, and Brian J. Waibel, both of Newark, Del., assignors to Supercritical Fluid Technologies, Inc., Newark, Del.

Filed Oct. 30, 1996, Ser. No. 739,893
Int. Cl.[6] F04B 49/00
U.S. Cl. 417—46 **13 Claims**



1. A precision high-pressure control assembly for supercritical fluids comprising a continuous flow system having a pressure control loop which includes a source of fluid, said source of fluid communicating with a pump for compressing the fluid and increasing the pressure of the fluid to create a supercritical fluid, an outlet line leading from said pump, a pressure sensor monitoring the pressure of the supercritical fluid in said outlet line, a process controller having an input for receiving a signal relating to the pressure sensed by said pressure sensor, said process controller yielding an electronic control output signal to an electropneumatic regulator, a source of air communicating with said electropneumatic regulator to provide pressurized regulated driver air directed to said pump, and said electropneumatic regulator controlling the regulated driver air pressure of said pump in accordance with the signal received from said process controller.

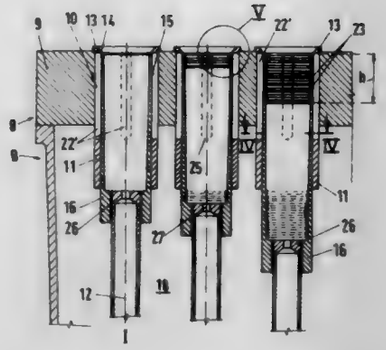
5,797,720

DEVICE FOR PRODUCING A STACK OF CUP-SHAPED RECEPTACLES FITTED IN ONE ANOTHER

Michael Ruh, Heusenstamm, Germany, assignor to Tetra Laval Holdings & Finance S.A., Switzerland

PCT No. PCT/EP96/00316, § 371 Date Jul. 30, 1997, § 102(e) Date Jul. 30, 1997, PCT Pub. No. WO96/23718, PCT Pub. Date Aug. 8, 1996
PCT Filed Jan. 26, 1996, Ser. No. 894,275
Claims priority, application Germany, Feb. 1, 1995, 195 03 039.7
Int. Cl.[6] B65G 57/16
U.S. Cl. 414—788.2 **11 Claims**

1. Device for manufacturing a stack (**31**) of cup-shaped containers (**2**, **4**, **6**) coaxially inserted inside another, each with a side wall (**32**), on one end of which a base (**33**) is arranged, and on the other end a flange (**1**), wherein the container (**2**, **4**, **6**) is composed of a flexible material and the flange (**1**) is substantially stiffer than the side wall (**32**) and the base (**33**), comprising an end plate (**9**) of a gas-tight housing (**8**) there is arranged, in a driveable manner, at least one cup-shaped cavity (**16**) intermittently moveable in a longitudinal direction (**12**) of the latter up to a maximum lift (h) which is equal to the maximum height (H) of a flange area (**19**) of the container stack (**31**), that an aperture (**19***a*) of the cavity (**16**) is configured and arranged for level receipt and installation of the



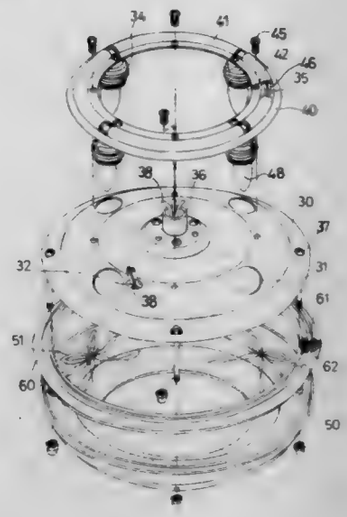
flange (**1**) of a first, outer container of the stack, and in an initial position (I) before the first movement, is arranged in the area of the end plate (**9**), accessible from outside the housing (**8**), while the base (**20**) of the cavity (**16**) located opposite the aperture (**19***a*) is arranged facing towards an internal space (**18**) of the housing (**8**), and that in an internal wall (**15**) of the housing (**8**) at least partially surrounding a cylindrical external surface (**17**) of the cavity (**16**) there is provided at least one gas outlet channel (**22**), which connects a space (**23**) around the external surface of the container stack (**31**) with the internal space (**18**) of the housing (**8**).

5,797,721

CEILING FAN HOUSING HAVING LIGHT DEVICE

Jack Yu, No. 109-1, Avenue 6, Lane 164, Tzong Sa Road, Da Du Hsiang, Taichung Hsien, Taiwan

Filed Apr. 10, 1997, Ser. No. 843,679
Int. Cl.[6] F04D 29/00
U.S. Cl. 415—5 **3 Claims**

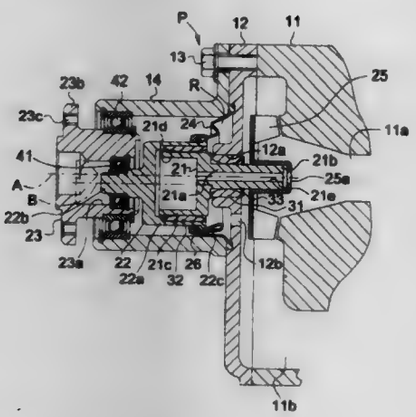


1. A ceiling fan housing comprising:
a body including at least one opening and including a bottom portion,
a disc secured on said body,
at least one lamp holder secured to said disc for holding light bulb and for engaging into said body via said at least one opening, and
a lamp shade including an upper portion secured to said bottom portion of said body,
said at least one lamp holder being allowed to engage into said body via said opening and being allowed to be disengaged from said body.

5,797,722
FLUID PUMP

Norio Sasaki, Aichi-ken, and Itsuro Hashiguchi, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 25, 1997, Ser. No. 845,479
Claims priority, application Japan, Apr. 26, 1996, 8-107998
Int. Cl.[6] F04D *29/08*
U.S. Cl. 415—170.1 **3 Claims**



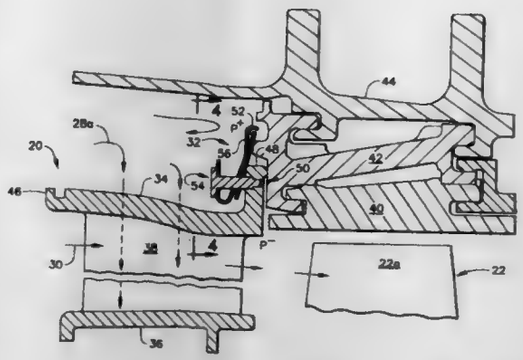
1. A fluid pump comprising:
- a housing assembly including a mounting plate and a housing body mounted to said mounting plate in a liquid-tight manner;
- a pump shaft having a journal portion rotatably supported on said mounting plate and a cylindrical cam portion integrally formed with one end of said journal portion located in said housing body, said cam portion being placed eccentrically from a center axis of said journal portion;
- an impeller mounted on the other end of said pump shaft located at a backside of said mounting plate;
- a drive shaft rotatably mounted within said housing body to be applied with a drive torque and positioned coaxially with the journal portion of said pump shaft, said drive shaft being formed with an eccentric bore the center axis of which is radially displaced from the center axis of said journal portion;
- a carrier having a cylindrical cap portion rotatably coupled with the cylindrical cam portion of said pump shaft and a shaft portion integrally formed with the cylindrical cap portion coaxially therewith and rotatably coupled within the eccentric bore of said drive shaft; and
- a diaphragm of elastic material coupled at one end thereof with the cylindrical cap portion of said carrier and fixed at the other end thereof to an internal surface of said mounting plate in a liquid-tight manner to seal the journal portion and cylindrical cam portion of said pump shaft located in said housing body.

5,797,723
TURBINE FLOWPATH SEAL

Wilson Frost; John R. Staker, and John H. Starkweather, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Nov. 13, 1996, Ser. No. 748,936
Int. Cl.[6] F04D *29/08*
U.S. Cl. 415—174.2 **10 Claims**

1. A turbine seal comprising:
- a first arcuate segment defining a flowpath boundary between combustion gases inboard thereof and air outboard thereof, and having a radially outwardly extending rail at one end thereof;
- a second arcuate segment disposed coaxially with said first segment for defining a continuation of said flowpath boundary, and having a radially extending face adjoining said rail;

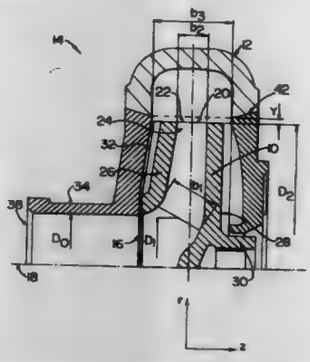


- a leaf seal bridging said rail and said face for sealing leakage therebetween of said air outboard of said first segment;
- a plurality of mounting pins extending through said leaf seal, with each pin having a head at a distal end, and a tip at a proximal end, with said pins being fixedly joined to said rail solely about said pin tips for freely supporting said pin heads in a cantilever without obstruction therearound; and
- a leaf spring mounted on said pins between said pin heads and said leaf seal to pre-load said leaf seal against said rail and face to effect said sealing therebetween.

5,797,724
PUMP IMPELLER AND CENTRIFUGAL SLURRY PUMP INCORPORATING SAME

Wen Jie Liu, Lindfield, and Jeff Bremer, Western Australia, both of Australia, assignors to Vortex Australia Proprietary, Ltd.

PCT No. PCT/AU93/00676, § 371 Date Sep. 9, 1996, § 102(e) Date Sep. 9, 1996, PCT Pub. No. WO94/15102, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 23, 1993, Ser. No. 464,883
Claims priority, application Australia, Dec. 29, 1992, PL6575; Dec. 29, 1992, PL6576
Int. Cl.[6] F04D *29/44*
U.S. Cl. 415—206 **6 Claims**



1. An impeller adapted for rotatable mounting within a volute of a centrifugal slurry pump, the impeller comprising:
- an intake opening formed coaxially with an axis of rotation of the impeller;
- an outlet opening extending about the periphery of the impeller; and,
- a plurality of blades extending generally radially between the intake opening and the outlet opening, the region between adjacent blades defining respective blade passages through which a slurry is caused to flow upon rotation of said impeller, the width of each blade passage measured along a line perpendicular to a meridional flow streamline of the slurry progressively narrowing in a direction toward the periphery of the impeller, said impeller being dimensioned relative to said

volute so that, the ratio of the blade passage width (b1) measured at the entry of the blade passage to the blade passage width (b2) at the periphery of the impeller is in the range of 1.5 to 1.7;

the ratio of the diameter (D2) of the impeller and the blade passage width (b2), at the periphery of the impeller is in the range of 9.3 to 10.2; and,

the ratio of the impeller diameter (D2) to the width of the volute (b3) is in the range of 3.8 to 4.2,

whereby, in use, said slurry pump can operate with a specific speed in the range of 22 to 30.

5,797,725

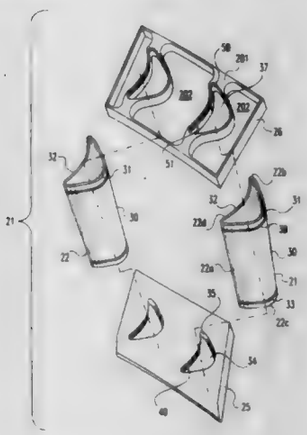
GAS TURBINE ENGINE VANE AND METHOD OF MANUFACTURE

Jeffrey F. Rhodes, Zionsville, Ind., assignor to Allison Advanced Development Company, Indianapolis, Ind.

Filed May 23, 1997, Ser. No. 862,837

Int. Cl.[6] F04D *29/44*

U.S. Cl. 415—209.2 **53 Claims**



1. A gas turbine engine vane, comprising:

an airfoil having an outer surface extending between a leading edge and a trailing edge and between a first end and an opposite other second end;

an endwall positioned proximate one of said ends; and

a retainer formed insitu and extending between said airfoil and said endwall for coupling said airfoil with said endwall, said retainer abutting but not bonded to said endwall and said airfoil.

5,797,726

TURBULATOR CONFIGURATION FOR COOLING PASSAGES OR ROTOR BLADE IN A GAS TURBINE ENGINE

Ching-Pang Lee, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

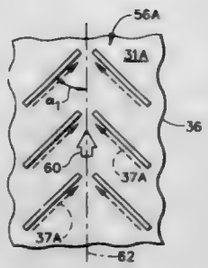
Filed Jan. 3, 1997, Ser. No. 778,595

Int. Cl.[6] F04D *29/58*

U.S. Cl. 416—96 R **8 Claims**

1. In a cooling passage of a rotor blade for a gas turbine engine, said cooling passage being substantially quadrilateral in cross-section and including a leading wall and a trailing wall with respect to rotation of said rotor blade and a centerline extending therethrough, a turbulator configuration, comprising:

(a) a plurality of spaced turbulator pairs positioned on an inner surface of said leading wall and angled with respect to said centerline, wherein said leading wall turbulator pairs are angled toward said centerline when coolant flows radially outward through said cooling passage and are angled away from said centerline when coolant flows radially inward through said cooling passage; and



(b) a plurality of spaced turbulator pairs positioned on an inner surface of said trailing wall and angled with respect to said centerline, wherein said trailing wall turbulator pairs are angled away from said centerline when coolant flows radially outward through said cooling passage and are angled toward said centerline when coolant flows radially inward through said cooling passage;

whereby said turbulator configuration is consistent with the direction of counter-rotating flow circulations experienced by said leading and trailing walls of said cooling passage caused by Coriolis forces on said coolant flowing therethrough.

5,797,727

IMPELLER MOUNTING FOR ELECTRICALLY DRIVEN AIR PUMP TO REDUCE VIBRATION

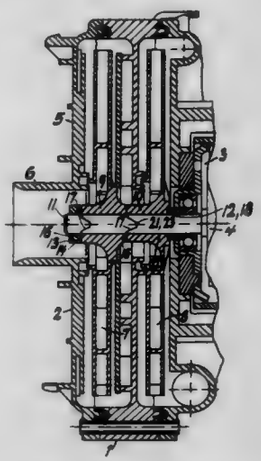
Rainer Peters, Goch; Michael Bonse, Düsseldorf, and Günter van de Venne, Monchen-Gladbach, all of Germany, assignors to Pierburg AG, Neuss, Germany

Filed Mar. 21, 1997, Ser. No. 821,515

Claims priority, application Germany, Mar. 23, 1996, 196 11 512.6

Int. Cl.[6] F04D *29/34*

U.S. Cl. 416—204 R **9 Claims**



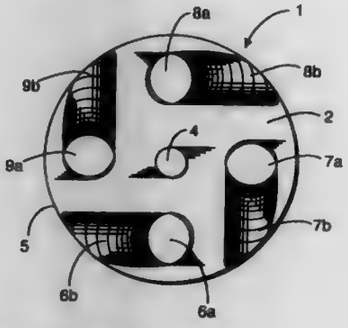
1. In an electrically driven air pump having a housing containing a pump unit driven from a shaft of an electric motor, the improvement wherein said pump unit comprises an impeller unit made of plastic and including a hub which is press-fit on the shaft of the electric motor, a collar press-fit on said shaft and abutting against said hub of said impeller unit on a side thereof facing the electric motor, and a lock ring, made of metal press-fit on said shaft and abutting against said hub of said impeller unit on an opposite side thereof facing away from said electric motor, said lock ring and said hub of said impeller unit having mutually abutting surfaces which include respectively engaging tooth and groove means for preventing relative rotary movement therebetween.

5,797,728

DISK-SHAPED IMPELLER FOR MIXING FLUIDS

Donald E. Frith, 310 Poppinga Way, Santa Maria, Calif. 93455

Filed Aug. 28, 1997, Ser. No. 919,279
Int. Cl.[6] F04D 29/38
U.S. Cl. 416—231 A 18 Claims



1. An impeller for mixing, comprising:

a disk having top and bottom surfaces, opposed and spaced apart from each other and including a plurality of holes extending from said top surface to said bottom surface and arranged symmetrically around a circle having a smaller diameter than said disk;

a first set of troughs, corresponding to a number of said plurality of holes, each trough having a portion having a width corresponding substantially to a width of said holes, being arranged on said top surface of said disk and sloping downwardly from a periphery of said disk toward each of said holes, respectively; and

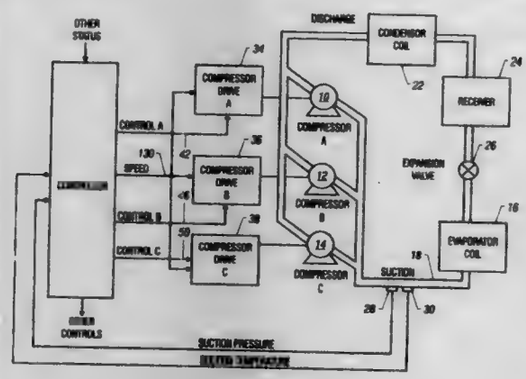
a second set of troughs, corresponding to a number of said plurality of holes, each trough having a portion having a width corresponding substantially to a width of said holes, being arranged on said bottom surface of said disk and sloping upwardly from a periphery of said disk toward each of said holes, respectively.

5,797,729

CONTROLLING MULTIPLE VARIABLE SPEED COMPRESSORS

Lenley J. Rafuse, Jr., Franklin; Hamed S. Borhanian, Allston, both of Mass., and Willard C. Pope, York, Pa., assignors to Aspen Systems, Inc., Marborough, Mass.

Filed Feb. 16, 1996, Ser. No. 602,584
Int. Cl.[6] F04B 41/06
U.S. Cl. 417—3 13 Claims



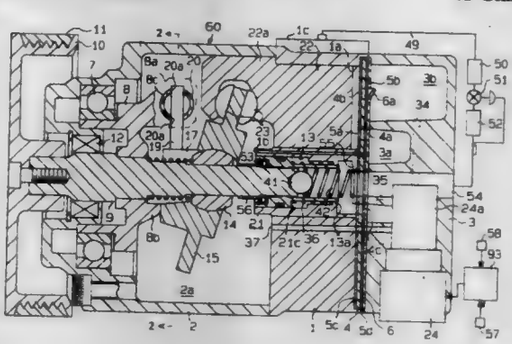
1. A refrigeration system comprising a plurality of variable speed compressors and a controller, the controller being configured to energize a subset of the variable speed compressors, the subset being determined by comparing a capacity requirement of the refrigeration system against a stored set point table stored in the controller, the stored set point table defining a plurality of ranges of required rack capacity over which defined subsets of the plurality of variable speed compressors provide a greater energy efficiency ratio than any other subsets when each energized variable speed compressor operates at a speed substantially the same as the other energized variable speed compressors, the speed being below a maximum speed of the compressors.

5,797,730

SWASH PLATE TYPE COMPRESSOR

Masahiro Kawaguchi; Masanori Sonobe; Tomohiko Yokono, and Ken Suitou, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation of Ser. No. 255,043, Jun. 7, 1994, abandoned.
This application Aug. 29, 1996, Ser. No. 705,068
Claims priority, application Japan, Jun. 8, 1993, 5-137931; Jun. 22, 1993, 5-150878
Int. Cl.[6] F04B 1/29
U.S. Cl. 417—222.2 48 Claims



1. A compressor having a refrigerant gas passage connected to a refrigerant circuit separately provided from the compressor, said compressor having a plurality of reciprocable pistons for compressing refrigerant gas, said compressor comprising:

a housing having a refrigerant discharge chambers a refrigerant suction chamber, and a crank chamber;

a plurality of cylinder bores disposed in the housing, said cylinder bores communicating with said discharge chamber and said suction chamber and each of said cylinder bores accommodating one of said pistons;

a drive shaft rotatably supported in the housing;

a swash plate supported on the drive shaft for integral rotation with inclining motion with respect to the drive shaft in the crank chamber to drive the pistons, said swash plate being moveable between a maximum inclined angle and a minimum inclined angle greater than zero; and

means for selectively connecting and disconnecting said refrigerant circuit to and from the refrigerant gas passage in direct association with the variable inclination of the swash plate.

5,797,731

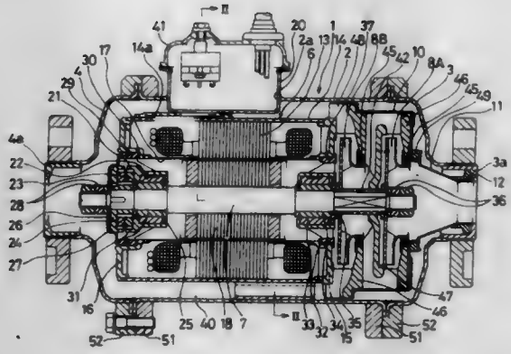
GROUP OF FULL-CIRCUMFERENTIAL-FLOW PUMPS AND METHOD OF MANUFACTURING THE SAME

Makoto Kobayashi; Masakazu Yamamoto; Yoshio Miyake; Koji Isemoto; Keita Uwai, and Yoshiaki Miyazaki, all of Fujisawa, Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 607,264
Claims priority, application Japan, Feb. 24, 1995, 7-62189
Int. Cl.[6] F04B 17/03
U.S. Cl. 417—238 10 Claims

1. A group of full-circumferential-flow pumps comprising:

a group of motors, each comprising a main shaft, a rotor mounted on said main shaft, a stator disposed around said rotor, a cylindrical outer motor frame fitted over said stator,



and an outer cylinder disposed around said cylindrical outer motor frame with an annular space defined therebetween;

a group of pump parts including at least an impeller; and

a group of frequency converters for energizing said motors to rotate at high speeds by raising the frequency of a commercial electric power supply;

wherein at least some of said group of motors, said group of pump parts and said group of frequency converters are combined to provide at least one single-suction type full-circumferential-flow pump of a first type lacking a frequency converter and providing a certain pump head at a certain flow rate using a certain number of said impellers, and at least one single-suction-type full-circumferential-flow pump of a second type having a frequency converter and providing a pump head greater than said certain pump head and having a number of impellers which is not greater than said certain number of impellers.

5,797,732

VARIABLE CAPACITY PUMP HAVING A PRESSURE RESPONSIVE RELIEF VALVE ARRANGEMENT

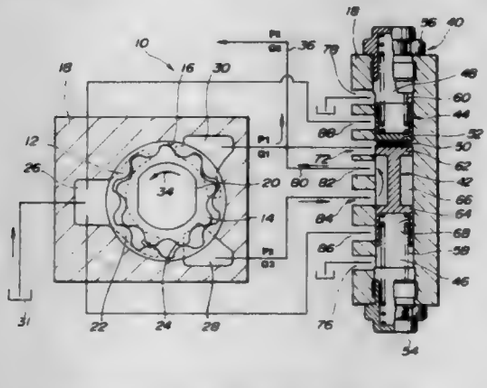
Yasushi Watanabe, and Hideaki Ohnishi, both of Atsugi, Japan, assignors to Unisia Jecs Corporation, Atsugi City, Japan

Continuation of Ser. No. 365,148, Dec. 28, 1994, abandoned. This application Feb. 7, 1997, Ser. No. 797,638

Claims priority, application Japan, Dec. 28, 1993, 5-070797 U; Feb. 22, 1994, 6-024166

Int. Cl.[6] F02C *15/04;2/10*

U.S. Cl. 417—310 **2 Claims**



1. A variable capacity pump comprising:

a pumping means having an inlet port, a first outlet port, and a second outlet port, for pumping oil from said inlet port to said first outlet port and to said second outlet port;

an oil supply passage connected uninterruptedly at one end thereof to said second outlet port of said pumping means;

a regulator valve having a bore, pressure responsive means disposed in said bore, a pressure chamber, and a pressure admission port which is connected to said oil supply passage and in communication with said pressure chamber; and

a branch passage connected to said oil supply passage;

said regulator valve further having a relief port connected to said inlet port of said pumping means, and a transfer port connected to said first outlet port of said pumping means;

said pressure responsive means including a spool disposed in said bore and moveable in response to pressure within said pressure chamber between a first position in which said transfer port is connected to said branch passage and a second position in which said transfer port is connected to said relief port;

said regulator valve further having a second relief port connected to the inlet port of said pumping means and wherein said pressure responsive means includes a piston which is disposed in said bore and is moveable in response to the pressure within said pressure chamber between a first position in which fluid connection between said branch passage and said second relief port is blocked and a second position in which the fluid connection between said branch passage and said second relief port is established.

5,797,733

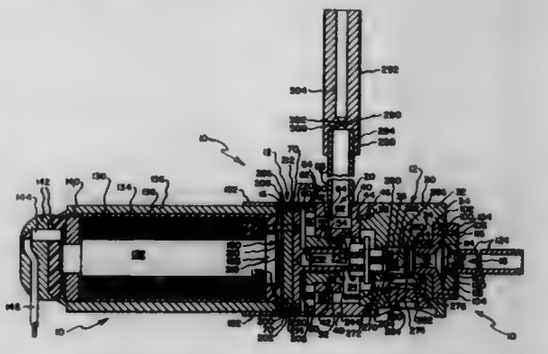
LOW POWER ELECTROMAGNETIC PUMP

Theodore J. Falk, Clarence; W. Richard Brown, Clarence Center; Lawrence E. Morris, Bowmansville; Norbert W. Frenz, Jr., Clarence; Douglas K. Gillies, East Aurora, and Raymond S. Konopa, Alden, all of N.Y., assignors to Wilson Greatbatch Ltd., Clarence, N.Y.

Continuation of Ser. No. 212,555, Mar. 11, 1994, abandoned. This application Feb. 24, 1997, Ser. No. 804,948

Int. Cl.[6] F04B *17/04*

U.S. Cl. 417—416 **22 Claims**



1. An electromagnetic pump comprising:

a) a housing having an interior fluid containing region including a fluid receiving chamber and a fluid output chamber in fluid communication therewith, an inlet in fluid communication with said receiving chamber and an outlet in fluid communication with said output chamber;

b) check valve means operatively associated with said fluid containing region for allowing fluid flow in a direction from said inlet through said outlet and blocking fluid flow in a direction from said outlet through said inlet;

c) electromagnet means carried by said housing and located external to said fluid containing region;

d) an armature positioned in said fluid containing region of said housing having a pole portion located for magnetic attraction by said electromagnet means and having a piston portion operatively associated with said fluid receiving and output chambers for forcing fluid from said receiving chamber through said outlet, said armature being movably supported in said housing for movement from a rest position through a forward pumping stroke when attracted by said electromagnet means to force fluid from said receiving chamber through said outlet and for movement in an opposite direction through a return stroke back to said rest position, said armature piston

portion being located between a plunger portion and said pump inlet and movable within said housing, there being a relatively small clearance between said armature piston portion and said housing;

e) means defining a magnetic circuit including said electromagnet means and said armature and a gap between said pole portion of said armature and said electromagnet means for moving said armature toward said electromagnet means to close said gap in response to electrical energization of said electromagnet means;

f) controlled means for providing a bypass path for bubbles in the fluid around said armature piston portion between said fluid output chamber and said fluid receiving chamber only during said return stroke of said armature; and

g) means in said bypass path for providing an orifice for fluid flow in the bypass path so as to decelerate the flow of fluid through the pump and limit the inertial flow volume in the pump.

5,797,734

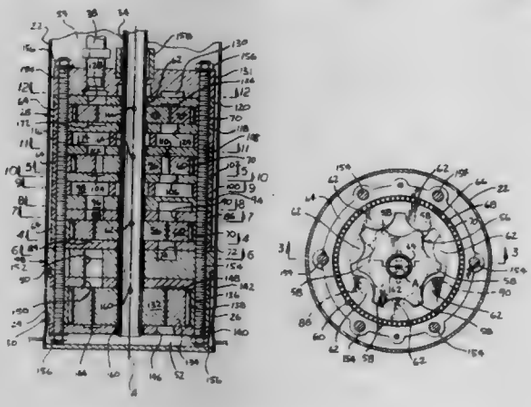
PUMP FOR HOT AND COLD FLUIDS

Thomas L. Kizer, Farmington Hills, and Richard G. Reed, Jr., Royal Oak, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 26, 1996, Ser. No. 756,617

Int. Cl.[6] F04C *2/10;13/00*

U.S. Cl. 418—9 **10 Claims**



1. A positive displacement hydraulic pump for use with super-cooled and super-heated fluids of low lubricity and viscosity and for use with such fluids at a temperature between the temperatures of said super-heated and super-cooled fluids, said hydraulic pump comprising an inner rotor, a ring-shaped outer rotor having a plurality of internal teeth and being formed with an outer cylindrical surface, said inner rotor having a plurality of external teeth formed thereon in meshing engagement with said internal teeth of said outer rotor, a ring-shaped stationary support housing for said inner and outer rotors, an inner cylindrical surface formed in said support housing, a plurality of roller bearings interposed between and in direct contact with said inner cylindrical surface of said support housing and the outer cylindrical surface of said outer rotor, a pair of end plates fixed to said support housing and cooperating with the latter to enclose said inner and outer rotors, a drive shaft extending through said pair of end plates for driving connection with said inner rotor, one of said pair of end plates having a fluid inlet port formed therein and the other of said pair of end plates having a fluid outlet port formed therein, said inlet port and said outlet port being located relative to said inner and outer rotors so that rotation of said inner rotor and said outer rotor creates an expanding chamber adjacent said inlet port for drawing fluid therein while simultaneously creating a contracting chamber adjacent said outlet port for forcing the fluid through said outlet port at a high pressure, said support housing and said inner and outer rotors being made of the same metallic material and having essentially the same width dimension along the rotational axis of said drive shaft so that the thermal expansion of said support housing and of said inner and outer rotors while pumping super-heated fluid and the thermal contraction of said support housing and of said inner and outer rotors while pumping super-cooled fluid does not adversely affect the end-clearance between the end plates and the inner and outer rotors to an extent where the efficiency of the pump would differ if it were pumping fluid at a temperature of 70 degrees Fahrenheit, and said roller bearings being made of a metallic material different than the metallic material of said support housing and said inner and outer rotors so as to avoid material transfer and molecular bonding between said outer rotor and said support housing.

5,797,735

FLUID MACHINE HAVING BALANCE CORRECTION

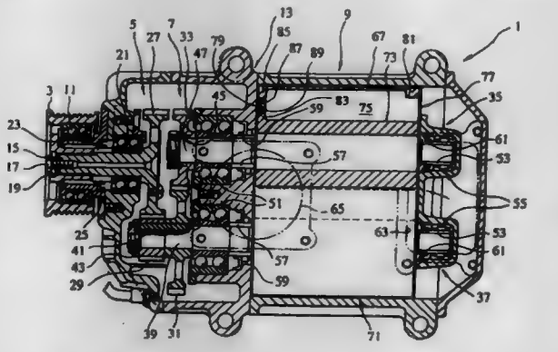
Susumu Ishikawa; Masao Tateno, and Koji Tomita, all of Tochigi-ken, Japan, assignors to Tochigi Fuji Sangyo Kabushiki Kaisha, Japan

Filed Mar. 28, 1996, Ser. No. 623,156

Claims priority, application Japan, Apr. 3, 1995, 7-077827; Sep. 13, 1995, 7-235607

Int. Cl.[6] F01C *1/16;21/08*

U.S. Cl. 418—151 **3 Claims**



1. A fluid machine comprising a casing and a pair of rotors in the casing, the pair of rotors having tooth stripe portions respectively, the pair of rotors fixed onto respective fixing shafts and being engageable with each other while input driving force is being transmitted to one rotating shaft to compress or pump a fluid, the casing having a flow inlet port and a flow outlet port of the fluid wherein

at least one of the rotors has a hollow portion formed in the tooth stripe portion thereof such that the hollow portion extends along a tooth stripe direction;

the hollow portion has an opening portion opened to at least one end face of the rotor in its rotating axis direction;

the tooth stripe portion has a thickness forming portion for a balance correction, correcting the balance of the rotor in its rotating direction by cutting, projected onto an inner circumferential side of the hollow portion, and arranged in the opening portion;

the thickness forming portion for the balance correction is constructed by a balancer partially projected from an inner circumferential face of the hollow portion in cross section crossing the tooth stripe direction;

the balancer is projected from the most distant portion from a rotation axis of the rotor; and

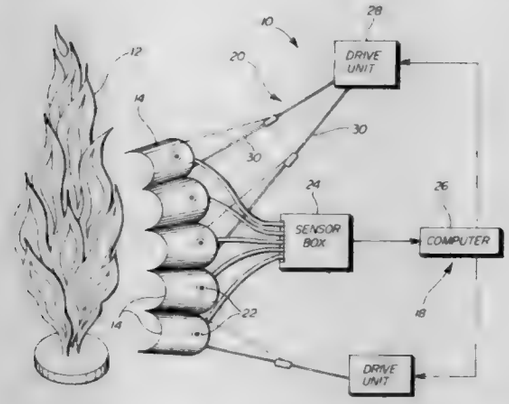
a flow preventing member for preventing a flow of the fluid along the tooth stripe direction is formed in the hollow portion.

5,797,736

RADIATION MODULATOR SYSTEM

M. Pinar Mengüc; Bruce L. Walcott; Stephen R. Swabb, and Michael A. Marra, III, all of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Dec. 3, 1996, Ser. No. 757,695
Int. Cl.[6] F23N 5/00
U.S. Cl. 431—75 7 Claims



1. A method for increasing combustion efficiency and reducing pollutants produced by a flame, comprising:

sensing cooler spots in said flame; and

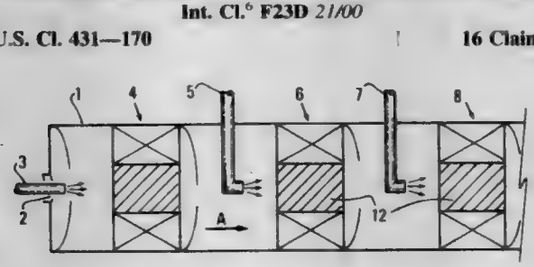
reflecting and focusing radiant energy from said flame into said cooler spots sensed in said flame.

5,797,737

CATALYTIC COMBUSTION SYSTEM WITH MULTISTAGE FUEL INJECTION

Jean-Hervé Le Gal, Paris; Gérard Martin, and Patrick Euzen, both of Rueil-Malmaison, all of France, assignors to Institute Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 14, 1997, Ser. No. 783,091
Claims priority, application France, Jan. 15, 1996, 96 00512
Int. Cl.[6] F23D 21/00
U.S. Cl. 431—170 16 Claims



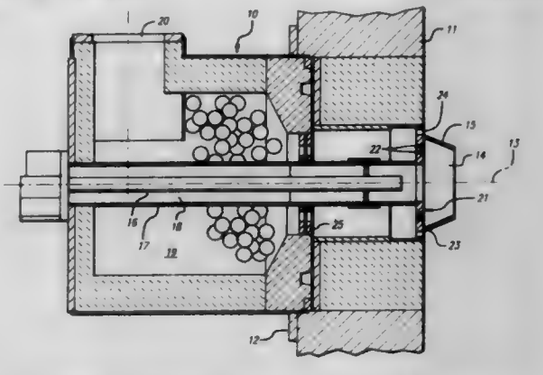
1. A catalytic system comprising a casing having an inlet for an oxidizer, at least two fuel injection means intended for a multistage fuel injection, at least a first monolithic element that is covered with a first combustion catalyst and placed downstream from a first fuel injection means in relation to the direction of progress of an air-fuel mixture in the system, said first injection means performing a partial fuel injection, and at least a second monolithic element placed downstream from a second injection means, said second monolithic element being intended to stabilize the combustion, said second monolithic element being covered with a second combustion catalyst comprising a compound selected from hexaaluminates.

5,797,738

BURNER AND METHOD OF BURNING A FUEL

Brian James Wills, "Sandbourne", Stone Lane, Kinver, West Midlands, England

Filed Jan. 26, 1996, Ser. No. 592,193
Int. Cl.[6] F23D 11/44
U.S. Cl. 431—215 15 Claims



1. A method of burning a fuel in air, comprising the steps of:

delivering the fuel to a mixing position;

dividing a stream of air into first and second portions, said first portion passing through at least one first fixed opening having a minimum transverse dimension not substantially greater than 10 mm, and said second portion passing through at least one second fixed opening having a minimum transverse dimension different from the minimum transverse dimension of said at least one first opening, whereby the ratio of the first portion to the second portion varies as the temperature of the stream of air varies;

directing the first portion to the mixing position to burn the fuel; and

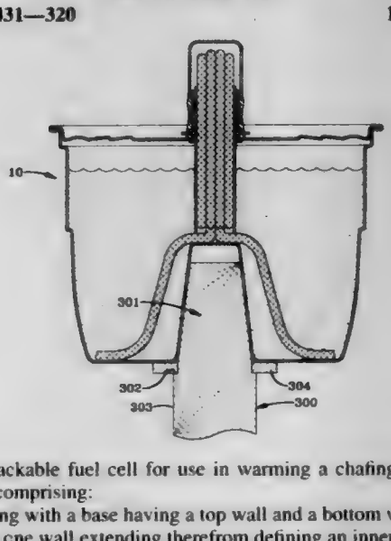
directing the second portion of the air to merge with the burning fuel and air downstream of the mixing position.

5,797,739

FUEL CELL FOR USE WITH A CHAFING DISH

Paul R. Lioi, 4214 9th St., NW., Canton, Ohio 44708

Filed Sep. 25, 1996, Ser. No. 719,728
Int. Cl.[6] F23D 3/24
U.S. Cl. 431—320 14 Claims



1. A stackable fuel cell for use in warming a chafing dish, the fuel cell comprising:

a housing with a base having a top wall and a bottom wall and at least one wall extending therefrom defining an inner chamber;

a recess formed in the base and extending into the chamber, with said recess being defined by an annular wall of conical shape extending inward from said base to a recess top, and adapted for receiving a portion of a second fuel cell during stacking;

fuel housed within the housing;

a lid for substantially enclosing the inner chamber, the lid formed with a wick aperture;

a wick submerged at least partially into the fuel and extending partially out of the wick aperture;

said recess being sized larger than the portion of the second fuel cell whereby the second fuel cell is free of mechanical engagement with the recess;

a grommet; and

a support insertable into the recess wherein the support comprises an elongated pole insertable into the ground, the elongated pole having a recess engaging end and a stop against which the grommet rests at full insertion of the recess-engaging end of the elongated pole into the recess.

5,797,740

DENTAL INSTRUMENT

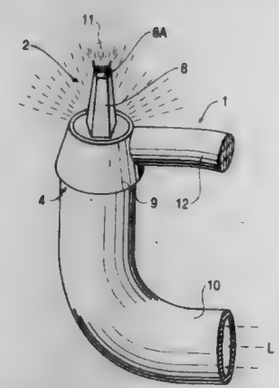
Kjell Per Lundvik, Neuenegg, Switzerland, assignor to Develodent GmbH, Neuenegg, Switzerland

Filed Apr. 16, 1997, Ser. No. 835,816

Claims priority, application European Pat. Off., Apr. 17, 1996, 96810242

Int. Cl.[6] A61C *1/00;3/00*

U.S. Cl. 433—29 **7 Claims**



1. A dental instrument for use in filling cavities with a light activated filling component, comprising:

a grip having first and second ends, wherein at least one of said first and second ends of said grip bears a through bore disposed orthogonally to the length direction of said grip; and

a plurality of light transparent stuffing parts which are removably fastenable within said through bore, said stuffing parts each including a stuffing end disposed at a first free end, and a second free end remote of said stuffing end which is adapted to receive an attachable light source.

5,797,741

DENTAL IMPLANT ARTICLE AND DEVICE FOR FITTING IT

Bruno Bonpard, 7 rue Valentin Haüi, and Elisabeth Mauduech, 7 rue Valentin Haüy, both of Paris, France, 75015

PCT No. PCT/FR95/00692, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/32682, PCT Pub. Date Dec. 7, 1995

PCT Filed May 29, 1995, Ser. No. 737,784

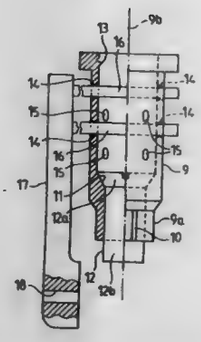
Claims priority, application France, May 31, 1994, 94 06593

Int. Cl.[6] A61C *3/00;8/00*

U.S. Cl. 433—75 **20 Claims**

1. Dental implant article comprising:

an implant body which is intended to be fitted in a substantially vertical cavity drilled into a jawbone from the upper face of the jawbone, said implant body having a bore substantially transverse to a longitudinal axis of said implant body; and



an elongate key accommodated in said bore of the implant body, said key being intended to be fitted into the jawbone after the jawbone has been equipped with the implant body; and

wherein said key is smooth and has a cylindrical shape and wherein said bore corresponds substantially to a cross-section of the cylindrical key for smooth sliding of said key in said bore.

5,797,742

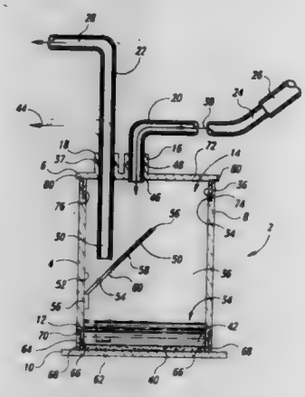
AMALGAM SOLIDS COLLECTING AND SEPARATING APPARATUS

Ross M. Fraker, 4510-54th Ave. N.E., Seattle, Wash. 98105

Filed Feb. 29, 1996, Ser. No. 610,145

Int. Cl.[6] A61C *17/04*

U.S. Cl. 433—92 **24 Claims**



1. An amalgam solids collecting apparatus of the type used for collecting an accumulation of a generally separable mixture of liquid and solid particles that includes amalgam solids, the apparatus being connectable to a source of the mixture, and being connectable to a vacuum source, comprising:

a container having an interior area therein defining a collection portion within the container, the container having an inlet port that communicates with the interior area of the container, the inlet port being connectable to the source of the mixture and the inlet port being sized to receive the mixture therethrough to form the accumulation in the container with a headspace above the accumulation, the container having an outlet port with a second aperture therein that communicates with the interior area;

an outflow tube passing through the outflow port, the outflow tube having a first opening within the interior area and a second opening exterior of the container, the outflow tube being movable relative to the container between a raised position with the first opening being in the headspace and a lowered position with the first opening being within the accumulation, the second opening of the outflow tube being connectable to the vacuum source to create a partial vacuum within the interior area of the container when the outflow tube is in the raised position, and to withdraw the liquid from the

container when the outflow tube is in the lowered position such that the amalgam solids remain in the container; and

a second outflow port that communicates with the interior area wherein the second outflow port defines an outflow passageway between the interior area of the container and the exterior of the container, and a valve is coupled to the second outlet port by an outlet tube, the valve being movable between a closed position to close the outflow passageway and an open position to open the passageway.

5,797,743

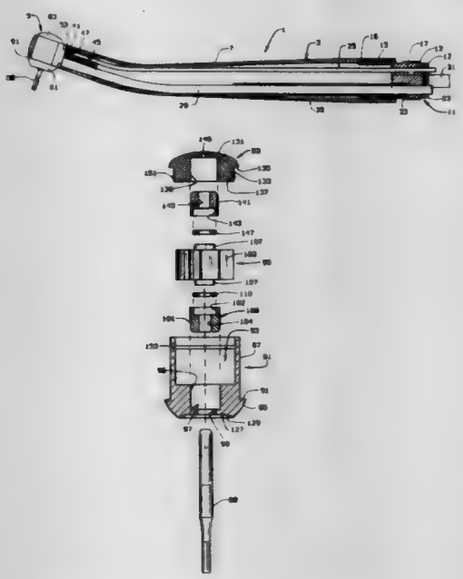
AUTOCLAVABLE DENTAL HANDPIECE WITH DISPOSABLE HIGH SPEED TURBINE

Ronald L. Bailey, Harvester, Mo., assignor to Young Dental Manufacturing Company, Inc., Earth City, Mo.

Filed Apr. 29, 1996, Ser. No. 639,401

Int. Cl.[6] A61C *1/10*

U.S. Cl. 433—126 **83 Claims**



1. A high-speed dental/medical handpiece, the handpiece including:

a body comprising a sleeve and a head at an end of said sleeve, said head having an opening; said sleeve carrying at least an air input tube, said air input tube being operatively connectable to a source of air, said body being made of an autoclavable material; and

a cartridge removably received in said opening of said head of said body to removably receive a dental bit; said cartridge including a hollow cartridge body, a cap which closes said cartridge body, and a turbine; said cap and body cooperating to define a chamber which receives said turbine; said cartridge including an air input opening which is in communication with said air input line to provide operating air to drive said turbine and an exhaust outlet to exhaust said operating air from said chamber; said cartridge including a retainer to hold said cartridge in said body head during operation of said high-speed handpiece.

5,797,744

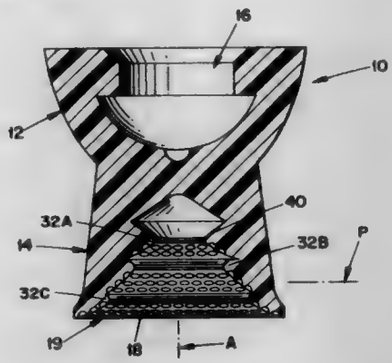
DENTAL PROPHY CUP HAVING A MICROCELLULAR POLISHING SURFACE AND METHOD OF MAKING

Neil A. Rosenberg, Nantucket, Mass., assignor to NAR Inc., Barrington, R.I.

Filed Dec. 2, 1996, Ser. No. 757,636

Int. Cl.[6] A61C *3/06*

U.S. Cl. 433—166 **8 Claims**



1. A dental prophy cup comprising a body having a rear mounting portion and a front polishing portion formed of one piece with the mounting portion, the mounting portion adapted to be mounted on a handpiece for rotation about a longitudinal center axis of the body, the polishing portion including a front surface forming a forwardly open center cavity for receiving abrasive paste, the body formed of a solid elastomeric material whereby the polishing portion is elastically flexible in response to being pressed against a tooth, to enable the front surface to generally conform to a contour of the tooth, the front surface possessing a microcellular texture defining open empty microcells for retaining abrasive paste during a tooth-polishing operation, each microcell including an outer edge lying flush with the front surface, whereby an imaginary plane extending perpendicular to the center axis intersects the front surface and a plurality of the microcells disposed therein, the entire intersected front surface being spaced at a constant distance from the center axis.

5,797,745

RADIOPAQUE SOLUTION FOR VISUALIZING DENTAL ANATOMY, PATHOLOGICAL CONDITIONS, AND IATROGENIC EVENTS, AND METHOD OF USE

Clifford J. Ruddle, 227 Las Alturas Rd., Santa Barbara, Calif. 93103

Filed Dec. 20, 1996, Ser. No. 770,287

Int. Cl.[6] A61C *5/10*

U.S. Cl. 433—224 **24 Claims**

1. A diagnostic composition for visualizing dental anatomy, pathology and iatrogenic events and removing pulp tissue and irritants, when present, from a tooth in vivo in a patient's mouth, the composition comprising a radiopaque solution and an anti-microbial cleaning solution, the anti-microbial cleaning solution being capable of digesting and removing pulp, microbial organisms, and irritants from a patient's tooth.

5,797,746

Patent Not Issued For This Number

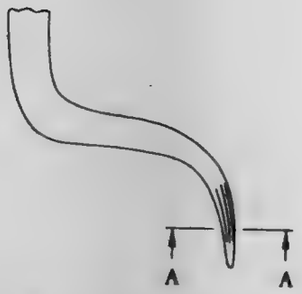
5,797,747

METHOD FOR USING ENDODONTIC INSTRUMENT FITTED ON A VIBRATING HAND-PIECE

Jean-Marie Badoz, Pontarlier; Paul Calas, Toulouse, and Jean-Marie Vulcain, Vitre, all of France, assignors to Micro Mega International Manufactures, S.A., Besancon, France

Filed Nov. 21, 1995, Ser. No. 561,448
Claims priority, application France, Nov. 21, 1994, 94 14058
Int. Cl.[6] A61C 5/02
U.S. Cl. 433—224 8 Claims





1. A method for using an endodontic instrument comprising an elongated body having a proximal portion, a median portion, and a distal portion, wherein:

each of the proximal, median, and distal portions has a principal axis;

the proximal portion adjoins the median portion, and the median portion adjoins the distal portion;

the principal axis of the median portion forms a first angle with the principal axis of the proximal portion; and

the principal axis of the distal portion forms a second angle with the principal axis of the median portion, wherein the first and second angles are in opposite directions, the method comprising the steps of:

(a) mounting the instrument onto a vibratory handpiece; and

(b) using the instrument mounted onto the vibratory handpiece to widen an entrance of a tooth canal without perforating the pulp floor of the tooth canal, wherein the distal portion is prevented from reaching the pulp floor of the tooth canal by the median portion abutting the top of the outer wall of the tooth canal.

5,797,748

TOOTH PROSTHESIS WITH DIRECTIONAL DISTRIBUTION OF THE STRESS RESISTANCE AND METHOD

Marc Reynaud, 23, avenue Plaine Fleurie, 38240 Meylan; Pierre-Luc Reynaud, 9, rue du Rif-Tronchard, 38120 Saint-Egreve, and Manh Chu, Saint-Egreve, all of France, assignors to Marc Reynaud, Meylan, and Pierre-Luc Reynaud, Saint Egreve, both of France

PCT No. PCT/FR96/00330, § 371 Date Aug. 20, 1997, § 102(e) Date Aug. 20, 1997, PCT Pub. No. WO96/26687, PCT Pub. Date Sep. 6, 1996
PCT Filed Mar. 1, 1996, Ser. No. 894,435
Claims priority, application France, Mar. 1, 1995, 95 02362
Int. Cl.[6] A61C 5/08
U.S. Cl. 433—224 11 Claims



1. Dental prothesis made of composite material, comprising a central core (3) made of at least one bundle of fibers (5) which is surrounded by a sheath (7) constituted by at least one layer of fibers (8a, 8b, 8c) , the fibers (5) of the central core (3) and those of the sheath (7) being embedded in a hardenable resin, and the fibers (8a, 8b, 8c) of the sheath (7) being oriented by a given angle (α) with respect to the longitudinal axis (yy') of the prothesis (1).

5,797,749

DENTAL COMPOSITION

Raymond L. Bertolotti, Oakland, and Thomas S. Blake, Danville, both of Calif., assignors to Danville Materials, San Ramon, Calif.

Filed Mar. 19, 1997, Ser. No. 820,567
Int. Cl.[6] A61C 5/00
U.S. Cl. 433—228.1 20 Claims

1. An aqueous-based dental composition comprising about 0.25% by weight to about 20% by weight benzethonium chloride, about 10% by weight to about 60% by weight 2-hydroxyethyl methacrylate, and the remainder water.

5,797,750

METHOD AND APPARATUS FOR DETERMINING THE FOUNDATION MAKEUP COLOR THAT SUBSTANTIALLY REPRODUCES A PERSON'S NATURAL SKIN COLOR

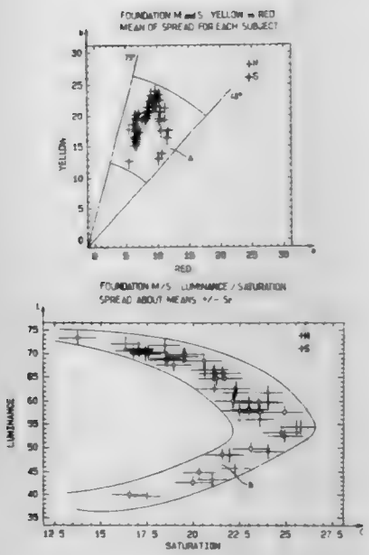
Eliane Gouriou, Issy-Les-Moulineaux; Annie Raynal; Régine Baudet, both of Orleans; Jean-Pierre Hulaud, La Forest Landerneau, and Jean-Paul Biesse, Baccon, all of France, assignors to Parfums Christian Dior, Paris, France

Division of Ser. No. 129,248, Sep. 29, 1993, Pat. No. 5,478,238.
This application Jun. 1, 1995, Ser. No. 456,705
Claims priority, application European Pat. Off., Aug. 3, 1993, 93401994
Int. Cl.[6] G09B 19/00
U.S. Cl. 434—100 12 Claims

1. A method for determining the foundation makeup color that substantially reproduces the natural skin color of a person, which comprises:

(a) determining at least one first coordinate selected from the group consisting of red, green, blue coordinates and at least one second coordinate selected from the group consisting of luminance and saturation coordinates defining the chromatic parameters of the natural skin color of a person under predetermined lighting conditions, to define therefrom an individual foundation skin color for the person tested;

(b) comparing the foundation skin color for the person tested with at least one first coordinate selected from the group consisting of red, green, blue coordinates and at least one second coordinate selected from the group consisting of luminance and saturation coordinates defining the chromatic parameters of a plurality of reference skin color foundation colors in a palette of reference foundation colors forming a data base incorporating the skin colors of a representative sample of a population of selected persons; and



(c) selecting the reference foundation color from the palette which most closely approximates the foundation skin color of the person tested, which may be utilized as the foundation makeup color for that person,

wherein the reference foundation color palette of said data base is defined by

zone A of FIG. **10** of the drawing in the a, b (red, yellow) coordinate plane of FIG. **10** defined first between the two straight lines passing through the origin O at angles of about 48° and 75° with the red axis, and second between the two circular arcs about origin O having radii corresponding to saturation values of 13 and 27 and extending between the two straight lines, and

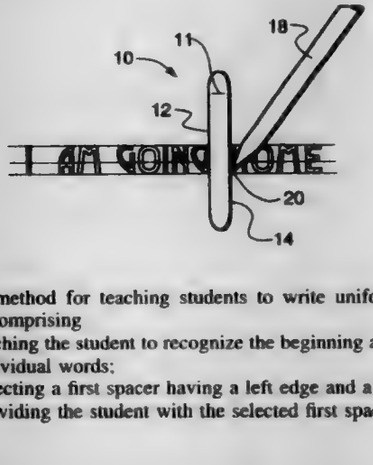
zone B of FIG. **11** of the drawing in the L, C (luminance, saturation) coordinate plane of FIG. **11** defined between and extending up to the ends of the curved lines therein, which L, C coordinate plane is the result of superposing the set of L, C coordinate planes that results from all of the reference foundation colors in the data base of said palette.

5,797,751

METHOD FOR TRAINING STUDENTS TO WRITE EVENLY SPACED WORDS

Pamela L. Quarles, 18 Cordrey Rd., Newark, Del. 19713

Filed Apr. 3, 1997, Ser. No. 833,031
Int. Cl.[6] G09B *11/04*
U.S. Cl. 434—162 **8 Claims**



1. A method for teaching students to write uniformly spaced words, comprising

a) teaching the student to recognize the beginning and ending of individual words;

b) selecting a first spacer having a left edge and a right edge;

c) providing the student with the selected first spacer;

d) having the student write a plurality of individual words by placing the left edge of the spacer at the end of each written word and by writing each next word beginning at the right edge of the spacer;

e) repeating step (d) a number of times;

f) withholding the spacer from the student and having the student write a plurality of words without the use of the spacer;

g) evaluating the writing, resulting in step (f) for word spacing uniformity, and if such spacing is not acceptably uniform, repeating steps (c) through (g) a number of times until the spacing of the written words is substantially uniform.

5,797,752

SYSTEM AND METHOD FOR NOTIFYING A TIME LIMIT AND EXTENSION OF USED PERIOD OF A KARAOKE APPARATUS

Satoru Umezawa, Shizuoka-ken, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Apr. 18, 1996, Ser. No. 634,248
Int. Cl.[6] G09B *5/08;* **G10H** *1/36*
U.S. Cl. 434—307 A **4 Claims**



2. A karaoke system comprising

a karaoke apparatus comprising a monitor on which words and background scenes are displayed in parallel with a karaoke performance; and

a management apparatus connected to said karaoke apparatus via a line, said management apparatus including:

use period storing means for storing a use period at a start of a use of said karaoke apparatus; and

time limit transmission means for transmitting time limit information to said karaoke apparatus when a remaining time of the use period is equal to or less than a predetermined time during the use of said karaoke apparatus,

wherein said karaoke apparatus includes:

remaining time display means for, when the time limit information is received, displaying the time limit information on said monitor;

extension accepting means for accepting an input of an extension period in response to the display of said remaining time display means; and

extension requesting means for transmitting the extension period as an extension requesting message when the extension period is input,

wherein said management apparatus includes:

use period updating means for adding the extension period to the use period stored in said use period storing means and for updating the use period when the extension requesting message is received from said karaoke apparatus.

4. A method for notifying a time limit and extension of used period of a karaoke apparatus comprising the steps of:

storing a use period at a start of a use of said karaoke apparatus in a use period storing means;

transmitting time limit information to said karaoke apparatus when a remaining time of the use period is equal to or less than a predetermined time during the use of said karaoke apparatus;

displaying the time limit information on a display means when the time limit information is received;

accepting an input of an extension period in response to the display of said remaining time on said display means;

transmitting the extension period as an extension requesting message when the extension period is input;

adding the extension period to the use period stored in said use period storing means and for updating the use period when the extension requesting massage in received from said karaoke apparatus.

5,797,753

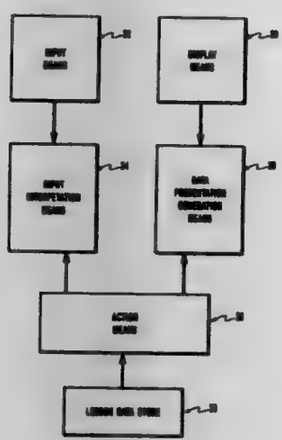
METHOD AND SYSTEM FOR COMPUTERIZED LEARNING RESPONSE, AND EVALUATION

Michael R. Griswold, Provo; Thierry Guillerm, Salt Lake City; Wayne Jiang; Bruce Mossman, both of Provo; Spencer Rogers, Orem, and Giovanni Tata, Provo, all of Utah, assignors to William M. Bancroft, Provo, Utah

Continuation of Ser. No. 548,460, Oct. 26, 1995, abandoned, which is a division of Ser. No. 408,734, Mar. 22, 1995, abandoned. This application Dec. 26, 1996, Ser. No. 777,171

Int. Cl.[6] G09B *3/00;7/00*

U.S. Cl. 434—322 **11 Claims**



1. A method for using a computer system as a computerized learning, response, and evaluation system for arranging data relevant to a topic into a format which allows for presentation of that data and concomitant user initiated testing of portions of that data through questions which are created by said computer system from said data, the method comprising the steps of:

a. an author obtaining a pool of data relevant to a topic, said data comprising a plurality of information resources comprising at least one of text, graphics, or sound;

b. said author creating a lesson by arranging the data into a plurality of pages, each of said pages having at least one of said information resources thereon, at least a portion of said pages being adapted for presentation to a student so that the information resources contained thereon are presented to said student, the information resources of said pages being further adapted for use by said computer system to create questions;

c. said computer system creating questions from the information resources of said plurality of pages by performing at least the steps of:

i. selecting a question part from among the information resources of said plurality of pages;

ii. selecting a right answer part from among the information resources of said plurality of pages so that said right answer part is the correct answer to said question part;

iii. selecting at least one wrong answer part from among the information resources not used to select said question part and said right answer part; and

iv. assembling said selected question part, right answer part, and said at least one wrong answer part into a question in order to test the knowledge of said student and presenting the assembled question to said student.

5,797,754

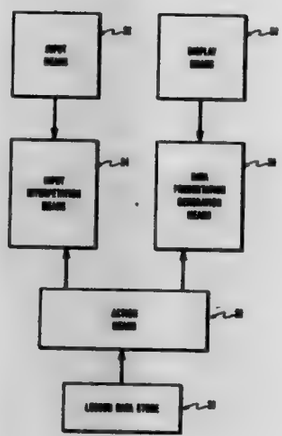
METHOD AND SYSTEM FOR COMPUTERIZED LEARNING, RESPONSE, AND EVALUATION

Michael R. Griswold, Provo; Thierry Guillerm, Salt Lake City; Wayne Jiang; Bruce Mossman, both of Provo; Spencer Rogers, Orem, and Giovanni Tata, Provo, all of Utah, assignors to William M. Bancroft, Provo, Utah

Continuation of Ser. No. 548,608, Oct. 26, 1995, abandoned, which is a division of Ser. No. 408,734, Mar. 22, 1995, abandoned. This application Jan. 9, 1997, Ser. No. 781,524

Int. Cl.[6] G09B *3/00;7/00*

U.S. Cl. 434—322 **2 Claims**



1. A method for allowing a user of a computer to selectively access additional information and to be presented that information by actuating a subsidized area in a screen comprising a plurality of information resources such as text, graphics or sound, the method comprising:

a) differentiating a portion of the screen comprising at least one information resource so that the user is aware of the availability of at least one other information resource in addition to said at least one information resource;

b) tying said at least one other information resource to that distinguished area;

c) the computer generating questions based on said at least one other information resource tied to that distinguished area by performing at least the following steps:

i. selecting a question part and right answer part pair from at least one of said at least one information resource and said at least one other information resource;

ii. selecting at least one wrong answer part from information resources that are not part of said at least one information resource and said at least one other information resource; and

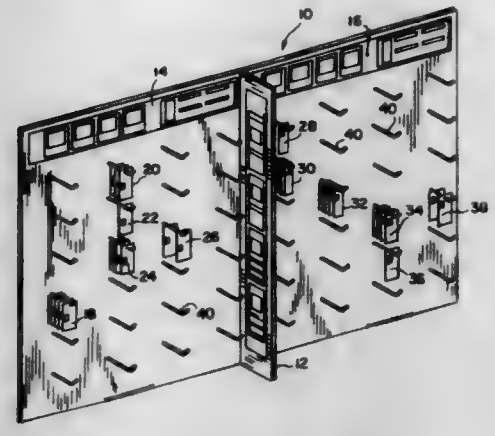
iii. creating a question by assembling said selected question part and right answer part pair and said at least one wrong answer part into a question.

5,797,755

MERCHANDISE DISPLAY SYSTEM AND METHOD

Holliday S. Montgomery, Peachtree City, Ga., assignor to Goody Products, Inc., Peachtree City, Ga.

Filed Sep. 25, 1996, Ser. No. 718,924
Int. Cl.[6] G09B 1/06
U.S. Cl. 434—429 16 Claims



1. A merchandise display system comprising:

a plurality of articles of merchandise intended for sale, each article having a pictorial representation indicative of a feature or characteristic of quality of the article provided thereon in a manner such that the pictorial representation is plainly visible;

a plurality of pegs adapted to support the plurality of articles of merchandise in a manner so that the pictorial representations provided on the articles of merchandise are plainly visible;

a first display panel having a plurality of pictorial representations provided thereon corresponding to the pictorial representations provided on the plurality of articles, the first display panel being provided at a first angular orientation with respect to the pictorial representations provided on the plurality of articles of merchandise; and

a second display panel having a plurality of pictorial representations provided thereon corresponding to the pictorial representations provided on the plurality of articles, the second display panel being provided at a second angular orientation with respect to the pictorial representations provided on the plurality of articles of merchandise, the pictorial representations provided on the articles of merchandise, and on the first and second display panels being coordinated with one another so that a potential purchaser can quickly and easily locate a particular article of merchandise with a desired feature or characteristic of quality as embodied in the pictorial representation.

5,797,756

GROUNDING BRACKET PARTICULARLY FOR USE IN A CONNECTING DEVICE FOR TELECOMMUNICATION AND DATA TRANSMISSION APPLICATIONS

Ferenc Nad, Berlin, Germany, assignor to Krone Aktiengesellschaft, Berlin-Zehlendorf, Germany

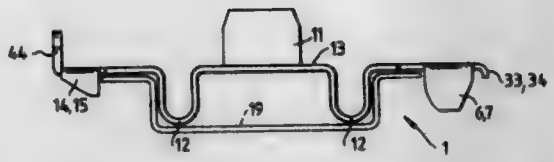
Filed Sep. 24, 1996, Ser. No. 719,314
Claims priority, application Germany, Sep. 29, 1995, 295 15 982.0
Int. Cl.[6] H01R 9/26
U.S. Cl. 439—94 20 Claims

1. A grounding bracket arrangement for telecommunication and data transfer applications, comprising:

a hat-type rail provided as a carrier rail;

a connecting device for telecommunication and data applications; and

a bracket including a bottom with a contact lug bent out from the bracket bottom, spring elements for resiliently latching in said hat-type rail and fastening elements for safe attachment at a bottom of said connecting device, wherein said spring elements are formed by two U-shaped configurations, and said contact lug is formed by cutting-free a portion from said bracket bottom.

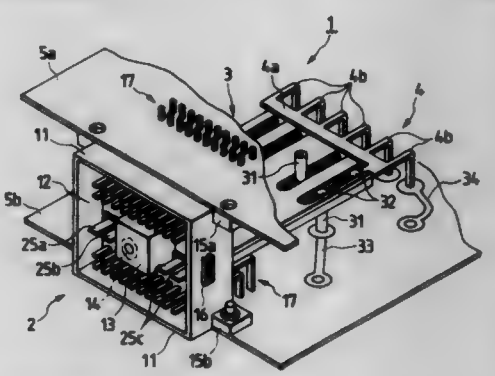


5,797,757

PCB MULTI-POLE CONNECTOR

Yoshihito Aoki, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Nov. 12, 1996, Ser. No. 747,701
Claims priority, application Japan, Nov. 13, 1995, 7-294433
Int. Cl.[6] H01R 4/66; 13/648
U.S. Cl. 439—101 15 Claims



1. A PCB multi-pole connector, comprising:

a connector body;

a plurality of terminals mounted in said connector body, said terminals having first end portions for mating with terminals of a mating connector and second end portions for connecting with circuit patterns formed on printed circuit boards; and

a bus bar card accommodating a bus bar, said bus bar having a terminal portion and a connecting portion,

wherein said bus bar card is detachably mounted in said connector body to juxtapose said terminal portion with said first end portions of said terminals, said bus bar card includes upper and lower cases which have cut portions where said connecting portion of said bus bar is longitudinally exposed.

5,797,758

LEVER ACTION-TYPE FEMALE CONNECTOR

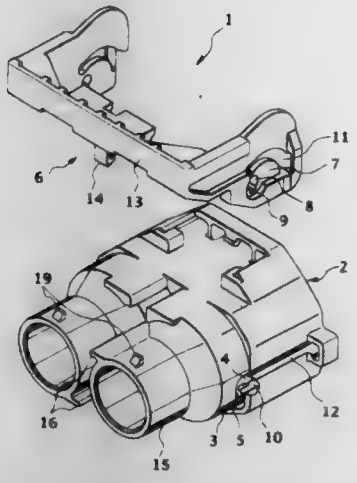
Shinichi Tsuchiya, and Kazuhisa Ishizaki, both of Shizuoka-ken, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Feb. 6, 1997, Ser. No. 796,134
Claims priority, application Japan, Feb. 16, 1996, 8-029525
Int. Cl.[6] H01R 13/60
U.S. Cl. 439—157 4 Claims

1. A female connector for engaging a male connector housing, said female connector comprising;

a female connector housing having a pair of L-shaped axle parts projecting in an axial direction laterally from sidewalls, the female connector having at least one wire leading pipe integrally extending therefrom and an engagement rib formed on the periphery of said wire leading pipe;

a lever pivotally attachable to said female connector housing, said lever having at least one cam recess for engaging a projection formed on said male connector housing and a pair



of side walls, each having a bearing bore for receiving a respect one of said axle parts of said female connector housing, said lever having a handling part briding said side walls thereby providing a substantial U-shaped configuration and an engagement hook on said handling part for latching with said engagement rib;

each of said axle parts having, at a leading end thereof, a push projection extending in a direction perpendicular to the axial direction of each of said axle parts; and

each of said bearing bores having an insertion notch to define a key-hole configuration through which said axle parts can pass.

5,797,759

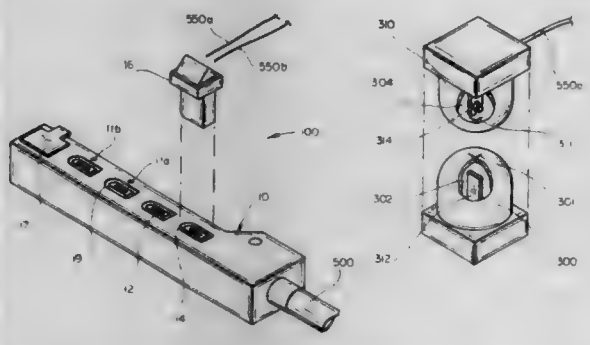
MODULAR TELECOMMUNICATIONS TERMINAL BLOCK

John S. Mattis, Sunnyvale; James Craig Milroy, Palo Alto; Paul von der Lippe, Granada; Gerald L. Shimirak, Danville; Paul S. Chan, San Francisco, and Sebastiano Scarampi, Los Altos, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 922,460, Jul. 30, 1992, Pat. No. 5,273,449, which is a division of Ser. No. 499,117, Mar. 26, 1990, Pat. No. 5,153,988. This application Dec. 22, 1993, Ser. No. 173,805

Int. Cl.[6] H01R *13/44*

U.S. Cl. 439—201 **14 Claims**



1. An environmentally protected terminal having a plurality of standardized sealed mateable/demateable individual interfaces capable of interconnecting a plurality of devices in an outside environment, the apparatus comprising:

a terminal including a plurality of paired electrical contacts, at least one end of each contact sealed in a gel sealing material within the terminal but capable of forming a repeatably sealed mateable/demateable connection with a separate pair of electrical contacts apart from the terminal, the separate pair of electrical contacts being surrounded by an elastomeric member filled with a gel sealing material, the end opposite to the mateable/demateable end within the terminal forming a permanently sealed electrical contact to a wire, wherein the pair of mateable/demateable electrical contacts remains sealed before, during, and after connection to the separate pair electrical contacts, and wherein the interface between the separate paired electrical contacts and the block at mateable/demateable electrical contact within the terminal is formable in the absence of specialized tools.

5,797,760

ELECTRICAL COMPONENTS AND APPARATUS

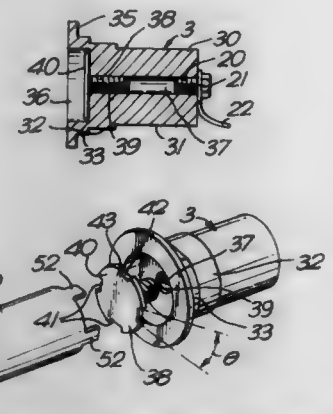
Neil Andrew Swindlehurst, Worcestershire, England, assignor to Smiths Industries PLC, London, England

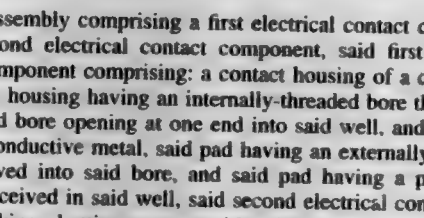
Filed Jun. 18, 1997, Ser. No. 877,917

Claims priority, application United Kingdom, Jul. 4, 1996, 9614051

Int. Cl.[6] H01R *13/28*

U.S. Cl. 439—289 **11 Claims**





1. An assembly comprising a first electrical contact component and a second electrical contact component, said first electrical contact component comprising: a contact housing of a conductive metal, said housing having an internally-threaded bore therein and a well, said bore opening at one end into said well, and a contact pad of a conductive metal, said pad having an externally-threaded stem screwed into said bore, and said pad having a planar pad member received in said well, said second electrical contact component making abutting contact with said planar pad member of said first electrical contact component.

5,797,761

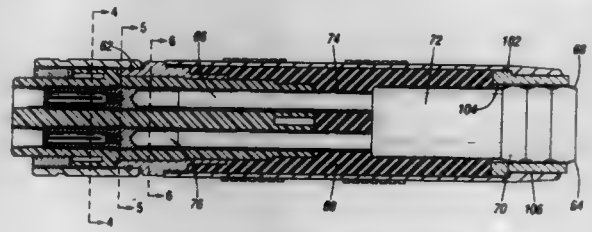
POWER CONNECTOR ASSEMBLY

Russell K. Ring, Friendswood, Tex., assignor to Kemlon Products & Development Company, Houston, Tex.

Filed Apr. 30, 1996, Ser. No. 641,253

Int. Cl.[6] H01R *4/38*

U.S. Cl. 439--320 **23 Claims**



1. A power connector for a power cable comprising:

a substantially cylindrical piece of pre-molded insulating material, said cylindrical piece having a longitudinal axis, an outside surface defining an outside diameter, a first end, a second end, and a means for creating a fluid tight barrier adjacent to the second end, said cylindrical piece further defining a plurality of substantially circular cavities extending

from the first end to the second end parallel to the longitudinal axis, each said channel having an inside surface defining an inside diameter;

a substantially tubular bushing for engaging a coupling nut, said busing having a longitudinal axis, with an inside surface, a first end, a second end, a first outside surface adjacent to the first end and defining a first outside diameter, a second outside surface adjacent to the first outside surface and defining a second outside diameter, wherein said second outside diameter is greater than the first outside diameter, a third outside surface adjacent to the second outside surface and defining a third outside diameter, wherein said third outside diameter is lesser than the second outside diameter, said third outside surface having a means for attaching a sleeve to the bushing, and a fourth outside surface adjacent to the third outside surface and defining a fourth outside diameter which is lesser than the third outside diameter, said inside surface being bonded to and in a covering relationship to the outside surface of the cylindrical piece between the first end and the second end of the cylindrical piece;

a substantially tubular coupling nut for engaging a surface connector having an inside surface, an outside surface, a first end, a second end and a longitudinal axis, said inside surface containing threads near the first end, said inside surface near the second end being adjacent to and in covering relationship to the first outside surface of the bushing near the first end of the bushing, said cylindrical piece having a means for engaging the surface connector in an alignable manner;

a snap ring positioned between the inside surface of the coupling nut and the first outside surface of the bushing;

a substantially tubular sleeve having a first end, a second end, an inside surface, an outside surface and a longitudinal axis, said inside surface at the first end having a means for attaching to the third outside surface of the bushing, said sleeve in covering relationship to the cylindrical piece near the second end of the cylindrical piece and the bushing near the second end of the bushing;

wherein the longitudinal axes of said cylindrical piece, said bushing, said coupling nut and said sleeve are coaxial.

5,797,762

ELECTRICAL CONNECTOR HAVING A CAM ACTUATOR FOR A PLURALITY OF CONTACTS

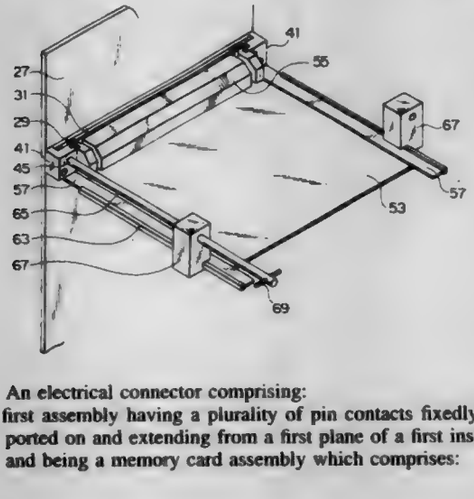
Kazuki Saito; Yuichi Matsuno; Yuuji Kuramitsu, and Hiroyuki Tsuzuki, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry Limited, and NEC Corporation, both of Tokyo, Japan

Filed Oct. 16, 1996, Ser. No. 734,401

Claims priority, application Japan, Oct. 19, 1995, 7-271397

Int. Cl.[6] H01R *4/50*

U.S. Cl. 439—342 **10 Claims**



1. An electrical connector comprising:

a first assembly having a plurality of pin contacts fixedly supported on and extending from a first plane of a first insulator and being a memory card assembly which comprises:

a memory card; and

an edge connector mounted on said memory card and at an edge portion of said memory card, said edge connector comprising said first insulator and said pin contracts;

a second assembly having a plurality of socket contacts configured to be brought into a connection with said pin contacts, said socket contacts being fixedly supported in a second insulator having a rod receiving hole for removably and rotatably supporting a rod and being outwardly exposed in a second plane of said second insulator, said second plane facing toward said first plane when said pin contacts are brought into contact with said socket contacts, respectively;

A pin driving plate mounted in said second plane and having a plurality of pin receiving holes extending in a first direction perpendicular to said second plane for receiving said pin contacts upon a connection to said socket contacts, said pin driving plate being reciprocatingly movable along said second plane and in a second direction perpendicular to said first direction for driving said pin contacts in said second direction for making a connection and a disconnection between said pin contacts and said socket contacts, said pin driving plate having a cam hole; and

an actuator member removably attached to said second assembly and being said rod having a circular section with an eccentric portion engaged with said cam hole for actuating said pin driving plate in said second direction.

5,797,763

ELECTRICAL CONNECTION BOX

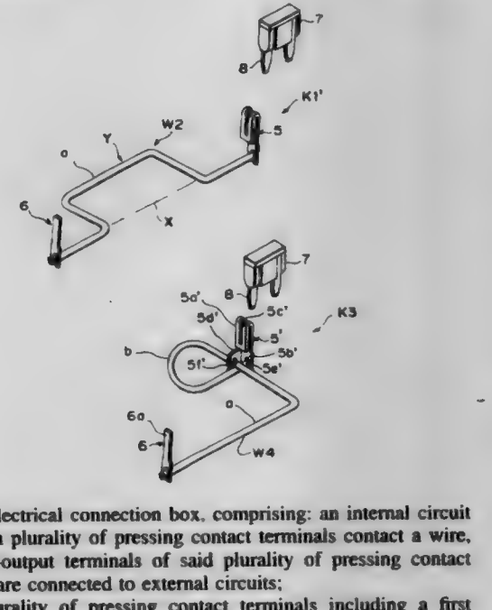
Yuuji Saka; Nori Inoue; Takahiro Onizuka; Yoshito Oka, and Makoto Kobayashi, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Oct. 24, 1995, Ser. No. 547,468

Claims priority, application Japan, Nov. 29, 1994, 6-294788; Dec. 26, 1994, 6-322611

Int. Cl.[6] H01R *4/24*

U.S. Cl. 439—402 **4 Claims**



1. An electrical connection box, comprising: an internal circuit in which a plurality of pressing contact terminals contact a wire, and input-output terminals of said plurality of pressing contact terminals are connected to external circuits;

said plurality of pressing contact terminals including a first pressing contact terminal connected an external electrical heating element;

said wire including an electrically operative portion between said first pressing contact terminal and another one of said plurality of pressing contact terminals and an electrically inoperative portion; and

said first pressing contact terminal having a plurality of pressing contact portions, one of said plurality of pressing contact

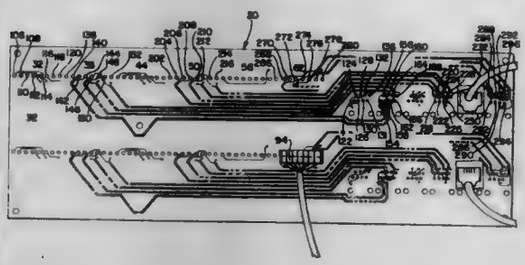
portions being connected to a conductor of said electrically operation portion, while a conductor of the electrically inoperative portion having been routed away from and back toward said first pressing contact terminal to connect with another one of said plurality of pressing contact portions to form a loop wire portion for heat dissipation.

5,797,764

LOW RETURN LOSS AND LOW CROSSTALK TELECOMMUNICATIONS ELECTRIC CIRCUIT

David J. Coulombe, Skokie, and Ray Matlin, Woodridge, both of Ill., assignors to Homaco, Inc., Chicago, Ill.

Filed Feb. 12, 1997, Ser. No. 798,921
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—55 **9 Claims**



1. A low return loss and low crosstalk electric circuit for use in connecting portions of a telecommunications system comprising: a pair of elongated circuit conductors, said conductors being parallel to each other over a substantial portion of their respective lengths, each of said conductors having a surface in a single plane, a pair of compensation traces spaced from and electromagnetically connected to the conductors, said compensation traces having a surface in a second plane spaced from and parallel to the single plane of the conductors, a pair of elongated cognate circuit conductors, said cognate conductors parallel to each other over a portion of their respective lengths, each of said cognate conductors having a surface in a second single conductor plane, said second single conductor plane being spaced from and parallel to the single plane of the first-mentioned elongated circuit conductors, a pair of cognate compensation traces spaced from and electromagnetically connected to the cognate conductors, said pair of cognate compensation traces having a surface in a second compensator plane spaced from and parallel to the second single conductor plane and being spaced away from the single plane of the first-mentioned elongated circuit conductors a greater distance than from the second single conductor plane.

5,797,765

COAXIAL CONNECTOR FOR MOUNTING ON A CIRCUIT SUBSTRATE

Ron Barnett; Thomas W. Finkle, and Michael T. Powers, all of Santa Rosa, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

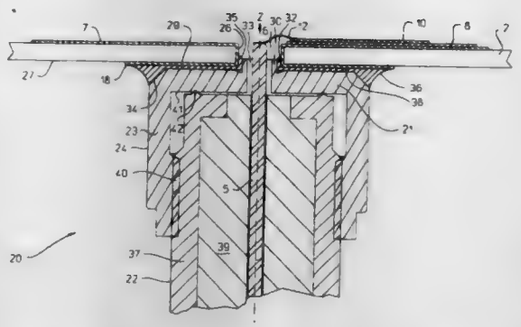
Filed Nov. 1, 1996, Ser. No. 743,444
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—63 **11 Claims**

1. A coaxial connector mating to a planar substrate having a contact pad and a conductive bore connecting to the contact pad, the coaxial connector comprising:

a conductive disk having a hole in its center and a beveled edge around a perimeter of a first surface of the disk;

a nipple protruding from the first surface, disposed concentrically about the hole, the hole being continuous through the nipple;

a cylindrical sleeve extending from a second surface of the disk and having a central axis aligned with the hole;



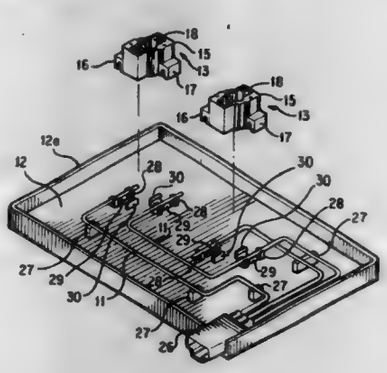
a center conductor along the central axis of the cylindrical sleeve, penetrating the hole through the disk and nipple and penetrating the conductive bore, whereby the center conductor is centered in the conductive bore when the nipple is positioned in the conductive bore.

5,797,766

LAMP MOUNTING DEVICE

Fumiyoshi Tanigawa, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed Mar. 12, 1996, Ser. No. 614,056
Claims priority, application Japan, Mar. 14, 1995, 7-083165
Int. Cl.[6] H01R 4/24
U.S. Cl. 439—419 **5 Claims**



1. A lamp mounting device comprising:

a board on which power supply wires are laid to supply power to a lamp, said board including a first engagement member;

a socket for the lamp to be mounted to the board, said socket having a second engagement member which is resiliently engageable with said first engagement member and having accommodating chambers for receiving said power supply wires;

a pair of terminal fittings integral with said socket; and

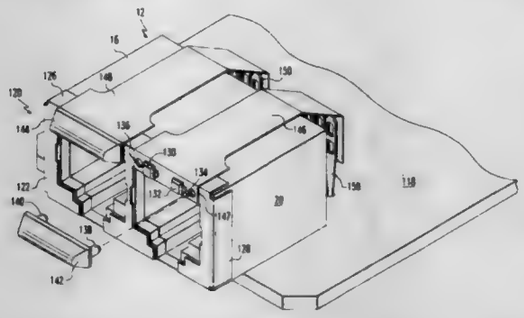
a pair of terminals fitted into said terminal fittings, said terminals having end portions extending into said accommodating chambers, said end portions comprising pressure-engaging portions which are brought into contact with said power supply wires when the socket is mounted on the board.

5,797,767

INDICATOR LIGHT MODULAR JACK

Mark S. Schell, Palatine, Ill., assignor to Berg Technology, Inc., Reno, Nev.

Filed May 31, 1996, Ser. No. 657,792
Int. Cl.[6] H01R 3/00
U.S. Cl. 439—490 9 Claims



7. A modular connector for receiving a complementary plug to effect an electrical connection therebetween, the modular connector comprising:

a housing defining a front face and having a cavity therein with an opening in said front face;

a plurality of electrical terminals disposed within said cavity and adapted to be electrically coupled to complementary electrical terminals of the plug upon insertion of the plug into said cavity;

a flex circuit electrically coupled to at least one of said plurality of electrical terminals; and

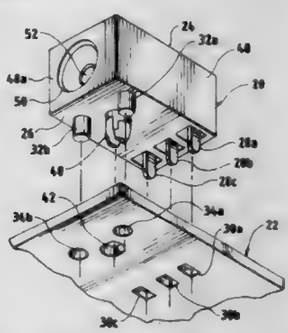
a light emitting device electrically coupled to said flex circuit wherein a portion of said flex circuit is secured to said housing and a lens is superimposed over said light emitting device and said flex circuit is secured at least in part to said housing by said lens.

5,797,768

ELECTRICAL CONNECTOR AND SYSTEM FOR AUTOMATIC INSERTION MACHINERY

Joe Francaviglia, Bloomingdale, Ill., assignor to Senior Industries, Inc., Wood Dale, Ill.

Filed Aug. 5, 1996, Ser. No. 693,931
Int. Cl.[6] H01R 13/66
U.S. Cl. 439—567 16 Claims



1. An electrical connector mountable on a first surface of a printed circuit board having a mounting aperture extending through the board to a second surface, comprising:

an electrical contact for connection to an external electrical source;

a housing containing the electrical contact and including a mounting surface for mating engagement with the first surface of the printed circuit board;

a terminal extending from the mounting surface and electrically connected to the contact; and

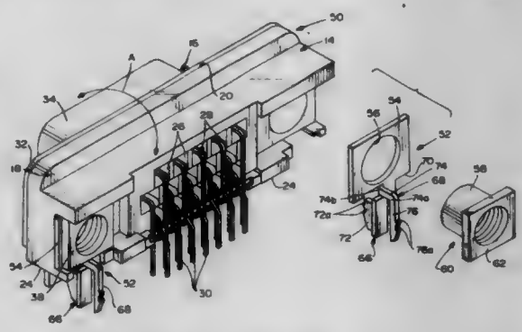
a snap fit post for insertion into the mounting aperture of the printed circuit board to hold the housing against the first surface of the printed circuit board, said snap fit post having a neck extending from the mounting surface and being located in an intermediate area between an edge of the housing and the terminal and an enlarged snap fit head which compresses inwardly to pass through the mounting aperture and expands outwardly after passing beyond the second surface of the printed circuit board for snug engagement against the second surface surrounding the mounting aperture to thereby capture and hold the connector tc the printed circuit board.

5,797,769

ELECTRICAL CONNECTOR WITH BOARDLOCK

Tsung-Lin Yang, and Jiunn-Ren Chen, both of Taipei, Taiwan, assignors to Molex Incorporated, Lisle, Ill.

Filed Jun. 18, 1996, Ser. No. 665,661
Claims priority, application Taiwan, May 14, 1996, 85207102
Int. Cl.[6] H01R 13/66
U.S. Cl. 439—571 11 Claims



1. An electrical connector, comprising:

a dielectric housing having a front mating face, a rear terminating face, a bottom mounting face and a plurality of terminal-receiving passages extending rearwardly of the front mating face, the bottom mounting face being adapted for surface mounting to a printed circuit board;

a plurality of terminals received in said passages; and

a stamped and formed metal boardlock mounted on the housing and including a generally planar mounting plate disposed generally parallel to the front mating face of the housing, a pair of locking legs formed out of a bottom edge of the mounting plate and projecting below the bottom mounting face of the housing for insertion into a hole in the printed circuit board, and at least one of the locking legs being generally coplanar with the mounting plate and having a locking portion formed generally perpendicular to the mounting plate and, in turn, perpendicular to the front mating face of the housing.

5,797,770

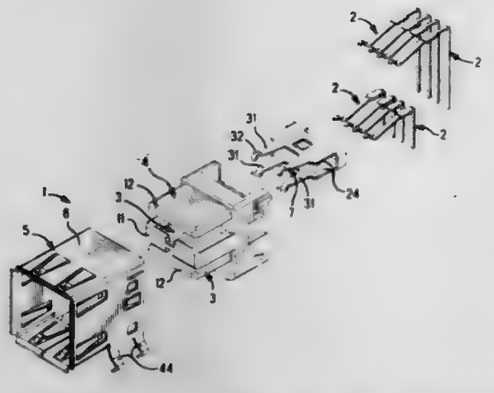
SHIELDED ELECTRICAL CONNECTOR

Wayne Samuel Davis, Harrisburg; Robert Neil Whiteman, Jr., Middletown, and Michael Eugene Shirk, Grantville, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 21, 1996, Ser. No. 701,227
Int. Cl.[6] H01R 13/00
U.S. Cl. 439—607 8 Claims

1. A shielded electrical connector comprising:

an insulating housing, at least two plug receiving cavities in the housing, electrical contacts in each of the plug receiving cavities, shielding being provided by a conductive outer shell and a separate conductive second shell engaging the outer shell, the outer shell encircling the housing and the second



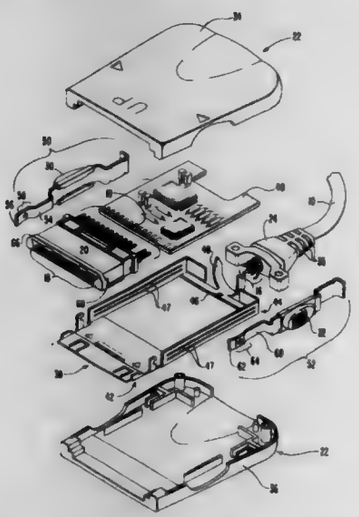
shell insertable into the housing from a rear face and affixed within the housing, said second shell projecting between the plug receiving cavities in the housing and including at least one spring finger extending into each of said plug receiving cavities to proximate a front face of the insulation housing for engaging a shield of a mating plug type connector upon insertion into a respective one of said plug receiving cavities, whereby each of the plug receiving cavities in encircled by the shielding.

5,797,771

CABLE CONNECTOR

R. Troy Garside, Bountiful, Utah, assignor to U.S. Robotics Mobile Communication Corp., Salt Lake City, Utah

Filed Aug. 16, 1996, Ser. No. 689,714
Int. Cl.[6] H01R *9/03*
U.S. Cl. 439—610 **8 Claims**



1. A cable connector for connecting a cable containing a plurality of wires into a mating receptacle, the cable connector comprising:

a casing having a receptacle end, a cable end, and respective first and second side walls connecting the two ends, the casing further defining a cavity;

a housing connected to the receptacle end of the casing for fitting into the mating receptacle;

a grommet connected to the cable end of the casing to support the cable containing the plurality of wires;

contacts held by the housing for electrical connection within the mating receptacle;

a hollowed grounding shield located in the casing cavity and electrically connected to the plurality of wires, the grounding shield being hollowed-out to lessen vertical space impact within the casing cavity; and

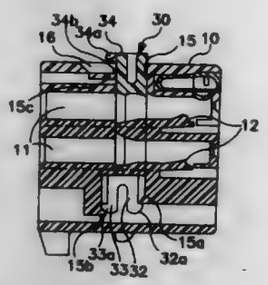
a PC board located within the casing cavity and fitting in the hollowed out portion of the grounding shield, the PC board being electrically connected to the plurality of wires within the cable and to the contacts.

5,797,772

CONNECTOR PROVIDED WITH A RETAINER

Toshikazu Sakurai; Izumi Suzuki, and Hitoshi Okumura, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Mar. 13, 1997, Ser. No. 816,655
Claims priority, application Japan, Mar. 13, 1996, 8-056524
Int. Cl.[6] H01R *13/436*
U.S. Cl. 439—752 **10 Claims**



1. A connector comprising:

a housing (**10**) and a retainer (**30**),

the housing (**10**) being provided with terminal fitting chambers (**11**) for accommodating terminal fittings (**20**) and with a retainer insertion opening (**15**) into which the retainer (**30**) is insertable for retention therein,

the retainer (**30**) having engaging means engageable with the housing (**10**) for selectively holding the retainer (**30**) in a partial lock position and a full lock position with respect to the housing (**10**), said retainer (**30**) being configured for detachment of the terminal fittings (**20**) when retainer (**30**) is in its partial lock position and for securely retaining the terminal fittings (**20**) in the housing (**10**) when the retainer (**30**) is in its full lock position, and wherein

said retainer (**30**) further comprising a locking control member (**34**) for preventing movement of the retainer (**30**) from the partial lock position to the full lock position, said locking control member (**34**) including a manual actuator for selectively releasing the locking control member (**34**) to enable movement of the retainer (**30**) to the full lock position, the locking control member (**34**) being provided at a rear end of the retainer (**30**) with respect to an insertion direction of the retainer (**30**) and being provided with a flexible portion in the form of a cantilevered arm projecting rearwardly with respect to the insertion direction for deflection in a direction substantially normal to the insertion direction to permit a push-in operation of the retainer (**30**).

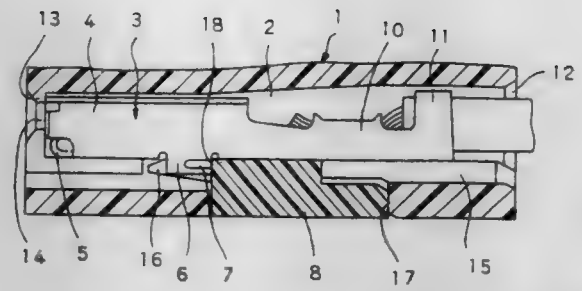
5,797,773

TERMINAL FITTING

Masaaki Kobayashi, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

Continuation of Ser. No. 589,352, Jan. 22, 1996, abandoned.
This application Nov. 14, 1997, Ser. No. 971,045
Claims priority, application Japan, Feb. 2, 1995, 7-039064
Int. Cl.[6] H01R *13/436*
U.S. Cl. 439—752 **3 Claims**

1. A terminal fitting for insertion into an electrical connector housing, said terminal fitting having a connecting member adapted to mate with a corresponding connecting member of another ter-



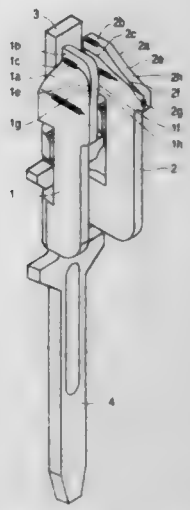
minal fitting to make an electrical connection therewith, said connecting member having a distal end and a longitudinal axis, said terminal fitting further having a wire contacting portion and an integral upstanding portion having an upstanding edge extending in a direction transverse to said longitudinal direction and facing away from the distal end of said connecting member, said upstanding edge being adapted to engage a retaining member of the housing in use to doubly lock the terminal fitting within the housing, wherein the upstanding portion includes an elongate strengthening bead which is generally parallel to said longitudinal axis and extends to said upstanding edge, said strengthening bead bulging inward so that a portion of the upstanding edge extends transversely out of a plane defined by the upstanding portion to provide increased resistance to damaging the retainer and removing the terminal fitting from the housing on account of a rearwardly directed axial force.

5,797,774

CONTACT

Tetsuya Kaneko, Chiba-ken, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Dec. 24, 1996, Ser. No. 773,036
Claims priority, application Japan, Dec. 28, 1995, 7-353191
Int. Cl.[6] H01R *11/22*
U.S. Cl. 439—857 **7 Claims**



1. A contact for contacting with a pin terminal projecting vertically from a lower surface of an IC body, said contact comprising:

first and second contact pieces extending vertically and respectively having plate surfaces opposed to one another so as to receive the pin terminal therebetween under pressure;

wherein upper end portions of said first and second contact pieces are bent forwardly to form forwardly-bent pieces, respectively;

wherein upper edge portions of said forwardly-bent pieces are respectively bent backwardly to form backwardly-bent upper pieces;

wherein inner curved-surfaces of said backwardly-bent upper pieces respectively serve as pressure contact surfaces to contact with the pin terminal;

wherein side edge portions of said forwardly-bent pieces on a pin terminal introduction side thereof are respectively bent backwardly to form backwardly-bent side pieces continuous with said backwardly-bent upper pieces;

wherein inner curved-surfaces of said backwardly-bent side pieces are respectively continuous with said inner curved-surfaces of said backwardly-bent upper pieces; and

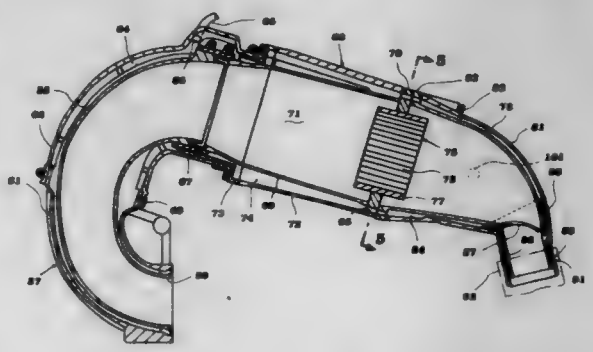
wherein inner curved surfaces of upper ends of said backwardly-bent side pieces respectively serve as pressure contact surfaces to contact with the pin terminal at an early stage of introduction of the pin terminal in an introduction direction in between said first and second contact pieces.

5,797,775

ENGINE CONTROL SYSTEM FOR A WATERCRAFT

Shigeyuki Ozawa; Ryoichi Nakase; Keiichi Hiki, and Hiroaki Fujimoto, all of Shizuoka-ken, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 1, 1996, Ser. No. 674,153
Claims priority, application Japan, Jun. 30, 1995, 7-165762
Int. Cl.[6] B63H *21/22*
U.S. Cl. 440—1 **30 Claims**



1. A watercraft comprised of a hull, an internal combustion engine mounted within said hull, a propulsion unit driven by said internal combustion engine for propelling said hull through a body of water, an exhaust system for collecting exhaust gases from said engine and discharging them to the atmosphere, means for sensing a temperature in said exhaust system, and means for initiating a protective action for reducing the temperature of said exhaust system by reducing the amount of fuel passing to the exhaust system when the sensed temperature exceeds a predetermined value.

5,797,776

VIBRATION REDUCTION SYSTEM FOR AN OUTBOARD MOTOR

David W. Kusche, Oshkosh, Wis., assignor to Brunswick Corporation, Lake Forest, Ill.

Filed Apr. 18, 1997, Ser. No. 844,338
Int. Cl.[6] B63H *1/15*
U.S. Cl. 440—52 **9 Claims**

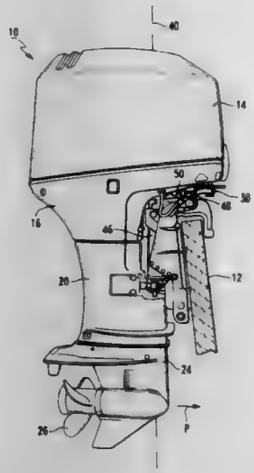
1. An outboard motor, comprising:

an internal combustion engine mounted for rotation about an axis;

a steering device attached to said engine for causing said engine to rotate about said axis;

a cowl disposed around said engine, said cowl being attached to said engine; and

first and second resilient pads attached to move in coordination with said cowl and disposed at opposite sides of said steering device to limit rotational movement of said cowl about said axis relative to said steering device, said first and second resilient pads being positioned relative to said steering device to define an overlap area between said steering device and



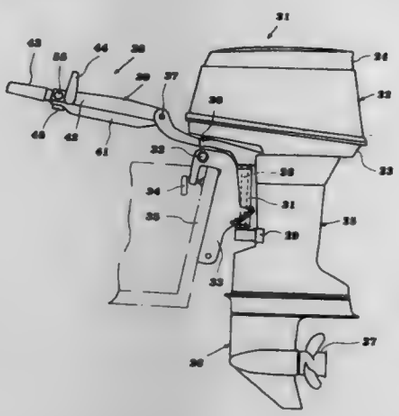
each of said resilient pads, the magnitude of said overlap area being inversely proportional to the speed of said engine.

5,797,777

OUTBOARD MOTOR CONTROL

Hiroyuki Tsunekawa, and Kouji Abe, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 492,710, Jun. 20, 1995, abandoned. This application Oct. 10, 1997, Ser. No. 948,506
Claims priority, application Japan, Jun. 22, 1994, 6-163261
Int. Cl.[6] B60K *41/00*
U.S. Cl. 440—84 **13 Claims**



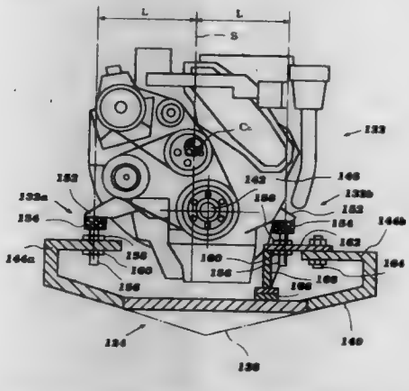
1. A control handle for the tiller of an outboard motor comprising an elongated outer housing for attachment at its rear end to the tiller for steering of the outboard motor and extending forwardly therefrom, a throttle control extending forwardly from said outer housing and rotatable about an axis defined by said outer housing for connection to an engine speed control element for controlling the speed of said outboard motor, a transmission control supported for movement by said outer housing at the front thereof and in juxtaposition to said throttle control and associated with a transmission control of said outboard motor for operating it, said transmission control being mounted on one exterior surface of said outer housing, and a control switch carried at the front of said outer housing for controlling another function disposed on an other outer surface of said outer housing and inwardly of the outer periphery of and surrounded by said other surface of said outer housing to avoid inadvertent activation thereof while still permitting selective activation thereof.

5,797,778

MOUNTING ARRANGEMENT FOR MARINE PROPULSION ENGINE

Ryoichi Ito, and Masamichi Fujiwara, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Jan. 30, 1997, Ser. No. 791,107
Claims priority, application Japan, Jan. 30, 1996, 8-014157
Int. Cl.[6] B63H *21/30*
U.S. Cl. 440—111 **19 Claims**



1. In combination, an internal combustion engine and a watercraft having a water propulsion apparatus and a hull, said engine having a block with a crankshaft extending therefrom in driving relation to said water propulsion apparatus, said crankshaft extending along a first line, said engine having a center of gravity positioned along a second line extending parallel to said first line but laterally offset therefrom, said engine mounted to said hull with a first mount, a second mount, and a third mount, said first and second mounts being positioned on opposite sides of said second line and equidistant therefrom, and said third mount being positioned along said second line.

5,797,779

BODYBOARD WITH DIFFERENTIATED TOPSKIN

Michael A. Stewart, 22345 LaPaloma Ave., Yorba Linda, Calif. 92687

Filed Feb. 8, 1996, Ser. No. 598,249
Int. Cl.[6] A63C *15/00*
U.S. Cl. 441—74 **22 Claims**



1. A bodyboard for use in supporting a rider during travel in ocean surf, the bodyboard comprising:

an elongate plank defining a semi-rigid bodyboard core with a riding surface, a planing surface, a forward end, a rear end and a pair of elongate laterally-opposed side edges; and

a multi-layer topskin covering the riding surface of the bodyboard core, the topskin including a first layer and a second layer, the second layer defining an hourglass-shaped aperture through which the first layer protects to define a centralized torso-supporting region of generally hourglass shape and a

purchase-enhancing region which extends substantially along a perimeter of the torso-supporting region to impede uncontrolled rider shift.

5,797,780

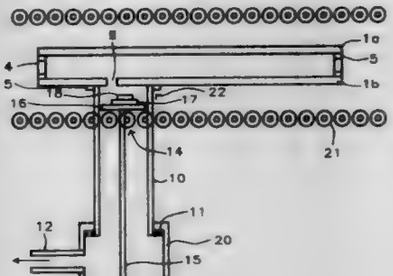
HYBRID TUBELESS SEALING PROCESS FOR FLAT PANEL DISPLAYS

Chao-Chi Peng, Chinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsin-Chu, Taiwan

Filed Feb. 23, 1996, Ser. No. 606,123

Int. Cl.[6] H01J *9/40*

U.S. Cl. 445—25 **35 Claims**



1. A method for sealing a FED device under high vacuum with a plug using a three-port hybrid tubeless technique, comprising the steps of:

providing a display device, which is encased in a glass panel casement having a front glass panel and a back glass panel with an exhaust aperture in one of the glass panel;

providing a straight glass exhaust tube;

attaching one end of said glass exhaust tube to the outer surface of said glass panel around said exhaust aperture;

providing a three-port stainless steel exhaust tube having an aperture-O-ring port, a hermetically sealed port and a pumping port, wherein the aperture-O-ring port and the hermetically sealed port are at opposite ends of said stainless steel exhaust tube;

attaching the aperture-O-ring port end of said stainless steel exhaust tube to the unattached end of the glass exhaust tube with the O-ring vacuum seal;

connecting a pumping system to the pumping port of the stainless steel exhaust tube;

connecting a linear feedthrough mechanism to allow linear movement through the hermetically sealed port;

placing a vitreous glass frits disk on a flat sealing plate substrate to form a sealing assembly;

placing said sealing assembly in a holder locating at the inserting end of a retractable plunger;

inserting the retractable plunger with the sealing assembly mounted in the holder into the stainless steel exhaust tube through the hermetically sealed port and through the attached glass exhaust tube, with the glass frits facing the aperture of said panel;

attaching the shaft end of said retractable plunger inside the exhaust tube to the linear motion feedthrough mechanism at the hermetically sealed end of the exhaust tube;

inserting said display device having the aperture end of the stainless steel exhaust tube connected to the back panel of the device around the aperture via a glass tube, into a heated oven/furnace;

pushing the glass frits sealing plate substrate assembly held by the plunger using the linear feedthrough mechanism until the surface of the glass frits disk is firmly pressed against the aperture of said panel in the oven, when the high vacuum is achieved inside the display device

releasing the vitreous glass frits/ sealing plate substrate assembly from the holder when the vitrify glass frits disk forms a plug in the aperture and seals the display device under high vacuum;

moving the plunger away from the glass frits plug/glass plate substrate seal in the display device panel, after temperature has cooled down shutting off the vacuum pumping system, wherein the plunger with holder is withdrawn by the linear motion feedthrough mechanism into the section of the exhaust tube left outside of the oven;

removing the sealed display device from the oven; and

cutting off the exhaust tube from the display device.

5,797,781

TRIPLE-LAYERED SHADOW MASK AND ITS MANUFACTURING

Sang Youl Yoon, Kyungsangbuk-do, Rep. of Korea, assignor to Orion Electric Co., Ltd., Kyungsangbuk-do, Rep. of Korea

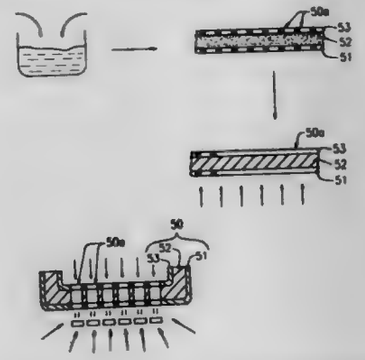
PCT No. PCT/KR96/00128, § 371 Date Mar. 31, 1997, § 102(e) Date Mar. 31, 1997, PCT Pub. No. WO97/06552, PCT Pub. Date Feb. 20, 1997

PCT Filed Aug. 5, 1996, Ser. No. 817,599

Claims priority, application Rep. of Korea, Aug. 4, 1995, 1995/24026(PA)

Int. Cl.[6] H01J *9/18*

U.S. Cl. 445—37 **3 Claims**



1. A method of manufacturing a triple-layered shadow mask for a CRT, said method comprising the steps of:

(a) preparing a first and a second thin metal plates having a multiple electron beam holes in a desired arrangement;

(b) mixing inorganic materials and organic materials into a paste by dissolving them with a solvent;

(c) producing a triple-layered forming blank by coating either one of said first and the second thin metal plates with said paste and sticking both of the thin metal plates;

(d) hardening said paste of said forming blank by drying them;

(e) forming said forming blank of hardened paste into a given shape; and

(f) eliminating said organic materials by burning them out.

5,797,782

APPARATUS FOR CONNECTING A VACUUM PUMP STAND WITH AN ELECTRONIC TUBE

Armin Blecker, Asslar, and Hartmut Tschesche, Braunfels, both of Germany, assignors to Balzers-Pfeiffer GmbH, Asslar, Germany

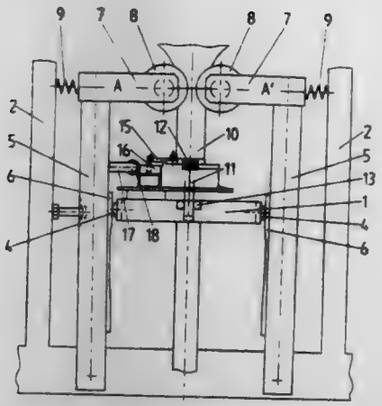
Filed Mar. 25, 1996, Ser. No. 622,529

Claims priority, application Germany, Mar. 24, 1995, 195 10 727.6

Int. Cl.[6] H01J *9/385*

U.S. Cl. 445—70 **4 Claims**

1. An apparatus for connecting a vacuum pump stand with an electronic tube having a tube neck with an exhaust tube projecting



therefrom, with the vacuum pump stand having a suction flange including a gasket ring for receiving the exhaust tube and with the suction flange being displaceable toward the electronic tube neck, said apparatus comprising:

guide rails for guiding the suction flange upon displacement thereof toward the electronic tube neck;

rollers for centering the electronic tube neck and the exhaust tube relative to the gasket ring;

roller mounts for supporting the centering rollers; and

pivotal levers for supporting the roller mounts and connected with the guide rails;

wherein the suction flange is formed as a guide table provided with guide rolls slidable along the guide rails as the suction flange moves toward the electronic tube neck, and

wherein the guide rails have a variable profile such that during an initial displacement of the suction flange toward the electronic tube neck, the levers are in a position in which the centering rollers are spaced from the electronic tube neck, that during a further displacement of the suction flange toward the electronic tube neck, the levers pivot into a position, in which the centering rollers engage the electronic tube neck and remain in this position until the exhaust tube reaches the gasket ring, and that during a still further movement of the suction flange to an end position thereof, the levers pivots back into a position in which the centering rollers are again spaced from the electronic tube neck.

5,797,783

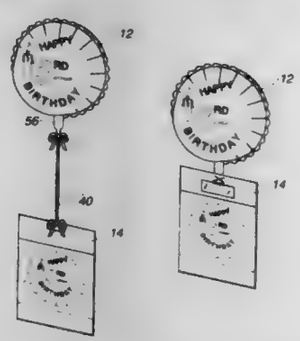
TOY BALLOON PACKAGING

Dale Alan Harris, Chicago, Ill., assignor to M & D Balloons, Inc., Manteno, Ill.

Continuation of Ser. No. 370,678, Jan. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 333,600, Nov. 2, 1994, Pat. No. 5,514,022, which is a continuation of Ser. No. 41,755, Apr. 2, 1993, abandoned. This application Jul. 3, 1996, Ser. No. 674,856

Int. Cl.[6] **A63H** *27/10;* **G09F** *21/06*

U.S. Cl. 446—77 **13 Claims**



7. A marketing display kit for a toy balloon, the kit comprising:

a package comprising a pocket;

a noninflated metallized balloon in the pocket;

the noninflated metallized balloon with a preselected volume to be inflated with a lighter-than-air gas upon removal from the package so as to assume a preselected buoyancy, the balloon having a surface with artwork which is displayed when the balloon is inflated; and

the package including at least one slit aperture adapted to secure a neck of an inflated balloon to the package, the package having sufficient weight to balance the buoyancy of the balloon when the balloon is in an inflated condition to the preselected volume with the lighter-than-air gas to the preselected buoyancy, and the package having artwork indicative of the artwork on the surface of the balloon to illustrate the balloon in an inflated condition.

5,797,784

CONFIGURED OR KEYED CONNECTOR SYSTEM

Michael Wolfe, 101 W. 90th St., New York, N.Y. 10024

Continuation of Ser. No. 366,832, Dec. 30, 1994, Pat. No. 5,486,127. This application Jan. 22, 1996, Ser. No. 589,163

Int. Cl.[6] **A63H** *33/06;3/46;* **F16B** *7/10*

U.S. Cl. 446—120 **12 Claims**



1. A system for coupling a plurality of components comprising:

(a) at least one first component part, the first component part with a male connector extending therefrom, the male connector comprising:

(i) a button head connector with a formed and configured end, the configured end having an established shape and size, a shaft, having a shape, a size and an axis, connecting the configured button head end to the component part, the configured end having a larger shape and size than the attaching shaft, and

(ii) at least one configured formation of the male button head connector representing a keying or key like feature, or configured end,

(b) at least one second component part, the second component part with a female receptor integrally formed in the second component part having a void with an opening, surrounded by scalloped edges, which have a flexibility, the scalloped edges providing and defining a key slot opening, which are configured with at least one positioning space, the positioning space(s) formed by the size and shape of the opening, the opening position which is slightly smaller than the corresponding male connector, to receive and hold only a complementary configured sized and shaped end of the male connector;

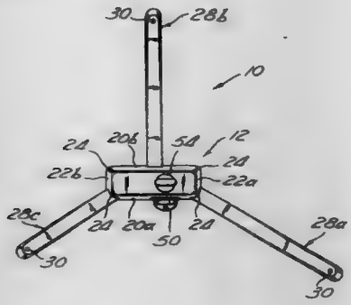
wherein the configured end of the male connector which when of complementary configured keying sizing and shape as the female receptor opening is engaged with the female receptor of another component part by virtue of their complementary sizing and shape, selectively positions and singularly orients the component parts in one of any chosen radial orientations about the axis of the connector shaft and restrains rotational movement about the axis when engaged.

5,797,785

THREE ARM MOBILE

Michael Silberstein, La Jolla, Calif., assignor to Infantino, A Dorel Company, Chula Vista, Calif.

Filed Jun. 10, 1996, Ser. No. 661,182
Int. Cl.[6] A63H *33/00*
U.S. Cl. 446—227 **11 Claims**



1. A decorative mobile, comprising:

a central housing defining opposed pairs of longitudinal and lateral sides separated by four corner regions;

a generally rectangular wind-up musical drive unit disposed within the housing and having an output shaft extending therefrom which protruded from the housing and rotates when the drive unit is operatively wound, said housing being configured to accept the drive unit; and

three elongate arms including two arms of a first substantially equal length and one arm of a second length which is less than the first length, one of the arms of the first length being attached to and extending from one of the longitudinal sides, with tho other arm of the first length and the arm of the second length being attached to and extending from respective ones of the corner regions;

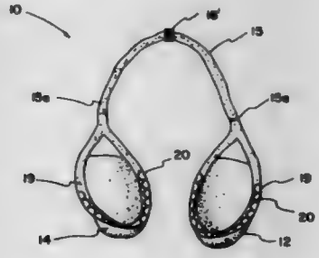
the first and second lengths of the arms being selected to balance the housing by compensating for the non-uniform weight distribution created by the drive unit therewithin, and to provide the mobile with a proportional appearance.

5,797,786

POST OPERATIVE BRASSIERE

Joey Paulette Smith, and Gerald William Smith, both of 5009 Zebulon Rd., Zebulon, N.C. 27597

Filed Aug. 2, 1996, Ser. No. 691,539
Int. Cl.[6] A41B *3/00*
U.S. Cl. 450—1 **10 Claims**



1. A brassiere for use by post operative patients, said brassiere comprising:

a first breast support cup, said first breast support cup being fabricated from a flexible cloth material and being provided with a quilted lining sewn with an elastic thread, said cup including elastic panel means disposed about a peripheral edge of said cup for supporting said first cup over one breast of a wearer;

a second breast support cup, said second breast support cup being fabricated from a flexible cloth material and being provided with a quilted lining sewn with elastic thread, said cup including elastic panel means disposed about a peripheral edge of said cup for supporting said second cup over the other breast of the wearer; and

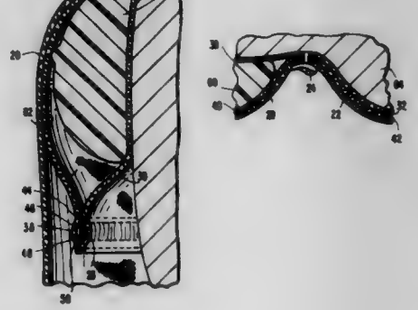
flexible strap means interconnecting said panel means within said first and second breast support cups, said flexible strap means extending about the neck and over the shoulders of the wearer so as to create tension within said panel means and to form an open gap between said first and said second breast support cups over the sternum of the wearer without destroying the support provided to the wearer's breasts by said brassiere.

5,797,787

FULL-FIGURED WOMAN'S GARMENT

Shelly Kaye, 165 Lindbergh Ave., Oceanside, N.Y. 11572

Filed Jul. 11, 1997, Ser. No. 891,712
Int. Cl.[6] A41C *3/00;3/12*
U.S. Cl. 450—30 **20 Claims**



1. A garment, comprising:

a) a rear garment portion generally overlying at least part of a wearer's back when worn;

b) a front garment portion connected to the rear garment portion and generally overlying at least part of a wearer's chest when worn;

c) a backing underlying the front garment portion at one side of the wearer's chest and bounding a pocket for receiving an artificial breast, said backing having an upper region connected to the front garment portion above the received breast, and a lower region situated below the received breast; and

d) an elongated drawstring extending at least partly along the lower region and terminating in an accessible end region accessibly located relative to the front garment portion and operative, when pulled and held, to secure the pocket and the received breast in place on the wearer's chest.

5,797,788

GRINDING A MOUNTED CARD CLOTHING

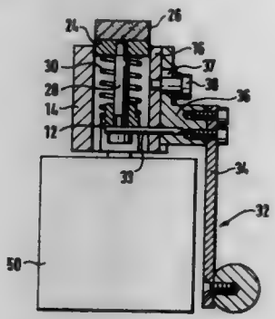
Ralph A. Graf, Freienbach, and Stefan Geisser, Rapperswill, both of Switzerland, assignors to Graf & CIE AG, Rapperswill, Switzerland

Filed Feb. 14, 1997, Ser. No. 801,087

Claims priority, application Germany, Feb. 15, 1996, 196 05 635.7

Int. Cl.[6] B24B *47/22*

U.S. Cl. 451—28 **14 Claims**



11. A method of grinding a card clothing mounted on a support and rotatable therewith about an axis, the method comprising the steps of:

a) supporting an abrasive grinding element adjacent the card clothing;

a') establishing for the grinding element a radial inner position relative to the axis;

a") withdrawing the grinding element radial outward to a radial outer position relative to the axis;

b) rotating the card clothing and support about the axis;

b') releasing the grinding element to move radially inward to the radial inner position; and

c) continuously elastically pressing the grinding element radially of the axis toward the card clothing, whereby the element grinds the card clothing.

5,797,789

POLISHING SYSTEM

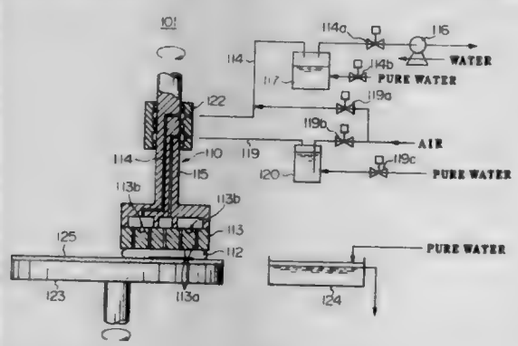
Koichi Tanaka; Toshihiro Tsuchiya; Koji Morita, and Tsutomu Takaku, all of Nishi-shirakawa-gun, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1997, Ser. No. 810,915

Claims priority, application Japan, Mar. 28, 1996, 8-074518

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—289 **18 Claims**



15. A polishing system for polishing an object, comprising: a polishing head including a holding member for holding an object on a lower surface thereof, the holding member having at least one through hole in communication with a vacuum pump through a vacuum passage and with a fluid supply system through a fluid passage, the vacuum passage and the fluid passage being independent from each other; and a polishing member; the object being polished by pressing the object held on the lower surface of the holding member against the polishing member while moving the holding member relative to the polishing member and supplying an abrasive slurry to the polishing member; and the object being separated from the polishing head by injecting a fluid from the fluid supply system to the object through the through hole of the holding member.

5,797,790

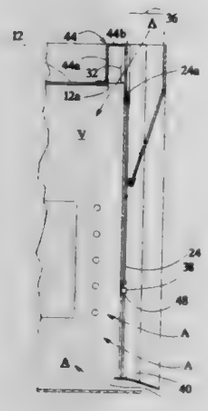
FUME HOOD

Kurt Rindoks, Davidson, and S. Ross Lyons, Huntersville, both of N.C., assignors to Kewaunee Scientific Corporation, Statesville, N.C.

Filed Dec. 15, 1995, Ser. No. 573,253

Int. Cl.[6] B08B *15/02*

U.S. Cl. 454—59 **6 Claims**



1. A laboratory fume hood, comprising:

a cabinet having a top panel lying in a top plane and an open front face lying in a front plane with an upper region and a lower region;

a bypass channel having a first leg extending upward from said top panel of said cabinet, and a second leg extending forward from said first wall, said first leg located in a plane rearward of said front plane and said second leg located in a plane above said top plane, said bypass channel defining a bypass opening between said top panel and said front plane into said cabinet;

a front panel confronting said upper region, said front panel extending outwardly from said open front face and said front plane and upwardly beyond said top plane and spaced forwardly from said second leg defining a gap therebetween;

a sash having a top edge, said sash covering a portion of said open front face and being movable between a lowered position covering said lower region, a partly raised position wherein said top edge is flush with said top plane, and a fully raised position wherein said top edge abuts against said second leg of said bypass channel; and

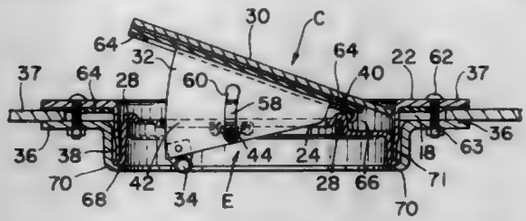
wherein said sash permits air to enter said cabinet through said bypass area and said gap when in said lowered position, wherein said sash closes off said upper region yet permits air to enter said cabinet through said open front face and said bypass area and said gap when in said partly raised position, and wherein said sash closes off said bypass area and said upper region when in said fully raised position.

5,797,791

VENTED WINDOW ASSEMBLY

James T. Humphrey, Roanoke, and Randy L. Pratt, Salem, both of Va., assignors to Mountain Car Company, Salem, Va.

Filed Jul. 24, 1996, Ser. No. 685,503
Int. Cl.[6] B60H 1/26
U.S. Cl. 454—134 15 Claims



1. A vented window assembly for providing ventilation to a compartment of any manner of vehicle or vessel, said window assembly comprising:

at least one unitary piece of transparent or translucent window material, said window material configured for mounting in a panel structure of said vehicle or vessel;

an opening defined through said unitary piece of window material;

a vent assembly mounted in said opening and sealingly engaged with said window material, said vent assembly further comprising an operable vent selectively positionable between an open position wherein an air flow path is defined through said vented window assembly into said compartment, and a closed position wherein said air flow path is sealed; and

said vent assembly comprising a frame structure with opposite edge members for mounting onto said window material in sealing engagement therewith, and a vent plate with a plurality of openings therethrough rotatable carried in said frame structure and variably positionable relative thereto, said vent assembly further comprising a vent cover which seals against a sealing surface of said vent plate in said closed posed and an operating mechanism connected to said vent cover and extending through said vent plate for moving said vent cover between said closed position and said open position, said vent assembly further comprising a tensioning device for maintaining said vent cover in sealing engagement with said sealing surface.

5,797,792

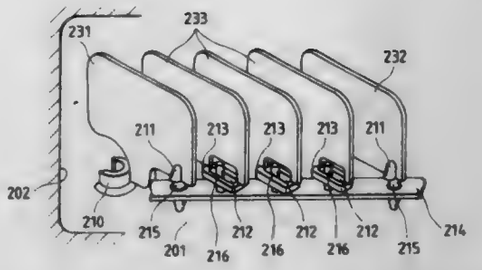
AIR-DIRECTION ADJUSTING APPARATUS IN AIR-CONDITIONING EQUIPMENT

Satoru Kotoh, Hyogo; Kiyoshi Sakuma, Shizuoka; Takayuki Yoshida, Shizuoka; Hiromi Sano, Shizuoka; Katuyuki Aoki, Shizuoka; Shin'ichi Suzuki, Shizuoka; Hideaki Koizumi, Shizuoka; Kaoru Yamamoto, Shizuoka; Kunio Matsushita, Shizuoka; Kenichi Unno, Shizuoka, and Tomoko Oguma, Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 478,878, Jun. 7, 1995, abandoned, which is a division of Ser. No. 202,258, Feb. 25, 1994. This application Oct. 17, 1996, Ser. No. 733,194
Claims priority, application Japan, Mar. 5, 1993, 5-045142; Aug. 24, 1993, 5-209419
Int. Cl.[6] F24F 13/15
U.S. Cl. 454—320 6 Claims

1. A mechanism for controlling the flow of air from an air-conditioning unit comprising:

a plurality of guide vanes mounted within an air outlet of said air-conditioning unit via pivotal bearings so as to engage in rotational movement to direct said flow of air, said plurality of guide vanes spaced apart and arranged adjacent to one another in a row, angles of inclination of said plurality of guide vanes being a maximum for a guide vane at a center of said row and becoming progressively smaller for guide vanes toward each end of said row, wherein said plurality of guide vanes consist of first and second guide vanes respectively located at opposite ends of a series of third guide vanes and each guide vane having rotational bearings connected to one another via a connection arm, said rotational and pivotal bearings of said second guide vane being closer together than said rotational and pivotal bearings of said first guide vane, wherein intermediate connection shafts are connected at one end thereof to said connection arm and pivotally connected at another end thereof into movable fittings of said series of third guide vanes, said movable fittings consisting of elongated holes;



an outlet nozzle for pivotally holding said plurality of guide vane;

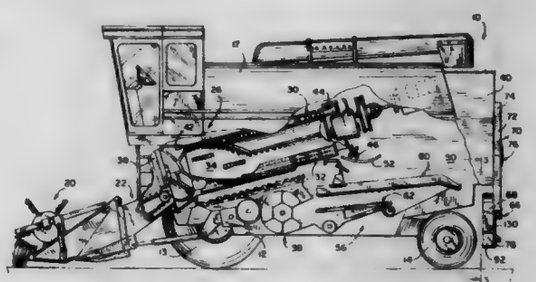
an air course formed within a body of said air-conditioning unit, wherein said plurality of guide vanes are positioned at a lower end of said air course and control said flow of air from said air-conditioning unit in both left and right directions.

5,797,793

RESIDUE SPREADING APPARATUS FOR AGRICULTURAL COMBINES

Robert A. Matousek, Milan; Dan J. Burke; Jeffrey R. Payne, both of Moline, all of Ill., and Charles E. Volk, Devils Lake, N. Dak., assignors to Case Corporation, Racine, Wis.

Filed Mar. 7, 1996, Ser. No. 610,814
Int. Cl.[6] A01F 12/00;29/12
U.S. Cl. 460—111 40 Claims



32. An agricultural combine, comprising:

an elongated mobile frame with a housing mounted thereon, said housing defining a longitudinal axis and including a wall with upstream and downstream end portions defining a plenum-like enclosure;

a crop harvesting assembly carried toward a forward end of the frame and operable to harvest crop material from a field;

a crop material separator including an elongated generally cylindrical rotor assembly arranged in crop material receiving relation relative to said crop harvesting assembly and having upstream and downstream end portions in crop material conducting relation with a crop material inlet proximate the upstream wall portion of the housing and a residue material outlet proximate the downstream wall portion of the housing, the crop material separator separating the harvested crop material into a grain rich mixture and a residue material wherein the residue material is directed toward and through the residue material outlet;

a cleaning system including a blower arranged beneath said rotor assembly to create an air stream directed beneath the rotor assembly and toward the residue material outlet such that lighter residue material is separated from the grain rich mixture; and

an apparatus arranged in crop receiving relation to said residue material outlet and across a rear end portion of the housing to receive and mix the residue material from the crop material separator and the lighter residue material from the cleaning system, the apparatus being configured to redirect and discharge said mixed residue materials in a direction generally normal to the longitudinal axis of said housing and from a side of the combine.

5,797,794

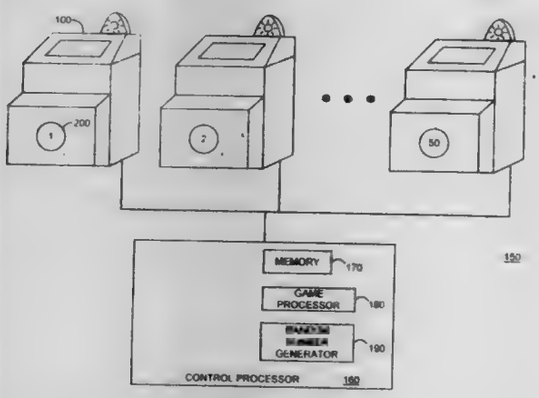
MULTIPLE-PLAYSTATION GAME OF CHANCE

Robert C. Angell, West Greenwich, R.I., assignor to GTECH Corporation, West Greenwich, R.I.

Filed Oct. 16, 1996, Ser. No. 731,498

Int. Cl.[6] A63F *3/06*

U.S. Cl. 463—18 **24 Claims**



1. A method of playing a game of chance, comprising

providing a plurality of playstations, one of which is chosen by a player for entering a quantity of player symbols;

assigning a unique game symbol to each playstation of the plurality of playstations, the game symbol being chosen from a set of game symbols; and

randomly selecting a quantity of winning symbols from the set of game symbols;

wherein the player wins the game if a predetermined number of the player symbols match the winning symbols or if the game symbol assigned to the player's playstation is related to one of the winning symbols in a predetermined manner.

5,797,795

GAMING FACILITIES FOR PLAYER TO PLAY GAME BY REMOTE OPERATION

Takatoshi Takemoto, Tokyo, and Kazuo Tohge, Taito-ku, both of Japan, assignors to Kabushiki Kaisha Ace Denken, Tokyo, Japan

PCT No. PCT/JP95/00891, § 371 Date Nov. 12, 1996, § 102(e) Date Nov. 12, 1996, PCT Pub. No. WO95/30463, PCT Pub. Date Nov. 16, 1995

PCT Filed May 10, 1995, Ser. No. 737,856

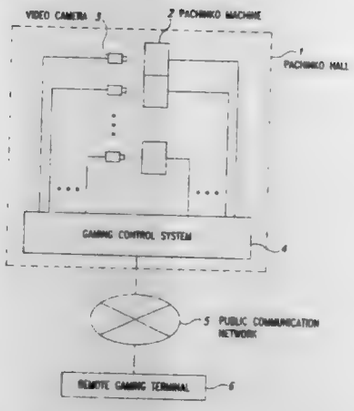
Claims priority, application Japan, May 10, 1994, 6-096511; Jan. 26, 1995, 7-010764

Int. Cl.[6] A63F *7/02*

U.S. Cl. 463—42 **32 Claims**

1. Gaming facilities comprising:

one or more gaming machines;



one or more gaming condition detection systems being provided in a one-to-one correspondence with said one or more gaming machines for detecting gaming progress conditions thereof;

a gaming control system being connected to said one or more gaming machines and said one or more gaming condition detection systems and comprising a control section for controlling operation of said gaming machines, a first transmission section for transmitting a signal to a communication line, and a first reception section for receiving a signal transmitted over the communication line; and

one or more remote gaming terminals each comprising a second transmission section for transmitting a signal to a communication line, a second reception section for receiving a signal transmitted over the communication line, a display section for displaying the signal received by said second reception section, an operation section for accepting an external command, and a signal generation section for generating a signal based on the command accepted through the operation section, characterized in that

said first transmission section transmits a signal indicating a gaming condition detected by any of said one or more gaming condition detection systems to one of said one or more remote gaming terminals via a communication line, that

said second reception section receives the signal indicating the gaming condition transmitted via the communication line, that

said display section displays an image indicating the gaming condition in said gaming machine based on the signal indicating the gaming condition received by said second reception section, that

said operation section accepts an operation command for causing said gaming machine whose image indicating the gaming condition therein is displayed by said display section to operate, that

said signal generation section generates a gaming signal, which is a signal indicating a command for causing said gaming machine to operate, based on the operation command accepted through said operation section, that

said second transmission section transmits the gaming signal generated by said signal generation section to said gaming control system via the communication line, that

said first reception section receives the gaming signal transmitted via the communication line from said remote gaming terminal, and that

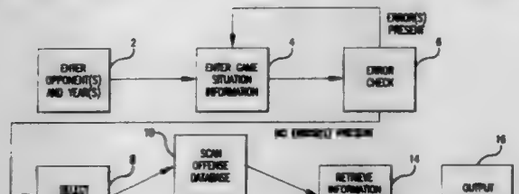
said control section controls said gaming machine for which said first transmission section transmits the signal indicating the gaming condition so that said gaming machine operates based on the gaming signal received by said first reception section.

5,797,796

DATA ANALYSIS SYSTEM

Kenneth K. Dickinson, 3035 Green Valley Dr., Ann Arbor, Mich. 48103

Filed Oct. 28, 1996, Ser. No. 739,036
Int. Cl.[6] A63F 9/00
U.S. Cl. 463—43 12 Claims



1. A data system adapted to accept certain first data associated with a game situation and to forecast future plays in athletic contests, said system comprising:

a data base containing said first data and further containing second data representing a plurality of probable future plays;

a data analyzer adapted to recognize said certain first data and to retrieve said corresponding second data; and

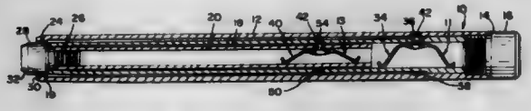
a user interface, adapted to accept said certain first data and to display said retrieved second data.

5,797,797

LATERAL SUPPORT BUTTON SPRING FOR EXPANDABLE BATONS

Kevin L. Parsons, Appleton, Wis., assignor to Armament Systems and Procedures, Inc., Appleton, Wis.

Filed Apr. 19, 1996, Ser. No. 639,938
Int. Cl.[6] F41B 15/02
U.S. Cl. 463—47.7 13 Claims



1. A detent spring for use in expandable batons, said spring comprising:

a. a base having a length and side edges, a first end and a second end;

b. first and second flanges attached to said side edges, each flange having a width and a length;

c. a first leg extending at an angle from said first end;

d. a second leg extending at an angle from said second end; and

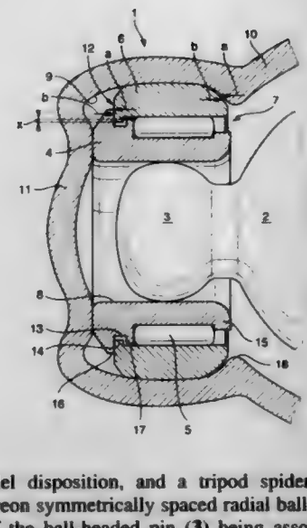
e. a detent button supported by the base.

5,797,798

CONSTANT VELOCITY UNIVERSAL JOINT

Denis Bastien, Haguehau, and Pierre Alber, Reichshofen, both of France, assignors to Ina Wälzlager Schaeffler KG, Herzogenaurach, Germany

PCT No. PCT/EP95/03420, § 371 Date Apr. 30, 1997, § 102(e) Date Apr. 30, 1997, PCT Pub. No. WO96/15384, PCT Pub. Date May 23, 1996
PCT Filed Aug. 31, 1995, Ser. No. 836,277
Claims priority, application Germany, Nov. 9, 1994, 44 39 965.0
Int. Cl.[6] F16D 3/205
U.S. Cl. 464—111 7 Claims



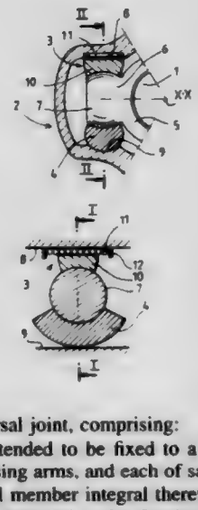
1. A constant velocity universal joint, including an outer joint part (10) formed with circumferentially spaced axial guide tracks (9) in parallel disposition, and a tripod spider (2) which has arranged thereon symmetrically spaced radial ball-headed pins (3), with each of the ball-headed pin (3) being associated to a joint bearing (7) which includes an anti-frictionally mounted tripod roller (6) bearing upon the guide track (9) and rotatably supported by rolling elements upon an inner ring (4) on which the ball-headed pin (3) is guided for angular mobility wherein the inner ring (4) is provided on a side facing away from the tripod spider (2) with an annular shoulder (16) which has an end face bearing upon the tripod roller (6), said inner ring (4) being provided with a circumferential annular groove (13)adjacent to the annular shoulder (16) for captivating a collar (14) of the tripod roller (6), thereby forming an elastic latching mechanism (12) between the tripod roller and the inner ring.

5,797,799

SLIDING UNIVERSAL JOINT FOR A MOTOR VEHICLE HAVING A TRIPOD WITH THREE JOURNALS EACH HAVING TWO DIFFERENT FORCE TRANSMISSION COMPONENTS

Gérard Deschatrettes, Montesson, and François Verbrugge, Cergy St Christophe, both of France, assignors to GKN Automotive AG, Lohmar, Germany

Filed Jan. 11, 1996, Ser. No. 584,202
Claims priority, application France, Jan. 11, 1995, 95 00275
Int. Cl.[6] F16D 3/26
U.S. Cl. 464—111 22 Claims



1. A sliding universal joint, comprising:

a male element intended to be fixed to a first shaft, said male element comprising arms, and each of said arms comprising a spherical journal member integral therewith;

a female element intended to be fixed to a second shaft and engaged with said male element, said female element defining

a plurality of guide paths such that two of said guide paths are situated on opposite sides of each said spherical journal member; and

intermediate members interposed between each said spherical journal member and the two of said guide paths situated on opposite sides thereof, the two of said guide paths including a first guide path and a second guide path;

wherein said intermediate members comprise, for each said spherical journal member, a first intermediate member that is adapted to interact with the first guide path and a second intermediate member that is adapted to interact with the second guide path; and

wherein said first intermediate member has a smaller amount of resistance to free axial sliding when said first intermediate member contacts and interacts with said first guide path than the amount of resistance to free axial sliding of said second intermediate member when said second intermediate member contacts and interacts with said second guide path.

5,797,800

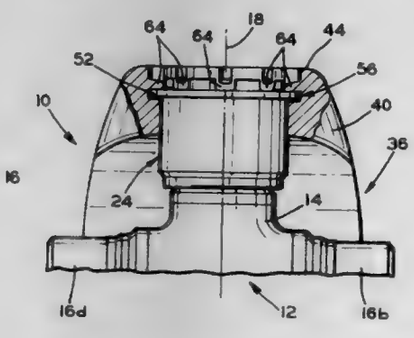
METHOD AND APPARATUS FOR RETAINING A BEARING CUP IN A UNIVERSAL JOINT ASSEMBLY

Michael L. Rhoades, and James T. Reynolds, both of Toledo, Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed May 2, 1996, Ser. No. 640,534

Int. Cl.[6] F16D *3/16*

U.S. Cl. 464—130 **18 Claims**



1. A method of assembling a universal joint assembly comprising the steps of:

providing a yoke including an arm having an opening formed therethrough, said opening having a groove formed therein including a wall;

providing a cross including a body having a trunnion extending therefrom;

positioning said cross relative to said yoke such that said trunnion is received within said opening of said arm;

mounting a bearing cup on said trunnion within said opening at a predetermined position relative to said arm, said bearing cup being located a predetermined distance from said wall of said groove;

installing a ring in said groove, said ring defining a thickness that is smaller than said predetermined distance so as to be movable in said groove relative to said bearing cup and said arm; and

fixing said ring in position relative to said arm so as to abut said bearing cup and thereby maintain said bearing cup at said predetermined position relative to said arm.

5,797,801

CONSTANT VELOCITY FIXED JOINT

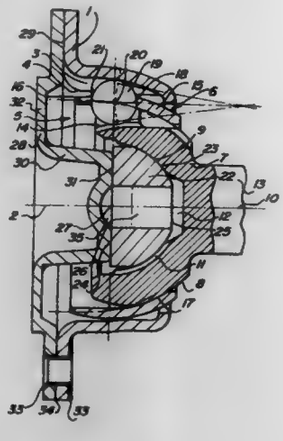
Werner Jacob, Frankfurt, Germany, assignor to Lohr & Bromkamp GmbH, Offenbach am Main, Germany

Filed Nov. 22, 1995, Ser. No. 561,631

Claims priority, application Germany, Nov. 23, 1994, 44 41 629.6

Int. Cl.[6] F16D *3/224*

U.S. Cl. 464—145 **14 Claims**



1. A fixed constant velocity joint comprising:

a hollow outer part defining a cavity and including a first aperture and a second aperture at each end, said first aperture greater in diameter than said second aperture, an inner face of the outer part includes outer running grooves extending in meridian planes with reference to a longitudinal axis of the outer part, a stop face of the outer part formed relative to the outer running grooves such that the distance from the stop face to the joint articulation center is accurately controlled, said stop face constructed perpendicular to the longitudinal axis of the outer part;

an inner part arranged in the cavity of the outer part, an outer face of the inner part includes inner running grooves extending in meridian planes with reference to a longitudinal axis of the inner part and the inner running grooves positioned opposite the outer groove;

a torque transmitting ball is accommodated in each opposed inner running groove and outer running groove, said inner running and outer running grooves both being undercut free, a cage which jointly guides said balls, cage partly occupying the space between the inner face of the outer part and the outer face of the inner part, said cage including a hollow spherical partial face guided on an outer spherical face of the inner part, said outer spherical face of the inner part arranged towards the second aperture, and an outer face of the cage arranged with play relative to the inner face of the outer part;

guiding means for accommodating movement between said inner and outer parts, said guiding means abutting said inner part and including a first convexly spherical guiding face of a guiding element, a contact face of said guiding element is radially adjustably guided on a setting face of a supporting element to radially adjust the guiding face, said supporting element fixed relative to the outer part and the longitudinal axis of the outer part being positioned perpendicularly to said setting face, and said inner part, the outer part and the cage being articulatable relative to one another around the joint articulation center; and

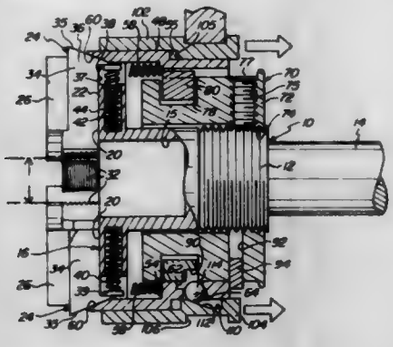
said guiding element being partially spherical, with at least one planar face, said guiding element planar face serves as the contact face which constitutes the plane containing the articulation joint center, and said supporting element, at the setting face, includes the plane of the contact face.

5,797,802

DIE HEAD

Florian I. Nowak; Gary F. Nowak, and Glen L. Nowak, all of Newington, Conn., assignors to Nowak Products, Inc., Newington, Conn.

Filed May 12, 1997, Ser. No. 855,800
Int. Cl.[6] B21J *13/02*
U.S. Cl. 470—185 **12 Claims**



7. A thread-cutting system, comprising:

a fast-acting die head constructed for engagement of a workpiece on an axis thereof, said die head comprising a body constructed to receive a workpiece inserted axially at least partially thereinto; a plurality of chasers assembled with said body for movement, in effective opposition to one another, between closed and open positions in which said chasers are disposed relatively close to, and relatively distant from, said axis, respectively; biasing means operatively interposed between said body and said chasers for resiliently biasing said chasers toward said open position; and operating means assembled with said body and comprising a camming member reciprocally movable relative to said body along said axis, said camming member having at least one camming surface thereon for engagement with said chasers to force said chasers toward said closed positions and into engagement with a workpiece so inserted during movement of said camming member in one direction; said operating means also including an actuating member reciprocally movable relative to said camming member and constructed for engagement therewith to move said camming member in said one direction, and for movement independently thereof in the direction opposite to said one direction; each of said chasers having a workpiece-engaging portion comprised of thread-cutting elements, and at least two force-receiving elements, one of said force-receiving elements being a bearing surface for engagement by said biasing means to bias said chaser toward said open position, and the other of said force-receiving elements being a cam-follower surface disposed for engagement by said camming surface of said camming member to force said chaser toward said closed position, each of said chasers comprising an elongate member having a longitudinal axis and opposite end portions thereon, one of said end portions comprising said workpiece-engaging portion and the other of said end portions providing said at least two force-receiving elements, said elongate member having forward and rearward lengthwise margins and terminating at said other end portion in a forwardly inclined surface which provides a first portion of said cam-follower surface, said other end portion including a nose element that projects beyond said rearward margin and defines both said bearing surface and also a second portion of said cam-follower surface contiguous to said first portion thereof, said bearing surface and said second portion of said cam-follower surface being aligned generally on an axis parallel to said longitudinal axis of said elongate member; and

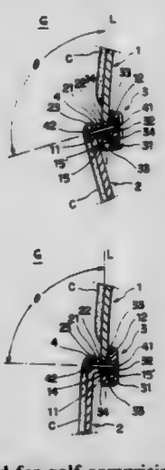
actuating means, comprising an engagement component engaging said actuating member of said die head, a supporting component on which said engagement component is mounted, and limiting means, said supporting component being movable relative to said die head and being so constructed as to advance said die head to a position of initial engagement with a workpiece so received, acting through said engagement component and said actuating member, and to permit free movement of said engagement component beyond said position of initial engagement, said limiting means being so disposed as to engage said engagement component at a point beyond said position of initial engagement, and thereby to limit the distance that said engagement component can travel beyond said position of initial engagement; whereby, in operation of said system for cutting threads in a workpiece, said supporting component is moved relative to said die head so as to advance said die head to the position of initial engagement with the workpiece, whereby the thread cutting operation causes said die head and engagement component to advance together in said one direction until said engagement component engages said limiting means, and whereby continued advance of the components of said die head, other than said actuating member, causes said camming member to disengage said chasers to thereby permit said biasing means to bias said chasers toward said open position thereof.

5,797,803

WRIST FIXING BAND FOR GOLF

Chul Hi Jung, #209-1001 Kyungnam APT, 38 Juyup-dong, Koyang-Si, Kyunggi-do, Rep. of Korea

Filed May 19, 1997, Ser. No. 858,688
Claims priority, application Rep. of Korea, Jan. 7, 1997, 97-138
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—213 **4 Claims**



1. A wrist fixing band for golf comprising:

a prop of the back of an arm being formed as a shape capable of supporting the back of the arm, said prop of the back of the arm including a first center pin hole which is formed through a front end of said prop of the back of the arm, said prop of the back of the arm including a guide protrusion protruding from an outer surface of said prop of the back of the arm, and said prop of the back of the arm including a first sliding groove which is formed through a lower portion of said prop of the back of the arm;

a prop of the back of the hand formed as a shape capable of supporting the back of the hand, said prop of the back of the hand including a spacer protruding from an outer surface of said prop of the back of the hand at a rear end thereof, said prop of the back of the hand including a second center pin hole which is formed through a center of said spacer, in which an upper portion of said spacer is inserted into said first sliding groove;

a bending angle control knob being formed as a circular plate having a predetermined thickness, said bending angle control knob including a second sliding groove for receiving said guide protrusion, said bending angle control knob including a second center pin hole which is formed through a center of

said bending angle control knob, in which said second sliding groove is formed at a bottom side of said bending angle control knob, and said guide protrusion is inserted into said second sliding groove;

a center pin for fixing said prop of the back of the arm, said prop of the back of the hand and said bending angle control knob together, said center pin being inserted into said first, second and third center pin hole in sequence, said center pin having a head portion at its front end and a fixing portion at its rear end; and

a fixing means for fixing said prop of the back of the arm to an arm of the golfer,

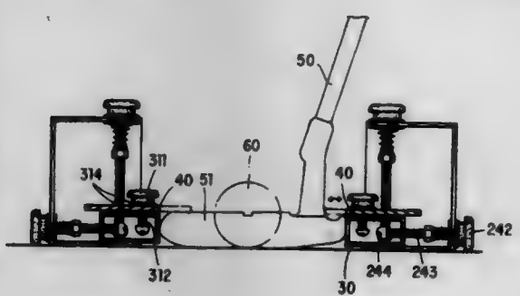
whereby, a relative bending angle of said prop of the back of the arm and said prop of the back of the hand is controlled by controlling a slant direction of said center pin in accordance with the rotation of said bending angle control knob.

5,797,804

GOLF PUTTING ALIGNMENT TRAINER

Meng-Tsung Chen, No. 31, Lane 16, Bei-Chung Street, Tainan, Taiwan

Filed Aug. 8, 1996, Ser. No. 694,307
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—260 **4 Claims**



1. A golf putting alignment trainer, comprising a pair of spaced bodies between which a user displaces a head portion of a putter to strike a ball, each said body comprising:

a hollow casing having a longitudinally extended compartment formed therein, an upper wall, and a rear wall, said hollow casing having an open side facing the head portion of the putter;

a movable member mounted in said compartment of said hollow casing and extending longitudinally therein;

vertical adjustment means coupled between said movable member and said upper wall of said hollow casing for affecting adjustment of a relative vertical position of said movable member within said compartment of said hollow casing;

horizontal adjustment means coupled between said movable member and said rear wall of said hollow casing and for affecting adjustment of a relative horizontal position of said movable member within said compartment of said hollow casing; and

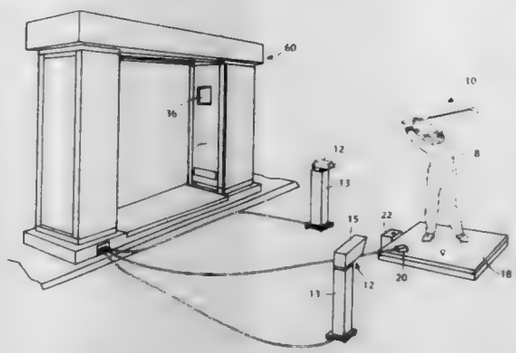
a scale coupled to said movable member and extending longitudinally thereon for indicating a distance between the head portion of the putter and a ball, said scale including means for adjusting a position thereof horizontally relative to said movable member.

5,797,805

METHOD AND SYSTEM FOR PRODUCING PERSONAL GOLF LESSON VIDEO

Alan Lubell, New York, N.Y.; Thomas S. Peters, Boca Raton, Fla., and Earl Takefman, Montreal, Canada, assignors to The Visual Edge, Boca Raton, Fla.

Filed May 24, 1996, Ser. No. 656,156
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—266 **27 Claims**



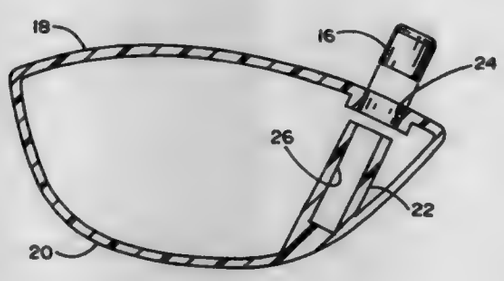
1. A personal golf lesson videotape produced from a partially prerecorded videotape containing a golf lesson given by a professional golfer, the partially prerecorded videotape having gaps therein in predetermined places into which selected portions of a visual recording of a person's golf swing are inserted shown in split screen format with corresponding portions of a recorded golf swing performed by the professional and the partially prerecorded videotape, at least one of said gaps not being at the beginning or end of said partially prerecorded videotape.

5,797,806

GOLF CLUB HAVING SHOCK ISOLATION BETWEEN THE HEAD AND THE SHAFT

Byron Butler, Rancho Santa Margarita, Calif., assignor to I.D. Golf, Carlsbad, Calif.

Continuation-in-part of Ser. No. 742,737, Nov. 1, 1996. This application Mar. 10, 1997, Ser. No. 815,268
Int. Cl.[6] A63B *53/02*
U.S. Cl. 473—310 **1 Claim**



1. A golf club comprising:

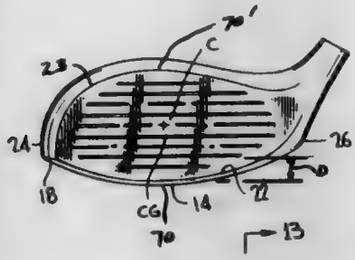
a metal wood head having an internal hosel and a top line passage, the hosel being spaced from the passage to form a gap therebetween, only the passage and the gap having a shock attenuating ferrule extending therethrough;

a shaft extending through the passage and the gap and extending into the hosel, the ferrule engaging the shaft for dampening vibration of the shaft upon impact of the head with a golf ball, the gap and ferrule permitting limited motion of the shaft relative to the head.

5,797,807
GOLF CLUB HEAD

James T. Moore, 2003 Foxcroft Dr., LaGrange, Ga. 30240

Filed Apr. 12, 1996, Ser. No. 629,951
Int. Cl.[6] A63B 53/04
U.S. Cl. 473—345 18 Claims

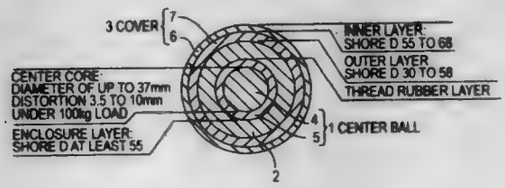


1. A metal wood golf club head comprising, a crown portion and a sole portion, a toe portion, a heel portion, a ball striking surface extending between said toe portion and said heel portion and between said crown portion and said sole portion, said ball striking surface having a lower marginal edge intersecting said sole portion and extending from said toe portion to said heel portion, said ball striking surface also having an upper marginal edge intersecting said crown portion and extending from said toe portion to said heel portion, a hosel extending from said crown portion at the location where said upper marginal edge joins said heel portion, said hosel having an opening extending therethrough along an axis disposed adjacent said ball striking surface at said heel portion, said crown portion and said sole portion being joined together along a common outer margin to define an edge at said common outer margin, said crown portion defining a continuous curve from said marginal edge to said common outer margin, said crown portion also defining a continuous curve from said heel portion to said common outer margin at said toe portion, said lower marginal edge of said ball striking surface defining a continuous downwardly extending generally convex curve from said toe portion to said heel portion so that at approximately the mid-point along said convex curve, the vertical distance along said ball striking surface from said lower marginal edge to a horizontal line extending between the toe portion and the heel portion of said lower marginal edge is at least twenty percent of the vertical distance along said ball striking surface from said mid-point of said lower marginal edge to said upper marginal edge.

5,797,808
WOUND GOLF BALL

Junji Hayashi, and Hisashi Yamagishi, both of Chichibu, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed Apr. 1, 1997, Ser. No. 831,515
Claims priority, application Japan, Apr. 3, 1996, 8-106316
Int. Cl.[6] A63B 37/06;37/12
U.S. Cl. 473—364 2 Claims



1. A wound golf ball comprising a center ball having thread rubber wound thereon and a cover enclosing the wound center ball, wherein

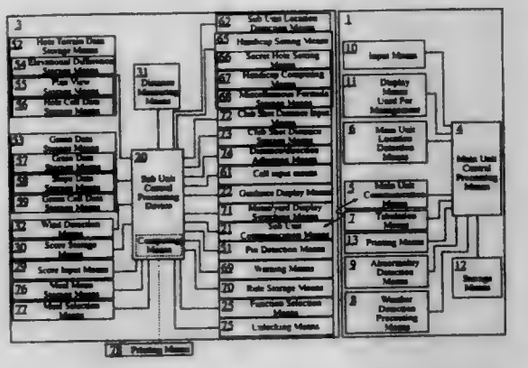
said center ball consists of a center core having a diameter of up to 37 mm and experiencing a distortion of 3.5 to 10 mm under a constant load of 100 kg and a layer enclosing the center core and having a Shore D hardness of at least 55, said center ball having a diameter of 33 to 38 mm, and

said cover consists of an inner layer having a Shore D hardness of 55 to 68 and an outer layer having a Shore D hardness of 30 to 58, the inner layer being harder than the outer layer by at least 5 in Shore D hardness.

5,797,809
GOLF COURSE GUIDANCE METHOD, GUIDANCE DEVICE, AND MANAGEMENT SYSTEM

Makoto Hyuga, 25-58, Misumi-cho 2-chome, Higashimurayama-shi Tokyo, 189, Japan

PCT No. PCT/JP94/00288, § 371 Date Jun. 16, 1995, § 102(e) Date Jun. 16, 1995, PCT Pub. No. WO95/23012, PCT Pub. Date Aug. 31, 1995
PCT Filed Feb. 24, 1994, Ser. No. 454,286
Int. Cl.[6] A63B 71/06; G06F 15/44; G09F 17/00
U.S. Cl. 473—407 23 Claims



1. A guidance method for a golf course comprising the steps of:

providing a plan view of said golf course;

dividing said plan view into a plurality of cells, each having definable characteristics;

at least one of said plurality of cells including: a cup, a pin having a vertical axis, said cup having means for holding said pin whereby said pin is removable from said cup, and means, connected to said pin, for measuring weather and generating a weather data responsively thereto;

storing a data corresponding to said definable characteristics of each of said plurality of cells;

selecting at least two of said plurality of cells;

generating an advice from at least one of said data and said weather data corresponding to said at least two of said plurality of cells; and

transmitting said advice to a user of said golf course.

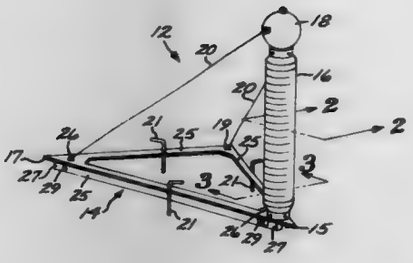
5,797,810
BATTING PRACTICE DEVICE

George R. Sandoval, 17120 S. Kingsview Ave., Carson, Calif. 90746

Continuation of Ser. No. 591,852, Jan. 25, 1996, abandoned. This application Feb. 13, 1997, Ser. No. 799,469
Int. Cl.[6] A63B 69/00
U.S. Cl. 473—417 8 Claims

1. A batting practice device comprising:

a triangular base element;



a vertically oriented, free standing biasing element, rigidly attached at its bottomed to one corner of said base element, said biasing element being exclusively, deformable in a single plane and biased toward maintaining a vertical orientation; and

a ball, attached to the top end of said biasing element.

5,797,811

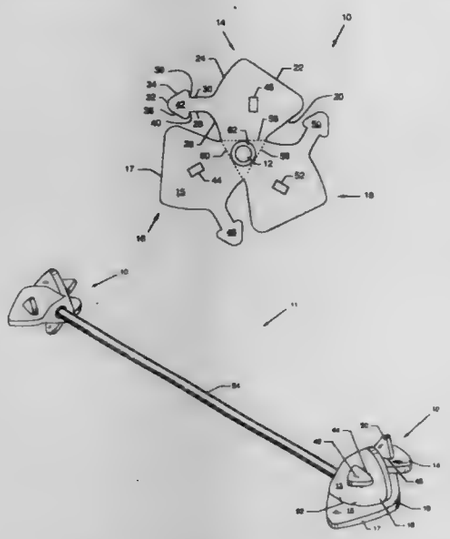
END PIECE WITH SYMMETRICAL AIR FOIL SIDE WINGS FOR A JUGGLING STICK

William E. Vestal, Lot 8, Block 19, #8 Carbonate Ave., Crestone, Colo. 81131

Filed Feb. 7, 1997, Ser. No. 795,149

Int. Cl.[6] A63B *67/00*

U.S. Cl. 473—514 **3 Claims**



1. An end piece for a juggling stick comprising:

a. a member with symmetrical air foil side wings about a central hole, each side wing including a locking tab and a central hole, the locking tab engages into the central hole of the adjacent air foil side wing, thereby forming an aerodynamically stable end piece.

5,797,812

SHOCK-ABSORBING STRUCTURES FOR RACKETS

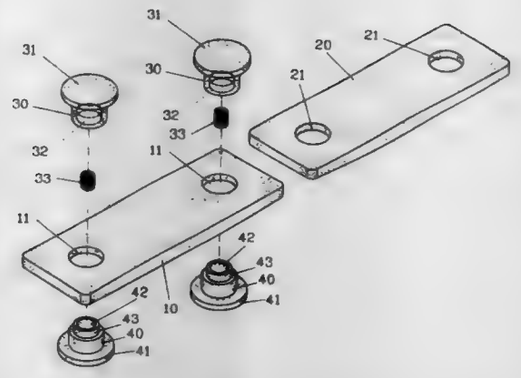
Wen-Chung Liu, No. 3 Lane 125, Ren-Hua Road, Da-Li City, Taichung Hsien, Taiwan

Continuation-in-part of Ser. No. 798,062, Feb. 11, 1997, abandoned. This application Apr. 14, 1997, Ser. No. 834,124

Int. Cl.[6] A63B *49/00*

U.S. Cl. 473—522 **12 Claims**

1. A shock absorbing assembly for a racket comprising:



(a) first and second clamping plates adapted for cooperatively capturing therebetween a plurality of strings of said racket, said first clamping plate having formed therein at least one first plate hole, said second clamping plate having formed therein at least one second plate hole, said first and second plate holes being aligned when said first and second clamping plates cooperatively capture said racket strings;

(b) retaining means coupled to said first and second plate holes of said first and second clamping plates for securing said first and second clamping plates about said racket strings; and,

(c) resilient means adapted to be operably disposed substantially between said first and second clamping plates for resiliently dampening the vibration of said racket strings captured between said first and second clamping plates.

5,797,813

HANDLE GRIP

Ben Huang, 19472 Woodlands La., Huntington Beach, Calif. 92648

Continuation-in-part of Ser. No. 787,828, Jan. 23, 1997, Pat. No. 5,730,669, and Ser. No. 550,219, Oct. 30, 1995, Pat. No. 5,695,418, which is a continuation of Ser. No. 953,190, Sep. 29, 1992, abandoned, which is a continuation of Ser. No. 890,383, May 26, 1992, abandoned, which is a continuation of Ser. No. 637,931, Jan. 14, 1991, abandoned, said Ser. No. 787,828 is a continuation-in-part of Ser. No. 567,339, Dec. 28, 1995, abandoned. This application Mar. 21, 1997, Ser. No. 822,226

Int. Cl.[6] A63B *49/08*

U.S. Cl. 473—549 **21 Claims**



1. The combination of a handle of an impact imparting a device and a resilient grip, comprising:

a strip consisting of an open-pored felt layer having a generally flat inner surface and radially extending side edges, and a flat closed pore polyurethane layer having its inner surface bonded to the outer surface of the felt layer, with the pores of such polyurethane layer extending generally normal to the longitudinal axis of the strip, and with the felt layer providing strength for the polyurethane layer while the polyurethane layer both absorbs shocks and provides tackiness so as to inhibit slippage of a user's hand relative to a handle;

heat compressed radially inwardly extending reinforcement side edges formed in the polyurethane layer of the strip along the length of the strip;

outwardly and downwardly slanted side edges formed along the length of the felt layer;

an adhesive applied to the underside of the felt layer; and

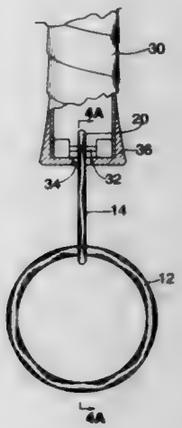
the strip being spirally wrapped about the handle with the underside of adjoining recessed side edges overlapping one another to form a water retarding joint between the adjoining side edges.

5,797,814

RETENTION DEVICE FOR SPORTS RACQUETS, ESPECIALLY FOR RACQUETBALL RACQUETS

Richard Janes, Burlington Township, N.J., and Stephen J. Davis, Washington Crossing, Pa., assignors to Prince Sports Group, Inc., Bordentown, N.J.

Filed May 10, 1996, Ser. No. 645,465
Int. Cl.[6] A63B *49/00*
U.S. Cl. 473—551 **17 Claims**



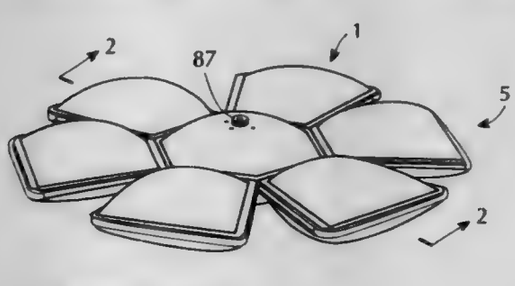
1. A racquetball racquet comprising a handle having a butt end, and a retention device comprising wrist securing means for securing said device about a wrist of a person gripping said handle, and a connecting member, coupled to said wrist securing means, wherein said connecting member includes a loop portion, remote from said wrist securing means, for securing said connecting member to said handle, wherein said handle includes a means in the region of said butt end for engaging said loop portion wherein said retention device is made completely of elastomeric material, and wherein said connecting member has sufficient length to allow a person to grip the handle.

5,797,815

POP-OPEN THROWING TOY WITH CONTROLLABLE OPENING DELAY AND METHOD OF OPERATING SAME

Michael J. Goldman, Moorestown, N.J.; James O. Kuhn, Sonoma, Calif., and Richard P. Christen, Sandy, Oreg., assignors to Goldman Toy Group, Inc., Moorestown, N.J.

Filed Feb. 6, 1997, Ser. No. 795,756
Int. Cl.[6] A63H *27/00*
U.S. Cl. 473—588 **22 Claims**



1. A toy object, comprising:

an articulated shell structure having a top cap, a bottom cap, and at least three fingers connecting said top cap and said bottom cap in a manner such that said articulated shell structure can selectively change from a three-dimensional, polyhedral shape into a flattened shape as said top cap and said bottom cap move together along a central axis;

an elastic member which is attached to at least two of said fingers, the elastic member applying a force to said fingers, the force tending to urge said shell structure into a three-dimensional, polyhedral shape;

a releasable lock which, when the shell structure is deformed to said flattened shape, applies a restraining force to said top cap and said bottom cap, the restraining force holding said shell structure in said flattened shape in opposition to the force applied by said elastic member; and

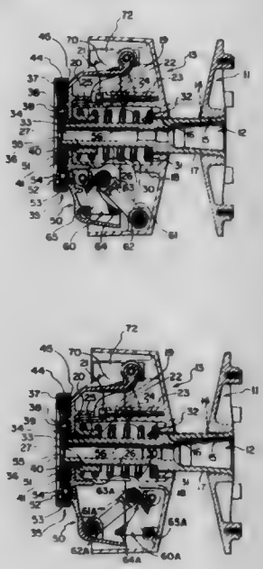
a variable timer which causes said releasable lock to apply the restraining force to the shell structure only during a period of time which can be varied, wherein after the period of time the variable timer causes said restraining force not to be applied, and the elastic member thereby urges said shell structure into the three-dimensional, polyhedral shape.

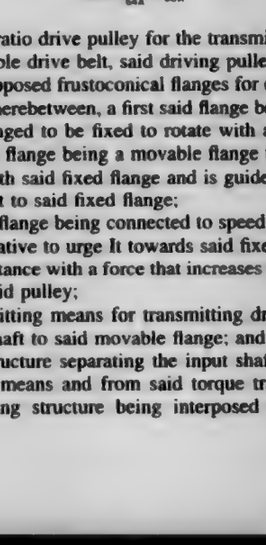
5,797,816

VARIABLE RATIO DRIVE PULLEY WITH DAMPING STRUCTURE

Willy Bostelmann, Wels, Austria, assignor to Bombardier Inc., Canada

Filed Oct. 31, 1995, Ser. No. 551,291
Int. Cl.[6] F16H *59/00;61/00*
U.S. Cl. 474—14 **11 Claims**





1. A variable ratio drive pulley for the transmission of a driving torque to a flexible drive belt, said driving pulley comprising:

two coaxial opposed frustoconical flanges for engagement of the drive belt therebetween, a first said flange being a fixed flange that is arranged to be fixed to rotate with an input shaft, the second said flange being a movable flange that is constrained to rotate with said fixed flange and is guided to move axially with respect to said fixed flange;

said movable flange being connected to speed responsive means that is operative to urge It towards said fixed flange against a spring resistance with a force that increases with the rotational speed of said pulley;

torque transmitting means for transmitting driving torque from the input shaft to said movable flange; and

a damping structure separating the input shaft from said speed responsive means and from said torque transmitting means, said damping structure being interposed to deliver torque

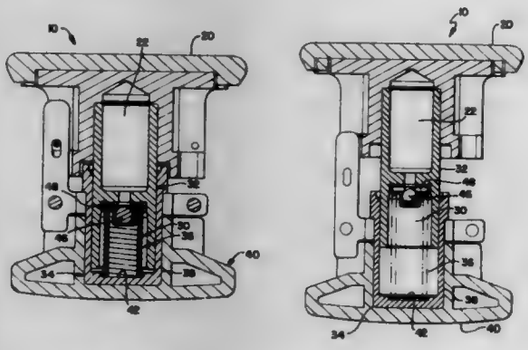
between said input shaft and said torque transmitting means during operation of said drive pulley, said damping structure being constructed and arranged to isolate said speed responsive means and said torque transmitting means from vibrations carried by the input shaft.

5,797,817

HYDRAULIC TENSIONER WITH INTERNAL RESERVOIR

Christopher T. Senftleben, Dryden, and Curt A. Wykstra, Moravia, both of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Dec. 15, 1995, Ser. No. 573,181
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—110 **17 Claims**



1. A hydraulic tensioner comprising:

a housing with a bore formed therein,

a generally cylindrical sleeve having a first end which is tightly received in said bore of said housing to define an internal reservoir with said bore,

a hollow piston slidably received about an outside portion of a second end of said sleeve to define a fluid chamber with said sleeve, said piston being spaced apart from said housing in the radial direction,

a spring biasing said piston in a protruding direction from said housing,

said internal reservoir adapted to be connected to an external source of pressurized fluid, and said internal reservoir being connected with said fluid chamber, and

a check valve located between said internal reservoir and said fluid chamber to permit the flow of fluid from said internal reservoir through said check valve into said fluid chamber.

5,797,818

CHAIN TENSIONER WITH DAMPING FEATURE

James D. Young, Chesaning, Mich., assignor to Cloyes Gear and Products, Inc., Mentor, Ohio

Filed Feb. 26, 1997, Ser. No. 806,844
Int. Cl.[6] F16H *7/08*
U.S. Cl. 474—111 **23 Claims**

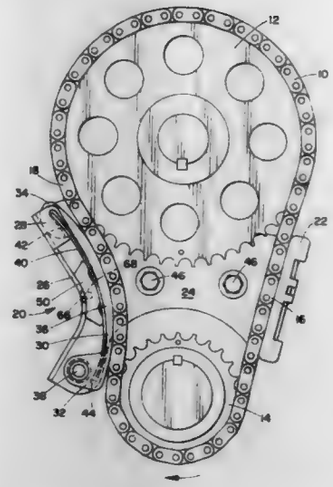
1. A chain tensioning apparatus for tensioning a chain in a timing chain assembly having a pair of sprockets operatively connected by a chain, the chain tensioning apparatus comprising:

a tensioner bracket;

a flexible shoe having first and second ends joined by an elongated central body section, the first end of the shoe pivotally mounted on the tensioner bracket;

an elongated spring having first and second ends supported in the first and second ends of the shoe, and a central section of the spring applying a tensioning force on the central body section of the shoe; and

a resilient damping device mounted on the tensioner bracket and engaging the spring on a side opposite the shoe to limit chain vibration, the damping device being formed from a compressible material which compresses in response to a deflection of the spring.

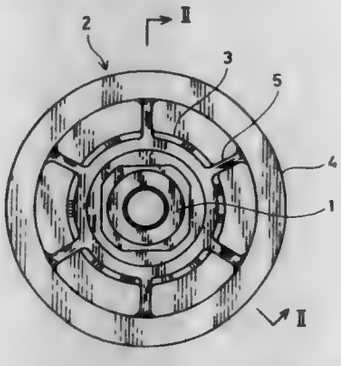


5,797,819

RESIN PULLEY

Hirokazu Arai, Yamato-Kohriyama, Japan, assignor to Sumitomo Bakelite Company, Limited, Shinagawa-ku, Japan

Filed Feb. 10, 1997, Ser. No. 797,335
Claims priority, application Japan, Feb. 14, 1996, 8-052356
Int. Cl.[6] F16H *55/06*
U.S. Cl. 474—161 **6 Claims**



1. A resin pulley comprising a resin material wherein an inorganic fiber, an inorganic powder, an organic fiber and an elastomer are blended in a phenol resin.

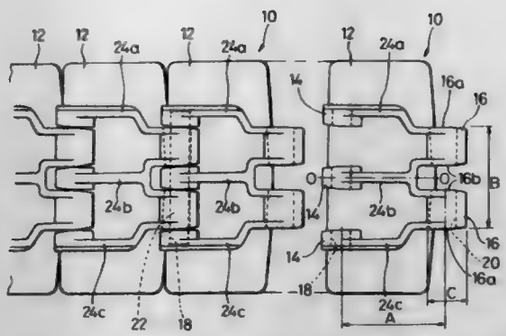
5,797,820

SLAT BAND CHAIN AND SPROCKET

Shunichi Endo, Tokyo, Japan, assignor to Yamakyu Chain Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 532,423, Sep. 22, 1995, abandoned. This application Oct. 29, 1997, Ser. No. 967,191
Int. Cl.[6] F16G *13/02*; B65G *17/06*
U.S. Cl. 474—230 **5 Claims**

1. A synthetic resin slat band chain having a standard chain pitch of about 38.1 mm and comprising a synthetic resin top plate on which an object to be carried is mounted, a first synthetic resin slat band chain link having a front curled portion and a pair of rear curled portions which are connected with a front curled portion at a front end of a second synthetic resin slat band chain link at a lower part of a rear end of said top plate, and each link having at



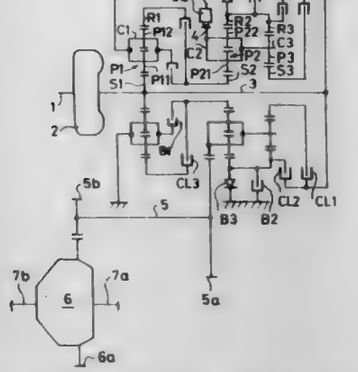
least three synthetic resin reinforcement ribs connecting said front curled portions with said rear curled portions, said rear curled portions each having a hole sized to receive a synthetic resin pin for connecting said rear portions of the first slat band chain link with said front curled portion of the second slat band chain link, and wherein the width of said pair of rear curled portions is 30–45 mm and the length of said rear curled portions is 13.3–14.5 mm, for providing increased breaking load capability of the slat band chain, and wherein the slat band chain is operable to travel along both a straight line path and a curved line path.

5,797,821

SHIFT CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION

Shuichi Fujimoto, Kawagoe; Hisashi Kunii, Higashikurume; Kazumi Sato, Tokorozawa; Yoshiyuki Ura, Niiza, and Takamichi Shimada, Sakado, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1996, Ser. No. 627,406
Claims priority, application Japan, Apr. 5, 1995, 7-104820
Int. Cl.[6] F16H *1/28*
U.S. Cl. 475—120 **6 Claims**



1. A shift control apparatus for an automatic transmission comprising:

a plurality of power transmission paths provided between an input member and an output member for establishing speed ranges;

a plurality of frictionally engaging elements for selectively establishing a predetermined power transmission path among said power transmission paths;

engagement-controlling means for controlling engagement actuation of said frictionally engaging elements;

said transmission being capable of establishing a forward range, a neutral range and a reverse range, said forward range establishing forward speed ranges, said neutral range cutting off power transmission between said input and output members, and said reverse range establishing reverse speed ranges;

a control for establishing a first speed range via a predetermined speed range being executed when a shift is made from said neutral range to said forward range, said predetermined speed range being a second or higher speed range;

a selected frictionally engaging element of said plurality of frictionally engaging elements being used for establishing said predetermined speed range and for establishing said reverse range;

an engagement-actuation control of said selected frictionally engaging element which is executed when a shift is made from said neutral range to said reverse range including a plurality of control stages; and

D-N-R engagement-condition-detecting means which detects engagement condition of said selected frictionally engaging element when the shift to said reverse range is made via said neutral range following the shift from said neutral range to said forward range;

wherein:

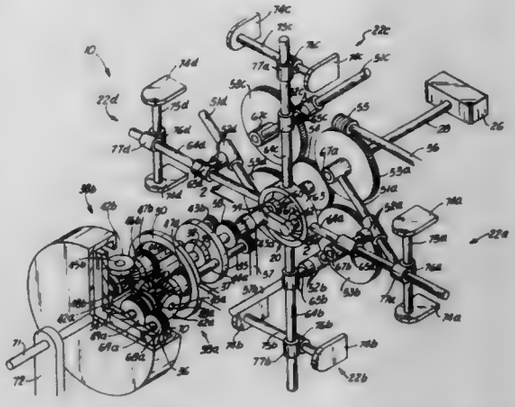
when the shift to said reverse range is made following the shift from said neutral range to said forward range, said engagement-controlling means selects a control stage in correspondence with the engagement condition detected by said D-N-R engagement-condition-detecting means and initiates the engagement-actuation control of said selected frictionally engaging element from the control stage selected, so as to execute an engagement control for establishing said reverse range.

5,797,822

INFINITELY VARIABLE ROTARY DRIVE TRANSMISSION SYSTEM

Leroy C. Green, 3120 Unionhill Rd., Marianna, Fla. 32446

Filed Mar. 21, 1997, Ser. No. 821,516
Int. Cl.[6] F16H *15/50*
U.S. Cl. 475—306 **20 Claims**



1. An infinitely variable rotary drive transmission system for regulating a power output from a motor, said infinitely variable rotary drive transmission system comprising:

(a) non-spinning hub means coupled to a plurality of radial arm means extending radially outwardly therefrom and spaced thereon for controlling a crank rotation;

(b) a plurality of differential gear assembly means spaced symmetrically about and concentric with an axis of an input shaft for controlling rotational speed of an output shaft;

(c) a plurality of cam rod means each pivotally coupled to a respective one of a plurality of gear means for providing a plurality of resistances;

(d) a plurality of cam follower means each slidably coupled to a respective one of said plurality of cam rod means and pivotally coupled to a respective one of said plurality of radial arm means for controlling a slope of inclination for each of said respective one of said plurality cam rod means; and,

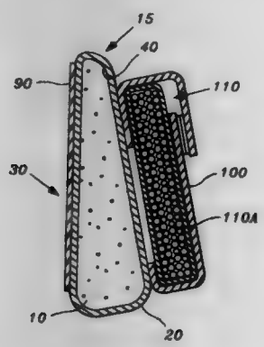
(e) a plurality of support means for supporting a respectively one of said plurality of radial arm means and for maintaining the original alignment of each of said plurality of radial arm means parallel to its original orientation.

5,797,823

STRAIN REDUCING WEIGHTED JOGGING BELT

George A. Gouvis, II, 4991 Persimmon La., Irvine, Calif. 92612

Filed Mar. 6, 1997, Ser. No. 813,802
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—105 **3 Claims**



1. A jogging belt device to be worn around a jogging person's waist, the device comprising:

an elongate strip of resilient material of a length for encircling a portion of the person's waist, the strip providing an in-facing surface in contact with the person's waist, an outfacing mounting surface and a pair of opposing free ends;

an adjustable attachment means joining the free ends of the strip for enclosing the strip about the person's waist and for tightening the belt around the person's waist;

a plurality of pouches fixed to the mounting surface of the strip in positions arranged in side-by-side adjacency around the elongate strip;

each of the pouches providing a weight means;

the resilient strip having a triangular cross-sectional shape for supporting the pouches at an upwardly directed angle inclined to the person's waist such that a component of the downward force of each said weight is directed to compressing the resilient strip, the strip being of such resilience as to cause the peak of the downward force of each said weight to be delayed with respect to the peak of the downward force of the person's body weight.

5,797,824

DISPOSABLE DIAPER WITH PADDED WAISTBAND AND LEGHOLES

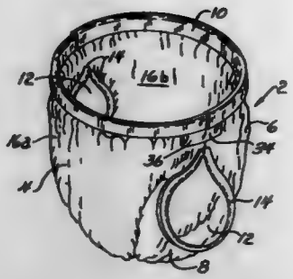
Rhonda Tracy, 233 Grandview, Glen Ellyn, Ill. 60137

Continuation of Ser. No. 790,469, Nov. 12, 1991, abandoned, which is a continuation of Ser. No. 516,473, Apr. 30, 1990, Pat. No. 5,064,421, which is a continuation of Ser. No. 93,681, Sep. 8, 1987, abandoned. This application Jul. 16, 1993, Ser. No. 92,540
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 **15 Claims**

1. A disposable diaper comprising:

a body portion having two enlarged end portions and a narrowed intermediate portion therebetween, the body portion being shaped about a waist and crotch of a wearer and have an inside and an outside with respect to the wearer;

each end portion having a respective waistband portion at an edge thereof so that when the diaper is worn, the waistband portions gird the waist of the wearer;



at least two body-portion layers including a layer of liquid absorbent material and a plastic layer having an edge at the edge of the diaper;

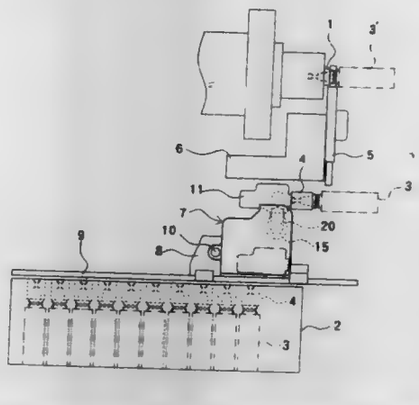
a soft padding member located along at least one of said waistband portions, being adjacent to said plastic layer edge, the soft padding member being distinct from all of said body-portion layer, the soft padding member including a material formed from a soft substance presenting a soft surface along at least a portion of said inside of the diaper waistband portion despite said plastic layer edge.

5,797,825

TOOL CONVEYER

Atsuya Murata, Kasugai, and Yukio Taki, Aichi-ken, both of Japan, assignors to Ohkuma Corporation, Aichi-ken, Japan

Filed Apr. 17, 1997, Ser. No. 842,848
Claims priority, application Japan, Apr. 18, 1996, 8-096914
Int. Cl.[6] B23Q *3/157*
U.S. Cl. 483—53 **10 Claims**



1. A tool conveyer for use with a machine tool for carrying a tool between a tool magazine and an automatic tool changer, said tool conveyer comprising

a case having a shaft provided thereon,

a first link rotatably connected at a first end to said shaft,

first means for driving said first link,

a second link rotatably connected at its intermediate portion to a second end of said first link,

a tool holder connected to a first end of said second link,

a first guide for rectilinearly guiding said tool holder in a tool conveying direction, and

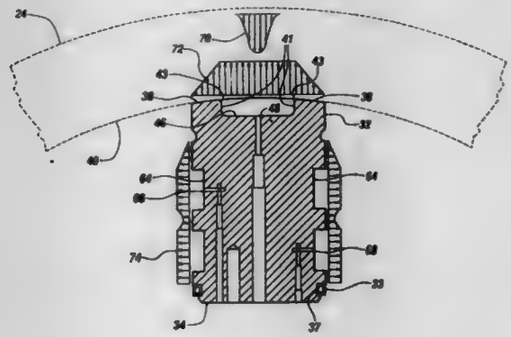
a second guide for rectilinearly guiding a second end of said second link in a direction perpendicular to said tool conveying direction.

5,797,826

HYDROSTATIC SHOE FOR CONTROLLED CROWN ROLLS

Rajendra D. Deshpande, Rockton, Ill., and James P. Alfano, Janesville, Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Oct. 2, 1996, Ser. No. 726,308
Int. Cl.[6] B21B 7/00
U.S. Cl. 492—7 23 Claims



1. A paper web engaging roll assembly for use in a papermaking apparatus having machine and cross-machine directions, comprising, in combination:

a first cylindrical roll;

a second cylindrical roll having a hollow interior with an interior surface;

a stationary support beam disposed the hollow interior of the second roll extending longitudinally therein, wherein the second roll engages the first roll forming a nip therebetween;

a plurality of pistons mounted within a corresponding plurality of piston cavities formed in the support beam and aligned longitudinally therealong, wherein the pistons are operable to move in a nipward direction toward and away from the nip;

a glide shoe supported on each piston, wherein each glide shoe has an upper supporting face positioned in proximity to the interior surface of the second cylinder, wherein portions of the glide shoe define a cavity recessed below the supporting face, and wherein hydraulic fluid is discharged from the cavity to form a supportive film which is engaged between the glide shoe supporting face and the second cylinder interior surface to support said second cylinder in rotational engagement; and

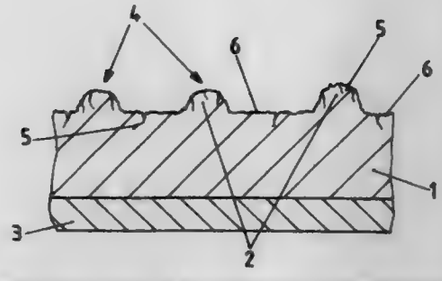
hydraulic thrust bearing means formed in each of the pistons in at least one of the cross-machine, or machine, directions, the hydrostatic thrust bearing means being so constructed and arranged as to cooperate with a corresponding cavity to operate to center the pistons in the piston cavities.

5,797,827

PRINTING MATERIAL GUIDING SURFACE STRUCTURE FOR PRINTING MACHINE CYLINDERS

Werner Sondergeld, Offenbach, Germany, assignor to MAN Roland Druckmaschinen AG, Germany

Filed Apr. 24, 1996, Ser. No. 637,166
Claims priority, application Germany, Apr. 26, 1995, 195 15 393.6
Int. Cl.[6] B23P 15/00
U.S. Cl. 492—37 16 Claims



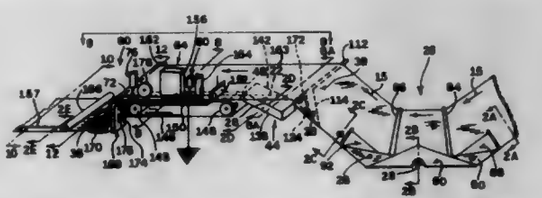
1. A surface structure for a sheet-guiding cylinder of a printing machine comprising a plurality of elevated elements separated by valleys and arranged in an approximately uniform distribution on the circumferential surface of the cylinder, each of the elevated elements having bearing surfaces for supporting and guiding printing material which contacts the cylinder, and a plurality of depressions formed in the bearing surfaces of the elevated elements for providing a rough surface that prevents slippage of the printing material on the cylinder.

5,797,828

DRAW TAPE MACHINES AND METHODS

Paul A. Selle, Appleton; Peter J. Gietman, Jr., Combined Locks; Timothy R. Dutter, Appleton; Thomas C. Jansen, Appleton, and Frank M. Slama, Appleton, all of Wis., assignors to CMD Corporation, Appleton, Wis.

Filed Jan. 2, 1996, Ser. No. 582,072
Int. Cl.[6] B31B 1/90
U.S. Cl. 493—225 100 Claims



1. A method of providing a draw tape in a plastic web, the plastic web being folded longitudinally along the length thereof to form top and bottom layers of the plastic web, first and second edge portions of the top and bottom layers respectively being folded onto respective first and second main body portions of the top and bottom layers, to form respective first and second hems, with respective first and second draw tapes in the hems, the first and second edge portions being sealed to the respective main body portions to form first and second sealed hems with the first and second draw tapes therein, the method comprising the steps of:

(a) forming holes at spaced locations in the edge portions adjacent first and second free edges of the web by (i) receiving the first and second edge portions of the web in a flat disposition and turning the first and second edge portions inwardly toward the main body portions of the web, with one of the first and second edge portions nested in the other of the first and second edge portions, (ii) folding the edge portions back onto the main body portion of the nested one of the first and second edge portions, and (iii) forming holes in the first and second edge portions at loci adjacent but spaced from free edges of the respective layers;

(b) feeding draw tape material into proximity with the first and second edge portions;

(c) receiving the draw tape material as first and second draw tapes and forming the first and second hems and incorporating the first and second draw tapes into the hems; and

(d) sealing the first and second edge portions to the respective first and second main body portions of the respective layers to form the first and second sealed hems, and thus sealing the hems and securing the respective draw tapes therein.

5,797,829

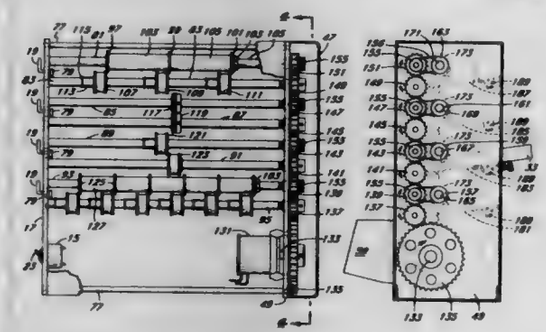
Patent Not Issued For This Number

5,797,830

MULTI USE PAPER AND CARD STOCK CUTTER

Albert Flores, 1551 Monte Sander, El Paso, Tex. 79936, and Ricardo Molina, El Paso, Tex., assignors to Albert Flores, El Paso, Tex.

Filed Mar. 12, 1996, Ser. No. 614,366
Int. Cl.[6] B31B *1/14*
U.S. Cl. 493—361 17 Claims



1. A cutting machine comprising:

a main structural support;

a first cutter means, supported by said main structural support, having a plurality of cutter blades for automatically serially cutting a first series of sheet material supplied from a stack, and providing a first type of cut;

a second cutter means, supported by said main structural support and underlying said first cutter means, having at least one set of cutter blades for automatically serially cutting a second series of sheet material supplied from a stack, and providing a second type of cut different than said first type of cut;

a third cutter means, supported by said main structural support and underlying said second cutter means, having a plurality of cutter blades for automatically serially cutting a third series of sheet material supplied from a stack, and for providing a third type of cut different than said first and said second types of cut;

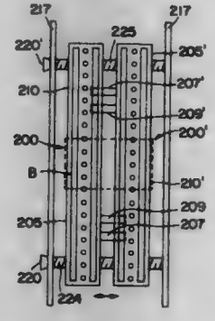
power means, supported by said main structural support for simultaneously powering said first, second and third cutter means for use simultaneously.

5,797,831

VACUUM HOLD DOWN FOLDER/GLUERS AND PROCESS

John T. Roberts, Clover, S.C., and Jimmy R. Bridges, Charlotte, N.C., assignors to Roverts Systems, Inc., Charlotte, N.C.

Filed Aug. 25, 1995, Ser. No. 519,248
Int. Cl.[6] B31F *1/08*
U.S. Cl. 493—438 12 Claims



1. A modular vacuum hold down device for a folding mechanism for pre-scored paper-board articles, including a first vacuum hold down device comprising:

a substantially enclosed, free-standing, rectangular-shaped conveyor housing having legs such that said housing may be relocated without regard as to any other machinery, a vacuum inlet, side plates, a conveyor table having vacuum holes along its length, and defining a vacuum chamber therein;

at least one conveyor belt in between said side plates and spanning said conveyor table such that said at least one conveyor belt cannot flex;

a drive mechanism associated with said at least one conveyor belt for driving said at least one conveyor belt;

a vacuum source comprising a blower driven by a motor, said vacuum source in fluid communication with said vacuum inlet, whereby when said vacuum source is activated, a vacuum is created in said vacuum chamber and in an area of said conveyor table having said vacuum holes, thereby causing said pre-scored paper-board articles to adhere to said at least one conveyor belt and against said conveyor table;

said blower motor and said drive mechanism mounted to one of a left side and a right side of an outside of said conveyor housing to form one of a left-handed version and a right-handed version, respectively; and

folding elements spaced above said conveyor housing for folding and forming a flat pre-scored paper-board article fed from an article feeder, said folding elements independently movable with respect to said modular vacuum hold down device to form said article into a container.

5,797,832

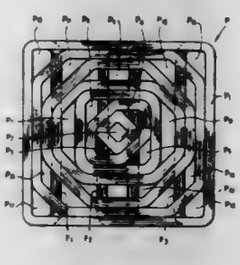
APPARATUS AND METHOD FOR FORMING LIGHTWEIGHT PALLETS

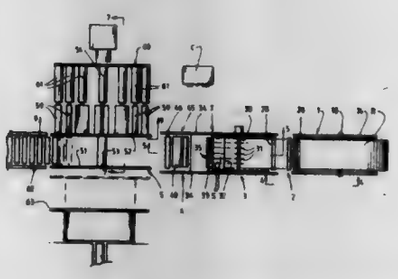
Alex Ong, North Carlton; Ross Chiodo, and John Mammoliti, both of Reservoir, all of Australia, assignors to Visy Paper PTY Ltd, Reservoir, Australia

Continuation-in-part of Ser. No. 969,041, Oct. 30, 1992, Pat. No. 5,448,956, which is a continuation-in-part of Ser. No. 838,518, Feb. 19, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,683

Claims priority, application Australia, Feb. 22, 1991, PK 4761

Int. Cl.[6] B31F *1/10*
U.S. Cl. 493—462 7 Claims





1. A method of forming a lightweight pallet comprising the steps of

continuously winding a strip of paper, cardboard or corrugated board around a central mandrel to define a central opening.

introducing other shaped mandrels between the paper, cardboard or corrugated board already wound and the paper, cardboard or corrugated board being wound to create a multiplicity of shaped openings,

winding an outer layer of said paper, cardboard or corrugated board to give the pallet its final shape,

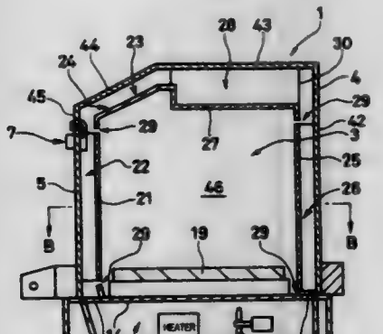
applying adhesive to at least one side of said paper, cardboard or corrugated board as it is wound around said central mandrel and said other shaped mandrels, and severing the paper, cardboard or corrugated board when the winding operation is complete.

5,797,833

INFANT INCUBATOR

Shinichi Kobayashi, Tokyo; Eiji Koike, Omiya, and Kazuo Matubara, Tokyo, all of Japan, assignors to Atom Medical Corporation, Tokyo, Japan

Filed Apr. 9, 1997, Ser. No. 835,659
Claims priority, application Japan, Apr. 19, 1996, 8-122183
Int. Cl.[6] A61G *11/00*
U.S. Cl. 600—22 **7 Claims**



1. An infant incubator, comprising;

a base for supporting a premature baby;

a hood mounted on the base to provide an incubation chamber isolated from the atmosphere; said hood having an inner surface:

a plurality of partition plates disposed along said inner surface of said hood to provide a plurality of air paths against said inner surface;

a fan for circulating an air through said air paths;

a heater for heating said air; and

an air vessel for extending a distance between said inner surface of the hood and said partition plate causing the circulating air to reduce its velocity.

5,797,834

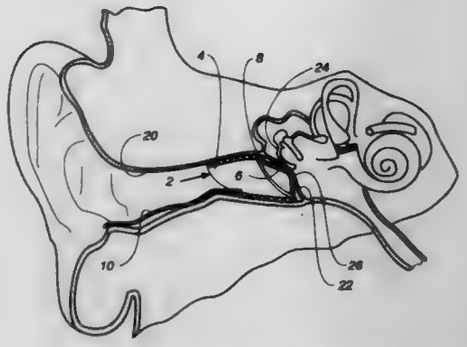
HEARING IMPROVEMENT DEVICE

Richard Goode, Los Altos, Calif., assignor to ReSound Corporation, Redwood City, Calif.

Filed May 31, 1996, Ser. No. 655,773
Int. Cl.[6] H04R *25/02*
U.S. Cl. 600—25 **18 Claims**

1. A device for improving an individual's hearing, comprising:

a diaphragm having an outer edge portion and a center portion wherein said center portion is more flexible than said outer edge portion, adapted for contacting the individual's tympanic membrane, the diaphragm being sufficiently efficient to vibrate in response to sound stimuli so as to displace the tympanic membrane.

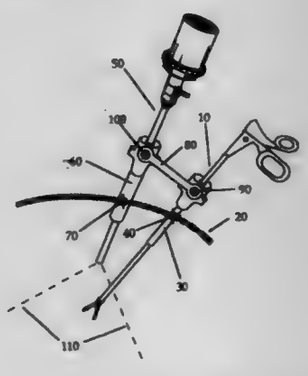


5,797,835

SYSTEM AND METHOD FOR ENDOSURGERY EMPLOYING CONJOINT OPERATION OF AN ENDOSCOPE AND ENDOSURGICAL INSTRUMENT

Philip S. Green, 820 Miranda Green, Palo Alto, Calif. 94306

Filed Sep. 12, 1997, Ser. No. 928,777
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—106 **22 Claims**



1. An apparatus for effecting the motion of a first endoscopic device operating through a first cannula in response to the motion of a second endoscopic device operating through a second cannula comprising:

a first pivot fixed with respect to the first cannula;

a second pivot fixed with respect to the second cannula;

a link member connected between the first and second pivots.

5,797,836

ENDOSCOPE WITH RELATIVE ROTATION AND AXIAL MOTION BETWEEN AN OPTICAL ELEMENT AND AN IMAGING DEVICE

Paul V. Lucey, Sandown, and Robert J. Scarchilli, Nashua, both of N.H., assignors to Smith & Nephew, Inc., Memphis, Tenn.

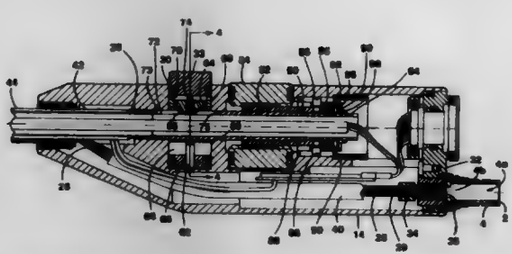
Filed Jun. 7, 1995, Ser. No. 475,898
Int. Cl.[6] A61B *1/05*
U.S. Cl. 600—109 **21 Claims**

1. An apparatus for viewing a region, comprising:

a hollow member elongated between a proximal end and a distal end configured to be inserted into the region,

an elongated inner member disposed within said hollow member,

an optical assembly comprising



an optical element disposed in said distal end of said hollow member, and

an image detector supported at a distal end of said inner member adjacent said optical element in said distal end, and

an actuating mechanism coupled to said optical assembly and arranged to separately produce: (1) relative rotation between said optical element and said image detector, and (2) relative axial motion between said optical element and said image detector to change a spacing therebetween,

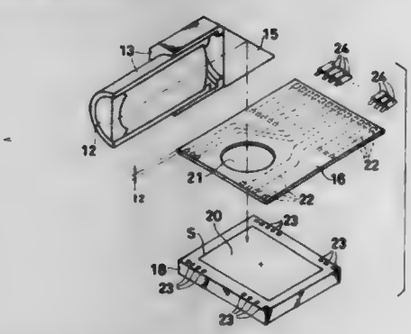
said actuating mechanism including an actuator arranged to provide said relative rotation between said optical element and said image detector, said actuator being rotatable disposed with respect to said proximal end of said hollow member and engaging a proximal end of said inner member so that rotation of said actuator causes said image detector to rotate with respect to said optical element, the engagement between said actuator and said proximal end of said inner member being configured to permit said inner member to be moved axially with respect to said hollow member to change said spacing between said image detector and said optical element.

5,797,837

ENDOSCOPE IMAGE UNIT WITH CIRCUIT BOARD HAVING A HOLE THERETHROUGH

Itsuji Minami, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Aug. 29, 1996, Ser. No. 705,158
Claims priority, application Japan, Oct. 4, 1995, 7-282553
Int. Cl.[6] A61B *1/05*
U.S. Cl. 600—109 **1 Claim**



1. Electronic endoscope unit comprising:

an objective optical member;

an imaging device having an imaging plane and an upper surface for imaging an object of inspection which is caught by said objective optical member and provided with at least either of a color filter and a micro-lens provided on said imaging plane;

a signal wire for transmitting a signal from said imaging device;

a circuit board provided with an air gap portion for forming an entire air gap between the objective optical member and the color filter or micro-lens, and a wiring pattern for connecting said imaging device with said circuit board on said surface;

wherein said circuit board is inserted between and adhered to said upper surface of said imaging device and said objective optical member;

wherein said air gap on said circuit board is a through hole;

wherein the circuit board is adhered between the upper surface of said imaging device and said objective optical member with an adhesive so that said through hole is maintained in an air-tight state;

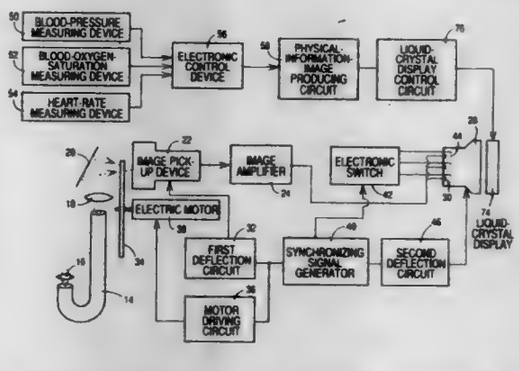
wherein said wiring pattern and said imaging device are provided with respective terminals, whereby said respective terminals are connected by contact bonding; and wherein said objective optical member includes a prism and said circuit board is adhered to a bottom surface of said prism.

5,797,838

PHYSICAL-INFORMATION-IMAGE DISPLAYING APPARATUS

Tohru Oka, Ichinomiya, Japan, assignor to Colin Corporation, Komaki, Japan

Filed Sep. 13, 1996, Ser. No. 710,144
Int. Cl.[6] G06F *15/68*
U.S. Cl. 600—300 **29 Claims**



1. A physical-information-image displaying apparatus for use with an endoscope including an image pick-up which picks up an endoscopic image from a living subject and produces an endoscopic-image signal representing the picked-up endoscopic image, and a display screen, the display screen displays the picked-up endoscopic image represented by the endoscopic-image signal, the apparatus comprising:

a physical-information obtaining device which obtains physical information from the subject and produces, a physical-information signal representing the obtained physical information, said physical-information obtaining device comprising at least one of a blood-pressure measuring device, a blood-oxygen-saturation measuring device, and a heart-rate measuring device;

a physical-information-image-signal producing device which produces, based on said physical-information signal produced by said physical-information obtaining device, a physical-information-image signal representing a physical-information image corresponding to said obtained physical information; and

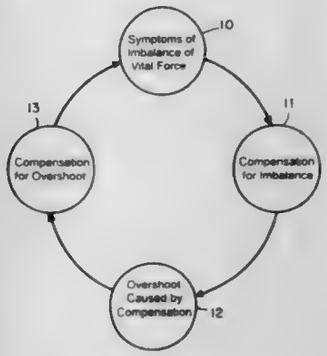
a superimposing device which superimposes said physical-information-image signal on the endoscopic-image signal so that said physical-information is displayed on a predetermined portion of the display screen while being superimposed on a corresponding portion of the picked-up endoscopic image on the predetermined portion of the display screen, the physical-information image and a remaining portion of the picked-up endoscopic image are simultaneously displayed on the display screen.

5,797,839

HOMEOPATHIC TREATMENT SELECTION SYSTEM AND METHOD

Paul Herscu, Amherst, Mass., assignor to Apple Blossom, LLC, Amherst, Mass.

Filed Dec. 23, 1996, Ser. No. 772,415
Int. Cl.[6] A61B 5/00
U.S. Cl. 600—300 **10 Claims**



1. A computer-implemented method for facilitating the selection of remedies for a patient, the method implemented on a computer with an input unit, a display unit, a database providing a data file containing a plurality of indexed data records containing symptoms, rubrics, and remedies, the symptom data records containing indications of rubrics, the rubrics containing indications of remedies, the method comprising:

a) receiving via the input unit a first set of input data identifying patient symptoms;

b) receiving via the input unit a first command to create at least one segment consisting of at least one rubric, the segment being associated with a subset of the symptoms;

c) creating the at least one segment by indexing via the database into the data file for a set of rubric data records related to the symptom data records,

d) receiving via the input unit a second command to create at least one remedy from the at least one segment; and

e) creating the at least one remedy by indexing via the database into the data file remedy data records indicated by the set of rubric data records in related to the at least one segment.

5,797,840

APPARATUS AND METHOD FOR TIME DEPENDENT POWER SPECTRUM ANALYSIS OF PHYSIOLOGICAL SIGNALS

Solange Akselrod, Ramat Ilan, and Laurence Keselbrener, Tel Aviv, both of Israel, assignors to Ramot University Authority for Applied Research & Industrial Development Ltd.

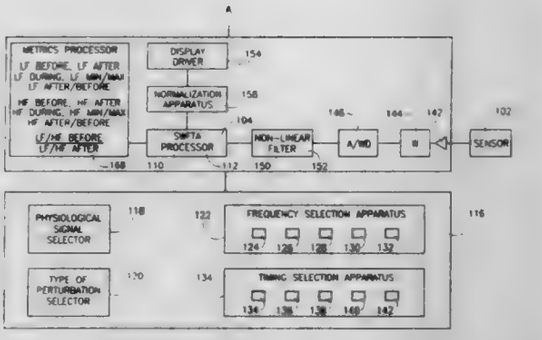
PCT No. PCT/US95/11686, § 371 Date Feb. 28, 1997, § 102(e) Date Feb. 28, 1997, PCT Pub. No. WO96/08992, PCT Pub. Date Mar. 28, 1996
PCT Filed Sep. 13, 1995, Ser. No. 793,583
Claims priority, application Israel, Sep. 14, 1994, 110973
Int. Cl.[6] A61B 5/00
U.S. Cl. 600—301 **50 Claims**

1. An apparatus for time dependent power spectrum analysis of a physiological signal modulated by the autonomic nervous system, the apparatus comprising:

(a) a sensor for picking up a physiological signal modulated by the autonomic nervous system;

(b) frequency selection apparatus for selecting at least one frequency inherent to said signal;

(c) a selective windowed time-frequency analysis processor for determining the power spectrum of said physiological signal within a window along said signal for said at least one frequency, said processor calculates the duration of said window as a function of said at least one frequency, thereby enabling the analysis of signals under non-steady state conditions; and



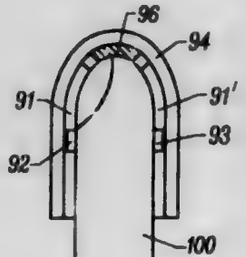
(d) output apparatus for providing information associated with the functioning of the autonomic nervous system as provided by the power spectrum of the physiological signal.

5,797,841

SHUNT BARRIER IN PULSE OXIMETER SENSOR

Russ Delonzor, Union City; Paul D. Mannheimer, Danville; Michael E. Fein, Mountain View, and Don Hannula, San Luis Obispo, all of Calif., assignors to Nellcor Puritan Bennett Incorporated, Pleasanton, Calif.

Filed Mar. 5, 1996, Ser. No. 611,151
Int. Cl.[6] A61B 5/00
U.S. Cl. 600—323 **9 Claims**



1. A sensor comprising:

at least one emitter;

a detector;

a covering layer having a first portion over the emitter and a second portion over the detector;

a shunt barrier positioned between said first and second portions of said covering layer to substantially block radiation of the wavelengths emitted by said emitter, such that less than 10% of the radiation detected by said detector is shunted radiation;

wherein there is a break between said first and second portions of said covering layer, said shunt barrier comprising an underlying layer bridging said break and having an adhesive surface.

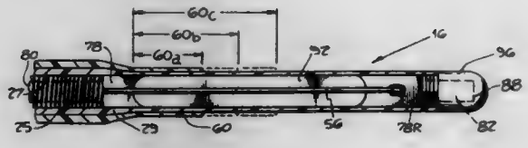
5,797,842

STEERABLE ELECTROPHYSIOLOGY CATHETER

Fernando Pumares, San Bruno, and Timothy McGrath, Milpitas, both of Calif., assignors to E.P. Technologies, Inc., San Jose, Calif.

Filed Oct. 31, 1996, Ser. No. 740,621
Int. Cl.[6] A61B 6/00
U.S. Cl. 600—435 **26 Claims**

1. A catheter steering mechanism comprising:



a tubular catheter body containing a steering tube having proximal and distal ends;

a lumen extending through the length of the steering tube and having a distal end that terminates short of the distal end of the catheter body,

a steering spring having an axis and a bendable portion of substantially uniform cross section extending distally for a selected axial length beyond the distal end of said steering tube,

at least one steering wire extending through the lumen, having a first end attached to the steering spring at a first location outside the distal end of the lumen and having a second end extending through the proximal end of said lumen;

a controller positioned at the proximal end of said catheter and attached to said steering wire for applying tension thereon to bend the distal end of the steering spring toward the tense steering wire,

a flexible tubular body enclosing said steering tube and having a distal section enclosing said steering spring and forming a distal portion of said catheter body, and,

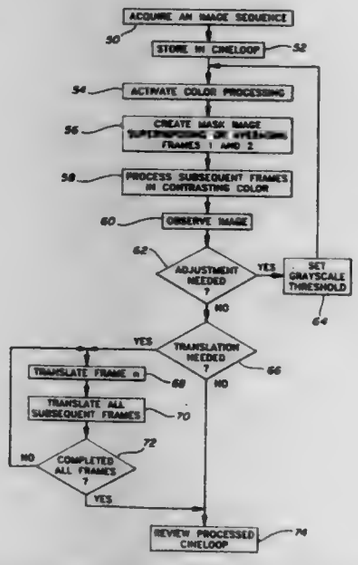
a first sleeve of high burst strength polymeric material formed around a portion of said flexible tubular body, at least a portion of the axial length of said bendable portion of said steering spring and at least a portion of said steering tube, whereby the bending characteristics of said distal portion are modified due to said sleeve.

5,797,843

ENHANCEMENT OF ORGAN WALL MOTION DISCRIMINATION VIA USE OF SUPERIMPOSED ORGAN IMAGES

Geoffrey N. Fitch, McCordsville, and Harvey Feigenbaum, Carmel, both of Ind., assignors to Eastman Kodak Comapny, Rochester, N.Y.

Filed Nov. 3, 1992, Ser. No. 970,904
Int. Cl.[6] G06F *00/00*
U.S. Cl. 600—437 **18 Claims**



1. A method for distinguishing motional characteristics of moving tissue within the body comprising the steps of:

a) acquiring a sequence of images of said tissue during a period of its motional activity;

b) coloring tissue represented in a first image in the sequence in a first color;

c) coloring tissue represented in the other images in the sequence in a second color which is distinguishable from said first color; and

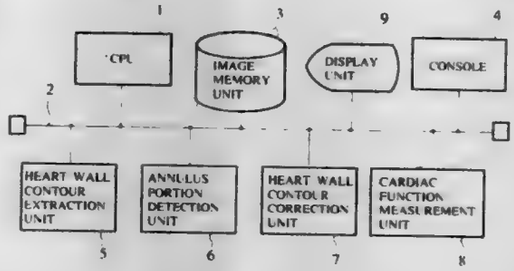
d) successively displaying said other images in the sequence behind the tissue of said first image to view the motion of said moving tissue in constant relation to said tissue of said first image.

5,797,844

METHOD AND APPARATUS FOR ULTRASONIC IMAGING AND ULTRASONIC IMAGE PROCESSING

Hideki Yoshioka, and Kazuhiro Iinuma, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 21, 1996, Ser. No. 701,058
Claims priority, application Japan, Aug. 23, 1995, 7-214920
Int. Cl.[6] A61B *8/00*
U.S. Cl. 600—442 **35 Claims**



1. A method for processing an ultrasonic image of a long axis view of a heart imaged from an apex portion side, comprising the steps of:

extracting a heart wall contour from the ultrasonic image;

determining a center of gravity of the heart wall contour extracted by the extracting step; and

detecting an annulus portion of the heart from a plurality of points on the heart wall contour located at positions deeper than the center of gravity determined by the determining step, according to a prescribed criterion regarding said plurality of points.

5,797,845

ULTRASOUND APPARATUS FOR THREE DIMENSIONAL IMAGE RECONSTRUCTION

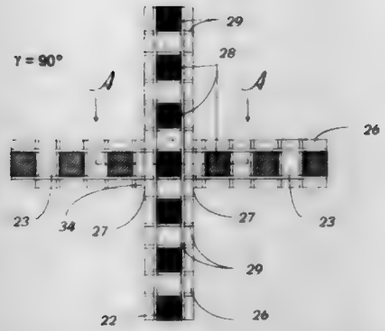
Leonid S. Barabash, 13021 S. 48th St., Apt. 2097; Aaron E. LaBarge, 3914 E. Nambe St., both of Phoenix, Ariz. 85044, and Angel T. M. Wang, 4700 Sandyland Rd. Apt. 37, Carpenteria, Calif. 93013

Filed Nov. 4, 1996, Ser. No. 742,403
Int. Cl.[6] A61B *8/00*
U.S. Cl. 600—443 **24 Claims**

1. A method of generating a scanned "pencil" acoustic beam comprising the steps of:

shaping one or more dynamic focused and scanned flat transmit acoustic beams by energizing one or more phased transmit arrays, so that said transmit flat acoustic beams can be focused and steered by changing the energizing time of transmit array individual elements,

receiving the echo pulses by one or more phased receive arrays with dynamic focused and scanned flat receive apertures, so that said flat receive apertures can be focused and steered by the change in delay of the signals received by individual elements of receive arrays or can be formed by a shift of



digitized amplitude information in memory for a predetermined number of digits in accordance with the set flat receive aperture,

placing said transmit and receive arrays with axial symmetry and at the same origin,

orienting said transmit and receive arrays relative to each other by an optimal angle γ defined as

$$\gamma = \pi(n\ tr + n\ rec)$$

where n tr is the number of said one or more transmit arrays and n rec is the number of said one or more receive arrays,

separating the array functions in transmission and reception modes, so that transmit arrays are used only for transmission of acoustic pulses into an investigated part of a human body and receive arrays are used only for reception of echo pulses from an irradiated part of a human body,

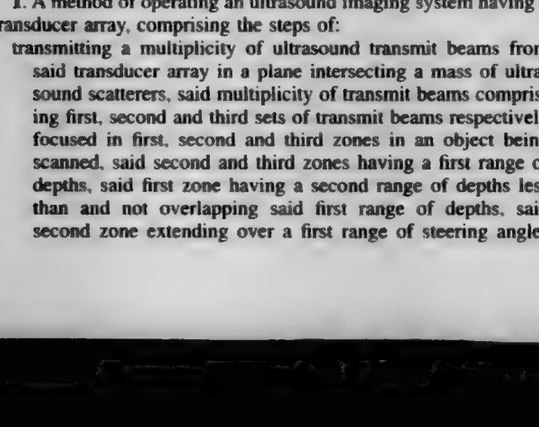
whereby said scanned "pencil" acoustic beam is generated by a crossing of one or more of said dynamic focused and scanned flat transmit acoustic beams and said one or more dynamic focused and scanned flat receive apertures.

5,797,846

METHOD TO CONTROL FRAME RATE IN ULTRASOUND IMAGING

Mir Said Seyed-Bolorforosh, Brookfield; Michael J. Washburn, New Berlin, and David D. Becker, Milwaukee, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 30, 1996, Ser. No. 774,665
Int. Cl.[6] A61B *8/00*
U.S. Cl. 600—447 **10 Claims**



1. A method of operating an ultrasound imaging system having a transducer array, comprising the steps of:

transmitting a multiplicity of ultrasound transmit beams from said transducer array in a plane intersecting a mass of ultrasound scatterers, said multiplicity of transmit beams comprising first, second and third sets of transmit beams respectively focused in first, second and third zones in an object being scanned, said second and third zones having a first range of depths, said first zone having a second range of depths less than and not overlapping said first range of depths, said second zone extending over a first range of steering angles centered on a centerline of said transducer array, said third zone extending over a second range of steering angles, said second range of steering angles being greater than and not overlapping with said first range of steering angles, and said first zone extending over a third range of steering angles which overlaps both of said first and second ranges of steering angles;

for each transmit beam, acquiring a respective receive vector derived from ultrasound reflected back to said transducer array by scatterers in said respective zones; and

displaying an image frame which is a function of at least said receive vectors,

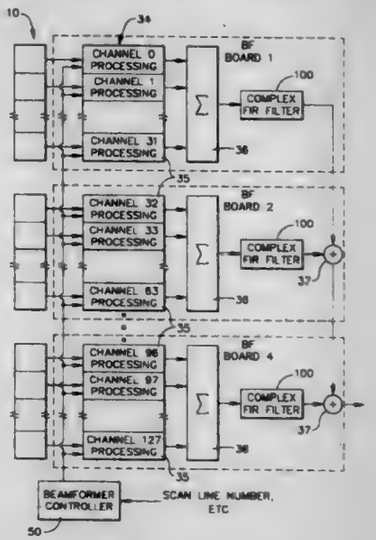
wherein said first set of transmit beams have a first vector density and a first transmit waveform center frequency, said second set of transmit beams have a second vector density and a second transmit waveform center frequency less than said first transmit waveform center frequency, said third set of transmit beams have a third vector density and a third transmit waveform center frequency less than said second transmit waveform center frequency, and said first, second and third vector densities being a function of said first, second and third transmit waveform center frequencies respectively.

5,797,847

METHOD AND APPARATUS FOR COMPLEX BANDPASS FILTERING AND DECIMATION IN ULTRASOUND BEAMFORMER

Steven C. Miller, Town of Pewaukee; Gregory A. Lillegard, Greenfield, and Daniel Milon, Milwaukee, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 30, 1996, Ser. No. 774,666
Int. Cl.[6] A61B *8/00*; A61N *7/00*
U.S. Cl. 600—447 **20 Claims**



1. A complex FIR filter circuit comprising:

a first register pipeline clocked at a first sampling rate and having a plurality of outputs for outputting in each sampling period a respective plurality of successive digital samples derived from an input stream of digital samples;

a first filtering means for outputting in at least every other sampling period an in-phase filtered digital sample and a quadrature filtered digital sample derived from said plurality of successive digital samples output by said first register pipeline by applying a first set of complex filter coefficients;

a second register pipeline clocked at a second sampling rate less than said first sampling rate and having a plurality of outputs for outputting in each sampling period a respective plurality of successive digital samples derived from said in-phase filtered digital samples output by said first filtering means;

a third register pipeline clocked at said second sampling rate and having a plurality of outputs for outputting in each sampling period a respective plurality of successive digital samples derived from said quadrature filtered digital samples output by said first filtering means; and

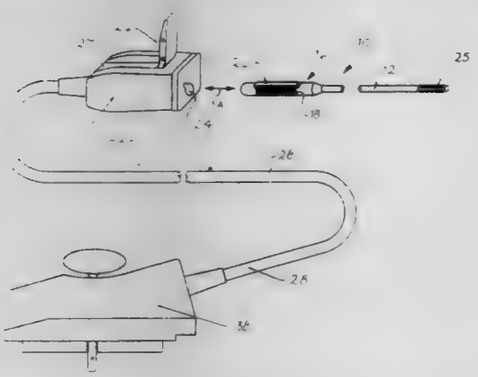
a second filtering means for outputting in at least every other sampling period an in-phase filtered digital sample and a quadrature filtered digital sample derived from said plurality of successive digital samples output by said second register pipeline and said plurality of successive digital samples output by said third register pipeline by applying a second set of complex filter coefficients.

5,797,848

ULTRASONIC TRANSDUCER ASSEMBLY WITH IMPROVED ELECTRICAL INTERFACE

Vaughn R. Marian, Saratoga, Calif., and Michael G. Curley, Cambridge, Mass., assignors to Acuson Corporation, Mountain View, Calif.

Filed Jan. 31, 1997, Ser. No. 792,291
Int. Cl.[6] A61B *8/12*
U.S. Cl. 600—459 **19 Claims**



1. In an ultrasonic transducer assembly of the type comprising a support element, a transducer array comprising a plurality of transducer elements carried by the support element, and a plurality of conductors, each coupled to a respective transducer element of the transducer array and carried by the support element, the improvement comprising:

a shaft carried by the support element, said shaft defining a longitudinal axis;

a plurality of contacts extending circumferentially at least partially around the shaft and spaced along the axis, at least a plurality of said contacts each electrically coupled to a respective one of the conductors.

5,797,849

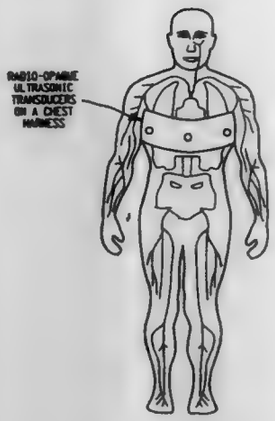
METHOD FOR CARRYING OUT A MEDICAL PROCEDURE USING A THREE-DIMENSIONAL TRACKING AND IMAGING SYSTEM

Ivan Vesely, Cleveland Heights, Ohio, and Wayne Smith, London, Canada, assignors to Sonometrics Corporation, London, Canada

Continuation-in-part of Ser. No. 411,959, Mar. 28, 1995, Pat. No. 5,515,853. This application Mar. 7, 1997, Ser. No. 812,518
Int. Cl.[6] A61B *8/00*
U.S. Cl. 600—461 **20 Claims**

1. A method of performing an in vivo medical procedure on an associated body using a 3-D tracking and imaging system, said method comprising:

mounting a plurality of mobile transducer means to an instrument means;



mounting one or more reference transducers means to locations on the body, the reference transducer means having a position fixed relative to the body;

generating three-dimensional coordinates of the mobile transducer means relative to a reference frame established by the reference transducer means;

generating image data of the environment surrounding the instrument means to provide an image template;

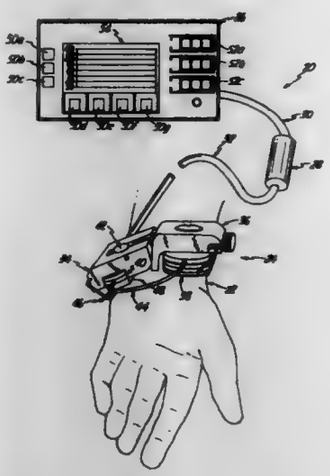
registering the three-dimensional coordinates with the image data to form a 3-D image scene showing the position of the mobile transducer means relative to the image template.

5,797,850

METHOD AND APPARATUS FOR CALCULATING BLOOD PRESSURE OF AN ARTERY

G. Kent Archibald, Vadnais Heights; Timothy G. Curran, Ramsey; Orland H. Danielson, Roseville; Marius O. Poliac, St. Paul, and Roger C. Thede, Afton, all of Minn., assignors to Medwave, Inc., New Hope, Minn.

Continuation-in-part of Ser. No. 227,506, Apr. 14, 1994, Pat. No. 5,450,852, which is a continuation-in-part of Ser. No. 150,382, Nov. 9, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 388,751
Int. Cl.[6] A61B *5/02*
U.S. Cl. 600—494 **26 Claims**



1. A method for determining blood pressure of an artery having a pulse, the method comprising:

continuously varying a pressure applied to the artery;

sensing pressure data produced by the artery;

deriving a plurality of parameters from the sensed pressure data including at least one of the following: (a) rise time of a selected portion of a waveform, (b) applied pressure corresponding to a starting point of a waveform, (c) applied pressure corresponding to an ending point of a waveform, (d) pressure of a waveform at a selected time, (e) a pressure corresponding to a selected point on a waveform, (f) a time value corresponding to a width of a selected portion of a waveform, (g) mean amplitude of a waveform, (h) mean of a curve generated from data taken from a plurality of waveforms; and

determining a blood pressure value based upon the parameters.

5,797,851

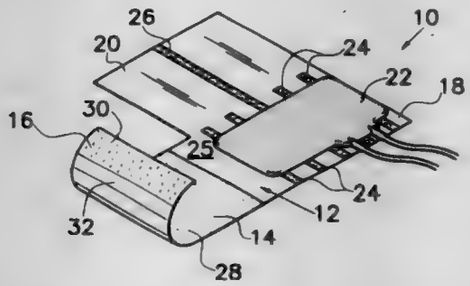
MEDICAL BLADDER COVER

Timothy N. Byrd, P.O. Box 490, Townsend, Tenn. 37882

Filed Feb. 18, 1997, Ser. No. 801,757

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—499 **11 Claims**



1. A medical bladder cover for releasably securing a medical bladder to a patient and for providing a protective covering around the medical bladder, said bladder cover comprising:

a body fabricated of flexible sheet material, said body including an elongated portion for being releasably received around an appendage of a patient, said elongated portion having first and second end portions and first and second surfaces, and having a bladder engaging portion for releasably engaging a medical bladder, said body also including a flap portion secured to said elongated portion for being folded over the medical bladder as said elongated portion engages said medical bladder;

a first securement device for releasably securing said body to the medical bladder, said first securement device including a plurality of first adhesive surface portions provided on said bladder engaging portion of said elongated portion of said body for releasably bonding said bladder engaging portion to the medical bladder; and

a second securement device for releasably securing said elongated portion of said body about the appendage of the patient.

5,797,852

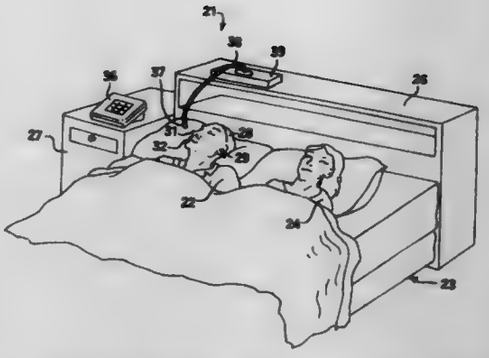
SLEEP APNEA SCREENING AND/OR DETECTING APPARATUS AND METHOD

Ahmet Karakasoglu, Mountain View; Chin N. Hung, Santa Clara; Anthony F. Matouk, Los Altos, and Lawrence C. Grotte, San Carlos, all of Calif., assignors to Local Silence, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 206,464, Mar. 4, 1994, abandoned, and Ser. No. 206,462, Mar. 4, 1994, which is a continuation-in-part of Ser. No. 206,464, Mar. 4, 1994, which is a continuation-in-part of Ser. No. 38,336, Feb. 4, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 472,441

Int. Cl.[6] A61B *5/08*

U.S. Cl. 600—529 **18 Claims**



1. A sleep apnea screening and/or detection apparatus for use by a patient having lungs and a nose and mouth in communication with the lungs and breathing through the nose and/or mouth and producing an air flow into and out of the lungs and creating audible sounds comprising a first microphone adapted to be positioned adjacent the patient's nose and/or mouth to pick up directly audible breathing sounds created by breathing of the patient and providing a first electrical analog signal, a second microphone adapted to be positioned near the patient but spaced from the first microphone and out of contact with the patient for picking up ambient audible noise in the vicinity of the patient and providing a second electrical analog signal, means operating on and combining the first and second electrical analog signals to provide a third electrical signal, means operating on the third electrical signal for generating a fourth electrical signal providing a waveform which is closely correlated with the air flow of the patient and electrical classifier means for classifying the electrical waveform provided by the fourth electrical signal to determine when a disordered breathing event has occurred.

5,797,853

METHOD AND APPARATUS FOR MEASURING BRAIN FUNCTION

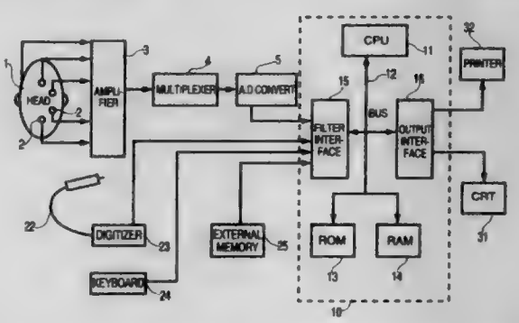
Toshimitsu Musha, 2-13-17 Minami-tsuhushino, Machida-shi, Tokyo 194, and Omi Terasaki, 9-5-1-9-401 Arima, Miyamae-ku, Kawasahi-shi, 216, both of Japan

Continuation of Ser. No. 413,503, Mar. 20, 1995, abandoned. This application May 7, 1997, Ser. No. 852,672

Claims priority, application Japan, Mar. 31, 1994, 6-063105

Int. Cl.[6] A61B *5/05*

U.S. Cl. 600—544 **12 Claims**



1. For use with a human subject having a head and having a level of brain function susceptible to loss, an apparatus for automatically determining the level of brain function loss of the human subject said apparatus comprising:

a plurality of sensors which produce output signals for detecting electromagnetic signals of the human subject when applied to said head of the human subject corresponding to a particular range of electromagnetic frequencies;

an amplifier for amplifying said output signals;

means for digitizing said output signals;

a computer comprising:

a filter for filtering said output signals,

a processor for determining the human subject dipolarity, wherein the human subject dipolarity is a mean dipolarity determined for a given time frame,

output interface means for displaying the human subject dipolarity,

read-only memory, and

random access memory;

analyzing means for analyzing the human subject dipolarity and determining the human subject level of brain function loss; and

a display for displaying the level of brain function loss of the human subject.

5,797,854

METHOD AND APPARATUS FOR TESTING AND MEASURING CURRENT PERCEPTION THRESHOLD AND MOTOR NERVE JUNCTION PERFORMANCE

James L. Hedgecock, 445 Dartmoor St., Laguna Beach, Calif. 92651

Filed Aug. 1, 1995, Ser. No. 509,952

Int. Cl.[6] A61B *5/05*

U.S. Cl. 600—554 **22 Claims**



1. An apparatus for testing and measuring current perception threshold in selected nerve fiber groups of a patient, said apparatus comprising:

a waveform generator for generating a current-limited electrical signal;

means for varying an electrical current magnitude of said electrical signal among a plurality of values;

a single first electrode comprising an absorbent pad of at least about 4 square inches in surface area and capable of being moistened to enhance electrical contact with the skin of the patient;

a single second electrode adapted to be placed at a distance from said first electrode;

the apparatus adapted to cause said electrical signal to pass through said first electrode, the selected nerve fiber groups of the patient, and said second electrode;

threshold detection means for detecting a threshold current magnitude at which the selected nerve fiber groups of the patient first perceive said electrical signal; and

means for displaying an indication of said electrical current magnitude corresponding to the current perception threshold.

5,797,855

URINE SPECIMEN AND OTHER BODY FLUIDS COLLECTION DEVICE

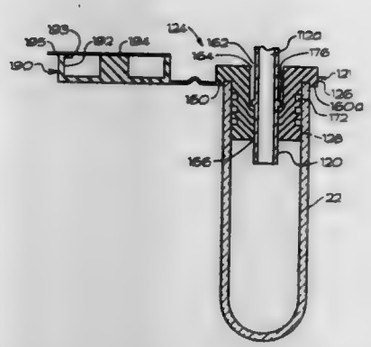
James Taylor Hazard, 347 Kenwood Way, Louisville, Ky. 40215, and R. Vincent Kidd, III, 2101 Robin Ave., Hammond, La. 70403

Division of Ser. No. 322,112, Oct. 21, 1994, which is a continuation-in-part of Ser. No. 149,549, Nov. 9, 1993, abandoned. This application Mar. 10, 1997, Ser. No. 814,652

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—513 **17 Claims**

1. A device for collecting urine samples comprising:



an elongated flexible tubular conduit having a funnel-shaped first opening at one end and a second opening at the opposite end, said conduit having holding means adjacent said funnel-shaped first opening, said holding means being positioned to hold said funnel-shaped first opening in contacting relationship with a urethra when in a use position;

a sample collector having an opening therein;

a closure member disposed within said opening of said sample collector, said closure member having means to receive said opposite end of said tubular conduit therethrough, said means to receive said opposite end of said tubular conduit including sealing means when not in receipt of said opposite end therein; and,

said closure member comprising a detachable stopper and a body with an opening extending longitudinally therethrough, said body receiving said stopper in said opening, said body having air vents means therein.

5,797,856

INTRAVASCULAR GUIDE WIRE AND METHOD

Jeffrey S. Frisbie, San Jose; Ravi S. Kurse, Sunnyvale, and Victor Chechelski, Mountain View, all of Calif., assignors to Cardiometrics, Inc., Rancho Cordova, Calif.

Filed Jan. 5, 1995, Ser. No. 368,871

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—585 **22 Claims**



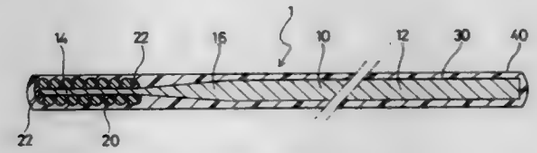
1. An intravascular guide wire comprising a solid cylindrical flexible elongate member formed essentially of stainless steel having proximal and distal extremities, a flexible elongate tubular member formed essentially of stainless steel coaxially disposed on the flexible elongate member and having proximal and distal extremities, means bonding the proximal extremity of the flexible elongate tubular member to the proximal extremity of the flexible elongate member to prevent axial movement of the flexible elongate member relative to the flexible elongate tubular member and so that a major portion of the proximal extremity of the flexible elongate member remains free and a coil assembly secured to the distal extremity of the flexible elongate member and to the distal extremity of the flexible elongate tubular member.

5,797,857

GUIDE WIRE

Hideshi Obitsu, Fujinomiyasshi, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 363,350, Dec. 23, 1994, abandoned. This application Jul. 18, 1996, Ser. No. 683,133
Claims priority, application Japan, Dec. 24, 1993, 5-068751 U
Int. Cl.[6] A61B 5/00
U.S. Cl. 600—585 31 Claims



1. A guide wire for a catheter comprising:

a super-elastic core member having a proximal section, a distal section smaller in diameter than said proximal section and an intermediate section between said proximal section and said distal section, the distal section of said core member having an outer diameter that is substantially uniform or that becomes gradually smaller toward a distal end of the core member, said distal section having an outer peripheral surface;

a shape deformable and deformed shape retaining X-ray opaque metal coil attached to said distal section of said core member, said metal coil being in tight contact with the outer peripheral surface of said distal section of said core member along the entire length of the metal coil, said metal coil having an outer surface;

a synthetic resin envelope which covers said core member and said X-ray opaque metal coil to form a substantially smooth outside surface, the synthetic resin envelope contacting the outer surface of the metal coil, including filling up areas along the outer surface of the metal coil between adjacent turns of the metal coil, to restrict movement of the metal coil; and

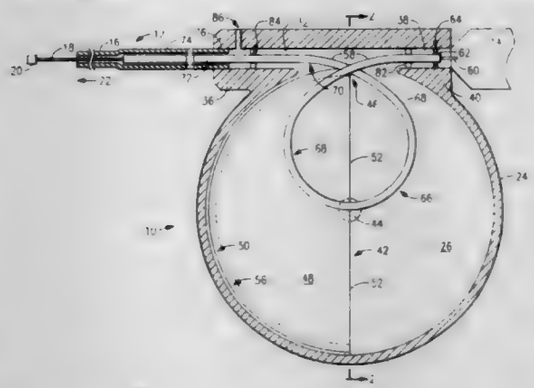
a hydrophilic lubricative layer which covers said outside surface of said synthetic resin envelope.

5,797,858

SPOOLING PULLBACK FOR CATHETER IMAGING AND THERAPY CORES

Jonathan M. Rourke, Belmont, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 14, 1997, Ser. No. 818,026
Int. Cl.[6] A61B 5/00
U.S. Cl. 600—585 24 Claims



1. A pullback device for axial positioning of a core of an intravascular catheter, the intravascular catheter including an intravascular sheath and a core wherein the core includes a working head located at a distal end of the intravascular sheath and a drive cable running through the intravascular sheath to a proximal end of the intravascular sheath, comprising:

a pullback chassis having

a catheter extension extending therefrom for attachment of the proximal end of the intravascular sheath with a distal passage therethrough and

an interface unit extension extending therefrom for attachment of the interface unit with a proximal passage therethrough,

an intermediate sheath enclosing the intravascular catheter drive cable and having a pullback loop for receiving and enclosing the the drive cable, the pullback loop including

a fixed segment attached to the proximal passage through the interface unit extension, and

a variable segment extending towards the distal passage and having a sliding section adjoining the distal passage, whereby

when the intravascular catheter is connected to the pullback device the drive cable will extend from the proximate end of the intravascular catheter and through the distal passage, the intermediate sheath pullback loop and the proximal passage for connection to the interface unit, thereby forming a loop between the distal and proximal passages within the intermediate sheath pullback loop, and

an actuating member,

the intermediate sheath being attached to an attachment point of the actuating member at the junction between the fixed and variable segments of the intermediate sheath,

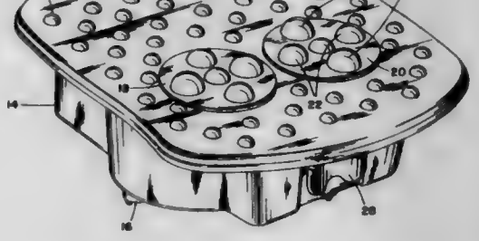
the actuating member acting to increase and decrease the length of the sliding section of the variable segment included in the pullback loop, thereby enlarging and reducing the diameter of the pullback loop and the length of drive cable contained in the pullback loop to thereby control the axial location of the working head with respect to the distal end of the intravascular sheath.

5,797,859

MASSAGER FOR PRODUCING ROTARY/VIBRATORY MASSAGE MOTION, USING A SINGLE MOTOR

Barry V. Prehodka, Ridgefield, Conn., assignor to Conair Corporation, Stamford, Conn.

Filed Jan. 9, 1997, Ser. No. 781,544
Int. Cl.[6] A61H 1/00; 15/02
U.S. Cl. 601—22 12 Claims



1. A massager for producing rotary and/or vibratory massage action comprising:

a base structure;

a support plate with a contact surface and a mounting surface;

means for resiliently mounting said support plate to said base structure;

at least one rotator structure associated with said contact surface and having massage members extending therefrom;

a motor attached to said mounting surface and manifesting a first rotary output and a counter rotary output;

gear means attached to said mounting surface, for coupling said motor to said at least one rotator structure to cause a rotary movement thereof upon actuation of said motor;

an eccentric weight; and

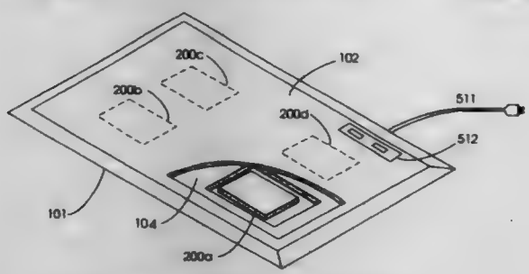
clutch means for driveably coupling said eccentric weight to said motor when said motor produces said first rotary output and for decoupling said eccentric weight from said motor when said motor produces said counter rotary output.

5,797,860

LOW PROFILE VIBRATING FLOOR MAT

Hiro Moriyasu, 1314 SW. 57th Ave., Portland, Oreg. 97221

Filed Jul. 26, 1996, Ser. No. 686,732
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—30 **6 Claims**



1. A low profile vibrator floor mat, comprising:

upper and lower protective covering material;

first magnetic laminates substantially in the shape of "C" or "E" cores, and

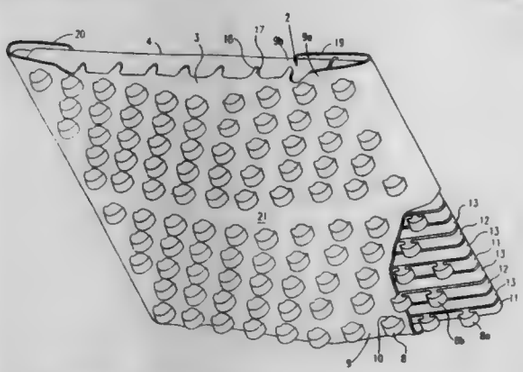
second substantially "I" shape magnetic laminates placed on top of the first laminates with one end physically fastened to the first laminates, and the other end free to be magnetically vibrated.

5,797,861

BACK REST PARTICULARLY USEFUL FOR PRODUCING A SHIATSU MASSAGING EFFECT IN THE LUMBAR REGION

Israel Port, Ramat Gan, Israel, assignor to Concept Product Promotion Ltd., Tel Aviv, Israel

Filed Jun. 12, 1996, Ser. No. 661,949
Claims priority, application Israel, Jun. 13, 1995, 114136
Int. Cl.[6] A61H *7/00*
U.S. Cl. 601—134 **2 Claims**



1. A back rest comprising:

a plurality of discrete elements, each having a uniform thickness and defining at least one edge;

a multiplicity of mutually spaced protrusions integrally formed with said discrete elements and having said uniform thickness, extending outwardly at said at least one edge; and

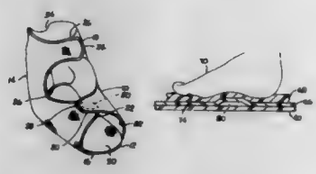
a combination joining and covering element comprising a portion of semi-flexible web material having apertures therein, said web material tightly engaging said plurality of discrete elements, whereby said apertures are stretched over said protrusions, said protrusions extend through said apertures, and retaining said plurality of discrete elements in generally parallel registration.

5,797,862

MEDICAL BOOT FOR PATIENT WITH DIABETIC FOOT

William D. Lamont, 54283 Meadowood Ct., Shelby Township, Mich. 48316

Continuation-in-part of Ser. No. 521,962, Aug. 31, 1995, and a continuation-in-part of Ser. No. 343,090, Nov. 21, 1994, Pat. No. 5,609,570. This application Sep. 4, 1996, Ser. No. 707,725
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—10 **9 Claims**



1. An insole adapted for removable placement in a medical boot, wherein the boot comprises a compressible foam material designed to at least partially enclose a person's foot, said insole comprising:

an upper layer adapted to engage the undersurface of a person's foot when the foot is positioned in a medical boot, said upper layer being formed of a heat-activated moldable plastic material adapted to conform to the surface contour on the undersurface of a person's foot and to form a permanent impression thereof;

a lower polymer layer bonded to said upper layer, said lower layer being formed of an elastic resilient material having the ability to flow perpendicular to the direction of an applied force, whereby the polymer layer provides a shock absorption capability to the insole;

said upper and lower layers being bonded together to form a multiply flexible laminate having a front toe area, a rear heel area, and an intermediate metatarsal area;

a resilient elastic pad bonded to the undersurface of said lower polymer layer, whereby a portion of the person's foot is elevated according to the thickness of the pad; and

a relatively hard bottom layer (**40**) attached to said elastic pad and said lower polymer layer to form a bottom surface of the insole, said hard bottom layer being formed of a relatively rigid, non-yielding flexible material resistant to deformation forces, whereby said bottom layer provides a foundational support for a person's foot.

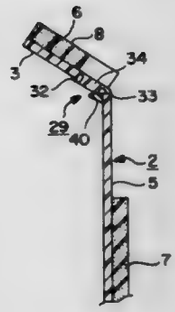
5,797,863

COLLAPSIBLE CERVICAL COLLAR

Ole Køhnke, Frederiksberg, Denmark, assignor to Ambu International A/S, Glostrup, Denmark

Filed Nov. 29, 1996, Ser. No. 758,562
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—18 **9 Claims**

1. A collapsible cervical collar comprising:



an elongated neck encircling band having an inside surface adapted to contact the neck of a wearer of the collar and an outside surface;

a chin support brace having a first end and a second end and a concave edge separated by said first end and said second end; and

hinge means connecting said elongated neck encircling band to said chin support brace for rotating said chin support brace from an inoperable position being substantially parallel to said elongated neck encircling band and adjacent to the inside surface of the elongated neck encircling band to an operable position being more than 180 degrees from the inoperable position relative to the elongated neck encircling band.

5,797,864

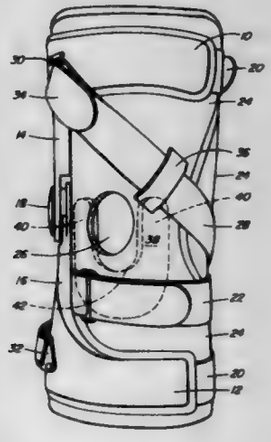
MULTI-PURPOSE BRACE

Dean A. Taylor, Vancouver, Canada, assignor to Generation II Orthotics, Inc., Richmond, Canada

Filed Nov. 14, 1996, Ser. No. 749,049

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—26 **12 Claims**



1. A method of alleviating the effects of degeneration of the knee in which the degeneration involves the patella and at least one of the medial and lateral compartments of the knee, the method comprising:

applying a lateral force to the knee; and

stabilizing the position of the patella during the application of the lateral force.

5,797,865

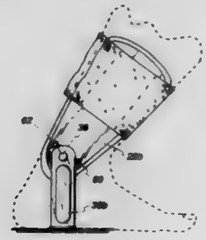
LIGHTWEIGHT ANKLE RESTRAINT

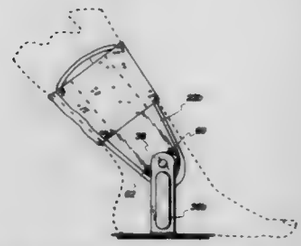
Robert Finley McDavid, III, Downers Grove, Ill., assignor to McDavid Knee Guard, Inc., Chicago, Ill.

Filed Sep. 16, 1997, Ser. No. 931,592

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—27 **14 Claims**





1. A restraint for limiting movement of the wearer's ankle, comprising:

a stirrup member with a monolithic one-piece body having a sole plate and a pair of spaced-apart struts upstanding from the sole plate, the struts having upper free ends with a rounded edge portion;

a pair of leg-engaging splint plates, each having an outer surface and a lower end with a flat surface land portion which extends above the outer surface and the lower end hingedly connected to the upper end of a respective strut, each splint plate carrying a pair of stop members each with stop surfaces, the stop surfaces upwardly and inwardly inclined toward one another, one on either side of the upper free end of said strut;

each strut having opposed generally co-extensive sides, each side having an edge terminating in said rounded edge portion; and

the stop surface of one of said stop members to engage one side edge of a strut as the rounded edge portion of the strut moves past the stop surface of the other stop member.

5,797,866

DEVICE AND METHOD OF IONTOPHORETIC DRUG DELIVERY

Ronald P. Haak; J. Richard Gyory, both of San Jose, and Felix Theeuwes, Los Altos Hills, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 941,421, Oct. 27, 1992, Pat. No. 5,496,266. This application Feb. 27, 1996, Ser. No. 607,534

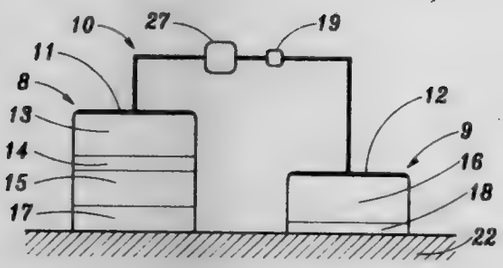
Int. Cl.[6] A61N *1/30*

U.S. Cl. 604—20 **17 Claims**

1. An electrically powered iontophoretic agent delivery device including a donor electrode assembly, a counter electrode assembly and a source of electrical power adapted to be electrically connected to the donor and counter electrode assemblies, the donor electrode assembly comprising:

an agent reservoir containing an agent adapted to be placed in agent transmitting relation with a body surface;

a donor electrode adapted to be electrically connected to the source of electrical power;



a non-hydrated, selectively-permeable membrane between the donor electrode and the agent reservoir and capable of being permeable to molecules less than a predetermined molecular weight and substantially less permeable to molecules greater than the predetermined molecular weight; and,

a donor electrolyte reservoir containing an electrolyte intermediate the donor electrode and the non-hydrated, selectively-permeable membrane,

wherein the agent dissociates into agent ions having a molecular weight less than the predetermined molecular weight and counter ions having a molecular weight greater than the predetermined molecular weight,

wherein the electrolyte dissociates into first and second electrolyte ions,

wherein the electrolyte ions having the same charge as the agent ions have a molecular weight greater than the predetermined molecular weight,

wherein the electrolyte ions having the same charge as the counter ions have a molecular weight less than the predetermined molecular weight, and

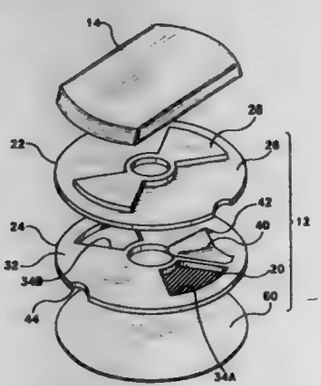
wherein the membrane is capable of being hydrated after placement on the body surface.

5,797,867

IONTOPHORETIC DRUG DELIVERY SYSTEM, INCLUDING METHOD FOR ACTIVATING SAME FOR ATTACHMENT TO PATIENT

Stephen K. Guerrera, Milford, Mass., and Michael I. Bernhard, Summit, N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 27, 1996, Ser. No. 722,816
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 **20 Claims**



1. A user activated iontophoretic device for use in delivering at least one medication through an applied area of a patient, such as the skin, mucus membrane and the like, comprising:

a first portion and a second portion, said first portion including an electrode assembly and an electrode reservoir and said second portion including a drug reservoir;

said electrode assembly including electrode means for driving a medication into the patient to be absorbed by the body of the patient;

said drug reservoir containing an active compound to be delivered to the applied area of the patient; and

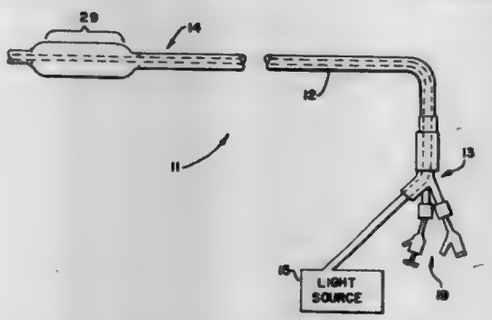
barrier means for sealing said drug reservoir in said second portion and including a foil seal having a tab, with the foil seal being adhered along the peripheral edge of the drug reservoir and the tab being adhered to the first portion so that movement of said first portion relative to said second portion manipulates said barrier means and brings the electrode reservoir and the drug reservoir into fluid conducting contact with one another, whereby said reservoirs are sealingly separated from one another with the active compound contained in the drug reservoir being isolated from the electrode reservoir in the first portion prior to activation so that upon alignment of said reservoirs and manipulation of said barrier means, the electrode reservoir and the drug reservoir are brought into fluid conducting contact with one another so that said drug is dissolved in an aqueous solution contained in said electrode reservoir.

5,797,868

PHOTODYNAMIC THERAPY BALLOON CATHETER

James E. Leone, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Jul. 25, 1996, Ser. No. 690,329
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—21 **29 Claims**



1. A photodynamic therapy balloon catheter for activating treatment fluid at a location within a living body, comprising:

an elongated tubular catheter having a proximal portion which remains outside of the living body when in use, the catheter also having a distal portion which is inserted into the living body when in use;

an optical fiber extending along the length of said catheter, said optical fiber having a generally distal light energy emanating section;

said elongated tubular catheter having a light-passing inner tubular member cylindrically surrounding said optical fiber and extending longitudinally along the length of the light energy emanating section of said optical fiber, said inner tubular member being made of a polymer material;

a light-passing inflatable balloon member at said distal portion of the catheter, said balloon member being in fluid-passing communication with said proximal portion of the catheter, said balloon member cylindrically surrounding said inner tubular member and extending longitudinally with respect to said inner tubular member, said balloon member being made of a polymeric material;

a light source communicating with said optical fiber to deliver light energy to said light energy emanating section; and

at least one of said inner tubular member and said balloon member includes light-reflective material which, upon light emanating through the light energy emanating section, reflects said light energy and activates photodynamic treatment fluid at a location within a living body, said light-reflective material being loaded into said polymer material from which said at least one of said inner tubular member and said balloon member is made.

5,797,869

MULTIPLE LUMEN CATHETER

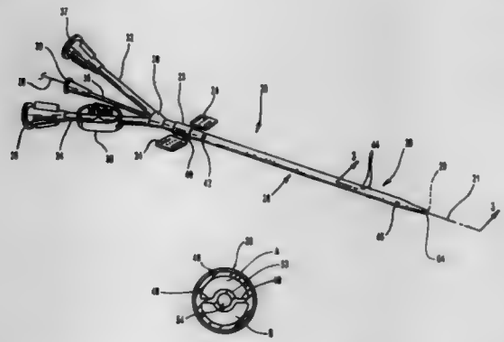
Geoffrey S. Martin, and Michael R. LeBlanc, both of Mississauga, Canada, assignors to Vas-Cath Incorporated, Mississauga, Canada

Continuation of Ser. No. 205,331, Mar. 3, 1994, Pat. No. 5,472,417, which is a continuation of Ser. No. 785,351, Oct. 30, 1991, abandoned, which is a continuation of Ser. No. 288,364, Dec. 22, 1988, Pat. No. 5,195,962. This application Jun. 7, 1995, Ser. No. 481,169

Claims priority, application Canada, Dec. 22, 1987, 555076

Int. Cl.[6] A61M *3/00*

U.S. Cl. 604—43 **23 Claims**



1. A multiple lumen catheter comprising:

a) a flexible elongate catheter body extending about a longitudinal axis and having:

(i) a distal end with a tapered tip,

(ii) a proximal end,

(iii) an outer wall, and

(iv) a septum extending between spaced points on the interior of said outer wall;

b) said outer wall of said catheter body and said septum together defining first and second lumens,

c) said outer wall further defining respective first and second apertures providing for fluid communication between said first and second lumens, respectively, and the exterior of said catheter body, said first and second lumens extending from said proximal end of said catheter body to said first and second apertures, respectively; and

d) a portion of said septum defining a third lumen, said third lumen having a cross-sectional area substantially smaller than that of either of said first and second lumens, and said third lumen extending centrally along said catheter body from said proximal end thereof to said distal end thereof, and said third lumen being separated from said first and second lumens by said septum,

e) said third lumen terminating at the distal terminus of said tapered tip in a third aperture.

5,797,870

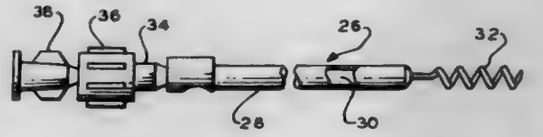
PERICARDIAL DELIVERY OF THERAPEUTIC AND DIAGNOSTIC AGENTS

Keith L. March, and Douglas P. Zipes, both of Carmel, Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Filed Jun. 7, 1995, Ser. No. 487,729

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 **25 Claims**



1. A method for delivering a gene therapy agent to epicardial and pericardial tissue of a patient's heart, comprising:

providing an elongated intravascular device having a distal tip configured to pierce a wall of the patient's heart.

guiding the distal tip of the device into the left ventricle of the patient's heart;

piercing the endocardium, the myocardium and the epicardium with the distal tip of the device, said distal tip being located in the pericardial space;

introducing the gene therapy agent through the distal tip; and

maintaining the gene therapy agent within the pericardial space for a sufficient period of time.

5,797,871

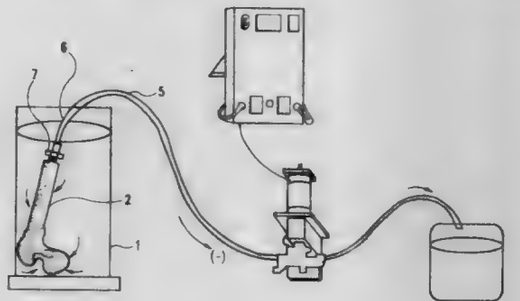
ULTRASONIC CLEANING OF ALLOGRAFT BONE

Lloyd Wolfinbarger, Jr., Norfolk, Va., assignor to LifeNet Research Foundation, Virginia Beach, Va.

Continuation-in-part of Ser. No. 646,520, May 7, 1996, and Ser. No. 395,113, Feb. 27, 1995, Pat. No. 5,556,379, which is a continuation-in-part of Ser. No. 293,206, Aug. 19, 1994, abandoned. This application May 7, 1996, Ser. No. 646,519

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 **25 Claims**



1. A method for producing a bone graft suitable for transplantation into a human, comprising:

sonicating said bone graft with a solvent comprising one or more detergents in an ultrasonic cleaner at a temperature from 37° to 50° C. and for a time period effective to produce a cleaned bone graft essentially free from bone marrow.

5,797,872

METHOD OF TREATING DOMESTIC ANIMALS SUCH AS COWS FOR MASTITIS AND APPARATUS FOR INJECTING OZONE INTO BREASTS

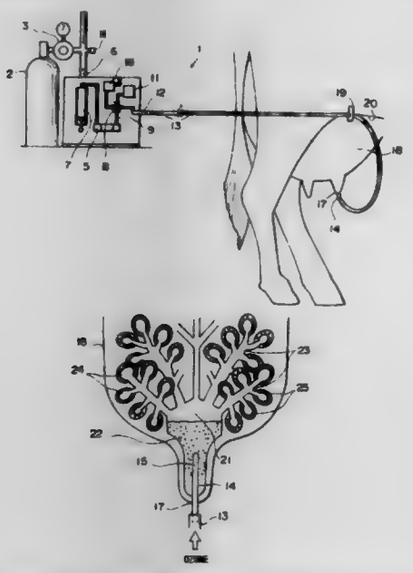
Atsuya Ogata, Hokkaido, and Shigeru Suzuki, Kanagawa, both of Japan, assignors to Nippon Ozone Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1997, Ser. No. 858,155

Claims priority, application Japan, Apr. 26, 1996, 8-131331; Sep. 12, 1996, 8-262282

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 **13 Claims**



1. A method of treating domestic animals such as cows for mastitis, comprising the step of:

injecting ozone through a teat orifice of a breast into the interior of the breast.

5,797,873

PROCESS FOR THE PREPARATION OF BONE CEMENTS COMPRISING ACTIVE COMPOUNDS

Hans-Werner Franz, Dieburg, and Berthold Nies, Fränkisch-Crumbach, both of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Germany

Continuation of Ser. No. 528,520, Sep. 15, 1995, abandoned. This application Nov. 10, 1997, Ser. No. 967,789

Claims priority, application Germany, Sep. 17, 1994, 44 33 201.7

Int. Cl.[6] A61F *2/28; A61M 31/00*

U.S. Cl. 604—49 **6 Claims**

1. A process for the formation of bone cements or replacements comprising an active compound selected from the group consisting of cytostatics, antibiotics, antiseptics and bone growth-promoting substances and additionally comprising a) about 50 to 75% by weight of a solid component comprising a finely divided polymer of acrylic acid esters, methacrylic acid esters or both and optionally additives, and b) about 25 to 50% by weight of a liquid component comprising an acrylic acid ester monomer, methacrylic acid ester monomer or both and optionally additives, wherein weight percents are based on the total weight of a+b,

said process comprising mixing the solid component and liquid component to form a liquid to semi-solid paste, optionally bringing the mixture into a desired shape and optionally hardening the mixture,

wherein the active compound is dissolved in an organic solvent selected from the group consisting of 2-pyrrolidone, N-methylpyrrolidone, dimethylsulfoxide, tetrahydrofuran, dioxane, ethylene glycol, propanediol or combinations thereof, and the amount of said organic solvent does not exceed 50% by weight, based on the liquid component (b), and wherein the active compound dissolved in an organic solvent is mixed with the liquid component or the solid component and the solid component is subjected to final sterilization prior to mixing the solid component and liquid component to form a liquid to semi-solid paste by means of radiation, ethylene oxide or both and the liquid component and organic solvent are subjected to sterile filtration.

5,797,874

METHOD OF DELIVERY OF GAS-SUPERSATURATED LIQUIDS

James Richard Spears, Bloomfield Hills, Mich., assignor to Wayne State University, Detroit, Mich.

Division of Ser. No. 353,137, Dec. 9, 1994, Pat. No. 5,599,296, which is a continuation-in-part of Ser. No. 273,652, Jul. 12, 1994, Pat. No. 5,569,180, which is a continuation-in-part of Ser. No. 152,589, Nov. 15, 1993, Pat. No. 5,407,426, which is a continuation-in-part of Ser. No. 818,875, Jan. 10, 1992, Pat. No. 5,309,776, which is a continuation of Ser. No. 655,078, Feb. 14, 1991, Pat. No. 5,086,620. This application Jun. 5, 1995, Ser. No. 465,425

Int. Cl.[6] A61M *25/00;37/00;31/00;* **A61B** *5/02*

U.S. Cl. 604—53 **16 Claims**



1. A method of delivering gas-supersaturated liquids from a source of gas into a site within an environment that is external in relation to a delivery system, the site being proximate to or remote from, but in fluid communication with, an exit port of the delivery system, the environment having a low concentration of the gas in relation to that of the source, comprising:

exposing a liquid carrier to a compressed form of the gas to form a gas-carrying liquid in the form of a gas-saturated pressurized liquid carrier;

compressing the gas-saturated pressurized liquid carrier to form a compressed carrier for transporting the gas-carrying liquid to eliminate gas nuclei from the delivery system;

providing the delivery system with a housing, including a guide wire disposed therewithin;

transporting the gas-saturated compressed carrier to the delivery system at a pressure (P); and

infusing the gas-saturated compressed carrier from the delivery system through the exit port to the environment at a pressure (p), where (P) exceeds (p), without associated bubble formation and cavitation proximate the exit port so that the gas is transported to the site in solution with the carrier in a supersaturated state, characterized by a fluid continuum of uniform density after emergence from the exit port.

5,797,875

BREAST PUMP ASSEMBLY AND METHOD OF USING SAME

Brian H. Silver, Cary, Ill., assignor to Medela, Incorporated, McHenry, Ill.

Division of Ser. No. 390,859, Feb. 16, 1995, Pat. No. 5,601,531. This application Nov. 5, 1996, Ser. No. 743,986

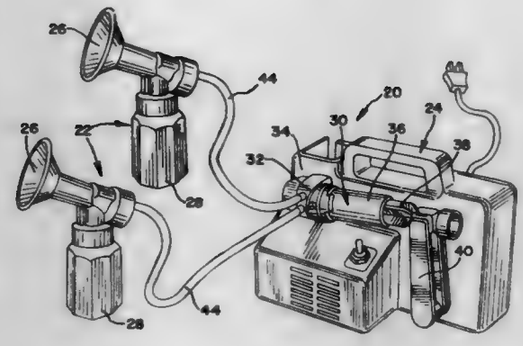
Int. Cl.[6] A61M *1/06*

U.S. Cl. 604—74 **6 Claims**

1. An improved breast pump assembly comprising:

a source of intermittent vacuum,

at least one breast pumping unit including a breast hood which is adapted to receive a woman's breast therein for the expression of milk, a container for expressed milk which is in fluid communication with said breast hood, and a tube connected at one end to a respective breast hood; and



a connector device for connecting said vacuum source to said breast pumping unit such that intermittent vacuum can thereby be generated in said breast hood to effect the expression of milk from a breast, said connector device having an internal pathway in communication with said vacuum source and a port in communication with said internal chamber, said port having sidewalls and being formed as a female receptacle of non-circular axial cross-section, and

a male connector on another end of said tube which male connector has a non-circular axial cross-section matched to that of said female receptacle such that said male connector is adapted to be snugly received within said female receptacle in a substantially airtight engagement with said sidewalls.

5,797,876

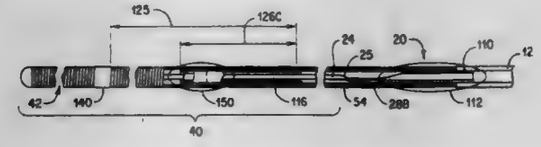
HIGH PRESSURE PERFUSION DEVICE

J. Richard Spears, Bloomfield Hills, Mich.; Philip S. Levin, Thompson, Conn., and Paul J. Zalesky, Huntington Beach, Calif., assignors to Therox, Inc., Costa Mesa, Calif., and Wayne State University, Detroit, Mich.

Filed Nov. 27, 1995, Ser. No. 563,057

Int. Cl.[6] A61M *37/00*

U.S. Cl. 604—95 **32 Claims**



1. A perfusion guidewire for the delivery of liquid, comprising:

a tubular housing defining a fluid lumen therethrough, the housing having a proximal end and a distal end, wherein the distal end of the housing is formed in the shape of an elongated tapered lip;

a core wire having a proximal end and a distal end, the proximal end of the core wire being secured to the tapered lip of the tubular housing;

a first coil mounted at the distal end of the core wire; and

an elongated cylindrical sheath extending from an area proximal to the tapered lip and over a portion of the core wire, the sheath defining a continuation of the fluid lumen and having at least one fluid exit.

5,797,877

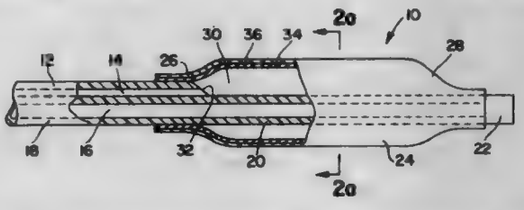
MEDICAL DEVICE BALLOONS CONTAINING THERMOPLASTIC ELASTOMERS

Bruce Hamilton, Lowell, and Ronald A. Sahatjian, Lexington, both of Mass., assignors to Boston Scientific Corporation, Natick, Mass.

Continuation of Ser. No. 530,825, Sep. 20, 1995, abandoned, which is a continuation of Ser. No. 364,431, Dec. 27, 1994, abandoned, which is a continuation of Ser. No. 130,283, Oct. 1, 1993, abandoned. This application May 24, 1996, Ser. No. 653,117

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 **15 Claims**



11. A catheter for insertion into a bodily conduit, said catheter comprising:

a shaft including a lumen internal to said shaft for delivery of fluid inflation media; and

a dilatation balloon bonded to said shaft and defining a chamber, said chamber being in fluid communication with said lumen to permit inflation of said chamber, wherein said dilatation balloon comprises, as a single, unitary balloon, a thermoplastic elastomer in combination with a non-compliant structural polymeric material, and said thermoplastic elastomer is not under tensile stress in said combination when said balloon is inflated.

5,797,878

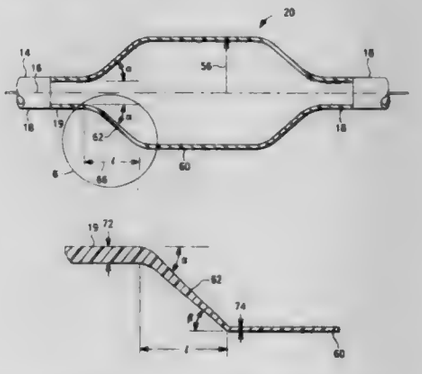
CATHETER HAVING OPTIMIZED BALLOON TAPER ANGLE

Jefferey Bleam, San Jose, Calif., assignor to Guidant Corporation, Santa Clara, Calif.

Filed Aug. 15, 1996, Ser. No. 698,094

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—196 **5 Claims**



1. An apparatus for insertion into a biological conduit, comprising:

a catheter tube having a proximal end, a distal end and an axis which extends between the proximal and distal ends; and

a balloon, the balloon being mounted on the distal end of the catheter, the balloon expanding from a collapsed configuration to an expanded configuration,

the balloon has a tapered portion and a working length, the tapered portion connecting the working length with the catheter tube, the tapered portion extending from the catheter tube

at an angle which remains within the range of 9° and 12° whether the balloon is an expanded, collapsed or deformed configuration,

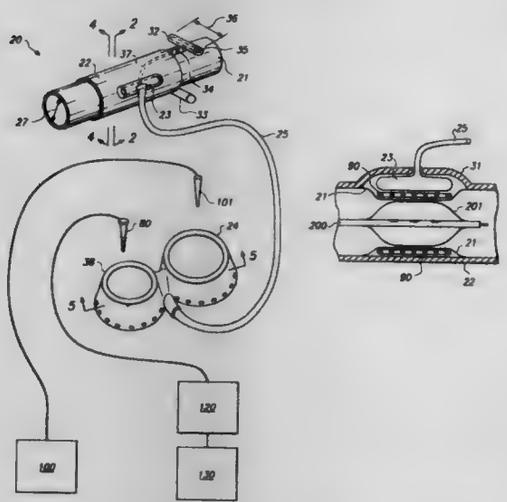
whereby, the angle is optimized to enable the balloon to slide within the biological conduit.

5,797,879

APPARATUS AND METHODS FOR PROVIDING SELECTIVELY ADJUSTABLE BLOOD FLOW THROUGH A VASCULAR GRAFT

William M. DeCampli, 8 Heritage Ct., Atherton, Calif. 94027

Filed Aug. 26, 1996, Ser. No. 703,096
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—96 **6 Claims**



1. Apparatus for adjusting blood flow within a vascular graft, the vascular graft being formed of a compliant material having an exterior surface and a cross-section, the apparatus comprising:

a balloon disposed against the exterior surface of the vascular graft;

a sheath disposed around the balloon and the vascular graft, the sheath being substantially less compliant than the vascular graft, the sheath having a portion forming an aperture adjacent to the balloon;

a first subcutaneously implantable access port; and

a substantially non-distendable lumen disposed through the aperture in the sheath to provide fluid communication between the balloon and the first subcutaneously implantable access port;

wherein inflation of the balloon to constrict the vascular graft causes substantially no crimping or infolding of the compliant material.

5,797,880

CATHETER AND PLACEMENT NEEDLE ASSEMBLY WITH RETRACTABLE NEEDLE

Timothy J. Erskine, Sandy, Utah, assignor to Becton and Dickinson and Company, Franklin Lakes, N.J.

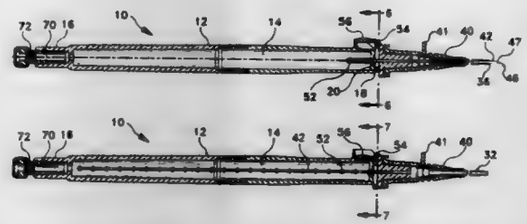
Filed Sep. 5, 1996, Ser. No. 706,578
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—110 **13 Claims**

1. A catheter and needle assembly comprising:

a hollow handle with a longitudinal axis defining a cavity, said handle having a proximal end and a distal end;

a catheter having a proximal end, a distal end and an open passageway therethrough;

a catheter hub affixed to the catheter proximal end, said catheter hub being releasably mounted adjacent to said distal end of



said hollow handle so that said catheter projects axially from said distal end of said handle;

an elongate needle with an open bore therethrough with a sharp distal point and a proximal end, said needle having a first position wherein said needle is disposed within said handle and through said opening into said catheter passageway so that said sharp distal point of said needle projects axially beyond said distal end of said catheter;

a spring associated with said needle to urge said needle to a second position wherein said needle is substantially within said cavity;

a releasable latch associated with said handle to retain said needle in said first position, said latch movable to a release position wherein said latch no longer retains said needle in said first position; and

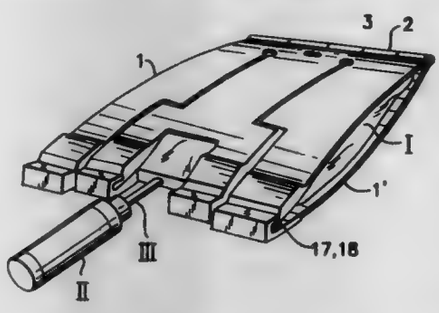
a one-way valve mounted on said proximal end of said needle for relative movement with respect to said hollow handle to allow fluid flow into said cavity from said needle bore and to substantially prevent fluid flow from said cavity into said needle bore.

5,797,881

INTRAVENOUS INFUSION APPARATUS

Amir Gadot, 53, Bialik St., Givat Shemuel 51905, Israel

Filed Oct. 24, 1996, Ser. No. 736,394
Claims priority, application Israel, Jun. 20, 1996, 118689
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—133 **12 Claims**



1. An intravenous infusion system comprising a mechanical clamp for expelling an infusion liquid from a substantially rectangular, flexible bag containing said liquid, said bag being of a rectangular shape having a length and a width, with the length being greater than the width and having a port and spout for connection of an injection needle by a flexible tube at a first short side thereof and a perforated lug at a second short side thereof, said mechanical clamp comprising a pair of superposed, rectangular plates of a resilient material of a length greater than the length of said bag and of a width substantially co-extensive with the width of said bag in an emptied state of the bag, said plates being connected along first ends thereof by a hinge assembly and being provided along second ends thereof with an operating locking assembly, each of said two plates being divided into at least two sections by at least one longitudinally extending slot, said bag being configured to be placed between said two plates with its lug adjacent to said hinge assembly and with said port and spout adjacent said locking assembly, whereupon by closing said clamp

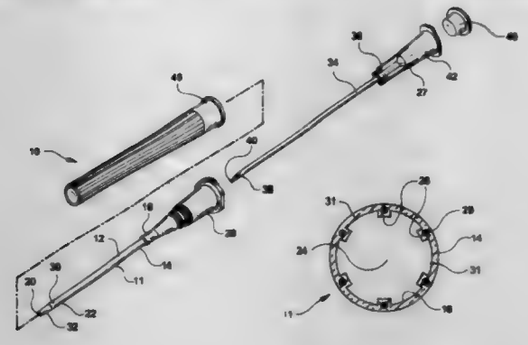
over said bag by said locking assembly, positive pressure is applied to said bag to expel said liquid out through said port to said needle.

5,797,882

ARTERIAL CATHETER AND CATHETER/NEEDLE ASSEMBLY WITH IMPROVED FLOW CHARACTERISTICS AND METHOD FOR ITS USE

Edmund Robert Purdy, Fruit Heights, Utah, and Charles W. Daugherty, Jamestown, Ohio, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 23, 1996, Ser. No. 702,084
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—164 **17 Claims**



1. An arterial catheter and inserter needle assembly comprising:

an arterial catheter comprising an elongate tube having a sidewall with an inside surface and an outside diameter, a proximal end, an open distal end having a tip portion and a hollow bore therethrough with an inside diameter, a hub attached to said proximal end in fluid communication with said hollow bore, said inside surface of said hollow bore having a plurality of inward projections disposed longitudinally from said proximal end to said distal end, said tip portion having at least one hole through said sidewall into said bore and comprising a taper of said sidewall outside diameter distally from said at least one hole to said open distal end, said inward projections in said bore being substantially diminished on said inside surface at said taper; and

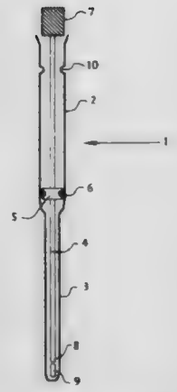
an elongate inserter needle disposed within the arterial catheter having a proximal end, a distal end, and a passageway therethrough sized to fit within said inside diameter of said bore of said arterial catheter, a hub attached at said proximal end of said needle sized to releasably fit within said hub of said arterial catheter, a sharpened point on said distal end of said needle, said needle having a sufficient length so that said sharpened point of said needle extends beyond said tapered tip portion of said catheter when said inserter needle is disposed within said bore of said catheter and said needle hub is positioned in said catheter hub.

5,797,883

MEDICAL DEVICE FOR REMOVAL OR INJECTION OF BIOLOGICAL MATERIAL BY REMOTE CONTROL

Jean-Claude Prince, 72, rue du Vexin, 60530 Ercuis, France

Filed Jan. 19, 1995, Ser. No. 374,951
Claims priority, application France, Jan. 19, 1994, 94 00545
Int. Cl.[6] A61M *5/178*
U.S. Cl. 604—170 **17 Claims**



5. A device for sampling biological materials, comprising:

(a) a tube having a front segment and a rear segment, wherein:

the outer diameter of the front segment is smaller than the outer diameter of the rear segment;

the inner diameter of the front segment is smaller than the inner diameter of the rear segment; and

the front segment has a distal opening;

(b) a rod having a piston having an outer diameter substantially equal to the inner diameter of the rear segment, wherein, when the rod is engaged within the tube, the piston is positioned within the rear segment, such that, when the rod is partially withdrawn from the tube, a negative pressure is created in the front segment that is greater than the negative pressure created within part of the rear segment by the partial withdrawal of the rod, thereby enabling sampling of the biological materials through the distal opening; and

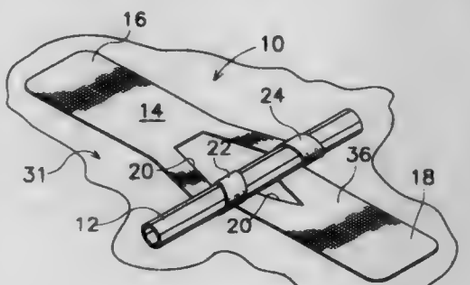
(c) an outer tube of rigidity greater than that of the tube, such that when the tube and rod are engaged within the outer tube, the tube and the rod obtain the shape of the outer tube.

5,797,884

MEDICAL TUBE/WIRE HOLDING DEVICE AND ASSOCIATED TUBE/WIRE HOLDING METHOD

Timothy N. Byrd, 1267 Old Cades Cove Rd., Townsend, Tenn. 37882

Continuation-in-part of Ser. No. 412,896, Mar. 29, 1995, Pat. No. 5,520,656. This application May 3, 1996, Ser. No. 642,460
Int. Cl.[6] A61M *5/32*
U.S. Cl. 604—180 **7 Claims**



1. A medical tube/wire holding device for maintaining the desired position of at least one medical tube/wire, said holding device comprising:

a flexible body having a lower surface and defining first and second end portions, said body further defining an opening therethrough disposed between said first and second end portions such that said body defines first and second engaging straps disposed on opposite sides of said opening, said opening being adapted to receive therethrough at least a selected portion of said second end portion of said body after at least a portion of said body has been received around said medical tube/wire;

a mechanism for releasably securing said first end portion of said body to a supporting surface; and

a mechanism for securing said body about at least one medical tube/wire after said preselected portion of said second end portion of said body is received through said opening in said body, said mechanism for securing said first and second engaging straps about at least one medical tube/wire including a locking bar carried by said second end portion of said body, said locking bar defining first and second opposite end portions for releasably engaging said first and second engaging straps, respectively, and defining greater rigidity than said flexible body, whereby said selected portion of said second end portion is releasably prohibited from moving through said opening in said body.

5,797,885

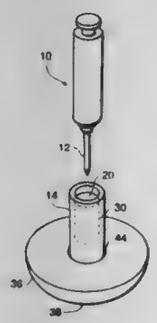
APPARATUS AND METHOD FOR RECAPPING SYRINGE NEEDLES

Gregory R. Rubin, 24704 Calle Conejo, Calabasas, Calif. 91302

Filed Jul. 28, 1997, Ser. No. 901,435

Int. Cl.[6] A61M *5/32*

U.S. Cl. 604—192 **15 Claims**



1. A novel syringe cap assembly for receiving and retaining a used syringe needle, and retentively holding same therein, said novel needle cap assembly comprising:

a) a needle cap having a cylindrically shaped side wall and a bottom wall and an end wall extending across one end of the side wall and an open end opposite the end wall, said cylindrically shaped side wall having an axial extent from the open end to the end wall;

b) a needle cap retaining member frictionally held within an interior chamber of said needle cap, said retaining member being formed of a material which will receive penetration of a needle therein, and frictionally and retentively hold the same and yet allow a pulling of the needle from the retaining member if required, said retaining member having an axial length extending for a greater portion of the overall axial extent of the needle cap side wall to enable relatively tight gripping force to be applied to the syringe needle for a substantial portion of its length; and

c) a lid capable of being disposed over the open end of said needle cap after the syringe needle has been inserted into the retaining member.

5,797,886

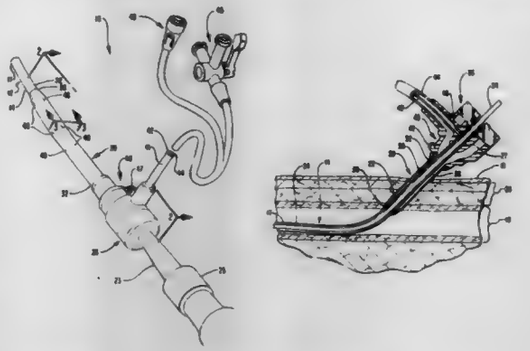
CATHETER APPARATUS WITH MEANS FOR SUBCUTANEOUS DELIVERY OF ANESTHETIC AGENT OR OTHER FLUID MEDICAMENT

Robert Roth, Festus, Mo.; Fred P. Lampropoulos, Sandy, Utah; Jim Mottola, South Jordan, Utah; Arlin Dale Nelson, Midvale, Utah, and Jerrold L. Foote, Salt Lake City, Utah, assignors to Merit Medical Systems, Inc., South Jordan, Utah

Continuation-in-part of Ser. No. 417,824, Apr. 6, 1995, Pat. No. 5,533,986, which is a continuation-in-part of Ser. No. 198,625, Feb. 18, 1994, Pat. No. 5,405,334. This application Mar. 22, 1996, Ser. No. 622,458

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—264 **21 Claims**



1. An indwelling catheter apparatus comprising:

catheter means for insertion through subcutaneous tissue, said catheter means comprising an indwelling cannula adapted for insertion through subcutaneous tissue into a patient's body, and having an indwelling distal end and a proximal hub end adapted for securement outside of the body;

sheath means disposed about a portion of the canula for delivering fluid medicament to essentially only the subcutaneous tissue surrounding said cannula, said sheath means including a plurality of delivery holes, each of said delivery holes providing a fluid communication path between the sheath means and the surrounding subcutaneous tissue for said fluid medicament; and

light permeable hub means for delivering fluid medicament to the sheath means, the light permeable hub means joined with ultraviolet activated adhesive in a fluid-tight manner to a proximal portion of the sheath means such that the sheath means is retained in a predetermined position with respect to the hub means.

5,797,887

MEDICAL DEVICE WITH A SURFACE ADAPTED FOR EXPOSURE TO A BLOOD STREAM WHICH IS COATED WITH A POLYMER CONTAINING A NITROSYL-CONTAINING ORGANO-METALLIC COMPOUND WHICH RELEASES NITRIC OXIDE FROM THE COATING TO MEDIATE PLATELET AGGREGATION

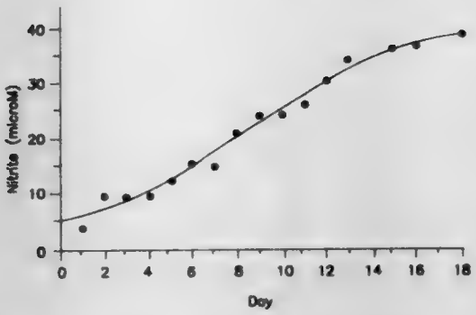
Gerald M. Rosen, Lutherville; William R. Herzog, Jr., and Sovitj Pou, both of Baltimore, all of Md., assignors to Novovasc LLC, Baltimore, Md.

Filed Aug. 27, 1996, Ser. No. 703,646

Int. Cl.[6] A61M *5/32;25/00*

U.S. Cl. 604—265 **16 Claims**

1. In a method for producing a medical device capable of inhibiting the aggregation of platelets from blood flowing in a living being resulting from exposure of the blood to a medical device by coating the surface of the foreign body prior to contact therewith, with a physiologically acceptable polymer coating which contains dissolved or dispersed therein a therapeutic drug, the improvement wherein the polymer coating is insoluble in the



blood and has a porosity sufficiently small to inhibit diffusion of blood-borne reductants from entering the coating and sufficiently large to allow passive diffusion of nitric oxide from within the polymer coating into the blood stream of the living being and contains dissolved or dispersed therein as the therapeutic drug and the source of the nitric oxide an amount of a nitrosyl-containing organometallic compound, which slowly decomposes at body temperature within the polymer coating when the device is exposed to the blood stream of the living being and in so doing releases from the coating into the blood stream an amount of nitric oxide effective to inhibit platelet aggregation which would otherwise be promoted by contact of the blood with the foreign body.

5,797,888

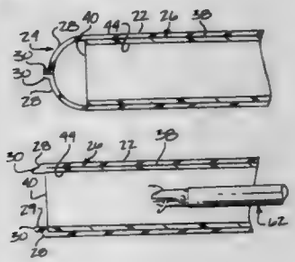
CANNULA WITH UNIVERSAL SEAL AND METHOD OF INTRODUCING INSTRUMENTS THERETHROUGH

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 618,328, Mar. 19, 1996. This application Jul. 25, 1996, Ser. No. 672,843

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—280 **19 Claims**



1. A cannula for insertion through an anatomical cavity wall to establish communication with the anatomical cavity, said cannula comprising

an elongate tubular body having a distal portion adapted to extend through the anatomical cavity wall into the anatomical cavity and a proximal portion adapted to be disposed externally of the anatomical cavity;

a seal disposed along said distal portion of said tubular body and having a variable size passage to permit instruments of varying sizes to be passed therethrough, said seal being biased toward a closed position wherein said variable size passage is closed and being movable to an open position wherein said variable size passage is open; and

a tubular pusher disposed in said tubular body and insertable in said seal to move said seal from said closed position to said open position allowing instruments of various sizes to be introduced through said tubular body without contacting said seal, said tubular pusher being withdrawable from said seal such that said seal is biased toward said closed position to contact instruments of various sizes in said passage;

said seal having a configuration to sealingly engage instruments of various sizes in said passage when said pusher is withdrawn from said seal.

5,797,889

MEDICAL DEVICE HAVING A CONNECTOR PORTION WITH AN IMPROVED SURFACE FINISH

Christopher P. Steinman, Sandy City, Utah, assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 19, 1996, Ser. No. 667,523

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—283 **10 Claims**



1. A medical device, comprising:

an adapter portion for connection to another medical device wherein the adapter portion has a female luer with an internal surface that mates with a male luer portion of another medical device and wherein the internal surface of the female luer has an average surface roughness of at least about 10 micro-inches.

5,797,890

SUPPORT DEVICES FOR RETAINING A MALE URINARY INCONTINENCE CONDOM CATHETER ONTO A PENIS

Victor H. Goulter, and Barbara Goulter, both of San Francisco, Calif., assignors to Goulter Medical Corporation, Portland, Oreg.

Filed Feb. 6, 1996, Ser. No. 597,179

Int. Cl.[6] A61F *5/44*

U.S. Cl. 604—351 **12 Claims**

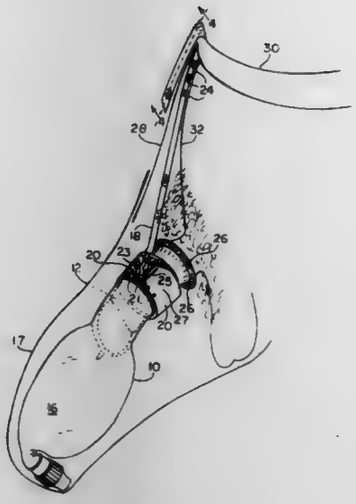
1. A combination of a device for retaining an external urinary catheter onto a penis of a wearer, said external urinary catheter having a proximal end for encircling the penis of the wearer and an undergarment having a waistband, said combination comprising:

an undergarment having a waistband to be worn about the wearer;

a band for encircling said proximal end of said external urinary catheter;

a support strap having a first end and a second end, said first end of said support strap being attached to said band;

and an adjustment means for adjusting the length of said support strap comprising a plurality of attachment means positioned at different positions along the length of said support strap, wherein said plurality of attachment means are attached to



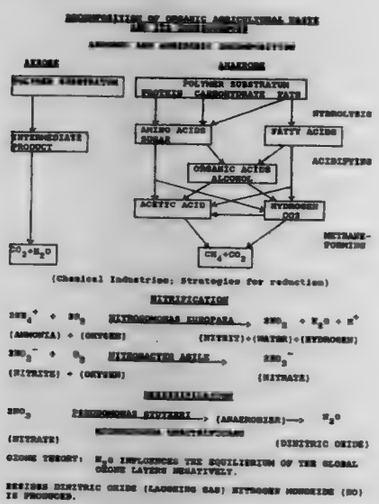
said second end of said support strap to said waistband of the undergarment having an expandable pouch for supporting said external urinary catheter.

5,797,891

SANITARY CONTROL DEVICE

Jack G. Wiersma, Jupiter, Fla., assignor to Nouveau Technologies, Inc., Tequesta, Fla.

Filed Oct. 29, 1996, Ser. No. 741,143
Int. Cl.[6] A61F 13/15;13/20
U.S. Cl. 604—360
5 Claims



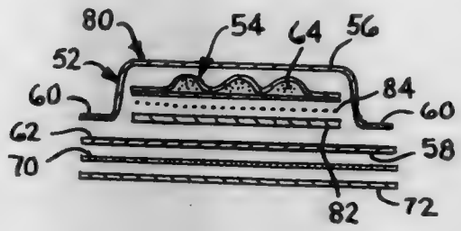
1. A sanitary control device comprising a means for receiving absorbing fluids and solids emitted from a human body, said means for receiving selected from the group consisting of diapers, women's sanitary products, and bedpans, and said means containing a superabsorbent polymer or non-woven receptor material, and a non-steroidal colloidal composition having an effective amount of dry triterpene saponin stored on said means for receiving; wherein said colloidal composition is capable of neutralizing odors from the absorbed fluids and solids.

5,797,892

TOILET TRAINING AID PROVIDING A DIMENSIONAL CHANGE

Frank Steven Glaug; Michael Scott Brunner; Faith Eileen Cochrane; Debra Hartley Durrance, all of Appleton; Christopher Peter Olson, Neenah; Robert Joseph Schleinz, and Richard Harry Thiessen, both of Appleton, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 362,291, Dec. 22, 1994, Pat. No. 5,649,914. This application May 1, 1995, Ser. No. 432,473
Int. Cl.[6] A61F 7/00;13/15
U.S. Cl. 604—361
8 Claims



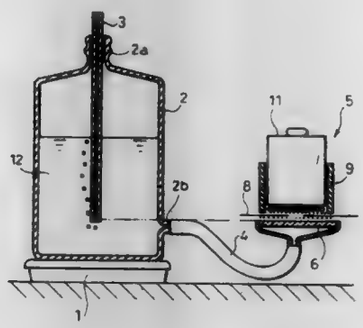
1. A toilet training aid for use with a garment, comprising:
a pad comprising:
a dimensional change member having longitudinal and transverse axes and a height dimension perpendicular to a plane formed by the longitudinal and transverse axes, the dimensional change member adapted to expand to at least about 2 times the height dimension in 10 seconds when immersed in distilled water; and
attachment means for attaching the pad to the garment;
the pad being formed of liquid permeable materials such that liquid can pass thorough the pad.

5,797,893

ABSORBING AGENT COMPOSITION, ABSORBENT MATERIAL, AND ABSORBENT PRODUCT CONTAINING ABSORBENT MATERIAL

Katsuyuki Wada, Himeji; Kunihiko Ishizaki, Sulta, and Kinya Nagasuna, Himeji, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Aug. 27, 1996, Ser. No. 703,882
Claims priority, application Japan, Sep. 1, 1995, 7-224928; Dec. 12, 1995, 7-323305
Int. Cl.[6] A61F 13/15;13/20
U.S. Cl. 604—372
12 Claims



1. An absorbing agent composition having a diffusing absorbency index under pressure of 1.5 g/g·min or higher with respect to a 0.9 weight percent sodium chloride solution under a load of 20 g/cm^2.

5,797,894

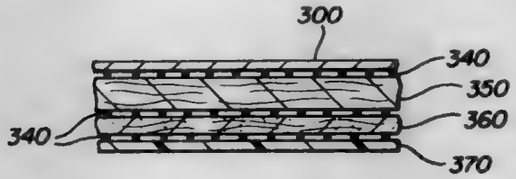
UNITIZED SANITARY NAPKIN

Serge Cadieux, Pierrefonds, and Yvon Levesque, Montreal, both of Canada, assignors to Johnson & Johnson, Inc., Canada

Continuation of Ser. No. 161,995, Dec. 2, 1993, abandoned, which is a continuation of Ser. No. 979,369, Nov. 20, 1992, abandoned, which is a continuation of Ser. No. 851,270, Mar. 13, 1992, abandoned, which is a continuation of Ser. No. 601,491, Oct. 22, 1990, abandoned, which is a continuation of Ser. No. 389,701, Aug. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 242,273, Sep. 12, 1988, abandoned. This application Oct. 11, 1994, Ser. No. 321,384

Int. Cl.[6] A61F *13/46*

U.S. Cl. 604—378 16 Claims



1. A unitized absorbent structure having respective cover, transfer, and reservoir layers, characterized in that:

a) at least two of said respective layers are in physical contact with one another such that fluid transfer is promoted therebetween;

b) said respective layers have a predetermined positive density gradient from the cover layer to the reservoir layer;

c) each of said layers has preselected fluid retention and transfer capacity;

d) said cover and transfer layers tend to promote transfer to the next subsequent layer in preference to dispersion of fluid over their length and breadth, while said reservoir layer tends to promote dispersion and retention of fluid throughout its length and breadth,

e) said transfer layer comprises hydrophilic material, and

f) said fluid reservoir layer has a pore size distribution in the wet state such that between about 90% and 100% of the pores are less than 300 μm in radius and about between 0% and 10% of the pores are greater than 300 μm in radius.

5,797,895

METHOD OF BONDING AN ELASTIC MATERIAL TO A SUBSTRATE AND ARTICLE MANUFACTURED BY SAID METHOD

Urban Widlund, Mölnlycke, and Robert Kling, Skene, both of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

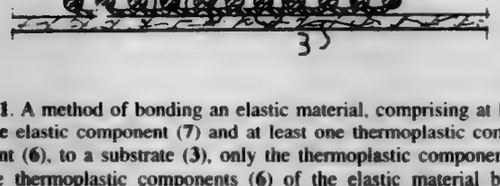
PCT No. PCT/SE94/01236, § 371 Date Jun. 18, 1996, § 102(e) Date Jun. 18, 1996, PCT Pub. No. WO95/17296, PCT Pub. Date Jun. 29, 1995

PCT Filed Dec. 21, 1994, Ser. No. 663,062

Claims priority, application Sweden, Dec. 21, 1993, 9304232

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 16 Claims



1. A method of bonding an elastic material, comprising at least one elastic component (7) and at least one thermoplastic component (6), to a substrate (3), only the thermoplastic component or the thermoplastic components (6) of the elastic material being bonded to the substrate (3), said elastic component being held stretched during bonding, wherein the bonding is effected by ultrasonic welding and wherein the elastic material is bonded only to said substrate (3).

5,797,896

DISPOSABLE ABSORBENT ARTICLE HAVING A LANDING MEMBER FOR ENGAGING WITH A HOOK-TYPE FASTENING MEMBER

Christoph Johann Schmitz, Euskirchen-Stotzheim, Germany, assignor to The Procter & Gamble Company, Cincinnati, Ohio

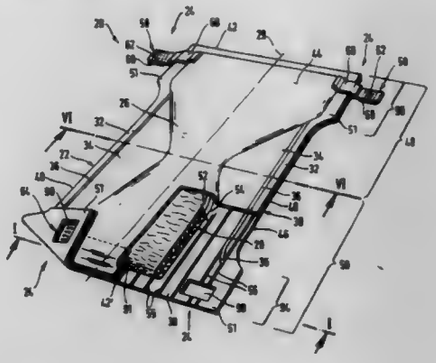
PCT No. PCT/US95/16676, § 371 Date Jun. 30, 1997, § 102(e) Date Jun. 30, 1997, PCT Pub. No. WO96/20677, PCT Pub. Date Jul. 11, 1996

PCT Filed Dec. 13, 1995, Ser. No. 860,125

Claims priority, application European Pat. Off., Dec. 29, 1994, 94120876

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—391 13 Claims



1. An absorbent article comprising:

a backsheet having two longitudinal sides, a front transverse edge, a front waist region located along the the front transverse edge, a back transverse edge, and a back waist region located along the back transverse edge;

a mechanical closing system comprising:

at least two hook-type fastening members located in the back waist region and extending transversely beyond each longitudinal side, and

a landing member for mechanically engaging with the hook-type fastening members; and

an inner layer covering at least a part of the backsheet on a user-facing side thereof in the region of the landing member, wherein the landing member comprises at least one cut-out section extending through the backsheet and exposing the underlying inner layer, the inner layer being adapted to mechanically engage with the hook-type fastening members.

5,797,897

PRE-SLIT INJECTION SITE AND TAPERED CANNULA

Steven C. Jepson; Thomas E. Dudar, both of Palatine; Brian D. Zdeb, Round Lake, and Vince C. Desecki, Ingleside, all of Ill., assignors to Baxter International Inc., Deerfield, Ill.

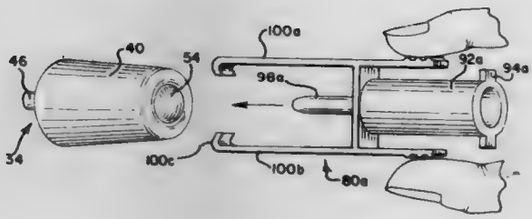
Continuation of Ser. No. 183,110, Jan. 18, 1994, abandoned, and a continuation-in-part of Ser. No. 147,414, Jan. 25, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 470,380

Int. Cl.[6] A61B *29/00*

U.S. Cl. 604—412 31 Claims

1. A cannula insertion member for being inserted into a pre-slit resealable injection site, said insertion member comprising:

a tube having a central bore that extends throughout said tube for an entire length of said tube and terminates at an aperture



that has substantially the same cross-sectional circumference as at least portions of the central bore, the central bore defining a fluid flow path therein, said tube having a distal end region for penetrating said resealable injection site:

said distal end region defining the aperture in the distal end of said distal end region through which fluid can flow to or from said fluid flow path;

said distal end region including a tapered exterior surface to facilitate insertion, said distal end being so constructed and arranged to allow multiple insertions into said resealable injection site and allowing the injection site to reseal after each such insertion; and

locking means for removably locking said cannula insertion member to said resealable injection site.

5,797,898

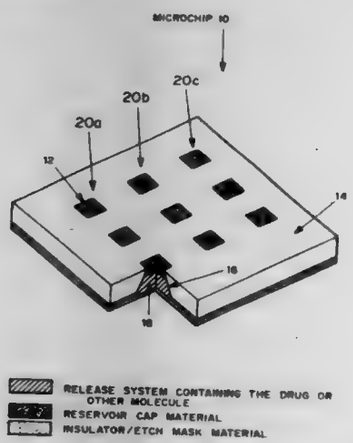
MICROCHIP DRUG DELIVERY DEVICES

John T. Santini, Jr., Jackson, Mich.; Michael J. Cima, Lexington, and Robert S. Langer, Newton, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 2, 1996, Ser. No. 675,375

Int. Cl.[6] A61K *9/22*

U.S. Cl. 604—890.1 **29 Claims**



1. A microchip device for the release of molecules comprising a substrate,

at least two reservoirs in the substrate containing the molecules, and

each reservoir having a reservoir cap positioned on the reservoir over the molecules so that the molecules are released from the device by diffusion through or upon disintegration of the reservoir caps, and

wherein release of the molecules from the reservoir is controlled by said diffusion through or disintegration of the reservoir cap.

5,797,899

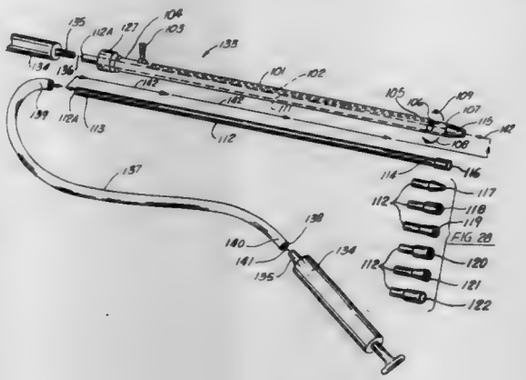
INSTRUMENTATION FOR LAPAROSCOPIC SURGICAL ENDOSCOPIC INSERTION AND APPLICATION OF LIQUID, GEL AND LIKE MATERIAL

Eugene B. Tilton, Jr., 513 Dorrington Blvd., Metairie, La. 70005

Continuation-in-part of Ser. No. 644,504, May 10, 1996, which is a continuation-in-part of Ser. No. 625,098, Apr. 1, 1996, which is a continuation-in-part of Ser. No. 407,409, Mar. 17, 1995, Pat. No. 5,503,623. This application Sep. 24, 1996, Ser. No. 718,861

Int. Cl.[6] A61M *5/00*

U.S. Cl. 606—1 **30 Claims**



1. A method of dispensing a liquid medicinal material into a patient's body cavity, comprising the steps of:

a) surgically forming a port through the patient's body cavity wall;

b) wherein the formation of said port includes placing a first tubular member, having proximal and distal end portions and an elongated bore into the patient's body cavity said proximal end having a valving member that can valve gas flow through the bore and in between the proximal and distal end portions;

c) inserting a second tubular member into the bore of the first tubular member and through said valving member, the second tubular member being an instrument body with a bore having a central longitudinal axis and a moving distal end portion that can be manipulated by a surgeon into positions deviating away from the axis;

d) valving the flow of gases between the patient's body cavity and the proximal end of the first tubular member with the valving member;

e) placing a flexible dispensing tube into the bore of the second tubular member, the second tubular member having a distal end with a nozzle for applying the liquid with a desired spray pattern;

f) extending the distal end of the second tubular member into the patient's body cavity;

g) attaching a syringe to the proximal end of the dispensing tube;

h) transmitting the liquid medicinal material from the syringe into the patient's body cavity via the nozzle; and

i) articulating the instrument body distal end to flex the distal end of the dispensing tube.

5,797,900

WRIST MECHANISM FOR SURGICAL INSTRUMENT FOR PERFORMING MINIMALLY INVASIVE SURGERY WITH ENHANCED DEXTERITY AND SENSITIVITY

Akhil J. Madhani, and J. Kenneth Salisbury, both of Cambridge, Mass., assignors to Intuitive Surgical, Inc., Mountain View, Calif.

Filed May 16, 1997, Ser. No. 857,655
Int. Cl.[6] A61B *17/00*; B25J *17/00*
U.S. Cl. 606—1 28 Claims



1. An articulated surgical instrument for minimally invasive surgery comprising an elongate support member, a wrist member, first and second capstans, first and second work members; first, second, third and fourth intermediate idler pulleys; and first, second, third and fourth cables wherein:

the elongate support member has a proximal end and a distal end and a support axis running longitudinally along the elongate support member from the proximal end to the distal end;

the wrist member has a proximal end and a distal end and a wrist axis running longitudinally along the wrist member from the proximal end to the distal end;

the proximal end of the wrist member is attached to the distal end of the support member by a wrist joint such that the wrist member can pivot about a joint axis perpendicular to the support axis and perpendicular to the wrist axis;

the first and second capstans are rotatably mounted to the distal portion of the wrist member by respective first and second capstan joints such that the axis of rotation of each of the first and second capstan joints is perpendicular to the wrist axis and perpendicular to the joint axis;

the first and second opposed work members are coupled to the respective first and second capstans;

the first, second, third and fourth intermediate idler pulleys are rotatably mounted to the wrist member about the wrist joint;

each intermediate idler pulley is engaged by one of the first, second, third and fourth cables; and

each capstan is drivingly engaged by two of the first, second, third and fourth cables;

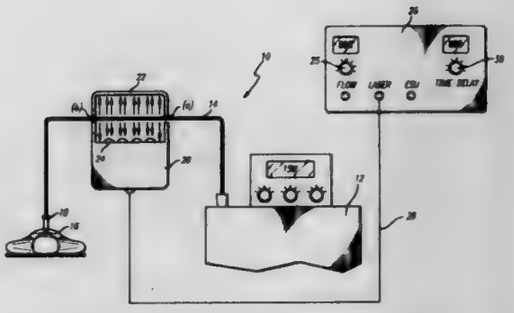
whereby selective actuation of the cables operates to pivot the wrist member about the joint axis and pivot the work members independently of each other about the capstan joints.

5,797,901

AUTOMATIC ACTIVATION SYSTEM FOR A MEDICAL DIAGNOSTIC MONITORING AND SURGICAL APPARATUS AND METHOD THEREFORE

Ioan Cosmescu, 1449 N. 22nd St., Phoenix, Ariz. 85022

Filed Sep. 20, 1996, Ser. No. 717,109
Int. Cl.[6] A61B *5/00*
U.S. Cl. 606—10 16 Claims



1. An automatic activation system comprising, in combination:

a surgical laser apparatus having means for generating a laser beam;

a fiber optic for receiving said laser beam upon activation of the laser surgical apparatus; and

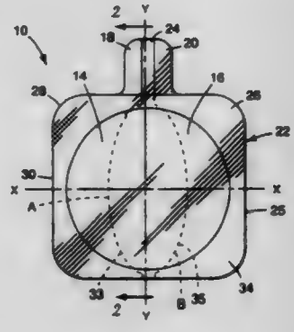
optical sensor means for detecting said laser beam being transmitted through an exterior surface said fiber optic and in turn emitting an output signal to a medical apparatus having means for activation upon receiving said output signal from the optical sensor means.

5,797,902

BIOMEDICAL ELECTRODE PROVIDING EARLY DETECTION OF ACCIDENTAL DETACHMENT

Samuel G. Netherly, Afton, Minn., assignor to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

Filed May 10, 1996, Ser. No. 644,799
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—32 8 Claims



1. A biomedical electrode, comprising:

an electrically non-conductive backing;

two conductive plates required for Contact Quality Monitoring circuitry separated from each other along a longitudinal axis of the backing, each conductive plate contacting the electrically non-conductive backing, and each conductive dilate having a curvilinear interior edge adjoining the longitudinal axis which edge is also symmetrical about an axis orthogonal to the longitudinal exit; and optionally,

a field of conductive adhesive in contact with both the conductive plates, wherein

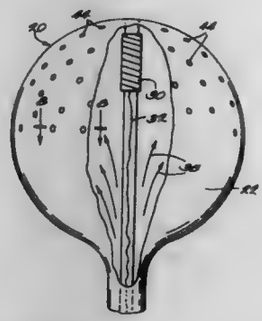
the minimum distance separating the conductive plates along the longitudinal axis at a first point distal from an outside edge of the biomedical electrode intersecting the longitudinal axis is substantially greater than the minimum distance separating the conductive plates at a second point more proximal to the outside edge of the biomedical electrode.

5,797,903

TISSUE HEATING AND ABLATION SYSTEMS AND METHODS USING POROUS ELECTRODE STRUCTURES WITH ELECTRICALLY CONDUCTIVE SURFACES

David K. Swanson, Mountain View; Dorin Panescu, Sunnyvale; James G. Whayne, Saratoga; Patrick M. Owens, Cupertino, and Russell B. Thompson, Los Altos, all of Calif., assignors to EP Technologies, Inc., Sunnyvale, Calif.

Filed Apr. 12, 1996, Ser. No. 631,252
Int. Cl.[6] A61B 17/39
U.S. Cl. 606—34 99 Claims



1. An electrode assembly comprising

a wall having an exterior peripherally surrounding an interior area,

at least a portion of the wall comprising an electrically conductive material, and

a lumen for conveying a medium containing ions into the interior area,

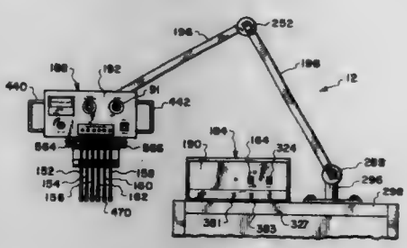
wherein at least a portion of the wall also comprises a porous material sized to pass ions contained in the medium without allowing substantial medium perfusion through the porous material.

5,797,904

MULTI-PROBE BLEND ELECTROLYSIS MACHINE

Margaret M. Smith, Reno, Nev., assignor to Clareblend, Inc., Sparks, Nev.

Filed Dec. 27, 1996, Ser. No. 774,962
Int. Cl.[6] A61B 17/41
U.S. Cl. 606—36 6 Claims



1. An electrolysis machine comprising:

a main unit containing first electronic components, said main unit being fixedly located on a supporting surface; and

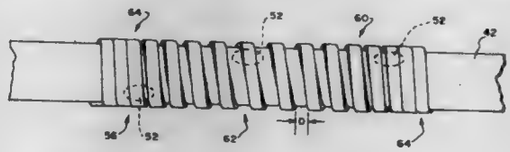
an arm unit having an outer end and an inner end, said arm unit permitting movement of said outer end relative to said inner end and said main unit, said inner end being fixable to said supporting surface, said outer end being free, a chassis mounted on said outer end, said chassis containing second electronic components, a plurality of probes mounted on said chassis, said probes electrically connecting with said electronic components, each said probe to be usable to connect with a hair follicle to effect removal of hair, said chassis having protruding handle means, said handle means being graspable permitting manual adjusting movement of said chassis to said arm unit relative to said supporting surface.

5,797,905

FLEXIBLE TISSUE ABLATION ELEMENTS FOR MAKING LONG LESIONS

Sidney D. Fleischman, Menlo Park; Russell B. Thompson, Los Altos; Dorin Panescu, Sunnyvale, and David K. Swanson, Mountain View, all of Calif., assignors to E. P. Technologies Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 287,192, Aug. 8, 1994, abandoned, and Ser. No. 439,824, May 12, 1995, abandoned. This application Nov. 13, 1995, Ser. No. 558,131
Int. Cl.[6] A61B 17/36
U.S. Cl. 606—41 51 Claims



1. A device for ablating body tissue comprising

a support body,

wire wound about the support body in adjacent windings to form an elongated electrode having at least one edge portion adjoining the support body and an other portion spaced away from the at least one edge portion, the adjacent windings being spaced closer together near the at least one edge than along the other portion of the elongated electrode, and

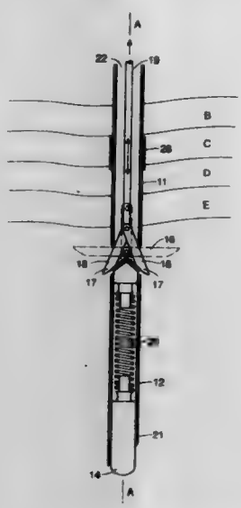
a connection coupling the wire to a source of ablation energy for transmission by the elongated electrode to ablate tissue.

5,797,906

RETROGRADE TISSUE SPLITTER AND METHOD

David Rhum, New York, N.Y.; Rodney E. Wells, East Lyme, Conn., and Joshua Makower, Nanuet, N.Y., assignors to Valleylab Inc, Boulder, Colo.

Division of Ser. No. 158,069, Nov. 24, 1993, Pat. No. 5,449,355. This application Apr. 28, 1995, Ser. No. 431,368
Int. Cl.[6] A61B 17/39
U.S. Cl. 606—48 4 Claims



1. A device for retrograde hole opening through tissue comprising:

a member elongate relative to an axis thereof and being substantially longer than its cross sectional dimensions, the member adapted for insertion through tissue in a direction generally along its axis through external tissue of a human or animal body during a placement procedure and wherein the member includes a passage therethrough located substantially along the axis of the member connected with a source of fluid for moving said fluid through the member;

a distal end and a proximal end on the member, the distal end for first entering the tissue during placement and the proximal end for control of the distal end of the member while remaining outside the tissue;

a tip at the distal end of the member adapted for placement through the external tissue of a human or animal;

a deployable tissue divider having one or more tissue parting elements and each with means for splitting, the tissue parting elements located within a storage position carried within the member, each of the tissue parting elements movable relative to the axis of the member for placement in an exposed position relative to the member when shifted from the storage position so that the means for splitting thereof splits tissue during retrograde extraction by contacting tissue during retrograde movement of the member along the axis and wherein the deployable tissue divider includes an electrode insulatively associated with the member for transmitting radio frequency energy from the proximal end to at least each means for splitting and wherein the member is a non-conductive electric insulator, and a conductor is positioned on the member slightly proximal of each means for splitting for providing an electrosurgical effect therebetween;

an energy supply connecting with the electrode at the proximal end for supplying radio frequency energy between the proximal end and each means for splitting, wherein a return path is between each means for splitting and the energy supply;

an electrosurgical generator for providing said radio frequency energy, the electrosurgical generator including a control to regulate the amplitude and frequency of the energy, and

a linkage between the proximal end and the deployable tissue divider for use in the selective disposition thereof by manipulation of the linkage at the proximal end to position and retain each of the tissue parting elements with its means for splitting in the exposed position so that upon withdrawal of the member after placement through the external tissue the tissue parting elements enlarge the initial puncture or incision simply while moving retrograde through the tissue and wherein a handle is associated with the proximal end for control and manipulation of the distal end and a trigger is carried on the handle for operation of the linkage and wherein a resilient load is on the deployable tissue divider to urge the one or more tissue parting elements from storage to the exposed position and a lock is associated with the linkage to retain the tissue parting elements in the storage position so that upon release of the lock, movement of the tissue parting elements relative to the axis of the member is allowed by means of axial motion of the linkage initiated by force applied to the linkage at the proximal end.

5,797,907

ELECTROCAUTERY CUTTER

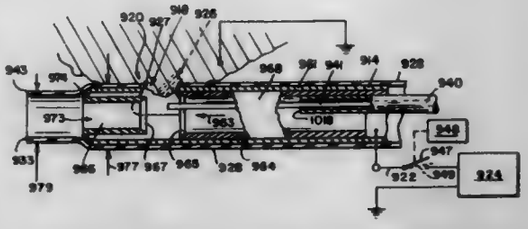
Thomas P. Clement, Bloomington, Ind., assignor to Mectra Labs, Inc., Bloomfield, Ind.

Continuation-in-part of Ser. No. 60,423, May 11, 1993, Pat. No. 5,505,210, which is a continuation-in-part of Ser. No. 956,601, Oct. 5, 1992, Pat. No. 5,335,671, which is a continuation-in-part of Ser. No. 830,580, Feb. 4, 1992, Pat. No. 5,409,013, which is a continuation-in-part of Ser. No. 580,945, Sep. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 432,084, Nov. 6, 1989, Pat. No. 5,019,054.

This application Dec. 15, 1995, Ser. No. 573,180

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—49 **41 Claims**



1. A handheld electrocautery cutter for suction, removal of body tissues and electrocauterization of tissue in a patient, the electrocautery cutter comprising:

a rigid cannula defining a cannula interior, the cannula having a proximal end and a distal end, the distal end being insertible and positionable in a patient's body, and the cannula defining a cannula opening adjacent the distal end to permit access to the cannula interior for capture of body tissue in the cannula interior;

a movable cutter for cutting tissue entering the cannula opening;

a cutter actuator configured to move the cutter,

an valve connected to the cannula to control suction flow from the cannula interior;

a valve actuator configured to actuate the valve;

an electrical switch linked to the cannula to control mono-polar electrocautery current flowing from adjacent the distal end of the electrocautery cutter to the patient for cauterizing body tissue;

an electrical actuator configured to activate the electrical switch;

wherein the cannula and valve are integrated into a rigid structure to be held in a user's hand such that movement of the rigidly coupled cannula and valve by a user's hand allows the distal end of the cannula to be accurately positioned at a specific location in the patient's body; and

wherein the cutter actuator, valve actuator, and electrical actuator are operable by a hand of the user as it moves the rigidly coupled valve and cannula to accurately position the distal end of the cannula in the patient's body.

5,797,908

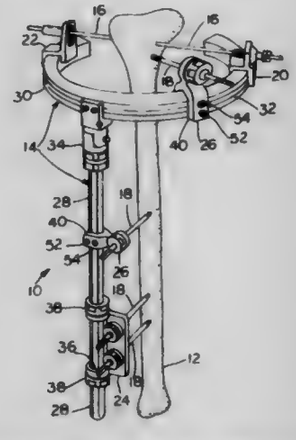
EXTERNAL FIXATOR ASSEMBLY AND CLAMP THEREFOR

John E. Meyers, Columbia City; Gregory G. Price, Warsaw, and Randall N. Allard, Plymouth, all of Ind., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Feb. 4, 1997, Ser. No. 794,074

Int. Cl.[6] A61B *17/62*

U.S. Cl. 606—54 **16 Claims**



1. An external fixator assembly for externally fixating and stabilizing a bone, said external fixator assembly comprising:

a frame member;

a bone piercing member insertable into the bone; and

a clamp including a body with a U-shaped slot, a hole, and a threaded opening therein, said threaded opening being in communication with said slot, said bone piercing member being received within said hole, said frame member being

disposed within said slot, said clamp further including a set screw in said in said threaded opening, said set screw being engaged with said frame member and holding said frame member within said slot;

wherein said U-shaped slot has an interconnecting wall comprising two adjacent wall segments of substantially equal length which abut at a center point to form an obtuse angle.

5,797,909

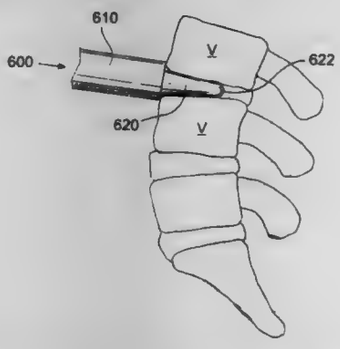
APPARATUS FOR INSERTING SPINAL IMPLANTS

Gary Karlin Michelson, 438 Sherman Canal, Venice, Calif. 90291

Division of Ser. No. 396,414, Feb. 27, 1995, which is a continuation-in-part of Ser. No. 74,781, Jun. 10, 1993, which is a continuation-in-part of Ser. No. 968,240, Oct. 29, 1992, which is a continuation of Ser. No. 698,674, May 10, 1991, which is a division of Ser. No. 205,935, Jun. 13, 1988, Pat. No. 5,015,247. This application Jun. 7, 1995, Ser. No. 482,215

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—61 **48 Claims**



1. A spinal distractor for use in spinal fusion surgery for positioning two adjacent vertebrae in selected relationship to each other, said spinal distractor comprising:

a body; and

a disc penetrating extension extending from said body for insertion into the disc space between the two adjacent vertebrae and for bearing against adjacent endplates of the two adjacent vertebrae, said disc penetrating extension having a first portion for bearing against one of the adjacent endplates and a second portion for bearing against the other of the adjacent endplates, said first and second portions converging away from said body along at least a portion of their length.

5,797,910

OPERATIVE EQUIPMENT FOR CORRECTING A SPINAL DEFORMITY

Jean-Raymond Martin, Tournefeuille, France, assignor to Paulette Fairant, Tournefeuille, France

PCT No. PCT/FR94/01021, § 371 Date Feb. 27, 1996, § 102(e) Date Feb. 27, 1996, PCT Pub. No. WO95/05786, PCT Pub. Date Mar. 2, 1995

PCT Filed Aug. 23, 1994, Ser. No. 605,038

Claims priority, application France, Aug. 27, 1993, 93 10291; Feb. 7, 1994, 94 01440; Jul. 15, 1994, 94 08794

Int. Cl.[6] A61B *17/70*

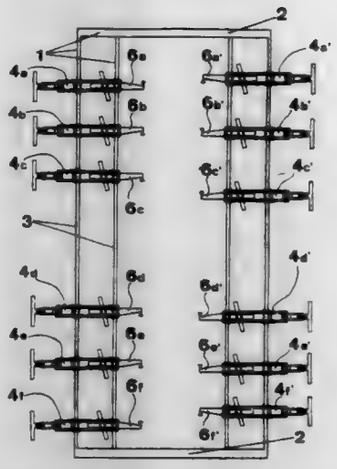
U.S. Cl. 606—61 **21 Claims**

1. A spinal operative equipment comprising:

a frame support including longitudinal bars for extending along a spinal column,

corrective devices slidably mounted on said longitudinal bars, each of said corrective devices comprising:

a base for transversely attaching said corrective device to said frame while allowing free longitudinal sliding movements of said corrective devices,



a corrective arm resting on said base and having an operational end for engagement with a corresponding side of a vertebra,

a horizontal frontal control rod having first means for adjustment of said operational end with respect to said base in a horizontal frontal direction orthogonal to said longitudinal bars, said horizontal frontal control rod being arranged to maintain said operational end in said horizontal frontal direction after adjustment,

a horizontal sagittal control rod having second means for adjustment of said operational end with respect to said base in a horizontal sagittal direction orthogonal to said longitudinal bars; said horizontal sagittal control rod being adapted to maintain said operational end in said horizontal sagittal direction after adjustment.

5,797,911

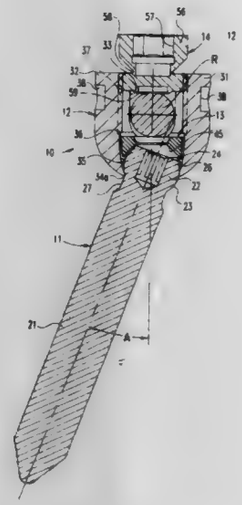
MULTI-AXIAL BONE SCREW ASSEMBLY

Michael C. Sherman, and Troy Drewry, both of Memphis, Tenn., assignors to SDGI Holdings, Inc., Memphis, Tenn.

Filed Sep. 24, 1996, Ser. No. 719,161

Int. Cl.[6] A61B *17/70*

U.S. Cl. 606—61 **15 Claims**



1. A spinal fixation assembly, comprising:

an elongated member configured for placement adjacent and along the length of the spine;

a bone engaging fastener, said fastener having a lower portion configured for engaging a vertebra and an enlarged head;

a receiver member defining a bore therethrough from a top end to a bottom end, said bore including a recess for receiving said head of said bone engaging fastener therein, said recess having a lower opening at said bottom end of said receiver member through which said lower portion of said fastener extends, said member also including a channel communicating with said recess and having an upper opening at said top end of said receiver member, said channel being configured to receive said elongated member therein adjacent said recess;

a crown member insertable through said upper opening and slidably disposed within said recess, said crown member having a lower surface contacting said head of said fastener and an opposite upper surface contacting said elongated member, said head including a surface configuration for relative penetration into said lower surface; and

a compression member engaged within said bore adjacent said upper opening, said compression member operable to press said elongated member against said crown member and said crown member against said head of said fastener for relative penetration therebetween, to thereby fix said head of said fastener between said crown member and said recess of said receiver member.

5,797,912

WASHER FOR USE WITH A BONE SCREW

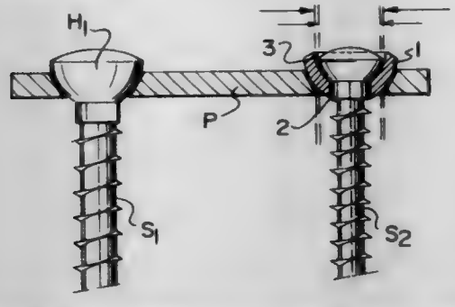
John Runciman, Renfrew, Canada; Samuel G. Agnew, Little Rock, Ark., and Ross Kenneth Leighton, Halifax, Canada, assignors to Terray Corporation, Ontario, Canada

Continuation of Ser. No. 558,431, Nov. 16, 1995, abandoned. This application Aug. 19, 1997, Ser. No. 916,741

Claims priority, application Canada, Sep. 22, 1995, 2158890

Int. Cl.[6] A61B *17/80*

U.S. Cl. 606—69 **6 Claims**



1. Apparatus for stabilizing a fracture in a bone comprising, in combination:

at least one bone plate fabricated from a surgically compatible metal, said at least one bone plate having at least two screw holes of a first diameter therethrough, from an upper to a lower surface thereof, with at least a portion of each said screw hole, at the upper surface of said at least one bone plate, having a concavely curved inner surface;

a selection of bone screws, each bone screw being fabricated from a surgically compatible metal, said selection of bone screws including at least one first screw and at least one second screw, each of said first and second screws having a shaft of a diameter selected to pass through said screw holes, with the shaft diameter of said at least one second screw being smaller then the shaft diameter of said at least one first screw, each screw having a head with an upper surface adapted to receive a screw driving instrument and a convexly curved lower surface from which said shaft projects, the head of said at least one first screw being dimensioned to fit snugly against said at least one bone plate, with the convex lower surface of said head of a said at least one first screw bearing against the concave inner surface of a said screw hole, and the head of said at least one second screw having a similar shape to the head of said at least one first screw, but being smaller than the head of said at least one first screw; and

at least one washer fabricated from a surgically compatible metal, said at least one washer having a central aperture dimensioned to fit the shaft of said at least one second screw to permit said shaft of said at least one second screw to pass therethrough, said at least one washer having an upper surface that is concavely curved around said central aperture to accept the head of a said at least one second screw in a snug fit, and said at least one washer having a lower surface that is convexly curved and dimensioned to fit snugly against said at least one bone plate, with the convex lower surface of said at least one washer bearing against the concave inner surface of a said screw hole.

5,797,913

DEVICE FOR SECURING BONE PARTS AFTER OSTEOTOMY, OR FOR REDUCING A BONE FRACTURE AND SECURING THE FRACTURED BONE PARTS, ONCE THESE PARTS HAVE BEEN BROUGHT TOGETHER

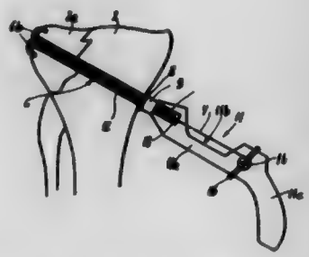
Alain Dambreville, Quimper, and Patrick Pfaifer, Lyons, both of France, assignors to Groupe Lepine, Lyons, France

Filed Feb. 10, 1997, Ser. No. 797,331

Claims priority, application France, Jul. 28, 1995, 95 09441

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—72 **5 Claims**



1. A device for securing bone parts after osteotomy, or for reducing a bone fracture and securing the fractured bone parts, once these parts have been brought together, comprising:

a grapnel-shaped element comprising a central rod having a longitudinal axis and a first and a second end, said central rod being semi-rigid, that is to say exhibiting a relative flexibility perpendicular to its longitudinal axis, comprising at least two branches at said first end, which are curved through substantially 180 degrees and whose free ends are sharp-pointed, and comprising a ring at said second end;

a lock washer intended to be engaged on said central rod, and

a metal sleeve capable of being crimped, said metal sleeve being capable to be engaged on said central rod and to comes into abutment against the lock washer.

5,797,914

BONE SCREW

Karl A. Leibinger, Mulheim, Germany, assignor to KLS Martin, L.P., Jacksonville, Fla.

Filed Sep. 12, 1996, Ser. No. 710,174

Claims priority, application Germany, Dec. 21, 1995, 295 20 312 U

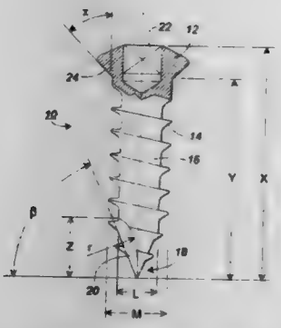
Int. Cl.[6] A61B *17/86*

U.S. Cl. 606—73 **9 Claims**

1. A self-drilling and self-tapping bone screw for insertion into a bone, said bone screw comprising:

a screw head; and

a solid screw body extending from said screw head and including a tapered tip portion terminating at a pointed tip distal from said screw head and a shaft extending from said screw



head to said tip portion, said screw body having a centerline and being provided with a continuous thread formed on said shaft and on said tip portion, said tip portion being provided with a recessed flute defined by two walls positioned essentially at a right-angle to one another, wherein a substantial portion of at least one of said two walls comprises a generally flat portion which extends from adjacent said pointed tip toward said screw head at a transposed distance from said centerline and at an acute angle to said centerline, and wherein adjacent said tip portion a profile of said continuous thread is convex.

5,797,915

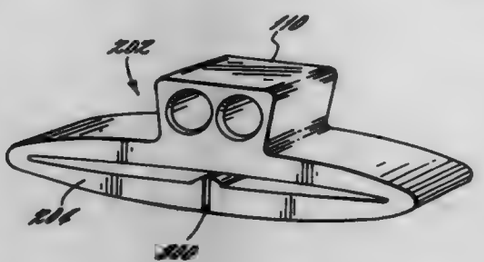
CERCLAGE SYSTEM

Raymond H. Pierson, III, 62 Columbia St., Suite 102, Orlando, Fla. 32806, and Thomas Wade Fallin, 819 Striker Ave., Suite 10, Sacramento, Calif. 95834-1129

Filed Apr. 17, 1996, Ser. No. 633,619

Int. Cl.[6] A61B *17/82*

U.S. Cl. 606—74 **28 Claims**



12. A dynamically tensioning retaining system for retaining a cable disposed around a bone, comprising:

a retainer configured to be connected to the cable; and

a biasing mechanism configured to be responsive to tension in the cable and configured to be connected to the cable for maintaining tension in the cable, wherein the retainer and the biasing mechanism are integrated into a single unit.

5,797,916

TROCHANTERIC REATTACHMENT CERCLAGE DEVICE

Christopher S. McDowell, Bridgewater, Mass., assignor to Johnson & Johnson Professional, Inc., Raynham, Mass.

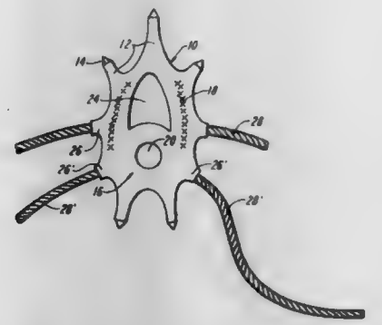
Filed Dec. 10, 1996, Ser. No. 763,541

Int. Cl.[6] A61B *17/82*

U.S. Cl. 606—74 **18 Claims**

1. A bone fixation device comprising:

a retaining member fabricated from a biocompatible material, the retaining member having a first side, a second side, and a bone engaging face;



a first cable having a first end and a second end, the first end of the first cable being permanently secured to the first side of the retaining member at a first junction;

a second cable having a first end and a second end, the first end of the second cable being permanently secured to the second side of the retaining member at a second junction;

a first cable guide proximate the first junction and extending from the first side of the retaining member; and

a second cable guide proximate the second junction and extending from the second side of the retaining member.

5,797,917

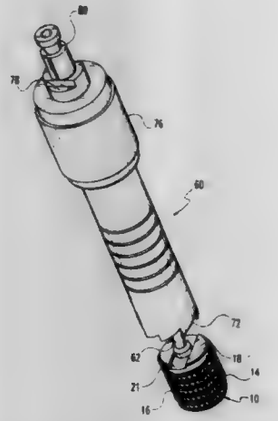
ANTERIOR SPINAL INSTRUMENTATION AND METHOD FOR IMPLANTATION AND REVISION

Lawrence M. Boyd, and Thomas McGahan, both of Memphis, Tenn., assignors to SDGI Holdings, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 482,447, Jun. 7, 1995. This application Feb. 12, 1997, Ser. No. 799,792

Int. Cl.[6] A61B *17/88*

U.S. Cl. 606—99 **15 Claims**



1. An apparatus for removal of a fusion implant in the disc space between adjacent vertebrae, comprising:

a guide member having an elongated shaft and an engagement end having means for engaging the fusion implant within the disc space to permit removal of the implant from the disc space by the guide member; and

a cylindrical trephine concentrically disposed about said guide member, said trephine having a cutting end adjacent said engagement end of said guide member, said cutting end defining teeth for cutting a core of bone from the the adjacent vertebrae surrounding the fusion implant.

5,797,918

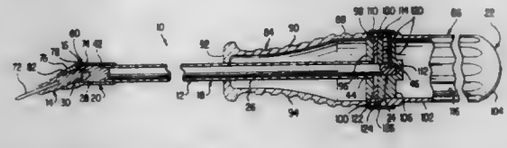
FLEXIBLE SURGICAL SCREWDRIVER AND METHODS OF ARTHROSCOPIC LIGAMENT RECONSTRUCTION

David A. McGuire, 3418 Lakeside Dr., Anchorage, Ak. 99515; Jeffery W. Lefler, Corona, and Gary T. Garman, La Verne, both of Calif., assignors to David A. McGuire, Anchorage, Ak.

Continuation-in-part of Ser. No. 340,790, Nov. 16, 1994, Pat. No. 5,464,407, which is a continuation-in-part of Ser. No. 956,733, Oct. 2, 1992, Pat. No. 5,391,170, which is a continuation-in-part of Ser. No. 806,906, Dec. 13, 1991, Pat. No. 5,257,996, and a continuation-in-part of Ser. No. 839,466, Feb. 19, 1992, Pat. No. 5,520,693. This application Nov. 6, 1995, Ser. No. 554,601

Int. Cl.[6] A61B *17/56*

U.S. Cl. 606—104 33 Claims



1. A screwdriver comprising:

(a) a rotatable handle having a distal portion, and a central longitudinal axis;

(b) a flexible shaft portion coupled to the distal portion of the handle, the flexible shaft portion having a plurality of linkage members disposed in series, each linkage member having a bore extending longitudinally therethrough;

(c) a plurality of links, each link joining a linkage member to an adjacent linkage member by a means for preventing adjacent linkage members from substantially rotating about the longitudinal axis relative to one another, so as to permit torque to be transmitted along the linkage members while permitting adjacent linkage members to be pivotally movable with respect to one another about a pivot axis that is transverse to the longitudinal axis; and

(d) a cannulated drive tip attached to a terminal linkage member of the flexible shaft portion for driving a cannulated screw with rotation transmitted from the flexible shaft portion.

5,797,919

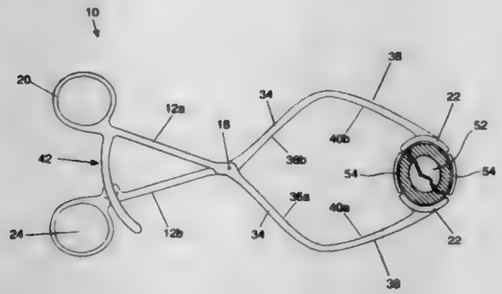
SURGICAL BONE CLAMP

Keith Anthony Brinson, P.O. Box 410, Whigham, Ga. 31797

Filed Jul. 16, 1996, Ser. No. 680,604

Int. Cl.[6] A61B *17/28*

U.S. Cl. 606—105 17 Claims



16. A surgical bone clamp comprising:

a first shaft member and a second shaft member each having a first end, a second end, a back section and a front section;

a bone engaging means secured to said second end of each of said first shaft member and second shaft member, each of said bone engaging means comprising an elongated curved surface, said curved surface being shaped and configured to generally conform to and clamp around a curved outer surface of a long bone;

said first shaft member is pivotally mounted to said second shaft member at a pivot point and said pivot point is located in proximity to said first end of said first shaft member and said second shaft member;

said front section of each of said first and second shaft members encompasses the bone engaging means and said back section of each of said first and second shaft members encompasses said first end; and

said pivot point divides said front section from said back section;

wherein said front section of said first shaft member and said front section of said second shaft member are each bent outwardly to form opposed arches, said opposed arches forming a substantially diamond-shaped opening when said clamp is in a fully closed position.

5,797,920

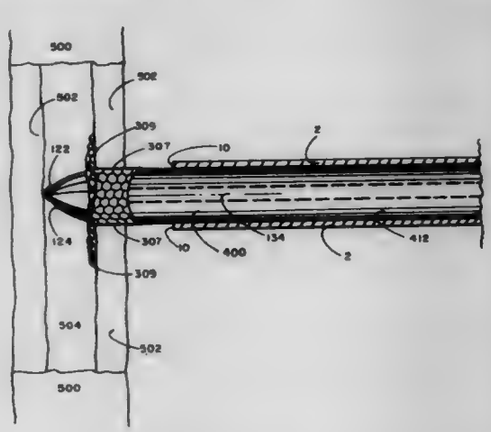
CATHETER APPARATUS AND METHOD USING A SHAPE-MEMORY ALLOY CUFF FOR CREATING A BYPASS GRAFT IN-VIVO

Ducksoo Kim, Dover, Mass., assignor to Beth Israel Deaconess Medical Center, Boston, Mass.

Continuation-in-part of Ser. No. 664,165, Jun. 14, 1996, Pat. No. 5,676,670. This application Aug. 23, 1996, Ser. No. 702,668

Int. Cl.[6] A61F *11/00*

U.S. Cl. 606—108 12 Claims



1. A catheter apparatus for creating a bypass on-demand between an unobstructed blood vessel and an obstructed blood vessel in-vivo using a graft segment as a conduit, said bypass catheter apparatus comprising:

a catheter suitable for introduction into and extension through the body in-vivo to a chosen site wherein an unobstructed blood vessel is in anatomic proximity to an obstruction lying within another blood vessel, said catheter being comprised of a hollow tube of fixed axial length having a proximal end, a distal end, and at least one internal lumen of predetermined diameter;

an obturator for on-demand introduction and passage through said catheter to a chosen site on the unobstructed blood vessel in-vivo, said obturator comprising

(1) a puncturing headpiece for puncture of and entry into the lumen of an unobstructed blood vessel,

(2) a perforating end tip on said puncturing headpiece to facilitate the perforation of a blood vessel wall at the chosen site in-vivo,

(3) an elongated shaft of fixed axial length integrated with said puncturing headpiece, said elongated shaft being configured for the carrying and transport of a graft segment within said internal lumen of said catheter to the chosen site on the unobstructed blood vessel in-vivo; and

a thermoelastic deformable cuff comprised of a prepared shape-memory allow for positioning over said elongated shaft adjacent to said puncturing headpiece of said obturator together with a graft segment

(i) wherein, prior to the perforation of the unobstructed blood vessel in-vivo by said puncturing headpiece of said obturator, a portion of said cuff in a first shaped configuration has been engaged and joined to one end of the graft segment then carried by said elongated shaft of said obturator thereby forming an engaged cuff portion and a non-engaged cuff portion,

(ii) and wherein, after the perforation of the unobstructed blood vessel in-vivo by said puncturing headpiece of said obturator, at least part of said non-engaged cuff portion is extended into the lumen of the unobstructed blood vessel and becomes thermoelastically deformed in-situ into a prepared memory-shaped second configuration, and said prepared memory-shaped second configuration of said deformed non-engaged cuff portion becomes disposed onto an interior surface of the unobstructed blood vessel,

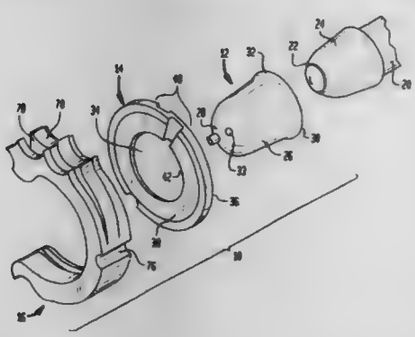
(iii) and whereby said cuff engaged end of the graft segment become secured to and placed in blood flow communication with the unobstructed blood vessel and serves as a conduit means for bypassing an obstruction and restoring blood flow from the unobstructed blood vessel to the obstructed blood vessel to the obstructed blood vessel.

5,797,921

DISPOSABLE CIRCUMCISION APPARATUS AND METHOD OF USE

Catherine M. Cimini, Somerset, N.J., and James A. Mawhirt, Brooklyn, N.Y., assignors to International Technidyne Corporation, Edison, N.J.

Filed Mar. 17, 1997, Ser. No. 819,426
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—118 **17 Claims**



1. An apparatus for circumcising a penis having a glans penis and a foreskin, the apparatus comprising:

a cap defining an interior space and having an outer surface, the interior space adapted to receive the glans penis of the penis, the outer surface adapted to receive the foreskin;

a clamp having an opening for encircling a portion of the cap and holding the foreskin in engagement with the outer surface of the cap; and

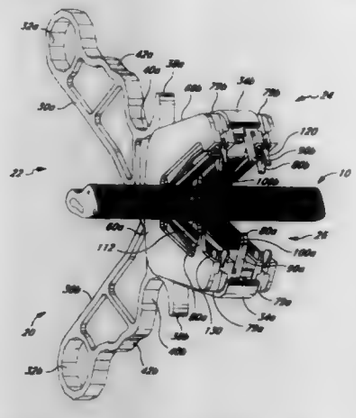
a blade guide mechanism having a guide slot on an interior edge adapted to receive a portion of the clamp for guiding the blade guide mechanism around the cap and a blade adapted to engage and cut the foreskin.

5,797,922

UMBILICAL CORD CLAMPING DEVICE

Stephen R. Hessel, Fountain Valley, and Michael Katz, Port Richmond, both of Calif., assignors to Balagan Medical Inc., Huntington Beach, Calif.

Continuation of Ser. No. 597,607, Feb. 6, 1996, abandoned. This application Mar. 20, 1997, Ser. No. 821,111
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—120 **28 Claims**



1. A clamping device for single-handed attachment by a user of a pair of resilient clamps onto an umbilical cord of a newly born infant prior to severance of said cord, said clamping device squeezing blood away from between said resilient clamps so that said cord can be severed with release of a minimal amount of blood, said clamping device comprising:

a handle assembly comprising a pair of substantially identical handle portions having proximal ends for grasping by said user; and

a clamp holder assembly comprising a pair of substantially identical holding members each comprising a pair of receptacles and a pressure plate positioned between said receptacles, one of said holding members attached to a distal end of one of said handle portions and the other of said holding members attached to a distal end of the other of said handle portions, said plate positioned exterior to said receptacles and said resilient clamps such that said plates make first contact with said cord during operation of said device, each of said resilient clamps comprising a pair of arms being received into said receptacles of said holding members;

said resilient clamps being retained within said holder assembly prior to closure of said resilient clamps by compression of said arms by said holding members, said pressure plates being juxtaposed to compress said cord to squeeze blood away from between said resilient clamps thereby substantially eliminating said blood from said cord between said resilient clamps so that severance of said cord can be performed with release of a minimal amount of blood, said resilient clamps being readily released from said members after said closure.

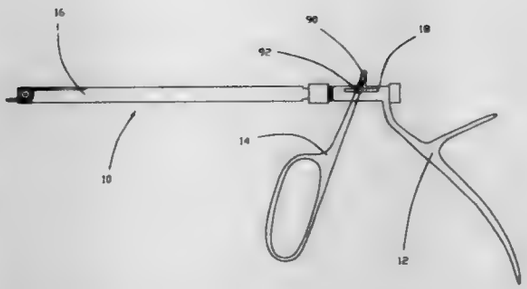
5,797,923

ELECTRODE DELIVERY INSTRUMENT

Harish Aiyar, 12851 Cedar Rd., Cleveland Heights, Ohio 44118, and J. Thomas Mortimer, 13753 County Line Rd., Chagrin Falls, Ohio 44022

Filed May 12, 1997, Ser. No. 854,564
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—129 **13 Claims**

1. A device for implanting electrodes within the body of a mammal, comprising:



an elongate frame having a first handle at a proximal end and a channel located within a distal end;

a wheel assembly rotatably mounted at said distal end of said frame;

a hollow needle, capable of carrying an electrode, rigidly affixed to said wheel assembly and positioned within said channel in said frame;

a second handle movably coupled to said frame;

and actuating means, coupled to said wheel assembly and said second handle;

wherein when said second handle is shifted toward said first handle, said needle is rotated out of said channel within said frame such that said needle can implant an electrode within the body of a mammal.

5,797,924

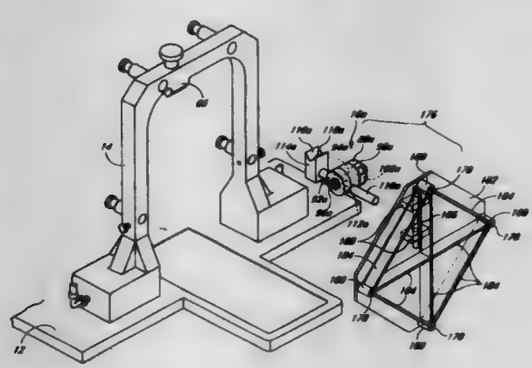
STEREOTACTIC FIXATION SYSTEM AND CALIBRATION PHANTOM

Reinhard W. Schulte, Grand Terrace; William J. Wicks, Redondo Beach, and Helmut J. Meinzer, Grand Terrace, all of Calif., assignors to Loma Linda University Medical Center, Loma Linda, Calif.

Division of Ser. No. 344,291, Nov. 22, 1994, Pat. No. 5,549,616, which is a continuation-in-part of Ser. No. 148,213, Nov. 2, 1993, Pat. No. 5,464,411. This application Mar. 4, 1996, Ser. No. 610,354

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—130 **22 Claims**



7. A calibration phantom used to replicate the position of a stereotactic immobilization device relative to a scanning plane of a medical device, the scanning plane having a pair of intersecting axes for reference purposes, said stereotactic immobilization device releasably attaching to at least one point on a support apparatus used with the medical device, said calibration phantom comprising:

a plurality of markers located in a plane and defining at least two intersecting axes; and

a support coupled to said markers, said support configured to releasably attach to the support apparatus at the same point on the support apparatus that the stereotactic immobilization device is releasably attached wherein said support comprises an adjustable coupling that provides at least three degrees of rotational movement of said markers relative to the support apparatus and at least two degrees of linear movement of said markers relative to the support apparatus so as to align said axes defined by said markers with the axes of the scanning plane of the medical device.

5,797,925

DEPILATING DEVICE WITH A MULTIPLE-SHELL HOUSING

Hans-Eberhardt Heintke, Wächtersbach, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany

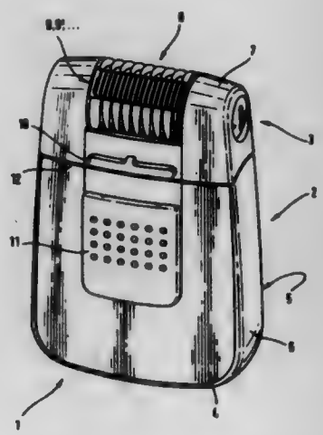
PCT No. PCT/EP95/02739, § 371 Date Mar. 21, 1996, § 102(e) Date Mar. 21, 1996, PCT Pub. No. WO96/05751, PCT Pub. Date Feb. 29, 1996

PCT Filed Jul. 31, 1995, Ser. No. 619,656

Claims priority, application Germany, Aug. 18, 1994, 44 28 892.1

Int. Cl.[6] A61D *1/06*

U.S. Cl. 606—133 **17 Claims**



1. A depilating device comprising,

a first housing comprising a plurality of shells;

an assembly unit comprising:

(a) a rotary cylinder;

(b) a motor;

(c) a gear assembly, wherein the gear assembly and the motor drive the rotary cylinder; and

(d) a second housing incorporating the rotary cylinder, the second housing being detachably coupled to the gear assembly; and

vibration absorbing elements;

wherein the assembly unit is supported in and isolated from the first housing by the vibration absorbing elements, and wherein the vibration abosrbing elements are located at points of connection between the assembly unit and the first housing.

5,797,926

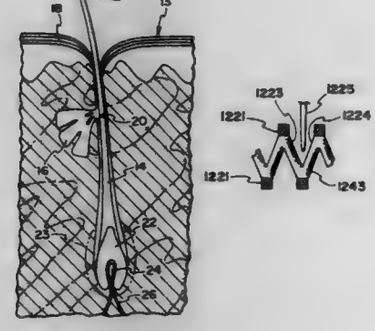
METHOD AND APPARATUS FOR PERMANENT REMOVAL OF MULTIPLE HAIRS WITH HAIR CLAMPING SPRINGS

Thomas L. Mehl, Sr., 1015 Hwy 337, Old Bronson Rd., Newberry, Fla. 32669

Division of Ser. No. 573,643, Dec. 18, 1995, which is a continuation of Ser. No. 176,561, Dec. 30, 1993, Pat. No. 5,470,332, which is a continuation of Ser. No. 917,662, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 794,364, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 454,622, Dec. 21, 1989, abandoned, which is a continuation of Ser. No. 66,261, May 25, 1993, abandoned, which is a continuation of Ser. No. 929,750, Aug. 17, 1992, abandoned, which is a continuation of Ser. No. 707,828, May 30, 1991, abandoned. This application Oct. 3, 1996, Ser. No. 725,397

Int. Cl.[6] A61B *17/50*

U.S. Cl. 606—133 **26 Claims**



1. A hair removal device, including;

a) a housing;

b) a spring having at least two coils configured for engaging a hair, said spring being disposed on said housing, and said spring being configured for conducting electrical Power therethrough;

c) said spring having an insulated region and an uninsulated region, whereby, when electrical power is conducted through said spring and a hair engages said uninsulated region, electrical power is transferred from said spring to the hair engaged by said uninsulated region;

d) a drive element attached to said spring for moving said at least two coils toward and away form each other; and

e) an electrical connector electrically connected to said spring for applying electrical power to said spring from an electrical power source.

5,797,927

COMBINED TISSUE CLAMPING AND SUTURING INSTRUMENT

InBae Yoon, 2101 Highland Ridge Dr., Phoenic, Md. 21131

Filed Sep. 22, 1995, Ser. No. 532,461

Int. Cl.[6] A61B *17/04*

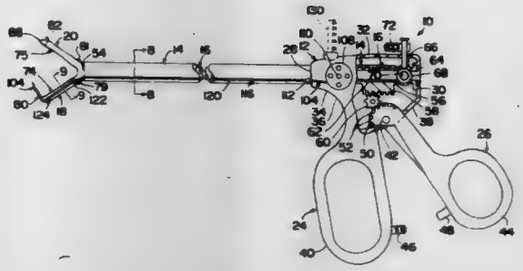
U.S. Cl. 606—144 **44 Claims**

41. A combined tissue clamping and suturing instrument comprising

a handle portion;

a jaw portion selectively actuated by operation of said handle portion, said jaw portion including a pair of opposed jaws;

a hollow suture needle mounted on a first of said jaws, said hollow needle having a first open end mounted on said first jaw and a second open end with a peripheral edge defining a tissue penetrating point, said first and second open ends being connected by a slot formed in said hollow needle; and



a length of suture material extending through said hollow needle, said length of suture material being of a size to be removable from said hollow suture needle in a direction transverse to a longitudinal axis of said needle using said slot.

5,797,928

LIGATING APPARATUS

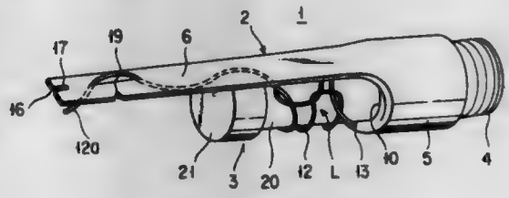
Takahiro Kogasaka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1995, Ser. No. 581,181

Claims priority, application Japan, Jan. 20, 1995, 7-007226; Dec. 26, 1995, 7-339067

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—144 **50 Claims**



1. A ligating apparatus comprising:

a ligature applying body having a distal end with a ligature holding section thereat for holding one end of a ligature;

a ligature holder movable relative to the ligature applying body, said ligature holder including:

a through hole through which the ligature-applying body is to be moved,

ligature holding means for holding at least one part of the ligature to the ligature holder, and

a ligature retaining section for retaining the ligature and through which the through bore extends;

ligature winding means for holding the ligature in a wound relation around the ligature applying body or the ligature holder, thereby to form at least one loop to be tightened to form a knot;

loop releasing means for releasing said at least one loop from the ligature applying body or the ligature holder when the ligature applying body is pulled into the through hole of the ligature holder; and

loop tightening means as part of the ligature holding section of the ligature applying body for tightening said at least one loop released from the ligature applying body or the ligature holder, when the ligature applying body and the ligature holder are moved relative to each other.

5,797,929

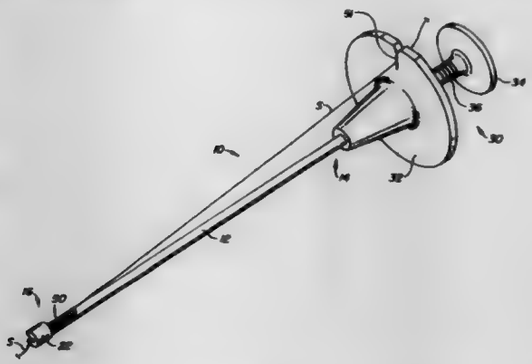
APPARATUS AND METHODS FOR ADVANCING SURGICAL KNOTS

Bernard H. Andreas, Fremont, and Timothy J. Wood, Santa Clara, both of Calif., assignors to Perclose, Inc., Menlo Park, Calif.

Continuation of Ser. No. 252,310, Jun. 1, 1994, abandoned. This application Nov. 2, 1995, Ser. No. 552,211

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—148 | 23 Claims



1. A knot pusher comprising:

a shaft having a proximal end and a distal end and an axis therebetween, the shaft having a side opening disposed proximally of the distal end;

a fitting on the distal end of the shaft, said fitting having a slot extending from the side opening to the distal end of the fitting, the slot at a different radial position than a portion of the opening;

a member having a proximal end and a distal end mounted on the shaft to move axially between a first position and a second position, the member in the first position radially blocking the slot while leaving an open passage from the distal end of the fitting to the portion of the side opening, the slot providing a radial opening to the open passage when the member is in the second position.

5,797,930

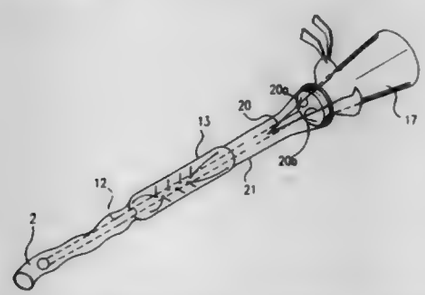
SURGICAL IMPLEMENT AND METHOD OF SUTURING

Joel Ovil, Ramat Hasharon, Israel, assignor to Dan Siev, Kfar Shmaryahu, Israel, a part interest

Filed Dec. 26, 1996, Ser. No. 772,586

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—148 | 28 Claims



1. A surgical implement for use in suturing an annular part of a first organ to a second organ around an opening in the second organ, comprising:

a holder having a proximate end and a distal end;

said holder including a handle at said proximate end graspable by a user, and a stem at said distal end insertable into said annular part of the first organ;

said stem including a fluid passageway therethrough closed at a distal end of the stem and communicating with a plurality of openings formed through the stem inwardly of said closed distal end thereof;

and an inflatable balloon carried by said stem on the outer surface thereof;

said balloon being in the form of an elastomeric sleeve fixed at its opposite ends to the outer surface of said stem on opposite sides of said opening and being dimensioned such that in the deflated condition of the balloon the balloon and stem are insertable into said annular part of the first organ, and in the inflated condition of the balloon the balloon firmly engages the inner surface of the annular part of the first organ to hold it during suturing thereof to said second organ.

5,797,931

TISSUE-FIXING SURGICAL INSTRUMENT, TISSUE-FIXING DEVICE, AND METHOD OF FIXING TISSUES

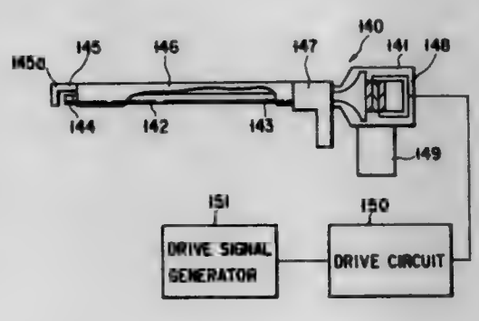
Shiro Bito; Isami Hirao; Kazuhiko Oozeki; Minoru Tsuruta; Akito Mukaizawa; Akio Nakada; Tsuyoshi Tsukagoshi; Shuichi Kimura; Toshihiko Suzuta, all of Tokyo, Japan; Seiji Kuramoto, Huntingeon Station, N.Y., and Naoki Uchiyama, Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 384,210, Feb. 3, 1995, Pat. No. 5,658,300, which is a continuation of Ser. No. 72,224, Jun. 3, 1993, abandoned. This application Mar. 22, 1996, Ser. No. 620,364

Claims priority, application Japan, Jun. 4, 1992, 4-144299; Jun. 4, 1992, 4-144640; Mar. 31, 1993, 5-094963; May 18, 1995, 7-119712; Sep. 18, 1995, 7-238667

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—151 | 30 Claims



1. A surgical instrument for applying and clamping a surgical clip, comprising:

a surgical clip having a first clamping portion, a second clamping portion, and a connecting portion which connects the first clamping portion and the second clamping portion together, said surgical clip being made of a thermoplastic resin which is softened when heated;

a clip applicator having a holding portion for holding said surgical clip;

an ultrasonic oscillation device for inducing heat in said surgical clip and for softening at least a part of said thermoplastic resin of said surgical clip; and

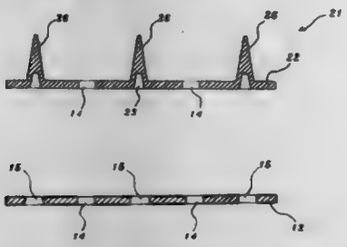
an operating device for deforming said at least a part of said softened thermoplastic resin of said surgical clip and clamping said first and second clamping portions together.

5,797,932

MUSCLE CLAMPING DEVICE

Byung-Moo Min; Joon Mook Yang, and Nam Sook Cho, all of Daejon, Rep. of Korea, assignors to Jong-Deok Park, Daejon, Rep. of Korea

Filed Apr. 25, 1996, Ser. No. 637,458
Int. Cl.[6] A61B 17/08
U.S. Cl. 606—151 7 Claims



1. An ocular muscle clamping device for maintaining ocular muscles at a predetermined width, comprising:

a first bioabsorbable fixing device which includes a plurality of fixing projections formed on one surface of the first fixing device at regular intervals, each projection having a circular cone shape and a sharp end and a plurality of grooves formed on the opposite surface of the first fixing device corresponding to said fixing projections; and

a second bioabsorbable fixing device which includes a plurality of fixing opening holes each having a first diameter on the surface facing said fixing projections and a second diameter on its opposite surface, said holes formed at regular intervals so as to correspond to said fixing projections,

wherein the inner surface of said fixing opening holes formed by said first and second diameters has a taper angle constructed and designed to satisfy a self-locking condition with said fixing projection when said projection is forcibly engaged in said hole; and

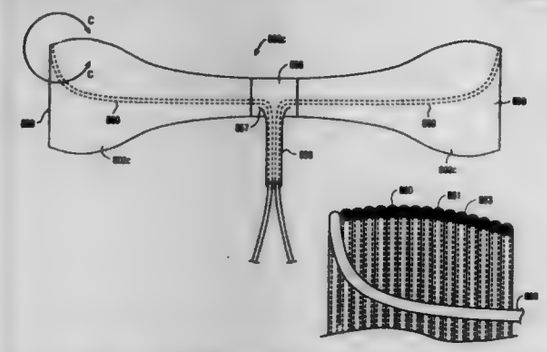
wherein the shape and ends of said fixing projections of said first fixing device comprise piercing means to pierce the ocular muscles positioned between the first and second fixing device and said projections become fixed into the fixing opening holes of said second fixing device, thereby fixing the ocular muscles to said clamping device.

5,797,933

CORONARY SHUNT AND METHOD OF USE

David W. Snow, Woodside; Craig L. Adams, San Ramon; Brian S. Donlon, Los Altos Hills, and Hanson S. Gifford, III, Woodside, all of Calif., assignors to Heartport, Inc., Redwood City, Calif.

Filed Jul. 16, 1996, Ser. No. 680,889
Int. Cl.[6] A61B 17/08
U.S. Cl. 606—151 10 Claims



1. A method of permitting fluid flow across an opening in a coronary artery while preventing fluid flow out of the opening in the coronary artery when performing an anastomosis, comprising the steps of:

incising an opening in a coronary artery of a patient;

providing a shunt including a body having a lumen therethrough, the body having at least a portion formed by a filament wrapped around the lumen;

passing the shunt through the opening and into the coronary artery;

positioning the shunt in the coronary artery so that a fluid flow is permitted through the lumen from a first side of the opening in the coronary artery to a second side of the opening in the coronary artery;

occluding the hollow body structure on the first and second sides of the opening so that fluid flow between the hollow body structure and the shunt is prevented;

attaching a graft vessel to the opening in the coronary artery; and

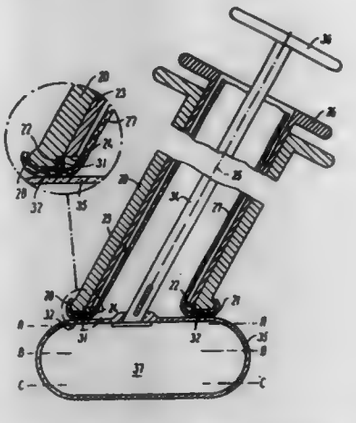
removing the shunt through the opening in the coronary artery before completing the attaching step.

5,797,934

METHOD, INSTRUMENT AND ANASTOMOTIC FITTING FOR USE WHEN PERFORMING AN END-TO-SIDE ANASTOMOSIS

Jorgen A. Rygaard, Gentofte, Denmark, assignor to Oticon A/S, Hellerup, Denmark, and Bernafon AG, Berne, Switzerland

PCT No. PCT/DK94/00149, § 371 Date Aug. 23, 1996, § 102(e) Date Aug. 23, 1996, PCT Pub. No. WO95/17128, PCT Pub. Date Jun. 29, 1995
PCT Filed Apr. 12, 1994, Ser. No. 663,134
Claims priority, application Denmark, Dec. 23, 1993, 1455/93
Int. Cl.[6] A61B 17/04
U.S. Cl. 606—153 6 Claims



1. Method for connecting an end of a first vessel to the side of a second vessel, such as an artery or a vein, by establishing an end-to-side anastomosis, comprising the following steps a through l:

(a) forming an opening in the side of said second vessel,

(b) inserting in said opening a generally tubular anastomosis instrument carrying said first vessel in its central longitudinal cavity and with the end region of said first vessel everted about an adjacent end of said instrument in such a manner, that the intima side of said end region comes into contact with the intima side of said second vessel at an edge region of said opening,

(c) joining said end region to said edge region by inserting penetratingly therethrough and leaving therein a plurality of spiked members,

(d) removing said instrument from the joint formed between said first and said second vessels,

(e) providing an anastomosis instrument comprising a tubular member with an end face, an internal circumferential recess in said tubular member and adjacent to said end face, and ejector inside said tubular member and with an ejecting end and

capable of being moved between a first position, in which said ejecting end is situated on the side of said recess facing away from said end face and a second position, in which said ejecting end extends into or beyond the circumferential recess, said ejector having a passage therethrough substantially coaxially with said tubular member,

(f) ensuring that said ejector is in said first position,

(g) providing an elastically yielding anastomotic fitting having outwardly directed spikes, deforming said fitting elastically and placing it with said spikes engaging said internal circumferential recess,

(h) inserting said first vessel into said tubular member, through said ejector and everting one end of said vessel about said end face so as to form a collar around the outside of said tubular member,

(i) making an incision through one wall of said second vessel,

(j) inserting said tubular member into said incision in said second vessel in a manner to make the outside surface of said collar contact the intima of said second vessel,

(k) moving said ejector into said second position so as to allow said anastomotic fitting to penetrate said collar and the wall of said second vessel around said incision with its spikes, and

(l) removing said anastomosis instrument, leaving said anastomotic fitting behind with its spikes joining said first vessel to said second vessel.

5,797,935

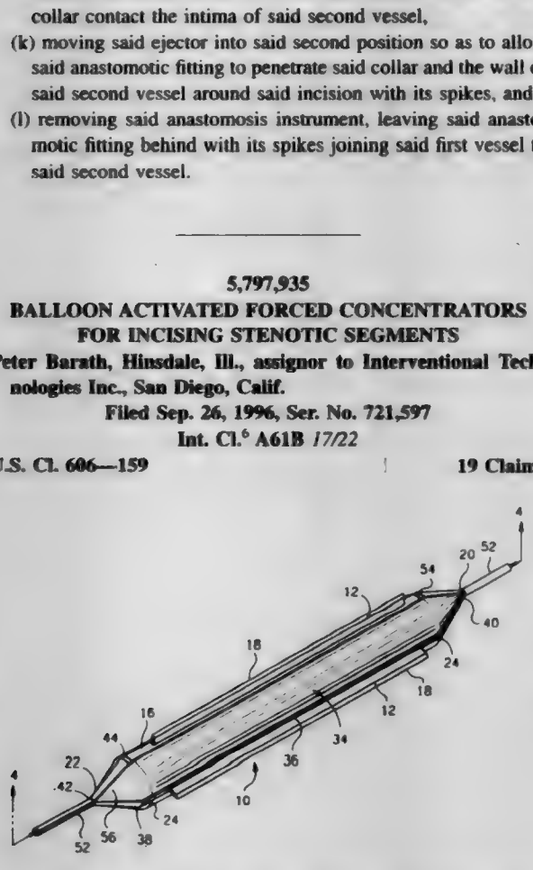
BALLOON ACTIVATED FORCED CONCENTRATORS FOR INCISING STENOTIC SEGMENTS

Peter Barath, Hinsdale, Ill., assignor to Interventional Technologies Inc., San Diego, Calif.

Filed Sep. 26, 1996, Ser. No. 721,597

Int. Cl.[6] A61B *17/22*

U.S. Cl. 606—159 **19 Claims**



1. A device for incising stenotic segments, mountable over an inflatable angioplasty balloon, which comprises:

at least one elongated flexible panel, said panel having an outer surface, an inner surface, a proximal end and a distal end;

a cutting blade having an edge, said cutting blade mounted on said outer surface of said elongated flexible panel with said edge of said cutting blade projecting away from said outer surface of said elongated flexible panel;

a first circular band attached to said proximal end of each said elongated flexible panel; and

a second circular band attached to said distal end of each said elongated flexible panel, said first circular band and said second circular band being positionable to retain said inner surface of each said elongated flexible panel against said angioplasty balloon.

5,797,936

MICROSURGICAL INSTRUMENT

Hein Kleihues, Carmerstr. 4, Berlin, Germany, D-10623

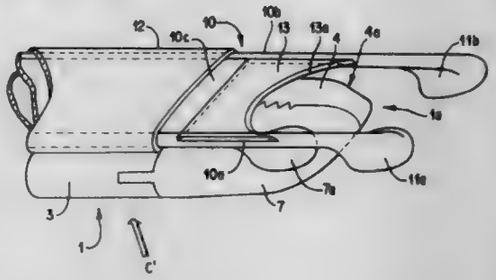
PCT No. PCT/DE94/01553, § 371 Date Sep. 18, 1996, § 102(e) Date Sep. 18, 1996, PCT Pub. No. WO95/18573, PCT Pub. Date Jul. 13, 1995

PCT Filed Dec. 30, 1994, Ser. No. 669,367

Claims priority, application Germany, Jan. 5, 1994, 44 00 409.5

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **15 Claims**



1. Microsurgery instrument for surgical procedures, comprising a hollow shaft, a first jaw part which protrudes from a distal end of the hollow shaft a first handle part stationarily connected on another end of the hollow shaft,, a second jaw part swivellably arranged at the hollow shaft, a first connecting rod extending through the hollow shaft for actuating the second jaw part via a second handle part provided on the another end to carry out a gripping or clamping operation of a tissue section,

wherein, on the distal end of the hollow shaft, a cutting device is operatively actuatable via a third handle part associated with a second connecting rod axially displaceable in the hollow shaft, to perform a cutting operation on the gripped or clamped tissue section.

5,797,937

OPHTHALMOLOGIC KNIFE

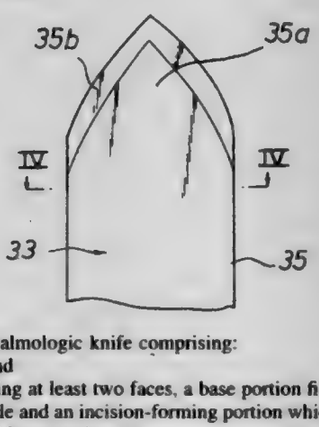
Kazuo Ichikawa, Nagoya, and Toshiyuki Nakajima, Tokyo, both of Japan, assignors to Canon Staar Co. Inc., Tokyo, Japan

Filed Jul. 18, 1996, Ser. No. 683,194

Claims priority, application Japan, Jul. 31, 1995, 7-195045

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—167 **11 Claims**



1. An ophthalmologic knife comprising:

a handle; and

a blade having at least two faces, a base portion fixed to a tip of said handle and an incision-forming portion which is extended from said base portion,

wherein the blade or at least part of said incision-forming portion which is inserted into an eyeball has a non-planar cross section along a plane substantially perpendicular to said incision-forming portion, said non-planar cross section having

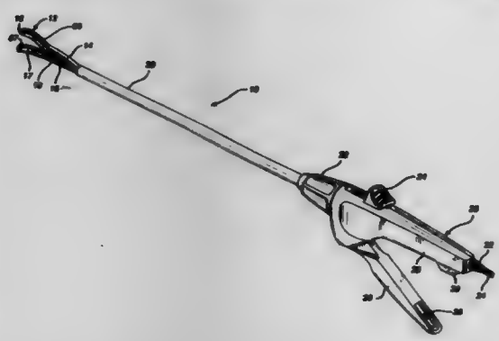
a substantially smaller radial dimension than that of the eyeball to provide a smooth insertion of a three-dimensional object into the eyeball through an incision made in the eyeball by said knife and to provide incision resistance to widening in a vertical direction when said three-dimensional object is inserted into said eyeball.

5,797,938

SELF PROTECTING KNIFE FOR CURVED JAW SURGICAL INSTRUMENTS

Joseph F. Paraschac, Kettering; Kenneth S. Wales; Rudolph H. Nobis, both of Mason, and Kip Rupp, New Richmond, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Continuation of Ser. No. 545,977, Oct. 20, 1995, abandoned. This application Nov. 18, 1996, Ser. No. 751,898
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 **7 Claims**



1. A surgical instrument including an end effector wherein said end effector comprises:

first and second curved jaw members adapted to grasp tissue wherein said jaw members are curved along a proximal to distal axis of said instrument;

a curved knife channel within said jaw members wherein said knife channel is at least three times as wide as said knife;

an axially flexible knife adapted to move through said end effector from said proximal end to said distal end of said end effector wherein said knife includes a cutting edge at a distal end thereof, said cutting edge including at least one sacrificial contact point wherein said sacrificial contact point contacts said knife channel over a portion of its travel.

5,797,939

ENDOSCOPIC SCISSORS WITH LONGITUDINAL OPERATING CHANNEL

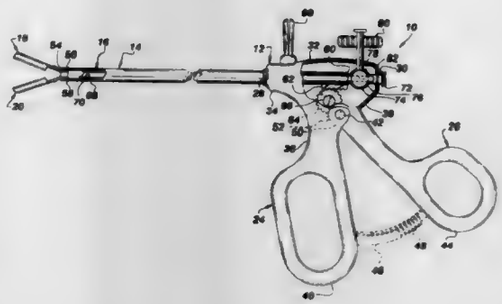
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation of Ser. No. 612,634, Mar. 4, 1996, and Ser. No. 376,186, Jan. 20, 1995, Pat. No. 5,665,100, which is a continuation-in-part of Ser. No. 281,814, Jul. 28, 1994, abandoned, which is a continuation of Ser. No. 73,193, Jun. 8, 1993, Pat. No. 5,334,209, which is a continuation of Ser. No. 720,381, Jun. 25, 1991, Pat. No. 5,217,473, which is a division of Ser. No. 446,555, Dec. 5, 1989, Pat. No. 5,026,379, said Ser. No. 612,634 is a continuation of Ser. No. 281,814. This application Dec. 27, 1996, Ser. No. 778,710
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—167 **11 Claims**

1. A multifunctional endoscopic scissors instrument for use in performing endoscopic procedures within an anatomical cavity comprising

a handle;

an elongate tubular member having a proximal end coupled with said handle for being disposed externally of the anatomical



cavity and a distal end for being disposed within the anatomical cavity and carrying a pair of opposed, relatively movable blades, said elongate tubular member defining a channel permitting access to an operative site within the anatomical cavity from outside the body;

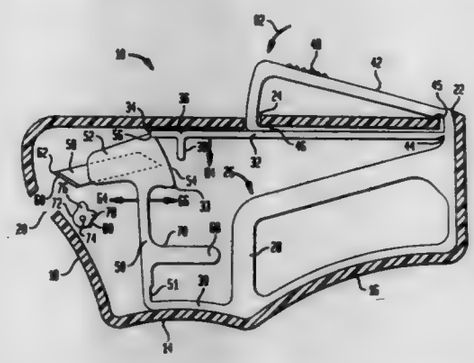
said blades being movable relative to one another by manipulation of said handle to perform cutting operations.

5,797,940

ADJUSTABLE SKIN INCISION DEVICE

James A. Mawhirt, Brooklyn, N.Y., and Nikki S. Thompson, Freehold, N.J., assignors to International Technidyne Corporation, Edison, N.J.

Filed May 30, 1997, Ser. No. 866,172
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 **17 Claims**



1. A device for making an adjustably sized incision in skin, comprising:

a housing having a slotted opening;

a blade disposed within said housing for making an incision in skin;

blade triggering means disposed within said housing, for propelling said blade through said slotted opening of said housing a given distance to make an incision of a predetermined size in the skin; and

incision size adjusting means associated with said housing for selectively adjusting the size of the incision, wherein said incision size adjusting means includes a selector disposed externally on said housing and a cam which is coupled to said selector, said selector being movable relative to said housing for allowing the size of the incision to be manually selected and said cam operating to adjust the size of the incision when said selector is moved relative to said housing between a plurality of positions.

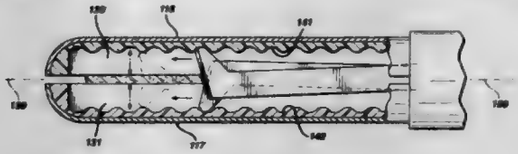
5,797,941
SURGICAL INSTRUMENT WITH EXPANDABLE CUTTING ELEMENT

Dale Schulze, Lebanon, and William D. Fox, New Richmond, both of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Continuation of Ser. No. 395,732, Mar. 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 382,463, Feb. 3, 1995, abandoned. This application Feb. 24, 1997, Ser. No. 804,845

Int. Cl.[6] A61B *17/32;17/39*

U.S. Cl. 606—171 **4 Claims**



1. A surgical instrument comprising:

a shaft having a distal end; and

an end effector located at the distal end of said shaft, said end effector comprising:

first and second elements comprised of first and second opposed tissue contacting surfaces respectively, said elements movable relative to each other from an open, spaced apart position for positioning tissue therebetween, to a closed position for approximating the tissue between the surfaces, said closed position defining a variable gap between said surfaces;

a cutting element comprising first and second cutting blades, said cutting element being movable with respect to said surfaces to divide tissue approximated between said surfaces;

wherein said end effector includes a mechanism to provide scissors-like cutting action between said blades as said cutting element is advanced;

said cutting element being adaptable in size to fit within said variable gap between said first and second surfaces.

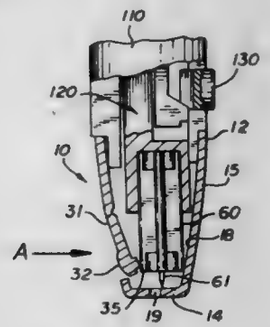
5,797,942
RE-USABLE END CAP FOR RE-USABLE LANCET DEVICES FOR REMOVING AND DISPOSING OF A CONTAMINATED LANCET

Steven Schraga, 9433 Byron Ave., Surfside, Fla. 33154

Filed Sep. 23, 1996, Ser. No. 716,748

Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—182 **20 Claims**



16. A device comprising:

a) lancet holding means;

b) a lancet inserted into said holding means; and

c) a cap having a first end comprising an open mouth for removable attachment to said lancet holding means, a second end having an opening therein and a hollow, main body between said ends, said main body being formed of a generally non-deformable material;

d) said open mouth and main body of said cap structured and disposed to permit at least partial passage of said lancet and lancet holding means therethrough and into a piercing position wherein a sharp tip of said lancet is exposed through said opening of said second cap end; and

e) engagement means formed on said cap, exteriorly actuatable, and movable relative to said cap between a first withdrawn position and a second engaged position wherein the lancet is engaged and can be withdrawn from said lancet holding means and selectively retained within said cap said main body remaining substantially undeformed while said engagement means moves from said first position to said second position.

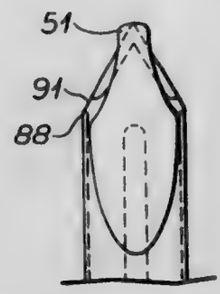
5,797,943
SHIELDED TROCAR AND TROCAR SHIELD

John K. Danks, Boca Raton, Fla.; Richard V. Mazzola, Bloomfield, N.J., and Thomas R. Johnson, Milford, N.H., assignors to Endoscopic Concepts, Inc., Delray Beach, Fla.

Division of Ser. No. 459,331, Jun. 2, 1995, Pat. No. 5,607,440, which is a division of Ser. No. 238,959, May 6, 1994, Pat. No. 5,545,150. This application Mar. 3, 1997, Ser. No. 811,107

Int. Cl.[6] A61B *17/34;17/32*

U.S. Cl. 606—185 **22 Claims**



1. A shielded obturator comprising:

(a) an obturator having a distal end and a proximal end, the proximal end of said obturator forming a handle;

(b) a pointed blade on the distal end of the obturator, said pointed blade having a sharpened point at a distal end and sharpened lateral portions;

(c) a shield slidably mounted on the obturator and movable relative to the pointed blade between an extended protective position, a partially retracted semi-protective position covering the sharpened point of the pointed blade, while leaving at least a portion of the sharpened lateral portions exposed for cutting tissue and a retracted unprotected position; and

(d) biasing means tending to bias the shield into the extended protective position.

5,797,944
VISUALIZATION TROCAR

Anthony A. Nobles, Fountain Valley; Arthur Lancaster, Costa Mesa, and Ben G. Brosch, Jr., Mission Viejo, all of Calif., assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

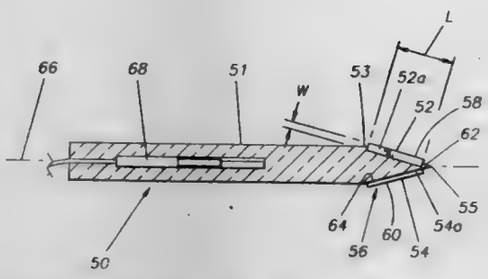
Continuation of Ser. No. 707,683, Sep. 4, 1996, abandoned, which is a continuation of Ser. No. 376,759, Jan. 20, 1995, Pat. No. 5,562,696, which is a continuation of Ser. No. 343,263, Nov. 21, 1994, abandoned, which is a continuation-in-part of Ser. No. 974,956, Nov. 12, 1992, Pat. No. 5,385,572. This application Sep. 12, 1997, Ser. No. 928,680

Int. Cl.[6] A61B *17/34;1/00*

U.S. Cl. 606—185 **5 Claims**

1. A trocar for endoscopic surgery, comprising:

a shaft having a distal end and a proximal segment having a cavity formed therein, the shaft having a longitudinal axis;



a transparent puncturing head formed on the distal end of the shaft; and

a blade embedded in the puncturing head, the blade having a flat blade surface defining a blade plane, and the blade is positioned such that the blade plane is parallel to the longitudinal axis;

wherein a video display system may be operationally connected within the cavity formed in the proximal segment of the shaft for displaying the image of an object located beyond the puncturing head.

5,797,945

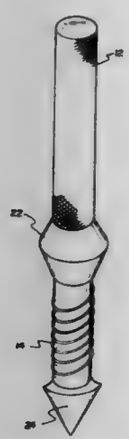
HEMOSTATIC DILATOR

Marwan Saifi, 15 N. Avon Dr., Claymont, Del. 19703

Filed Feb. 24, 1997, Ser. No. 804,834

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—187 **11 Claims**



1. A new and improved hemostatic dilator comprising, in combination:

a top handle extent defining approximately 64% the entire length of the hemostatic dilator, the top extent having an elongated cylindrical configuration with a plurality of intersecting grooves formed in an entire outer surface thereof thereby defining a gripping surface;

an intermediate extent defining approximately 32% the entire length of the hemostatic dilator, the intermediate extent having a generally cylindrical configuration with a helix integrally formed along an entire length thereof, the diameter of the intermediate extent being 20 mm;

a stopper segment integrally formed between the top handle extent and the intermediate extent such that the top handle extent and the intermediate extent are maintained in a coaxial relationship, the stopper portion being defined by a pair of frusto-conical segments with a large base of each segment integrally formed together wherein an interconnection of the segment defines a protrusion extending radially outwardly from the outer surface of the top handle extent and the intermediate extent; and

a bottom blade extent with a conical configuration having a base integrally formed on a lower end of the intermediate extent and a sharp cutting tip;

whereby the hemostatic agent may be applied about the intermediate extent and the top handle extent may be utilized to facilitate the piercing of a scalp with the bottom blade extent such that the hemostatic agent is applied to the area being pierced thereby precluding bleeding.

5,797,946

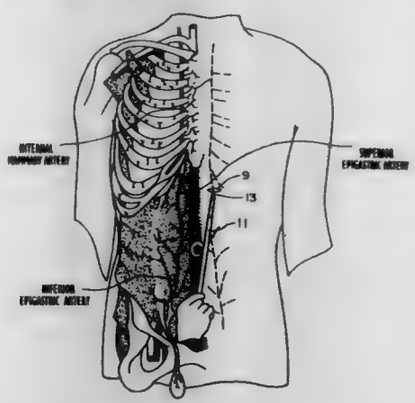
METHOD FOR ARTERIAL HARVEST AND ANASTOMOSIS FOR CORONARY BYPASS GRAFTING

Albert K. Chin, Palo Alto, Calif., assignor to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 593,533, Jan. 24, 1996, abandoned, which is a continuation-in-part of Ser. No. 502,494, Jul. 13, 1995. This application Mar. 15, 1996, Ser. No. 616,206

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—190 **14 Claims**



1. A method of harvesting an arterial vessel of a patient using a dissection cannula having a substantially rigid and transparent tissue-separating blunt tip covering a distal end of the cannula, and having a balloon attached to an exterior wall of the cannula near the blunt tip for peripheral expansion in response to selective inflation thereof, and having an endoscope disposed within the cannula with a viewing end positioned in alignment with the transparent tip for viewing therethrough tissue bluntly dissected thereby, the method comprising the steps of:

forming a subcostal incision to expose a superior epigastric vessel;

introducing the dissection cannula into the incision and advancing the blunt tip through tissue planes with visualization thereof through the blunt tip and endoscope while selectively inflating and deflating the balloon for selectively dissecting the tissue planes to form a working cavity adjacent to and along the length of the arterial vessel substantially along the internal mammary artery to the region of the subclavian artery; and

selectively occluding side branches from the internal mammary artery and providing a distal free end of the artery for anastomosis with a coronary artery.

5,797,947

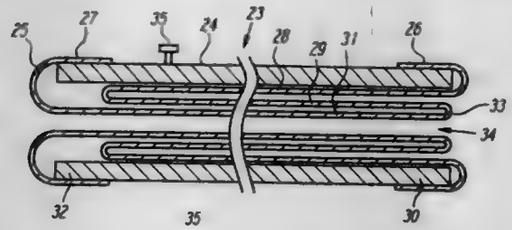
METHODS AND DEVICES FOR HARVESTING BLOOD VESSELS WITH BALLOONS

Kenneth H. Mollenauer, Santa Clara, Calif., assignor to General Surgical Innovations, Inc., Cupertino, Calif.

Continuation of Ser. No. 444,426, May 19, 1995, Pat. No. 5,593,418. This application Jan. 10, 1997, Ser. No. 781,219

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—192 15 Claims



1. A device for enveloping an elongate structure, said device comprising:

a housing having proximal and distal ends; and

an elongate balloon disposed on said housing said elongate balloon in its uninflated state being folded, said elongate balloon in its inflated state being at least partially unfolded and forming a tubular shape adapted to envelope the elongate structure, said inflated balloon having a central lumen, said lumen having open distal and proximal ends to allow insertion of a surgical device through said lumen.

5,797,948

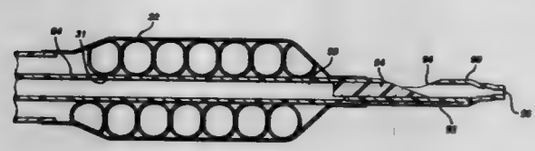
CENTERING BALLOON CATHETER

Susan L. Dunham, Pembroke Pines, Fla., assignor to Cordis Corporation, Miami, Fla.

Continuation-in-part of Ser. No. 725,364, Oct. 3, 1996. This application Dec. 19, 1996, Ser. No. 770,610

Int. Cl.[6] A61M *25/10*

U.S. Cl. 606—194 19 Claims



1. A catheter for insertion into a vessel of a patient, said catheter having distal and proximal ends, said catheter comprising:

a. an elongated flexible shaft having distal and proximal ends, said shaft having a central lumen extending therethrough, said central lumen also having distal and proximal ends, said shaft further including an inflation lumen;

b. an inflatable outer balloon disposed at said distal end of said catheter, an inflatable inner balloon disposed within said outer balloon, said inner balloon being in fluid communication with said inflation lumen for inflation and deflation thereof, said central lumen extending through said inner balloon and said inner balloon being a centering balloon which pushes against both said vessel and said shaft when inflated whereby when said inner balloon is at least partially inflated said distal end of said central lumen is substantially centered within said vessel.

5,797,949

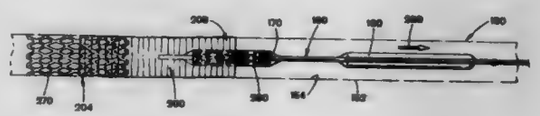
METHOD AND APPARATUS FOR IMPLANTING A PROSTHESIS WITHIN A BODY PASSAGEWAY

Juan C. Parodi, Mercedes 4255, Buenos Aires 1419, Argentina

Division of Ser. No. 644,684, May 30, 1996. This application Jun. 3, 1997, Ser. No. 868,206

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—194 9 Claims



1. A method of assembling an apparatus for repairing a body passageway, the apparatus including a catheter, the catheter having first and second ends, a first inflatable member disposed upon the catheter proximate the first end of the catheter, a second inflatable member disposed upon the catheter between the first inflatable member and the second end of the catheter, and a prosthesis having first and second ends, comprising the steps of:

associating a first means for securing, the prosthesis within the body passageway, with the prosthesis, proximate the first end of the prosthesis;

disposing the first securing means and the first end of the prosthesis upon the second inflatable member; and

disposing a second means for securing the prosthesis within the body passageway upon the first inflatable member.

5,797,950

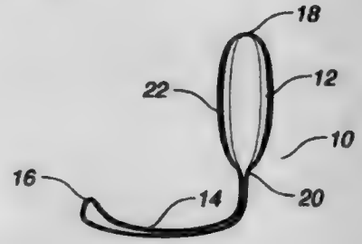
APPARATUS FOR RELEASING CONGESTED PROSTATE FLUID

Jiro Takashima, 7203 Schiller, Houston, Tex. 77055

Filed May 14, 1996, Ser. No. 645,523

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—197 24 Claims



1. An apparatus for releasing congested prostate fluid comprising:

a head means having a size suitable for fitting into a human rectum and movably held by a sphincter, said head means having a surface for rubbing a prostate gland; and

a rod means connected to a bottom of said head means and extending outwardly therefrom, said rod means for guiding a movement of said head means as the sphincter contracts and relaxes, said rod means comprising:

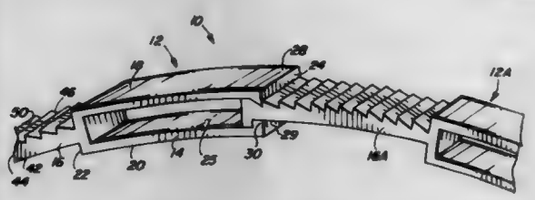
a rod having a generally L-shaped or C-shaped configuration, said rod having a first end proximal said head means and a second end distal said head means, said rod having a plane extending transversely therethrough at said first end which is separated by less than a length of the sphincter from a plane parallel thereto touching said second end.

5,797,951

EXPANDABLE SUPPORT MEMBER

Edward Gene Mueller, 3840 N. 43rd Ave. #8, Phoenix, Ariz. 85031-2926

Filed Aug. 9, 1995, Ser. No. 513,071
Int. Cl.[6] A61M 29/00
U.S. Cl. 606—198 15 Claims



1. An expandable support assembly comprising:
(a) a first segment having:
(i) a first section having a body with opposite first and second walls defining a compartment therein and having an open end communicating with said compartment and further including first engagement means;
(ii) a second section on said body having second engagement means thereon;
(b) a second segment having:
(i) a first section having a body defining a compartment therebetween and having an open end communicating with said compartment and further including first engagement means;
(ii) a second section on said body having second engagement means thereon;
(c) said second section of said first segment being received within the compartment of the second segment and being moveable relative thereto to an extended position with the first engagement means of the second segment in engagement with the second engagement means of the first segment.

5,797,952

SYSTEM AND METHOD FOR DELIVERING HELICAL STENTS

Enrique J. Klein, Los Altos, Calif., assignor to Localmed, Inc., Palo Alto, Calif.

Filed Jun. 21, 1996, Ser. No. 667,576
Int. Cl.[6] A61M 29/00
U.S. Cl. 606—198 51 Claims



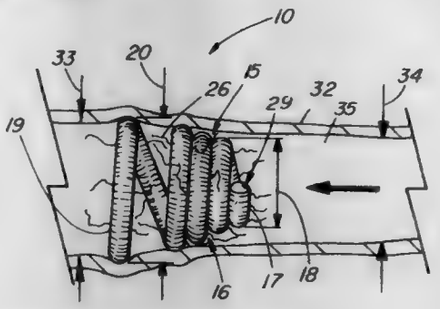
1. A catheter carrying a self-expanding helical prosthesis, said catheter comprising:
a catheter body having a proximal end and a distal end;
a barrel rotatably attached to the distal end of the catheter body;
a self-expanding helical prosthesis disposed over the barrel; and
an axially retractable cover disposed over said helical prosthesis, said cover maintaining the prosthesis in a radially reduced diameter condition;
wherein axial retraction of the cover allows the prosthesis to expand radially and wherein the barrel rotates as the prosthesis is deployed in a lumen which immobilizes a first released end of the stent.

5,797,953

HELICAL EMBOLIZATION COIL

Kurt J. Tekulve, Ellettsville, Ind., assignor to Cook Incorporated, Bloomington, Ind.

Continuation of Ser. No. 507,600, Jul. 26, 1995, abandoned, which is a continuation of Ser. No. 210,798, Mar. 18, 1994, abandoned. This application Feb. 23, 1996, Ser. No. 609,767
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—200 19 Claims



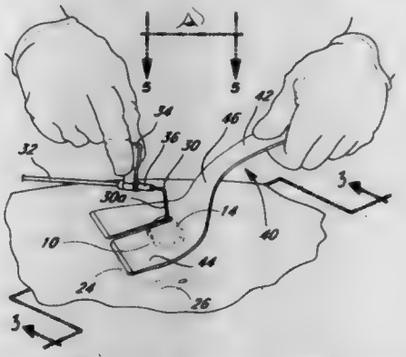
1. An embolization coil (10) comprising:
a continuous wire strand (11) wound into a longitudinally extending coil (12) having a plurality of tightly spaced turns (13), said longitudinally extending coil wound into a conically helically shaped coil (15) having a plurality of radially expanding turns (16), said radially expanding turns longitudinally overlapping each other, whereby said radially expanding turns longitudinally contact each other in response to blood flowing therethrough to occlude a vessel in which the embolization coil is positioned.

5,797,954

ACCESSING AND DEACCESSING TOOLS AND METHODS

Terry M. Shaffer, 7 Coralwind, Aliso Viejo, Calif. 92656; Jeanette Perlick, 5432 Kenilworth Dr., Huntington Beach, Calif. 92649, and Robert J. Burns, 24341 DeLeon Dr., Dana Point, Calif. 92629-1609

Filed May 24, 1996, Ser. No. 653,305
Int. Cl.[6] A61B 17/00
U.S. Cl. 606—201 21 Claims



1. A method for manually removing a needle from a medical device implanted under the skin of a patient, including

grasping with one hand a handle section of a tool having a guard section having an area in excess of 1.25 square inches and a slot therein,

sliding the slot along the needle to bring the guard section into an overlying relationship with the implanted medical device,

maintaining said one hand a minimum distance away from the needle of at least three inches, and

with the other hand withdrawing said needle free of the implanted medical device.

5,797,955

PRESSURE APPLICATION UNIT FOR POSITIONING VERTEBRA

David J. Walters, P.O. Box 637, Erwin, Tenn. 37650

Continuation-in-part of Ser. No. 661,822, Jun. 11, 1996. This application Jun. 9, 1997, Ser. No. 870,880

Int. Cl.[6] A61B *17/00; A61F 5/00*

U.S. Cl. 606—204 **12 Claims**



1. A device for applying external pressure to one or more of a patients vertebra for repositioning the same and/or maintaining the position thereof in the patients spine, or for forcing and maintaining segments of a broken vertebra in healing contact with each other, said spine lying generally along a spinal axis, said device comprising an upper body vest means adapted to substantially surround the upper body of a patient from adjacent the waist to adjacent the neck in a snug manner, said vest means having front and back sections provided with cooperating segments of attachment means for clamping said sections to each other to snugly surround said upper body, said back section having an elongated substantially rigid portion extending substantially the length of said back section and formed to closely conform to the curvature of the patients spine and lie adjacent thereto, one element of a pressure applicator means provided on said elongated portion, thrust means providing another element of said applicator means and being mounted on said one element for controlled, reciprocable movement in a direction generally normal to said spinal axis for applying external pressure in a controlled manner to a selected portion of said spine.

5,797,956

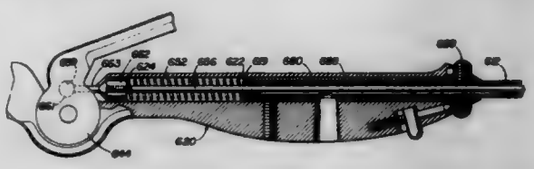
SURGICAL INSTRUMENT HANDLE AND ACTUATOR MEANS FOR HEART SURGERY

Gregory R. Furnish, and W. Michael Hipps, both of Lawrenceville, Ga., assignors to Snowden-Pencer, Inc., Tucker, Ga.

Continuation-in-part of Ser. No. 540,472, Oct. 10, 1995. This application Mar. 20, 1996, Ser. No. 618,448

Int. Cl.[6] A61B *17/28;17/32*

U.S. Cl. 606—205 **6 Claims**



1. A hand-held surgical instrument handle adapted to be attached to a tool having at least one articulated member thereon, the handle comprising:

a) an elongated base having a body portion, a top surface, an opposite bottom side, a first side, an opposite second side, a proximal end, and a distal end;

b) an elongated lever having a first surface, an opposite second surface, a front end, a rear end and an actuator arm adjacent the rear end adapted to be projected into the body portion of said base at a predetermined point;

c) means for connecting said actuator arm to said base at the predetermined point to allow said lever to pivot about a transverse axis at the predetermined point between a normally open position and a closed position;

d) means for actuating the articulated member of said tool when said lever is moved to the closed position;

e) means for biasing said lever in the normally open position;

f) means for securing said handle lever at selected points throughout a range of motion of said handle lever between and including the open position and the closed position, wherein said securing means is a rachet comprising:

i) a rachet plate having a toothed surface thereon mounted on said base; and

ii) a pawl arm having a pawl tooth complementary to the rachet plate teeth pivotally mounted upon said lever such that said pawl tooth is capable of selectively engaging the toothed surface of said rachet plate throughout the range of motion of said lever; and

g) means for selectively disengaging said securing means, comprising a pawl detachment member having a first end fixedly attached to said pawl arm and an opposite second end so that said pawl detachment member moves said pawl arm between an engaging position and a disengaging position,

wherein said pawl tooth in the engaging position is movable between a locked position, wherein said pawl arm is in engagement with said rachet plate, and an unlocked position, wherein said pawl tooth is disengaged from said rachet plate, and

wherein said pawl tooth in the disengaging position is disengaged from said rachet plate.

5,797,957

ENDOSCOPIC BIOPTOME WITH A HARD STOP TO CONTROL BITING FORCE

Matthew A. Palmer, Miami, and Vincent Turturro, Miramar, both of Fla., assignors to Symbiosis Corporation, Miami, Fla.

Filed May 2, 1996, Ser. No. 641,805

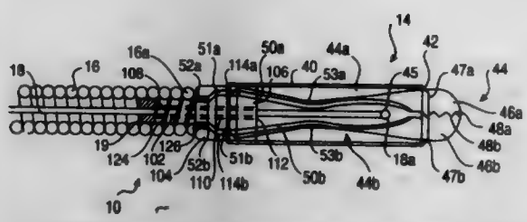
Int. Cl.[6] A61B *17/32*

U.S. Cl. 606—205 **14 Claims**

1. An endoscopic bioptome, comprising:

a) a hollow outer member having a proximal and a distal end;

b) an inner control member having a proximal and a distal end and extending through said hollow outer member;



c) a cylinder having a longitudinal axis, said cylinder being coupled to said distal end of one of said hollow outer member and said inner control member;

d) a jaw assembly including a pair of resilient arms coupled to said distal end of the other of said hollow outer member and said inner control member and extending distally therefrom, each of said resilient arms terminating in a jaw cup having a cutting edge, each of said resilient arms having a portion bent away from said longitudinal axis of said cylinder; and

e) actuation means coupled to said proximal end of said hollow outer member and to said proximal end of said inner control member for axially displacing one of said hollow outer member and said inner control member relative to the other of said hollow outer member and said inner control member, whereby said cylinder extends around said pair of resilient arms and closes said jaw cups; wherein,

one of said cylinder, said inner control member, said hollow outer member, and said jaw assembly comprises displacement limiting means for limiting displacement of said cylinder and said jaw assembly relative to each other so that force applied to said cutting edges of said jaw cups by said cylinder is controlled.

5,797,958

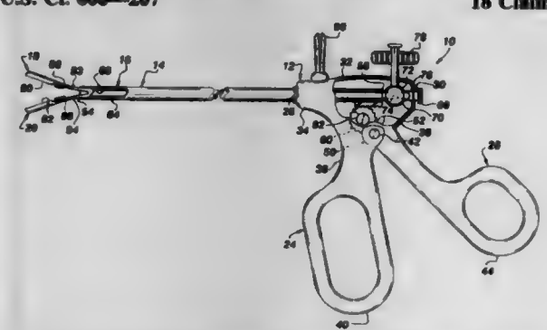
ENDOSCOPIC GRASPING INSTRUMENT WITH SCISSORS

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation-in-part of Ser. No. 612,634, Mar. 6, 1996, and Ser. No. 376,186, Jan. 20, 1995, Pat. No. 5,665,100, which is a continuation-in-part of Ser. No. 281,814, Jul. 28, 1994, abandoned, which is a continuation of Ser. No. 73,193, Jun. 8, 1993, Pat. No. 5,334,209, which is a continuation of Ser. No. 720,381, Jun. 25, 1991, Pat. No. 5,217,473, which is a division of Ser. No. 446,555, Dec. 5, 1989, Pat. No. 5,026,379, said Ser. No. 612,634 is a continuation of Ser. No. 281,814. This application Dec. 4, 1996, Ser. No. 760,245

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—207 **18 Claims**



1. A multifunctional endoscopic instrument for use in performing endoscopic procedures within an anatomical cavity comprising a handle; and

an elongate tubular member having a proximal end coupled with said handle for being disposed externally of the anatomical cavity and a distal end for being disposed within the anatomical cavity and carrying a pair of opposed, relatively movable jaws;

said jaws defining a grasping portion operable by manipulation of said handle to grasp objects and a cutting portion operable by manipulation of said handle to cut tissue.

5,797,959

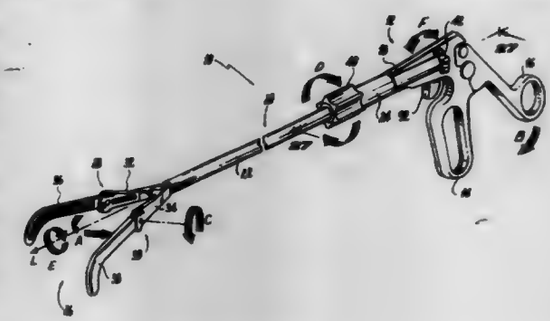
SURGICAL APPARATUS WITH ARTICULATING JAW STRUCTURE

Salvatore Castro, Seymour, and Richard A. McGarry, Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 531,990, Sep. 21, 1995, abandoned. This application Aug. 13, 1997, Ser. No. 910,767

Int. Cl.[6] A61B *17/28*

U.S. Cl. 606—207 **29 Claims**



1. A surgical apparatus comprising:

a) a handle portion;

b) an elongated body portion extending distally from the handle portion and defining a longitudinal axis;

c) a tool assembly operatively associated with a distal end portion of the body portion and including:

i) a first jaw assembly having a proximal jaw portion and a distal jaw portion; and

ii) a second jaw assembly having a proximal jaw portion and a distal jaw portion, the distal and proximal jaw portions of each jaw assembly being pivotably connected to one another and movable between first and second articulated positions;

d) a jaw actuation mechanism including a resiliently bendable actuation member having first and second cooperating actuating legs, each leg being connected to a respective one of first and second linkage members, each linkage member extending at least partially through a respective one of the proximal jaw portions of the first and second jaw assemblies and each linkage member being connected to a respective distal jaw portion of the first and second jaw assemblies to effectuate simultaneous pivotable movement of the distal jaw portions relative to the proximal jaw portions of the tool assembly, wherein the distal jaw portions of the first and second jaw assemblies each have an elongated aperture through which a connecting member is disposed to attach the distal jaw portion to the respective linkage member movement of each said linkage member relative to a respective proximal jaw portion causing each said connecting member to slide along a respective elongated aperture; and

e) a jaw control mechanism operatively connecting the handle portion and the tool assembly and configured to effect movement of the tool assembly between an open position and a closed position.

5,797,960

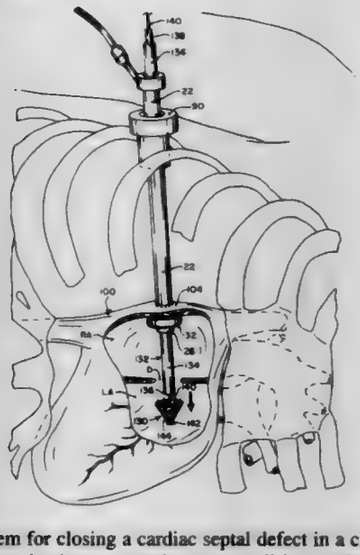
METHOD AND APPARATUS FOR THORACOSCOPIC INTRACARDIAC PROCEDURES

John H. Stevens, 727 E. Loma Verde, Palo Alto, Calif. 94303; Bruce A. Reitz, 676 Alvarado Row, Stanford, Calif. 94305; Alex T. Roth, 1354 Regent St., Redwood City, Calif. 94061; William S. Peters, 130 Farm Rd., and Hanson S. Gifford, 3180 Woodside Rd., both of Woodside, Calif. 94062

Continuation-in-part of Ser. No. 163,241, Dec. 6, 1993, Pat. No. 5,571,215, which is a continuation-in-part of Ser. No. 23,778, Feb. 22, 1993, Pat. No. 5,452,733. This application Apr. 20, 1995, Ser. No. 425,179

Int. Cl.[6] A61M *29/00*

U.S. Cl. 606—213 26 Claims



1. A system for closing a cardiac septal defect in a chamber of a patient's heart having a muscular outer wall by passing an instrument through a percutaneous penetration in the patient's chest wall and into a cardiac penetration in the muscular outer wall of the heart, said system comprising:

a patch for securing across the cardiac septal defect to occlude blood flow therethrough;

an introducing instrument comprising an elongate shaft having a proximal end and a distal end, the distal end of the introducing instrument being configured for releasably holding the patch; and

an access device having a distal end positionable through a cardiac penetration in the outer wall of the heart, a proximal extremity configured to extend outside the chest through the percutaneous penetration in the chest wall with the distal end positioned in the cardiac penetration, and a passage therebetween adapted for introduction of the patch therethrough into the chamber using the introducing instrument, the proximal extremity being generally rigid to facilitate manipulation of the access device from outside the chest.

5,797,961

RADIUSED HOLLOW CUTTING EDGE NEEDLE

Daniel J. Smith, Manalapan; Carl Gucker, Branchburg; Zivko Elik, Bound Brook; Paul Parisi, Bridgewater; Randolph Ruetsch, Branchburg; William McJames, Belle Mead, and Emil Richard Skula, Wayne, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

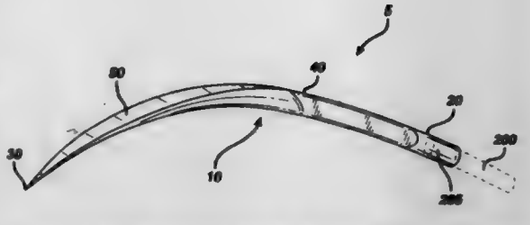
Continuation of Ser. No. 601,899, Feb. 15, 1996, abandoned. This application Aug. 19, 1997, Ser. No. 916,964

Int. Cl.[6] A61B *17/06*

U.S. Cl. 606—222 15 Claims

1. A surgical needle having a cutting edge, comprising:

an elongated member having a proximal end and a distal end wherein the elongated member is curved;



a piercing point extending from the distal end of said member;

a suture-mounting means in the proximal end of the member;

wherein the distal end of the member has a cross-section, said cross-section comprising:

a top side having first and second opposed edges, the top side defining a line;

a first opposed lateral concave side having a top edge and a bottom edge, the first concave side defining a line at least part of which is curved such that the concave side comprises at least one curved section and at least one straight section;

a second, opposed lateral concave side having a top edge and a bottom edge, the second concave side defining a line at least part of which is curved such that the concave side comprises at least one curved section and at least one straight section,

wherein the top edge of the first opposed side and the first opposed edge of the top surface are co-extensive to form a first cutting edge, and wherein the top edge of the second opposed side and the second opposed edge of the top are co-extensive to form a second cutting edge, and wherein the bottom edges of the first and second side surfaces are co-extensive to form a third cutting edge.

5,797,962

SURGICAL SUTURE AND METHOD FOR PREPARATION THEREOF

Kenji Tomihata; Ikuo Sasaki, and Masakazu Suzuki, all of Ayabe, Japan, assignors to Gunze Limited, Kyoto-fu, Japan

Filed May 28, 1996, Ser. No. 654,105

Claims priority, application Japan, May 25, 1995, 7-152596

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—228 18 Claims



1. A surgical suture comprising a copolymer of lactic acid and ε-caprolacton in an amount sufficient to reduce the shrinkage ratio of said surgical suture to 5% or less when treated at 60° C. for 20 hours.

5,797,963

SUTURE ANCHOR ASSEMBLY AND METHODS

Dennis McDevitt, Upton, Mass., assignor to Innovasive Devices, Inc., Marlborough, Mass.

Continuation-in-part of Ser. No. 337,944, Nov. 10, 1994, Pat. No. 5,649,963. This application Dec. 6, 1995, Ser. No. 568,348

Int. Cl.[6] A61B *17/04*

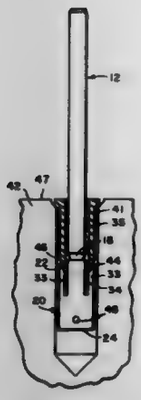
U.S. Cl. 606—232 5 Claims

1. A suture anchor comprising:

an insertion stem,

an expander element having a channel therethrough for passage of the insertion stem, on which the expander element is disposed, and

an anchoring element having a channel therethrough for passage of the insertion stem, on which the anchoring element is disposed, the insertion stem and the anchoring element being so arranged that movement of the insertion stem effects movement of the anchoring element within the bone hole,



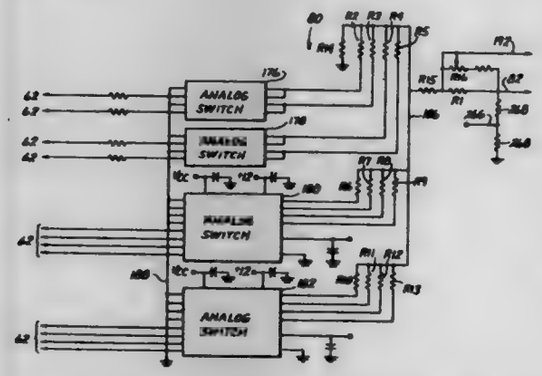
the expander element and the anchoring element being so arranged that movement of the anchoring element within a bone hole from a first position to a second position causes the anchoring element to cam over the expander element, forcing at least a portion of the anchoring element into a wall of the bone hole.

5,797,964

SELECTIVELY PROGRAMMABLE VARIABLE-VOLTAGE DIRECT-CURRENT VOLTAGE SOURCE

Gary Carlson, Newport Beach, and Jeffrey A. Norris, Lake Forest, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 268,217, Jun. 29, 1994, Pat. No. 5,636,638. This application Oct. 16, 1996, Ser. No. 732,006
Int. Cl.[6] A61N *1/08*
U.S. Cl. 607—2 **14 Claims**



1. A selectively programmable variable-voltage direct-current voltage source for providing an output voltage, the output voltage being controlled by a microprocessor, said voltage source comprising a microprocessor:

a pair of controlling resistors each having a resistance value, said controlling resistors including a variable resistor;

a voltage regulator connected to said controlling resistors and for providing the output voltage; and

a programmable variable-resistance circuit including:

plural resistors connected in a parallel configuration and having a common connection, said voltage regulator being connected to said common connection, each resistor of said plural resistors having a differing resistance value; and

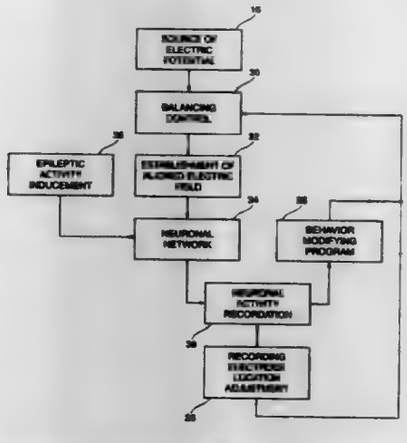
switch means connected to the microprocessor and said plural resistors for receiving instructions from the microprocessor and for responsively connecting selected ones of said plural resistors in parallel with respect to said common connection to define said variable resistor with a resistance value.

5,797,965

SUPPRESSION OF EPILEPTIFORM ACTIVITY

Mark L. Spano, Laurel; Steven J. Schiff, Rockville, both of Md.; Bruce J. Gluckman, Arlington, Va., and William L. Ditto, Woodstock, Ga., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 299,999, Aug. 19, 1994, Pat. No. 5,522,863. This application Mar. 26, 1997, Ser. No. 825,150
Int. Cl.[6] A61N *1/18*
U.S. Cl. 607—2 **10 Claims**



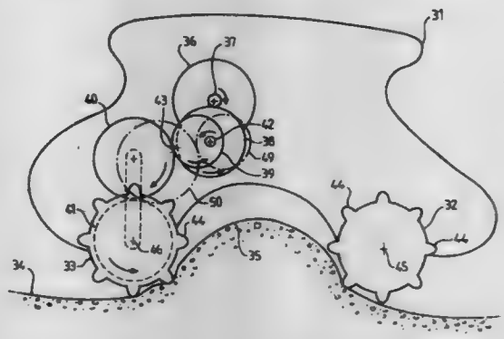
1. A method of modifying behavior of a neural system within which epileptic activity occurs including the steps of: generating an electric field; positioning the electric field in operative alignment with the neural system; and varying magnitude of the operatively aligned electric field in accordance with a chaos controlling algorithm to suppress the epileptic activity in the neural system.

5,797,966

PAINLESS ELECTRIC STIMULATION APPLIANCE AND CORRESPONDING PROCESS

Daniel Bontoux, Saint-Genis-Laval; Monique Paget, and Jean-Pierre Debourg, both of Lyons, all of France, assignors to Seb S.A., Ecully, France

Filed Mar. 18, 1997, Ser. No. 819,336
Claims priority, application France, Mar. 20, 1996, 96 03462
Int. Cl.[6] A61N *1/26*
U.S. Cl. 607—3 **12 Claims**



1. Electric stimulation appliance for body care, comprising at least one stimulation electrode (**24**, **25**, **32**, **33**) applied locally on the skin and sending skin currents when in operation, at least one vibrating part (**23**, **33**) mechanically prompting the skin in vibration in association with a electric stimulation, and a box (**21**, **31**) held in the hand during use, characterized in that said vibrating pair (**23**, **33**) being positioned in the vicinity of said electrodes (**24**, **25**,

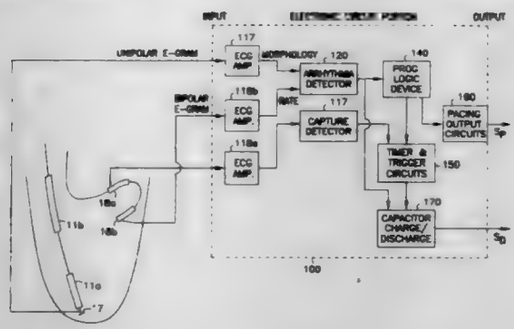
32, 33) is mechanically actuated by the rotation around an axis (18, 46) of at least one rotating element (22, 23), said rotating element being driven mechanically in rotation.

5,797,967

SYSTEM AND METHOD TO REDUCE DEFIBRILLATION REQUIREMENTS

Bruce H. KenKnight, Minneapolis, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Sep. 27, 1996, Ser. No. 720,360
Int. Cl.[6] A61N 1/39
U.S. Cl. 607—4 **28 Claims**



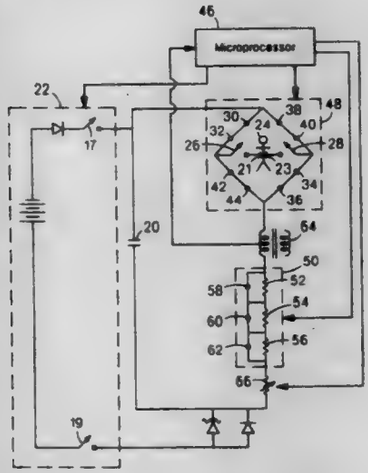
1. A method of treating cardiac arrhythmia, comprising application by an implantable pacing electrode system of at least one exogenous pacing level shock to at least one region of fibrillating myocardium of selected cardiac tissue, any such region being characterized by a 1:1 phase lock of a local electrogram of that region to a stimulus artifact in that region, such that invasion of intrinsic fibrillation wavefronts into at least one region of fibrillating myocardium is prevented.

5,797,968

ELECTROTHERAPY CIRCUIT FOR PRODUCING CURRENT WAVEFORM WITH SAWTOOTH RIPPLE

Michael L. Lopin, Newton, and Shervin Ayati, Sudbury, both of Mass., assignors to ZMD Corporation, Wilmington, Del.

Filed Dec. 18, 1996, Ser. No. 769,046
Int. Cl.[6] A61N 1/39
U.S. Cl. 607—5 **38 Claims**



1. An electrotherapy circuit for administering to a patient a current waveform having at least one phase produced by continuous discharge of a charge storage device, comprising:

a charge storage device for producing the continuous discharge;

at least two discharge electrodes connected by electrical circuitry to opposite poles of the charge storage device;

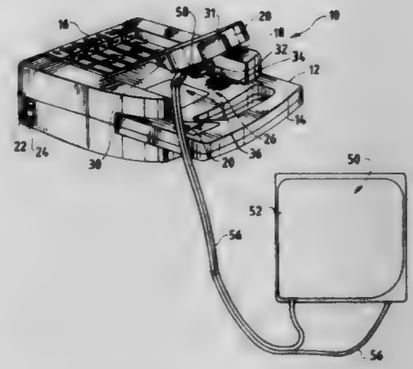
a control circuit, connected to the charge storage device, that controls the continuous discharge of the charge storage device through the electrodes so as to produce at least one phase of a current waveform that includes a ripple with a height less than about one-quarter of the average height of the phase.

5,797,969

ONE BUTTON LID ACTIVATED AUTOMATIC EXTERNAL DEFIBRILLATOR

Kenneth F. Olson, Minneapolis; Byron L. Gilman, Plymouth, and Katherine H. Anderson, Golden Valley, all of Minn., assignors to SurVivaLink Corporation, Minneapolis, Minn.

Continuation of Ser. No. 512,441, Aug. 8, 1995, Pat. No. 5,645,571, which is a continuation-in-part of Ser. No. 509,990, Aug. 1, 1995, abandoned. This application Jan. 9, 1997, Ser. No. 781,185
Int. Cl.[6] A61N 1/39
U.S. Cl. 607—5 **19 Claims**



1. A one button method of applying a defibrillation shock to a patient using an automated external defibrillator (AED) having a case including an electrode compartment, a pair of electrodes stored within the electrode compartment, an openable lid covering the electrode compartment, a high voltage circuit, and an operator-actuated rescue switch, the method including the steps of:

opening the lid covering the electrode compartment to expose the electrodes therein wherein the electrodes are electrically connected to the AED prior to the opening of the lid and wherein the step of opening the lid causes the AED to be powered ON;

retrieving the electrodes stored in the compartment;

applying the electrodes to the patient;

pausing while the high voltage circuit charges; and

actuating the operator-actuating rescue switch a single time to apply a defibrillation shock to the patient via the electrodes.

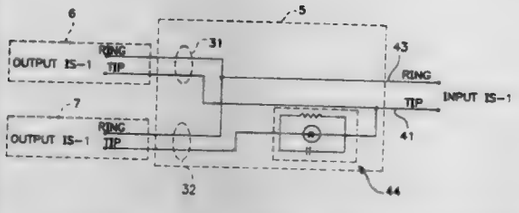
5,797,970

SYSTEM, ADAPTOR AND METHOD TO PROVIDE MEDICAL ELECTRICAL STIMULATION

Yves Pouvreau, Le Rheu, France, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 4, 1996, Ser. No. 708,381
Int. Cl.[6] A61N 1/362
U.S. Cl. 607—9 **7 Claims**

1. A system to provide medical electrical stimulation to a patient's heart comprising:



a pulse generator, the pulse generator generating electrical pacing stimulation pulses of a first pacing amplitude and a second pacing amplitude;

a first lead coupled to the pulse generator, the first lead having a first lead body, the first lead body having a first distal end, a first electrode located at the first distal end;

a second lead, the second lead having an second lead body, the second lead body having a second distal end, a second electrode located at the second distal end; and

means for directing electrical pacing stimulation pulses of a first pacing amplitude through the first lead to the first electrode and directing electrical pacing stimulation pulses of a second pacing amplitude through the second lead to the first electrode and through the second lead to the second electrode, the means for directing electrical pacing stimulation pulses coupled to the pulse generator wherein the means for directing electrical pacing stimulation pulses of a first pacing amplitude to the first electrode and directing electrical pacing stimulation pulses of a second pacing amplitude to the first electrode and the second electrode comprises a zener diode electrically coupling the second lead to the pulse generator; and

means for sensing through the second electrode, the means for sensing comprising a capacitor and a resistor coupled to the second lead body in parallel to the zener diode wherein electrical signals present at the second electrode may be conducted through the second lead body to the pulse generator.

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5,797,971

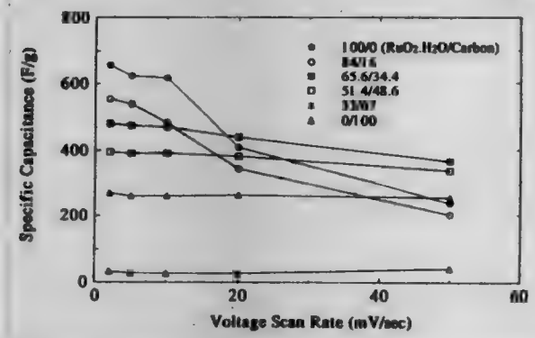
METHOD OF MAKING COMPOSITE ELECTRODE MATERIALS FOR HIGH ENERGY AND HIGH POWER DENSITY ENERGY STORAGE DEVICES

Jian-Ping Zheng, Eatontown, and T. Richard Jow, Chatham, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 353,483, Dec. 9, 1994, Pat. No. 5,621,609. This application Sep. 24, 1996, Ser. No. 718,883

Int. Cl.[6] **H01G** *9/15*

U.S. Cl. 29—25.03 **5 Claims**



1. Method of making a composite electrode structure comprising the steps of:

saturating carbon black with an electrolyte;

mixing hydrous ruthenium oxide powder and the saturated carbon black; and

forming the mixture of hydrous ruthenium oxide powder and the saturated carbon black to derive a desired electrode configuration.

5,797,972

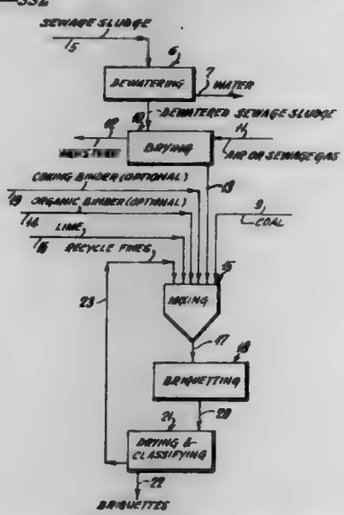
SEWAGE SLUDGE DISPOSAL PROCESS AND PRODUCT

Helmut W. Schulz, Harrison, N.Y., assignor to Dynecology, Inc., Harrison, N.Y.

Continuation-in-part of Ser. No. 410,392, Mar. 27, 1995, Pat. No. 5,711,768, which is a continuation-in-part of Ser. No. 242,532, May 13, 1994, Pat. No. 5,431,702, which is a continuation-in-part of Ser. No. 37,086, Mar. 25, 1993, abandoned. This application Apr. 7, 1997, Ser. No. 838,460

Int. Cl.[6] **C10L** *5/14;5/46*

U.S. Cl. 44—552 **13 Claims**



1. A method for the preparation of pressed fuel briquettes or pellets consisting essentially of sewage sludge solids and crushed coal which comprises:

a. mixing dehydrated sewage sludge containing from about 70 to about 95 weight percent solids with crushed coal wherein the ratio of coal to sewage sludge solids on a dry basis is in the range of from about 1:3 to about 3:1 and with from about 2 to about 12 percent bitumen or pitch on a dry weight basis; and

b. compressing the resulting mixture into briquettes or pellets.

5,797,973

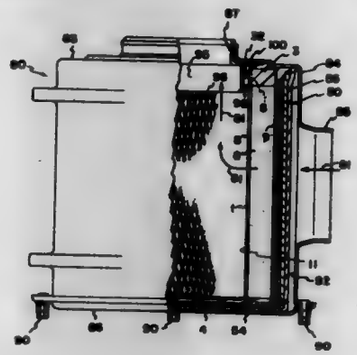
AIR FILTRATION ARRANGEMENT AND METHOD

Denis J. Dudrey, Bloomington; Brad Kahlbaugh, Roseville, and Erland D. Anderson, Farmington, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Division of Ser. No. 426,220, Apr. 21, 1995, Pat. No. 5,669,949. This application Apr. 23, 1997, Ser. No. 841,499

Int. Cl.[6] **B01D** *46/00*

U.S. Cl. 55—372 **22 Claims**



1. An air filter arrangement for filtering particulate matter from incoming air to an engine air intake; said arrangement comprising:

(a) a first construction having an upstream side;

(i) said construction comprising first and second end caps with filter media extending therebetween; said construction including an inner cylindrical liner; said first end cap having a central air flow aperture therein;

(b) a removable and replaceable sleeve filter of media positioned in covering relation to said first construction upstream side; said removable and replaceable sleeve filter including:

(i) an outermost layer of media comprising fibrous depth media having a first efficiency for filtering;

(ii) a second layer of media downstream from said outermost layer; said second layer of media having an efficiency for filtering which is different from said outermost layer; and,

(iii) said outermost layer and said second layer being secured together to form a removable and replaceable sleeve filter; said sleeve filter being continuous and without a nonpermanent seam.

5,797,974

RESPIRATORY FILTER AND SAMPLING DEVICE

Dennis K. Flaherty, Ballwin, Mo.; Russell P. Gordon, Campbell; Paul M. Taylor, Saratoga, both of Calif., and Frank D. Zielinski, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 324,072, Oct. 14, 1994, Pat. No. 5,651,810. This application Apr. 8, 1997, Ser. No. 826,943

Int. Cl.[6] **B01D** *35/30*

U.S. Cl. 55—482 **13 Claims**

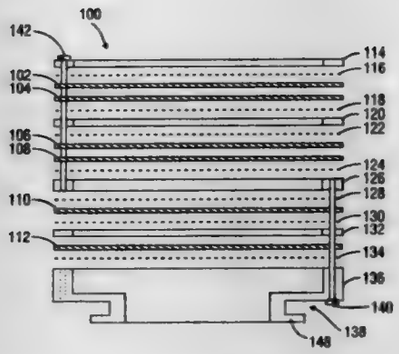
1. A device for sampling and filtering a herbicide comprising:

a first end member;

a second end member in operative alignment with said first end member;

a plurality of fiberglass pads arranged in a stack and through which air is first respired for trapping the herbicide, said plurality of fiberglass pads being intermediate said first and second end members and in operative alignment therewith;

a mist pad in operative alignment with said plurality of fiberglass pads and through which air is respired after being



respired through said plurality of fiberglass pads for preventing respiration of wet vapor, said mist pad being intermediate said first and second end members;

first adjustable connecting means for engaging at least said first end member; and

second adjustable connecting means for engaging at least said second end member;

said first and second connecting means engaging said plurality of fiberglass pads and said mist pad for maintaining same in tight engagement with said first and second end members.

5,797,975

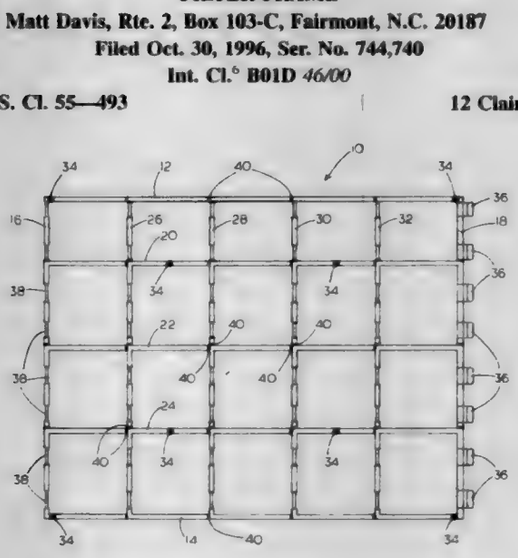
FILTER FRAME

R. Matt Davis, Rte. 2, Box 103-C, Fairmont, N.C. 28187

Filed Oct. 30, 1996, Ser. No. 744,740

Int. Cl.[6] B01D *46/00*

U.S. Cl. 55—493 **12 Claims**



1. A filter frame having at least one break-away filter frame smaller in size than the original filter frame, comprising: a filter frame for supporting a filter media thereon including a mainframe of a select area having multiple separable frame sections and wherein at least one of the separable frame sections includes an area smaller than the area of the mainframe; each separable frame section comprises a break-away construction that allows the frame section to be broken away from the mainframe and the mainframe including a grid structure having break-away lines formed therein by reducing the cross-sectional area of portions of the grid structure at selected points thereby allowing the mainframe to be broken along a selected break-away line.

5,797,976

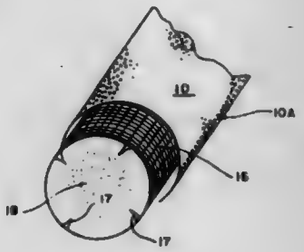
METHOD AND COMPOSITION FOR PROMOTING AND CONTROLLING GROWTH OF PLANTS

Thomas T. Yamashita, 1094 Clover La., Hanford, Calif. 93230

Continuation of Ser. No. 682,850, Jul. 12, 1996, abandoned, which is a continuation of Ser. No. 490,351, Mar. 8, 1990, Pat. No. 5,549,729, which is a continuation-in-part of Ser. No. 354,155, May 19, 1989, abandoned, and Ser. No. 242,951, Sep. 9, 1988, abandoned. This application Feb. 4, 1997, Ser. No. 795,192

Int. Cl.[6] C05F *5/00*

U.S. Cl. 71—26 **24 Claims**



4. An aqueous composition of matter which is suitable for use as a foliar spray for plants, the aqueous composition comprising:

from about 0.625 to about 8.785 weight percent, based upon the weight of the composition, of a carbon skeleton/energy component selected from the group consisting of water soluble mannose, lactose, dextrose, arythrose, fructose, fucose, galactose, glucose, gulose, maltose, polysaccharides, raffinose, ribose, ribulose, rutinose, saccharose, stachyose, trehalose, xylose, xylulose, adenose, amylose, arabinose, fructose phosphate, fucose-p, galactose-p, glucose-p, lactose-p, maltose-p, mannose-p, ribose-p, ribulose-p, xylose-p, xylulose-p, deoxyribose, adonitol, galactitol, glucitol, maltitol, mannitol-p, ribitol, sorbitol, sorbitol-p, sylitol and mixtures thereof,

a macronutrient component having at least one water soluble nitrogen source and at least one water soluble phosphorus source, the macronutrient component being present in an amount effective for providing from about 0.0075 to about 0.625 weight percent, based upon the weight of the composition, nitrogen and from about 0.005 to about 0.625 weight percent, based upon the weight of the composition, phosphorus, the nitrogen source being selected from the group consisting of ammonia, urea, ammonium salts, nitrates, amino acids, proteins, nucleic acids and mixtures thereof, the phosphorus source selected from the group consisting of phosphoric acid, single, double and triple superphosphates, salts of phosphoric acid, nitric acid phosphates and mixtures thereof; and

from about 0.00025 to about 0.125 weight percent, based upon the weight of the composition, of a vitamin/cofactor component selected from the group consisting of thiamine, riboflavin, nicotinic acid, pyridoxine, folic acid, biotin, pantothenic acid, cyanocobalamin, phosphatidylcholine, inositol, para-aminobenzoic acid and mixtures thereof, the vitamin/cofactor being in an amount effective for stimulating energy production and biosynthesis by the plant such that the burden of energy production and carbon skeleton production by the carbon skeleton/energy component is shared by photosynthesis and other biosynthetic paths of the plants, the amount of the vitamin/cofactor component being consistent with metabolism and biosynthesis of the plant,

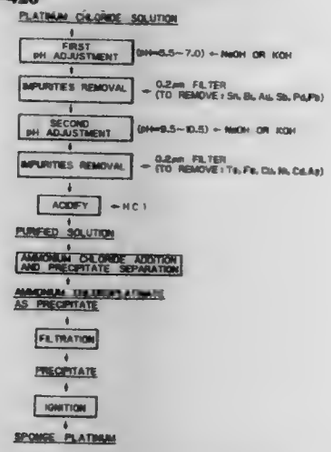
the carbon skeleton/energy component being present in substantially greater amount than the macronutrient component and the vitamin/cofactor component.

5,797,977

METHOD OF PLATINUM RECOVERY

Katutoshi Narita, Ibaraki-ken, Japan, assignor to Nippon Mining & Metals Co., Ltd., Ibaraki, Japan

Filed Feb. 20, 1997, Ser. No. 803,109
Claims priority, application Japan, May 27, 1996, 8-131929
Int. Cl.[6] C22B 11/00
U.S. Cl. 75—426 2 Claims



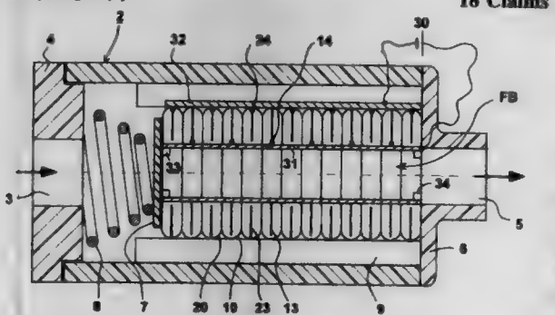
1. A method of platinum recovery comprising:
the first neutralization step in which a neutralizing reagent is added to a solution of chloroplatinic acid containing impurities to adjust the pH value of the solution to 5.5–7.0;
the step of filtrating off the insoluble compounds that produced in the first neutralization step;
the second neutralization step in which a neutralizing reagent is added to the first filtrate of chloroplatinic acid to adjust the pH value of the solution to 9.5–10.5;
the step of filtrating off the insoluble compounds that produced in the second neutralization step;
the step of adding hydrochloric acid to the solution from which the insoluble compounds has been removed;
the step of adding ammonium chloride to the thus processed solution to convert platinum into ammonium chloroplatinate; and
the step of intensely heating the ammonium chloroplatinate to yield sponge platinum.

5,797,978

AIR FILTER INCLUDING ELECTROSTATIC PRECIPITATION, AND METHOD OF OPERATING SAME

Gideon Rosenberg, 20 Hanna Senesh Street, Tivon 36000, Israel, and Ilan Leskly, 12830 Hanover St., Los Angeles, Calif. 90049

Filed Nov. 27, 1995, Ser. No. 563,092
Claims priority, application Israel, Dec. 6, 1994, 111901
Int. Cl.[6] B03C 3/40
U.S. Cl. 95—74 18 Claims



10. A filter element, comprising: a disc of insulating material having substantially planer outer faces formed with ribs contactible with ribs on the outer faces of other discs when stacked therewith to define filtering passageways between the contacting faces of the discs; and an electrode layer carried by said disc and covered by the insulating material thereof, said electrode layer being electrically connected to an exposed electrical terminal at one edge of the disc.

16. A method of operating an air filter body
including a housing having an inlet and an outlet; a plurality of discs of electrically insulating material arranged in a stack within said housing and having ribbed contacting faces defining small filtering passageways between the contacting faces of adjacent discs; each of said discs having an electrode layer insulated by the respective disc from the electrodes of the adjacent disc; each of said electrodes being electrically connected to an electrical terminal at an edge of the respective disc; electrical conductors for connecting the electrical terminals of alternating discs to one side of a voltage source and the electrical terminals of the remaining alternating discs to the other side of said voltage source; and an electrical voltage source connected to said terminals of the electrodes in the insulating discs to electrically attract solid particles in the air to the contacting faces of the discs;
said method of operating the air filter body comprising:
during a filtering mode, directing the air to be filtered into said housing inlet while applying an electrical voltage to said terminals of the electrodes in said insulating discs to thereby attract solid particles in the air to the contacting faces of the discs in the filter body; and during a cleaning mode, directing air into the housing through the housing outlet to reverse flush the filter body while reversing the electrical voltage applied to said terminals to thereby expel the particles from the contacting faces of the filter body discs.

5,797,979

REMOVAL OF ACID GASES FROM GAS MIXTURES USING ION EXCHANGE RESINS

Robert Quinn, East Texas, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 23, 1997, Ser. No. 787,844
Int. Cl.[6] B01D 53/04
U.S. Cl. 95—97 9 Claims

1. A process for separating one or more acid gases from a gas stream containing said acid gas and at least one other component, comprising bringing said gas stream into contact with a macroreticular anion exchange resin containing quaternary ammonium functionalities and counter-anions which are the conjugate bases of acids having a pKa greater than 3 and less than 14, which anion exchange resin selectively absorbs, and thereby removes, said acid gas from the gas stream.

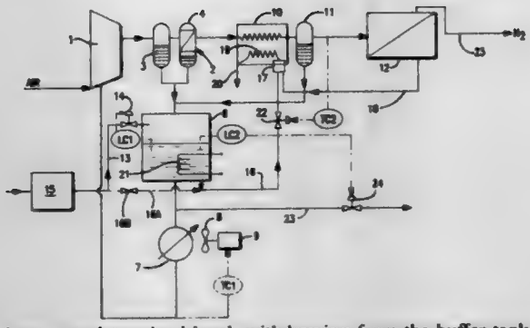
5,797,980

PROCESS AND INSTALLATION FOR THE TREATMENT OF ATOMOSPHERIC AIR

Frédéric Fillet, Clamart, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Mar. 27, 1997, Ser. No. 827,378
Claims priority, application France, Mar. 27, 1996, 96 03808
Int. Cl.[6] B01D 53/047
U.S. Cl. 95—106 13 Claims

1. In a process for the treatment of atmospheric air, comprising the steps of compressing atmospheric air by means of a compressor cooled by a liquid of which at least a fraction of the liquid leaves the compressor in admixture with the compressed air, separating the compressed air from the cooling liquid, cooling the liquid thus separated, recycling the separated liquid toward the compressor, and sending the thus-separated air to at least one further treatment step; the improvement comprising using water as said liquid, passing the water from said separation to a buffer tank, supplying said buffer tank with makeup water to maintain in said buffer tank



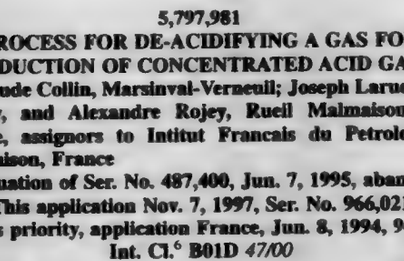
at least a predetermined level, withdrawing from the buffer tank a purge flow of water, and using said purge flow of water to cool the air from said separation.

5,797,981

PROCESS FOR DE-ACIDIFYING A GAS FOR PRODUCTION OF CONCENTRATED ACID GASES

Jean-Claude Collin, Marsinval-Verneuil; Joseph Larue, Chambourcy, and Alexandre Rojey, Rueil Malmaison, all of France, assignors to Intitut Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 487,400, Jun. 7, 1995, abandoned. This application Nov. 7, 1997, Ser. No. 966,021
Claims priority, application France, Jun. 8, 1994, 94 08.501
Int. Cl.[6] B01D *47/00*
U.S. Cl. 95—174 **29 Claims**



1. A method of treating a gas containing at least one hydrocarbon and at least one acid gas to at least partially remove the acid gas from the gas and to produce at least one concentrated acid gas, which comprises the following steps:

(a) the gas is cooled to a temperature lower than or equal to ambient temperature and the cooled gas is brought into contact with a first mixture of a solvent phase containing at least one physical polar solvent and water in a first contact zone to provide a first fraction of a solvent phase which is rich in acid gas and which contains the hydrocarbon in solution and a fraction of gas which is low in acid gas,

(b) the first fraction of solvent phase rich in acid gas obtained in step (a) is regenerated by expansion in a first regeneration zone to produce a gaseous fraction that is rich in acid gas and that contains the hydrocarbon and a solvent phase that is low in acid gas and said solvent phase is recycled back to the first contact zone of step (a),

(c) the gaseous fraction rich in acid gas containing the hydrocarbon obtained in step (b) is brought into contact with a second mixture of solvent phase containing at least one physical polar solvent and water in a second contact zone to produce a gaseous fraction that is enriched with hydrocarbon and a second fraction of a solvent phase that is enriched with acid gas,

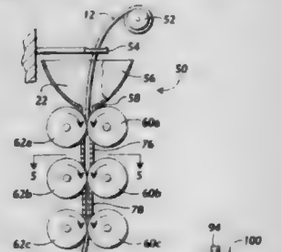
(d) the second fraction of solvent phase enriched with acid gas from step (c) is regenerated by expansion in a second regeneration zone separated from the first regeneration zone to produce a gaseous fraction with a higher concentration of acid gas than the gaseous fraction separated during step (b) and a fraction of solvent phase which is recycled back to the second contact zone of step (c), said second contact zone being separated from the first contact zone.

5,797,982

APPARATUS FOR MANUFACTURING A SEAMLESS PACKING MATERIAL

Steven M. Suggs, and Reid M. Meyer, both of Atlanta, Ga., assignors to Acadia Elastomers Corporation, Roanoke, Va.

Division of Ser. No. 569,948, Dec. 11, 1995, Pat. No. 5,609,708, which is a division of Ser. No. 85,550, Jun. 30, 1993, Pat. No. 5,499,827. This application Jan. 8, 1997, Ser. No. 780,465
Int. Cl.[6] B05B *13/02;* **B05C** *3/12*
U.S. Cl. 118—304 **4 Claims**



1. An apparatus for manufacturing a seamless packing material comprising:

a spool holding an elongate length of a resilient core made of interwoven fibers and a binder material;

a hopper having a funnel shaped open bottom through which the core passes, the hopper holding a supply of particles;

a sprayer mounted above the hopper for applying a film of adhesive to the core entering the hopper;

at least one pair of grooved rollers, said at least one pair of rollers mounted for counter rotation with respect to each other wherein grooves on the at least one pair of rollers together define an opening between the at least one pair of rollers through which the core passes;

a wheel having a pair of radially extending side walls for receiving the core;

a roller for forcibly bearing against the core passing around the wheel to compress the particles and the core into a packing material having a seamless skin.

5,797,983

CONTACT LUBRICATOR WITH METERED SUPPLY

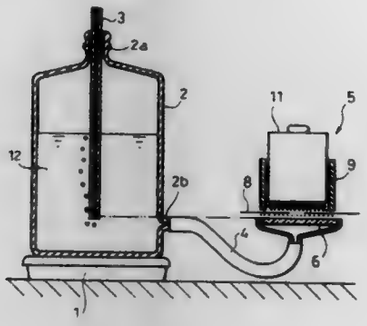
Charles W. Boelkins, 1188 Kirk Dr. S.E., Grand Rapids, Mich. 49546

Division of Ser. No. 570,806, Dec. 12, 1995, Pat. No. 5,690,738, which is a continuation of Ser. No. 157,923, Nov. 24, 1993, abandoned. This application May 16, 1997, Ser. No. 857,701
Int. Cl.[6] B05C *1/00*
U.S. Cl. 118—683 **10 Claims**

1. A surface liquid applicator for sheet stock, comprising in combination:

at least one rotatable elongated roller disposed in alignment with and adjacent said sheet stock to rotatably contact said sheet stock as it passes;

said at least one roller comprising a generally hollow and rigid cylinder having a generally open interior and a sidewall with a plurality of openings therethrough for passing liquid therethrough, and an outer cover of generally deformable material carried on said cylinder, said cover being transmissible by said liquid;



said at least one roller further having end closure portions at each end of said cylinder and an internal tube extending between said end closure portions, at least one of said end closure portions having a passage extending transversely therethrough and located in alignment with said internal tube to convey said liquid thereto;

a source of pressurized liquid and a conduit connecting said source to said at least one end closure portion passage to convey said pressurized liquid from said source to said internal tube, including a cyclically operating apparatus for intermittently applying pressurized liquid to said conduit and said tube;

said internal tube extending across substantially the entire interior length of said roller and having a closed end extremity opposite said at least one end closure portion having said passage;

said internal tube further having peripheral walls defining a plurality of mutually spaced outlet apertures inside said roller of a restricted size operable to pass said liquid therethrough and emit it as a spray projecting outwardly from said internal tube into the interior of said cylinder in response to the pressurized liquid applied by said cyclically operating apparatus forcing said liquid through said outlet apertures, said spray occurring in bursts corresponding to said intermittently applied pressurized liquid;

said intermittently sprayed liquid contacting said sidewall of said cylinder for passage therethrough and said cover having a length and width, and having sufficient thickness, resiliency and transmissibility to carry and spread said sprayed liquid throughout its length and width when the roller carrying said cover is positioned to place said cover in contact with said sheet stock to transfer said liquid thereto by surface contact.

5,797,984

WATER RESISTANT STARCH BASED FOAMS

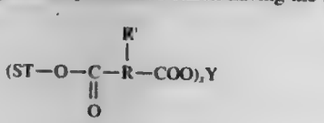
Robert L. Billmers, Stockton, and Paul A. Altieri, Belle Mead, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Apr. 15, 1997, Ser. No. 838,100

Int. Cl.[6] C08B *31/04;* **C09D** *103/06;* **C08L** *3/06*

U.S. Cl. 127—33 **20 Claims**

1. A biodegradable, water and humidity resistant starch product comprising a hydrophobically modified starch having the formula:



where ST is starch, R is a dimethylene group, R' is a hydrocarbon group having 10 to 16 carbon atoms, Y is a metal, x is an integer equal to the valence of Y and the derivative or ester group has a DS of from about 0.03 to 0.12.

5,797,985

BANANA STARCH PRODUCTION

Roy L. Whistler, 320 Laurel Dr., West Lafayette, Ind. 47906

Filed Mar. 26, 1997, Ser. No. 824,303

Int. Cl.[6] C08B *30/04*

U.S. Cl. 127—68 **10 Claims**

1. A process for isolating starch granules from green bananas to take advantage of naturally occurring enzymes in banana plant tissue, said process comprising the steps of pulping the bananas, steeping the pulped bananas in sodium bisulfite solution at pH of about 3.5 to about 5.5 for a period of time sufficient to release the starch granules from the banana pulp, separating the starch as a starch slurry from the non-starch pulp, and isolating the starch from the starch slurry.

5,797,986

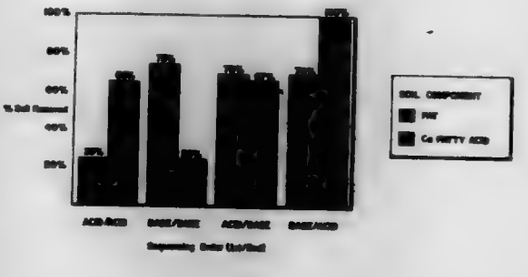
FLOOR CLEANING METHOD

John J. Rolando, Woodbury; Terry J. Klos, Victoria, both of Minn.; John E. Thomas, River Falls, Wis.; David W. Gohl, St. Paul, Minn., and Allison Buchanan, Biloxi, Miss., assignors to Ecolab Inc., St. Paul, Minn.

Continuation of Ser. No. 382,293, Feb. 1, 1995, abandoned. This application Nov. 14, 1996, Ser. No. 749,076

Int. Cl.[6] B08B *3/04*

U.S. Cl. 134—6 **42 Claims**



1. A method of cleaning a hard floor surface to substantially completely remove a complex soil, the method comprising the sequential steps of:

(a) first contacting a hard floor surface having a complex soil residue with a first cleaner that has an alkaline pH, to result in a treated floor surface;

(b) next contacting the treated floor surface with a second cleaner having an acidic pH; and then

(c) contacting the floor surface with a third cleaner having a neutral pH, said third cleaner comprising a nonionic surfactant,

wherein the complex surface soil residue is exposed to mechanical force in the presence of a cleaner.

5,797,987

ZINC PHOSPHATE CONVERSION COATING COMPOSITIONS AND PROCESS

Charles E. Rossio, Carleton, Mich., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 14, 1995, Ser. No. 572,434

Int. Cl.[6] C09D *5/08*

U.S. Cl. 106—14.12 **10 Claims**

1. An aqueous zinc phosphate conversion coating concentrate which comprises: (a) from about 10 to 60 g/l zinc ion; (b) from about 160 to 400 g/l phosphate ion; (c) from about 2 to 40 g/l fluoride ion; (d) from about 0.1 to 10 g/l ferrous ion; and (e) from about 0.2 to 50 g/l ammonium ion.

5,797,988

PROCESS FOR PRODUCING BRIQUETTED AND PRESSED GRANULAR MATERIAL AND USE THEREOF

Günter Linde; Olaf Schmidt-Park, both of Krefeld; Manfred Eitel, Kempen, and Lothar Steiling, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Apr. 7, 1997, Ser. No. 826,665

Claims priority, application Germany, Apr. 18, 1996, 196 15 261.5; Sep. 18, 1996, 196 38 042.1

Int. Cl.[6] C09C *1/44*

U.S. Cl. 106—472 19 Claims

1. A process for producing briquetted and pressed granular material from carbon blacks and auxiliary substances comprising the steps of

a) mixing one or more inorganic carbon blacks with one or more auxiliary substances promoting processability,

b) subjecting this mixture to a pressing or briquetting step to produce a pressed or briquetted product,

c) comminuting the pressed or briquetted product to produce a comminuted product,

d) dividing the comminuted product into two or more fractions,

e) removing a first fraction of particles having at least 85% of the particles at least 80 μm as product and transferring the other fraction or fractions out of the process.

5,797,989

APPARATUS FOR THE CONTINUOUS CRYSTALLIZATION OF POLYESTER MATERIALS

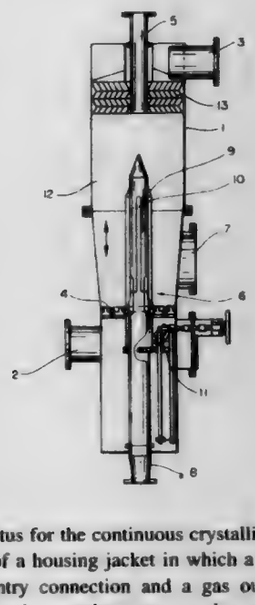
Hans Geissbuehler, Zuzwil, and Heinz Gasser, Wil, both of Switzerland, assignors to Buehler AG, Uzwil, Switzerland

Filed Jan. 11, 1996, Ser. No. 585,116

Claims priority, application Germany, Jan. 9, 1995, 195 00 383.7

Int. Cl.[6] C30B *35/00*

U.S. Cl. 117—200 6 Claims



1. In an apparatus for the continuous crystallization of polyester material having of a housing jacket in which a treatment space is formed, a gas entry connection and a gas outlet connection, a perforated base and a product entry and a product outlet, the improvement comprising that the housing jacket has an axis and that the product entry and product outlet means are arranged concentrically and parallel with said axis in the housing jacket, said product outlet means being axially displaceable.

5,797,990

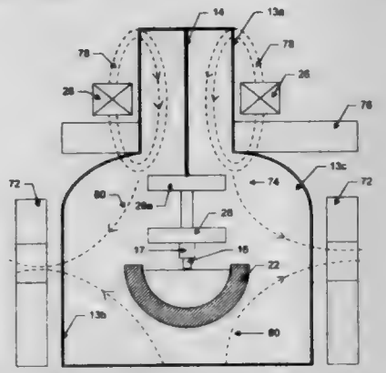
APPARATUS FOR DAMPING A CRYSTAL INGOT SUSPENSION IN A CZOCHRALSKI CRYSTAL PULLER

Zhixin Li, Hudson, N.H., assignor to Ferrofluidics Corporation, Nashua, N.H.

Filed Feb. 26, 1996, Ser. No. 605,508

Int. Cl.[6] C30B *35/00*

U.S. Cl. 117—208 26 Claims



1. An apparatus for damping orbital oscillation of a ingot suspended on a cable in a Czochralski crystal growing device, the apparatus comprising:

a first magnetic field generator for generating a first magnetic field;

a conductor for generating a second magnetic field;

means for mechanically connecting the conductor to the ingot;

the second magnetic field being generated in the vicinity of the first magnetic field so that the first and second magnetic fields interact to oppose the orbital oscillation.

5,797,991

DEVICE FOR COATING A WIRE WITH A LUBRICANT

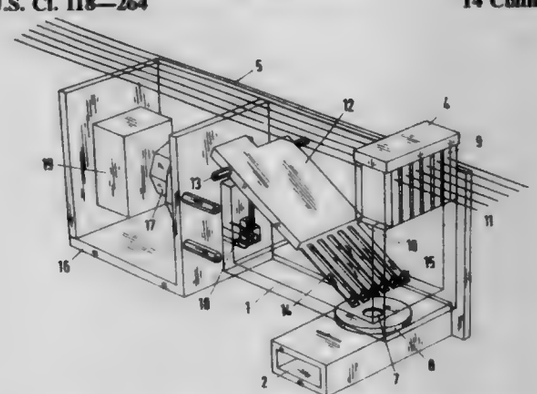
Gerhard Boockman, Niederlauer, Germany, assignor to Boochmann GmbH, Germany

Filed Mar. 25, 1997, Ser. No. 823,479

Claims priority, application Germany, Apr. 4, 1996, 196 13 582.6; Oct. 28, 1996, 196 44 639.2

Int. Cl.[6] B05C *11/00*

U.S. Cl. 118—264 14 Claims



1. A device for coating wire with a lubricant liquid, including a lubricant reservoir for containing the lubricant liquid, an at least one applicator felt, means for continuously moving at least one wire to be coated with the lubricant liquid into contact with the applicator felt, and a metering apparatus which supplies a controlled amount of lubricant liquid from the lubricant reservoir to the applicator felt, wherein the metering apparatus is provided with at least one metering pin which has an indentation therein, and means for, at controlled intervals, immersing the indentation into the lubricant liquid in the lubricant reservoir, and then contracting the applicator felt with the at least one metering pin having the

lubricant liquid contained in the indentation in such a manner that a substantially equal amount of lubricant liquid is absorbed into the applicator felt.

5,797,992

METHOD FOR ENVIRONMENTAL TREATMENT OF HEAVY METALS

Carl L. Huff, 6969 Hollister, #603, Houston, Tex. 77040

Filed Nov. 19, 1996, Ser. No. 752,054
Int. Cl.[6] B08B 7/00;15/00
U.S. Cl. 134—7 8 Claims

1. A method for in situ decontamination of lead contaminated surface coatings, comprising:

determining the amount of lead in a lead contaminated surface coating to be decontaminated,

blending a mixture of an abrasive blasting media with an amount of calcium phosphate in sufficient concentration to react with the lead in said lead contaminated surface coating,

abrasive blasting said lead contaminated surface coating from a coated surface with said mixture,

allowing said calcium phosphate to react with said lead in said lead contaminated surface coating removed by abrasive blasting to render said lead immobile and biologically nonhazardous, and

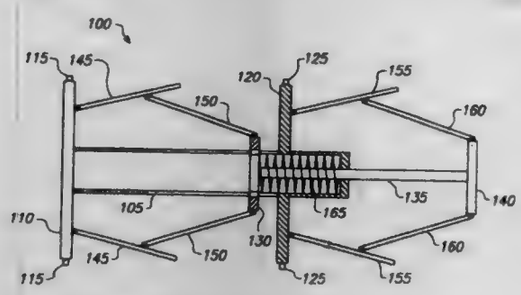
leaving said mixture of abrasive blasting media and calcium phosphate and the surface coating removed by said abrasive blasting in place.

5,797,993

EXPANDABLE PIPELINE PIG ASSEMBLY

Steven P. Woehleke, Moraga, Calif., assignor to Chevron U.S.A. Inc., San Francisco, Calif.

Filed Jul. 16, 1997, Ser. No. 895,290
Int. Cl.[6] B08B 9/04
U.S. Cl. 134—8 20 Claims



2. An expandable pipeline pig comprising:

(a) an elongated cylindrical body member;

(b) a front plate member, a center portion of which is fixedly attached to a front portion of elongated cylindrical body member;

(c) a rear plate member, a center portion of which is fixedly attached to a rear portion of elongated cylindrical body member;

(d) a collar member slidably disposed about said elongated cylindrical body member, said collar member:

(i) having an outer portion forming a ring about of said elongated cylindrical body member;

(e) front rib members:

(i) having front-end portions pivotably attached to a rear side portion of said front plate member; and

(ii) wherein the point of said pivotable attachments is radially equidistant about-the elongated cylindrical body member;

(f) front strut members having front-end portions and rear-end portions:

(i) wherein said front-end portions are pivotably attached to rear-end portions of said front rib members;

(ii) wherein said rear-end portions are pivotably attached to outer portions of said collar member, wherein the point of said pivotable attachments is radially equidistant about said elongated cylindrical body member; and

(iii) wherein said attachment points of the rear-end portions of said front strut members substantially correspond to the radial point of attachment of said front-end portions of said front rib members which are pivotably attached to said rear side portion of said front plate member;

(g) rear rib members:

(i) having front-end portions pivotably attached to a rear side portion of said rear-end plate; and

(ii) wherein the point of said pivotable attachments is radially equidistant about the elongated cylindrical body member;

(h) rear strut means for biasing rear-end portions of said rear rib members;

(i) at least one bias means for moving said collar member toward the front of said elongated cylindrical body member, thereby deploying said front and rear rib members;

(j) a front diaphragm member, wherein radial portions of said front diaphragm member are flexibly attached to said front rib members;

(k) a rear diaphragm member, wherein radial portions of said rear diaphragm member are flexibly attached to said rear rib members; and

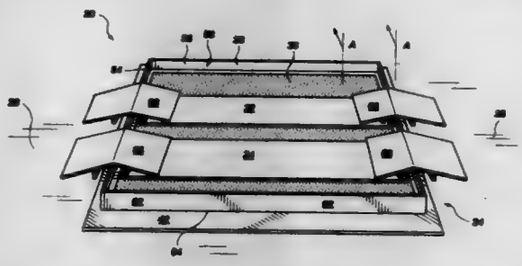
(l) wherein said elements are so disposed such that sliding said front and rear strut members toward the front of said elongated cylindrical body member, due to expansion of said bias means, results in pivoting the rear-end portions of said front and rear rib members outward from said elongated cylindrical body member such as occurs when opening an umbrella.

5,797,994

FLUID RETENTION STATION

Royce Calvin Rasmussen, South Jordan, Utah, assignor to Royce Industries, L.C., Salt Lake City, Utah

Continuation-in-part of Ser. No. 489,222, Jun. 12, 1995, Pat. No. 5,597,001. This application Oct. 30, 1996, Ser. No. 739,581
Int. Cl.[6] B08B 3/02
U.S. Cl. 134—10 20 Claims



20. A method for deploying a portable fluid containment flooring system comprising the steps of:

(a) deploying a base layer of perforation resistant material for covering the existing terrain;

(b) deploying a berm pad layer comprising a substantially fluid impermeable bottom and contiguous flexible upwardly extending sidewalls, said bottom and sidewalls defining a fluid tight enclosure adapted to receive and encircle the portions of said vehicle or other equipment from which fluid is to be received and to retain said fluid within said enclosure; and

(c) deploying a porous layer overlying at least a portion of said bottom of said berm pad layer within said enclosure through which fluid must pass to a collection location within said enclosure to remove from said fluid any contaminants which are too large to pass through the pores of said porous layer or which have an affinity for a surface of said porous layer thereby yielding fluid at the collection location containing reduced amounts of said contaminants.

5,797,995

METHOD FOR THERMAL REMOVAL OF HALOGENATED ORGANIC COMPOUNDS FROM SOIL

Herman Otto Krabbenhoft, Scotia, and Jimmy Lynn Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 407,454, Mar. 29, 1995, abandoned. This application Mar. 8, 1996, Ser. No. 611,609

Int. Cl.[6] B08B *3/08;3/10*

U.S. Cl. 134—19 7 Claims

1. A method for decontamination of particulate materials contaminated with halogenated organic compounds which consists of admixing with the contaminated materials about one to fifteen weight percent based on the weight of the contaminated particulate materials of formic acid, dry heating the resulting admixture to a temperature of 250° C. to 450° C., by external means, for a time sufficient to volatilize and remove the halogenated organic compounds and the formic acid, as vapor, from the particulate material, and collecting the halogenated organic compounds and formic acid vapor by condensation.

5,797,996

METHOD FOR CONTROLLING THE AMOUNT OF WATER FILLED IN A DISHWASHING MACHINE

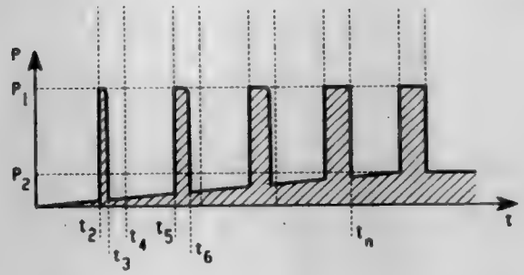
Claudio Milocco, Trieste, and Gianluca Tassotti, Pordenone, both of Italy, assignors to Electrolux Zanussi Elettrodomestici S.p.A., Pordenone, Italy

Filed Sep. 8, 1997, Ser. No. 924,968

Claims priority, application Italy, Sep. 12, 1996, PN96A0051

Int. Cl.[6] B08B *7/04*

U.S. Cl. 134—18 5 Claims



1. Method for controlling the amount of water being filled in a dishwashing machine including normally closed valve means (**18**); a program sequence control switch (**12**) controlling the valve means; spray means (**7**); a circulation pump (**10**) supplying the spray means; an electric motor (**11**) driving the pump and controlled by said program sequence control switch; and pressure sensing means for determining pressure of the water at the circulation pump, the method comprising the steps of:

energizing the circulation pump to pressurize the water in an intermittent manner with an alternating sequence of pre-set operating periods (T) and pauses (S) during which a nominal rotating speed of the motor is at its highest value rated (V_1) and its lowest value (V_0), respectively;

spraying the water on washload items through the spray means;

sensing the pressure of the water at the circulation pump; and

characterized by opening said valve means (**18**) in at least one pause (S) following a period (T) during which the pressure of the water at the pump (**10**) decreases below a pre-determined threshold value (P_2).

5,797,997

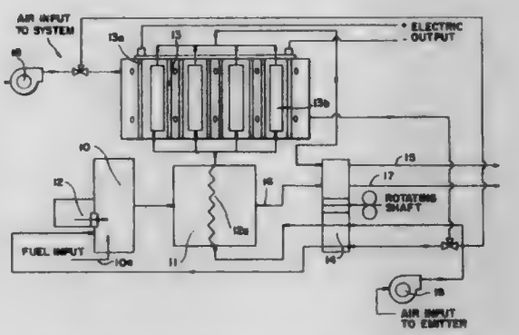
OXYGEN PRODUCING THERMOPHOTOVOLTAIC SYSTEMS

Darryl L. Noreen, 551 Observer Hwy. #10 B, Hoboken, N.J. 07030

Continuation-in-part of Ser. No. 315,062, Sep. 29, 1994, Pat. No. 5,512,108. This application Apr. 30, 1996, Ser. No. 640,318

Int. Cl.[6] H02N *6/00*

U.S. Cl. 136—253 25 Claims



1. A system for co-generating pure oxygen and electricity, comprising:

a) membrane means for separating pure oxygen from a gaseous mixture;

b) thermophotovoltaic (TPV) means for generating electricity sufficient to separate said pure oxygen from said gaseous mixture, comprising:

i) an insulated housing containing a porous ceramic matrix and having a combustion zone for supporting combustion of a reactant mixture and for emitting radiant energy in response to said combustion,

ii) means for injecting an incoming reactant mixture into said ceramic matrix,

iii) ignition means to ignite said reactant mixture and propagate a combustion flame within said combustion zone;

iv) photocell means for receiving and converting said radiant energy into electricity,

v) heat recovery means for recovering heat of combustion and for preheating said reactant mixture,

c) means for transferring said TPV generated electricity to said membrane means for separating pure oxygen;

d) heat recovery means for recovering heat emitted from said means for separating pure oxygen; and

e) means for collecting, storing, and delivering said pure oxygen.

5,797,998

MULTIPLE LAYER THIN FILM SOLAR CELLS WITH BURIED CONTACTS

Stuart Ross Wenham, Menai, and Martin Andrew Green, Waverley, both of Australia, assignors to Pacific Solar Pty. Limited, New South Wales, Australia

PCT No. PCT/AU95/00184, § 371 Date Aug. 28, 1996, § 102(e) Date Aug. 28, 1996, PCT Pub. No. WO95/27314, PCT Pub. Date Oct. 12, 1995

PCT Filed Mar. 31, 1995, Ser. No. 700,544

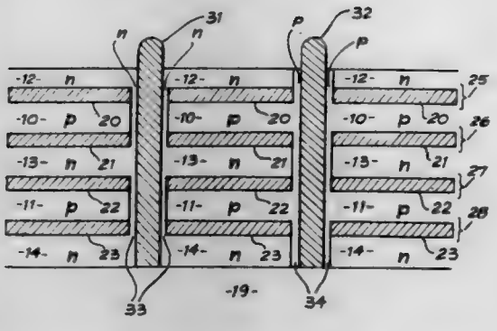
Claims priority, application Australia, Mar. 31, 1994, PM4834

Int. Cl.[6] H01L *31/05*

U.S. Cl. 136—255 18 Claims

1. A thin film polycrystalline solar cell comprising:

at least three layers of alternate polarity polycrystalline material defining p-n junctions between each pair of alternate polarity layers of said at least three layers of alternate polarity polycrystalline material;



connecting means for connecting like polarity layers of said at least three layers of alternate polarity polycrystalline material in parallel;

one of lightly doped and intrinsic regions separating said at least three layers of alternate polarity polycrystalline material;

the at least three layers of alternate polarity polycrystalline material having a maximum dopant concentration above 10^{17} atoms/cm^3; and

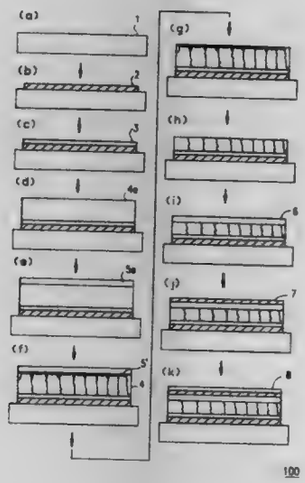
each of the at least three layers of alternate polarity polycrystalline material having a thickness which is not greater than 5 times a minority carrier diffusion length for based on a dopant concentration thereof.

5,797,999

SOLAR CELL AND METHOD FOR FABRICATING THE SAME

Hitoshi Sannomiya, Osaka; Takashi Tomita, Nara; Shunpei Yamazaki, Setagaya-ku, and Yasuyuki Arai, Atsugi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 6, 1996, Ser. No. 709,505
Claims priority, application Japan, Sep. 8, 1995, 7-231776
Int. Cl.[6] H01L *31/0368*
U.S. Cl. 136—258 PC **29 Claims**



1. A solar cell, comprising:

a substrate;

a polycrystalline silicon film of a first conductivity type which is provided over the substrate and contains nickel and hydrogen or halogen elements; and

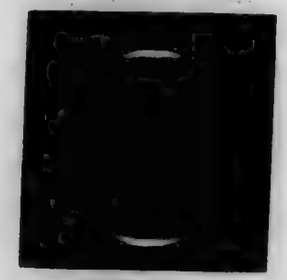
a crystalline silicon film of a second conductivity type which is provided on a first side of the polycrystalline silicon film of the first conductivity type facing the substrate or on a second side opposite to the first side thereof.

5,798,000

NON-ZINC CHLORIDE TYPE FLUX FOR TIN PLATING

Reika Satsurai, Tokai, Japan, assignor to Hoshizaki Denki Kabushiki Kaisha, Aichi-ken, Japan

Continuation of Ser. No. 388,054, Feb. 10, 1995, abandoned. This application Jan. 29, 1997, Ser. No. 790,485
Claims priority, application Japan, Feb. 10, 1994, 6-037918
Int. Cl.[6] B23K *35/34*
U.S. Cl. 148—26 **5 Claims**



FLUX No.1

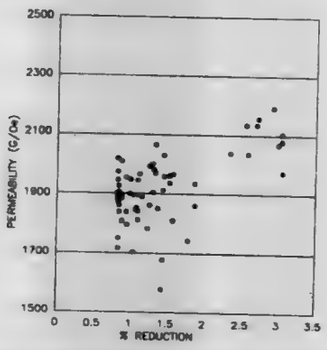
1. A flux for use in coating a copper or nickel containing substrate metal with molten tin, consisting essentially of stannous chloride ($SnCl_2$ $2H_2O$) and at least one chloride salt selected from the group consisting of sodium chloride and potassium chloride, excluding zinc chloride therefrom, wherein the ratio of stannous chloride to said at least one chloride salt is 4:6–9:1.

5,798,001

ELECTRICAL STEEL WITH IMPROVED MAGNETIC PROPERTIES IN THE ROLLING DIRECTION

Jeffrey P. Anderson, Macedonia, Ohio, assignor to LTV Steel Company, Inc., Cleveland, Ohio

Filed Dec. 28, 1995, Ser. No. 579,745
Int. Cl.[6] H01F *1/147*
U.S. Cl. 148—120 **23 Claims**



1. A method of making electrical steel characterized by low core loss and high permeability in the rolling direction comprising the steps of:

hot rolling a slab into a strip having a composition comprising (% by weight):

C: up to 0.01
Si: 0.20–2.25
Al: 0.10–0.45
Mn: 0.10–1.0
S: up to 0.015
N: up to 0.006
Sb: up to 0.07
Sn: up to 0.12
P: 0.005–0.1, and the balance being substantially iron,

coiling,

hot band annealing in a temperature range effective to coarsen grains sufficient to improve magnetic properties in a rolling direction of the strip,

cold rolling,

batch annealing at a temperature in the range of 1040°–1140° F.,

temper rolling to provide the strip with a transfer surface roughness (Ra) of not greater than 15 μin,
punching out shapes into laminations, and
final annealing the laminations.

5,798,002

METHOD OF AND DEVICE FOR PRODUCING CARBIDE AND CARBON SOLID SOLUTION CONTAINING SURFACE LAYERS

Savelly M. Gugel, 109-10 Park Lane S., #B3, Richmond Hill, N.Y. 11418

Filed Dec. 2, 1996, Ser. No. 759,012
Int. Cl.[6] C23C *8/44;8/46*
U.S. Cl. 148—209 **22 Claims**



1. A method of producing a surface layer selected from the group consisting of carbide containing surface layer and a carbon solid solution containing surface layer on a substrate selected from the group consisting of a metal and a metal containing an alloying element, the method comprising the steps of providing a bath composed of a cold carbon-containing liquid active medium at ambient temperature; introducing heating means into the cold liquid active medium; immersing a substrate into the cold liquid active medium; heating the substrate directly by the heating means inside the liquid active medium to a corresponding processing temperature until the layer of a desired chemical composition and thickness is formed on the substrate.

5,798,003

Patent Not Issued For This Number

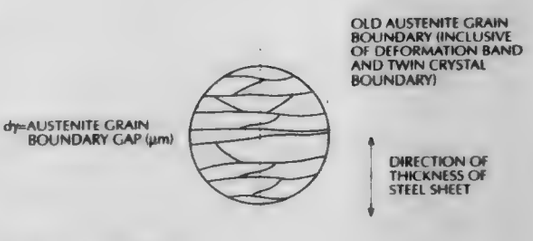
5,798,004

WELDABLE HIGH STRENGTH STEEL HAVING EXCELLENT LOW TEMPERATURE TOUGHNESS

Hiroshi Tamehiro; Hitoshi Asahi; Takuya Hara, all of Futtsu, and Yoshio Terada, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

PCT No. PCT/JP96/00155, § 371 Date Jan. 14, 1997, § 102(e) Date Jan. 14, 1997, PCT Pub. No. WO96/23083, PCT Pub. Date Aug. 1, 1996
PCT Filed Jan. 26, 1996, Ser. No. 714,098
Claims priority, application Japan, Jan. 26, 1995, 7-011081; Feb. 3, 1995, 7-017303; Feb. 6, 1995, 7-018307
Int. Cl.[6] C22C *38/08;38/48*
U.S. Cl. 148—336 **9 Claims**

1. A weldable high strength steel excellent in low temperature toughness; containing, in terms of percent by weight:
C: 0.05 to 0.10%,
Si: ≦0.6%,
Mn: 1.7 to 2.5%,
P: ≦0.015%
S: ≦0.003%
Ni: 0.1 to 1.0%,
Mo: 0.15 to 0.60%,
Nb: 0.01 to 0.10%,



Ti: 0.005 to 0.030%,
Al: ≦0.06%,
B: up to 0.0020%
N: 0.001 to 0.006%, and
the balance of Fe and unavoidable impurities; and
having a P value, defined by the following formula, within the range of 1.9 to 4.0;
wherein the micro-structure of said steel contains at least 60%, in terms of a volume fraction, of martensite transformed from un-recrystallized austenite having an apparent mean austenite grain size (dγ) of not greater than 10 μm, and the sum of said martensite fraction and a bainite fraction is at least 90%:

$$P=2.7C+0.4Si+Mn+0.8Cr+0.45(Ni+Cu)+(1+\beta)Mo-1+\beta$$

where β is 0 when B is less than 3 ppm and β is 1 when B is greater than or equal to 3 ppm and wherein said steel has a tensile strength of at least 950 MPa.

5,798,005

TITANIUM TARGET FOR SPUTTERING AND PRODUCTION METHOD FOR SAME

Hideo Murata, Tottori-ken, and Shigeru Taniguchi, Yasugi, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 623,861
Claims priority, application Japan, Mar. 31, 1995, 7-099977
Int. Cl.[6] C22C *14/00*
U.S. Cl. 148—421 **9 Claims**

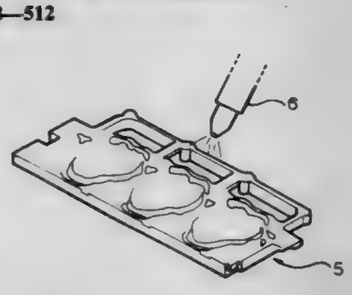
1. A titanium target for sputtering, wherein X-ray diffraction intensity ratios on a sputtering plane of the target are (0002)/(10$\bar{1}$1)≧0.8 and (0002)/(10$\bar{1}$0)≧6, and having a recrystallized structure having an average crystal grain size of 20 μm or less.

5,798,006

PRE-MANUFACTURING METHOD OF A CYLINDER HEAD BY MEANS OF JUNCTION OF LOW FUSING POINT A1 ALLOYED LAYERS

Yong-Song Lee, Seoul, Rep. of Korea, assignor to Kia Motors Corporation, Seoul, Rep. of Korea

Filed Aug. 21, 1996, Ser. No. 697,238
Claims priority, application Rep. of Korea, Jul. 26, 1996, 96-30569
Int. Cl.[6] B23K *20/233*
U.S. Cl. 148—512 **12 Claims**



1. A method of pre-manufacturing a cylinder head, comprising the steps of:

depositing a Cu layer on a plurality of members formed of aluminum alloys;

stacking the plurality of members orderly against each other; and

connecting the plurality of members by heating the Cu layer and the members to form an Al—Cu layer between the plurality of members;

wherein the plurality of members comprise a first member contacted with a cylinder block, a second member having a suction and exhaust member formed thereon, and a third member fixing a valve having a cam shaft.

5,798,007

PROCESS AND APPARATUS FOR THE CONTINUOUS HEAT TREATMENT OF A METAL STRIP TRAVELLING IN A DIFFERENT ATMOSPHERE

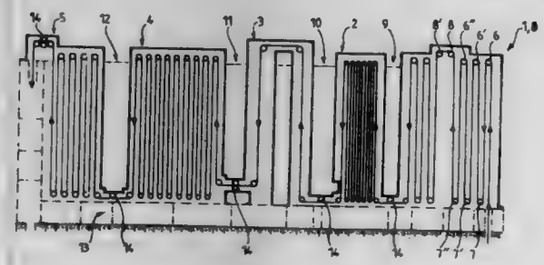
Michel Boyer, Chartrettes, and Jean-Jacques Nozieres, Chaville, both of France, assignors to Stein Heurtey, Ris Orangis, France

Filed Mar. 11, 1997, Ser. No. 814,226

Claims priority, application France, Mar. 13, 1996, 96 03140

Int. Cl.[6] **C21D** *9/573;9/667*

U.S. Cl. 148—627 **19 Claims**



1. Plant for the continuous heat treatment of a metal strip traveling through a thermally isolated furnace said furnace comprising:

at least one heating section,

at least one cooling section having means for blowing a gas onto the metal strip,

said sections being provided, in their upper and lower parts, with a plurality of guide rollers for guiding the strip,

guide rollers for guiding the strip,

connecting tunnels for connecting said sections together,

a plurality of isolating devices provided to the said tunnels,

said isolating devices enabling at least one cooling section and at least one heating section to be sealed from at least one neighboring section,

at least one isolating device is located at at least one of a point prior to the entry of the strip into and a point subsequent to exit from said at least one cooling section,

at least one isolating device is located at at least one of a point prior to the entry of the strip into and a point subsequent to exit from said at least one heating section, and

a protective atmosphere in said sealed section, said atmosphere having properties enabling the cooling capacity of the said section to be increased relative to at least one neighboring section, by virtue of an increase in the gradient across said section (° C./s).

5,798,008

METHOD FOR PRODUCING COPPER ALLOY MATERIALS FOR MOLDS FOR CONTINUOUS STEEL CASTING, AND MOLDS MADE OF THE MATERIALS

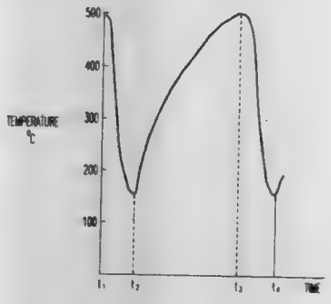
Keishi Nogami; Masuto Koide; Takashi Morimoto, all of Sakai, and Yutaka Koshiba, Tokyo, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jul. 15, 1996, Ser. No. 680,402

Claims priority, application Japan, Sep. 22, 1995, 7-244985

Int. Cl.[6] **B22C** *9/00;7/06*

U.S. Cl. 148—682 **8 Claims**



5. A method for producing copper alloy materials for molds for continuous steel casting, the method comprising the steps of:

heating cast ingots of a copper-based chromium-zirconium alloy consisting essentially of Cr in an amount of 0.2 to 1.5% by weight, Zr in an amount of 0.02 to 0.2% by weight and at least one selected from the group consisting of Mg, Si, Al, Ni, Sn, Fe, Mn, Ag, Co, B and P in an amount up to 0.2% by weight with the balance being Cu and inevitable impurities at between 900° C. and 1000° C. for 30 minutes or longer;

hot working said cast ingots at a reduction ratio of 60% or more to be at 850° C. or higher at which the hot working is finished;

rapidly cooling said cast ingots immediately after the hot working to 400° C. or lower at a cooling rate of 10° C./sec or more; and

aging said cast ingots at between 400° C. and 520° C. for from 1 hour to 5 hours to provide for mold materials.

5,798,009

FOAMED RUBBER COMPOSITIONS FOR TIRES AND PNEUMATIC TIRE USING THE SAME

Hiroyuki Teratani, Kodaira, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 579,200

Claims priority, application Japan, Dec. 27, 1994, 6-326065; Feb. 14, 1995, 7-24974; Aug. 30, 1995, 7-221589; Aug. 31, 1995, 7-223129

Int. Cl.[6] **B60C** *9/02;* **C08J** *9/06*

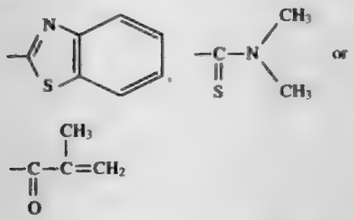
U.S. Cl. 152—548 **9 Claims**

1. A foamed rubber composition comprising 3–30 parts by weight, based on 100 parts by weight of rubber ingredient, of particles having a JIS C-type hardness of not less than 75 and an average particle size of 5–250 μm and containing an organic binder and aluminum-bonded hydroxy groups and/or silicon-bonded hydroxy groups at its surface, and 3–50% by weight, based on the weight of the particles, of at least one silane coupling agent represented by the following general formula:

$$Y_3—Si—C_nH_{2n}A$$

wherein A is $—S_mC_nH_{2n}Si—Y3$ group or S_mZ group, Y is an alkyl or alkoxy group having a carbon number of 1–4 or chlorine atom,

provided that three Y groups may be same or different, Z is



and m and n are an integer of 1–6, respectively.

5,798,010

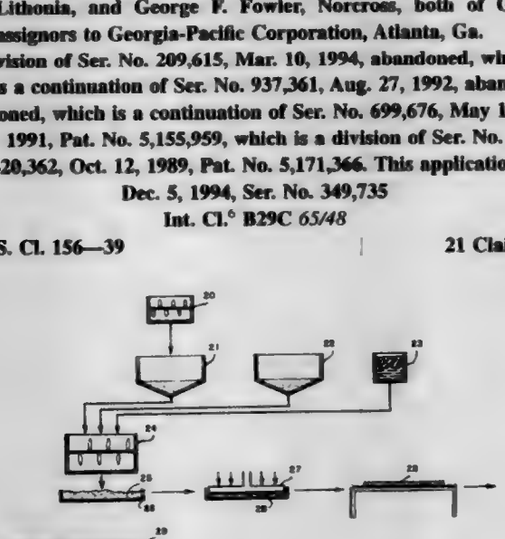
METHODS OF PREPARING FIRE DOORS

Turner W. Richards, Goldendale, Wash.; Hubert C. Francis, Lithonia, and George F. Fowler, Norcross, both of Ga., assignors to Georgia-Pacific Corporation, Atlanta, Ga.

Division of Ser. No. 209,615, Mar. 10, 1994, abandoned, which is a continuation of Ser. No. 937,361, Aug. 27, 1992, abandoned, which is a continuation of Ser. No. 699,676, May 14, 1991, Pat. No. 5,155,959, which is a division of Ser. No. 420,362, Oct. 12, 1989, Pat. No. 5,171,366. This application Dec. 5, 1994, Ser. No. 349,735

Int. Cl.[6] B29C *65/48*

U.S. Cl. 156—39 **21 Claims**



1. A method of preparing a fire door capable of achieving a 20 minute ASTM E-152 fire test rating without the use of asbestos, comprising:

(a) providing at least a pair of substantially asbestos free preformed gypsum fiberboard panels having a composition comprising about 65 wt. % to about 90 wt. % set gypsum dihydrate, about 10 wt. % to about 17 wt. % paper fiber, and a density of at least about 60 lbs/cu.ft., said fiberboard panels being formed by casting and compressing a wet slurry comprising gypsum and said paper fiber;

(b) providing a core;

(c) adhering said core between said gypsum fiberboard panels;

(d) securing edge banding between said gypsum fiberboard panels to substantially enclose said core and form a composite member, said edge banding comprising about 65 wt. % to about 90 wt. % set gypsum dihydrate and from about 7 wt. % to about 30 wt. % paper fiber, said edge banding having a density of at least about 60 lbs/cu.ft. and a screw holding capacity of at least 400 pounds: and

(e) providing said composite member as a substantial portion of said door so as to produce a fire door capable of achieving a 20 minute ASTM E-152 fire test rating.

5,798,011

METHOD OF MAKING WINDOW FRAME FOR CONCRETE WALL PANEL

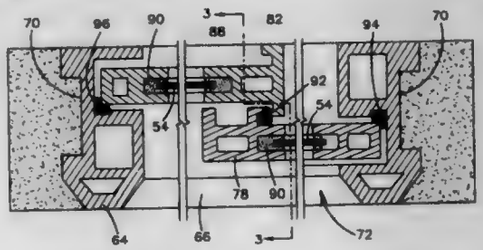
Tatsuo Suenaga; Hiroaki Nakagawa; Shin Terauchi; Takeo Kikuchi; Shinnosuke Aiba; Mikio Kobayashi; Yutaka Katsuta; Kenji Ago; Katsumi Kosuge; Yasuyuki Matsubara; Masato Tanaami; Shunichi Sugishita; Hideki Ikeda; Toshio Furuya, all of Tokyo; Shigeyuki Akihama, Kanagawa, and Takahiro Arai, Saitama, all of Japan, assignors to Kajima Corporation, and Kabushiki Kaisha F R C, both of Tokyo, Japan

Division of Ser. No. 277,608, Jul. 20, 1994, Pat. No. 5,591,286, which is a division of Ser. No. 43,268, Apr. 6, 1993, Pat. No. 5,356,687. This application Aug. 9, 1996, Ser. No. 694,629

Claims priority, application Japan, Apr. 8, 1992, 4-87155

Int. Cl.[6] E06B *3/00;7/12*

U.S. Cl. 156—71 **1 Claim**



1. The method of securing a window frame in an opening in a concrete wall panel comprising the steps of:

(a) forming a wall panel mold to define a top, bottom, and side edges of a concrete wall panel;

(b) extruding top, bottom, and two side member lengths of concrete with outer faces having mortises and tenons, and with inner faces of said top and bottom member lengths each having opposed inwardly projecting rectangular front flanges and inwardly projecting rectangular rear flanges horizontally spaced from said front flanges;

(c) placing said extruded lengths of concrete together to form a window frame;

(d) fixing said window frame to said wall panel mold;

(e) pouring concrete grout in said wall panel mold, including

(f) pouring said concrete grout about said outer faces of said window frame so as to embed said mortises and said tenons in said concrete grout to form said concrete wall panel;

(g) permitting said concrete grout to harden about said window frame mortises and tenons to form mortise and tenon joints between said window frame and said hardened concrete grout of said concrete wall panel;

(h) placing a four-sided front window sash having top and bottom exterior grooves in said window frame with said exterior grooves of said front window sash in horizontal sliding engagement with said inwardly projecting rectangular front flanges of said window frame, each of said four sides of said front window sash having interior grooves;

(i) placing a four-sided rear window sash having top and bottom exterior grooves in said window frame with said exterior grooves of said rear window sash in horizontal sliding engagement with said inwardly projecting rectangular rear flanges of said window frame, each of said four sides of said rear window sash having interior grooves;

(j) placing sealing means between said front and rear window sashes for sealing engagement therebetween;

(k) placing sealing means between a first of said two side member lengths of concrete and said front window sash;

(l) placing sealing means between a second of said two side member lengths of concrete and said rear window sash;

(m) placing window panes in said interior grooves of said front and rear window sashes; and

(n) sealing said window panes in said front and rear window sashes,

whereby said mortise and tenon joints create an air-tight, water-tight, and heat and fireproof bond between said hardened

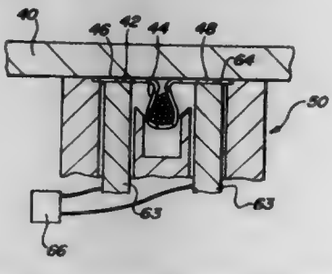
grout and said window frame, and said window panes and sashes are sealed within said window frame.

5,798,012

METHOD OF ASSEMBLING WIRE HARNESS AND TRIM PANEL

Michael A. Krane, Woodhaven; Mike Zuteck, Grosse Pointe Farms, and Steve Nagy, Grosse Isle, all of Mich., assignors to UT Automotive Dearborn, Inc., Dearborn, Mich.

Filed Sep. 30, 1996, Ser. No. 724,733
Int. Cl.[6] B29C 65/08
U.S. Cl. 156—71 7 Claims



1. A method of securing a wire harness to a vehicle trim panel comprising the steps of:

1) providing a wire harness assembly jig including attachment stations, said attachment stations being provided with actuation structure to secure said holding strips to a trim panel;

2) placing holding strips in said attachment stations;

3) assembling wires to said wire harness assembly jig, and through said attachment stations;

4) placing a trim panel adjacent said wire harness assembly jig; and

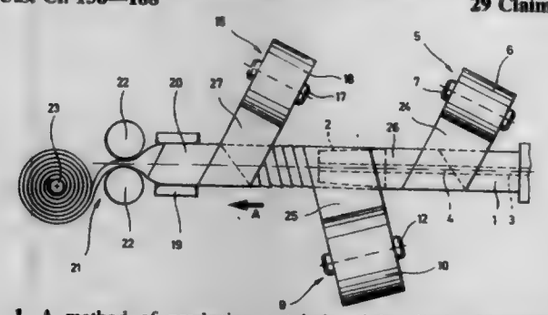
5) utilizing said attachment stations to secure said strips to said trim panel, and capture said wires on said trim panel.

5,798,013

METHOD AND APPARATUS FOR PRODUCING A TUBULAR LINING HOSE

Joachim Brandenburger, Garmisch-Partenkirchen, Germany, assignor to Brandenburger Patentverwertungsgesellschaft des burgerlichen Rechts, Garmisch-Partenkirchen, Germany

PCT No. PCT/EP94/02521, § 371 Date May 24, 1996, § 102(e) Date May 24, 1996, PCT Pub. No. WO95/04646, PCT Pub. Date Feb. 16, 1995
PCT Filed Jul. 29, 1994, Ser. No. 596,148
Claims priority, application Germany, Aug. 6, 1993, 43 26 503.0; Nov. 22, 1993, 43 39 756.5
Int. Cl.[6] F16L 55/165; B65H 81/00
U.S. Cl. 156—188 29 Claims



1. A method of producing a tubular lining hose (20, 108), comprising the steps of forming at least one fibrous strip (25, 106) into a curable, resin-impregnated hose, an inner side of the resultant lining hose (20, 108) being provided with an inner foil hose (26, 107) onto which the fibrous strip (25, 106) is wound,

wherein a winding operation takes place on a winding mandrel (1) consisting of at least two winding fingers (28), which are arranged essentially parallel to each other and a distance of which can be adjusted in a direction radial to an axis (4) of the winding mandrel (1) so as to vary a winding circumference of said winding mandrel (1), and wherein the lining hose (20, 108) is advanced in a longitudinal direction of the hose (20, 108) by a means for substantially frictionless removal of the hose (26, 108) from the winding fingers (28), said advance movement being synchronous with a hose removal speed, and wherein the fibrous strip (25, 106) is unwound from a fibrous-strip roll (6, 10, 18) provided with an annular frame (8, 11, 16), which is arranged so that the fibrous-strip roll rotates about said winding mandrel (1).

20. An apparatus for producing a tubular lining hose (20, 108) comprising:

an elongate winding mandrel (1) and at least two reception means (5, 9, 15) which are arranged in spaced relationship with an axis (4) of the winding mandrel (1) such that they are adapted to be rotated about said axis (4) and which are used for receiving thereon fibrous-strip rolls (6, 10, 18); said fibrous-strip rolls (6, 10, 18) being adapted to be rotated about their longitudinal axis and supported in respective reception means (5, 9, 15) in such a way that the fibrous strips are adapted to be would on the winding mandrel (1) and the winding mandrel axis (4), respectively, by a rotary movement of the reception means about the winding mandrel axis and by simultaneous rotation of the fibrous-strip rolls (6, 10, 18) about their own axis;

a removing device (21) for removing a wound lining hose (20) from the winding mandrel (1) substantially in the axial direction of said winding mandrel, wherein said winding mandrel (1) has at least two winding fingers (28), which are arranged substantially parallel to each other and a distance of which can be adjusted individually or jointly in a direction radial to the axis (4) of the winding mandrel (1) so as to vary a winding circumference of said winding mandrel (1), said winding fingers (28) being provided with a means for producing an advance movement in a longitudinal direction of the hose so that a substantially frictionless removal of an inner foil hose (26) from the winding fingers (28) takes place, said advance movement being synchronous with a hose removal speed; and,

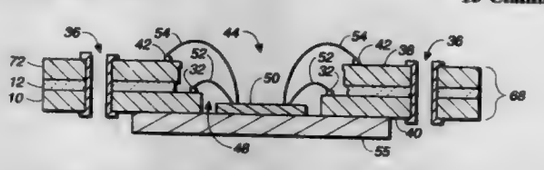
said reception means (5, 9, 15) are each provided with a annular frame (8, 11, 16), which is arranged such that it extends around the winding mandrel (1) and which is supported such that it is adapted to be rotated about said winding mandrel (1).

5,798,014

METHODS OF MAKING MULTI-TIER LAMINATE SUBSTRATES FOR ELECTRONIC DEVICE PACKAGING

Patrick O. Weber, San Jose, Calif., assignor to Hestia Technologies, Inc., Sunnyvale, Calif.

Division of Ser. No. 384,268, Feb. 2, 1995, Pat. No. 5,622,588. This application Oct. 16, 1996, Ser. No. 733,148
Int. Cl.[6] H01L 23/12
U.S. Cl. 156—263 15 Claims



1. A method for making multi-tier laminate substrates for electronic device packaging comprising the steps of:

providing a first laminating layer having a trace on a first side and a second laminating layer having a trace on a first side;

making an annular depression in the first side of the first laminating layer;

making a first window corresponding to the annular depression in at least one layer of dielectric;

laminating together the first laminating layer, the second laminating layer, and the layer of dielectric to produce a laminated substrate, wherein the layer of dielectric is located between the trace on the first side of the first laminating layer and the trace on the first side of the second laminating layer;

making vias through the laminated substrate;

plating the vias;

producing traces on a second side of the first laminating layer and a second side of the second laminating layer;

making a first opening in the first laminating layer corresponding to the annular depression; and

treating exposed surfaces of the laminating layers.

5,798,015

METHOD OF LAMINATING A STRUCTURE WITH ADHESIVE CONTAINING A PHOTOREACTOR COMPOSITION

Ronald Sinclair Nohr, Alpharetta, and John Gavin MacDonald, Decatur, both of Ga., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

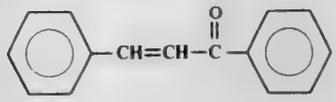
Filed Jun. 5, 1995, Ser. No. 463,189
Int. Cl.[6] C08F *2/50*
U.S. Cl. 156—275.5 **15 Claims**

1. A method of laminating a structure, comprising:

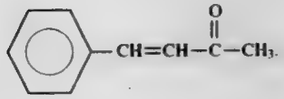
providing a structure comprising at least two layers and an adhesive composition between said layers, herein at least one layer is a cellulosic or polyolefin nonwoven web or film; and

irradiating the structure to polymerize the adhesive composition,

wherein the adhesive composition comprises a wavelength-specific sensitizer associated with a reactive species-generating photoinitiator, and an unsaturated polymerizable material, the sensitizer being represented by one of the following formulae:



or



5,798,016

APPARATUS FOR HOT WALL REACTIVE ION ETCHING USING A DIELECTRIC OR METALLIC LINER WITH TEMPERATURE CONTROL TO ACHIEVE PROCESS STABILITY

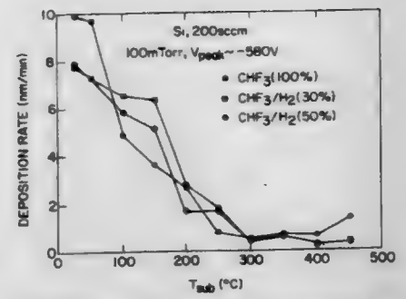
Gottlieb Stefan Oehrlein, Yorktown Heights, N.Y.; David Vender, Eindhoven, Netherlands; Ying Zhang, Petaluma, Calif., and Marco Haverlag, Heindhoven, Netherlands, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 8, 1994, Ser. No. 208,158
Int. Cl.[6] H01L *21/302*
U.S. Cl. 156—345 **25 Claims**

1. An apparatus for etching a device having a flow of a plasma and preventing the undesirable deposition of a film comprising:

a source of fluorocarbon gas;

an etching chamber having one of a surface defining the etching chamber and a surface disposed in said etching chamber;



means for heating said surface to and maintaining said surface at a temperature between 290° C. to 310° C. to impede the formation of a deposition film on said surface; and

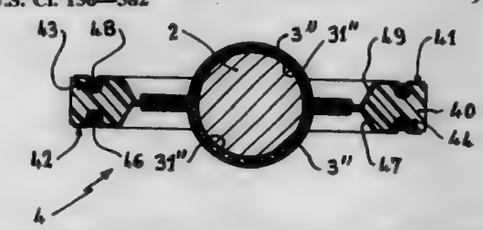
means for generating a plasma from the source fluorocarbon gas.

5,798,017

DEVICE FOR SUBLIMATING A DECORATION ON THE SURFACE OF AN OBJECT OF WHATSOEVER SHAPE

Jean-Noël Claveau, Coisia, Arinthod, France, 39240

PCT No. PCT/FR95/00874, § 371 Date Feb. 26, 1997, § 102(e) Date Feb. 26, 1997, PCT Pub. No. WO96/00658, PCT Pub. Date Jan. 11, 1996
PCT Filed Jun. 29, 1995, Ser. No. 765,255
Claims priority, application France, Jun. 30, 1994, 94 08317
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—382 **9 Claims**



1. A device for the hot transfer of a decoration constituted by sublimable ink to the surface of an object of whatsoever shape, comprising: at least one elastic membrane that is retained by a frame capable of elastic deformation in all directions when the device is placed under vacuum.

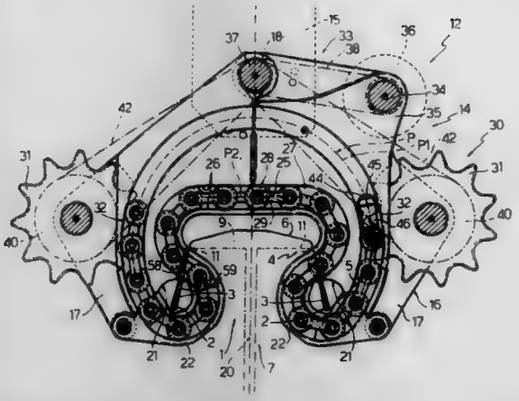
5,798,018

WINDING UNIT FOR FORMING A TOROIDAL CARCASS FOR A ROAD VEHICLE TIRE

Karl J. Siegenthaler, Prattein, Switzerland, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 18, 1996, Ser. No. 769,235
Claims priority, application Italy, Dec. 19, 1995, T095A1028
Int. Cl.[6] B29D *30/34*
U.S. Cl. 156—397 **9 Claims**

1. A winding unit (**14**) for forming a toroidal carcass (**1**) for a road vehicle tire by winding a textile cord (**5**) in a spiral about a toroidal frame (**7**) rotating about an axis of rotation (**13**) and defined by two annular beads (**2**) and by a removable annular element (**9**) located radially outwards of the beads (**2**) and centered axially in relation to the beads (**2**) so as to define, with the beads (**2**), two annular openings (**11**); the unit (**14**) being characterized by comprising a substantially U-shaped plate element (**16**), in turn comprising two arms (**17**) for surrounding said annular element (**9**), each arm (**17**) presenting a hole (**21**) for the passage of a respective bead (**2**) and a respective bead filler (**3**); a groove (**25**) formed on the plate element (**16**) and defining an endless path (P) comprising a first branch (P1) extending, in use, about said annular element (**9**), and a second branch (P2) extending about said holes (**21**), about said annular element (**9**), and through said openings (**11**); a flexible element (**27**) mounted so as to roll along said path



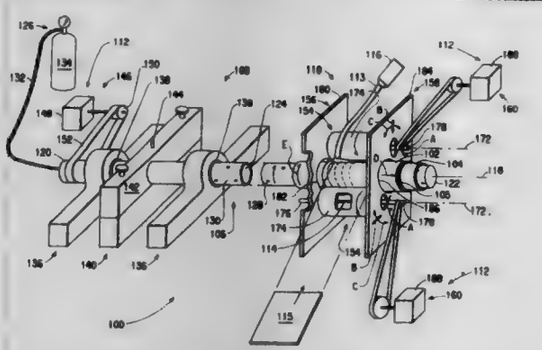
(P); feed means (**30**) connected to the flexible element (**27**) and for feeding the flexible element (**27**) continuously along said path (P); and a spool (**43**) for said cord (**5**), fitted in rotary manner to said flexible element (**27**).

5,798,019

METHODS AND APPARATUS FOR FORMING CYLINDRICAL PHOTOSENSITIVE ELEMENTS

Stephen Cushner, Lincroft; Roxy Ni Fan, E. Brunswick, both of N.J.; Edward Andrew Calisto, Hockessin, Del., and Daniel Francis Sheehan, Jr., Cliffwood Beach, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 29, 1995, Ser. No. 536,579
Int. Cl.[6] B29D *23/00;* **B41N** *1/12*
U.S. Cl. 156—425 **14 Claims**



1. An apparatus for forming a seamless cylindrical photosensitive element on a flexible sleeve, comprising:

a mandrel having a longitudinal axis, a first end and a second end, the mandrel for supporting the sleeve in a substantially cylindrical shape such that the sleeve is rotatable with or about the mandrel;

a mandrel support assembly for supporing at least the first end of the mandrel;

a calendering assembly for metering a substantially cylindrical molten stream, or a molten or solid sheet, of photopolymerizable material on the sleeve to have a substantially constant thickness, the calendering assembly comprising at least one calender roll positioned to contact the photopolymerizable material on the sleeve;

a drive system for rotating the calender roll while simultaneously moving the sleeve axially along the longitudinal axis of the mandrel, thereby moving the sleeve around and along the longitudinal axis of the mandrel in a helical fashion so that the calendering assembly polishes an outer circumferential surface of the element to a seamless uniform state without sanding, grinding or additional polishing apparatus; and

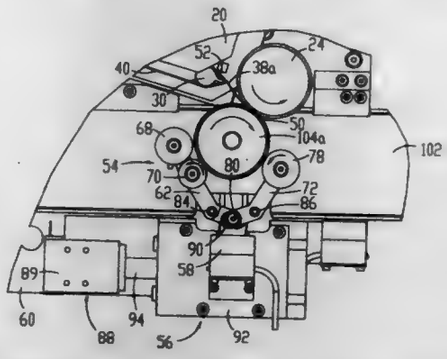
at least a heating element for heating the photopolymerizable material while the element is being formed.

5,798,020

MEDICINE VIAL LABELER

Michael E. Coughlin, Overland Park, Kans.; Ronald A. Leonard, Peculiar, Mo.; Lawrence E. Guerra, Roeland Park, and Keith W. Kudera, Merriam, both of Kans., assignors to Scriptpro, LLC, Mission, Kans.

Filed Jun. 23, 1997, Ser. No. 880,893
Int. Cl.[6] B65C *9/00*
U.S. Cl. 156—542 **11 Claims**



1. A labeler apparatus for applying a label to a cylindrically shaped object, the label presenting a label face and an opposed adhesive face with adhesive thereon, said apparatus comprising:

label dispensing means for dispensing a label from a source thereof and including a selectively actuatable rotatable drum positioned for receiving dispensed labels, the label presenting a leading edge and a trailing edge as dispensed; and

holding means for holding an object to be labeled in rotary contact with said drum for receiving the leading edge of the label in the nip between the object and said drum with the adhesive face in contact with the object in order to apply the label to the object upon rotation of said drum and rotation the object in response,

said holding means including

first and second holding arms having respective inboard and outboard ends and being pivotally coupled adjacent said respective inboard ends,

first pivot means pivotally coupling said first arm between said ends thereof with a support base, and second pivot means, spaced from said first pivot means, pivotally coupling said second arm between said ends thereof with said support base,

a plurality of rollers coupled with said arms, and

actuator means coupled with said arms adjacent said inboard ends thereof for selectively pivoting said arms about said respective first and second pivot means between a release position in which said arms are pivoted away from one another, and a holding position in which said arms are pivoted toward one another and toward said drum,

said rollers being configured and positioned for holding objects of different diameters in rotary contact with said drum when in said holding position.

5,798,021

CLAMPING APPARATUS FOR AN ELECTROFUSION JOINT

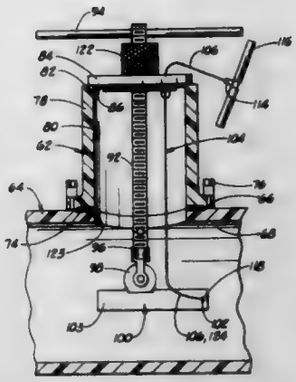
Terry L. Stiles, Tecumseh, Okla., assignor to Central Plastics Company, Shawnee, Okla.

Filed Jan. 17, 1996, Ser. No. 587,630
Int. Cl.[6] B25B *5/14*
U.S. Cl. 156—556 **14 Claims**

1. An apparatus for use with a fitting positioned adjacent to an opening formed in a length of pipe, said apparatus comprising:

a first portion adapted for engaging an outer surface of the fitting;

a second portion adapted for engaging an inner surface of the pipe; and



an adjusting stem threadingly engaged with said first portion, said second portion being connected to said adjusting stem by a swivel, such that the adjusting stem may be rotated about a longitudinal axis of the adjusting stem, and by a pivot, such that said second portion may be pivoted about an axis substantially Perpendicular to said longitudinal axis;

wherein:

said first and second portions are moved to a clamping position wherein said fitting is clamped against said pipe as said adjusting stem is rotated; and

relative longitudinal movement between said second portion and said adjusting stem is prevented.

5,798,022

Patent Not Issued For This Number

5,798,023

COMBINATION OF TALC-BENTONITE FOR DEPOSITION CONTROL IN PAPERMAKING PROCESSES

Przemyslaw Pruszynski, and John R. Armstrong, both of Burlington, Canada, assignors to Nalco Chemical Company, Naperville, Ill.

Filed May 14, 1996, Ser. No. 646,000

Int. Cl.[6] D21H *21/02*

U.S. Cl. 162—181.1 **14 Claims**

1. A method for minimizing pitch, ink and stickies particle deposits in the paper making process by causing retention of such particles onto fiber comprising the steps of:

a) adding an effective pitch, ink and stickies controlling amount of bentonite having a high swellable capacity in water to a suspension of fiber in contact with the paper machine and associated parts; and then,

b) adding from about 0.05 to about 20 kilograms of the talc per ton of fiber in suspension to the suspension in contact with the paper machine and associated parts, wherein the ratio of bentonite to talc is from about 1:1 to about 0.1:20, thereby increasing retention of pitch, ink and stickies onto the fiber and minimizing the deposition of pitch, ink, and stickies particles on the paper machine and associated parts.

5,798,024

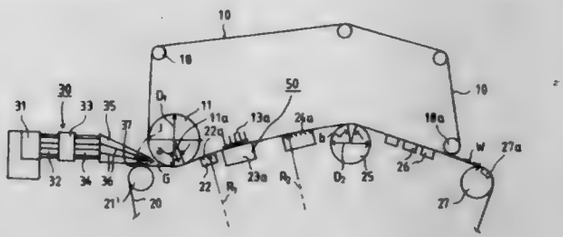
CONTROLLING WEB ANISTROPY IN A ROLL AND BLADE TWIN-WIRE GAP FORMER

Michael Odell, and Lauri Verkasalo, both of Jyväskylä, Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Jun. 11, 1996, Ser. No. 661,657

Int. Cl.[6] D21F *1/00*

U.S. Cl. 162—203 **20 Claims**



1. A method for forming a web in a roll and blade gap former having a desired anisotropy, comprising the steps of

generating turbulence in a stock suspension jet in a slice channel of a headbox,

discharging the stock suspension jet at a first speed from a slice opening of the slice channel of the headbox,

directing the stock suspension jet into a forming gap defined in part by a first forming roll having a diameter greater than or equal to about 1.4 m, the stock suspension jet being directed into a convergence of first and second wires which define a twin-wire zone after said forming gap, said first forming roll being arranged in a loop of one of said first and second wires,

directing a run of said twin-wire zone after said forming gap in a curve over a wrap angle sector of said first forming roll having a magnitude less than about 25°,

producing a pulsating pressure effect on the web after said curved run of said twin-wire zone over said wrap angle of said first forming roll,

guiding said first and second wires to run at a second speed,

controlling said first speed of the stock suspension jet relative to said second speed of said first and second wires to thereby define a jet-to-wire ratio which constitutes the ratio of said second speed to said first speed,

determining the diameter of said first forming roll, said wrap angle sector of said first forming roll, a magnitude of the pulsating pressure effect and an amount of turbulence in the stock suspension jet at which the desired anisotropy in the web will be attained by adjusting the diameter of said first forming roll, said wrap angle sector of the twin-wire zone about said first forming roll, the magnitude of the pulsating pressure effect and the amount of turbulence in the stock suspension jet relative to said jet-to-wire ratio and to each other until the web attains the desired anisotropy at a specific diameter of said first forming roll, a specific wrap angle sector of the twin-wire about said first forming roll, a specific magnitude of the pulsating pressure effect and a specific amount of turbulence in the stock suspension jet, and

operating the former with said first forming roll having said specific diameter, the twin-wire zone having said specific wrap angle sector about said first forming roll, the pulsating pressure effect having said specific magnitude and the stock suspension jet having the specific amount of turbulence.

5,798,025

APPARATUS FOR SCREENING WASTE PAPER PULP

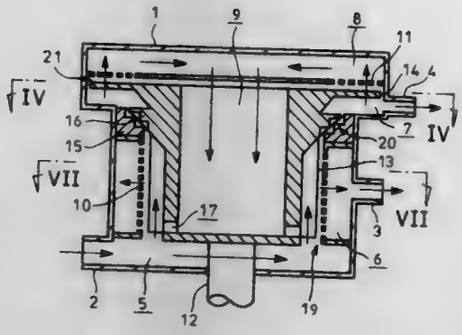
Naoyuki Iwashige, Yokohama, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, and Ishikawajima Sangyo Kikai Kabushiki Kaisha, both of Tokyo-to, Japan

Filed Mar. 13, 1997, Ser. No. 816,897

Int. Cl.[6] B01D *29/00*; D21D *5/02*

U.S. Cl. 162—261 **4 Claims**

1. An apparatus for screening waste paper pulp comprising:



a generally cylindrical casing having a stock inlet, an accept stock outlet and a reject outlet;

a cylindrical main screen plate concentrically fixed to define a space between an inner surface of said casing and said main screen plate;

an annular defibration stator concentrically disposed adjacent to an end of said main screen plate near said reject outlet;

an auxiliary screen plate spaced apart from said defibration stator and fixed to define a space between an inner surface of said casing and said auxiliary screen plate, wherein said auxiliary screen plate is in the form of a disk;

a rotor rotated around an axis of said casing, whereby said casing is partitioned into an inlet chamber communicated with said stock inlet and a space inside said main screen plate;

an accept stock chamber outside said main screen plate and communicated with the accept stock outlet;

a reject chamber communicated with said reject outlet and a circulation chamber outside said auxiliary screen plate, wherein said rotor includes main scraper blades faced to said main screen plate for preventing plugging of the main screen plate and wherein said casing is provided with a dilution water inlet to said reject chamber;

a defibration rotor faced to said defibration stator and auxiliary scraper blades faced to said auxiliary screen plate for preventing plugging of the auxiliary screen plate;

a circulation pathway opened to the circulation chamber; and

circulation outlets on a peripheral wall of the circulation pathway for discharging the stock passing through the auxiliary screen plate toward the main screen plate, wherein said defibration stator and defibration rotor having mutually facing surfaces divergent toward said reject chamber.

5,798,026

DRY END STEAM APPLICATOR

Witold Wacinski, and Eugene Kolesniak, both of North Vancouver, Canada, assignors to Measurex Devron Inc., North Vancouver, Canada

Filed Oct. 4, 1996, Ser. No. 726,247

Int. Cl.[6] F26B *13/02;21/06*

U.S. Cl. 162—290 **10 Claims**

1. A steam applicator to apply steam to a web passing by the applicator and comprising:

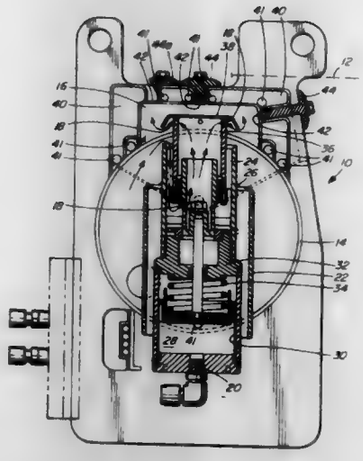
a main supply header;

a plurality of profiling steam chambers to receive steam from said main supply header;

pre-heat chambers adjacent said profiling steam chambers;

means to control flow of steam from said main supply header to each profiling steam chamber;

at least one outlet in each of the profiling steam chambers to allow a supply of steam from the applicator; and



means to control said supply of steam from each outlet comprising a plug to fit into each outlet.

5,798,027

PROCESS FOR DEPOSITING OPTICAL THIN FILMS ON BOTH PLANAR AND NON-PLANAR SUBSTRATES

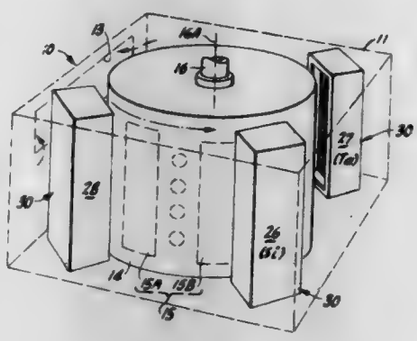
Paul M. Lefebvre; James W. Seeser; Richard Ian Seddon; Michael A. Scobey, all of Santa Rosa, Calif., and Barry W. Manley, Boulder, Colo., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 17,670, Feb. 11, 1993, abandoned, which is a division of Ser. No. 794,308, Nov. 14, 1991, Pat. No. 5,225,057, which is a continuation of Ser. No. 604,356, Oct. 26, 1990, abandoned, which is a continuation of Ser. No. 381,606, Jul. 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 154,177, Feb. 8, 1988, Pat. No. 4,851,095.

This application Jul. 7, 1994, Ser. No. 272,104

Int. Cl.[6] C23C *14/34*

U.S. Cl. 204—192.26 **18 Claims**



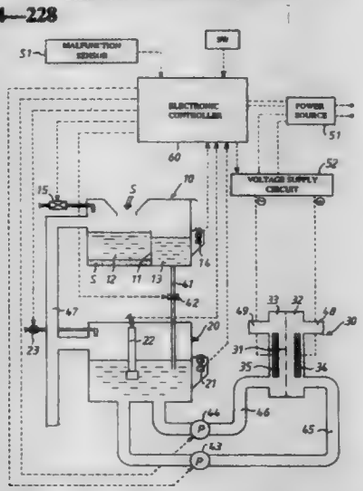
1. A process for forming optical thin film coatings, comprising: providing a substrate having a curved surface and sputter depositing on the curved surface a thin film coating while moving the substrate along a path selected for controlling the thickness profile of the thin film coating; providing a locally intense reactive plasma and chemically reacting substantially the entire thickness of the deposited thin film coating with the reactive plasma, the chemical reaction step being sequential in space relative to the sputter deposition step; and repeating the deposition and chemical reaction steps to form an optical thin film on the curved surface of the substrate having optical properties equivalent to those associated with formation on a flat substrate.

5,798,028

PRODUCTION SYSTEM OF ELECTROLYZED WATER

Koji Tsuchikawa, Nagoya, and Yosuke Saito, Tokai, both of Japan, assignors to Hoshiazaki Denki Kabushiki Kaisha, Aichi-ken, Japan

Filed Sep. 11, 1996, Ser. No. 712,320
Claims priority, application Japan, May 9, 1994, 6-95277
Int. Cl.[6] C25B 9/00;15/08
U.S. Cl. 204—228 4 Claims



1. A production system of electrolyzed water, comprising:

an electrolyzer, an interior of which is subdivided into an anode chamber and a cathode chamber with a cation permeable membrane;

power supply means for applying a DC voltage from an electric power source to an anode and a cathode respectively disposed within the anode and cathode chambers;

a water tank formed to store an amount of water to be supplied into the anode and cathode chambers of said electrolyzer;

first and second water supply conduits connecting said water tank to the anode and cathode chambers, respectively of said electrolyzer;

first and second electrically operated hydraulic pumps provided on said first and second water supply conduits to supply the water from said water tank to the anode and cathode chambers of said electrolyzer; and

an electric control apparatus for controlling said power supply means and said hydraulic pumps, said control apparatus including means for preventing backward flow of electrolyzed water, wherein

said preventing means includes means for selectively activating said hydraulic pumps when the anode and cathode of said electrolyzer are being applied with the DC voltage under control of said power supply means and deactivating said hydraulic pumps after the electrolyzed water is completely discharged from both said anode and cathode chambers and after the application of the DC voltage to the anode and cathode of said electrolyzer has been interrupted.

5,798,029

TARGET FOR SPUTTERING EQUIPMENT

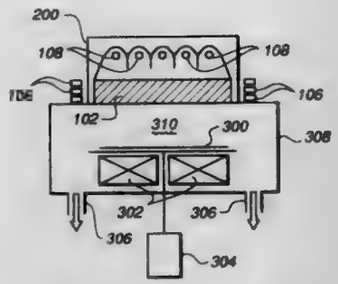
Katsumi Morita, Matsudo, Japan, assignor to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 498,646, Jul. 6, 1995, which is a continuation of Ser. No. 231,606, Apr. 22, 1994, abandoned. This application Dec. 30, 1996, Ser. No. 777,114
Int. Cl.[6] C23C 14/34;14/40
U.S. Cl. 204—298.16 16 Claims

1. Apparatus for sputtering material upon a substrate comprisings:

a vacuum chamber;

a target unit, contained in said vacuum chamber and positioned in a parallel spaced apart relation to said substrate, having a



plurality of targets positioned in spaced apart relation to one another where opposing surfaces of said adjacent targets define a space between adjacent targets and where a longitudinal axis extends along each of said targets and each longitudinal axis is parallel to each other longitudinal axis and all the longitudinal axes lie in a single plane whereby the targets in said target unit form a planar array of targets;

an electric field generator, connected to each of said targets, for generating an electric field between adjacent targets that produces a plasma between said adjacent targets whereby material contained in each of said targets is sputtered from each target, said electric field is orthogonally aligned with the longitudinal axis of each of the adjacent targets; and

a plurality of magnetic field generators, positioned at each end of said plurality of targets between said longitudinal axis of each of said adjacent targets, for generating a magnetic field having a magnetic field gradient within said space that promotes migration of the sputtered material toward said substrate, where said magnetic field is aligned perpendicular to a direction of said electric field within said space and parallel to said opposing surfaces of said adjacent targets, and where said magnetic field is located in the space between adjacent targets and is aligned parallel to the longitudinal axis of each of the adjacent targets to concentrate a plasma in said space between said adjacent targets and said magnetic field gradient is produced in a direction perpendicular to both the longitudinal axis of each of the targets and the direction of the electric field.

5,798,030

BIOSENSOR MEMBRANES

Burkhard Raguse, Gordon; Bruce A Cornell, Neutral Bay; Vijoleta L Braach-Maksvytis, Dulwich Hill, and Ronald J Pace, Farrer, all of Australia, assignors to Australian Membrane and Biotechnology Research Institute, Homebush, and University of Sydney, Sydney, both of Australia

Division of Ser. No. 406,853, May 17, 1995, Pat. No. 5,637,201. This application Apr. 9, 1997, Ser. No. 826,904
Int. Cl.[6] G01N 27/26
U.S. Cl. 204—403 10 Claims

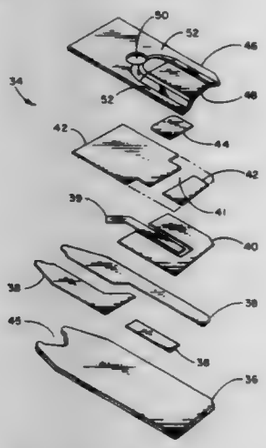
1. A biosensor for use in detecting the presence or absence of an analyte in a sample, the biosensor comprising an electrode and a bilayer membrane comprising a top layer and a bottom layer, the bottom layer being proximal to and connected to the electrode such that a space exists between the membrane and the electrode, the conductance of the membrane being dependent on the presence or absence of the analyte, the membrane comprising a closely packed array of amphiphilic molecules and a plurality of ionophores dispersed therein, and a layer of a hydrogel formed on top of the lipid bilayer membrane, the hydrogel allowing the passage of the analyte molecule to be detected.

5,798,031

ELECTROCHEMICAL BIOSENSOR

Steven C. Charlton, Osceola; Larry D. Johnson, Elkhart; Matthew K. Musbo, Granger, and Dennis Slomski, South Bend, all of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Filed May 12, 1997, Ser. No. 854,439
Int. Cl.[6] G01N 27/26
U.S. Cl. 204—403 25 Claims



1. An electrochemical sensor for the detection of an analyte in a fluid test sample which comprises from the bottom up:

a) an insulating base plate;

b) an electrode layer on said base plate;

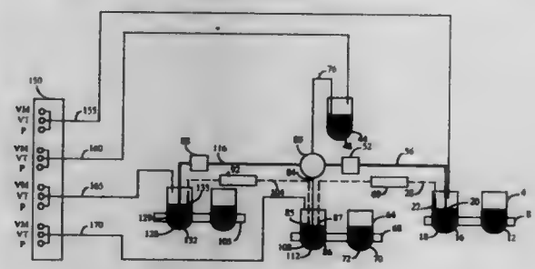
c) a lid of a deformable material which provides a concave area in the central portion thereof in such a manner that, when mated with the base plate, the lid and base plate form a capillary space in which the electrode layer is available for contact with the fluid test sample which is drawn into the capillary space by capillary action.

5,798,032

METHOD AND APPARATUS FOR AUTOMATED CARBOHYDRATE MAPPING AND SEQUENCING

Shaheer H. Khan, Foster City; Roger A. O'Neill, San Carlos, and Louis B. Hoff, Belmont, all of Calif., assignors to The Perkin-Elmer Corporation, Foster City, Calif.

Continuation of Ser. No. 307,206, Sep. 16, 1994, which is a continuation-in-part of Ser. No. 252,657, Jun. 2, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 558,047
Int. Cl.[6] C25B 7/00;9/00
U.S. Cl. 204—452 13 Claims



1. An apparatus for performing electrophoresis of sample molecules comprising:

a first capillary for containing a first separation medium, having an inlet end, an outlet end, a bore, and a first detection region located proximate to the outlet end;

a second capillary, for containing a second separation medium, having an inlet end, an outlet end, a bore, and a second detection region located proximate to the outlet end;

an outlet transfer tube for directing material away from the outlet end of the first capillary and the inlet end of the second capillary, the outlet transfer tube having an inlet end, an outlet end, and a bore;

a transfer cell to which the outlet end of the first capillary, the inlet end of the second capillary, and the inlet end of the outlet transfer tube are connected so that there is communication among the bores of the first capillary, the second capillary, and the outlet transfer tube, such that the inlet end of the second capillary is disposed adjacent to the outlet end of the first capillary so that a gap is formed therebetween;

a high-voltage power supply means for providing an independently controllable electrical potential across the first capillary and the second capillary sufficient to cause electrophoresis of the sample;

a detection means for independently detecting the sample molecules at the first detection region and at the second detection region; and

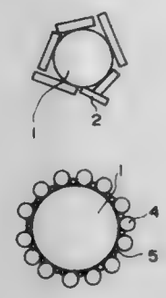
signal processing means for coordinating the high voltage power supply means and the detection means such that a selective transfer of a sample between the first and second capillaries can be effected.

5,798,033

PROCESS FOR PREPARING POROUS METALLIC BODY AND POROUS METALLIC BODY FOR BATTERY ELECTRODE SUBSTRATE PREPARED THEREFROM

Takafumi Uemiya; Hitoshi Tsuchida; Masayuki Furukawa; Kazuo Yamazaki, all of Shinminato, and Tadashi Dohi, Ohtsu, all of Japan, assignors to Sumitomo Electric Industries, Ltd.; Sumitomo Electric Industries Toyama Co., Ltd., and Nippon Graphite Industries, Ltd., all of Japan

Filed Oct. 4, 1996, Ser. No. 725,851
Claims priority, application Japan, Oct. 6, 1995, 7-260118
Int. Cl.[6] C25D 5/54;5/56
U.S. Cl. 205—161 4 Claims



1. A process for preparing a porous metallic body comprising the steps of: rendering a porous resin body electrically conductive, electroplating the conductive resin, and heating the electroplated resin to remove the resin, wherein the step of rendering the resin electrically conductive is conducted by coating the resin with a coating composition containing a conductive material consisting of (a) amorphous carbon particles and (b) a metal powder or a graphite powder in an amount of not more than 20% by weight based on the weight of the amorphous carbon particles.

5,798,034

PROCESS FOR THE PREPARATION OF A SUPERCONDUCTOR MATERIAL OF THE MIXED OXIDE TYPE

Philippe Géndre, Nanterre; Pierre Regnier, Bures sur Yvette; Lélia Schmirgeld-Mignot, Palaiseau, and André Marquet, Paris, all of France, assignors to Commissariat A l'Energie Atomique, Paris, France

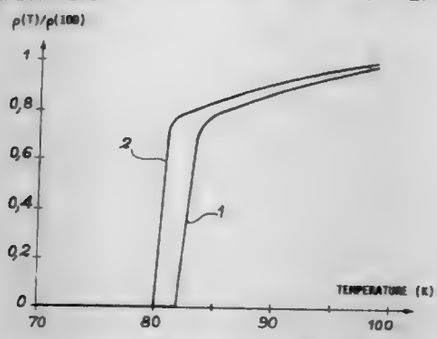
PCT No. PCT/FR95/00262, § 371 Date Mar. 3, 1997, § 102(e) Date Mar. 3, 1997, PCT Pub. No. WO95/24739, PCT Pub. Date Sep. 15, 1995

PCT Filed Mar. 8, 1995, Ser. No. 700,476

Claims priority, application France, Mar. 9, 1994, 94 02710

Int. Cl.[6] C25D *5/10;5/50;* C23C *39/24;* B23K *39/24*

U.S. Cl. 205—170 27 Claims



1. Process for the preparation of a superconductor material comprising the following steps:

a) depositing by electrolysis on a conductive substrate successive layers of metallic elements, each layer containing a single element and having a thickness such that each layer is not detached from the substrate or a previously deposited layer, and wherein elements liable to react with the substrate are separated therefrom by at least one layer of another element, and performing, following the deposition of at least one layer, an intermediate, oxidation-reaction, heat treatment for fixing the element of said layer before depositing a subsequent layer,

b) optionally repeating one or more times any portion of the depositing by electrolysis and intermediate heat treatment operations of step a) to obtain a pre-determined superconductor material thickness and

c) then subjecting all the layers to a final, oxidation, heat treatment to form the superconductor material.

5,798,035

HIGH THROUGHPUT SOLID PHASE CHEMICAL SYNTHESIS UTILIZING THIN CYLINDRICAL REACTION VESSELS USEABLE FOR BIOLOGICAL ASSAY

Gregory L. Kirk, Skillman, N.J., and Robert H. Grubbs, South Pasadena, Calif., assignors to Pharmacopeia, Inc., Princeton, N.J.

Filed Oct. 3, 1996, Ser. No. 726,058

Int. Cl.[6] C25B *15/02*

U.S. Cl. 205—335 78 Claims

1. A method of performing chemical synthesis on solid phase reactive material contained within a plurality of tubular reaction vessels, using one or more reaction stages, resulting in a plurality of final products and employing identifying indicia to represent specific reactions and reagents utilized during said one or more reaction stages, said method comprising:

reading said identifying indicia provided for each of a plurality of tubular reaction vessels,

reacting a reagent with said reactive material by flowing a reagent-containing solution through said tubular reaction vessels under particular reaction conditions, wherein said reacting is driven to completion within the reactive material by said flowing of reagent-containing solution through said tubular reaction vessels without agitation of said reactive material;

recording information concerning said reaction conditions and reagents, said information corresponding to said identifying indicia; and

repeating said reading and said reacting at least once using a different reagent, thereby synthesizing chemical compounds within said tubular reaction vessels.

5,798,036

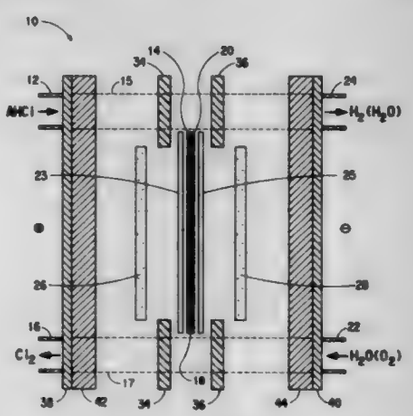
ELECTROCHEMICAL CONVERSION OF ANHYDROUS HYDROGEN HALIDE TO HALOGENS GAS USING A MEMBRANE-ELECTRODE ASSEMBLY OR GAS DIFFUSION ELECTRODES

William H. Zimmerman; Thomas Frank Saturno, both of Wilmington; John Stanley Artysiewicz, Middletown; James Arthur Trainham, Newark, all of Del.; Clarence Garlan Law, Jr., West Trenton, N.J.; John Scott Newman, Kensington, Calif., and Douglas John Eames, Chamblee, Ga., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 644,551, May 10, 1996, abandoned, which is a continuation-in-part of Ser. No. 432,403, May 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 156,196, Nov. 22, 1993, Pat. No. 5,411,641. This application Jun. 28, 1996, Ser. No. 671,867

Int. Cl.[6] C25B *1/26*

U.S. Cl. 205—620 26 Claims



1. A process for the direct production of essentially dry halogen gas from essentially anhydrous hydrogen halide, comprising the steps of:

(a) feeding molecules of essentially anhydrous hydrogen halide to an inlet of an electrochemical cell comprising a cation-transporting membrane, an anode disposed in contact with one side of the membrane and a cathode disposed in contact with the other side of the membrane; and

(b) applying a voltage to the anode and the cathode such that the anode is at a higher potential than the cathode, wherein the molecules of the essentially anhydrous hydrogen halide are transported to the anode, the molecules are oxidized at the anode to produce essentially dry halogen gas and protons, the protons are transported through the cation-transporting membrane of the electrochemical cell, and the transported protons are reduced at the cathode.

5,798,037

FILTER ELEMENT HAVING LASER MARKED PLASTIC COMPONENTS

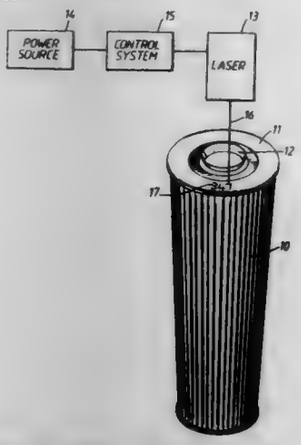
George B. Peacock, Chichester, United Kingdom, assignor to Pall Corporation, East Hills, N.Y.

Continuation of Ser. No. 619,247, Mar. 21, 1996, abandoned. This application Apr. 4, 1997, Ser. No. 833,257

Claims priority, application United Kingdom, Mar. 21, 1995, 9505656

Int. Cl.[6] B01D *27/08*

U.S. Cl. 210—85 14 Claims



1. A filter element including a filter medium incorporated in an assembly having at least one plastic component, the at least one plastic component having a first portion comprising a material which chances color when exposed to laser energy to produce markings having a color different from the color of the at least one plastic component.

5,798,038

DEVICE FOR REMOVING DEPOSITED MATERIAL FROM A LIQUID IN A FLUME

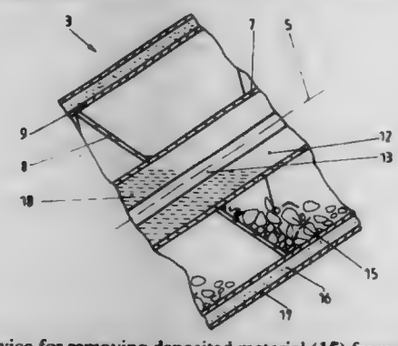
Hans Georg Huber, Berching, Germany, assignor to Hans Huber GmbH Maschinenund Anlagenbau, Berching, Germany

Filed Jul. 9, 1996, Ser. No. 677,489

Claims priority, application Germany, Jul. 15, 1995, 295 11 461.2

Int. Cl.[6] B01D *35/18;29/94;* E02B *5/08;8/02*

U.S. Cl. 210—154 5 Claims



1. A device for removing deposited material (15) from a liquid in a flume (4), said device comprising:

a conveyor (3) for transporting the deposited material (15), wherein said conveyor is constructed and arranged to be installed at an angle in a flume and extend upwardly from a flume to a discarding point (11), said conveyor comprising a housing (9), a driven hollow shaft (7) in said housing, a conveyor screw (8) surrounding said hollow shaft and driven with said hollow shaft for carrying deposited material upwards in said housing about said hollow shaft;

a heater (13) in said hollow shaft and rotatable with said hollow shaft to heat the deposited material (15) carried upwards about said hollow shaft, and

a slip ring (14) arranged to revolve with said hollow shaft for providing electrical energy to the heater (13);

wherein said heater is adapted and configured to generate heat energy within said hollow shaft.

5,798,039

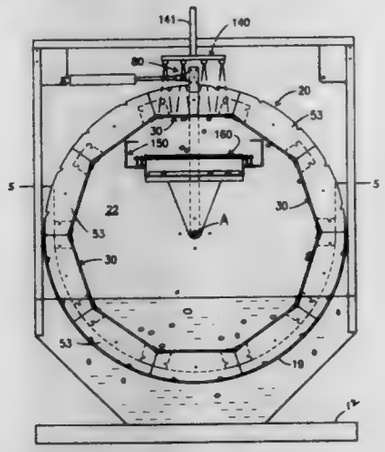
DRUM FILTER SYSTEM WITH REMOVABLE FILTER ELEMENTS AND A PAWL ROTATION MECHANISM

Fred E. Wiesemann, 10370 Longwood Dr., Bardmoor, Largo, Fla. 34647

Filed Feb. 7, 1997, Ser. No. 797,089

Int. Cl.[6] B01D *33/06*

U.S. Cl. 210—232 18 Claims



1. A filter system with removable filter elements, comprising:

a) a tank having an inlet and an outlet and a support within said tank;

b) a filter drum rotatably mounted on said support, said filter drum including a multiplicity of planar filter elements removably mounted thereon, said filter drum including mounting brackets for said filter elements, each mounting bracket including guide slots for adjacent filter elements;

c) actuating means for controllably rotating said filter drum, said actuating means comprising:

i) a plurality of notches located about a periphery of said drum in a common plane;

ii) an arm pivotably mounted in said tank and having a free end to which is mounted a reciprocable pawl;

iii) a cylinder mounted in said tank and receiving a reciprocable piston having a piston rod attached thereto at one end and to said free end of said arm at another end;

iv) said arm pivoting such that said pawl moves in said common plane, whereby when said piston moves in a first direction, said pawl indexes into one of said recesses and when said piston moves in a second direction, with said pawl within said one of said notches said drum rotates an incremental distance.

5,798,040

WATER PURIFICATION CARTRIDGE ASSEMBLY WITH UNIDIRECTIONAL FLOW THROUGH FILTER MEDIA

Li-Shiang Liang, Harvard, Mass., assignor to United States Filter Corporation, Palm Desert, Calif.

Filed Feb. 9, 1996, Ser. No. 598,818

Int. Cl.[6] B01D *24/12;24/14*

U.S. Cl. 210—232 6 Claims

1. An apparatus for purifying a fluid comprising:



a cylindrical element having two ends, the cylindrical element containing a filter media,

a first end cap disposed on one end of the cylindrical element, the first end cap including a fluid inlet port, a fluid outlet port, and a first fluid distributor,

a second end cap disposed on a second end of the cylindrical element, the second end cap including a product collection plenum, and a second fluid distributor that separates the filter media from the product collection plenum, the second fluid distributor including an annular plate having a hub, a porous portion and an outer ring, and

a liquid transfer tube disposed within the cylindrical element and extending from the product collection plenum to the fluid outlet port, wherein the liquid transfer tube is slidably mounted in the hub of the annular plate and further extends into the product collection plenum.

5,798,041

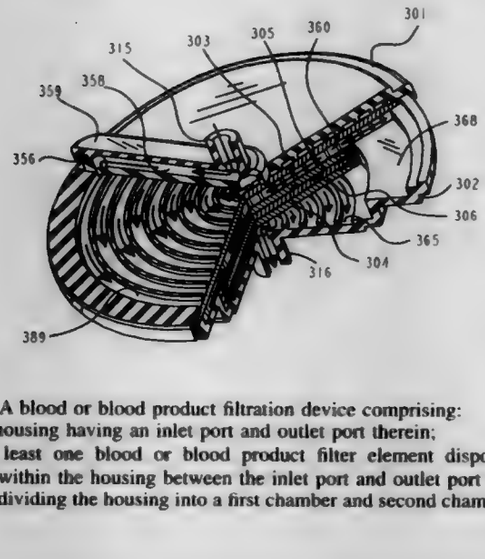
IN-LINE LIQUID FILTRATION DEVICE USEABLE FOR BLOOD, BLOOD PRODUCTS OR THE LIKE

Peter Zuk, Jr., Harvard, Mass., assignor to Hemasure, Inc., Marlborough, Mass.

Filed Sep. 6, 1995, Ser. No. 524,049

Int. Cl.[6] B01D *29/00;29/05*

U.S. Cl. 210—456 **27 Claims**



1. A blood or blood product filtration device comprising:

a housing having an inlet port and outlet port therein;

at least one blood or blood product filter element disposed within the housing between the inlet port and outlet port and dividing the housing into a first chamber and second chamber, said at least one filter element being sealed to said housing to prevent liquid from flowing in between the filter element and the housing;

a flow deflector disposed within said first chamber between said filter elements and the inlet port, said flow deflector being adapted to direct the flow of blood or blood product being filtered to substantially the outer edge of said at least one filter element and being spaced from said at least one filter element a distance wherein air trapped therebetween is forced through said at least one filter element by said blood or blood product into said second chamber;

a first channel disposed below said filter element in said second chamber, said first channel adapted to allow fluid to flow to the outlet port from the filter element;

a second channel, said second channel being within said first chamber and adapted to allow fluid to flow to the filter element wherein said second channel comprises a spiral channel, leading from an outer periphery of the first chamber to a central location within the first chamber; and

a third channel extending radially outward from the inlet port to the second channel.

5,798,042

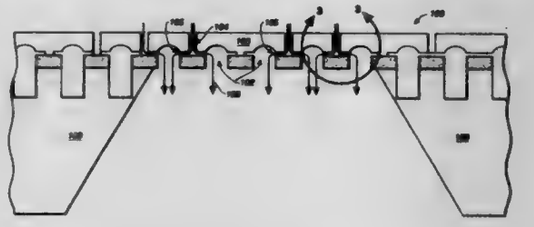
MICROFABRICATED FILTER WITH SPECIALLY CONSTRUCTED CHANNEL WALLS, AND CONTAINMENT WELL AND CAPSULE CONSTRUCTED WITH SUCH FILTERS

Wen-Hwa Chu, Albany, and Mauro Ferrari, Lafayette, both of Calif., assignors to Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 482,237, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 254,330, Jun. 6, 1994, which is a continuation-in-part of Ser. No. 207,457, Mar. 7, 1994, Pat. No. 5,651,900, and a continuation-in-part of Ser. No. 207,459, Mar. 7, 1994, Pat. No. 5,660,680. This application Jun. 14, 1996, Ser. No. 663,644

Int. Cl.[6] B01D *69/10;71/02;* **A61K** *9/52*

U.S. Cl. 210—490 **12 Claims**



1. A microfabricated filter, comprising:

a bulk substrate structure having openings therethrough, said bulk substrate structure having a substantially uniform predetermined thickness; and

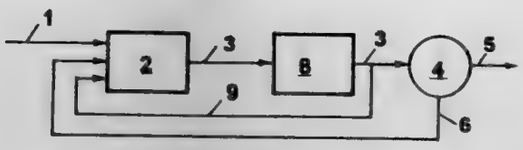
a thin film structure having openings therethrough, wherein said thin film structure is positioned relative to said bulk substrate structure such that said openings through said bulk substrate structure are partially blocked by said thin film structure and said openings through said thin film structure are partially blocked by said bulk substrate structure to produce pores of a substantially uniform predetermined width and length, said pores being formed by spaces between said bulk substrate structure and said thin film structure.

5,798,043

CONTROL OF ANAEROBIC WASTEWATER TREATMENT

Boris Mikhailovich Khudenko, Atlanta, Ga., assignor to Khudenko Engineering, Inc., Atlanta, Ga.

Filed Dec. 1, 1997, Ser. No. 982,030
Int. Cl.[6] C02F 3/30
U.S. Cl. 210—603 14 Claims



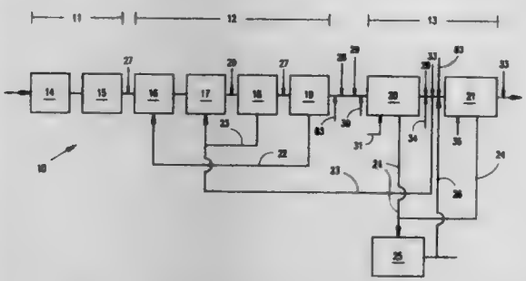
1. In a method for controlling treatment of wastewater conducted with biomass in a multi step system comprising at least one anaerobic treatment step and at least one carbon dioxide stripping step, wherein the said wastewater and the said biomass are sequentially treated in the said at least one anaerobic treatment step and the said at least one carbon dioxide stripping step the improvement is provided comprising the step of charging at least one recuperable abiotic control specie to at least one step in the said multi step system, whereby the said abiotic control species form insoluble carbonates or hydroxides in the said at least one carbon dioxide stripping step and at least partially convert into soluble bicarbonates in the said at least one anaerobic step.

5,798,044

METHOD FOR SEWAGE TREATMENT

Andreas Strohmeier, Leonberg; Ingulf Schroeter, Stuttgart, both of Germany, and Jean-Marie Rovel, Rueil-Malmaison, France, assignors to Philipp Muller GmbH, Stuttgart, Germany

PCT No. PCT/EP94/00765, § 371 Date Sep. 15, 1995, § 102(e) Date Sep. 15, 1995, PCT Pub. No. WO94/21568, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 11, 1994, Ser. No. 513,869
Claims priority, application Germany, Mar. 15, 1993, 43 08 156.8
Int. Cl.[6] C02F 3/30;3/06
U.S. Cl. 210—605 12 Claims



1. A method of sewage treatment, and in particular municipal sewage, comprising the steps of:

providing a mechanical purification stage, followed by a first biological purification stage and a second biological purification stage in the form of a biological filter system including a nitrification filter stage and a denitrification filter stage;

reducing in the first biological purification stage the carbon load and, as a maximum, the average nitrogen load occurring in 24-hours; and

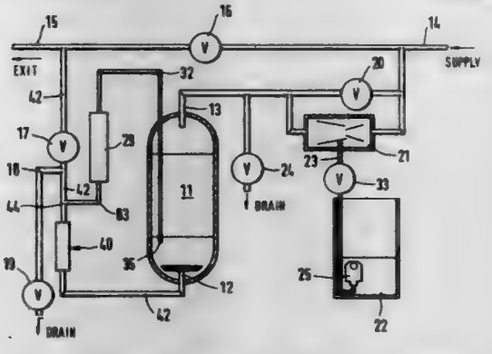
reducing in the second biological purification stage the nitrogen load peaks which exceed the average nitrogen load occurring in 24-hours including at temperatures below 12° C.

5,798,045

WATER TREATMENT PROCESS AND SYSTEM

Peter Spiegl, Aidlingen/Württ, Germany, assignor to Karl Spiegl GmbH & Co., Germany

Filed Aug. 29, 1996, Ser. No. 705,409
Claims priority, application Germany, Aug. 31, 1995, 195 32 074.3
Int. Cl.[6] C02F 1/42
U.S. Cl. 210—662 10 Claims



1. A process for the softening of water by ion-exchange in a regenerable medium, from which softened water is removed under back pressure, comprising the steps of: bypassing part of the flow from the regenerable medium through a bypass flow line in parallel with a main flow line through which the softened water is removed, the bypass flow line including a measuring cell for measuring a property of the water passing therethrough: and increasing the pressure gradient across the measuring cell by throttling the main flow passing through the main flow line.

5,798,046

ENHANCED REMOVAL OF HYDROPHOBIC CONTAMINANTS FROM WATER CLARIFICATION SYSTEMS

Carol S. Greer, Lisle; Ann M. Capozzi, and Linda S. Wilkins, both of Naperville, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Aug. 20, 1996, Ser. No. 700,000
Int. Cl.[6] C02F 1/24;1/56
U.S. Cl. 210—705 6 Claims

1. A method for removing secondary fiber contaminants from paper mill process waters comprising:

adding a polyvinyl chloride, a cationic polymeric coagulant and a polymeric flocculant to paper mill process waters containing secondary fiber contaminants in an amount sufficient to agglomerate the secondary fiber contaminants to larger particle sizes; and removing the secondary fiber contaminants from the process waters by a dissolved air flotation clarification process.

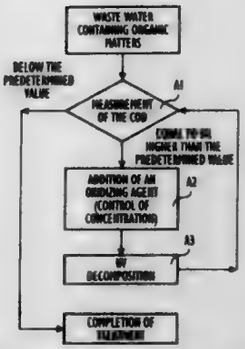
5,798,047

PROCESS AND APPARATUS FOR ULTRAVIOLET DECOMPOSITION OF WASTE WATER CONTAINING ORGANIC SUBSTANCES

Masafumi Tekawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 4, 1997, Ser. No. 831,030
Claims priority, application Japan, Apr. 5, 1996, 8-110092
Int. Cl.[6] C02F 1/172;1/32
U.S. Cl. 210—739 3 Claims

1. A process for ultraviolet treatment of waste water containing organic substances comprising addition of an oxidizing agent comprising hydrogen peroxide to the waste water containing organic substances and ultraviolet-ray irradiation to decompose the organic substances, wherein addition of the hydrogen peroxide is con-



trolled with the passage of time to maintain its proportion to the COD value of the waste water within the range of from 0.6 to 0.8 equivalents to the COD value of the waste water.

5,798,048

MULTILAYER PLASTIC FUEL FILTER HAVING ANTISTATIC PROPERTIES

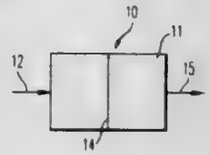
Hans Ries, Marl, Germany, assignor to Huels Aktiengesellschaft, Marl, Germany

Filed May 28, 1996, Ser. No. 654,240

Claims priority, application Germany, May 27, 1995, 195 19 481.0

Int. Cl.[6] B01D *35/30*

U.S. Cl. 210—767 **18 Claims**





16. A method of filtering fuel, comprising:

providing fuel filter including a filtering means for filtering fuel, a fuel inlet means, a fuel outlet means, and a housing surrounding said filtering means and including said inlet means and said outlet means.

filtering a fuel through a fuel filter, wherein the housing of said fuel filter comprises:

(a) a conductive inner layer and conductive outer layer, both comprising a first plastic;

(b) a non-conductive first middle layer, between said inner layer and said outer layer, comprising a second plastic;

wherein said inner layer and said outer layer together form a continuous conductive path.

5,798,049

FILTER CARTRIDGE CONSTRUCTION AND PROCESS FOR FILTERING PARTICLE-CONTAINING PAINT COMPOSITIONS

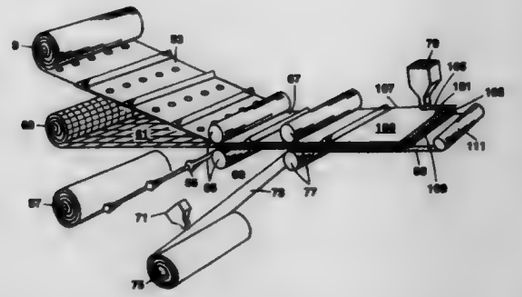
Stephen Proulx, Littleton; Paul J. Cook, Manchester-by-the-Sea, both of Mass., and Michael L. Heise, Cambridge, Canada, assignors to Millipore Corporation, Bedford, Mass.

Division of Ser. No. 552,682, Nov. 3, 1995. This application Dec. 4, 1996, Ser. No. 767,105

Int. Cl.[6] B01D *37/00*

U.S. Cl. 210—767 **6 Claims**

1. The process for filtering a slurry composition comprising a particle-containing paint composition or a particle loading slurry composition to remove particles of a predetermined size or larger



which comprises: passing said paint composition or said loading composition through a filtration element comprising (a) a woven polymer fiber filter layer having substantially uniform sized pores of between about 10 microns and about 105 microns and of about said predetermined size and (b) a spacer layer contacting each surface of said filter layer, each of said spacer layers having raised projections, and having pores larger than said uniform size pores, said filtration element being pleated or spirally wound wherein said composition is passed first through one of said spacer layers and then through said woven polymer fiber filter layer.

5,798,050

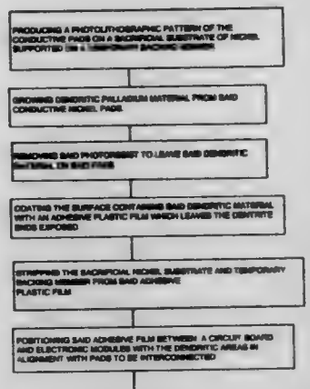
PROCESS FOR FABRICATION OF A SELECTIVELY FILLED FLEXIBLE ADHESIVE DEVICE FOR SOLDERLESS CONNECTION OF ELECTRONIC MODULES TO A SUBSTRATE

Michael A. Gaynes, Vestal, N.Y., and Jaynal A. Molla, Chandler, Ariz., assignors to International Business Machines, Endicott, N.Y.

Division of Ser. No. 781,397, Jan. 10, 1997. This application Jul. 17, 1997, Ser. No. 895,536

Int. Cl.[6] B44C *1/22*

U.S. Cl. 216—20 **13 Claims**



1. A process for the fabrication of an adhesive dielectric film having regions of anisotropically oriented metal fibers comprising the steps of:

a. producing a metallic pattern of the desired interconnection pad areas on a substrate;

b. growing dendritic metallic filaments on said metallic pads;

c. coating said substrate with a dielectric adhesive material to a thickness approximating the length of said filaments; and,

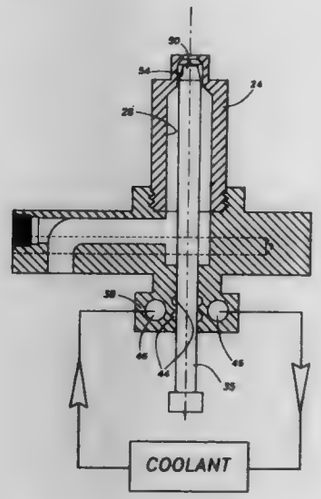
d. selectively etching away said metallic pads.

5,798,051

SEALING DEVICE FOR MOLTEN METAL VALVE PIN

Gary C. Hill, La Salle, Canada, assignor to Build A Mold, Ltd., Windsor, Canada

Filed Mar. 29, 1996, Ser. No. 622,868
Int. Cl.[6] B22D 41/08
U.S. Cl. 222—590 24 Claims



1. A method of selectively maintaining a molten material within a chamber having a moving member that moves axially through an opening in the chamber, comprising the steps of:

(A) allowing a portion of the molten material to enter part of the opening;

(B) collecting the portion of the molten material from step (A) within the opening before the material exits the opening such that the collected material surrounds the moving member; and

(C) solidifying the material collected in step (B) to thereby provide a bushing at the opening around the moving member while permitting the moving member to move through the bushing and the opening.

5,798,052

PIEZOELECTRIC CERAMIC COMPOSITION

Akira Ando, Omihachiman, and Toshikatsu Hisaki, Shiga-ken, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Dec. 18, 1996, Ser. No. 768,406
Claims priority, application Japan, Dec. 20, 1995, 7-331833
Int. Cl.[6] C04B 35/49;35/491;35/493
U.S. Cl. 252—62.9 13 Claims

1. The piezoelectric ceramic composition which is an oxide consisting essentially of a composite oxide with perovskite structure comprising Pb, Zr, Ti, Cu at least one of Mn and Cr, and optionally W, and which contains Pb in an amount larger than the stoichiometric amount of Pb in site A of said composite oxide when represented by the general formula ABO_3.

5,798,053

Patent Not Issued For This Number

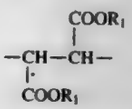
5,798,054

LUBRICANT AND COMBINATION LUBRICANT AND REFRIGERANT COMPOSITION

Takehisa Sato; Hironari Ueda; Toshiaki Kuribayashi; Satoshi Asano; Tadashi Niwa; Hiroshi Ueno; Takeaki Fujii, and Sadakatsu Suzuki, all of Saitama, Japan, assignors to Exxon Chemical Patents Inc., Houston, Tex.

Continuation-in-part of Ser. No. 476,066, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 107,853, Sep. 30, 1993, abandoned. This application Sep. 30, 1996, Ser. No. 723,038
Claims priority, application Japan, Dec. 26, 1991, 3/344484; Jan. 21, 1992, 4-29013; Oct. 1, 1992, 4/284896; Oct. 6, 1992, 4/290960; Oct. 7, 1992, 4/291916; Oct. 7, 1992, 4/291917; Oct. 7, 1992, 4/291918
Int. Cl.[6] C09K 5/04; C10M 145/16
U.S. Cl. 252—68 8 Claims

1. A lubricant comprising a fumaric ester polymer which comprises a recurring unit represented by the following general formula (I):


(I)

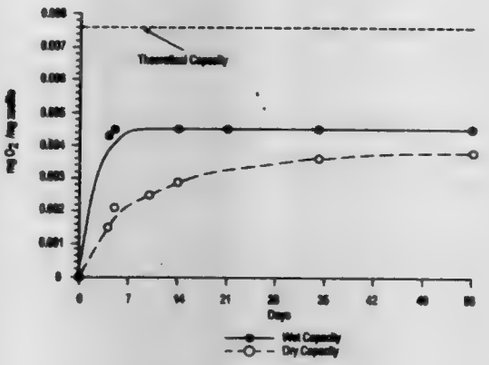
wherein R_1 is an ethyl group in 1 to 50 mole % of the recurring unit (I) and R_1 is a linear or branched C_3 to C_8 alkyl group in 50 to 99 mole % of the recurring unit (I) provided that there are at least two recurring units (I); and at least one substance selected from the group consisting of organic carboxylic esters and polyalkylene glycol, which substance has a kinematic viscosity of 2 to 30 cSt at 100° C.

5,798,055

OXYGEN SCAVENGING METAL-LOADED ION-EXCHANGE COMPOSITIONS

Thomas Andrew Blinka, 11604 Wave Lap; Drew Ve Speer, 6229 Slender Sky, both of Columbia, Md. 21044, and William Alfred Feehley, Jr., 12105 Stoney Batter Rd., Kingsville, Md. 21087

Continuation-in-part of Ser. No. 573,337, Dec. 15, 1995, abandoned. This application Dec. 3, 1996, Ser. No. 764,874
Int. Cl.[6] A23L 3/3436; C09K 3/00
U.S. Cl. 252—188.28 22 Claims

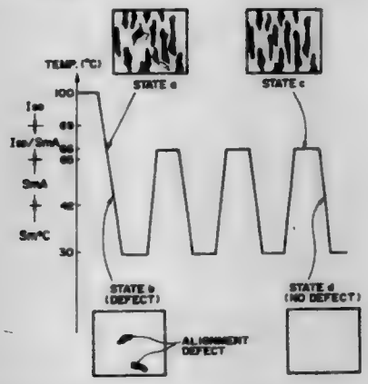


1. A composition comprising a carrier containing a metal-loaded cation exchange material wherein the the metal is incorporated into said material by cation exchange of a metal ion with a cation exchange material and reduction of said metal ion to its zero-valence state.

5,798,056
ALIGNING METHOD OF LIQUID CRYSTAL, PRODUCTION PROCESS OF LIQUID CRYSTAL DEVICE, AND LIQUID CRYSTAL DEVICE

Katsutoshi Nakamura, Hiratsuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,796
Claims priority, application Japan, Feb. 1, 1995, 7-034691
Int. Cl.[6] C09K *19/52;* G02F *1/141*
U.S. Cl. 252—299.01 **22 Claims**



1. An aligning method of a chiral smectic liquid crystal, comprising:

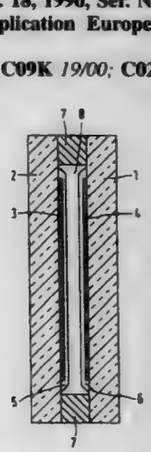
disposing a chiral smectic liquid crystal between a pair of electrode plates at least one of which is provided with an alignment control layer, said chiral smectic liquid crystal showing a phase transition series of isotropic phase, smectic A phase and chiral smectic phase in this order on temperature decrease; and

subjecting said chiral smectic liquid crystal to a treatment including a cycle of the steps of heating up to a first temperature at which said liquid crystal shows isotropic phase and smectic A phase in mixture and cooling down to a second temperature at which said liquid crystal shows chiral smectic phase.

5,798,057
METHOD OF MANUFACTURING A SWITCHABLE CHOLESTERIC FILTER AS WELL AS A LUMINAIRE HAVING SUCH A FILTER

Rifat A. M. Hikmet, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1996, Ser. No. 768,476
Claims priority, application European Pat. Off., Dec. 21, 1995, 95203589
Int. Cl.[6] C09K *19/00;* C02F *1/1335*
U.S. Cl. 252—299.5 **8 Claims**

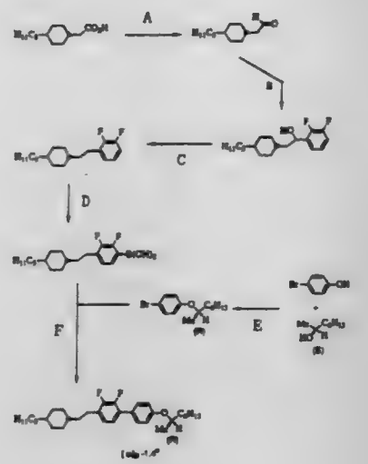


1. A method of manufacturing a switchable cholesteric filter comprising an optically active layer, in which a mixture of polymerizable, liquid-crystalline molecules is provided between two, substantially parallel substrates, which are each provided with an electrode for applying an electric field, said mixture subsequently being polymerized by means of UV light to form an optically active layer of cholesteric order comprising a three-dimensional network, characterized in that a quantity of a photo-stabilizing compound is added to the mixture, said quantity being not greater than about 5 wt. % of the overall volume of the mixture.

5,798,058
LIQUID CRYSTAL COMPOUNDS, MIXTURES AND DEVICES

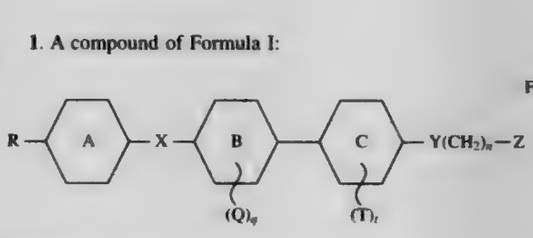
John William Goodby; Kenneth Johnson Toyne; Michael Hird, and Robert Andrew Lewis, all of Hull, United Kingdom, assignors to Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Gt. Britain & N. Ireland of Defence Evaluation and Research Agency, United Kingdom

PCT No. PCT/GB95/01525, § 371 Date Dec. 31, 1996, § 102(e) Date Dec. 31, 1996, PCT Pub. No. WO96/01246, PCT Pub. Date Jan. 18, 1996
PCT Filed Jun. 30, 1995, Ser. No. 765,351
Claims priority, application United Kingdom, Jul. 1, 1994, 9413324
Int. Cl.[6] C09K *19/34;19/12;19/30;* C07C *69/76*
U.S. Cl. 252—299.61 **17 Claims**



1. A compound of Formula I:

Formula I



wherein

R is C_{1-12} straight or branched chain alkyl or C_{2-12} alkenyl;

A is cyclohexyl;

X is CH_2CH_2

Q and T are independently chosen from fluorine or chlorine and q and t are independently chosen from 0, 1 or 2;

B and C are independently chosen from pyridine, or pyrimidine, or phenyl;

Y is 0, COO, OCO or a single bond;

n is 0–5;

Z is given by Formula II and possesses a chiral centre, the chiral carbon is denoted by C in Formula II:



Formula II

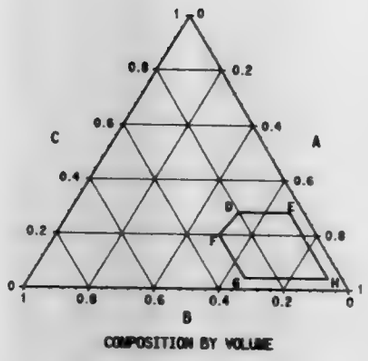
wherein

L is C_{1-5} alkyl or C_{2-5} alkenyl, H, F, CN, CF_3, CHF_2, CH_2F;

M is C_{1-5} alkyl or C_{2-5} alkenyl, or H;

P is H or the group R_2 wherein R_2 is C_{1-12} branched or straight chain alkyl and may contain a double bond when there is more than one carbon present or P is CO_2R_3 where R_3 is C_{1-5} alkyl;

provided that there is at least one phenyl ring present.



5,798,659

COLOR DISPLAY SCREEN COMPRISING A CONTRAST-ENHANCING PIGMENT

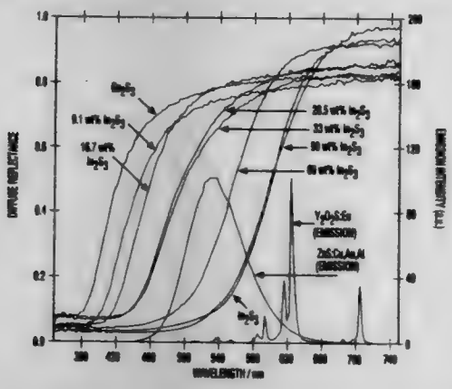
Michael Bredol, Münster; Jacqueline Merikhi, and Dieter Wädow, both of Aachen, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 9, 1996, Ser. No. 762,654

Claims priority, application Germany, Dec. 9, 1995, 195 46 011.1

Int. Cl.[6] H01J *1/62;* **C08K** *3/30;* **C09K** *11/00*

U.S. Cl. 252—301.45 **10 Claims**



1. A color display screen having a coating which comprises at least a green and/or a red phosphor as well as at least a pigment having the following composition:

$$Ga_aIn_bZn_cAl_dO_nS_mSe_oTe_p$$

wherein

$0.05<a<1.95$ $0.0\leqq n<0.3$

$0.05<b<1.95$ $2.1<m\leqq 3$

$0.00\leqq c<0.09$ $0.0\leqq o<0.3$

$0.00\leqq d<0.2$ $0.0\leqq p<0.3$

and $n+m+o+p=3$ and $a+b+\frac{2}{3}c+d=2$.

5,798,060

STATIC-DISSIPATIVE POLYMERIC COMPOSITION

Carol Annona Simmons Brevett, Bear, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 6, 1997, Ser. No. 796,766

Int. Cl.[6] H01B *1/20*

U.S. Cl. 252—520.1 **10 Claims**

1. A static dissipative bulk polymeric composition comprising a thermoplastic or thermosetting polymer matrix having a substantially uniform distribution therein of at least two fillers, wherein at least one filler comprises electroconductive doped-SnO_2 particles, and at least one filler comprises non-electroconductive particles having at least one dimension of at least about 30 microns, said matrix subjected to extrusion, melt processing or injection molding.

5,798,061

DEVICE FOR MIXING TWO FLUIDS

Edward Shafik Gaddis, Clausthal-Zellerfeld, Germany, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

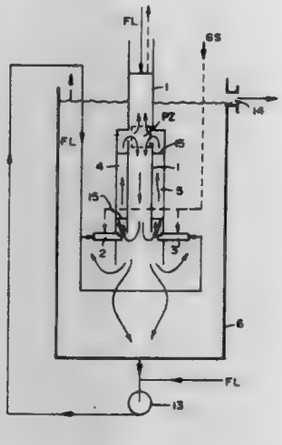
PCT No. PCT/DE95/00451, § 371 Date Mar. 19, 1997, § 102(e) Date Mar. 19, 1997, PCT Pub. No. WO95/32795, PCT Pub. Date Dec. 7, 1995

PCT Filed Mar. 31, 1995, Ser. No. 750,034

Claims priority, application Germany, May 26, 1994, 44 18 287.2

Int. Cl.[6] B01F *3/04*

U.S. Cl. 261—77 **13 Claims**



1. A submergible device for mixing two fluids, of which at least one is a liquid comprising a tube open on both axial ends for receiving the fluids, at least two nozzles for supplying the fluids, and a guide channel limited by walls, into which the nozzles at its one end project, and which guide channel discharges with its other end into the tube, and in which the tube, at the level of the discharge, surrounds in the middle portion of the guide channel an impact zone, in which fluid streams injected by the nozzles and emerging from the guide channel impact each other, the improvement comprising

at least one wall of the guide channel is formed by a part of the wall of the tube.

5,798,062

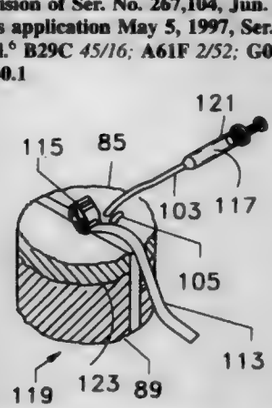
METHOD OF MAKING A CUSTOM FORMED NATURAL FIT ARTIFICIAL BREAST APPLIANCE

Janice Marie Thielbar, 48 Drakes Bay Dr., Corona Del Mar, Calif. 92625

Continuation of Ser. No. 455,344, May 31, 1995, abandoned, which is a division of Ser. No. 267,104, Jun. 23, 1994, abandoned. This application May 5, 1997, Ser. No. 851,406

Int. Cl.[6] B29C 45/16; A61F 2/52; G01B 7/04

U.S. Cl. 264—40.1 16 Claims



1. The process of forming a breast appliance comprising the steps of:

forming a breast appliance back mold having a positive mold area having an impression of at least a breast portion of a client's post operative chest area;

forming a breast appliance front mold having an inside area having a shape and texture desired for a breast appliance;

forming at least one bore in said breast appliance back mold, said at least one bore having an area sized to admit a fill tube;

inserting said fill tube through said at least one bore;

coating said inside area of said breast appliance front mold and said positive mold area of said breast appliance back mold and around said fill tube as it emerges from said at least one bore with a curable layer of a first silicone material having a first color additive dispersed therein and curable to a skin texture;

closing and securing said breast appliance front mold onto said breast appliance back mold forming a closed envelope open through said fill tube;

introducing a second silicone material having a second color additive dispersed therein and curable to a gel into said closed envelope through said fill tube, said first silicone material when cured enveloping said second silicone material when cured to form a breast appliance;

allowing sufficient time for said first and second silicone materials to cure to said skin texture and gel respectively; and

removing said breast appliance from said breast appliance front mold and said breast appliance back mold.

5,798,063

MOLDING PROCESS USING GAS UNDER PRESSURE

Klaus Bender, Stuttgart, Germany; Philippe Leboeuf, Paris, France, and Georgios Topulos, Geneva, Switzerland, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US95/13121, § 371 Date Mar. 27, 1997, § 102(e) Date Mar. 27, 1997, PCT Pub. No. WO96/10476, PCT Pub. Date Apr. 11, 1996

PCT Filed Oct. 2, 1995, Ser. No. 809,643

Claims priority, application European Pat. Off., Oct. 3, 1994, 94202857

Int. Cl.[6] B29C 44/04; 44/06

U.S. Cl. 264—45.5 7 Claims

1. A process for injection molding an article having a substantially smooth outer surface and a foamed core comprising the steps of

(a) injecting a melt of a thermoplastic polymer containing a foaming agent through an injection unit into a mold to entirely fill the mold cavity and maintaining said melt under a holding pressure to form an article having a substantially smooth outer surface;



(b) releasing the holding pressure of the melt and introducing a gas under pressure into the mold to create a hollow space in the melt by simultaneously forcing a portion of the melt to return to the injection unit;

(c) closing the injection unit to prevent melt from flowing back into the mold; and

(d) releasing the pressure of the introduced gas to allow foaming of the melt.

5,798,064

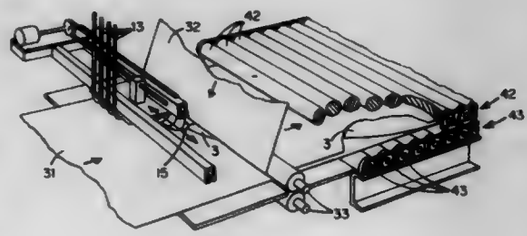
PROCESS AND APPARATUS FOR FABRICATION OF FLEXIBLE FOAM

Gregory P. Peterson, 3647 Sommersworth Ln., Indianapolis, Ind. 46228

Filed Dec. 23, 1996, Ser. No. 772,763

Int. Cl.[6] B29C 44/24; 44/46

U.S. Cl. 264—46.3 33 Claims



1. A continuous process for forming a flexible thin-gauge foam comprising:

supplying foam-forming components, at controlled temperatures and moisture levels, to discrete storage vessels;

adjusting or maintaining the temperature and moisture level of each foam-forming component within its storage vessel;

supplying the individual components to mixing and dispensing means;

admixing the foam-forming components to initiate a reaction;

casting the resulting foam-forming mixture onto a continuously conveyed first facing material and applying a continuously conveyed second facing material onto the foam-forming mixture, both facing materials being conveyed at the same rate to form a continuous sandwich;

dispersing the cast mixture evenly between the facing materials;

conveying the sandwich through a substantially vertical gap formed between a multiplicity of upper and lower rollers, the vertical gap between each upper and lower roller being substantially the same throughout the multiplicity, thereby restricting the rise of the reacting foam-forming mixture and defining the thickness of the resulting foam without fully restricting the expansion of the mixture; and

adjusting the speed and temperature at which the sandwich is conveyed through the vertical gap between the rollers to assure that the reaction is substantially complete before the sandwich has passed through the rollers.

5,798,065

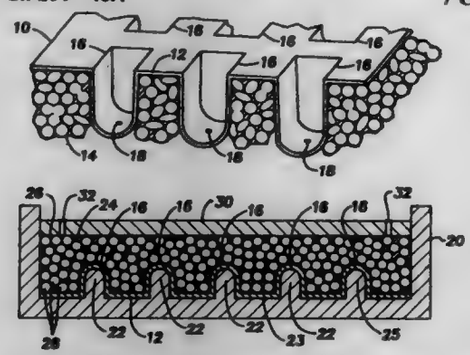
COLLAGEN DISRUPTIVE SURFACE MORPHOLOGY FOR IMPLANTS

George J. Picha, 6554 Beechwood Dr., Independence, Ohio 44131, assignor to George J. Picha, Independence, Ohio

Division of Ser. No. 729,167, Oct. 11, 1996, Pat. No. 5,706,807, which is a division of Ser. No. 364,515, Dec. 27, 1994, Pat. No. 5,564,439, which is a continuation of Ser. No. 128,377, Sep. 28, 1993, abandoned, which is a division of Ser. No. 951,934, Sep. 25, 1992, Pat. No. 5,271,736, Continuation of Ser. No. 699,382, May 13, 1991, abandoned. This application Oct. 2, 1997, Ser. No. 942,501

Int. Cl.[6] B29C 67/20

U.S. Cl. 264—46.4 7 Claims



1. A method for making an implant to be implanted into an animal or human being, said method comprising:

placing a support structure in a mold;

placing an uncured polymeric material in said mold;

placing deformable beads in said mold;

compressing said mold to deform said beads into general mutual contact;

curing said polymeric material to bond it to said support structure and to form a solid interconnected matrix between said deformed beads; and

removing said deformed beads from said matrix, whereby an implant having a polymeric open-celled foam surface is provided.

5,798,066

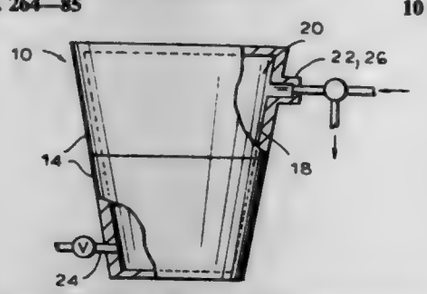
METHOD OF FORMING HOLLOW CERAMIC ARTICLES

Stuart Z. Uram, Alpine, N.J., assignor to Certech Incorporated, Wood-Ridge, N.J.

Filed Jul. 12, 1995, Ser. No. 501,474

Int. Cl.[6] B29C 45/03

U.S. Cl. 264—85 10 Claims



1. A method of forming a fired hollow ceramic article, comprising the steps of:

(A) providing a mold having a wall defining a cavity;

(B) injecting into the cavity through an inlet through the cavity wall a quantity of a slurry sufficient to fill the cavity, the slurry being formed by a molten thermoplastic binder and ceramic particles suspended in the binder, the ratio of ceramic particles to slurry being sufficiently high to ensure sintering of the ceramic particles during subsequent firing;

(C) cooling the portion of the slurry in contact with the cavity wall to solidify the same while leaving still molten the portion of the slurry not in contact with the cavity wall;

(D) injecting a gas into the cavity through an inlet through the cavity wall and into the still molten slurry portion to force the same out of the cavity through an outlet through the cavity wall and leave therein only the gas and a hollow green piece formed from the solidified slurry portion;

(E) separating the hollow green piece from the mold; and

(F) firing the separated hollow green piece to remove substantially all of the binder therefrom and sinter together substantially only the ceramic particles therefrom.

5,798,067

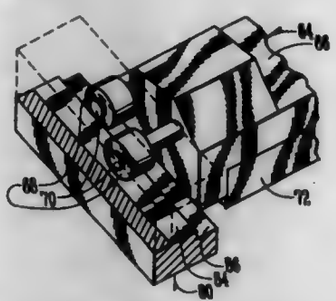
METHOD FOR FORMING A CONCRETE REINFORCEMENT ELEMENT

Robert T. Long, Sr., Ames, Iowa, assignor to Composite Technologies Corporation, Ames, Iowa

Filed Jun. 8, 1994, Ser. No. 255,429

Int. Cl.[6] B32B 3/26

U.S. Cl. 264—134 1 Claim



1. A method for producing composite reinforcement elements for concrete which have flat portions formed into a wavy non-planar profile so as to form anchorage points, comprising:

arranging a plurality of fiber strands into a roving;

coating the roving with a corrosion resistant material;

heating the coated roving to at least partially cure the coating material;

continuously moving the coated roving through a rotary die station and compressing the coated roving between opposing die molds moving in an endless loop path so as to form the roving into flat portions formed into a wavy non-planar profile which serve as anchorage points when embedded in concrete;

further comprising heating the die station to further cure the coating material;

wherein the die molds move parallel to one another along inner portions of the respective endless loop paths on parallel rails;

wherein the roving is coated with the coating material in a bath;

wherein the roving is moved along a serpentine path in the bath; and

further comprising cutting the profile into desired lengths.

5,798,068

PROCESS OF MELT IMPREGNATION

Marc Andrew Vlug, Amsterdam, Netherlands, assignor to Shell Research Limited, United Kingdom

PCT No. PCT/EP95/01024, § 371 Date Nov. 4, 1996, § 102(e) Date Nov. 4, 1996, PCT Pub. No. WO95/25000, PCT Pub. Date Sep. 21, 1995

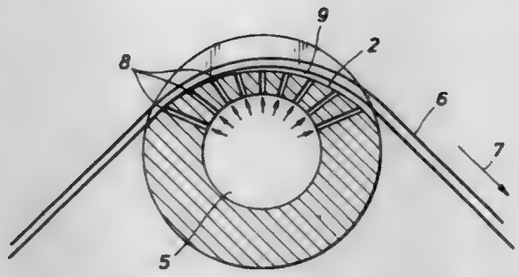
PCT Filed Mar. 16, 1995, Ser. No. 704,640

Claims priority, application European Pat. Off., Mar. 17, 1994, 94301920

Int. Cl.[6] B29C 41/24

U.S. Cl. 264—171.13 11 Claims

1. A process of making a fibre-reinforced polymeric material, comprising providing an extruder die having an arcuate support



surface (2), and an arc, said arcuate support surface being in the line of the arc, sliding a fibre bundle in a direction (7) over the arcuate support surface (2), and injecting into the fibre bundle a molten or liquid polymer, wherein the polymer is injected through a plurality of slots (4) in the arcuate surface, each slot being oriented substantially transverse to the direction (7) of the fibre bundle movement, wherein spacing between successive slots increases in the direction of bundle movement to accommodate slowing of impregnation speed.

5,798,069

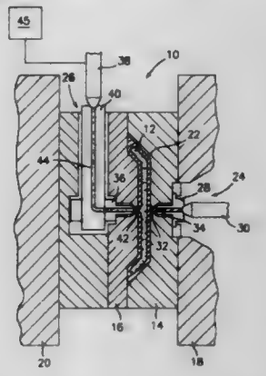
OPPOSED GATING INJECTION METHOD

Rene A. Bertschi, Wiesbaden, Germany, and Edward J. Jenko, Bolton, Canada, assignors to Husky Injection Molding Systems Ltd., Canada

Division of Ser. No. 254,139, Jun. 6, 1994, abandoned. This application Sep. 11, 1996, Ser. No. 711,467

Int. Cl.[6] B29C *45/16;45/10;45/13*

U.S. Cl. 264—255 **17 Claims**



1. An injection molding process for forming a molded multi-layered plastic article from a plurality of materials, comprising:

providing an injection molder having a first stationary mold half with a first molding surface and a second movable mold half with a second molding surface wherein said molding surfaces are adapted to cooperate to form at least one mold cavity for forming said molded plastic article, said cavity having a peripheral edge region;

relatively moving said first and second mold halves together along a first axis to form said mold cavity;

injecting a first plastic material through said first mold half along said first axis or parallel to said first axis into said mold cavity through a first orifice from a first injection means positioned in said first mold half;

injecting a second plastic material through said second mold half along said first axis or parallel to said first axis into said mold cavity while the first plastic material is still in the fluid state through a second orifice unconnected with said first orifice from a second injection means positioned in said second mold half, wherein said second material is different from said first material; and

wherein said first and second plastic materials are at least partially sequentially injected into said cavity so that the first injected plastic is forced to the edge region of said cavity to form substantially the entire edge region of the multi-layered article, and the second injected plastic forms the interior of the multi-layered article with the first injected plastic substantially surrounding the second injected plastic.

5,798,070

ENCAPSULATION METHOD

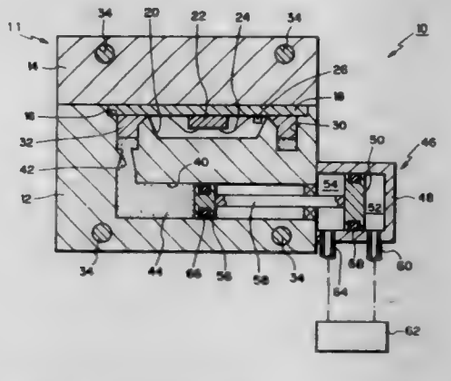
Kunito Sakai; Kazuharu Oshio, and Hirozoh Kanegae, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 358,303, Dec. 19, 1994, abandoned, which is a division of Ser. No. 130,444, Oct. 1, 1993, Pat. No. 5,395,226. This application Mar. 4, 1996, Ser. No. 609,786

Claims priority, application Japan, Feb. 23, 1993, 5-33308

Int. Cl.[6] B29C *33/24;70/70*

U.S. Cl. 264—272.17 **12 Claims**



1. A method of enclosing an object with a molding material, comprising the steps of:

(a) preparing a mold including a first mold section and a second mold section and adapted to define a mold cavity, said first mold section including a gasket groove extending along the mold cavity;

(b) placing a non-resilient gasket in said gasket groove;

(c) placing the object in the mold;

(d) closing the first and second mold sections so as to sandwich the object;

(e) pressing said gasket against one side of the object by application of a pressurized fluid, said pressurized fluid including a hydraulic oil mixed with a thermoplastic resin in powder form, whereby said gasket is permanently deformed to seal the mold cavity;

(f) introducing a molding material into the mold cavity; and

(g) curing the molding material.

5,798,071

METHOD FOR THE COMBINED INJECTION AND COMPRESSION MOLDING OF GOLF BALLS

Herbert C. Boehm, Norwell, Mass., assignor to Acushnet Company, Fairhaven, Mass.

Filed Jun. 7, 1995, Ser. No. 484,249

Int. Cl.[6] B29C *45/14;43/18*

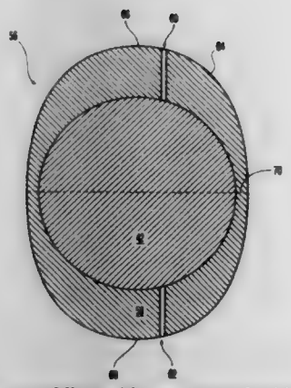
U.S. Cl. 264—275 **11 Claims**

1. A method of manufacturing a golf ball comprising the steps of:

(a) placing a golf ball core within a golf ball preform mold cavity;

(b) injection molding a cover of a cover material to an elongated shape around said golf ball core to define a golf ball preform;

(c) placing said preform into a dimpled golf ball compression mold cavity; and



(d) compression molding said cover around said golf ball core to a spherical shape to define said golf ball.

5,798,072

PROCESS FOR MOULDING A THERMOPLASTIC MATERIAL BY INJECTION ONTO A ROTATING CORE

Claude Dehennau, Waterloo; Vito Leo, Glimes, and Charles Cuvelliez, Rhode-Saint-Genese, all of Belgium, assignors to SOLVAY (Société Anonyme), Brussels, Belgium

Filed Jul. 31, 1996, Ser. No. 691,812
Claims priority, application Belgium, Aug. 1, 1995, 09500664
Int. Cl.[6] B28B *1/44*
U.S. Cl. 264—312 **9 Claims**

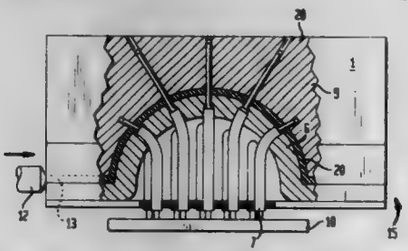
1. A process for moulding a thermoplastic material by injection into a hollow mold having a rotating core, said core having a period of rotation from 10 to 120 seconds, and said thermoplastic material having a modulus of relaxation in shear G_n (7.5) higher than 0.15 and less than 10.

5,798,073

MOLD ASSEMBLY FOR FORMING APERTURES IN A MOLDED BODY

Michael G. Johnson, Sussex; George Knoedl, Hunterdon, and George J. Shevchuk, Old Bridge, all of N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation of Ser. No. 533,042, Sep. 25, 1995, abandoned. This application Oct. 7, 1997, Ser. No. 946,449
Int. Cl.[6] B29C *45/36;45/44*
U.S. Cl. 264—313 **19 Claims**



1. A mold assembly for forming a molded body, said mold assembly comprising:

(a) a first housing having a first arbitrarily shaped surface and a plurality of apertures extending therethrough;

(b) a second housing having a second arbitrarily shaped surface positioned adjacent said first arbitrarily shaped surface of said first housing, said arbitrarily shaped surfaces of said first and second housings defining a mold cavity therebetween;

(c) a plurality of flexible elongated rod members configured to slide through said plurality of apertures of said first housing and at least partially through said mold cavity;

(d) an actuating member operatively associated with said plurality of elongated rod members, said actuating member being movable in a first direction to slide said plurality of rod members through said plurality of apertures; and

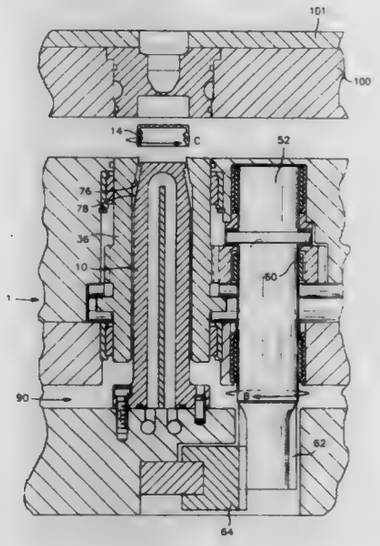
(e) a plurality of guide members operatively associated with said first housing, said plurality of guide members configured to position said flexible elongated rod members to enter said mold cavity from said plurality of apertures in directions non-parallel to each other.

5,798,074

PROCESS FOR FORMING A THREADED MOLDED PLASTIC ARTICLE

Derek McCready, and Jacek Kalemba, both of Mississauga, Canada, assignors to Husky Injection Molding Systems Ltd., Canada

Continuation-in-part of Ser. No. 327,655, Oct. 24, 1994, Pat. No. 5,565,223, which is a continuation-in-part of Ser. No. 126,879, Sep. 27, 1993, Pat. No. 5,383,780. This application Oct. 9, 1996, Ser. No. 728,325
Int. Cl.[6] B29C *45/44*
U.S. Cl. 264—318 **26 Claims**



1. Process for forming a threaded, molded plastic article with an outer surface thereof, which comprises:

molding said article in an injection mold having an injection mold cavity having a mold closed and a mold open position and being formed by a female mold and a mold core, said injection mold including a rotatable and movable unscrewing means adjacent said mold core;

relatively moving said female mold from the mold closed position to a position spaced from the mold core to space the female mold from the molded article, leave the molded article on the mold core and form the mold open position;

rotating said article by rotating said rotatable and movable unscrewing means to rotate and remove the article from the mold core; and

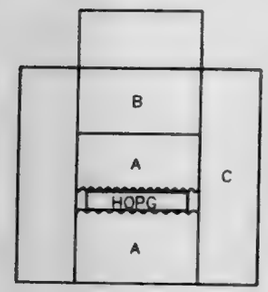
resetting said rotatable and movable unscrewing means to the position prior to removal of said article without rotating said unscrewing means.

5,798,075

ADJUSTMENT OF MOSAIC SPREAD FOR HIGHLY ORIENTED PYROLYTIC GRAPHITE

Arthur William Moore, Strongsville, Ohio, assignor to Advanced Ceramics Corporation

Filed Oct. 11, 1996, Ser. No. 728,933
Int. Cl.[6] B29C *43/00*
U.S. Cl. 264—320 11 Claims



SYSTEM FOR ROOM TEMPERATURE PRESSING OF HOPG BETWEEN METAL DIES WITH KNURLED SURFACES

GROOVES ENLARGED 10–20X TO ILLUSTRATE SHAPE. GROOVES ARE CRISS-CROSSED, I.E., THERE IS ANOTHER SET OF GROOVES MACHINED AT 90° TO THOSE SHOWN IN THE FIGURE

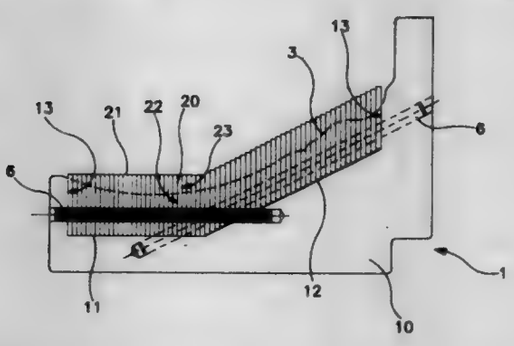
1. A method for shifting the mosaic spread of highly oriented pyrolytic graphite into a preselected mosaic spread range comprising the steps of: selecting highly oriented pyrolytic graphite samples having a mosaic spread which lies below said preselected mosaic spread range and cold working the selected samples to form a surface textured imprint sufficient to shift the mosaic spread of the cold worked samples into said preselected mosaic spread range.

5,798,076

TIRE MOLD AND PROCESS FOR THE MOLDING OF A TIRE

Jean-Pierre Ladouce, Clermont-Ferrand, France, assignor to Sedepro, Paris, France

Continuation of Ser. No. 284,850, Aug. 2, 1994, abandoned.
This application Jun. 24, 1996, Ser. No. 667,635
Claims priority, application France, Aug. 6, 1993, 93 09799
Int. Cl.[6] B29C *35/02*
U.S. Cl. 264—326 20 Claims



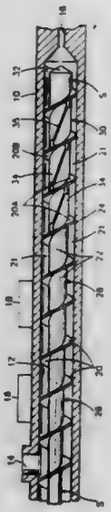
1. A tire mold including two shells for the molding of the side walls of the tire, and means for molding the tread of the tire, at least one shell comprising a laminated assembly formed of lamelliform elements having side faces and edges, the side faces being oriented substantially parallel to the common axis of the mold and tire across the entire widths of the side faces between opposite edges and being adjacent, the thickness of said lamelliform elements being between 0.1 and 5 mm., and means for maintaining the side faces pressed against each other while maintaining sufficient clearance for the passage of air between said lamelliform elements, the molding surface for the side wall being formed of adjacent edges of said lamelliform elements.

5,798,077

SCREW FOR PLASTICATING APPARATUS AND METHOD OF USE

Timothy W. Womer, Edinburg; Paul N. Colby, and Harry F. White, both of New Castle, all of Pa., assignors to Spirex Corporation, Youngstown, Ohio

Filed Nov. 4, 1996, Ser. No. 743,542
Int. Cl.[6] B29C *47/38;47/64*
U.S. Cl. 264—349 17 Claims



14. A process of plasticating resinous material in a molten state under pressure comprising:

a) feeding solid resinous material to a screw rotating about an axis in a barrel, said barrel having a cylindrical inner surface, said screw having a helical flight with said helical flight cooperating with said inner surface to move said material along a helical path;

b) heating said material while working the material between the barrel and the screw to convert a substantial portion of the solid material to a molten state;

c) passing said material through a metering section having a helical valley defined by said helical flight and a bottom core, the helical flight in the metering section being continuous, the bottom core of said helical valley having a plurality of geometric shapes which were formed therein using a grinding machine, said geometric shapes being side-by-side along said helical path in an alternating pattern, the side-by-side geometric shapes being sloped with each having a shallow portion and deep portion relative to the inner surface of the barrel, between the shallow and deep portions of each geometric shape there being a constant sloping depth differential;

d) between the side-by-side geometric shapes there being a barrier land traversing the helical valley; and

e) said heated material in the metering section is continuously advanced by the helical flight toward an outlet port, said heated material being advanced mixes by passing over said geometric shapes and barrier lands.

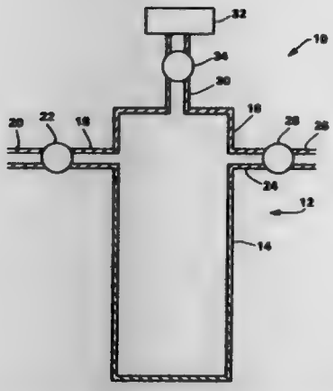
5,798,078

SULFONATED POLYMERS AND METHOD OF SULFONATING POLYMERS

David L. Myers, Cumming, Ga., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Jul. 11, 1996, Ser. No. 679,607
Int. Cl.[6] B29C *71/04;* C08F *8/36;* D06B *19/00;* D06M *10/06*
U.S. Cl. 264—446 9 Claims

1. A method of sulfonating a polymer, the method comprising: contacting the polymer with a gaseous mixture consisting essentially of sulfur dioxide and an oxygen donating gas, in which



the mixture has a mole ratio of sulfur dioxide to the oxygen donating gas which is equal to or greater than a stoichiometric ratio; and

continuously exposing the polymer and gaseous mixture to ultraviolet light while the polymer is in contact with the gaseous mixture; wherein contacting and exposing are carried out at a pressure of less than 1 atmosphere and the oxygen donating gas is nitrous oxide, nitrogen dioxide, or a halogen dioxide.

4. A method of imparting hydrophilic character to a shaped polymer, the method comprising:

contacting the shaped polymer with a gaseous mixture consisting essentially of sulfur dioxide and an oxygen donating gas, in which the mixture has a mole ratio of sulfur dioxide to the oxygen donating gas which is equal to or greater than a stoichiometric ratio; and

continuously exposing the shaped polymer and gaseous mixture to ultraviolet light while the shaped article is in contact with the gaseous mixture; wherein contacting and exposing are carried out at a pressure of less than 1 atmosphere and the oxygen donating gas is nitrous oxide, nitrogen dioxide, or a halogen dioxide.

7. A method of sulfonating a polymer, the method comprising:

continuously exposing a gaseous mixture consisting essentially of sulfur dioxide and an oxygen donating gas to ultraviolet light, in which the mixture has a mole ratio of sulfur dioxide to the oxygen donating gas which is equal to or greater than a stoichiometric ratio; and

contacting the polymer with the exposed gaseous mixture; wherein exposing and contacting are carried out at a pressure of less than 1 atmosphere, continuous exposure is carried out for as long as the exposed gaseous mixture is in contact with the polymer, and the oxygen donating gas is nitrous oxide nitrogen dioxide, or a halogen dioxide.

5,798,079

METHOD AND APPARATUS FOR FORMING DRINK-THRU CUP LIDS

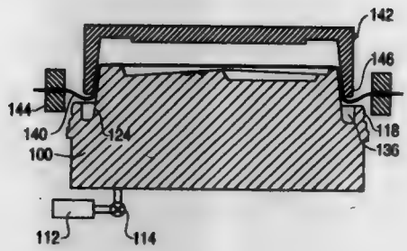
Michael Alan Freek; Scott Goodyear, and Jack Patel, all of Toronto, Canada, assignors to Fort James Corporation, Richmond, Va.

Filed Aug. 20, 1996, Ser. No. 700,103
Int. Cl.[6] B29C *51/10*
U.S. Cl. 264—554 **15 Claims**

1. A method of forming a lid having an annular mounting portion, an annular trough region positioned radially inward of the annular mounting portion, an annular side wall extending upwardly from an inner periphery of the annular trough region to an annular ridge adjacent said annular side wall, and a crown region, the method comprising the steps of;

providing a forming die having an upper surface of a configuration conforming to the configuration of the lid;

providing a forming ring for aiding in the forming of the lid;



positioning a thermoformable sheet material adjacent the upper surface of the forming die between the forming die and the forming ring;

lowering the forming ring into contact with the sheet material; and

conforming the sheet material to the configuration of the forming die;

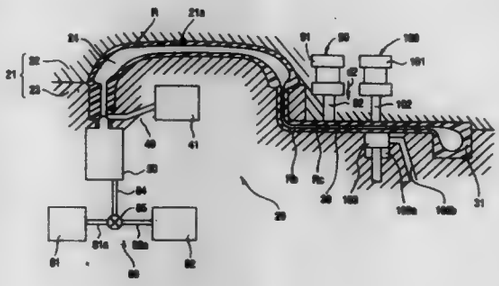
wherein the forming ring contacts that portion of the sheet material which forms a lowermost region of the lid.

5,798,080

METHOD OF PRODUCING A HOLLOW RESIN BODY AND APPARATUS THEREFOR

Mitsuo Ogura, Gifu, and Hironao Tanaka, Aichi, both of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Mar. 18, 1996, Ser. No. 617,225
Claims priority, application Japan, Mar. 30, 1995, 7-099690
Int. Cl.[6] B29C *45/72*
U.S. Cl. 264—572 **10 Claims**



1. A method for manufacturing a hollow resinous body, comprising the steps of:

providing a mold having a molding cavity and a resin tub which is in communication with the molding cavity through a tub communication path;

closing off the tub communication path;

supplying molten resin into the molding cavity;

injecting a gas into the molten resin and opening the tub communication path so as to form a hollow space within the molten resin, thereby forming a hollow body;

forming a through hole in the hollow body such that the hollow space is opened;

supplying a mixture of an atomized liquid carried by a gas as a cooling medium into the hollow space to cool the hollow body; and

discharging the cooling medium through the through hole.

5,798,081

METHOD FOR SINTERING GREEN CERAMIC MOULDINGS

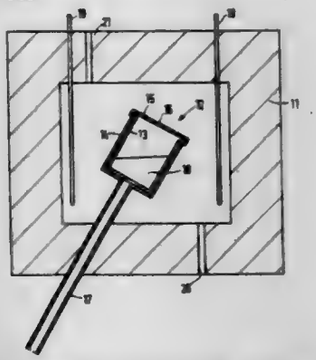
Rudolphus P. T. Ruijgrok, Roermond, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1996, Ser. No. 642,687

Claims priority, application European Pat. Off., May 19, 1995, 95201319

Int. Cl.[6] C04B *33/32;37/00*

U.S. Cl. 264—605 **7 Claims**



1. A method of sintering green-ceramic mouldings in a heating vessel of a furnace, said method comprising the steps of setting the mouldings in motion in the heating vessel during sintering, wherein the motion of the mouldings is attributed to the heating vessel being moved in the furnace during a sintering operation, the motion causing intermingling of the mouldings during sintering.

5,798,082

HIGH-STRENGTH AND HIGH-TOUGHNESS HEAT-RESISTANT CAST STEEL

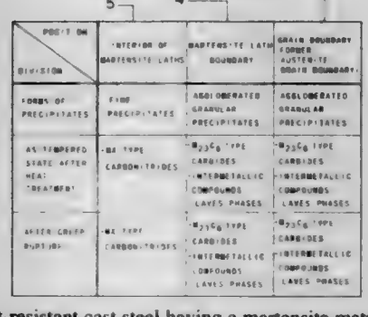
Yoshikuni Kadoya; Hisataka Kawai, and Ryotarou Magoshi, all of Hyogo-ken, Japan, assignors to Mitsubishi Heavy Industries, Ltd., Tokyo, Japan

Filed Apr. 28, 1997, Ser. No. 846,171

Claims priority, application Japan, Sep. 10, 1996, 8-239022

Int. Cl.[6] C22C *38/44;38/46*

U.S. Cl. 420—38 **15 Claims**



1. A heat-resistant cast steel having a martensite matrix structure and consisting essentially of, based on weight percentage:

0.08 to 0.25% carbon;

more than 0.1% and up to 0.5% silicon;

not more than 1% manganese;

0.05 to 1% nickel;

9 to 12% chromium;

0.3 to 1.5% molybdenum;

1 to 1.95% tungsten;

0.1 to 0.35% vanadium;

0.02 to 0.1% niobium;

0.01 to 0.08% nitrogen;

0.001 to 0.01% boron;

2 to 8% cobalt; and the balance substantially iron.

5,798,083

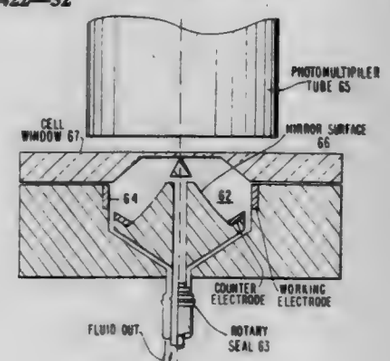
APPARATUS FOR IMPROVED LUMINESCENCE ASSAYS USING PARTICLE CONCENTRATION AND CHEMILUMINESCENCE DETECTION

Richard J. Massey, Rockville; Gary F. Blackburn, Gaithersburg; Elizabeth W. Wilkins, Germantown, and Haresh P. Shah, Gaithersburg, all of Md., assignors to IGEN International, Inc., Gaithersburg, Mass.

Division of Ser. No. 335,183, Nov. 7, 1994, abandoned, which is a continuation of Ser. No. 728,194, Jul. 10, 1991, abandoned, which is a continuation-in-part of Ser. No. 652,427, Feb. 6, 1991, abandoned, which is a continuation-in-part of Ser. No. 539,389, Jun. 18, 1990, abandoned, which is a continuation of Ser. No. 266,882, Nov. 3, 1988, abandoned. This application Jun. 6, 1995, Ser. No. 469,464

Int. Cl.[6] G01N *21/76*

U.S. Cl. 422—52 **22 Claims**



21. An assay apparatus for measurement of an analyte of interest based upon measurement of chemiluminescence comprising:

(a) a cell consisting essentially of a sample volume having inlet means and outlet means and a single collection zone;

(b) means for generating a magnetic field at said collection zone, wherein said means for generating said magnetic field is positioned proximate to said cell and said field is sufficient to collect said analyte at said collection zone when any such analyte of interest is bound directly or indirectly to a magnetic particle; and

(c) means to measure the chemiluminescence generated at the collection zone.

5,798,084

TEST SAMPLE POSITIONING SYSTEM

William Ernest Seaton, Chesterfield; Mark Joseph Fanning, Florissant; Craig Drager, Ballwin; Ron Robinson, Bridgeton; Roger James Morris, St. Louis, all of Mo., and Jean-Pierre Bernard Gayral, Amberieu en Bugey, France, assignors to bio Mérieux Vitek, Inc., Hazelwood, Mo.

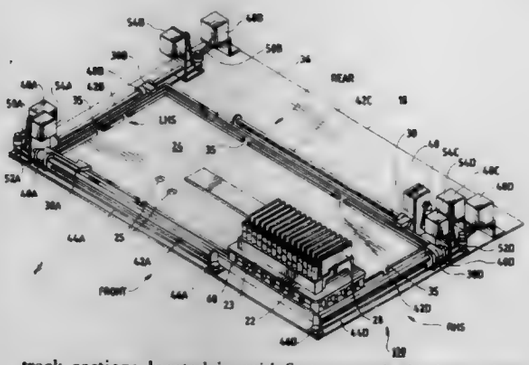
Division of Ser. No. 604,725, Feb. 21, 1996, Pat. No. 5,736,102. This application Mar. 14, 1997, Ser. No. 818,507

Int. Cl.[6] G01N *35/04*

U.S. Cl. 422—65 **8 Claims**

1. A test sample positioning system, comprising:

a base pan having first, second, third and fourth side regions, said base pan further comprising first, second, third and fourth



track sections located in said first, second, third and fourth side regions, respectively;

a sample holder for containing at least one test sample placed on and moved about said base pan, said sample holder comprising a base member, first, second, third and fourth side portions and a plurality of feet protruding downwardly from said base member;

a drive system for moving said sample holder in a linear fashion along said first, second, third and fourth side regions of said base pan such that said feet of said sample holder travel in said track sections, thereby maintaining alignment of said sample holder with respect to said base pan as said drive system moves said sample holder about said base pan;

said drive system comprising first, second, third and fourth paddles, each of said paddles independently operable to rotate relative to said base pan into engagement with said first, second, third and fourth side portions of said sample holder, respectively, to thereby move said sample holder about said base pan.

5,798,085

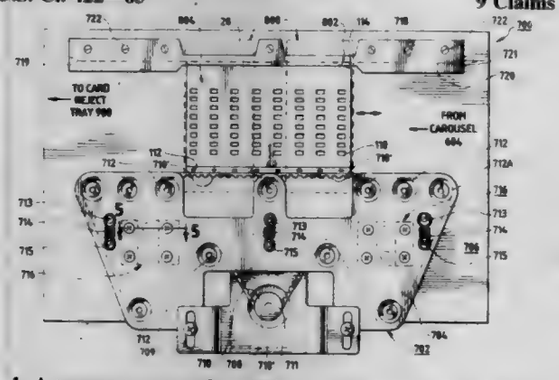
OPTICAL READER AND SAMPLE CARD TRANSPORT STATIONS FOR BIOLOGICAL SAMPLE TESTING MACHINE

William Ernest Seaton, Chesterfield, and Mark Joseph Fanning, Florissant, both of Mo., assignors to bioMerieux Vitek, Inc., Hazelwood, Mich.

Division of Ser. No. 604,472, Feb. 21, 1996, Pat. No. 5,670,375. This application Jul. 2, 1997, Ser. No. 887,198

Int. Cl.[6] G01N *35/04*

U.S. Cl. 422—65 **9 Claims**



1. A transport system for moving a test sample card having a plurality of sample wells and first and second edges relative to an optical system for reading said sample wells, comprising:

a ledge means for maintaining alignment of said card relative to said optical system, said ledge means defining a card slot receiving said first edge of said card, said card slot defining a card travel direction;

a drive assembly for said card, said drive assembly comprising:

a) a drive belt movable relative to said ledge means in a direction parallel to said card travel direction, said drive belt engaging said second edge of said card to move said card relative to said optical system, said drive belt supported by at least one roller;

b) means for driving said belt;

c) spring means for biasing said drive assembly towards said ledge means so as to maintain pressure between said card, said ledge means and said belt;

d) said drive belt sliding said card relative to said ledge means in said card travel direction without substantial slippage between said drive belt and said second edge of said card, thereby permitting said means for driving said belt to move said card relative to said optical system with substantial precision.

5,798,086

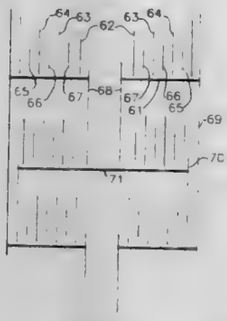
INTENSIFIED LOCALLY COCURRENT TRAY CONTACTORS

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed May 10, 1996, Ser. No. 644,568

Int. Cl.[6] C10J *1/08*

U.S. Cl. 422—211 **21 Claims**



1. An adiabatic vapor-liquid contactor comprised of:

a multiplicity of vertically stacked trays: each tray comprised of

a. a liquid entrance;

b. a liquid exit; and

c. a multiplicity of locally cocurrent liquid-recirculating compartments between said entry and exit; each compartment comprised of:

i. a compartment divider

ii. a channel divider with a liquid recirculation opening at the bottom which divides the compartment into a riser channel and a downcomer channel;

iii. vapor injection passages through the tray at the bottom of each riser channel, and

iv. a liquid transport opening in the bottom portion of said compartment divider.

5,798,087

METHOD OF PRODUCING GYPSUM

Taiichiro Suda; Nagatoshi Fujii; Masami Kawasaki; Yoshiko Moriguchi, all of Osaka; Masaki Iijima, Tokyo, and Toshikuni Sera, Hiroshima, all of Japan, assignors to Kansai Electric Power Co., Inc., Osaka, and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of Japan

Filed Dec. 10, 1996, Ser. No. 763,295

Claims priority, application Japan, Dec. 28, 1995, 7-342577

Int. Cl.[6] C01F *11/46*

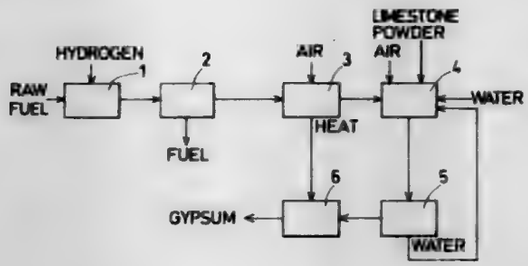
U.S. Cl. 423—555 **4 Claims**

1. A method of producing gypsum, which comprises the steps of:

subjecting a raw fuel to a hydrogenation and desulfurization treatment or a partial oxidation treatment;

subsequently separating a hydrogen sulfide-containing gas from said raw fuel;

subjecting said hydrogen sulfide-containing gas to combustion in the presence of a catalyst to produce a sulfur dioxide-



containing gas, wherein said catalyst is selected from the group consisting of an oxide of Ba and Ca;

and reacting said sulfur dioxide-containing gas with oxygen and calcium carbonate in an aqueous solution to produce gypsum.

5,798,088

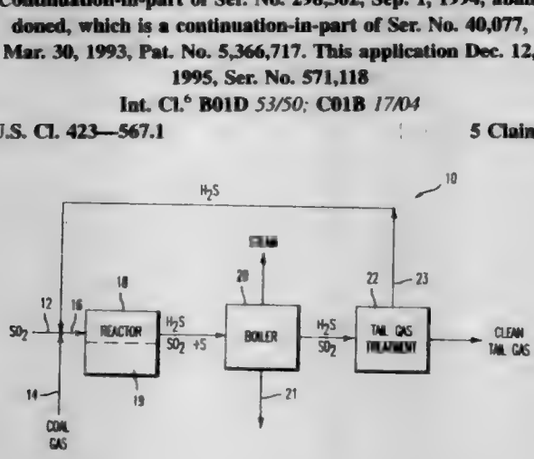
METHOD FOR PRODUCING ELEMENTAL SULFUR FROM SULFUR-CONTAINING GASES

Thomas P. Dorchak, Morgantown, W. Va.; Santosh K. Gangwal, Durham, N.C., and Scott M. Harkins, Pittsburgh, Pa., assignors to Research Triangle Institute, Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 298,302, Sep. 1, 1994, abandoned, which is a continuation-in-part of Ser. No. 40,077, Mar. 30, 1993, Pat. No. 5,366,717. This application Dec. 12, 1995, Ser. No. 571,118

Int. Cl.[6] B01D *53/50;* **C01B** *17/04*

U.S. Cl. 423—567.1 **5 Claims**



1. A method for producing elemental sulfur and sulfur compounds from sulfur containing gases, comprising mixing a primary gas stream consisting essentially of sulfur dioxide with a secondary reducing gas stream comprising at least one of hydrogen or carbon monoxide to prepare a gaseous mixture feed material, contacting a catalyst selected from the group consisting of silica, alumina, sodium impregnated alumina, zinc titanate, titania and transition metals selected from the group consisting of nickel, cobalt, tungsten, molybdenum, mixtures and alloys of these transition metals supported on alumina or titania with said feed material, at a pressure of 7–100 atmospheres and a temperature of 54° C.–700° C., and recovering 52.3–99.7% of the sulfur containing gases of said primary gas stream as elemental sulfur and reduced sulfur compounds from the product of said catalyst/feed material contacting step.

5,798,089

CHELANT MOIETIES LINKED TO AN ARYL MOIETY BY AN INTERRUPTED ALKYLENE LINKER

John Varadarajan; Alan David Watson, both of Wayne, Pa., and Arne Berg, Oslo, Norway, assignors to Nycomed Salutar, Inc., Wayne, Pa.

PCT No. PCT/GB95/00833, § 371 Date Jan. 17, 1997, § 102(e) Date Jan. 17, 1997, PCT Pub. No. WO95/28392, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 12, 1995, Ser. No. 727,594

Claims priority, application United Kingdom, Apr. 14, 1994, 9407435

Int. Cl.[6] A61K *51/04;* **A61B** *5/055;* **C07D** *257/02;225/00*

U.S. Cl. 424—1.65 **17 Claims**

1. A compound of formula I

$$Ch—(—L—Ar—(—AH)_n)_m$$

where Ch is an aminopolycarboxylic acid chelant or a phosphorus oxyacid analogue thereof; each L is an optionally oxo substituted C_{2-25}-alkylene linker wherein at least one CH_2 moiety is replaced by a group X^1 and wherein L is optionally interrupted by a metabolizable group M but with the provisos that the terminal portion of L which is adjacent to Ch is a CH_2 group and that the terminal portion of L which is adjacent to Ar is X^1, $—X^1—CH_2—$ or $—X^1—CH_2—CH_2—$; each Ar is an aryl ring optionally substituted by or having fused thereto a further aryl ring; each AH is a protic acid group or a salt thereof, each X^1 is O, S, NR^1 or PR^1; each R^1 is hydrogen, alkyl or aryl; and m and n are positive integers; or a salt or chelate thereof.

5,798,090

ENHANCEMENT OF THE CELLULAR IMMUNE RESPONSE

B. Michael Longenecker, and Carina Henningsson, both of Edmonton, Canada, assignors to Biomira, Inc., Edmonton, Canada

Continuation of Ser. No. 883,234, May 7, 1992, abandoned, which is a continuation of Ser. No. 524,310, May 17, 1990, abandoned, which is a division of Ser. No. 222,390, Jul. 21, 1988, Pat. No. 4,971,795, which is a continuation of Ser. No. 883,266, Jul. 8, 1986, abandoned. This application Feb. 24, 1995, Ser. No. 394,431

Int. Cl.[6] A01N *63/00;* **A61K** *39/00;39/38;45/00*

U.S. Cl. 424—279.1 **10 Claims**

1. A method of enhancing cellular immunity in a mammal which consists essentially of administering an immunologically effective amount of a carbohydrate antigenic determinant-bearing antigen, said antigen being a synthetic conjugate of a synthetic carbohydrate antigenic determinant and a non-tumor associated immunogenic carrier not naturally associated with said determinant, said mammal subsequently exhibiting a cellular immune response elicited by said antigen and specific to the carbohydrate antigenic determinant of said antigen, said response being mediated by the DTH-effector cells of said mammal, said cells having a CD5 positive, CD8 negative phenotype.

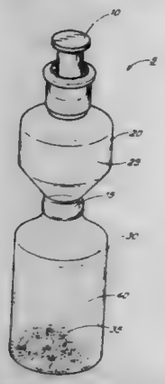
5,798,091
STABILIZED GAS EMULSION CONTAINING PHOSPHOLIPID FOR ULTRASOUND CONTRAST ENHANCEMENT

Leo A. Trevino; Ernest George Schutt, both of San Diego; David H. Klein, Carlsbad; Thomas E. Tarara, San Diego; Jeffry G. Weers, San Diego, and Alexey Kabalnov, San Diego, all of Calif., assignors to Alliance Pharmaceutical Corp., San Diego, Calif.

Continuation-in-part of Ser. No. 284,083, Aug. 1, 1994, Pat. No. 5,605,673, which is a continuation-in-part of Ser. No. 99,953, Jul. 30, 1993, Pat. No. 5,414,600. This application Feb. 28, 1995, Ser. No. 395,680

Int. Cl.[6] A61B *8/13*

U.S. Cl. 424—9.52 **35 Claims**



17. A gas emulsion ultrasound contrast medium, comprising:

an aqueous continuous phase substantially free of lamellar surfactant structures comprising a plurality of bubbles of a gas or gas mixture comprising a fluorocarbon or mixture of fluorocarbons having at least four carbon atoms surrounded by a surfactant layer comprising at least a first and a second surfactant, said first surfactant consisting essentially of a phospholipid or mixture of phospholipids having at least one acyl chain which comprises at least 10 carbon atoms, and comprising at least about 5% w/w of total surfactant, and wherein said second surfactant is more water soluble than said first surfactant.

5,798,092
DERIVATIZED DTPA COMPLEXES PHARMACEUTICAL AGENTS CONTAINING THESE COMPOUNDS, THEIR USE, AND PROCESSES FOR THEIR PRODUCTION

Heribert Schmitt-Willich; Johannes Platzek; Heinz Gries; Gabrielle Schumann-Glampierl; Hanns-Joachim Weinmann; Hubert Vogler; Julius Deutsch, and Juergen Conrad, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Germany

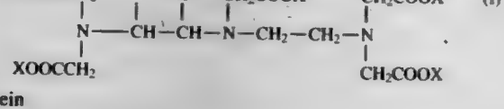
Continuation of Ser. No. 319,357, Oct. 6, 1994, which is a continuation of Ser. No. 909,379, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 809,830, Dec. 20, 1991, abandoned, which is a continuation of Ser. No. 780,840, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 544,530, Jun. 28, 1990, abandoned. This application Jun. 5, 1995, Ser. No. 461,746

Claims priority, application Germany, Jun. 30, 1989, P3922005.2

Int. Cl.[6] A61B *5/055*

U.S. Cl. 424—9.364 **35 Claims**

1. A compound of the formula



(I)

wherein

one of Z^1 and Z^2 is H and the other is

$$-(CH_2)_m-(C_6H_4)_q-(O)_k-(CH_2)_n-(C_6H_4)_l-(O)_r-R,$$

wherein

m and n, independently, are each 0–20,

k, l, q and r are each, independently, 0 or 1,

R is H, C_1–C_6-alkyl, OR^1-substituted C_1–C_6-alkyl or CH_2COOR^1,

R^1 is H, C_1–C_6-alkyl or benzyl; and

X is, in each case, a hydrogen atom or a metal ion equivalent of an element of atomic number 21–29, 42, 44 or 57–83;

with the provisos that;

at least two of the substituents X represent a metal ion equivalent;

when n and l each are 0, then k and r are not simultaneously 1;

$-(O)_r-R$ is not OH;

Z^1 and Z^2 are not $-CH_2-C_6H_4-O-CH_2-COOCH_2C_6H_5$, $-CH_2-C_6H_5$, $-CH_2-C_6H_4-OCH_3$ or $-CH_2-C_6H_4-O-(CH_2)_5-COOCH_2C_6H_5$;

Z^1 is not phenyl when Z^2 is H; and

at least one of q and l is 1;

or a physiologically acceptable salt thereof with an inorganic and/or organic base, an amino acid or amino acid amide.

5,798,093
SPRAY FORMULATIONS OF ANTIHYPERALGESIC OPIATES AND METHOD OF TREATING TOPICAL HYPERALGESIC CONDITIONS AND PRURITUS THEREWITH

John J. Farrar, Chester Springs; An-Chih Chang, Bensalem; Alan L. Maycock, Malvern, and Imre Balogh, Perkasie, all of Pa., assignors to Adolor Corporation, Malvern, Pa.

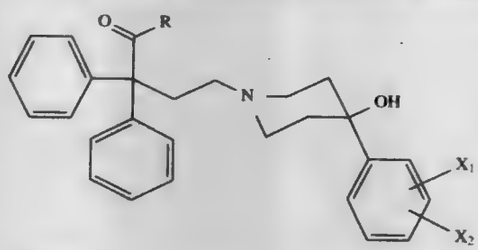
Continuation-in-part of Ser. No. 818,559, Mar. 14, 1997. This application Jul. 14, 1997, Ser. No. 892,389

Int. Cl.[6] A61L *9/04;* **A61K** *31/74*

U.S. Cl. 424—45 **2 Claims**

1. A method for the prevention or treatment of pruritus in a patient comprising administering to said patient an effective anti-pruritic amount of a formulation comprising:

(A) a peripheral anti-hyperalgesic compound of the formula (II)



II

wherein

R is $N(CH_3)_2$, $N(CH_2CH_3)_2$, $N(CH_3)C_2H_5$, $N(CH_2)_4$, $N(CH_2)_5$ or $N(CH_2CH_2)_2O$; and

X_1 and X_2 are independently H, Cl, Br, F or CF_3 and wherein said antihyperalgesic compound has a peripheral selectivity of from about 251 to about 1,280; and

(B) a solvent mixture for the compound of formula II comprising: a) up to about 15% w/w of an alcohol selected from the group consisting of ethyl alcohol, propyl alcohol and isopropyl alcohol or mixtures thereof; and b) greater than or equal to 85% w/w water.

5,798,094

CLEAR COSMETIC STICK COMPOSITION WITH ALKALI CHELATE

Tuan M. Vu, Allston; Jayant N. Sane, Framingham, and Craig M. Coe, Buzzards Bay, all of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Sep. 24, 1996, Ser. No. 718,884

Int. Cl.[6] A61K 7/32

U.S. Cl. 424—65 18 Claims

1. A clear cosmetic stick composition comprising, by weight, about 40 to 90% of a polyhydric alcohol, about 5 to 35% water, about 3 to 12% of an alkali metal salt of a C_{12-22} fatty acid, and about 0.3 to 1.6% of an alkali metal salt of a chelating agent, wherein said composition contains less than 0.3% of an alkali metal salt of a C_{20-22} fatty acid.

5,798,095

HAIR TREATMENT COMPOSITION AND METHOD OF MAKING SAME

Ernst Dieter Racky, Eppstein/Ts., Germany, assignor to Wella Aktiengesellschaft, Darmstadt, Germany

Filed May 15, 1996, Ser. No. 648,342

Claims priority, application Germany, Jul. 15, 1995, 195 25 821.5

Int. Cl.[6] A61K 7/06

U.S. Cl. 424—70.19 10 Claims

1. A hair treatment composition not containing any anionic surfactant, having a pH of from 2 to 7 and comprising a combination of

from 0.5 to 15 percent by weight of at least one surface active component selected from the group consisting of water-soluble cationic surfactants and water-soluble amphoteric surfactants and

from 0.05 to 5 percent by weight of a member selected from the group consisting of benzoic acid, physiologically compatible salts of benzoic acid, saccharin, physiologically compatible salts of saccharin with inorganic bases and combinations of the physiologically compatible salts of said saccharin with the physiologically compatible salts of said benzoic acid;

wherein a weight ratio of said member to said at least one surface active component is from 2:1 to 1:10.

5,798,096

BIOCOMPATIBLE HYDROGEL

Boris Ivanovich Pavlyk, Kiev, Ukraine, assignor to Maloe Vnedrencheskoe Predpriyatie "Interfall", Kiev, Ukraine

PCT No. PCT/UA94/00022, § 371 Date Jan. 23, 1997, § 102(e) Date Jan. 23, 1997, PCT Pub. No. WO96/04943, PCT Pub. Date Feb. 22, 1996

PCT Filed Aug. 12, 1994, Ser. No. 776,731

Claims priority, application Ukraine, Aug. 10, 1994, 94086726

Int. Cl.[6] A61F 2/02

U.S. Cl. 424—78.35 1 Claim

1. Biocompatible hydrogel for placing endoprostheses by injection, containing cross-linked polyacrylamide produced by radical polymerization and pyrogen-free water, said cross-linked polyacrylamide constituting from 3.5 to 6.0% by weight based on the total weight of the hydrogel.

5,798,097

IMMUNOGOBULIN CONJUGATES

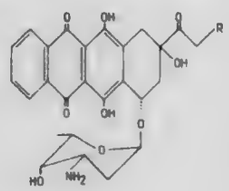
Ian Farquhar Campbell McKenzie; Geoffrey Allan Pietersz, and Mark John Smyth, all of Parkville, Australia, assignors to Pharmacia & Upjohn S.p.A., Milan, Italy

Continuation of Ser. No. 927,541, Jul. 24, 1992, abandoned, which is a continuation of Ser. No. 796,884, Nov. 25, 1991, abandoned, which is a continuation of Ser. No. 167,122, Mar. 11, 1988, abandoned. This application Apr. 11, 1995, Ser. No. 420,712

Claims priority, application Australia, Mar. 11, 1987, PI0803; Jul. 7, 1987, PI2955

Int. Cl.[6] A61K 39/395;39/44; C07K 16/00;17/00

U.S. Cl. 424—181.1 12 Claims



A	IDARUBICIN	R = H
B	BROMODARUBICIN	R = Br
I	AMINE LINK	R = NH—MoAb
D	ESTER LINK	R = O—C(=O)—MoAb

1. An immunoglobulin conjugate comprising idarubicin conjugated at the C-14 position to (a) a monoclonal antibody specific for an antigen selected from the group consisting of a human neoplasm and a T lymphocyte cell surface antigen, or (b) a fragment of said monoclonal antibody comprising at least one site which specifically binds said antigen, wherein at least 50% of said idarubicin is conjugated to said monoclonal antibody or fragment thereof at the C-14 position through an ester linkage.

8. A pharmaceutical composition comprising a pharmaceutically acceptable carrier or diluent, and as an active ingredient, an immunoglobulin conjugate comprising idarubicin conjugated at the C-14 position to (a) a monoclonal antibody specific for an antigen selected from the group consisting of a human neoplasm and a T lymphocyte cell surface antigen, or (b) a fragment of said monoclonal antibody comprising at least one site which specifically binds said antigen, wherein at least 50% of said idarubicin is conjugated to said monoclonal antibody or fragment thereof at the C-14 position through an ester linkage.

5,798,098

Patent Not Issued For This Number

5,798,099

DNA ENCODING DERF II, THE MAJOR MITE ALLERGEN, HOST CELLS CONTAINING SUCH DNA AND METHOD FOR PRODUCING DERF II

Toshifumi Yuuki; Yasushi Okumura, both of Tokyo, and Hiroshi Yamakawa, Urayasu, all of Japan, assignors to Asahi Breweries, Ltd., and Torii & Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 658,596, Feb. 21, 1991, abandoned. This application Aug. 10, 1994, Ser. No. 288,888

Claims priority, application Japan, Mar. 3, 1990, 2-50848

Int. Cl.[6] A61K 39/35; C07H 21/04; C12N 15/12;15/63;15/65;1/21;1/15; C12P 21/00

U.S. Cl. 424—185.1 12 Claims

1. An isolated DNA comprising a DNA segment encoding the major mite allergen Derf II of *Dermatophagoides farinae*, wherein said allergen has the amino acid sequence selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:4.

3. A replication vector comprising the nucleic acid sequence of the isolated DNA of claim 1 and at least one selective marker and at least one restriction site outside of said DNA segment.

6. A host cell of a species other than *Dermatophagoides farinae*, comprising the vector of claim 3.

12. In the method for the treatment of an allergic disease by means of desensitization therapy by administering to a subject gradually increasing doses of a causative agent, the improvement wherein said causative agent is the Derf II allergen expressed upon culturing of the host cell of claim 6, under conditions to permit expression of the Derf II allergen encoded by said DNA segment.

5,798,100

MULTI-STAGE CASCADE BOOSTING VACCINE

Hans J. Hansen, Mystic Island, N.J., assignor to Immunomedics, Inc., Morris Plains, N.J.

Filed Jul. 6, 1994, Ser. No. 268,129

Int. Cl.[6] A61K *39/395;39/40;* **C07K** *16/00*

U.S. Cl. 424—130.1 **21 Claims**

1. A method for inducing humoral and cellular immune responses in a mammal against a tumor that expresses a tumor associated antigen (TAA) or against a disease caused by an infectious agent, said method comprising the steps of:

(a) administering subcutaneously, intramuscularly, or intraperitoneally a first vaccine to the mammal, wherein said first vaccine comprises an antibody component that binds with the TAA or with an antigen associated with the infectious agent, and wherein said antibody component is conjugated with a soluble immunogenic carrier protein; and

(b) administering subcutaneously, intramuscularly, or intraperitoneally a second vaccine to said mammal, wherein said second vaccine comprises an anti-idiotype antibody component that mimics an epitope of said TAA or said infectious agent antigen, and wherein said anti-idiotype antibody component is conjugated with a soluble immunogenic carrier protein.

5,798,101

HERBAL APPETITE SUPPRESSANT AND WEIGHT LOSS COMPOSITION

Brian Haveson, Yardley, Pa., assignor to HPF, L.L.C., Horsham, Pa.

Filed May 1, 1997, Ser. No. 847,542

Int. Cl.[6] A61K *35/78;31/135*

U.S. Cl. 424—195.1 **11 Claims**

1. A composition comprising a dosage of a member selected from the group consisting of St. John's Wort and hypericin and a member selected from the group consisting of Mahuang extract, *Ephedra sinica* and ephedrine in an amount effective for reducing weight and maintaining the weight loss.

5,798,102

TREATMENT OF CARDIOMYOPATHY

John McMichael, Delanson, N.Y., and Harry C. Gurney, Conifer, Colo., assignors to Milkhaus Laboratory, Inc., Delanson, N.Y.

Filed Mar. 4, 1997, Ser. No. 810,725

Int. Cl.[6] A61K *38/16;38/48;38/27*

U.S. Cl. 424—198.1 **12 Claims**

1. A composition for treatment of cardiomyopathy in humans comprising an effective amount of beta-amyloid, streptolysin O, and growth hormone wherein said amount of growth hormone is from about 1×10^{-6} International Units to about 0.1 International Units per dose.

5. A method of ameliorating the symptoms of cardiomyopathy in humans comprising the step of administering from 1–10 drops per day to a patient diagnosed with cardiomyopathy an effective amount of beta-amyloid, streptolysin O, and growth hormone wherein said amount of growth hormone is from about 1×10^{-6} International Units to about 0.1 International Units per dose.

5,798,103

WHOOPING COUGH VACCINE COMPRISING A FIMBRIA PROTEIN

Frederik Robert Mooi, Utrecht, Netherlands, assignor to De Staat der Nerderlanden Vertegenwoordigd Door de Minister Van Welzijn, Volksgezondheid en Cultuur, Rijswijk, Netherlands

Filed Jan. 8, 1993, Ser. No. 2,024

Claims priority, application European Pat. Off., Jan. 8, 1992, 9220038

Int. Cl.[6] A61K *39/02;39/10;21/02*

U.S. Cl. 424—240.1 **7 Claims**

1. A substantially pure protein comprising an amino acid sequence code by SEQ ID NO:7, coding for a minor fimbrial subunit of *Bordetella pertussis* fimbriae (FimD) or immunogenic fragments thereof capable of increasing resistance to colonization by *B. pertussis* strains in trachea and lung tissues, said protein being effective to increase resistance to colonization in trachea and lung tissues by bacteria causative of whooping cough when administered in a vaccine.

5,798,104

INDUCTION OF CYTOTOXIC T-LYMPHOCYTE RESPONSES

Syamal Raychaudhuri, San Diego, and William H. Rastetter, Rancho Santa Fe, both of Calif., assignors to Idec Pharmaceuticals Corporation, San Diego, Calif.

Continuation of Ser. No. 919,787, Jul. 24, 1992, Pat. No. 5,585,103, which is a continuation-in-part of Ser. No. 735,069, Jul. 25, 1991, abandoned. This application May 24, 1995, Ser. No. 449,728

Int. Cl.[6] A61K *39/000;39/002;39/12;39/39*

U.S. Cl. 424—184.1 **35 Claims**

1. A method of treating a human infected with HIV virus, comprising administering a composition comprising an HIV antigen mixed with a microfluidized antigen formulation comprising:

(a) a stabilizing detergent,

(b) a micelle-forming agent, and

(c) a biodegradable and biocompatible oil,

said antigen formulation lacking an immunostimulating peptide component, and being formulated as a stable oil-in-water emulsion; wherein said composition is administered to said patient in an amount sufficient to induce a cytotoxic T-lymphocyte response in said patient.

5,798,105

DNA ENCODING A PLASMODIUM 16KD PROTEIN

Johannes Geradus Ghislain Schoenmakers, Mook; Rudolph Nicolaas Hendrik Konings, Guijk, and Inge Irma Marin Dominique Moelans, Nijmegen, all of Netherlands, assignors to University of Nijmegan, Netherlands

Continuation of Ser. No. 949,645, Dec. 4, 1992, abandoned. This application May 25, 1995, Ser. No. 450,065

Claims priority, application United Kingdom, Jun. 6, 1990, 9012580

Int. Cl.[6] A61K *39/015;* **C12P** *21/06;* **C12N** *15/00;* **C07H** *21/04*

U.S. Cl. 424—272.1 **7 Claims**

1. An isolated DNA sequence encoding the amino acid sequence shown in SEQ ID NO: 2.

5,798,106

PROTEIN

Johannes Gerardus Ghislain Schoenmakers, WK Mook; Rudolph Nicholaas Hendrik Konings, GZ Guijk, and Inge Irma Maria Dominique Moelans, SH Nijmegen, all of Netherlands, assignors to University of Nijmegan, Netherlands

Continuation of Ser. No. 949,645, Dec. 4, 1992, abandoned. This application May 25, 1995, Ser. No. 450,595

Claims priority, application United Kingdom, Jun. 6, 1990, 9012580

Int. Cl.° A61K *39/015;* C07K *1/00;21/02;* C12N *15/00;* C07H *21/02*

U.S. Cl. 424—272.1 9 Claims

1. A purified protein comprising the amino acid sequence as shown in SEQ ID NO: 2.

5,798,107

WRINKLE REDUCING COMPOSITION

Alice Marie Vogel, Middletown; Errol Hoffman Wahl; Jerome Paul Cappel, both of Cincinnati, all of Ohio, and Thomas Carl Ward, Blacksburg, Va., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 338,314, Nov. 10, 1994, abandoned. This application Jun. 24, 1996, Ser. No. 668,978

Int. Cl.° A61K *9/00*

U.S. Cl. 424—400 33 Claims

1. An article of manufacture, which comprises:

a wrinkle reducing active composition, comprising:

1. a wrinkle reducing active, comprising:

a. from about 0.1% to about 4.5%, by weight of the composition, silicone;

b. from about 0.1% to about 4.5%, by weight of the composition, film-forming polymer having a glass transition temperature of from about −20° C. to about 150° C.; and

2. a liquid carrier; and said wrinkle reducing active composition being packaged in

a spray dispenser, for spraying said wrinkle reducing composition onto fabric, wherein said spray dispenser is capable of dispensing onto said fabric an amount of said wrinkle reducing active of from about 0.1% to about 4%, by weight of said fabric; and

wherein said wrinkle reducing active is substantially free of starch, modified starch, and mixtures thereof; and wherein said wrinkle reducing composition results in a Loss Modulus Difference of greater than about 3.3×10^7 Pascal on fabric to provide acceptable wrinkle reducing properties.

5,798,108

COSMETIC COMPOSITION IN THE FORM OF A WATER/OIL/WATER TRIPLE EMULSION WITH GELLED EXTERNAL PHASE

Jean Francois Nadaud, Paris, and Laurence Sebillotte, Creteil, both of France, assignors to L'Oreal, France

PCT No. PCT/FR93/00714, § 371 Date Mar. 10, 1995, § 102(e) Date Mar. 10, 1995, PCT Pub. No. WO94/02120, PCT Pub. Date May 26, 1994

PCT Filed Jul. 13, 1993, Ser. No. 373,209

Claims priority, application France, Jul. 17, 1992, 92 08870

Int. Cl.° A61K *7/00*

U.S. Cl. 424—401 15 Claims

1. Gelled water/oil/water triple emulsion, which contains:

(A) a fatty phase comprising at least one wax with a melting point above or equal to 60° C., constituting with an aqueous phase the W/O primary emulsion;

(B) a dilution oil which is added to the W/O primary emulsion;

(C) a gelled continuous external aqueous phase without surfactant comprising at least one fatty chain-containing gelling agent which is a copolymer of a monoethylenic carboxylic acid containing 3–6 carbon atoms (or the anhydride thereof) and an acrylic ester containing a long chain selected from the group consisting of a C_8–C_{30} alkyl radical and C_8–C_{30} oxyalkylene radical;

wherein the amount of fatty phase in the W/O primary emulsion is greater than 35% by weight and the amount of wax(es) with a melting point above or equal to 60° C. is between 0.2 and 10%, based on the total weight of the triple emulsion.

5,798,109

EXTERNAL SKIN TREATMENT COMPOSITION

Takeshi Yanagida, and Okihiko Sakamoto, both of Yokohama, Japan, assignors to Shiseido Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 416,472, Apr. 4, 1995, abandoned, which is a continuation of Ser. No. 204,285, Mar. 10, 1994, abandoned. This application Aug. 20, 1996, Ser. No. 699,854

Claims priority, application Japan, Jul. 13, 1992, 4-227740; Jul. 13, 1992, 4-227741

Int. Cl.° A61K *7/48*

U.S. Cl. 424—401 8 Claims

1. A method for preventing stickiness caused by vitamin A, said method comprising:

adding to and mixing with an external skin treatment composition comprising vitamin A, a component which includes (i) at least one powder or (ii) at least one silicone oil selected from the group consisting of dimethyl polysiloxane and methylphenyl polysiloxane having a viscosity of 2–20 cs at 25° C., to form a formulated composition; and

continuing adding and mixing said component with said external skin treatment composition, until a desired reduction of stickiness is achieved.

5,798,110

PROCESS FOR MOLDING A MAKE-UP COMPOSITION

Gérard Joulia, Paris, France, assignor to L'Oreal, Paris, France

Continuation of Ser. No. 469,818, Jun. 6, 1995, abandoned, which is a division of Ser. No. 238,055, May 4, 1994, abandoned. This application Jan. 13, 1997, Ser. No. 782,388

Claims priority, application France, Jun. 7, 1993, 93 06763

Int. Cl.° A61K *7/00;7/021*

U.S. Cl. 424—401 11 Claims



1. Process for molding a make-up composition, comprising the steps of:

forming a mold including a concave molding surface as a base of the mold and defining a volume;

applying a sheet of open-cell plastic foam to the mold opposite the concave molding surface to substantially close off the volume, said sheet having a first portion facing the volume, and a second, opposite portion;

introducing a fluid make-up composition into the mold between the concave molding surface and the foam sheet;

impregnating the open cells of the first portion of the foam sheet with the fluid composition;

solidifying the composition to form a molded product, including both the solidified composition having a first usable surface from which make-up can be removed and the foam sheet attached to a second opposite surface,

wherein the solidifying step includes the substeps of bonding the foam sheet to the solidified composition via the impregnated

open cells, and elastically supporting the solid composition via the foam sheet; and

removing the molded product from the molding surface, to form the make-up composition including both the solidified composition and the foam sheet bonded thereto.

5,798,111

CLEAR EMULSION COSMETIC COMPOSITIONS

Vispi Dorab Kanga, Shelton; Craig Stephen Slavtcheff, Guilford, and Alexander Paul Znaiden, Trumbull, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 27, 1997, Ser. No. 884,303

Int. Cl.[6] A61K *7/02*

U.S. Cl. 424—401 **6 Claims**

1. A clear emulsion cosmetic composition having an optical clarity of better than 50 NTU at 21° C. comprising:

(i) from 10 to 97% by weight of an aqueous phase comprising 2-methyl-1,3-propanediol; and

(ii) from 2 to 90% by weight of an oily phase comprising a silicone oil.

5,798,112

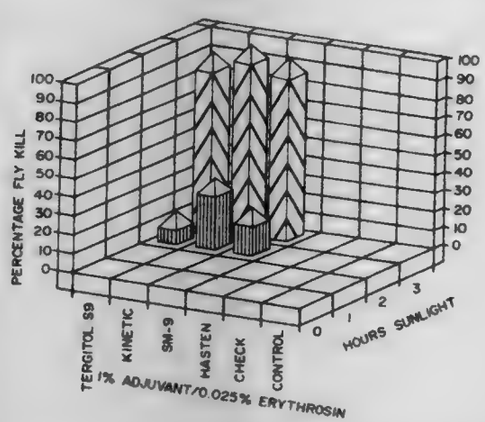
PHOTOTOXIC INSECTICIDAL COMPOSITION AND METHOD FOR CONTROLLING INSECT POPULATIONS

James R. Heitz, Starkville, Miss.; Robert L. Mangan, and Daniel S. Moreno, both of Weslaco, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C., and Photodyne International Inc., Linthicum, Md.

Continuation-in-part of Ser. No. 543,475, Oct. 16, 1995, Pat. No. 5,676,959, which is a continuation-in-part of Ser. No. 352,925, Dec. 9, 1994, abandoned. This application Sep. 26, 1996, Ser. No. 717,225

Int. Cl.[6] A01N *25/02*

U.S. Cl. 424—405 **14 Claims**



1. An insecticidal method for killing fruit flies of the Tephritidae family comprising applying to the habitat of said fruit flies of the Tephritidae family an insecticidal composition comprising a phototoxically effective amount of a food-grade photoactive dye and an effective amount of enzyme hydrolyzed corn protein bait.

5,798,113

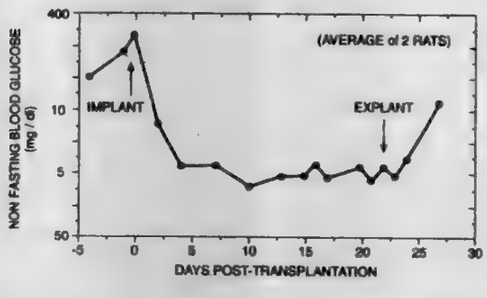
IMPLANTABLE BIOCOMPATIBLE IMMUNOISOLATORY VEHICLE FOR DELIVERY OF SELECTED THERAPEUTIC PRODUCTS

Keith E. Dionne, Rehoboth, Mass.; Dwaine F. Emerich, Providence, R.I.; Diane Hoffman, Cambridge, Mass.; Paul R. Sanberg, Spring Hill, Fla.; Lisa Christenson, New Haven, Conn.; Orion D. Hegre, Green Valley, Ariz.; David W. Scharp, St. Louis; Paul E. Lacy, Webster Grove, both of Mo.; Patrick Aebischer, Lutry, Switzerland; Alfred V. Vasooncellos, Cranston, R.I.; Michael J. Lysaght, Greenwich, R.I., and Frank T. Gentile, Warwich, R.I., assignors to Brown University Research Foundation

Division of Ser. No. 179,151, Jan. 10, 1994, which is a continuation-in-part of Ser. No. 692,403, Apr. 25, 1991, abandoned. This application May 24, 1995, Ser. No. 449,524

Int. Cl.[6] A61K *9/50;9/14*

U.S. Cl. 424—422 **33 Claims**



1. A method of providing a biologically active molecule or metabolic or immunologic function to a patient, comprising implanting into the body of the patient at least one immunoisolatory vehicle comprising:

(a) a core comprising a volume in excess of 1 μl and at least about 10^4 living cells dispersed in a biocompatible matrix formed of a hydrogel, said cells being capable of secreting a biologically active product or of providing a metabolic or immunologic function to the patient; and

(b) an external jacket surrounding said core, said jacket being greater than 5 microns thick, said jacket being formed from a hydrogel that does not ionically bond to a polymer of opposite charge on the core during formation of the jacket, said jacket being free of said cells projecting externally therefrom, said jacket being biocompatible and having a molecular weight cutoff permitting passage of molecules between the patient and the core through said jacket to provide said biologically active product or function.

5,798,114

REFILLABLE BODY POWERED DRUG DELIVERY TECHNIQUES

Dennis D. Elsberry, New Hope, and Robert E. Kim, Shoreview, both of Minn., assignors to Medtronic Incorporated, Minneapolis, Minn.

Filed Apr. 30, 1996, Ser. No. 640,360

Int. Cl.[6] A61F *2/02;* **A61K** *9/22*

U.S. Cl. 424—423 **31 Claims**

1. An implantable and refillable dispensing device for delivering a treatment agent to a body comprising in combination:

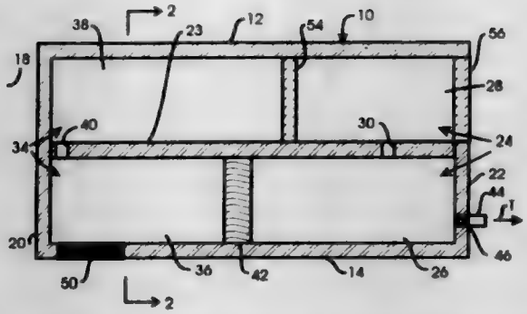
a first chamber for holding said treatment agent;

a conduit between said first chamber and said body;

a second chamber for holding a delivery agent;

means for applying pressure to said first chamber due to changes in volume of said delivery agent in said second chamber so that said treatment agent is delivered through said conduit to said body;

septum means for facilitating the introduction of treatment agent into said first chamber and for facilitating the removal of delivery agent from said second chamber, whereby said treat-



ment agent can be introduced into said first chamber and said delivery fluid can be withdrawn from said second chamber using a rejuvenating device, while said dispensing device remains implanted in the body.

5,798,115

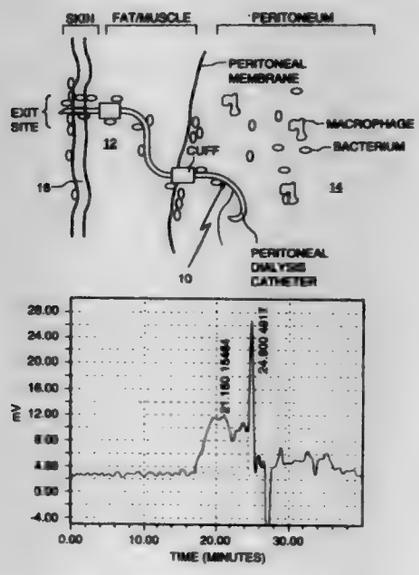
BIORESPONSIVE PHARMACOLOGICALLY-ACTIVE POLYMERS AND ARTICLES MADE THEREFROM

Paul J. Santerre, 866 White Ash Drive, Whitby, Ontario, Canada, L1N 7K3, and Marc W. Mittelman, 4822 Crystal Rose Dr., Mississauga, Ontario, Canada, L5V 1H2

Filed Feb. 13, 1997, Ser. No. 799,938

Int. Cl.[6] A61K *31/785*

U.S. Cl. 424—423 **15 Claims**



1. A bioresponsive, pharmacologically-active, polymeric material having a polystyrene equivalent molecular weight selected from 2,000–200,000 and a backbone comprising a pharmacologically-active fragment formed from a fluoroquinolone covalently linked through two functional groups selected from a polyamide, polyurea, polyurethane and polysulfonamide formed from two or isocyanate functional groups within said backbone.

5,798,116

STABILIZED MATERIALS COMPRISED OF COPPER ION-CONTAINING FIBRONECTIN MATS

Robert A. Brown, London, United Kingdom, assignor to University College London, London, England

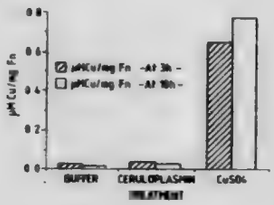
PCT No. PCT/GB94/01648, § 371 Date Apr. 17, 1996, § 102(e) Date Apr. 17, 1996, PCT Pub. No. WO95/04078, PCT Pub. Date Feb. 9, 1995

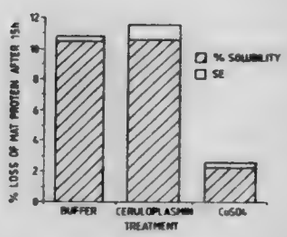
PCT Filed Jul. 29, 1994, Ser. No. 591,443

Claims priority, application United Kingdom, Jul. 30, 1993, 9315810

Int. Cl.[6] A61K *33/34;9/70;* **A61L** *25/00;15/00*

U.S. Cl. 424—445 **13 Claims**





1. A stable complex comprising a porous macroscopically oriented mat of fibronectin or a fragment thereof and Cu ions.

3. A wound dressing comprising a stable complex as claimed in claim 1.

5,798,117

METHOD OF REDUCING MICROORGANISM ADHESION

Roger R C New, London; Stephen A Charles, Oxon, and Ewan J Campbell, Uxbridge, all of Great Britain, assignors to Biocompatibles Limited, Middlesex, United Kingdom

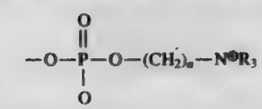
Continuation of Ser. No. 331,566, Dec. 20, 1994, abandoned. This application Oct. 7, 1996, Ser. No. 720,919

Claims priority, application United Kingdom, Apr. 24, 1992, 9208950; Nov. 16, 1992, 9224031

Int. Cl.[6] A61L *15/00;* **A61K** *31/685;* **B63B** *35/00;* **A61C** *3/00*

U.S. Cl. 424—445 **17 Claims**

1. A method of reducing the adhesion of a bacterium to the surface of an article, comprising the step of providing on a surface of the article a compound having pendant groups of formula (I)



(I)

in which each group R is the same or different and is alkyl of 1 to 4 carbon atoms and a is from 1 to 4.

5,798,118

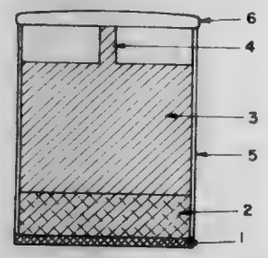
Patent Not Issued For This Number

5,798,119

OSMOTIC-DELIVERY DEVICES HAVING VAPOR-PERMEABLE COATINGS

Scott M. Herbig, Deschutes, Oreg., and Eric J. Miller, Mount Pleasant, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jun. 13, 1995, Ser. No. 489,888
Int. Cl.[6] A61K *9/22;9/24;9/32;9/34*
U.S. Cl. 424—473 42 Claims



1. An osmotic device for the controlled release of a beneficial agent to a non-aqueous environment comprising:

a. a hydrophilic formulation comprising an osmagent;

b. a beneficial agent;

c. a container surrounding the hydrophilic formulation, the beneficial agent, and a water reservoir, said container having at least in part between the water reservoir and the hydrophilic formulation, a semipermeable hydrophobic microporous material having pores that have an average pore size between about 0.1 μm and 30 μm said pores substantially filled with a gas phase, said hydrophobic material permeable to water in the vapor phase and said hydrophobic material impermeable to liquid water at a pressure less than 100 Pa, said hydrophobic material having a contact angle with water greater than 50 degrees, and said container having at least one opening through which the beneficial agent is released from the device; and

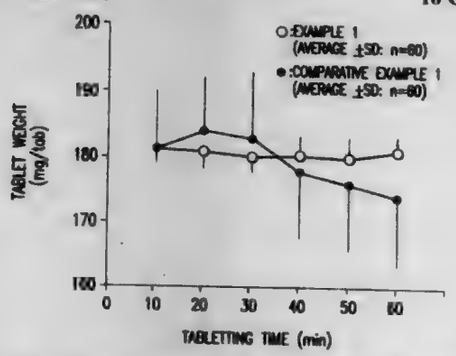
d. a water reservoir in a sealed compartment of the container that when the device is activated, the seal is disrupted allowing water vapor from the reservoir to be available for transport through the semipermeable material.

5,798,120

ENTERIC GRANULE-CONTAINING TABLETS

Matsushita Tomohisa, and Hashimoto Mitsuo, both of Tokyo, Japan, assignors to Tokyo Tanabe Company Limited, Tokyo, Japan

PCT No. PCT/JP94/01675, § 371 Date Apr. 5, 1996, § 102(e) Date Apr. 5, 1996, PCT Pub. No. WO95/10264, PCT Pub. Date Apr. 20, 1995
PCT Filed Oct. 6, 1994, Ser. No. 624,510
Claims priority, application Japan, Oct. 12, 1993, 5-254049
Int. Cl.[6] A61K *9/32*
U.S. Cl. 424—482 16 Claims



1. Enteric granule-containing tablets prepared by tabletting: enteric granules containing an active agent, and a second ingredient comprising one or more compounds selected from the group consisting of synthetic hydrotalcite, dried aluminum hydroxide gel, aluminum hydroxide/sodium hydrogen carbonate coprecipitate, alumina hydroxide/magnesium, synthetic aluminum silicate and dihydroxyaluminumamino acetate.

5,798,121

STABLE COSMETIC, DERMATOLOGICAL OR PHARMACEUTICAL COMPOSITION COMPRISING SELENIUM DISULPHIDE AND AT LEAST ONE ZINC SALT

Danièle Cauwet, and Henri Sebag, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Dec. 19, 1995, Ser. No. 576,431
Claims priority, application France, Dec. 20, 1994, 94 15326
Int. Cl.[6] A61K *33/32;33/04;31/095;31/19*
U.S. Cl. 424—642 14 Claims

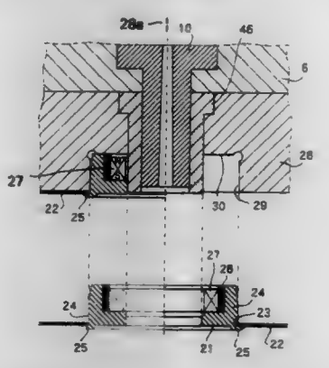
1. A stable cosmetic, dermatological or pharmaceutical composition comprising, in an aqueous medium, selenium disulphide in a mixture with at least one zinc salt of an inorganic or organo-carboxylic acid.

5,798,122

STAMPER PLATE MOUNTING DEVICE OF AN INJECTION MOLD FOR MAKING AN OPTICAL DISC SUBSTRATE

Mitsuo Takahashi, Matsudo, Japan, assignor to Seikoh Giken Co., Ltd., Chiba-ken, Japan

Filed Aug. 28, 1996, Ser. No. 704,321
Claims priority, application Japan, Nov. 28, 1995, 7-331229
Int. Cl.[6] B29C *45/17*
U.S. Cl. 425—3 8 Claims



1. A stamper plate mounting device of an injection mold for making an optical disc substrate, the mounting device including a first cavity plate having a central hole in a surface thereof symmetrically located with respect to a longitudinal axis, at least a portion of the first cavity plate adjacent the central hole being ferromagnetic; a second cavity plate facing the first cavity plate to form a cavity therebetween, one of the first and second cavity plates being movable with respect to the other cavity plate; and a stamper plate having an aperture therein, an inner circumference of said stamper plate defining the aperture; comprising

holding means having a first end fitting within the central hole and a second end, said second end having a flange for holding the inner circumference of the stamper plate against the first cavity plate, the aperture in the stamper plate being substantially coaxial with the central hole of the first cavity plate; and

a magnet embedded in one of (a) the first cavity plate adjacent the first end of said holding means, and (b) the first end of said holding means, said magnet having magnetic poles extending in a direction parallel to the longitudinal axis, the stamper plate being drawn by said holding means toward the first cavity plate due to a magnetic force generated by the

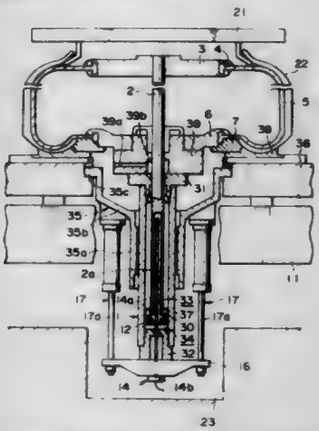
magnet acting on said holding means when the first end of said holding means is within the central hole of the first cavity plate.

5,798,123

CENTER MECHANISM OF TIRE PRESS

Hisashi Mitamura; Kashiro Ureshino; Hiroyuki Takebayashi; Hisaaki Onishi, and Shogo Sarumaru, all of Takasago, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 30, 1996, Ser. No. 739,556
Claims priority, application Japan, Oct. 31, 1995, 7-308342
Int. Cl.[6] B29C *35/02*
U.S. Cl. 425—29 **2 Claims**



1. A center mechanism of a tire press having a bladder, comprising:

an upper clamp holding the upper periphery of the bladder;

a cylinder having a piston connected for vertically moving the upper clamp by a reciprocating movement of the piston;

a center post connected to the piston of the cylinder so as to be coaxial with the cylinder; and

a sensor positioned for sensing a travel amount of the piston of the cylinder so that the bladder is inflated while the upper clamp is at a shaping height adapted to a tire size,

wherein each of the piston of the cylinder and the center post has a hollow portion, and

the sensor is a linear sensor comprising:

a signal generating unit fixed to an exterior of a lower end of the cylinder;

a sensor unit having one end is connected to the signal generating unit and another end positioned in the hollow portion of the center post; and

a magnet installed at the hollow portion of the piston at a position such that the magnet is sensed by the sensor unit.

5,798,124

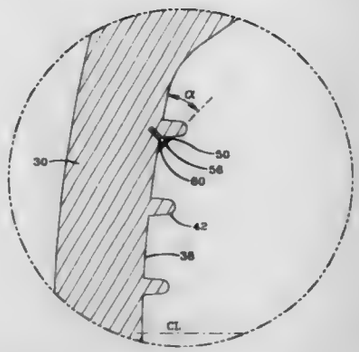
TIRE TREAD ELEMENT MOLD CHAMFER TO MODIFY RCF AND/OR RSAT USING THE EXISTING MOLD

John Alan Howald, and Steven Craig Rohweder, both of Uniontown, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 17, 1996, Ser. No. 588,036
Int. Cl.[6] B29C *35/00*
U.S. Cl. 425—32 **8 Claims**

1. A tire mold for modifying residual cornering force or residual self-aligning torque of a tire, said tire mold comprising:

molding means for molding treads, said molding means having a plurality of recesses for forming tread elements, each tread element having two or more edges, a plurality of tread element forming recesses having one or more portions for forming chamfered corners along one or more tread element edge,



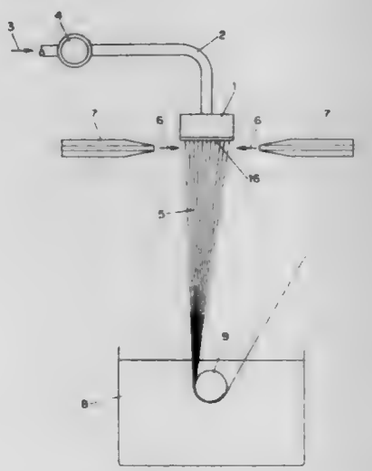
the chamfer corner forming portions being selectively partially or completely removable for modifying the residual cornering force or self-aligning torque of the molded tire.

5,798,125

DEVICE FOR THE PREPARATION OF CELLULOSE MOULDINGS

Stefan Zikeli, Regau; Ernst Rauch, Schörfling; Hermann Koberger, Zipf; Friedrich Ecker, Timelkam; Hartmut Rüf, Vöcklabruck; Raimund Jurkovic, and Franz Schwenninger, both of Lenzing, all of Austria, assignors to Lenzing Aktiengesellschaft, Austria

Continuation of Ser. No. 142,313, Nov. 16, 1993, Pat. No. 5,589,125. This application Jun. 6, 1995, Ser. No. 480,045
Claims priority, application Austria, Mar. 17, 1992, 537/92
Int. Cl.[6] D01F *2/24*
U.S. Cl. 425—72.2 **8 Claims**



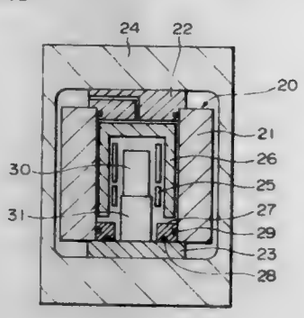
1. Apparatus for the preparation of cellulose fibres from a solution of tertiary amine oxide comprising a spinneret having a multiplicity of spinning holes arranged essentially in a ring-shape, an inlet for cooling gas positioned in the center of the ring-shape arrangement of the spinning holes and located immediately downstream of the spinning holes, said inlet comprising a tube having a baffle plate at one end deflecting said cooling gas horizontally, and an additional inlet for cooling gas located outside the ring-shape arrangement of the spinning holes.

5,798,126

SEALING DEVICE FOR HIGH PRESSURE VESSEL

Takao Fujikawa, and Noriaki Nakai, both of Takasago, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 21, 1997, Ser. No. 861,392
Claims priority, application Japan, May 21, 1996, 8-125921
Int. Cl.[6] B29C *43/10*
U.S. Cl. 425—78 **6 Claims**



1. A sealing device for a high pressure vessel for preventing leakage of pressure in pressure-processing a workpiece to be processed under isostatic pressure in the high pressure vessel, the high pressure vessel having a circular sectional form and comprising at least two members, an end of one of which has a cylindrical portion and the other of which comprises a cover which is openable to exchange a workpiece to be processed, the device comprising:

a ring member fitted into the cylindrical portion;

an axial seal ring mounted to an interface between the ring member and the cylindrical portion; and

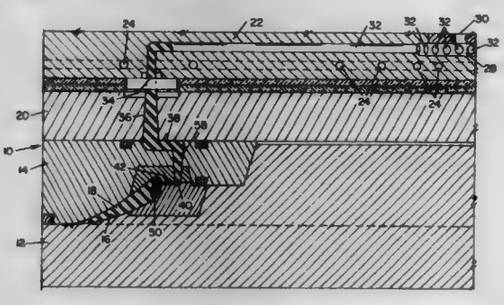
a plane seal ring mounted on an open end side of the ring member so as to adhere to an end surface of the other member.

5,798,127

INJECTION MOLDING OF A TIRE COMPONENT

Ronda Renee Bayer Thayer, Barberton; Robert Leon Benedict, Tallmadge; Larry Edward Chlebina; Bernard Byron Jacobs, both of Akron; Thomas Andrew Laurich, Tallmadge; Walter George Macesich, Akron; Norbert Majerus, Akron; John Sylvester Rambacher, Akron; William Allen Rex, Mogadore; Timothy Michael Rooney, Munroe Falls; Mohammad Eghbal Sobhanie, Akron; Albert James Yovichin, North Canton; David Lowell Wolfe, and Daniel Patrick Hentosz, both of Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 15, 1995, Ser. No. 528,980
Int. Cl.[6] B29C *35/00*
U.S. Cl. 425—117 **18 Claims**



1. Apparatus for injection molding an elongated component of elastomeric material comprising:

(a) a mold assembly having a cold plate and a heated mold mounted on said cold plate;

(b) an injection apparatus for heating, mixing and injecting said elastomeric material into said mold assembly;

(c) a plurality of runners in said cold plate for communicating said material from said injection apparatus to said heated mold;

(d) a generally elongated manifold defined by opposing heated surfaces of said mold connected to said runners in said cold-plate;

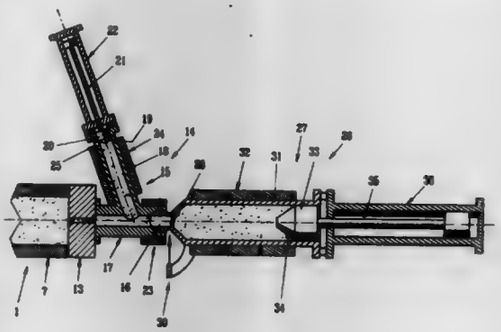
(e) an elongated mold cavity adjacent said elongated manifold defined by said opposing heated surfaces of said mold and (f) a landing area between said elongated manifold and said elongated mold cavity defined by said opposing surfaces of said heated mold and having a narrow elongated opening providing for heating and shearing said material as it is injected into said elongated mold cavity to increase the temperature and decrease the curing time of said elastomeric material.

5,798,128

PLANT FOR MANUFACTURING STRUCTURAL COMPONENTS MADE OF FIBRE-REINFORCED THERMOPLASTIC

Philippe Dumazet, Montbeliard; Daniel Ougier, Seloncourt, and Gefard Gropelier, Montbeliard, all of France, assignors to ECIA—Equipements Et Composants Pour L'Industrie Automobile, Audincourt, France

Filed Nov. 15, 1996, Ser. No. 749,841
Int. Cl.[6] B29C *31/06;45/47;45/56*
U.S. Cl. 425—147 **49 Claims**



1. A plant for manufacturing structural components made of fibre-reinforced thermoplastic, characterized in that it comprises:

means (**1**) of continuous production of a dough of a fibre-reinforced thermoplastic compound, having input means for receiving the thermoplastic (**4**) and the reinforcing fibres (**6**);

means (**14**) of accumulation and of temporary storage of the dough produced, comprising a reservoir-forming storage means (**15**) provided with an inlet connected to the production means (**1**) and an exit provided with shut-off means (**16**) connected to means of controlling the opening and closing of these shut-off means; and

means (**26**) of removing dough from the accumulation and temporary storage means (**14**) and of introducing this removed dough into a mould (**29**) for forming the component, these means (**26**) comprising syringe-formed means (**27**) which include at least one dough charging/discharging orifice (**28**), which means are carried by handling means (**38**) and can move between a first position for charging with dough, in which position the dough charging/discharging orifice (**28**) of the syringe-formed means (**27**) is opposite the exit of the dough accumulation and temporary-storage means (**14**) and the shut-off means (**16**) of this exit are opened in order to allow transfer of the dough from these accumulation and temporary-storage means (**14**) to the syringe-formed means (**27**), and a second position for introducing the dough with which these means are charged into the mould (**29**) for forming the component.

5,798,129

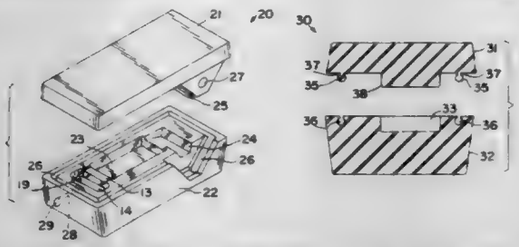
DEVICE FOR PROTOTYPE MOLDING

Bruce A. Megleo, 730 S. Benton, Palatine, Ill. 60067

Filed Aug. 31, 1995, Ser. No. 522,195

Int. Cl.[6] B29C *33/20*

U.S. Cl. 425—215 12 Claims



1. A reusable, resilient and self-locking mold for the prototype molding of an object, said mold comprising a first resilient mold portion and a second resilient mold portion matable thereto, said first mold portion having a first opposing mold face with a cavity therein corresponding to the shape of said object to be molded, said second mold portion having a second opposing mold face with a core thereon corresponding to the back of said object to be molded, the opposing mold faces of said first mold portion and said second mold portion upon mating, defining a void therebetween, said void corresponding in size and shape to the object to be molded, said void being connected by a first channel to a first orifice for providing resin therein, said void further being associated with a second channel extending to a second orifice on the outer surface of said mold, said second channel and orifice being of sufficient size and shape for removing air from said void, said first mold portion and said second mold portion having opposing members of a resilient interlocking pair on opposing mold faces, respectively, said interlocking pair members circumscribing said core and said cavity on said opposing mold faces, and when interlocked, forming a resilient and self-locking mold having a void that when subjected to reduced pressure, is resistant to air seepage during molding conditions, and when said void is filled with liquid resin, are capable of holding said first and second mold portions of said self-locking mold together, without the application of external force until said liquid resin in said void has hardened into said molded object.

5,798,130

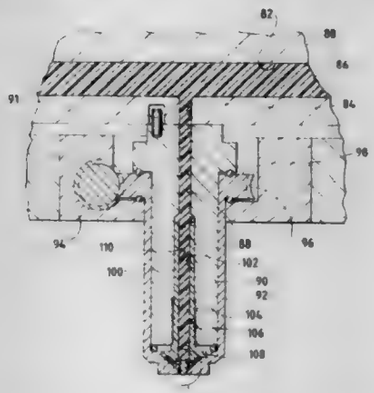
ADJUSTABLE MOLD GATE

John W. von Holdt, 6864 Lexington La., Niles, Ill. 60648, assignor to John W. Von Holdt, Niles, Ill.

Continuation-in-part of Ser. No. 523,381, Sep. 5, 1995. This application Aug. 5, 1996, Ser. No. 693,866

Int. Cl.[6] B29C *45/17;45/20*

U.S. Cl. 425—549 12 Claims



1. A mold gate for controlling the flow of molten plastic to a mold cavity for the injection molding of plastic parts, which mold gate comprises, in combination: an outer mold gate member having a central opening at an inner end through which molten plastic flows to a mold cavity, a hot probe centrally disposed adjacent to said central opening to define an annular passage between said hot probe and said central opening, said hot probe being longitudinally adjustable relative to said outer mold gate member to vary the area of a said annular passage, and apparatus for adjusting the longitudinal position of said hot probe to adjust the area of said annular passage and thereby control the flow of molten plastic to said mold cavity, said hot probe defining a central, longitudinal passageway through the length of said hot probe which communicates at an outer end with a source of molten plastic, and which communicates at an inner end with said annular passage, said hot probe being seated in a rotatable outer mold sleeve to be rotatable with said outer sleeve, said hot probe being threadedly engaged with an inner bushing having a passageway communicating with the central longitudinal passageway of the hot probe for said communication with the source of molten plastic, whereby rotation of said outer mold sleeve causes said hot probe to both rotate and to move longitudinally as guided by the threaded interengagement with the inner bushing, to permit adjustment of the size of said annular passage by longitudinal movement of the hot probe.

5,798,131

COATING ICE CONFECTIONERY ARTICLES WITH PARTICULATE MATERIAL

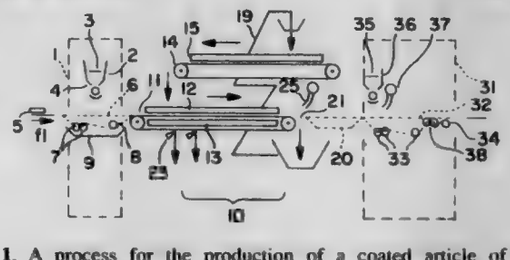
Francis-Victor Bertrand, Laversines, and Christian Mange, Beauvais, both of France, assignors to Nestec S.A., Vevey, Switzerland

Filed May 17, 1994, Ser. No. 243,816

Claims priority, application European Pat. Off., Jun. 11, 1993, 93109364

Int. Cl.[6] A23G *9/00*

U.S. Cl. 426—293 13 Claims



1. A process for the production of a coated article of ice confectionery comprising applying a liquid fatty material to a plurality of surfaces of a frozen article of ice confectionery to obtain article surfaces coated with a layer of the liquid fatty material, cooling the fatty-coated article to cool and keep the fatty-coated article cold during solidification of the fatty layer and during cooling and prior to the fatty layer solidifying at its surface, so that the fatty layer surface is tacky, applying solid particulate material on the tacky fatty-coated surface to obtain a cooled article having particulate material adhering to the fatty layer, separating particulate material which has not adhered to the fatty layer and recycling the non-adhering particulate material for application to additional fatty-coated articles.

5,798,132

PROCESS FOR APPLYING A FLAVORED COATING TO A FOOD PRODUCT

Weizhi Chen, and Saiyad Salahuddin Ahmad, both of Dallas, Tex., assignors to Recot, Inc., Pleasanton, Calif.

Filed Jun. 17, 1996, Ser. No. 668,072

Int. Cl.[6] A21D *15/08;* A23B *4/10;9/14*

U.S. Cl. 426—305 18 Claims

1. A process for preparing a coated food product, comprising

a) applying to a food product a flavorful coating composition, comprising an oil-in-water emulsion comprising water, at

least one ungelatinized native starch, at least one edible oil and at least one seasoning and

b) subjecting the resulting food product to a drying process comprising

a first drying stage subjecting the product to temperature and air flow sufficient to melt fat within the coating but not gelatinize the starch, followed by

a second drying stage subjecting the product to temperature and air flow sufficient to gelatinize the starch and thus set the coating.

5,798,133

METHOD FOR MAKING BACON BITS FROM RAW BELLIES

Gale F. Kunert, Austin, Minn., assignor to Hormel Foods Corporation, Austin, Minn.

Filed May 29, 1997, Ser. No. 864,925
Int. Cl.[6] A23L *1/01;1/31*
U.S. Cl. 426—438 **22 Claims**

1. A process for making bacon bits from raw bellies, comprising the steps of:

a) sizing the raw bellies to a first size;

b) mixing water, sized bellies, curing ingredients and encapsulated salt to form a product mixture;

c) heating the product mixture to above 120° F. wherein protein within the product mixture is substantially denatured before the encapsulated salt is released, thereby avoiding clumping of the product mixture;

d) mixing the product mixture;

e) heating the product mixture to at least 180° F.; and

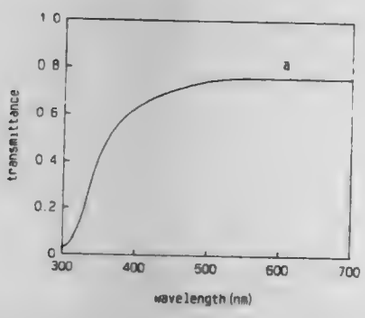
f) further processing the product mixture to a water activity level of 0.85 or less.

5,798,134

PROCESS FOR PRODUCING NICKEL OXIDE FILM

Yoshiyuki Sato; Shigeharu Tamura; Shoichi Mochizuki, and Toshiyuki Mihara, all of Ikeda, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Continuation of Ser. No. 539,261, Oct. 4, 1995, abandoned. This application Apr. 4, 1997, Ser. No. 833,089
Claims priority, application Japan, Oct. 11, 1994, 6-272984
Int. Cl.[6] C23C *16/00;14/34*
U.S. Cl. 427—126.6 **10 Claims**



1. A process for producing a transparent, substantially uncolored, electrochemically colorizable, film comprising nickel oxide, comprising:

forming a composite film comprising metallic nickel and carbon on a substrate, and

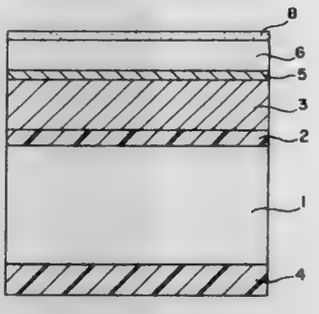
subsequently heat-oxidizing said composite film in an atmosphere of a gas comprising oxygen at a temperature of about 4000C under conditions sufficient to convert said composite film to a transparent, substantially uncolored, film comprising nickel oxide.

5,798,135

METHOD FOR PRODUCING A MAGNETIC RECORDING MEDIUM HAVING A CARBON PROTECTIVE LAYER

Hideyuki Ueda, Takatsuki; Hiroshi Seki, Katano; Kenji Kuwahara, Ikoma; Mikio Murai, Hirakata; Kiyosi Takahasi, Ibaraki; Masaru Odagiri, Kawanishi, and Sadayuki Okazaki, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 365,216, Dec. 28, 1994, Pat. No. 5,589,263. This application Sep. 30, 1996, Ser. No. 724,513
Claims priority, application Japan, Dec. 28, 1993, 5-337781
Int. Cl.[6] G11B *5/85*
U.S. Cl. 427—130 **12 Claims**



1. A method for producing a ferromagnetic metal thin film magnetic medium comprising the steps of forming a ferromagnetic metal thin film on a nonmagnetic substrate, supplying an oxidizing raw material in a discharging atmosphere in which said substrate is placed under pressure of between 0.05 and 0.2 Torr to form a plasma by an energy corresponding to a voltage of between 500 and 1500 V, generating chemical active species comprising atomic oxygen, irradiating said ferromagnetic metal thin film with said chemical active species in vacuum to form a dry etched layer on said ferromagnetic metal thin film, forming a carbonaceous film on said dry etched layer without breaking vacuum, and forming a lubricant layer on said carbonaceous film.

5,798,136

SIMULTANEOUS COATINGS OF WAX DISPERSION CONTAINING LUBRICANT LAYER AND TRANSPARENT MAGNETIC RECORDING LAYER FOR PHOTOGRAPHIC ELEMENT

Christine J. Landry-Coltrain, Fairport; Michael J. Corrigan, Hilton; Gregory W. Keyes; James H. Griggs, both of Rochester, and Bradley K. Coltrain, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 19, 1997, Ser. No. 858,682
Int. Cl.[6] G03C *1/76;* **B05D** *5/12;1/30;1/36*
U.S. Cl. 427—131 **7 Claims**

1. A method of producing an imaging support comprising:

providing a support,

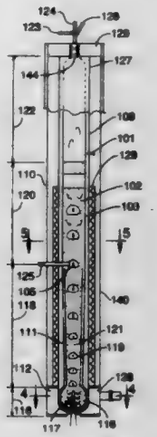
simultaneously coating on a side of the support; a transparent magnetic recording layer comprising magnetic particles, a polymeric binder and an organic solvent, and a lubricating overcoat layer farthest from the support, the lubricating overcoat layer comprising wax particles having a size from 0.01 μm to 0.5 μm, and an organic solvent; and

drying the magnetic recording layer and the lubricating overcoat layer.

5,798,137
METHOD FOR SILICON DEPOSITION

Stephen M. Lord, Encinitas, Calif., and Robert J. Milligan, Moses Lake, Wash., assignors to Advanced Silicon Materials, Inc., Moses Lake, Wash.

Filed Jun. 7, 1995, Ser. No. 481,801
Int. Cl.[6] C23C *16/24*
U.S. Cl. 427—213 **35 Claims**



1. A process for the deposition of silicon on particles that are located inside a vessel, the process comprising:

providing a reactor having a vessel, which vessel has a wall which defines a chamber having at least two zones including (a) an inlet zone and (b) an upper zone that communicates with and is located above the inlet zone to receive gas moving upwardly from the inlet zone, and which vessel has a fluidizing inlet for delivering gas into the inlet zone;

injecting a silicon-bearing gas through the fluidizing inlet to provide a fluidizing jet in the chamber without passing the gas through a distribution plate so as to maintain particles in the inlet zone in a submerged spouted bed;

maintaining particles in the inlet zone at an operating temperature sufficient to cause silicon to deposit from the silicon-bearing gas onto particles in the inlet zone; and

maintaining particles in the upper zone in a bubbling fluidized bed.

5,798,138
METHOD OF SELECTIVELY METALLISING AN INNER, ELECTRICALLY INSULATING SURFACE OF AN OPEN BODY

Petrus E. J. Legierse, Eindhoven; Jan W. Severin, Tilburg; Menno B. Kubbinga, Eindhoven; Franciscus A. Meeuwsen, Eindhoven, and Antonius F. P. M. Van Veggel, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

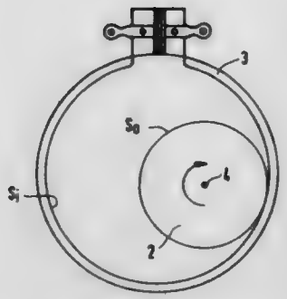
Filed Mar. 12, 1997, Ser. No. 815,239
Claims priority, application European Pat. Off., Mar. 18, 1996, 96200747
Int. Cl.[6] B05D *1/28;7/22*
U.S. Cl. 427—230 **6 Claims**

1. A method of producing an electrically conductive circuit arrangement on a curved, electrically insulating inner surface S_i of a tubular housing having an open end, said method comprising the following steps:

(a) providing a roller having a resilient outer surface S_o;

(b) providing a layer of ink on the outer surface S_o of the roller, in a circuit pattern, said ink consisting essentially of a catalyst which promotes electroless deposition of metals or of an electrically-conductive material;

(c) with the roller inserted into the housing through said open end, causing the roller to roll along the inner surface S_i so as



to transfer a layer of the ink from the surface S_o to the surface S_i, in the circuit pattern;

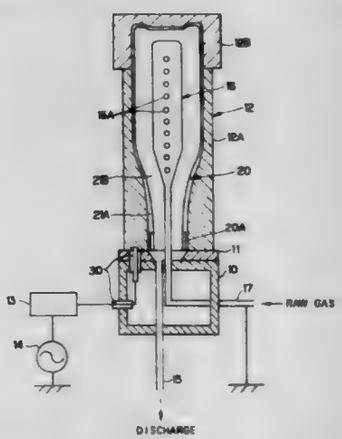
(d) allowing the transferred layer of ink on the surface S_i to dry;

(e) selectively depositing metallic material upon the transferred layer of dry ink.

5,798,139
APPARATUS FOR AND METHOD OF MANUFACTURING PLASTIC CONTAINER COATED WITH CARBON FILM

Kazufumi Nagashima, Tokyo-to, and Hideaki Shima, Kyoto, both of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, and Kabushiki Kaisha Samco International Kenkyusho, Kyoto, both of Japan

PCT No. PCT/JP95/01583, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO96/05112, PCT Pub. Date Feb. 22, 1996
PCT Filed Aug. 9, 1995, Ser. No. 776,703
Claims priority, application Japan, Aug. 11, 1994, 6-189224
Int. Cl.[6] B05D *7/22; C23C 16/26;16/54*
U.S. Cl. 427—237 **11 Claims**



6. A method of manufacturing a plastic container coated with carbon film, which comprises:

providing, in an external electrode, a hollow space for accommodating a container, said container and said hollow space being of similar shape, a distance between an inner surface of the external electrode and an outer surface of the container accommodating in the hollow space being approximately equal throughout the external electrode;

insulating the external electrode by an insulating member on which a mouth of the container abuts;

inserting an internal electrode which is earthed into the container accommodated in the hollow space, through the mouth of the container, an inner surface of said container and the internal electrode being of similar shape, a distance between an outer surface of the internal electrode and the inner surface of the container accommodated in the hollow space of the external electrode being approximately equal throughout the internal electrode;

discharging air in the hollow space of the external electrode so that the hollow space becomes vacuum; supplying raw gas into the container, and

impressing high frequency on the external electrode after raw gas is supplied into the container accommodated in the hollow space of the external electrode to form a carbon film.

5,798,140

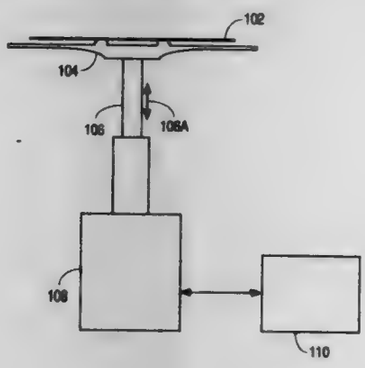
OSCILLATORY CHUCK METHOD AND APPARATUS FOR COATING FLAT SUBSTRATES

Michael L. Parodi, Alamo, Calif., and Roy E. Hurtig, Anacortes, Wash., assignors to Semiconductor Systems, Inc., Fremont, Calif.

Continuation of Ser. No. 152,036, Nov. 12, 1993, abandoned. This application Apr. 30, 1996, Ser. No. 640,248

Int. Cl.[6] B05D *3/12*

U.S. Cl. 427—240 **6 Claims**



1. A method for applying a layer of a coating liquid to a surface of an article, the method comprising;

applying a quantity of the coating liquid to a portion of the surface; and

oscillating the surface, until the coating liquid is evenly spread over the surface, wherein the step of oscillating comprises (a) spinning the article in a first direction for a first period of time and (b) spinning the article in a second direction, which is opposite the first direction, for a second period of time.

6. An apparatus for applying a layer of a liquid to a surface of an article, the apparatus comprising:

a chuck which is capable of securely holding the article;

a central gear mounted on a vertical shaft;

a plurality of planetary gears rotatably mounted around and meshing with the central gear;

a connecting member joining a non-central point on each of the planetary gears with the chuck; and

a motor for rotating the central gear to thereby vibrate the chuck orbitally.

5,798,141

METHOD FOR SEMICONDUCTOR FILMING

Toru Harada, Tokyo, Japan, assignor to Kokusai Electric Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1995, Ser. No. 571,538

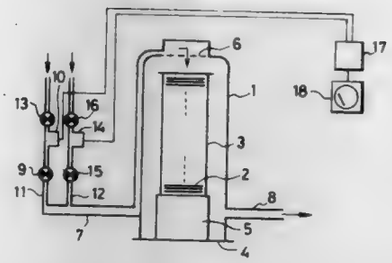
Claims priority, application Japan, Dec. 19, 1994, 6-334400

Int. Cl.[6] C23C *16/00*; **H01L** *21/31*

U.S. Cl. 427—248.1 **7 Claims**

1. A method of semiconductor filming wherein a thin film is deposited on a wafer under an atmospheric pressure, comprising the steps of:

simultaneously supplying a reactive gas and an inert gas to a reaction tube; and



maintaining a partial pressure of said reactive gas constant by adjusting flow rates of said reactive gas and said inert gas.

5,798,142

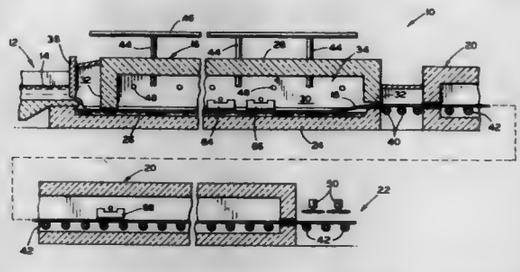
CVD METHOD OF DEPOSITING A SILICA COATING ON A HEATED GLASS SUBSTRATE

Michel J. Soubeyrand, Holland, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Continuation of Ser. No. 323,272, Oct. 14, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 681,611

Int. Cl.[6] C23C *16/40*

U.S. Cl. 427—255 **21 Claims**



1. A process for depositing a silica coating upon a heated glass substrate comprising the steps of:

a) providing the heated glass substrate having a surface upon which the coating is to be deposited;

b) pre-mixing a silane, a radical scavenger gas, oxygen and an inert carrier gas to form a precursor mixture, directing the precursor mixture toward and along the surface to be coated in a laminar flow, and reacting the mixture at or near the surface to form the silica coating, the radical scavenger being present in an amount such that the radical scavenger to silane ratio is between 3 to 1 and 17 to 1; and

c) cooling the coated glass substrate to ambient temperature.

5,798,143

CVD PROCESS FOR MAKING A HOLLOW DIAMOND TUBE

Peter George Partridge, Bristol, United Kingdom, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, United Kingdom

PCT No. PCT/GB95/01680, § 371 Date Jan. 15, 1997, § 102(e) Date Jan. 15, 1997, PCT Pub. No. WO96/02685, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 17, 1995, Ser. No. 765,792

Claims priority, application United Kingdom, Jul. 18, 1994, 9414444

Int. Cl.[6] C23C *16/26*

U.S. Cl. 427—249 **5 Claims**

1. A method of diamond coating an elongate substrate material to form a hollow diamond tube, having a surface pretreated to establish diamond nucleation sites, comprising the steps of:

(i) on a former winding the elongate material into substantially a helical geometry wherein the pitch of the helix is less than the diameter of the helix and removing the former, and

(ii) encapsulating the elongate helix of the substrate material prepared in step

(i) by depositing diamond on the elongate substrate material by chemical vapor deposition to form a continuous diamond film such that growth surfaces of the diamond deposited upon adjacent pitches of the helix fuse to close the pitch of the helix and resulting in said hollow diamond tube.

5,798,144

METHOD FOR IMPARTING HYDROPHOBICITY TO A SURFACE OF A SUBSTRATE WITH LOW CONCENTRATION ORGANOFUNCTIONAL SILANES

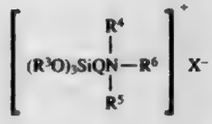
P. Prabodh Varanasi, Racine; John F. Goetz, Milwaukee, and Murthy S. Munagavalasa, Racine, all of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation of Ser. No. 627,690, Apr. 2, 1996, abandoned. This application Oct. 12, 1997, Ser. No. 946,750

Int. Cl.[6] B05D *1/02;1/36;1/38;5/00*

U.S. Cl. 427—384 **10 Claims**

1. A method for imparting hydrophobicity to a surface of a substrate comprising the steps of applying to said surface a solution having less than 0.2 ppm of an organofunctional silane, wherein said organofunctional silane is represented by the formula:



wherein R^3 is a hydrolyzable lower alkyl group having 1 to 6 carbon atoms, R^4, R^5 and R^6 are each independently alkyl groups having 1 to 24 atoms, Q is an alkylene radical having 1 to 6 carbon atoms and X is a halogen, and repeating the application step until an advancing contact angle of water on said substrate is at least 5 degrees greater than the advancing contact angle of water on said surface before any organofunctional silane is applied to said surface.

5,798,145

FLEXIBLE AMINOPLAST-CURABLE FILM-FORMING COMPOSITIONS PROVIDING FILMS HAVING RESISTANCE TO ACID ETCHING

Steven V. Barancyk; Christopher A. Verardi, and William A. Humphrey, all of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

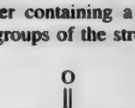
Continuation-in-part of Ser. No. 236,912, Apr. 29, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 586,053

Int. Cl.[6] C08L *61/20;67/02;71/02*

U.S. Cl. 427—393.5 **35 Claims**

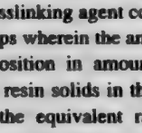
1. A flexible, curable film-forming composition comprising

(i) a polyether polymer containing a plurality of terminal or pendant carbamate groups of the structure:



wherein said polyether polymer has on average up to two of said terminal or pendant carbamate groups per molecule and wherein said polyether polymer has an equivalent weight of from about 140 to 2500 based on equivalents of said terminal or pendant carbamate groups and wherein the polyether polymer is present in the film-forming composition in amounts of 5 to 40 percent by weight based on weight of resin solids in the film-forming composition;

(ii) a polymer selected from the group consisting of a polyester polymer present in the film-forming composition in amounts up to 60 percent by weight based on the weight of resin solids in the film-forming composition, a polyurethane polymer, and an acrylic polymer, wherein the latter two can be present in the film-forming composition in amounts of 5 to 50 percent by weight based on weight of resin solids in the film-forming composition and mixtures thereof wherein each polymer contains a plurality of terminal or pendant carbamate groups of the structure:



and wherein each polymer of component (ii) has an equivalent weight of from about 140 to 2500 based on equivalents of said terminal or pendant carbamate groups; and

(iii) an aminoplast crosslinking agent containing methylol and/or methylol ether groups wherein the aminoplast is present in the film-forming composition in amounts of 15 to 50 percent based on weight of resin solids in the film-forming composition and wherein the equivalent ratio of said pendant or terminal groups to methylol or methylol ether groups is from 0.5 to 2:1 and is sufficient to form a crosslinked film.

5,798,146

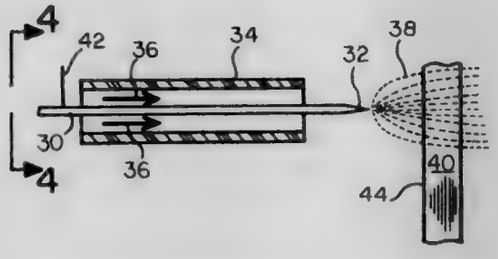
SURFACE CHARGING TO IMPROVE WETTABILITY

Igor Y. Murokh, Los Angeles, and Alex A. Kerner, Pacific Palisades, both of Calif., assignors to Tri-Star Technologies, El Segundo, Calif.

Filed Sep. 14, 1995, Ser. No. 528,327

Int. Cl.[6] B05D *1/04;1/06;3/10*

U.S. Cl. 427—458 **9 Claims**



4. A process for applying a flowable material to the surface of a dielectric workpiece which process comprises:

selecting a dielectric workpiece which has a surface;

establishing a corona discharge using only a single sharp edged electrode;

directing a stream of flowing gas through the corona discharge toward said surface; and

positioning said surface substantially within the corona discharge and stream of flowing gas, wherein said surface is substantially uniformly charged without causing significant degradation of said surface;

selecting a flowable material;

applying said flowable material to said charged surface of said dielectric workpiece; and

curing said flowable material in situ on said surface to permanently adhere said flowable material to said surface.

5,798,147

PROCESS FOR COATING AND PRINTING SUBSTRATES

Erich Beck, Ladenburg; Frank Meyer, Ludwigshafen; Ulrich Poth, Münster; Karl Siemensmeyer, Frankenthal; Claudia Sierakowski, Giessen; Norbert Greif, Bobenheim; Werner Ostertag, Grünstadt; Michael Zirnstein, Schriesheim; Reinhold Leyrer, Ludwigshafen; Ekkehard Jahns, Weinheim; Karl-Heinz Etzbach, Frankenthal, and Peter Schuhmacher, Mannheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/04576, § 371 Date May 23, 1997, § 102(e) Date May 23, 1997, PCT Pub. No. WO96/02597, PCT Pub. Date Feb. 1, 1996

PCT Filed Nov. 21, 1995, Ser. No. 836,874

Claims priority, application Germany, Nov. 23, 1994, 44 41 651.2; Sep. 1, 1995, 195 32 419.6

Int. Cl.[6] C09K *19/54;* B05D *3/02;3/06*

U.S. Cl. 427—511 15 Claims

1. A coating composition suitable for coating a substrate comprising a polymerizable mass containing a liquid-crystalline monomer having two polymerizable reactive groups, said mass including

(i) a mixture of

a_1) a chiral liquid-crystalline monomer having two polymerizable reactive groups, and

b) a polymeric binder, or a monomeric compound capable of being polymerized to form a polymer binder,

or

(ii) a mixture of

a_2) an achiral, liquid-crystalline monomer, having two polymerizable reactive groups,

b) a polymeric binder, or a monomeric compound capable of being polymerized to form a polymeric binder and

c) a non-liquid-crystalline chiral compound.

5,798,148

POROUS METAL COMPOSITE BODY

Thomas Ronald Thomas, Rowan House, and Jas Pal Singh Badyal, Shincliffe, both of England, assignors to British Technology Group Limited, London, England

PCT No. PCT/GB95/00620, § 371 Date Aug. 26, 1996, § 102(e) Date Aug. 26, 1996, PCT Pub. No. WO95/25588, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 21, 1995, Ser. No. 700,367

Claims priority, application United Kingdom, Mar. 21, 1994, 9405518

Int. Cl.[6] B01J *23/40*

U.S. Cl. 427—535 10 Claims

1. A method of making a porous Gp VIII metal composite body, comprising:

metallising a porous substrate with a Group VIII metal,

oxidising the metallized porous substrate in the gas phase by oxidative plasma, and then

reducing the metallized porous substrate in the gas phase by reducing plasma.

5,798,149

Patent Not Issued For This Number

5,798,150

PRESERVATION OF HOP PLANTS AND PLANT MATERIAL

Bruce Morford, and Melaine Morford, both of 40 Island Rd., White Swan, Wash. 98952

Filed Nov. 29, 1995, Ser. No. 563,931

Int. Cl.[6] A01N *3/00*

U.S. Cl. 428—17 18 Claims

1. A preserved hop plant material for use as a floral product prepared by the process of:

a. selecting a living, hop plant material;

b. supporting the selected hop plant material, to maintain said hop plant material in a natural configuration;

c. severing the hop plant material from a root system of said hop plant material, completely exposing a cross sectional surface of the stem, stalk, trunk or vine; and

d. exposing the cross sectional surface of the hop plant material to a glycerine containing preservative solution, while said hop plant material is maintained in the natural configuration, so that said hop plant material uptakes the preservative solution.

5,798,151

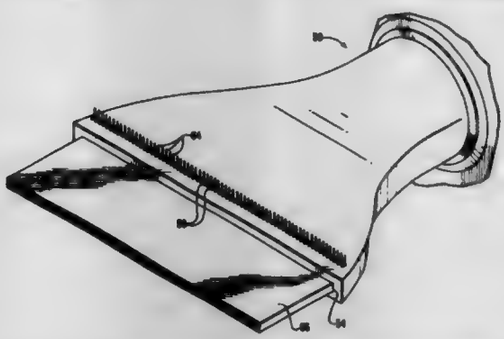
HYDRAULICALLY SETTABLE ARTICLES WHICH INCLUDE HELICALLY WOUND FILAMENTS

Per Just Andersen, and Simon K. Hodson, both of Santa Barbara, Calif., assignors to E. Khashoggi Industries, LLC, Santa Barbara, Calif.

Division of Ser. No. 318,913, Oct. 4, 1994, Pat. No. 5,545,297, which is a continuation-in-part of Ser. No. 255,344, Jun. 7, 1994, Pat. No. 5,549,859, Ser. No. 19,151, Feb. 17, 1993, Pat. No. 5,453,310, Ser. No. 95,662, Jul. 21, 1993, Pat. No. 5,385,764, Ser. No. 101,500, Aug. 3, 1993, abandoned, Ser. No. 109,100, Aug. 18, 1993, abandoned, and Ser. No. 929,898, Aug. 11, 1992, abandoned. This application Jul. 9, 1996, Ser. No. 675,996

Int. Cl.[6] A47G *19/22;* B32B *13/02*

U.S. Cl. 428—34.5 57 Claims



1. An article of manufacture having a cured hydraulically settable matrix and at least one filament incorporated therein, the article formed by the process comprising the steps of:

combining together a hydraulically settable binder, at least one aggregate material, a rheology-modifying agent, and water in relative concentrations to form a hydraulically settable mixture that flows when extruded under pressure through a die and that is immediately form stable upon exiting the die;

extruding the hydraulically settable mixture under pressure through a die having a longitudinal axis and an interior portion through which the mixture passes during the extruding step while continuously placing at least one filament within the hydraulically settable mixture as the mixture is extruded through the interior portion of the die such that the at least one filament has a winding angle of magnitude greater than about 5° relative to the longitudinal axis to form an extruded article having a hydraulically settable matrix that is immediately form stable upon exiting the die; and

allowing the hydraulically settable matrix of the extruded article to cure to form the cured hydraulically settable matrix includ-

ing the at least one filament having a winding angle of magnitude greater than about 5° relative to the longitudinal axis of the die.

5,798,152

BIODEGRADABLE COMPOSITE POLYMERIC ARTICLES COMPRISING POLYVINYL ALCOHOL

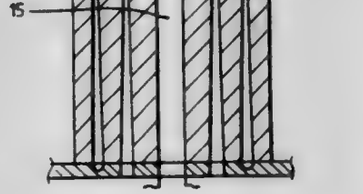
Henry Guy Stevens, St. Leonards, England, assignor to Novon International, Tonawanda, N.Y.

Continuation of Ser. No. 30,148, Mar. 18, 1993, abandoned. This application Oct. 31, 1994, Ser. No. 332,634

Claims priority, application United Kingdom, Jul. 24, 1990, 9016151

Int. Cl.[6] B32B *7/02*; B29C *45/14*

U.S. Cl. 428—34.1 23 Claims



1. A biodegradable polymeric composite comprising: a soluble body comprising partially hydrolyzed polyvinyl alcohol which is between 75 and 95 mole percent hydrolyzed, said soluble body being water-soluble at 20° C.; and

an exterior layer covering said soluble body, the exterior layer having a thickness of 20 μm or less and comprising polyvinyl alcohol which is more than 96 mole percent hydrolyzed, a weight ratio of the soluble body to the exterior layer thereon being at least 2:1.

5,798,153

LINKING DEVICE FOR COMPOSITE RODS

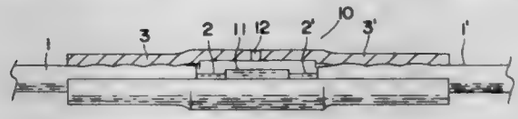
Jean-Baptiste Fay, Paris, and Michel Chardin, Colombes, both of France, assignors to Institut Francais du Petrole, Cedex, France

Filed Jul. 18, 1994, Ser. No. 276,323

Claims priority, application France, Jul. 19, 1993, 93 08934

Int. Cl.[6] E21B *19/16*; B29D *22/00*

U.S. Cl. 428—34.5 13 Claims



1. A linking device for joining single first and second elements having cylindrical at ends thereof, the first and second elements each having a first portion of a composite material and a second portion, coaxially disposed in the first portion and projecting therefrom, the device comprising:

a metal sleeve having a first tubular portion for receiving the end of the first element and a second tubular portion for receiving the end of the second element, the first and second tubular portions initially having inner walls defining a plurality of axially disposed opposed frustoconical surfaces which meet at annular edges defining annular teeth which grip the cylindrical surfaces of the first portions of the first and second elements when the tubular portions of the sleeve are subsequently inwardly deformed, the sleeve including an intermediate portion which is not deformed.

5,798,154

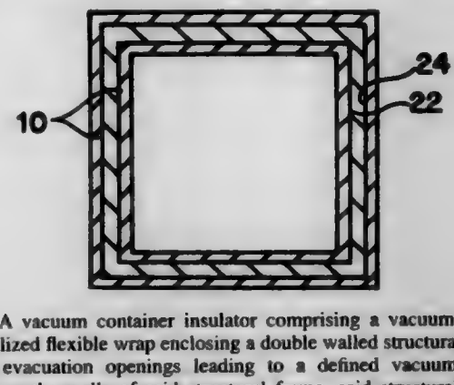
FLEX WRAPPED VACUUM INSULATOR

Lauri Bryan, 3760 Manchester St., Boise, Id. 83704

Continuation-in-part of Ser. No. 572,291, Dec. 13, 1995, abandoned. This application Sep. 13, 1996, Ser. No. 713,746

Int. Cl.[6] E04C *2/34*; E04B *1/62*

U.S. Cl. 428—35.3 14 Claims



1. A vacuum container insulator comprising a vacuum sealed metallized flexible wrap enclosing a double walled structural frame with evacuation openings leading to a defined vacuum space between the walls of said structural frame, said structural frame comprising a container shaped outside body of rigid material enclosing a smaller container shaped inside body of rigid material, spacing means for maintaining said outside and said inside bodies in spaced apart relationship, and an enclosure support means for supporting said flexible wrap between the open ends of said inside and said outside bodies, said flexible wrap closely fits and clings tight to the exterior surface of said structural frame which is opposite the surface surrounding said vacuum space, said spacer means and said enclosure support means additionally function as a means for providing a thermal break between said inside and said outside container shaped bodies whereby a superior vacuum container insulator is constructed that reduces thermal conduction between the walls of the insulator and can be assembled in modular form reducing manufacturing costs.

5,798,155

BEARING MATERIAL AND ITS MANUFACTURING METHOD

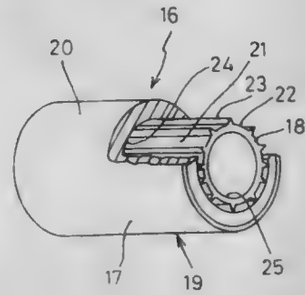
Chuichi Yanagawa, and Eigoro Tsukagoshi, both of Tokyo, Japan, assignors to Yanagawa Seiko Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1994, Ser. No. 255,676

Claims priority, application Japan, Jun. 11, 1993, 5-140521

Int. Cl.[6] F16C *33/20*

U.S. Cl. 428—35.8 12 Claims



1. A composite tubular bearing not requiring lubrication, comprising:

a. a fluorine resin annular inner member;

b. a metallic annular outer member;

c. said inner and outer members having mutually facing respective outer and inner surfaces;

d. one of said facing surfaces being cylindrical;

e. said remaining facing surface having circumferentially spaced areas projecting towards and contacting said cylindrical surface at locations spaced circumferentially thereabout;

f. anaerobic adhesive occupying the entirety of space separating said facing surfaces between said circumferentially spaced projecting areas.

5,798,156

LIGHTWEIGHT BLADDER LINED PRESSURE VESSELS

Fred Mitlitsky, 1125 Canton Ave.; Blake Myers, 4650 Almond Cir., both of Livermore, Calif. 94550, and Frank Magnotta, 1206 Bacon Way, Lafayette, Calif. 94549

Filed Jun. 3, 1996, Ser. No. 657,248
Int. Cl.[6] B29D *22/00*
U.S. Cl. 428—35.9 **24 Claims**

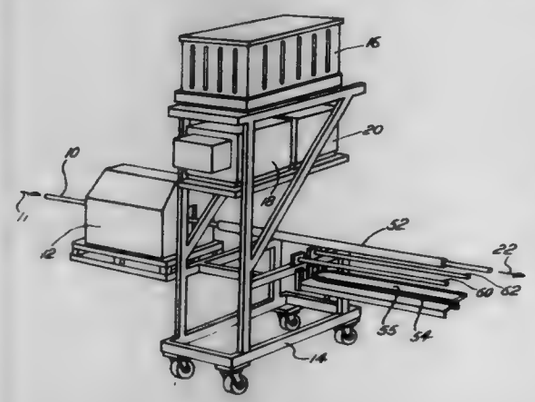
1. A bladder for gas storage vessels, comprising:
a cylindrical or conical body section;
a pair of end sections secured to said body section;
said body section being constructed of a material substantially impermeable to any of H_2, D_2 and T_2;
said pair of end sections being constructed of a material substantially impermeable to any H_2, D_2 and T_2; and
means for directing fluid into and out of said body section and at least one of said end sections.

5,798,157

IN-LINE COATING AND CURING A CONTINUOUSLY MOVING WELDED TUBE WITH AN ORGANIC POLYMER

Edward E. Mild, Frankfort, and Stephen E. Seilheimer, N. Aurora, both of Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill.

Filed Jun. 7, 1995, Ser. No. 476,506
Int. Cl.[6] B29D *22/00*; **F16L** *9/147*; **B05D** *1/04*
U.S. Cl. 428—36.9 **19 Claims**



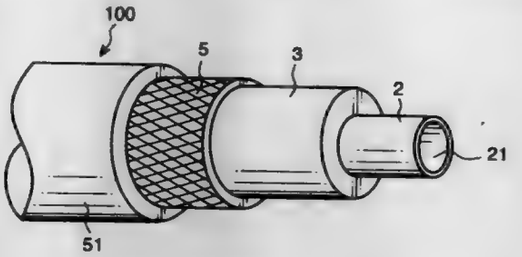
1. In a tube product of the type comprising a metal base tube with or without a zinc coating and with an overlying coating of organic polymer, the improvement comprising said coating of organic polymer consisting essentially of a thermosetting, cross-linking polyester, said polyester being triglycidyl isocyanurate (TGIC) polyester applied immediately over the metal base tube, without a primer, wherein the tube product was formed from a process including applying the TGIC as a powder to the metal base tube during traveling of the tube.

5,798,158

LAYERED MOLDING INCLUDING FLUOROPLASTIC LAYER CROSSLINKED WITH RUBBER LAYER

Masaki Koike; Atsushi Suzuki; Daisuke Tsutsumi, and Masayoshi Ichikawa, all of Aichi-ken, Japan, assignors to Toyoda Gosei Co., Ltd., Aichi, Japan

Filed Oct. 25, 1995, Ser. No. 547,909
Claims priority, application Japan, Oct. 28, 1994, 6-289093
Int. Cl.[6] B29D *9/00*
U.S. Cl. 428—36.9 **16 Claims**



1. A layered molding comprising:
a rubber layer formed from a base polymer consisting essentially of at least one epichlorohydrin rubber, said rubber layer containing an organic phosphonium; and
fluoroplastic layer disposed against and crosslinked with said rubber layer at an interfacial boundary positioned therebetween, said fluoroplastic layer consisting essentially of a copolymer composition that contains at least two precursors selected from the group consisting of hexafluoropropylene (HFP), tetrafluoroethylene (TFE), and vinylidene fluoride (VDF), wherein an amount of each precursor in the composition is selected within a range defined by plotting coordinates A, B, C, D, E, F, and G:

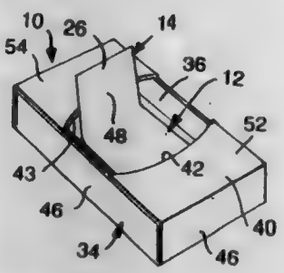
	HFP	TFE	VDF
A:	60	0	40
B:	40	25	35
C:	18	32	50
D:	25	0	75
E:	0	0	100
F:	0	100	0
G:	100	0	0

5,798,159

ADHESIVE SHEET PAD WITH CENTER TABBED LEADER STRIP

Joseph P. Callahan, Jr., St. Paul, and Bruce E. Samuelson, West Lakeland Township, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 263,601, Jun. 21, 1994, Pat. No. 5,518,144. This application May 17, 1996, Ser. No. 649,310
Int. Cl.[6] B32B *7/00*
U.S. Cl. 428—40.1 **4 Claims**



1. A pad comprising:
(a) a plurality of superimposed aligned sheets, wherein;

(1) each sheet includes: (A) a backing having top and bottom major surfaces; and (B) a layer of pressure sensitive adhesive on the bottom surface of the backing; and

(2) the plurality of superimposed sheets form a unitary pad having (i) a longitudinal length, (ii) a first longitudinal end, (iii) a second longitudinal end, (iv) an uppermost adhesive sheet with an exposed top surface, and (v) a lowermost adhesive sheet with an exposed adhesively coated bottom surface; and

(b) a leader strip having a shorter longitudinal length than the pad, a first longitudinal end, and a second longitudinal end; the leader strip superimposed over the exposed top surface of the uppermost adhesive sheet, such that;

(1) a first end portion of the leader strip is positioned proximate the first end of the pad and adhesively bonded to the exposed top surface of the uppermost adhesive sheet, and

(2) a second end portion of the leader strip is positioned intermediate the first and second ends of the pad and forms a nontacky, intermediately positioned pull tab with the second end of the leader strip longitudinally offset from the second end of the pad towards the first end of the pad.

5,798,160

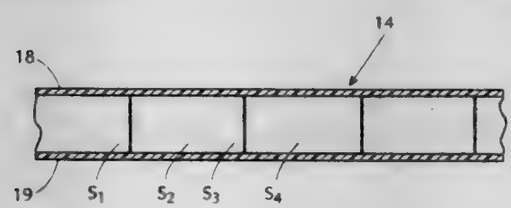
FOAM-PLASTIC CORE FOR STRUCTURAL LAMINATE

Henri-Armand Kohn, Croton-on-Hudson, N.Y., assignor to Baltek Corporation, Northvale, N.J.

Continuation-in-part of Ser. No. 214,430, Mar. 18, 1995. This application May 28, 1996, Ser. No. 653,911

Int. Cl.[6] B32B *3/26;3/10*

U.S. Cl. 428—56 **3 Claims**



1. A core panel for forming a structural laminate in which the panel is sandwiched between facing skins, said panel comprising a series of interbonded sections of rigid, closed-cell, foam-plastic material, said sections having substantially the same density whereby the density of the sections is evenly distributed throughout the core panel to provide a panel having predictable mechanical properties to satisfy structural laminate criteria, the sections being interbonded by an adhesive compatible with the foam-plastic material, said panel being derived from a stack of closed-cell, foam-plastic standard slabs, each having a density which varies from an inner region to an outer region thereof, the slabs in the stack being interbonded by lines of adhesive, the panel being a slice taken from the block in a plane normal to the lines of adhesive whereby each interbonded section in the series is taken from a corresponding slab in the block and has substantially the same density, and facing skins laminated to opposing upper and lower surfaces of the panel to form said structural laminate.

5,798,161

OPTICAL DISK, METHOD OF FORMING IMAGE ON OPTICAL DISK, IMAGE FORMING APPARATUS AND ADHESIVE LAYER TRANSFER SHEET

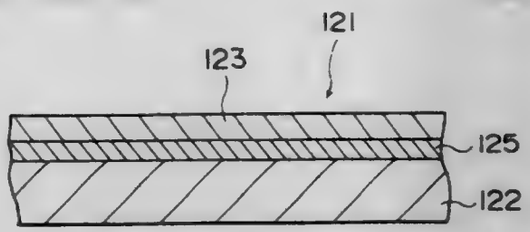
Tatsuya Kita; Naoji Shibasaki, and Takeshi Ueno, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Jan. 17, 1996, Ser. No. 587,948

Claims priority, application Japan, Jan. 20, 1995, 7-26126; Jun. 6, 1995, 7-163038

Int. Cl.[6] B32B *3/00*

U.S. Cl. 428—64.1 **9 Claims**



1. An optical disk provided on one surface thereof with an image receptive layer carrying an image and forming a label, and obtained by a method comprising the steps of:

forming the image on the image receptive layer of an intermediate transfer medium by a thermal transfer process; and

transferring the image receptive layer carrying the image from the intermediate transfer medium onto the surface of the optical disk to form the label on the surface of the optical disk.

5,798,162

COMPOSITES OF CRYSTALLINE POLYMERS

David H. Bank, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 4, 1996, Ser. No. 697,990

Int. Cl.[6] B32B *1/00*

U.S. Cl. 428—76 **17 Claims**

1. A multilayered composite comprising

an inner core layer of a crystalline thermoplastic polymer and a glass filler, and

an outer skin layer of a crystalline thermoplastic polymer and a mineral filler, wherein the outer skin layer surrounds the inner core layer.

5,798,163

TEMPORARY TARP-LIKE BARRIER ASSEMBLY, KIT AND METHOD THEREFOR

Peter N. Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570

Filed Oct. 1, 1996, Ser. No. 722,421

Int. Cl.[6] B32B *3/06*

U.S. Cl. 428—100 **11 Claims**



1. A temporary tarp assembly comprising:

a plastic sheet; and

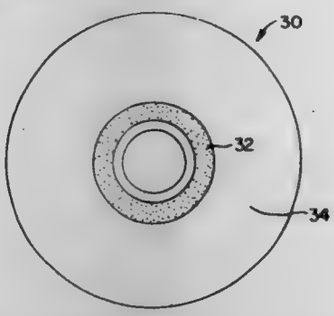
at least one reclosable fastener strip having a first end portion and a second end portion each respectively having a plurality of mechanical interlocking members, and wherein a portion of said plastic sheet is sandwiched and thermally molded between engaging portions of said interlocking members of said end portions of said at least one strip so that said strip forms a loop from which said plastic sheet is supportable.

5,798,164

ZONE TEXTURED MAGNETIC RECORDING MEDIA

Joel R. Weiss, Fremont; Koji Shima, Saratoga; Joseph Leigh; Hiroshi Konishi, both of Cupertino, all of Calif.; Nobuo Kuratake, Itami, Japan; Hiroki Hara, Itami, Japan, and Naoki Inoue, Itami, Japan, assignors to Stormedia, Inc., Santa Clara, Calif.

Filed Jul. 18, 1995, Ser. No. 503,785
Int. Cl.[6] G11B 5/64
U.S. Cl. 428—141 15 Claims



1. Magnetic recording media comprising a read/write head interaction surface including

a contact start stop zone having a first abraided texture with a first Ra surface roughness to improve durability,

a data zone having a second abraided texture with a second Ra surface roughness which is lower than the first surface roughness to improve magnetic recording characteristics, and

a transition zone between the contact start stop zone and the data zone,

at least a portion of the transition zone having both the first texture and the second texture overlapping thereon so that the transition zone has an Ra surface roughness which varies gradually from the first surface roughness adjacent the contact start stop zone to the second surface roughness adjacent the data zone,

wherein both the first and second textures comprise cross-hatched textures.

5,798,165

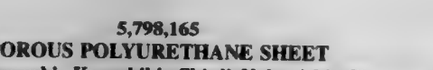
POROUS POLYURETHANE SHEET

Akinobu Mizoguchi, Kurashiki; Shinji Nakanishi, Okayama, and Toshiyuki Akasawa, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

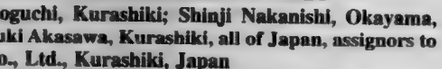
Division of Ser. No. 408,288, Mar. 22, 1995, Pat. No. 5,648,151. This application Jan. 21, 1997, Ser. No. 785,085
Claims priority, application Japan, Mar. 22, 1994, 6-50524
Int. Cl.[6] B32B 3/26
U.S. Cl. 428—160 17 Claims

1. A porous sheet comprising a polyurethane which comprises:

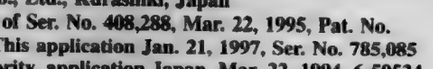
a) a soft segment component containing in the same or different soft segments repeating units represented by formula (I), formula (II) and formula (III),



$$—O—R_1—O—CO—O— \quad (I)$$



$$—O—R_2—O—CO—R_3—CO— \quad (II)$$



$$—(O—CH_2CHR_5)_2—O—CO—R_4—CO— \quad (III)$$

wherein R_1 is a hydrocarbon group having 5 to 6 carbon atoms, R_2 is a tetramethylene group, R_3 and R_4, are each independently an alkylene group having 4 to 8 carbon atoms and R_5 is a hydrogen atom or methyl group,

the ratio between the number of repeating units (I) (II) and (III) and the total number of repeating units (I) (II) and (III) are 0.1 to 0.8, 0.05 to 0.7 and 0.05 to 0.8, respectively; and

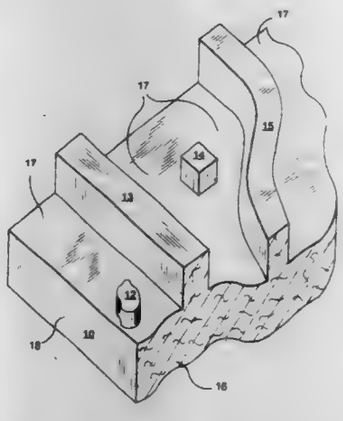
b) a hard segment component having an aromatic diisocyanate component and ethylene glycol or 1,4-butanediol component.

5,798,166

INSULATION FOR SLEEPING BAGS AND SIMILAR ITEMS

Brian Gross, Eugene, Oreg., assignor to Albany International Corp., Albany, N.Y.

Filed Aug. 26, 1996, Ser. No. 701,772
Int. Cl.[6] A47G 9/00
U.S. Cl. 428—156 6 Claims



1. An insulating material comprising:

a base fabric of uniform thickness,

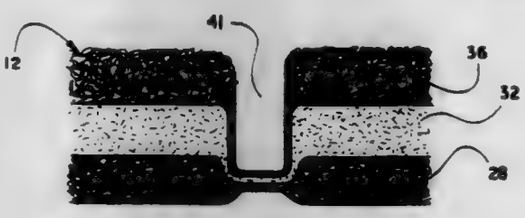
structures integral with said base fabric extending upward from said base fabric which support a subsequent layer of fabric while creating macro air spaces between said structures, said base fabric and said subsequent layer of fabric.

5,798,167

GARMENT OF A DURABLE NONWOVEN FABRIC

Linda Ann Connor, Atlanta, Ga., and Peter Maddern, Gwernymynydd, United Kingdom, assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 884,967, May 15, 1992, Pat. No. 5,366,786. This application Aug. 2, 1994, Ser. No. 845,131
Int. Cl.[6] A41D 31/02; B32B 5/26;5/14;7/04
U.S. Cl. 428—171 6 Claims



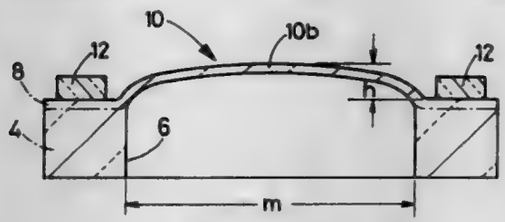
1. A garment for protecting a worker constructed from a fabric comprising a durable nonwoven laminate comprising at least one spunbond layer comprising thermoplastic filaments formed from a mixture of a thermoplastic polymer and an effective amount of a sorbitol nucleating agent and at least one layer of a meltblown web of thermoplastic microfibers, wherein the layers of the laminate are thermally bonded together in discrete areas.

5,798,168

METHOD OF PRODUCING CERAMIC DIAPHRAGM STRUCTURE HAVING CONVEX DIAPHRAGM PORTION AND DIAPHRAGM STRUCTURE PRODUCED BY THE SAME METHOD

Yukihisa Takeuchi, Aichi-ken; Tsutomu Nanataki, Toyoake; Hideo Masumori, Anjo, and Katsuyuki Takeuchi, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 521,988, Aug. 31, 1995, Pat. No. 5,634,999. This application Oct. 25, 1996, Ser. No. 738,322
Claims priority, application Japan, Sep. 6, 1994, 6-212444
Int. Cl.[6] B32B *3/10*
U.S. Cl. 428—174 **5 Claims**



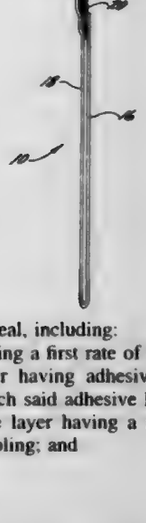
1. A ceramic diaphragm structure comprising:
a ceramic substrate having at least one window;
a ceramic diaphragm plate which is superposed on said ceramic substrate so as to close said at least one window, said diaphragm plate being fired with said ceramic substrate to form an integral sintered body, said diaphragm plate including at least one diaphragm portion which is respectively aligned with said at least one window, each of said at least one diaphragm portion protruding outwards, in a direction away from a corresponding one of said at least one window, said each diaphragm portion having a peripheral part that has a first predetermined radius of curvature and a part including the top of said diaphragm portion, which has a flat surface or a curved surface having a second predetermined radius of curvature greater than said first predetermined radius of curvature.

5,798,169

SELF-CONTAINING TAMPER EVIDENT SEAL

Christopher A. Smith, Redmond, Wash., assignor to Sealed Air Corporation, Saddle Brook, N.J.

Continuation of Ser. No. 285,639, Aug. 2, 1994, abandoned. This application Dec. 3, 1996, Ser. No. 760,137
Int. Cl.[6] B32B *7/00;* **B65D** *33/34*
U.S. Cl. 428—212 **28 Claims**



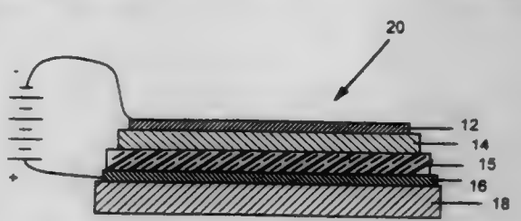
1. A tamper-evident seal, including:
(a) a plastic strip having a first rate of shrinkage upon cooling;
(b) an adhesive layer having adhesive tack and a transition temperature at which said adhesive layer loses said adhesive tack, said adhesive layer having a second, different rate of shrinkage upon cooling; and
(c) an ink layer:
i) wherein when said seal is applied to a surface of an object to seal the surface of the object, said ink layer is adhered to said plastic strip, and said adhesive layer is adhered to said ink layer and to the surface of the object, so that said ink layer is sandwiched between said plastic strip and said adhesive layer; and
ii) wherein said seal is sensitive to cooling when applied to the surface of the object, so that if said seal is progressively cooled to a temperature below a breakdown temperature, said ink layer visibly delaminates from said plastic strip regardless of whether said seal is removed, and wherein said adhesive layer is selected so that said transition temperature is below said breakdown temperature, whereby if a refrigerant is applied to said seal to cool said seal below said breakdown temperature, said ink layer delaminates from said plastic strip due to differential shrinkage of said plastic strip and adhesive layer providing an indication of the mere application of the refrigerant.

5,798,170

LONG OPERATING LIFE FOR POLYMER LIGHT-EMITTING DIODES

Chi Zhang, Goleta; Gang Yu, Santa Barbara, and Yong Cao, Goleta, all of Calif., assignors to Uniax Corporation, Santa Barbara, Calif.

Filed Feb. 29, 1996, Ser. No. 609,113
Int. Cl.[6] H05B *33/00*
U.S. Cl. 428—212 **15 Claims**



1. An organic light-emitting diode having an operating lifetime in excess of 1000 hours comprising
a semitransparent anode having a sheet resistance of less than 10^3 ohms per square separated from
an organic light-emitting layer by
an intermediate layer comprising polyaniline emeraldine salt said intermediate layer having a sheet resistance of more than 10^3 ohms per square.

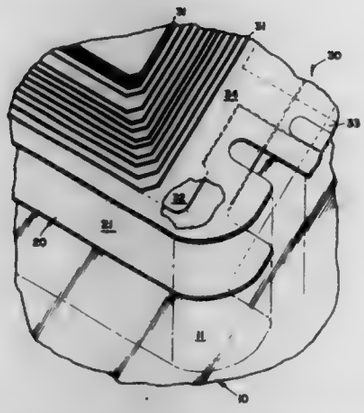
5,798,171

ADHERENT FILM WITH LOW THERMAL IMPEDANCE AND HIGH ELECTRICAL IMPEDANCE USED IN AN ELECTRONIC ASSEMBLY WITH A HEAT SINK

Bruce David Olson, Northfield, Minn., assignor to Sheldahl, Inc., Northfield, Minn.

Division of Ser. No. 451,128, May 26, 1995, abandoned. This application Jul. 3, 1996, Ser. No. 675,564
Int. Cl.[6] B32B *7/00;* **H01B** *17/60*
U.S. Cl. 428—220 **15 Claims**

1. An insulating laminate having a maximum thermal impedance of 250° C.-mm^2/watt and a minimum dielectric strength of 400 volts (ac), the laminate comprising:
(i) a first thermally conducting adhesive layer, having a thickness less than 60 μm, comprising an adhesive and about 10 to 50% by volume of a thermally conductive solid particulate;
(ii) an unfilled polymeric film layer having a maximum thickness less than 15 μm; and
(iii) a second thermally conducting adhesive layer, having a thickness less than 60 μm, comprising an adhesive and about 10 to 50% by volume of a thermally conductive solid particulate which is also electrically insulating;



wherein the laminate has a maximum thickness of about 0.135 mm.

5,798,172

STYRENIC RESIN COMPOSITION AND POLYSTYRENE ORIENTED FILM

Keisuke Funaki; Akihiko Okada, and Takaaki Uchida, all of Ichihara, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/02420, § 371 Date Jul. 29, 1996, § 102(e) Date Jul. 29, 1996, PCT Pub. No. WO96/17889, PCT Pub. Date Jun. 13, 1996

PCT Filed Nov. 28, 1995, Ser. No. 682,570

Claims priority, application Japan, Dec. 7, 1994, 6-303650; Dec. 7, 1994, 6-303651

Int. Cl.[6] B32B 5/16

U.S. Cl. 428—327 2 Claims

1. A styrenic resin composition which comprises 99.2 to 99.95% by weight of a styrenic polymer having a syndiotactic configuration and 0.05 to 0.8% by weight of a spherical regular elastomer having an average grain size in the range of 0.1 to 3 μm and which has a melt index at 300 C under 2.1 kg load being in the range of 1 to 50, wherein said spherical regular elastomer is the polymer of a monomer selected from an alkyl acrylate, an alkyl methacrylate and a polyfunctional monomer having a double bond in the form of conjugated diolefin.

5,798,173

INK JET RECORDING SHEET

Kenji Momma, and Kouji Idei, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Continuation of Ser. No. 382,194, Feb. 1, 1995, abandoned.

This application Jan. 27, 1997, Ser. No. 788,353

Claims priority, application Japan, Mar. 4, 1994, 6-035024; Mar. 31, 1994, 6-063794

Int. Cl.[6] B41M 5/00

U.S. Cl. 428—342 5 Claims

1. An ink jet recording sheet which contains in a paper support and/or in a layer coated on the support a polyvinylamine copolymer obtained from a copolymer of N-vinylformamide and acrylonitrile, said copolymer having a weight-average molecular weight of 50000 or more and containing 20 mol % or more of a vinylamine residue, wherein the polyvinylamine copolymer is contained in an amount of 1% by weight or more based on the solid content of pulp in the support or coated on the surface of the support in an amount of 0.1 g/m^2 or more.

5,798,174

BIAXIALLY AND MONOAXIALLY ORIENTED POLYPROPYLENE COLD SEAL RELEASE FILM

Andrew F. Wilkie, Havermill, Mass., assignor to AEP Industries, Inc., South Hackensack, N.J.

Filed Feb. 5, 1996, Ser. No. 597,892

Int. Cl.[6] B32B 7/12;27/32; B65B 51/10

U.S. Cl. 428—347 22 Claims

1. A packaging film having cold seal release properties, said film comprises:

a core layer selected from the group consisting of homopolymer isotactic polypropylene, ethylene-propylene random copolymer, polyethylene and ethylene-propylene block copolymer;

a cold seal release layer on one side of said core layer, said cold seal release layer comprising butene-propylene copolymer in an amount of about 1 to about 80 percent by weight of said cold seal release layer and polybutylene-ethylene copolymer in an amount of about 20 to about 99 percent by weight of said cold seal release layer, the butene content of said butene-propylene copolymer is about 11 to about 14 percent by weight of said butene-propylene copolymer, the ethylene content of said polybutylene-ethylene copolymer is up to about 6 percent by weight of said polybutylene-ethylene copolymer; and

a cold seal cohesive on an outer surface of said film on a side of said core layer opposite said cold seal release layer.

5,798,175

PRESSURE SENSITIVE ADHESIVES AND TAPE PRODUCT PREPARED THEREFROM

John K. Tynan, Jr., Port Huron, Mich., and Deborah Anne Chrzanowski, Corunna, Canada, assignors to American Tape Company, Marysville, Mich.

Filed Jan. 31, 1997, Ser. No. 792,896

Int. Cl.[6] C09J 7/02

U.S. Cl. 428—355 EN 31 Claims

15. A pressure sensitive adhesive tape comprising a backing having a layer of a pressure sensitive adhesive on a surface thereof, said adhesive comprising natural or synthetic rubber, a thermoplastic polyolefin blend comprising ethylene-propylene rubber, hydrogenated polyisoprene and polypropylene, and a tackifying resin.

5,798,176

MAGNETIC RECORDING MEDIUM

Noriyuki Kitaori; Osamu Yoshida; Hirohide Mizunoya, and Akira Shiga, all of Tochigi-ken, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Sep. 12, 1994, Ser. No. 304,227

Claims priority, application Japan, Sep. 13, 1993, 5-227154; Sep. 13, 1993, 5-227155; Sep. 13, 1993, 5-227156; Sep. 13, 1993, 5-227157; Sep. 29, 1993, 5-243202

Int. Cl.[6] G11B 5/66

U.S. Cl. 428—402 29 Claims



1. A magnetic recording medium comprising a substrate and a first magnetic layer on said substrate, wherein said first magnetic layer includes a binder and plate-like metallic magnetic powder of which the easy axis of magnetization exists in the plane of the plate-like particles of said powder.

5,798,177

HEAT TREATING OF MAGNETIC IRON POWDER

Patricia Jansson, Viken, Sweden, assignor to Höganäs AB, Höganäs, Sweden

PCT No. PCT/SE95/00445, § 371 Date Oct. 11, 1996, § 102(e) Date Oct. 11, 1996, PCT Pub. No. WO95/29490, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 24, 1995, Ser. No. 722,049

Claims priority, application Sweden, Apr. 25, 1994, 9401392

Int. Cl.[6] B22B *5/16*

U.S. Cl. 428—403 **22 Claims**

1. A process for the preparation of products having improved soft magnetic properties comprising the following steps

a) treating particles of an atomized or sponge iron powder with phosphoric acid at a temperature and for a time sufficient to form an insulating phosphorous containing layer material such that the phosphorus content is between 0.005 and 0.03% by weight of the atomized iron powder and between 0.02 and 0.06% by weight of the sponge iron powder,

b) drying the obtained powder,

c) optionally mixing the dry powder with a thermosetting resin,

d) compacting the powder obtained from step b) or c) in a die, and

e) heating the component obtained from step d) to a temperature between 350°–550° C.

5,798,178

CARBON BRUSH AND PROCESS FOR IMPREGNATING SAME

Rainer Sperling, Biebertal; Harald Friedrich, Fernwald, and Gunter Schardt, Giessen-Klein-Linden, all of Germany, assignors to Schunk Kohlenstofftechnik GmbH, Heuchelheim, Germany

Filed Sep. 8, 1994, Ser. No. 303,034

Claims priority, application Germany, Sep. 9, 1993, 43 30 548.2

Int. Cl.[6] B32B *9/00*; A46B *00/00*; B05D *3/02*

U.S. Cl. 428—408 **4 Claims**

1. A carbon brush or carbon bar, which is impregnated with 0.5–15 weight percent of an impregnating agent consisting of a mixture of an ester oil selected from the group consisting of carboxylic acid ester oil and dicarboxylic acid ester oil and a synthetic hydrocarbon oil wherein said ester oil has a kinematic viscosity of approximately 14 mm^2/S at a temperature of 100° C. and a kinematic viscosity of approximately 63 mm^2/S at a temperature of 40° C.

5,798,179

PRINTABLE HEAT TRANSFER MATERIAL HAVING COLD RELEASE PROPERTIES

Francis Joseph Kronzer, Marietta, Ga., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Jul. 23, 1996, Ser. No. 685,282

Int. Cl.[6] B32B *9/04*

U.S. Cl. 428—411.1 **14 Claims**

1. A printable heat transfer material comprising:

a flexible first layer having first and second surfaces and selected from the group consisting of films and cellulosic nonwoven webs;

a second layer overlaying the first surface of the first layer, which second layer comprises a thermoplastic polymer having essentially no tack at transfer temperatures of about 177 degrees Celsius, a solubility parameter of at least about 19 $(Mpa)^{1/2}$, and a glass transition temperature of at least about 0° C.; and

a third layer overlaying the second layer, which third layer comprises a thermoplastic polymer which melts in a range of from about 65° C. to about 180° C. and has a solubility parameter less than about 19 $(Mpa)^{1/2}$;

wherein the second and third layers are adapted to provide the printable heat transfer material with cold release properties.

5,798,180

THIN FILM COMPOSITE MEMBRANE AS BATTERY SEPARATOR

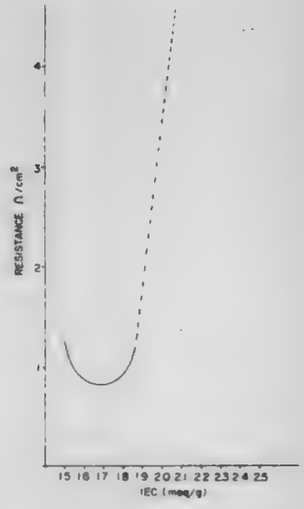
Geeta Chowdhury, Ottawa; William Adams, Nepean; Brian Conway, and Srinivasa Sourirajan, both of Ottawa, all of Canada, assignors to The University of Ottawa, Ottawa, Canada

Continuation of Ser. No. 297,875, Aug. 30, 1994, abandoned. This application Nov. 21, 1996, Ser. No. 754,741

Claims priority, application Canada, Jun. 14, 1994, 2125840

Int. Cl.[6] B32B *9/04*;*23/04*

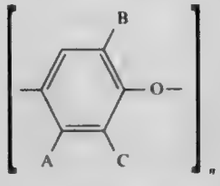
U.S. Cl. 428—411.1 **13 Claims**



1. A battery separator comprising:

a polymer substrate membrane having a porosity, electrical resistance and wettability enabling ion diffusion; and

a polyaromatic ether of the formula



wherein n is a finite integer greater than 0, A is selected from the group consisting of sulfonic acid and carboxylic acid groups and B and C are selected from the group consisting of lower alkyl and phenyl groups,

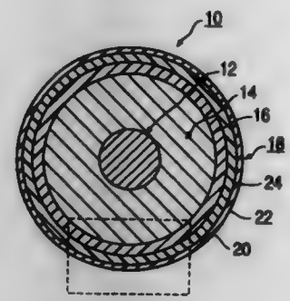
said polyaromatic ether being coated on the polymer substrate membrane to form an ion-selective membrane having an ion-exchange capacity of 1.5–1.9 meq/g and a resistivity less than 1.2 Ω/cm^2.

5,798,181

FLUOROPOLYMER COATED ELASTOMERIC ROLLERS AND STRUCTURES

Alex Ray Hobson, Elkton, Md.; Robert L. Sassa, Newark, Del.; Steven H. Speck, Bear, Del., and Tit-Keung Lau, Wilmington, Del., assignors to W. L. Gore & Associates, Inc., Newark, Del.

Filed Oct. 4, 1994, Ser. No. 317,971
Int. Cl.[6] B32B 27/06
U.S. Cl. 428—422 12 Claims



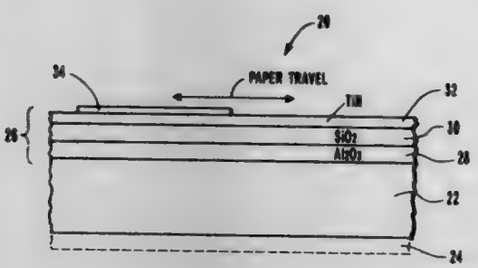
1. A composite release coating that comprises:
an expanded polytetrafluoroethylene (ePTFE) skin having a non-porous exposed surface and a porous adhered surface exposed surface being rendered non-porous at least in part by densification;
an adhesive layer, the adhesive layer imbibed within the porous ePTFE skin on the adhered surface;
a substratum to which the adhesive layer bonds the ePTFE skin.

5,798,182

WEAR RESISTANT THIN FILM COATING AND COMBINATION

Paul M. LeFebvre; Timothy C. Engel, both of Santa Rosa, and Leonard P. Mott, Palo Alto, all of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 149,505, Nov. 8, 1993, abandoned. This application Jul. 12, 1996, Ser. No. 680,727
Int. Cl.[6] B32B 17/00
U.S. Cl. 428—428 4 Claims



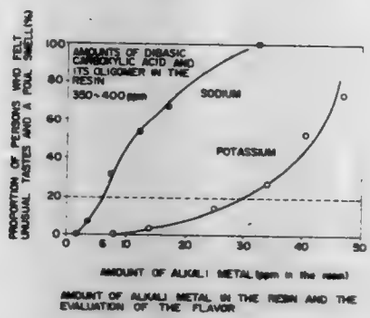
1. An abrasion resistant, optically clear, wear resistant, anti-reflection thin film coated copier platen, the thin film comprising in order from the platen: a layer of aluminum oxide formed on the platen; a layer of silicon dioxide formed on the aluminum oxide; and an optically transmissive, abrasion resistance-enhancing, conductive layer of titanium nitride formed on the silicon oxide, the layer of titanium nitride being thin relative to the layers of aluminum oxide and silicon oxide.

5,798,183

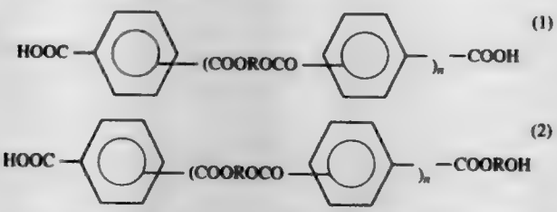
PACKAGING MATERIAL HAVING EXCELLENT FLAVOR RETENTION

Hiroko Hosono, Tokyo; Tetsuo Miyazawa, Ayase; Yoshitsugu Maruhashi, Yokohama; Katsuhiro Imazu, Yokohama, and Yasuji Nakamura, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 507,835
Claims priority, application Japan, Jul. 27, 1994, 6-175334
Int. Cl.[6] B32B 15/08;27/36; C08G 63/02
U.S. Cl. 428—458 10 Claims



7. A packaging material comprising
(i) a substrate of a metal foil or a metal plate, and
(ii) a biaxially stretched thermoplastic polyester film applied to at least one surface of said substrate, wherein said polyester film has (A) a total content of a dibasic carboxylic acid and its oligomer having a carboxylic group in an amount of 500 ppm by weight or less, and (B) a total content of alkali metal ions in an amount of 30 ppm by weight or less, wherein a content of sodium ions in the total content of alkali metal ions is an amount of 6 ppm by weight or less, to effectively eliminate damage to packaging ingredients caused by the dissolution of said dibasic carboxylic acid and its oligomer, said dibasic carboxylic acid and its oligomer being represented by the formulae (1) or (2)



wherein n is 0, 1 or 2 and R represents —CH_2CH_2—, —$CH_2CH_2CH_2CH_2$— or —$CH_2CH_2OCH_2CH_2$—.

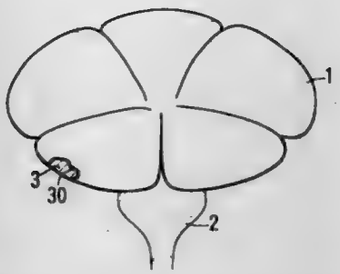
5,798,184

WAX MOLDING

Tomoo Sasa, Matsudo, and Ryosuke Oide, Tokyo, both of Japan, assignors to Torii Candle Corporation, Tokyo, Japan

Filed Nov. 13, 1996, Ser. No. 747,764
Int. Cl.[6] C11C 5/00
U.S. Cl. 428—484 14 Claims

1. A wax molding comprising a main body composed of a major amount of wax, wherein at least part of a surface of said main body is coated with a film containing a coloring constituent therein, and



wherein said coloring constituent has a photosensitivity which, after being irradiated with light, becomes colored in the absence of light.

5,798,185

JOINED STRUCTURE AND JOINING METHOD OF METAL PLATES

Akira Kato, Nagoya, Japan, assignor to Sanyo Machine Works, Ltd., Aichi, Japan

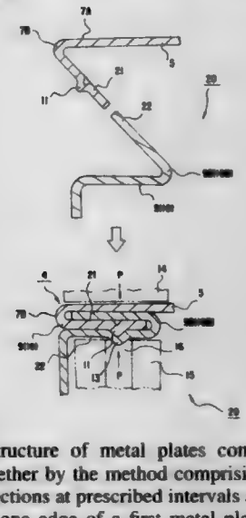
PCT No. PCT/JP94/01679, § 371 Date Oct. 11, 1995, § 102(e) Date Oct. 11, 1995, PCT Pub. No. WO95/17983, PCT Pub. Date Jul. 6, 1993

PCT Filed Oct. 6, 1994, Ser. No. 507,298

Claims priority, application Japan, Dec. 27, 1993, 5-331147; Mar. 29, 1994, 6-058479

Int. Cl.[6] B21D *39/00;5/00;5/16;* **B21C** *37/00*

U.S. Cl. 428—582 **3 Claims**



3. A joined structure of metal plates comprising two metal plates, joined together by the method comprising the steps of:

providing projections at prescribed intervals along a longitudinal direction of one edge of a first metal plate, said projections extending above a first surface of the first plate adjacent said edge,

folding a portion of said first metal plate parallel to said edge about a second surface of the plate to a first acute angle to form a crease and a first fold section, said first fold section having said second surface inside said acute angle and said first surface and said projections outside said first acute angle,

providing an electrically insulating film to a third surface of a second metal plate,

folding a portion of said second metal plate parallel to an edge thereof about the third surface to a second acute angle to form a crease and a second fold section, said second fold section having said third surface inside said second acute angle,

engaging said first fold section with said second fold section so as to position said first surface together with said third surface and said projections directly adjacent said insulating film,

applying a load to the engaged fold sections to press and bend the creases and forcibly engage said projections into said third surface of the second metal plate plastically deforming the second plate and causing said projections to break through said insulating film to secure electrical continuity between said metal plates.

5,798,186

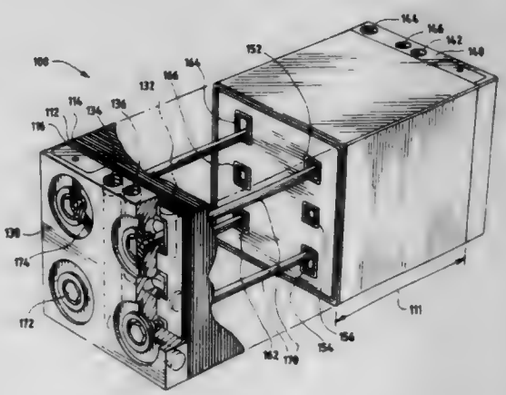
METHOD AND APPARATUS FOR COMMENCING OPERATION OF A FUEL CELL ELECTRIC POWER GENERATION SYSTEM BELOW THE FREEZING TEMPERATURE OF WATER

Nicholas J. Fletcher, Vancouver, Canada; Gustav A. Boehm, Ueberlingen, Germany, and Eric G. Pow, Vancouver, Canada, assignors to Ballard Power Systems Inc., Burnaby, Canada

Filed Jun. 7, 1996, Ser. No. 659,921

Int. Cl.[6] H01M *8/04*

U.S. Cl. 429—13 **27 Claims**



1. A method of commencing operation of an electric power generation system comprising a fuel cell stack connectable to an external electrical circuit for supplying electric current to said external circuit, said stack comprising at least one fuel cell, said at least one fuel cell comprising a membrane electrode assembly comprising an anode, a cathode, and a water permeable ion exchange membrane interposed between said anode and said cathode, at least a portion of said membrane electrode assembly having a temperature below the freezing temperature of water, said system further comprising a fuel reactant stream and an oxidant reactant stream, each of said reactant streams being flowable to said fuel cell stack, the method comprising the step of:

supplying electric current from said fuel cell stack to said external circuit such that said temperature of said at least a portion of said membrane electrode assembly exceeds the freezing temperature of water.

5,798,187

FUEL CELL WITH METAL SCREEN FLOW-FIELD

Mahlon S. Wilson, and Christine Zawodzinski, both of Los Alamos, N. Mex., assignors to The Regents of the University of California, Los Alamos, N. Mex.

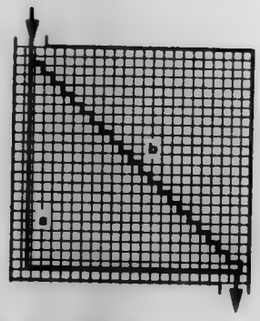
Filed Jun. 11, 1997, Ser. No. 873,049

Int. Cl.[6] H01M *8/04;8/10*

U.S. Cl. 429—26 **8 Claims**

1. A polymer electrolyte membrane (PEM) fuel cell having electrodes supplied with a reactant on each side of a catalyzed membrane assembly (CMA), said fuel cell comprising;

a reactant distribution metal mesh defining a rectangular flow-field pattern having an inlet confined to a first corner and an outlet confined to a second corner located on a diagonal from said first corner, wherein all flow paths from said inlet to said



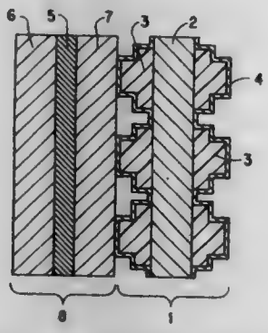
outlet through said rectangular flow field pattern have equivalent lengths to uniformly distribute said reactant over said CMA.

5,796,188

POLYMER ELECTROLYTE MEMBRANE FUEL CELL WITH BIPOLAR PLATE HAVING MOLDED POLYMER PROJECTIONS

Atsushi Mukohyama, and Toshihiko Takeda, both of Yokohama, Japan, assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Jun. 25, 1997, Ser. No. 881,319
Int. Cl.[6] H01M *8/04;8/10*
U.S. Cl. 429—34 **5 Claims**



1. In a polymer electrolyte membrane fuel cell comprised of polymer electrolyte membranes, gas diffusion electrodes that sandwich the membranes, and bipolar plates, each said bipolar plate having surfaces, said bipolar plates operating as gas separation plates and current collectors with fuel/oxidizing agent supply and discharge passages provided by projections on both of said surfaces, the improvement which comprises forming at least said projections of said bipolar plate with a melt-processible polymer having good fluidity, and a coating on the surfaces of said bipolar plate comprising metal, metal nitride or metal carbide.

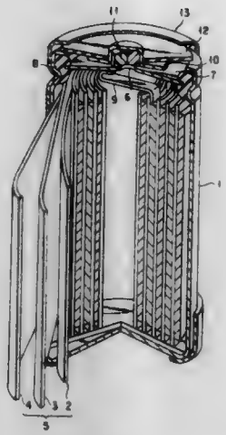
5,798,189

NICKEL-HYDROGEN SECONDARY BATTERY

Hirotaka Hayashida, Fujisawa; Hirohito Teraoka, Funabashi; Tomoyuki Ono, Yokohama; Tsuyoshi Soeda, Chigasaki, and Masaaki Yamamoto, Chiba-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, and Toshiba Battery Co., Ltd., Tokyo, both of Japan

Continuation-in-part of Ser. No. 421,245, Apr. 13, 1995, abandoned. This application Aug. 12, 1996, Ser. No. 689,488
Claims priority, application Japan, Apr. 15, 1994, 6-077162; Jan. 18, 1995, 7-005747; Oct. 13, 1995, 7-265858
Int. Cl.[6] H01M *4/36;2/16*
U.S. Cl. 429—101 **28 Claims**

1. A nickel-hydrogen secondary battery comprising:
a case,



a paste-type positive electrode accommodated in said case and containing nickel hydroxide and a polymeric binder,
a paste-type negative electrode accommodated in said case and containing a hydrogen-absorbing alloy and a polymeric binder,
a separator accommodated in said case in such as manner as to be interposed between said positive and negative electrodes, and
an alkali electrolyte accommodated in said case;
wherein said separator is formed of a sheet material containing polyolefin-based synthetic resin fibers and has first and second surfaces opposite to each other, said first surface having a hydrophilic portion and a hydrophobic portion having an area ratio of 10% or less including 0% based on the area of said first surface, said second surface having a hydrophilic portion and a hydrophobic portion having an area ratio of 2 to 25% based on the area of said second surface, and the area ratio of said hydrophobic portion on said second surface being higher than that on said first surface; and
said separator is interposed between said positive and negative electrodes such that said second surface of the separator faces said negative electrode.

5,798,190

PROCESS FOR THE PREPARATION OF A CURRENT COLLECTOR IN CONTACT WITH THE CATHODE MATERIAL

Maria Andrei, Berceto; Federico Capuano, Rieti, and Sandro Mercuri, Mentana, all of Italy, assignors to Enitricerche S.p.A., Milan, and Olivetti Personal Computer S.p.A., Ivrea, both of Italy

Filed Jul. 15, 1996, Ser. No. 680,356
Claims priority, application Italy, Jul. 21, 1995, MI95A1650
Int. Cl.[6] H01M *10/38*
U.S. Cl. 429—192 **9 Claims**

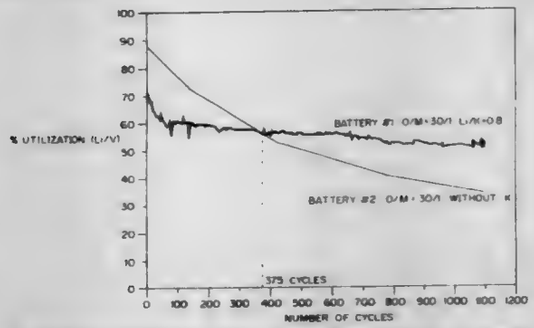
1. Process for the preparation of a current collector in contact with a cathode material comprising depositing in the absence of a solvent on a nickel layer having a rugosity R_a from 1 to 3 microns, a cathode paste comprising:
1) a powder of active cathode material;
2) an electronic conductor;
3) a polymeric composition consisting essentially of:
3a) a polymer derived from the polymerisation of a mixture of a vinyl ether having general formula (I) $R—(—O—CH_2—CH_2—)_n—O—CH=CH_2$, where R represents a methyl or an ethyl and n is an integer between 1 and 16; and a divinyl ether having general formula (II) $CH_2=CH—(O—CH_2—CH_2—)_m—O—CH=CH_2$, where m is an integer between 1 and 10
3b) one or more lithium salts, selected from $LiBF_4$ alone or in a mixture with other salts.

5,798,191

POLYMER ELECTROLYTE LITHIUM BATTERY CONTAINING A POTASSIUM SALT

Yves Choquette, Ste-Julie, Canada; Michel Armand, St-Martin d'Uriage, France; Martin Simoneau, Montréal, Canada; René Gagnon, Boucherville, Canada, and André Belanger, Ste-Julie, Canada, assignors to Hydro-Quebec, Montreal, Canada

Filed Mar. 12, 1997, Ser. No. 815,604
Int. Cl.[6] H01M 10/40
U.S. Cl. 429—192 15 Claims



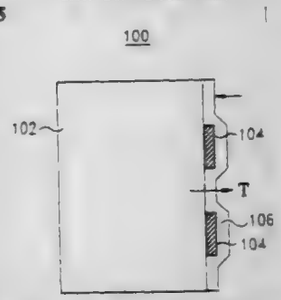
1. Rechargeable lithium battery comprising at least one lithium anode, one lithium ion reducible cathode bonded to a first polymer, and a polymer electrolyte comprising a lithium salt in solution in a second polymer, said lithium battery containing an additive comprising potassium ions, said potassium ions being distributed in at least one of said cathode and said polymer electrolyte, the concentration of lithium and potassium in the second polymer when said battery has reached equilibrium, expressed as O/(Li+K), being between about 8/1 and 40/1 while the ratio Li/K is between about 0.2 to 15, said potassium ions being selected so as to stabilize performances of the battery during cycling in terms of energy and power.

5,798,192

STRUCTURE OF A MASK FOR USE IN A LITHOGRAPHY PROCESS OF A SEMICONDUCTOR FABRICATION

Ming-Chu King, Taichung; Shih-Shiung Chen, Chiayi, and Ying-Chen Chao, Hsinchu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Co., Ltd., Hsinchu, Taiwan

Filed Apr. 15, 1997, Ser. No. 834,330
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 8 Claims



1. A structure of a mask for use in a lithography process in a semiconductor fabrication procedure, said structure comprising:
- a mask base being made of transparent material selected from a group consisting of glass and quartz;
- at least one pattern formed on said mask base, said at least one pattern being used for generating an image on a wafer and being made of a conductive opaque material; and
- a silver layer formed on said mask base and said at least one pattern for moving electrons that are confined at the corners of said at least one pattern on a surface of said silver layer, thereby distributing said electrons uniformly on said mask.

5,798,193

METHOD AND APPARATUS TO ACCURATELY CORRELATE DEFECT COORDINATES BETWEEN PHOTOMASK INSPECTION AND REPAIR SYSTEMS

Christophe Pierrat, and Baorui Yang, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed May 16, 1997, Ser. No. 857,620
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 6 Claims

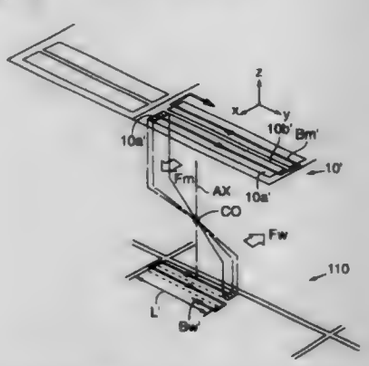
6. A method for correlating coordinate systems of a first and a second photomask processing machine, the method comprising:
- writing a test pattern at a known location on a non-productive area of a photomask, the test pattern containing a first reference point;
- inspecting the mask using the default coordinate system;
- locating the first reference point (Xp, Yp);
- initializing the coordinate system of first photomask processing machine such that the coordinates of the first reference point are (Xp, Yp);
- determining the location of each of a plurality of points, wherein the locations are relative to the initialized coordinate system of the first photomask processing machine;
- storing the location of each of the plurality of points;
- mounting the photomask on the second photomask processing machine;
- driving the second photomask processing machine to the first reference point;
- initializing the coordinate system of second photomask processing machine such that the coordinates of the first reference point are (Xp, Yp);
- locating each of the plurality of points relative to the initialized coordinate system of the second photomask processing system, using the stored locations.

5,798,194

MASKS FOR CHARGED-PARTICLE BEAM MICROLITHOGRAPHY

Mamoru Nakasuji, Yokohama, and Shintaro Kawata, Ibaragi-ken, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed May 19, 1997, Ser. No. 858,770
Claims priority, application Japan, May 22, 1996, 8-127008; Aug. 23, 1996, 8-222495
Int. Cl.[6] G03F 9/00
U.S. Cl. 430—5 21 Claims



1. A mask for transferring a die pattern to a sensitized substrate using a charged-particle flux and a projection lens having a field size, the mask comprising:
- (a) a membrane transmissive to the charged-particle flux, the membrane having a major surface comprising a plurality of mask subfields parallel to each other and collectively defining a mask die pattern having a width and a length parallel to the major surface, each mask subfield longitudinally extending a length that is equal to or smaller than the field size of the projection lens, each mask subfield being separated from adjacent mask subfields by a boundary region longitudinally

coextensive with the mask subfield, the boundary regions being parallel to each other;

(b) a beam support separately situated beneath and attached to each boundary region and being coextensive with the respective boundary region.

5,798,195

STEPPING ACCURACY MEASURING METHOD

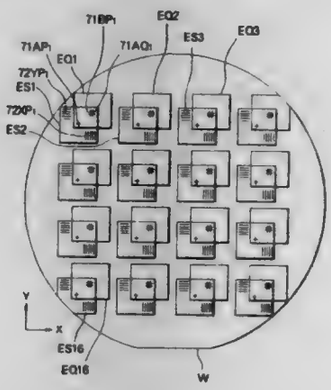
Kenji Nishi, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 311,057, Sep. 23, 1994, abandoned. This application Nov. 7, 1997, Ser. No. 966,844

Claims priority, application Japan, Sep. 24, 1993, 5-237770; Apr. 22, 1994, 6-084477

Int. Cl.[6] G03F 7/22

U.S. Cl. 430—22 5 Claims



1. A method for evaluating accuracy of a stage in an apparatus having the stage for positioning a photosensitive substrate in first and second directions perpendicular to each other in a two-dimensional plane and adapted to project a pattern of a mask onto said substrate for exposure, comprising the steps of:

a first step for resting a photosensitive evaluation substrate on said stage, projecting said plurality of evaluation marks by using a mask having such evaluation marks onto a first shot area on said evaluation substrate for exposure to form corresponding evaluation marks on the substrate, driving said stage to shift said evaluation substrate, projecting said evaluation marks by using the same mask onto a second shot area on the evaluation substrate for exposure to form corresponding evaluation marks on the substrate, said second shot area being partially overlapped with said first shot area so that at least one of the marks on said first shot area and at least one of the marks on said second shot area are included in an overlapped zone, and repeating the above-mentioned operations;

a second step for measuring deviation amounts of the exposed evaluation marks in said first and second directions for each of the overlapped zones between two adjacent shot areas on said evaluation substrate;

a third step for determining linear error component and a non-linear error component on the basis of the deviation amounts obtained in said second step; and

a fourth step for determining a rotational component of said stage when the latter is shifted on the basis of a scaling error component of the stage included in said linear error component determined in said third step.

5,798,196

PATTERN TRANSFER METHOD UTILIZING DISTRIBUTION CONDITION EVALUATION BY CHARGED PARTICLE BEAM

Teruaki Okino, Kanagawa-ken, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 1, 1996, Ser. No. 673,561

Claims priority, application Japan, Jul. 5, 1995, 7-169609

Int. Cl.[6] G03F 7/20

U.S. Cl. 430—30 6 Claims

1. A pattern transfer method wherein a part or all of a plurality of small areas on a mask are sequentially irradiated with a charged particle beam to transfer an image of a pattern provided in each of the irradiated small areas onto a radiation-sensitive substrate, said method comprising the steps of:

evaluating a distribution condition of said pattern for each of said small areas; and

adjusting a focused position of a projection optical system for projecting said pattern image onto said radiation-sensitive substrate for each of said small areas on the basis of predetermined information including a result of the evaluation.

5,798,197

USE OF LOW MOLECULAR-WEIGHT OR POLYMERIC ORGANIC COMPOUNDS WHICH ARE PRESENT IN THE COLUMNAR-HELICAL PHASE AND HAVE LIQUID-CRYSTALLINE PROPERTIES

Wolfgang Paulus, Weisenheim; Lukas Häussling, Bad Dürkheim; Karl Siemensmeyer; Karl-Heinz Etzbach, both of Frankenthal; Dieter Adam, Hof; Juergen Simmerer, Bayreuth; Helmut Ringsdorf; Peter Schuhmacher, both of Mainz; Dietrich Haarer, Bayreuth, and Sundeep Kumar, Mainz, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/03166, § 371 Date Feb. 20, 1997, § 102(e) Date Feb. 20, 1997, PCT Pub. No. WO96/06144, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 10, 1995, Ser. No. 776,610

Claims priority, application Germany, Aug. 20, 1994, 44 29 597.9

Int. Cl.[6] G03G 5/06

U.S. Cl. 430—56 10 Claims

1. A method of inducing photoconduction in a photoconductor comprising the steps of:

(a) providing the photoconductor,

wherein the photoconductor comprises low-molecular-weight organic compounds or polymeric organic compounds,

wherein the low-molecular-weight organic compounds or the polymeric organic compounds have liquid-crystalline properties and are in the columnar-helical phase; and

(b) exposing the photoconductor to light, thereby inducing photoconduction in the photoconductor.

5,798,198

NON-STOICHIOMETRIC LITHIUM FERRITE CARRIER

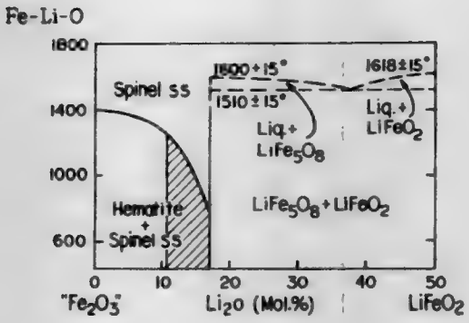
Alan Sukovich, and William R. Hutcheson, both of Valparaiso, Ind., assignors to Powdertech Corporation, Valparaiso, Ind.

Continuation-in-part of Ser. No. 45,379, Apr. 9, 1993, abandoned. This application Nov. 13, 1995, Ser. No. 555,909

Int. Cl.[6] G03G 9/107;9/113

U.S. Cl. 430—106.6 6 Claims

1. An environmentally benign, reprographic ferrite powder carrier for electrophotographic development consisting essentially of



a non-stoichiometric, lithium ferrite powder having a composition within the compositional range represented by the formula:

$$[(Li_2O)_{0.25}(Fe_2O_3)_{0.25}]_x(Fe_2O_3)_{1.00-x}$$

where $0.35<x\leqq0.50$ mole fraction and including SiO_2 or Bi_2O_3 or both within the powder composition as densifying and strengthening elements and a resin coating on the powder.

5,798,199

DRY XEROGRAPHIC TONER AND DEVELOPER

David Brian Bilbrey, Westminster; Rick Owen Jones, Berthoud; George Pharris Marshall, Boulder; Michael Gordon Miller, and James Craig Minor, both of Longmont, all of Colo., assignors to Lexmark International, Inc., Lexington, Ky.

Filed Jun. 3, 1997, Ser. No. 868,323
Int. Cl.[6] G03G *9/087*
U.S. Cl. 430—110 **14 Claims**

1. A xerographic toner comprising powder particles of a hybrid resin of polyester and styrene acrylate copolymer, said powder particles having thoroughly blended into them,

a pigment,

a charge control agent, and

a fumed metal oxide.

5,798,200

ELECTROPHOTOGRAPHIC IMAGE FORMING METHOD

Katsumi Matsuura, and Shigeki Takenouchi, both of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Feb. 19, 1997, Ser. No. 802,609
Claims priority, application Japan, Feb. 21, 1996, 8-033584
Int. Cl.[6] G03G *13/16*
U.S. Cl. 430—126 **11 Claims**

1. A method for forming plural images by repeating a process comprising the steps of

forming an electrostatic latent image on an organic photoreceptor, the outermost layer of said photoreceptor contains inorganic or organic particles having a volume average diameter of 0.05 μm to 2.0 μm, and the surface of the outermost layer having a ten point height of irregularities Rz of 0.05 μm to 1.0 μm,

developing said electrostatic latent image formed on said organic photoreceptor with a toner particles each of which contains domains of releasing agent having a number average domain diameter of 0.1 μm to 1.1 μm to form a toner image,

transferring said toner image to an image receiving paper by a transferring roller being pressed to said organic photoreceptor with a pressure of 25 g/cm^2 to 1000 g/cm^2, said transferring roller has an impact resilience of 30% to 70%, and the surface of said transferring roller comprises a porous foamed material,

separating said image receiving paper carrying said transferred toner image from said photoreceptor,

fixing said toner image carried on said image receiving paper, and

cleaning the surface of said photoreceptor.

5,798,201

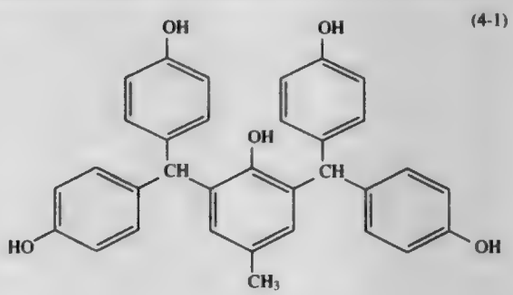
RADIATION SENSITIVE RESIN COMPOSITION

Katsumi Inomata; Nasahiro Akiyama; Toshiyuki Ota, and Akira Tsuji, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, and Arakawa Chemical Industries, Ltd., Osaka, both of Japan

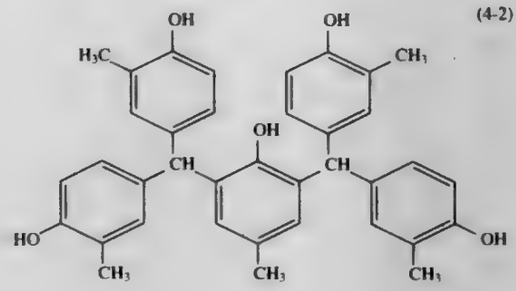
Division of Ser. No. 538,049, Oct. 2, 1995. This application Jul. 2, 1997, Ser. No. 887,466
Int. Cl.[6] G03F *7/023*
U.S. Cl. 430—192 **12 Claims**

1. A radiation sensitive resin composition comprising an alkali soluble resin and a 1,2-quinonediazide compound selected from the group consisting of 1,2-napthoquinonediazide-5-sulfonates of compounds represented by formulas (4-1), (4-2), (4-5) and (4-7):

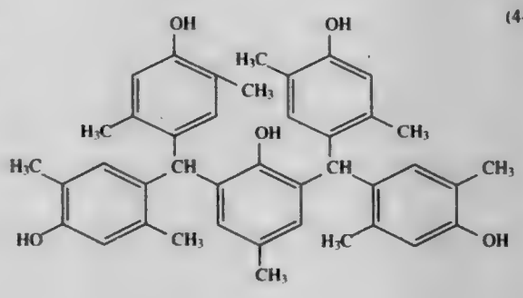
(4-1)



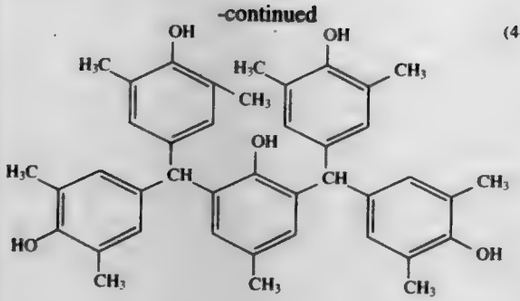
(4-2)



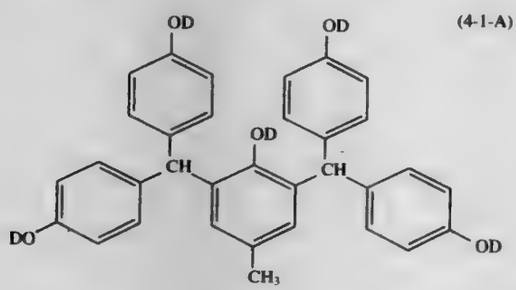
(4-5)

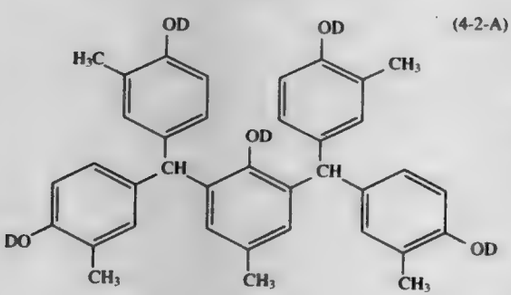


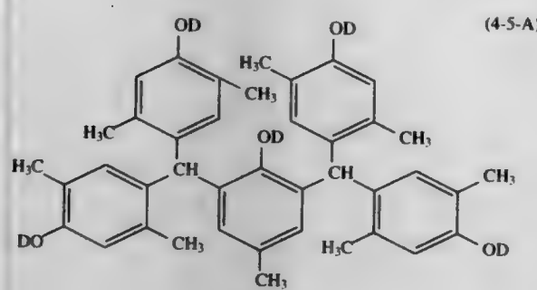
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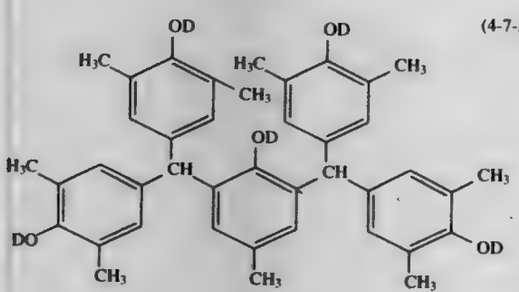

(4-7)

2. A radiation sensitive resin composition comprising an alkali soluble resin and a 1,2-quinonediazide compound selected from the group consisting of 1,2-quinonediazide compounds represented by formulas (4-1-A), (4-2-A), (4-5-A) or (4-7-A):


(4-1-A)


(4-2-A)


(4-5-A)


(4-7-A)

wherein D is a hydrogen atom or a 1,2-quinonediazide-sulfonyl moiety, provided that at least one of the D's in the moieties represented by -OD of each formula is an organic group containing a 1,2-quinonediazide-sulfonyl moiety.

5,798,202

LASER ENGRAVABLE SINGLE-LAYER FLEXOGRAPHIC PRINTING ELEMENT

Stephen Cushner, Lincroft; Roxy Ni Fan, East Brunswick, both of N.J.; Ernst Leberzammer, Glen Mills, Pa.; Paul Thomas Shea, Freehold, N.J., and Carol Marie Van Zoeren, Wilmington, Del., assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed May 11, 1992, Ser. No. 880,792

Int. Cl.[6] G03F 7/00

U.S. Cl. 430—306 **6 Claims**

1. A laser engravable, single-layer flexographic printing element which comprises:

(a) a flexible support; and

(b) a laser engravable, reinforced elastomeric layer wherein said layer has been singly reinforced mechanically or thermochemically or multiply reinforced mechanically and photochemically, mechanically and thermochemically, or photochemically and thermochemically, or mechanically, photochemically and thermochemically provided that thermochemical reinforcement is accomplished using a crosslinker other than sulfur, a sulfur containing moiety, or peroxide; said elastomeric layer being at least 0.05 cm thick and capable of being laser engraved to a depth of at least 0.005 cm after reinforcement.

5,798,203

METHOD OF MAKING A NEGATIVE PHOTORESIST IMAGE

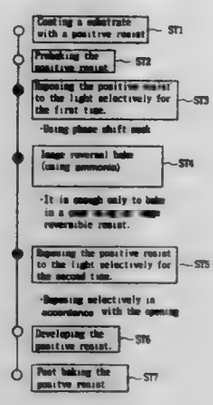
Hiroshi Haraguchi, Tokyo, and Hitoshi Tsuji, Kanagawa-ken, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 2, 1996, Ser. No. 595,846

Claims priority, application Japan, Feb. 6, 1995, 7-018059

Int. Cl.[6] G03F 7/20

U.S. Cl. 430—325 **15 Claims**



1. A method of making a negative photoresist image comprising the steps of:

selectively exposing to light through a phase shift mask a positive resist layer on a substrate, the phase shift mask including a first mask portion and an attenuator, said first mask portion having at least two mask membrane portions, and said attenuator positioned to cover an area between said at least two membrane portions;

changing an exposed portion of said positive resist layer to be resistant to developer;

selectively exposing to light the positive resist layer through a second mask which blocks exposure of an unexposed portion of the positive resist layer corresponding to a peripheral portion of the attenuator that does not overlap with said first mask portion; and

developing said positive resist layer.

5,798,204

DEVELOPMENT PROCESSING METHOD OF ULTRAHIGH-CONTRAST BLACK-AND-WHITE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kouta Fukui; Mitsunori Hirano, and Nobuaki Inoue, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 507,556, Jul. 26, 1995, abandoned. This application Dec. 16, 1996, Ser. No. 766,934

Claims priority, application Japan, Jul. 26, 1994, 6-174033; Jul. 26, 1994, 6-192758; Aug. 24, 1994, 6-199328

Int. Cl.[6] G03C *5/18;5/26;1/06;1/00*

U.S. Cl. 430—399 **13 Claims**

1. A development processing method, which comprises the steps of

(a) exposing a black and white silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer and

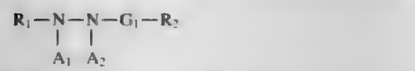
(b) developing the exposed silver halide photographic material with a developer while the developer is concurrently replenished with a development replenisher,

wherein the developer and the development replenisher each contains a dihydroxybenzene developing agent and an auxiliary developing agent exhibiting a superadditive property to the dihydroxybenzene developing agent, and both the developer and the development replenisher have such a property that an increase of the pH is 0.25 or less when 0.1 mol of sodium hydroxide is added to 1 liter thereof;

the developer has a pH from 9.5 up to but excluding 11.0; and

the developer replenisher is added in an amount of 225 ml/m^2 or less;

wherein the silver halide photographic material can further comprise at least one other hydrophilic colloid layer in addition to the at least one light-sensitive silver halide emulsion layer on a support, wherein a silver halide emulsion layer or another hydrophilic colloid layer contains at least one hydrazine derivative represented by the following formula (I):



(I)

wherein R_1 represents an aliphatic group or an aromatic group;

R_2 represents a hydrogen atom, an alkyl group, an aryl group, an unsaturated heterocyclic group, an alkoxy group, an aryloxy group, an amino group or a hydrazino group;

G_1 represents —CO—, —SO_2—, —SO—, —$PO(R_3)$—, —CO—CO—, a thiocarbonyl group or an iminomethylene group, in which R_3 has the same meaning as R_2, but it may be different from R_2;

A_1 and A_2 are both a hydrogen atom, or one of them is a hydrogen atom and the other is an alkylsulfonyl group, an arylsulfonyl group or an acyl group; and

wherein a black and white image having a gamma value of 10 or more is obtained.

5,798,205

RESTROVIRUS FROM THE HIV TYPE O AND ITS USE (MVP-2901/94)

Hans-Peter Hauser, Marburg; Stefan Knapp, Marburg; Stefan Brust, Marburg; Lutz G. Gürtler, Munich; Josef Eberle, Freising; Lazare Kaptue, and Léopold Achenqui Zekeng, both of Yaoundé/Cameroun, all of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Germany

Filed Feb. 16, 1996, Ser. No. 602,713

Claims priority, application Germany, Feb. 16, 1995; 195 05 262.5

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 **22 Claims**

1. An isolated protein, polypeptide or peptide which comprises at least 10 contiguous amino acids found at positions 319–341 of the amino acid sequence set forth in SEQ ID NO: 12.

5,798,206

METHODS FOR SCREENING OF TEST COMPOUNDS FOR INHIBITING BINDING OF A CD4-HIV 1 COMPLEX TO A CHEMOKINE RECEPTOR

Alexander Robert Neurath; Asim Kumar Debnath, both of New York; Shibo Jiang, Jackson Heights; Yun-Yao Li, Flushing, and Nathan Strick, Oceanside, all of N.Y., assignors to New York Blood Center, New York, N.Y.

Filed Jan. 10, 1997, Ser. No. 782,044

Int. Cl.[6] C12Q *1/70;* **G01N** *33/53*

U.S. Cl. 435—5 **17 Claims**

1. A method for the screening of a test compound for inhibiting the binding of a CD4-HIV-1 complex to a chemokine receptor, comprising:

(a) preparing a magnetic ligand by mixing a magnetic, CD4-containing substrate with HIV-1,

(b) mixing the magnetic ligand from step (a) with a test compound,

(c) adding cells that express a chemokine receptor to the mixture from step (b),

(d) separating cells that bound magnetic ligands from cells without bound magnetic ligands by contact with a magnetic separator, and

(e) quantifying the cells with bound magnetic ligands and quantifying the cells without bound magnetic ligands.

5,798,207

Patent Not Issued For This Number

5,798,208

WALK-THROUGH MUTAGENESIS

Roberto Crea, 45 Amherst Rd., Belmont, Mass. 02178-2102, assignor to Roberto Crea, San Mateo, Calif.

Continuation-in-part of Ser. No. 505,314, Apr. 5, 1990, abandoned. This application Nov. 2, 1992, Ser. No. 930,600

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34;21/00*

U.S. Cl. 435—6 **33 Claims**

1. A method of mutagenesis of a gene encoding a protein, comprising:

a) selecting one or more defined region(s) of the amino acid sequence of the protein encoded by the gene to be mutagenized;

b) for each of the defined region(s), determining one or more amino acid residue(s) to be inserted into amino acid positions in the defined region;

c) synthesizing without saturation a mixture of oligonucleotides, comprising a nucleotide sequence for each defined region, wherein each oligonucleotide contains, at each sequence position in the defined region, either a nucleotide required for

synthesis of the protein to be mutagenized or a nucleotide required for a codon of one of the predetermined amino acid(s), the mixture containing all possible variant oligonucleotides according to this criterion; and

d) generating an expression library of cloned genes containing said oligonucleotides.

5,798,209

HUMAN AND MOUSE VERY LOW DENSITY LIPOPROTEIN RECEPTORS AND METHODS FOR USE OF SUCH RECEPTORS

Lawrence C. B. Chan, Houston, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Division of Ser. No. 149,103, Nov. 8, 1993. This application May 26, 1995, Ser. No. 451,883

Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/04*;*21/02*

U.S. Cl. 435—6 **3 Claims**

1. A Method for detecting the presence of a human nucleic acid sequence encoding a Human Very Low Density Lipoprotein receptor or a subsequence or complement thereof that specifically hybridizes to said Human Very Low Density Lipoprotein receptor comprising the steps of:

(a) obtaining a sample containing a human nucleic acid sequence encoding at least part of said human Very Low Density Lipoprotien receptor or said subsequence or said complement thereof in an amount sufficient for detection;

(b) detecting said human nucleic acid sequence, wherein

(c) said detection occurs using an oligonucleotide able to hybridize to said human nucleic acid sequence to form a detectable target:probe duplex under selective hybridization assay conditions, and

(d) wherein said oligonucleotide does not hybridize to nucleic acid that does not encode said human very low density lipoprotein receptor or a subsequence or complement thereof to form a detectable non-target:probe duplex under said hybridization conditions.

5,798,210

DERIVATIVES UTILIZABLE IN NUCLEIC ACID SEQUENCING

Bruno Canard, Nice, and Simon Sarfati, Paris, both of France, assignors to Institut Pasteur, Paris Cedex, France

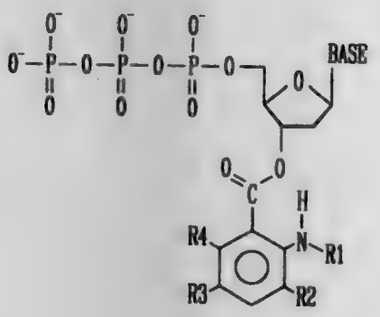
PCT No. PCT/FR94/00345, § 371 Date Nov. 20, 1995, § 102(e) Date Nov. 20, 1995, PCT Pub. No. WO94/23064, PCT Pub. Date Oct. 13, 1994

PCT Filed Mar. 28, 1994, Ser. No. 525,504

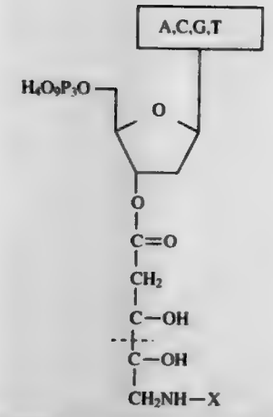
Claims priority, application France, Mar. 26, 1993, 93 03538

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **19 Claims**



1. An ester of a deoxyribonucleoside or ribonucleoside 5' triphosphate having formula (II):



(II)

where X is a fluorophore or hydrogen, in which the 3' hydroxyl can be restored by cleavage of the caproic acid when substituted by said fluorophore in basic medium or by action of an enzyme.

5,798,211

PROBE FOR DIAGNOSING *PSEUDOMONAS AERUGINOSA*

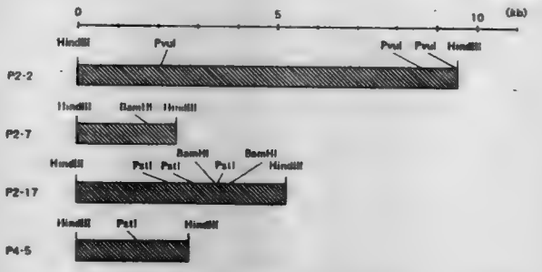
Tsuneya Ohno, 15-16, Kita-Aoyama 3 chome, Minato-ku, Tokyo 107; Akio Matsuhisa, Nara; Hirotsugu Uehara, Kobe, and Soji Eda, Higashi-Osaka, all of Japan, assignors to Tsuneya Ohno, Tokyo, and Fuso Pharmaceuticals, Ltd., Osaka, both of Japan

Division of Ser. No. 362,577, Mar. 27, 1995. This application Aug. 29, 1997, Ser. No. 921,177

Claims priority, application Japan, Jul. 7, 1995, 4-179719

Int. Cl.[6] C12Q *1/68*; C07H *21/04*

U.S. Cl. 435—6 **2 Claims**



1. A probe composition for detecting *Pseudomonas aeruginosa* wherein the probe composition consists essentially of

(a) the DNA of any one of SEQ ID NOS:13 through 16, or

(b) the complement of (a).

2. A method for detecting the presence of *Pseudomonas aerugiinosa* in a sample comprising the steps of contacting nucleic acid from said sample with the probe composition of claim 1 and detecting hybridization of the nucleic acid from said sample with DNA in said probe composition as an indication of the presence of *Pseudomonas aeruginosa.*

5,798,212

CDT ASSAY

Erling Sundrehagen, Oslo, Norway, assignor to Axis Biochemicals ASA, Oslo, Norway

Filed Sep. 9, 1996, Ser. No. 716,913

Int. Cl.[6] G01N *33/53*;*33/543*;*33/563*

U.S. Cl. 435—7.1 **22 Claims**

1. A method of assessment of carbohydrate-deficient transferrin in a transferrin containing body fluid, said method comprising the steps of:

i) obtaining a transferrin containing liquid sample of or derived from a said fluid;
ii) contacting said sample with a source of iron ions;
iii) subsequently contacting said sample with an anionic ion exchange resin at a pH such as to cause carbohydrate-deficient transferrin to be retained by said resin;
iv) subsequently contacting said resin with an eluant serving to release carbohydrate-deficient transferrin into the eluate from said resin;
v) collecting a volume of said eluate containing tri-sialo transferrin and optionally one or more of disialo, monosialo, and asialo transferrin but substantially free from tetra- and penta-sialo transferrin; and
vi) assessing the content of sialo and asialo transferrins in said volume of eluate.

5,798,213

MONOCLONAL ANTIBODIES

Kazutaka Miyadera, Kagoshima; Yuji Yamada, Saitama; Yuji Takebayashi, and Shinichi Akiyama, both of Kagoshima, all of Japan, assignors to Taiho Pharmaceutical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/02661, § 371 Date Aug. 21, 1996, § 102(e) Date Aug. 21, 1996, PCT Pub. No. WO96/20217, PCT Pub. Date Jul. 4, 1996

PCT Filed Dec. 25, 1995, Ser. No. 696,827

Claims priority, application Japan, Dec. 28, 1994, 6-327328

Int. Cl.[6] G01N *33/573;33/536;33/577;* **C07K** *16/24*

U.S. Cl. 435—7.4 **6 Claims**

3. An immunoassay for detecting human thymidine phosphorylase/human platelet-derived endothelial cell growth factor comprising the steps of:
(A) reacting a body fluid or tissue sample with a monoclonal antibody having binding specificity to a peptide having the amino acid sequence of SEQ ID NO:1, or an epitope thereof, wherein said monoclonal antibody is 2A4 produced by hybridoma FERM BP-6142, and is of the IcG_{2b} subclass; and
(B) determining whether said monoclonal antibody binds to proteins in said body fluid or tissue sample.

5,798,214

CAPTURE ASAYS

David James Squirrell, Salisbury, Great Britain, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland of Defence Evaluation and Research Agency, United Kingdom

PCT No. PCT/GB95/01643, § 371 Date Jan. 6, 1997, § 102(e) Date Jan. 6, 1997, PCT Pub. No. WO96/02666, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 12, 1995, Ser. No. 765,063

Claims priority, application United Kingdom, Jul. 13, 1994, 9414096

Int. Cl.[6] G01N *33/573;33/569*

U.S. Cl. 435—7.4 **22 Claims**

1. A method for determining the presence and/or amount of a microorganism and/or intracellular material present in a sample comprising the steps of:
(a) exposing the sample to a capture agent that has been immobilised upon a solid substrate, the capture agent being capable of binding to the microorganism or intracellular material such that the microorganism becomes associated with the solid substrate,
(b) exposing the solid substrate to an agent capable of making adenylate kinase associated with the microorganism and/or its intracellular material accessible to solutions applied to the substrate,
(c) applying a solution containing adenosine diphosphate (ADP) to the substrate under conditions whereby adenosine triphosphate (ATP) may be produced by any adenylate kinase present
(d) measuring the amount of adenosine triphosphate (ATP) produced and relating that to the presence and/or amount of micro-organism or intracellular material.

5,798,215

DEVICE FOR USE IN ANALYTE DETECTION ASSAYS

Cheryl A. Cathey, Gaithersburg, Md.; Tom Saul, El Granada, Calif.; Nicole D. Bloom, San Francisco, Calif.; Hans O. Ribi, Hillsborough, Calif.; Henry L. Schwartz, San Francisco, Calif.; Jeffrey B. Langford, Corvallis, Oreg., and David J. Paul, Scotts Valley, Calif., assignors to Biocircuits Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 296,489, Aug. 24, 1994, Pat. No. 5,660,993, which is a continuation-in-part of Ser. No. 179,749, Jan. 7, 1994, Pat. No. 5,503,985, which is a continuation-in-part of Ser. No. 19,469, Feb. 18, 1993, Pat. No. 5,399,486. This application Apr. 6, 1995, Ser. No. 420,987

Int. Cl.[6] G01N *33/53;33/543;33/558*

U.S. Cl. 435—7.9 **34 Claims**



1. A device for use in analyte detection comprising:
(a) a main flow path comprising:
a sample addition port for adding a sample suspected of containing an analyte;
at least one reagent incubation area downstream from said sample addition port;
and
a waste area downstream from said reagent incubation area;
(b) at least one side channel, said side channel comprising:
a liquid addition port and
a side reagent area for introducing a liquid into said reagent incubation area;
(c) at least one fluid interruption means positioned along said main flow path or side channel upstream from said reagent incubation area; and
(d) at least one reagent in said main flow path or said side channel,
wherein said side channel is in fluid communication with said main flow path at a region of said main flow path upstream from said incubation area and wherein said analyte, if present, reacts with a reagent to produce a detectable signal in said reagent incubation area.

5,798,216

ANTIBODIES AND IMMUNOASSAYS FOR DETECTING PLATELET TRANSFUSION REFRACTORINESS

Zaverio M. Ruggeri, La Jolla, and Jerry L. Ware, Encinitas, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 817,852, Jan. 6, 1992, Pat. No. 5,427,939. This application Jun. 6, 1995, Ser. No. 470,137

Int. Cl.[6] G01N *33/567;33/537*

U.S. Cl. 435—7.21 **4 Claims**

1. A method of immunoassay utilizing a monoclonal antibody, or an antigen binding fragment thereof, wherein said monoclonal

antibody or antigen binding fragment binds to a glycoprotein Ibα polypeptide having a Met^{145} residue, and wherein said monoclonal antibody or antigen binding fragment does not bind to a glycoprotein Ibα polypeptide having a Thr^{145} residue, said method comprising contacting said monoclonal antibody with glycoprotein Ibα polypeptide or a fragment thereof containing a Met^{145} or Thr^{145} residue and detecting whether there is present a complex of said monoclonal antibody or antigen binding fragment thereof and said Met^{145} form of said glycoprotein or said fragment thereof.

5,798,217

METHOD OF ANALYZING TUMOR CELL DNA CONTENT THROUGH TUMOR CELL ENRICHMENT

Wade E. Bolton, Plantation; Norma Sue Kenyon, Miami; Olavi Sliman, Davie, and Robert J. Schmittling, Cooper City, all of Fla., assignors to Coulter Corporation, Miami, Fla.

Continuation of Ser. No. 963,657, Apr. 26, 1993, abandoned. This application Jun. 12, 1995, Ser. No. 489,239

Int. Cl.[6] G01N *33/574;33/53;33/555;33/567*

U.S. Cl. 435—7.23 **13 Claims**

1. A method for enriching the tumor cell fraction in a sample containing or thought to contain tumor cells and at least leukocytes, said method comprising:

(a) analyzing a first sample without leukocyte depletion by flow cytometry in order to determine DNA histogram;

(b) mixing a second sample with a pan-leukocyte monoclonal antibody conjugated to a separable substrate;

(c) separating the substrate and leukocytes conjugated thereto from said second sample, thereby specifically depleting said second sample of leukocytes and enriching the tumor cell fraction in said second sample;

(d) analyzing said depleted second sample by flow cytometry to determine the DNA histogram; and

(e) comparing the peaks of the first sample with that of the second sample in order to determine the normal diploid peak and the DNA index of tumor peak.

5,798,218

COMPOSITIONS AND METHODS FOR THE SPECIFIC DETECTION OF THY-1 ANTIGEN

James Thomas Buckley, Victoria, Canada, assignor to University of British Columbia Innovation and Development Corporation, Victoria, Canada

Filed Sep. 24, 1996, Ser. No. 724,298

Int. Cl.[6] G01N *33/50;33/543;* **C07K** *14/195*

U.S. Cl. 435—7.24 **12 Claims**

1. A method of specifically detecting a Thy-1 antigen, comprising:

providing a biological sample to be tested;

providing a purified preparation of *aerolysin;*

combining the *aerolysin* with the biological sample; and

detecting the presence of an *aerolysin*-Thy-1 antigen complex.

5,798,219

SEROLOGICAL IDENTIFICATION OF CATTLE, SHEEP OR GOATS INFECTED WITH ANAPLASMA SPECIES

Donald P. Knowles; Travis C. McGuire; Guy H. Palmer; William C. Davis, and Terry F. McElwain, all of Pullman, Wash., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C., and Washington State University Research Foundation, Pullman, Wash.

Continuation of Ser. No. 156,426, Nov. 23, 1993, abandoned. This application Oct. 16, 1996, Ser. No. 730,995

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—7.93 **4 Claims**

1. A method for detecting Anaplasma specific antibodies in an animal, wherein the animal is a ruminant selected from the group consisting of cattle, sheep, and goat, said method comprising:

(a) obtaining a serological sample from the ruminant;

(b) conducting a competitive inhibition enzyme-linked immunosorbent assay on said serological sample using native or recombinant Anaplasma major surface protein 5 and labeled monoclonal antibody ANAF16C1 produced by hybridoma ANAF16C1 deposited with the American Type Culture Collection as accession number ATTC HB-12440;

(c) wherein the presence of competition for binding of said labeled monoclonal antibody to the native or recombinant Anaplasma major surface protein 5 indicates the presence of Anaplasma specific antibodies to major surface protein 5 in the serological sample.

5,798,220

ASSAY FOR HUMORAL IMMUNITY TO MACROMOLECULES

Nir Kossovsky, Los Angeles, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 29,775, Mar. 11, 1993, abandoned. This application May 25, 1995, Ser. No. 450,860

Int. Cl.[6] G01N *33/53*

U.S. Cl. 435—13 **5 Claims**

1. A method for detecting the presence of antibodies to conformationally altered native macromolecules in biological fluid, said method comprising the steps of:

obtaining a sample of biological fluid from a mammal wherein a biomaterial has been implanted into said mammal, said biomaterial being selected from the group consisting of silicone, stainless steel, polytetraflouroethylene, alumina, zirconia, polyurethane and calcium-phosphate ceramics;

providing a test surface which is coated with said biomaterial to provide a support surface consisting essentially of said biomaterial;

wherein said support surface has been treated with a sufficient amount of a native macromolecule for a sufficient time to attach said native macromolecule to said support surface to form conformationally altered native macromolecules which are attached to said test surface, said native macromolecule being selected from the group consisting of fibrinogen, fibronectin, laminin, sphingomyelin and phosphatidylcholine;

contacting said sample of biological fluid with said conformationally altered native macromolecules for a sufficient time to allow any immunoglobulin which specifically binds with said conformationally altered native macromolecule to bind thereto to form conformationally altered macromolecule/immunoglobulin conjugates;

detecting the presence of any conformationally altered macromolecule/immunoglobulin conjugates present on said test surface.

5,798,221
METHOD FOR THE CONDITIONING OF LIQUID SAMPLES

Poul Erik AEgidius, Helsinge, Denmark, assignor to Foss Electric A/S, Hillerod, Denmark

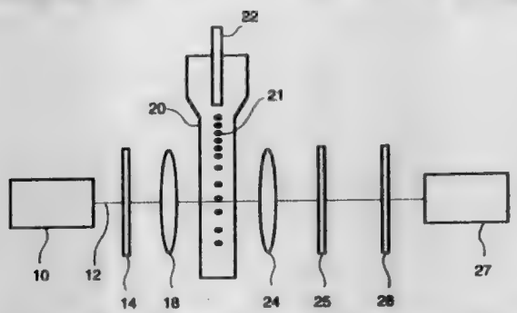
PCT No. PCT/DK95/00119, § 371 Date Sep. 16, 1996, § 102(e) Date Sep. 16, 1996, PCT Pub. No. WO95/25174, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 16, 1995, Ser. No. 714,140

Claims priority, application Denmark, Mar. 16, 1994, 0312/94

Int. Cl.[6] C12Q *1/37;1/02;1/04;* **G01N** *33/53;* **A23C** *9/12*

U.S. Cl. 435—23 **48 Claims**



1. A method for preparing a conditioned sample from an initial liquid sample, said initial liquid sample containing

fat globules and

somatic cells and/or protein particles, the method comprising treating the initial sample with

an ion-chelating agent,

a proteolytic enzyme,

a detergent, and

a bacteriologically specific fluorochrome so as to lyse the somatic cells and degrade and solubilize the protein particles and the cell debris from the somatic cells and stain substantially all bacteria in the initial sample, wherein said detergent is used in a concentration at or below the maximum concentration at which substantially no dissolution of the fat globules will take place, and thereby obtaining the conditioned sample which contains substantially the same amount of intact fat globules but a substantially lower amount of intact somatic cells and intact protein particles than does the initial sample.

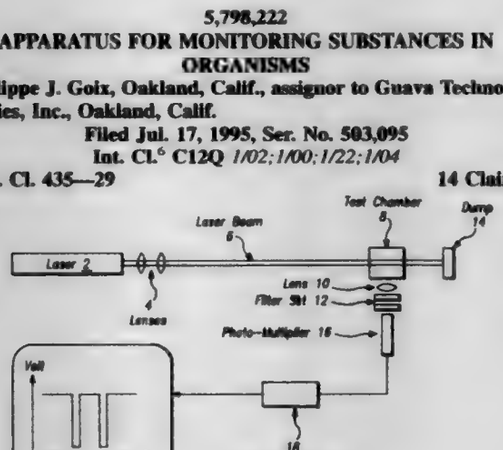
5,798,222
APPARATUS FOR MONITORING SUBSTANCES IN ORGANISMS

Philippe J. Goix, Oakland, Calif., assignor to Guava Technologies, Inc., Oakland, Calif.

Filed Jul. 17, 1995, Ser. No. 503,095

Int. Cl.[6] C12Q *1/02;1/00;1/22;1/04*

U.S. Cl. 435—29 **14 Claims**



1. A device for detecting a fluorescent substance tagged to a living microorganism comprising:

a flow carrier system for transporting the microorganism past a selected location;

a source of electromagnetic radiation for irradiating the substance tagged to the microorganism; and

a detection system for measuring fluorescent light emitted from the substance at the selected location.

5,798,223
POLYNUCLEOTIDES ENCODING HUMAN AMINE TRANSPORTER AND METHODS OF USING THE SAME

Yi Li, Gaithersburg, Md.; Liang Cao, Hong Kong, Hong Kong, and Craig A. Rosen, Laytonsville, Md., assignors to Human Genome Sciences, Inc., Rockville, Md.

Filed Jun. 6, 1995, Ser. No. 471,496

Int. Cl.[6] C12P *21/00;* **C12N** *15/12;1/15;5/10*

U.S. Cl. 435—69.1 **21 Claims**

1. An isolated polynucleotide comprising a polynucleotide having at least a 95% identity to a member selected from the group consisting of:

(a) a polynucleotide encoding a polypeptide comprising amino acid 1 to 470 of SEQ ID NO. 2;

(b) a polynucleotide encoding a polypeptide comprising amino acid 2 to 470 of SEQ ID NO. 2; and

(c) the complement of (a) or (b).

5,798,224
NUCLEIC ACIDS ENCODING PROTOCADHERIN

Shintaro Suzuki, Torrance, Calif., assignor to Doheny Eye Institute, Los Angeles, Calif.

Continuation-in-part of Ser. No. 998,003, Dec. 29, 1992, Pat. No. 5,643,781. This application Jun. 27, 1994, Ser. No. 268,161

Int. Cl.[6] C12N *15/09*

U.S. Cl. 435—69.1 **12 Claims**

1. A purified and isolated polynucleotide comprising a sequence encoding a human protocadherin pc3 having SEQ ID NO: 110.

2. A purified and isolated polynucleotide comprising a sequence encoding a human protocadherin pc5 having SEQ ID NO: 112.

5,798,225
PROCESS FOR RECOMBINANT PRODUCTION OF PTH AND PTHRP ANALOGS

John L. Krstenansky, Palo Alto; John J. Nestor, Cupertino; Teresa H. Ho, Los Altos; Brian H. Vickery, Mountain View, and Chinh T. Bach, San Jose, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Division of Ser. No. 184,328, Jan. 18, 1994, which is a continuation-in-part of Ser. No. 915,247, Jul. 14, 1992, Pat. No. 5,589,452. This application May 24, 1995, Ser. No. 449,500

Int. Cl.[6] C12N *15/16;1/21;15/63*

U.S. Cl. 435—69.4 **3 Claims**

1. A process for the recombinant production of a modified parathyroid hormone (PTH) or parathyroid hormone-related peptide (PTHrP) having bone mass restoring activity which differs from naturally occurring PTH or PTHrP by changes comprising substitutions at one or more of positions (22–31), wherein the substitutions are selected from the group consisting of SEQ ID Nos. (26, 27, 28, 29, 30, 85 and 86).

5,798,226

YEAST HOST STRAINS WITH DEFECTS IN N-GLYCOSYLATION

Ludwig Lehle, Regensburg; Klaus Lehnert, Hammersbach, and Erhard Kopetzki, Penzberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Continuation of Ser. No. 104,436, Aug. 9, 1993, abandoned. This application May 31, 1996, Ser. No. 651,323

Claims priority, application Germany, Aug. 7, 1992, 42 26 094.9; Jan. 23, 1993, 43 01 932.3

Int. Cl.[6] C12N *1/19;1/18;15/67;* C12P *21/00*

U.S. Cl. 435—69.1 35 Claims

5. A process for the production of a yeast mutant, said process comprising: ^{3}H-mannose suicide selection by the introduction of one or several selective markers (auxothrophies and/or resistances), selection of a strain which, after transformation with the plasmid YepL/glucose oxidase and fermentation in complete medium with 2% yeast extract, 4% peptone 0.1 mol/l phosphate buffer, pH 7.0, 1% fructose and 6% maltose, secretes 10 mg/l glucose oxidase or more into the medium after 3–4 days incubation while shaking, said strain, when crossed with a strain of *Saccharomyces cerevisiae* selected from the group consisting of DSM 7042, DSM 7338, DSM 7160 and DSM 7340, yielding a diploid which is defective in outer-chain N-glycosylation, said diploid, when transformed with a DNA expressing a protein of interest, under conditions favoring expression of said protein expressing said protein in hypoglycosylated form substantially without contamination with said protein in a form having outer-chain glycosylation, whereas said protein when expressed in a wild-type strain is expressed in a form having outer-chain glycosylation.

5,798,227

CO-EXPRESSION OF ALPHA AND BETA GLOBINS

Stephen J. Hoffman, Denver; Douglas L. Looker, Lafayette; Gary L. Stetler, Denver, all of Colo., and Michael Wagenbach, Osaka, Japan, assignors to Somatogen, Inc., Boulder, Colo.

Division of Ser. No. 789,179, Nov. 8, 1991, Pat. No. 5,545,727, which is a continuation-in-part of Ser. No. 671,707, Apr. 1, 1991, abandoned, which is a continuation-in-part of Ser. No. 374,161, Jun. 30, 1989, abandoned, and a continuation-in-part of Ser. No. 379,116, Jul. 13, 1989, abandoned, and a continuation-in-part of Ser. No. 349,623, May 10, 1989, abandoned. This application May 19, 1995, Ser. No. 446,105

Int. Cl.[6] C12P *21/06;21/04;* C12N *1/20;* C07K *14/805*

U.S. Cl. 435—69.6 15 Claims

1. In a method for the production of a hemoglobin-like protein wherein an alpha globin-like polypeptide and a beta globin-like polypeptide are each expressed in transformed, non-erythrocyte cells, the improvement comprising expressing the alpha globin and beta globin-like polypeptides in the same cell in such manner that the alpha and beta globin-like polypeptides are assembled and combined with heme so as to intracellularly produce a biologically functional hemoglobin-like protein and isolating said protein.

5,798,228

RECOMBINANT PRODUCTION OF DOG AND HORSE TYPE I INTERFERONS

Adolf Himmler, Vienna; Rudolf Hauptmann, Ebreichsdorf, both of Austria; Norbert Hauel, Schemmerhofen, Germany; Günther Adolf, and Peter Swetly, both of Vienna, Austria, assignors to Boehringer Ingelheim International GmbH, Ingelheim am Rhein, Germany

Division of Ser. No. 302,391, Sep. 8, 1994, Pat. No. 5,605,688, which is a continuation of Ser. No. 851,691, Mar. 13, 1992, abandoned, which is a division of Ser. No. 5,300, Dec. 17, 1986, abandoned, which is a continuation of Ser. No. 810,377, Dec. 18, 1985, abandoned. This application Feb. 24, 1997, Ser. No. 805,165

Claims priority, application Germany, Dec. 18, 1984, 34 46 122.1; Dec. 18, 1984, 34 46 124.8; Aug. 16, 1985, 35 29 262.8; Oct. 2, 1985, 35 35 115.2; Dec. 17, 1985, 35 44 520.3

Int. Cl.[6] C12N *15/21;15/20;* C07K *14/56;14/555*

U.S. Cl. 435—69.51 31 Claims

1. A substantially pure DNA molecule comprising the nucleotide sequence of a molecule selected from the group consisting of:

(a) a DNA molecule coding for a protein selected from the group consisting of:

(i) the amino acid sequence of EqIFN-α1 as shown in FIGS. 4A–4C;

(ii) the amino acid sequence of EqIFN-α2 as shown in FIGS. 10A–10B;

(iv) the amino acid sequence of EqIFN-ω1 as shown in FIGS. 12A–12C;

(v) the amino acid sequence of EqIFN-ω2 as shown in FIGS. 31A–31C; and

(vi) the amino acid sequence of CaIFN-α1 as shown in FIGS. 25A–25C;

(b) the complement of a DNA molecule hybridizing to one of the DNA molecules of paragraph (a) under conditions of stringency which select for greater than 85% homology and coding for an interferon protein found in a horse or a dog; and

(c) a DNA molecule which is degenerate with any DNA molecule of paragraphs (a) or (b).

5,798,229

BISPECIFIC MOLECULES RECOGNIZING LYMPHOCYTE ANTIGEN CD2 AND TUMOR ANTIGENS

Wolfgang Strittmatter, Ober-Ramstadt; Carlota-Silvia Jaggle, Darmstadt; Stefan Meuer, Heidelberg; Burkhart Shraven, Heidelberg, and Martin Wild, Heidelberg, all of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Germany

Filed Aug. 2, 1994, Ser. No. 284,947

Claims priority, application European Pat. Off., Aug. 2, 1993, 93112330.1

Int. Cl.[6] C12P *21/08;* C07K *16/28;16/30;16/00*

U.S. Cl. 435—70.21 17 Claims

1. A molecule which is a bispecific antibody fragment, comprising

(a) a first binding site specific for an epitope on a tumor cell antigen and

(b) a second binding site specific for an epitope of antigen CD2, selected from the group consisting of AIDC2.M1 and AICD2.M2,

of the formulae BAb<X,AICD2.M1>Y or BAb<X,AICD2.M2>Y, wherein

BAb≦indicates the molecule is a bispecific antibody,

X is a first antibody determinant specific for an epitope on a tumor cell antigen,

AICD2.M1 and AICD2.M2 are antibody determinants of antibodies AICD2.M1 and AICD2.M2, respectively, which are specific for antigen CD2, and

≧Y indicates the molecule is an antibody fragment.

10. A method for preparing a bispecific antibody fragment of claim 1, comprising enzymatically converting each of two different monoclonal antibodies (a') and (b'),

wherein

(a') has a first binding site specific for an epitope on a tumor cell antigen, and

(b') has a second binding site specific for an epitope of leukocyte antigen CD2, and

wherein each antibody comprises two identical light chain and heavy chain half molecules linked by one or more disulfide bonds, into two $F(ab')_2$ molecules,

splitting each $F(ab')_2$ molecule under reducing conditions into Fab' thiols,

derivatizing the Fab' molecules derived from either antibody (a') or (b') with a thiol activating agent, and

combining the thus-derivatized Fab' molecule with the corresponding other Fab' molecule derived from antibody (b') or (a') to produce a bispecific antibody $F(ab')_2$ fragment bearing both tumor specificity and leukocyte specificity,

wherein said monoclonal antibody (b') specific for an epitope of leukocyte antigen CD2 is selected from the group consisting of AICD2.M1 and AICD2.M2.

5,798,230

PROCESS FOR THE PREPARATION OF HUMAN MONOCLONAL ANTIBODIES AND THEIR USE

Georg Wilhelm Bornkamm, München; Dirk Eick, Germering; Bettina Kempkes, Chestnut Hill; Nicola Maria Jochner, Freising, and Lothar J. Strobl, Germering, all of Germany, assignors to GSF-Forschungszentrum fur Umwelt und Gesundheit GmbH, Oberschleissheim, Germany

Filed Apr. 3, 1996, Ser. No. 626,860

Claims priority, application Germany, Nov. 9, 1995, 195 41 844.1

Int. Cl.[6] C12P *21/04;21/06*

U.S. Cl. 435—70.21 **11 Claims**

1. A process for the preparation of human monoclonal anitibodies comprising the following steps of:

a) infecting or transfecting human antibody-producing B cells with an Epstein-Barr virus or a vector comprising Epstein-Barr virus nucleic acid sequences necessary for immortalization, in a first culture medium wherein said Epstein-Barr virus or vector expresses an Epstein-Barr virus nuclear antigen 2 (EBNA2) protein that is functional in said first culture medium, to produce immortalized B cells;

b) screening said immortalized B cells for specificity for a desired antigen to identify an immortalized B cell clone producing antibodies specific for the desired antigen;

c) propagating said identified B cell clone in said first culture medium;

d) culturing said propagated B cell clone in a second culture medium wherein the expression or function of said EBNA2 protein is reduced, and antibody production is thereby increased;

e) recovering antibodies from said second culture medium.

5,798,231

NUCLEOTIDE SEQUENCES FOR α CHAIN VARIABLE REGIONS IN HUMAN LYMPHOCYTE RECEPTORS, CORRESPONDING PEPTIDE SEGMENTS AND THE DIAGNOSTIC AND THERAPEUTIC USES

Thierry Hercend, Nogent-sur Marne; Frederic Triebel, Seine; Sergio Roman-Roman, and Laurent Ferradini, both of Paris, all of France, assignors to Roussel Uclaf, France

Division of Ser. No. 348,572, Apr. 19, 1995, which is a continuation of Ser. No. 934,529, Nov. 24, 1992, abandoned. This application Mar. 22, 1996, Ser. No. 620,467

Claims priority, application France, Feb. 8, 1991, 91 01487; Apr. 12, 1991, 91 04527

Int. Cl.[6] C12P *19/34;* **C12Q** *1/68;* **C07H** *21/04*

U.S. Cl. 435—91.2 **9 Claims**

2. In a method of amplification of DNA using a primer, the improvement comprising performing nucleic acid amplification using as primer a nucleotide sequence of about at least 17 nucleotides with a sequence of V α segment selected from the group consisting of SEQ ID Nos. 2 to 5, No. 11,

neuclotides 1 to 200 of SEQ ID No. 1,

nucleotides 1 to 467 of SEQ ID No. 6,

nucleotides 1 to 77 of SEQ ID No. 7,

nucleotides 1 to 151 of SEQ ID No. 8,

nucleotides 291 to 386 of SEQ ID No. 9,

or a fragment of a J α segment,

selected from the group consisting of SEQ ID Nos. 12, 13, or 14 to 19.

5,798,232

Patent Not Issued For This Number

5,798,233

GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF OLIGOSACCHARIDES, AND GENES ENCODING THEM

Emil C. Gotschlich, New Yok, N.Y., assignor to The Rockefeller University, New York, N.Y.

Division of Ser. No. 312,387, Sep. 26, 1994, Pat. No. 5,545,553. This application Jul. 18, 1996, Ser. No. 683,458

Int. Cl.[6] C12P *19/18;* **C12N** *9/10*

U.S. Cl. 435—97 **19 Claims**

1. A purified, functionally active LOS glycosyltransferase of *Neisseria gonorrhoeae*, wherein the functionally active glycosyltransferase catalyzes a reaction selected from the group consisting of:

a) adding Gal β1→4 to GlcNAc or Glc;

b) adding GalNAc or GlcNAc β1→3 to Gal; and

c) adding Gal α1→4 to Gal.

5,798,234

METHOD FOR THE DIRECTED MODIFICATION OF ENZYMES, MODIFIED ENZYMES AND THEIR USE

Paul C. Engel, and David Rice, both of Shefield, Great Britain, assignors to Degussa Aktiengesellschaft, Germany

PCT No. PCT/EP94/03420, § 371 Date Apr. 17, 1996, § 102(e) Date Apr. 17, 1996, PCT Pub. No. WO95/11296, PCT Pub. Date Apr. 27, 1995

Continuation of Ser. No. 628,699, Apr. 17, 1996, abandoned. This PCT application Oct. 17, 1994, Ser. No. 831,753

Claims priority, application Germany, Oct. 18, 1993, 43 35 448.3

Int. Cl.[6] C12P *13/00;7/40;* **C12N** *15/00;9/02*

U.S. Cl. 435—128 **7 Claims**

1. A method of modifying substrate specificity of an amino acid dehydrogenase from the group with E.C. number 1.4.1, wherein said dehydrogenase catalyzes the stereospecific, reversible reaction of oxidative deamination of an L-amino acid or reductive amination of an oxo acid and wherein said dehydrogenase has a binding pocket comprising amino acid residues corresponding to valine 377, serine 380, threonine 193, lysine 89 and alanine 163 of SEQ ID NO:1, said method comprising the steps of:

i) comparing the amino acid sequence of the amino acid dehydrogenase with the amino acid sequence of a second amino acid dehydrogenase from the group with E.C number 1.4.1; and

ii) substituting one or more residues selected from the group consisting of valine 377, serine 380, threonine 193, lysine 89 and alanine 163 of SEQ ID NO:1 with the amino acid residues at corresponding positions in the second amino acid dehydrogenase by mutation of a gene encoding first amino acid dehydrogenase.

5,798,235

GENE ENCODING BACTERIAL ACETOACETYL-COA REDUCTASE

Oliver P. Peoples, Arlington, and Anthony J. Sinskey, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 297,667, Aug. 29, 1994, Pat. No. 5,512,669, which is a continuation of Ser. No. 124,570, Sep. 20, 1993, abandoned, which is a continuation of Ser. No. 944,488, Nov. 3, 1992, abandoned, which is a division of Ser. No. 566,535, Aug. 13, 1990, Pat. No. 5,229,279, which is a continuation of Ser. No. 67,695, Jun. 29, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 476,638

Int. Cl.[6] C12P 7/62

U.S. Cl. 435—135 15 Claims

1. A system for synthesizing biopolymers having polyester backbones comprising a bacteria expressing at least one isolated structural gene encoding an enzyme selected from the group consisting of beta-ketothiolases, acetoacetyl-CoA reductases, and polyhydroxybutyrate synthases, wherein the bacteria is able to synthesize biopolymer incorporating D-3-OH-butyryl-S-CoA and at least one other comonomer.

5,798,236

SYNTHESIS OF QUINIC ACID FROM GLUCOSE

John W. Frost; Karen M. Draths, both of Lafayette, and Timothy L. Ward, Delphi, all of Ind., assignors to Genencor International, Inc., Rochester, N.Y.

Filed Sep. 30, 1992, Ser. No. 954,623

Int. Cl.[6] C12P 7/40

U.S. Cl. 435—136 26 Claims

1. A method for the production of quinic acid and derivatives thereof, including benzoquinone and hydroquinone, the method comprising:

a) selecting a host cell selected from the species *Escherichia coli*;

b) blocking in a pathway of the host cell the conversion of dehydroquinate to dehydroshikimate;

c) introducing into the host cell the ability to convert dehydroquinate to quinic acid in the host cell by introducing a gene coding for quinate dehydrogenase from Klebsiella to the host cell;

d) increasing the flow of carbon from a renewable carbon source into the pathway of the host cell; and

e) culturing the host cell in the presence of the renewable carbon source.

5,798,237

RECOMBINANT LACTOBACILLUS FOR FERMENTATION OF XYLOSE TO LACTIC ACID AND LACTATE

Stephen K. Picataggio, Golden; Min Zhang, Lakewood; Mary Ann Franden, Littleton; James D. Mc Millan, Boulder, and Mark Finkelstein, Fort Collins, all of Colo., assignors to Midwest Research Institute, Kansas City, Mich.

Filed Oct. 10, 1995, Ser. No. 541,632

Int. Cl.[6] C12P 7/56; C12N 1/20;15/00;1/00

U.S. Cl. 435—139 12 Claims

1. A homofermentative microorganism Lactobacillus MONT4 containing exogenous genes encoding xylose isomerase and xylukokinase which functions with transaldolase and transketolase enzymes in the pentose phosphate pathway for homofermentating xylose to lactic acid, wherein the microorganism homofermentates xylose to lactic acid in high yields of 94% of maximum yield based upon an amount of consumed sugar and wherein said microorganism without said exogenous genes being incapable of homofermentating said xylose to lactic acid.

5,798,238

METHOD OF INACTIVATION OF VIRAL AND BACTERIAL BLOOD CONTAMINANTS WITH QUINOLINES AS PHOTOSENSITIZER

Raymond P. Goodrich, Jr., Pasadena, and Sang Chul Park, Arcadia, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

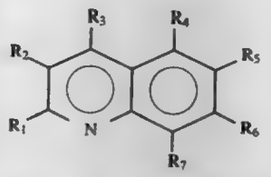
Continuation-in-part of Ser. No. 343,680, Nov. 22, 1994, which is a continuation-in-part of Ser. No. 311,125, Sep. 22, 1994, Pat. No. 5,516,629, which is a continuation-in-part of Ser. No. 165,305, Dec. 10, 1993, Pat. No. 5,587,490, which is a continuation-in-part of Ser. No. 47,749, Apr. 14, 1993, which is a continuation-in-part of Ser. No. 685,931, Apr. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 656,254, Feb. 15, 1991, abandoned, and a continuation-in-part of Ser. No. 632,277, Dec. 20, 1990, abandoned, and a continuation-in-part of Ser. No. 510,234, Apr. 16, 1990, abandoned, said Ser. No. 311,125 is a continuation-in-part of Ser. No. 91,674, Jul. 13, 1993, Pat. No. 5,418,130, which is a continuation-in-part of Ser. No. 47,749, Apr. 14, 1993. This application Jun. 7, 1995, Ser. No. 474,459

Int. Cl.[6] C12N 13/00; A01N 1/02

U.S. Cl. 435—173.3 4 Claims

1. A method of inactivating viral, bacterial and parasitic contamination from a composition comprising at least one component selected from the group consisting of blood, a blood component, a cell culture, and a component of a cell culture, comprising the steps of:

a) mixing said composition with a photosensitizer, wherein said photosensitizer inactivates said viral, bacterial or parasitic contaminant upon absorption of electromagnetic radiation, wherein said photosensitizer is a quinoline having the structure:



wherein R_1–R_7 are independently selected from the group consisting of halo, H, linear or branched or substituted alkyl (C_1–C_{15}), alkoxy (C_1–C_{15}), alkenyl (C_1–C_{15}), alkynyl (C_1–C_{15}), aryl, amino, thio, thioester, metal and a silicone based substituent; and

b) exposing said composition and said photosensitizer to electromagnetic radiation of sufficient wavelength and intensity for a period of time sufficient to activate said photosensitizer whereby the activation of said photosensitizer reduces said contamination in said composition.

5,798,239

GLYCOSYLATION VARIANTS OF IDURONATE 2-SULFATASE

Peter J. Wilson, North Adelaide; Charles Phillip Morris, Plympton; Donald Stewart Anson, Thebarton; Teresa Occhiodoro, Prospect; Julie Bielicki, Burnside; Peter Roy Clements, West Lakes, and John Joseph Hopwood, Stonyfell, all of Australia, assignors to Women's and Children's Hospital, North Adelaide, Australia

Division of Ser. No. 345,212, Nov. 28, 1994, which is a continuation of Ser. No. 991,973, Dec. 17, 1992, which is a continuation-in-part of Ser. No. 790,362, Nov. 21, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 484,494

Int. Cl.[6] A61K 38/46;38/47; C12N 9/00

U.S. Cl. 435—183 5 Claims

1. A method for producing a glycosylated iduronate-2-sulfatase enzyme which comprises culturing a host cell containing a nucleic acid encoding the enzymatically active iduronate-2-sulfatase polypeptide wherein said host cell glycosylates said polypeptide to

a greater degree than a native iduronate-2-sulfatase polypeptide expressed by a natural human liver cell.

5,798,240

RECOMBINANT MYCOBACTERIAL METHIONYL-TRNA SYNTHETASE GENES AND METHODS OF USE THEREFORE

Susan A. Martinis, Newton; Mandana Sassanfar, Dedham, both of Mass.; Sunghoon Kim, Seoul, Rep. of Korea; Sang Ho Lee, Boston, and Paul R. Schimmel, Cambridge, both of Mass., assignors to Cubist Pharmaceuticals, Inc., Cambridge, Mass.

Division of Ser. No. 305,766, Sep. 13, 1994, abandoned. This application Jan. 11, 1996, Ser. No. 584,226

Int. Cl.[6] C12N *9/00;15/00;1/20;* **C07H** *21/04*

U.S. Cl. 435—183 **62 Claims**

1. An isolated nucleic acid which encodes an aminoacyl-tRNA synthetase of a species of the genus Mycobacterium, wherein said aminoacyl-tRNA synthetase is selected from the group consisting of methionyl-tRNA synthetase, isoleucyl-tRNA synthetase, leucyl-tRNA synthetase, valyl-tRNA synthetase and cysteinyl-tRNA synthetase.

5,798,241

ATP-DIPHOSPHOHYDROLASES

Adrien R. Beaudoin, Rock Forest, and Jean Sevigny, East Angus, both of Canada, assignors to Universite de Sherbrooke, Sherbrooke, Canada

Continuation of Ser. No. 419,204, Apr. 10, 1995, abandoned. This application Dec. 31, 1996, Ser. No. 777,859

Int. Cl.[6] C12N *11/00;9/96;9/14*

U.S. Cl. 435—188 **12 Claims**

1. A mammalian ATP diphosphohydrolase (ATPDase) isolated and purified from bovine aorta characterized by the following physico-chemical properties:

a catalytic unit having a molecular weight on denaturing polyacrylamide gel electrophoresis of about 78 KDa; and

a deglycosylated form of said catalytic unit having a molecular weight on SDS-PAGE of about 56 KDa.

5,798,242

CHOLESTEROL OXIDASE

Kinya Fujishiro, Shizuoka-ken, and Takayuki Uwajima, Machida, both of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 460,114, Jun. 2, 1995, Pat. No. 5,665,560, which is a division of Ser. No. 262,338, Jun. 17, 1994, Pat. No. 5,602,017, which is a continuation of Ser. No. 14,531, Feb. 8, 1993, Pat. No. 5,371,005, which is a continuation of Ser. No. 798,660, Nov. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 683,539, Apr. 10, 1991, abandoned. This application Dec. 5, 1996, Ser. No. 759,579

Claims priority, application Japan, Apr. 10, 1990, 2-94296

Int. Cl.[6] C12N *9/04*

U.S. Cl. 435—190 **2 Claims**

1. An isolated cholesterol oxidase which is derived from *Brevibacterium sterolicum* and has the following physicochemical properties:

(a) activity which catalyzes the reaction of oxidizing cholesterol in the presence of oxygen to form hydrogen peroxide and 4-cholesten-3-one;

(b) an isoelectric point at a pH of 4.7;

(c) substrate specificity so that the enzyme acts on cholesterol, β-sitosterol, stigmasterol, pregnenolone, dehydroisoandrosterone and estradiol but does not act on vitamin D_3, cholic acid, androsterone, cholesterol linoleate or lanosterol;

(d) a working pH in a range of 5.0 to 7.5, and the enzyme is stabile in a pH range of 5.3 to 7.5 when heated at 50° C. for 60 minutes;

(e) optimum temperature of about 50° C.;

(f) the enzyme is inactivated at a pH of 10.0 or more or at a pH of 4.0 or less when heated at 50° C. for an hour and the enzyme is also inactivated by about 83% when heated at a pH of 7.0 and a temperature of 60° C. for an hour;

(g) the enzyme is inhibited by p-chloromercury benzenesulfonate, silver nitrate and o-hydroxyquinoline and in the presence of bovine serum albumin, resistance to heat and stability during storage are improved;

(h) molecular weight of about 43,000 (gel filtration); and

(i) 3.0×10^{-5}M of Michaelis' constant to cholesterol, when Michaelis' constant is determined in a 0.5 mM potassium sodium phosphate buffer (pH 6.6) at 37° C. for 10 minutes.

5,798,243

BACTERIAL PEPTIDE METHIONINE SULFOXIDE REDUCTASE, AND ADHESION-ASSOCIATED PROTEIN, AND ANTIBIOTIC THERAPIES BASED THEREON

Elaine Tuomanen; H. Robert Masure, and Theresa M. Wizemann, all of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Division of Ser. No. 642,247, May 1, 1996. This application Aug. 20, 1997, Ser. No. 915,003

Int. Cl.[6] C12N *9/02;* **C07K** *1/00;* **C07H** *21/04;* **C12P** *21/06*

U.S. Cl. 435—189 **2 Claims**

1. An isolated polypeptide having the amino acid sequence of SEQ ID NO:2, or functionally active fragment thereof.

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SIAα 2,3GALβ 1,4G1CNAC α 2,8-SIALYLTRANSFERASE

Shuichi Tsuji; Yukiko Yoshida; Naoya Kojima; Nobuyuki Kurosawa, and Toshiro Hamamoto, all of Saitama, Japan, assignors to The Institute of Physical and Chemical Research, Saitama, Japan

Filed Apr. 3, 1996, Ser. No. 626,994

Claims priority, application Japan, Apr. 3, 1995, 7-77469

Int. Cl.[6] C12N *9/10;15/54*

U.S. Cl. 435—193 **6 Claims**

1. Siaα2,3Galβ1.4GlcNAcα2,8-sialyitransferase having the amino acid sequence: Met Leu Ser Val Ala Leu Leu Ile Leu Ser Leu Ile Ser Tyr Val Ser Leu Lys Lys Glu Asn Ile Phe Thr Thr Pro Lys Tyr Ala Ser Pro Gly Ala Pro Arg Met Tyr Met Phe His Ala Gly Phe Arg Ser Gln Phe Ala Leu Lys Phe Leu Asp Gln Ser Phe Val Pro Ile Thr Asn Ser Leu Thr His Glu Leu Gln Gln Lys Pro Ser Lys Trp Thr Phe Asn Arg Thr Ala Phe Leu His Gln Arg Gln Glu Ile Leu Gln His Val Asp Val Ile Lys Asn Phe Ser Leu Thr Lys Ser Ser Val Arg Ile Gly Gln Leu Met His Tyr Asp Tyr Ser Ser His Lys Tyr Val Phe Ser Ile Ser Asn Asn Phe Arg Ser Leu Leu Pro Asp Val Ser Pro Ile Met Asn Lys Arg Tyr Asn Val Cys Ala Val Val Gly Asn Ser Gly Ile Leu Thr Gly Ser Gln Cys Gly Gln Glu Ile Asp Lys Ser Asp Phe Val Ser Arg Cys Asn Phe Ala Pro Thr Glu Ala Phe His Lys Asp Val Gly Arg Lys Thr Asn Leu Thr Thr Phe Asn Pro Ser Ile Leu Glu Lys Tyr Tyr Asn Asn Leu Leu Thr Ile Gln Asp Arg Asn Asn Phe Phe Leu Ser Leu Lys Lys Leu Asp Gly Ala Ile Leu Trp Ile Pro Ala Phe Phe Phe His Thr Ser Ala Thr Val Thr Arg Thr Leu Val Asp Phe Phe Val Glu His Arg Gly Gln Leu Lys Val Gln Leu Ala Trp Pro Gly Asn Ile Met Gln His Val Asn Arg Tyr Trp Lys Asn Lys His Leu Ser Pro Lys Arg Leu Ser Thr Gly Ile Leu Met Tyr Thr Leu Ala Ser Ala Ile Cys Glu Glu Ile His Leu Tyr Gly Phe Trp Pro Phe Gly Phe Asp Pro Asn Thr Arg Gly Asp Leu Pro Tyr His Tyr Tyr Asp Lys Lys Gly Thr Lys Phe Thr Thr Lys Trp GLn Glu Ser His Gln Leu Pro Ala Glu Phe Gln Leu Leu Tyr Arg Met His Gly Glu Gly Leu Thr Lys Leu Thr Leu Ser His Cys Ala (SEQ ID NO. 1).

5,798,245

TIA-1 BINDING PROTEINS AND ISOLATED COMPLEMENTARY DNA ENCODING THE SAME

Paul J. Anderson, Belmont, and Qingsheng Tian, Cambridge, both of Mass., assignors to Dana-Farber Cancer Institute, Boston, Mass.

Continuation-in-part of Ser. No. 133,530, Oct. 7, 1993, abandoned. This application Oct. 6, 1994, Ser. No. 318,947

Int. Cl.[6] C12N *9/12;9/00;* **C07K** *14/46*

U.S. Cl. 435—194 **2 Claims**

1. A substantially pure polypeptide that has an amino acid sequence that is SEQ ID NO:2.

5,798,246

CYCLIC NUCLEOTIDE PHOSPHODIESTERASE

Janice Au-Young, Berkeley; Benjamin Graeme Cocks, Palo Alto; Roger Coleman, Mountain View, and Jeffrey J. Seilhamer, Los Altos Hills, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Mar. 25, 1996, Ser. No. 624,663

Int. Cl.[6] C12N *9/18;15/12;15/52;15/85*

U.S. Cl. 435—196 **7 Claims**

1. A purified polynucleotide consisting of a nucleic acid sequence encoding the CN PDE8 polypeptide having the sequence shown in SEQ ID NO:2.

5,798,247

ORGANIC-CHEMICAL COMPOUND WITH ICE-INHIBITORY ACTION

Hans-Peter Albrecht, Gorxheimertal; Hans-Joachim Böhm, Limburgerhof, both of Germany; Kenneth Dale Brady, Worcester, Mass.; Peter Eckard, Weinheim; Kurt Ritter, Heidelberg, both of Germany; Robert Vincent Talanian, Needham, Mass., and Nigel Walker, Dossenheim, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Division of Ser. No. 498,972, Jul. 6, 1995, abandoned, which is a division of Ser. No. 239,324, May 6, 1994, abandoned. This application Mar. 20, 1997, Ser. No. 821,605

Int. Cl.[6] C12N *9/48;* **A61K** *38/00*

U.S. Cl. 435—212 **9 Claims**

1. A method of identifying an interleukin converting enzyme inhibitor by determining binding interactions between an organic compound and twenty two binding sites of a binding cavity of an interleukin converting enzyme inhibitor;

said binding sites being defined by the following coordinates in a right-handed cartesian coordinate system:

No. of the binding site	Coordinates of the binding site (in Ångström) X	Y	Z
1	19.5 ± 0.2	1.2 ± 0.2	0.6 ± 0.2
2	16.1 ± 0.2	6.2 ± 0.2	3.9 ± 0.2
3	14.2 ± 0.2	6.0 ± 0.2	1.9 ± 0.2
4	11.2 ± 0.2	2.4 ± 0.2	3.5 ± 0.2
5	6.2 ± 0.2	3.5 ± 0.2	4.0 ± 0.2
6	4.5 ± 0.2	7.4 ± 0.2	7.3 ± 0.2
7	8.8 ± 0.2	8.5 ± 0.2	8.0 ± 0.2
8	10.6 ± 0.2	10.2 ± 0.2	8.0 ± 0.2
9	2.9 ± 0.2	5.3 ± 0.2	7.9 ± 0.2
10	12.6 ± 0.2	9.0 ± 0.2	3.9 ± 0.2
11	5.1 ± 0.2	1.7 ± 0.2	4.8 ± 0.2
12	7.2 ± 0.2	4.5 ± 0.2	0.5 ± 0.2
13	5.9 ± 0.2	6.3 ± 0.2	0.3 ± 0.2
14	6.8 ± 0.2	10.1 ± 0.2	3.6 ± 0.2
15	3.8 ± 0.2	9.0 ± 0.2	2.3 ± 0.2
16	12.2 ± 0.2	7.3 ± 0.2	6.9 ± 0.2
17	16.8 ± 0.2	3.6 ± 0.2	0.0 ± 0.2

-continued

No. of the binding site		Coordinates of the binding site (in Ångström) X	Y	Z
18	from	13.2 ± 0.2	7.7 ± 0.2	10.1 ± 0.2
	to	7.5 ± 0.2	7.4 ± 0.2	12.4 ± 0.2
19	from	19.2 ± 0.2	4.8 ± 0.2	3.2 ± 0.2
	to	15.1 ± 0.2	0.0 ± 0.2	1.0 ± 0.2
20		0.0 ± 0.2	1.0 ± 0.2	7.1 ± 0.2
21		8.9 ± 0.2	7.1 ± 0.2	4.5 ± 0.2
22		18.9 ± 0.2	4.7 ± 0.2	6.4 ± 0.2

said binding sites having the following binding site properties:

No. of the binding site	Binding site property
1	HD or II
2	HA
3	HD
4	HD or II
5	HD or II
6	HD
7	HA
8	HD
9	HA
10	HD
11	HD or II
12	HD or II
13	HD or II
14	HA or HD
15	HA or HD
16	covalent
17	covalent
18	HI
19	HI
20	HI
21	HI
22	HI

said method comprising:

1) generating the binding cavity defined by the binding sites on a computer screen;

2) generating compounds with their spacial structure; and

3) testing to see whether the compounds bind to at least three of the stated binding-sites;

wherein the interleukin converting enzyme enters into an interaction with binding sites in the binding cavity.

5,798,248

RECOMBINANT MUTANT THROMBIN RECEPTOR AND RELATED PHARMACEUTICALS

Shaun R. Coughlin, San Francisco, and Robert M. Scarborough, Belmont, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 789,184, Nov. 7, 1991, which is a continuation-in-part of Ser. No. 657,769, Feb. 19, 1991, Pat. No. 5,256,766. This application Jun. 7, 1995, Ser. No. 485,886

Int. Cl.[6] C12N *9/74;1/20;* **C07H** *21/04*

U.S. Cl. 435—214 **6 Claims**

1. Proteolytically inactive thrombin mutated at positions 43 and/or 99 and/or 205, wherein said mutant thrombin is an antagonist of thrombin receptor.

5,798,249

HUMAN PROTEIN DISULFIDE ISOMERASE

Scott Michael Braxton, San Mateo, and Lynn E. Murry, Portola Valley, both of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 649,740, May 15, 1996. This application May 16, 1996, Ser. No. 650,275

Int. Cl.[6] C12N *9/90*; C07H *21/02;21/04*; C12P *21/06*

U.S. Cl. 435—233 5 Claims

1. A purified polynucleotide encoding a polypeptide with the amino acid sequence shown in SEQ ID NO:2.

5,798,250

FACILITATING HEPATITUS VIRUS INFECTION IN CELL CULTURE USING A MEMBRANE STRESSOR

Füsûn Zeytinoglu, Del Mar, Calif., assignor to ICN Pharmaceuticals, Inc.

Filed Apr. 15, 1996, Ser. No. 632,636

Int. Cl.[6] C12N *7/00*

U.S. Cl. 435—235.1 4 Claims

1. A method of infecting cells with Hepatitis C virus comprising:

providing cells in a culture medium;

exposing the cells to the virus; and

artificially exposing the cells to a sufficient amount of membrane stressor comprising at least one of DOTAP (N-[1-(2,3-Dioeoylocy)propyl}-N,N,N-trimethylammonium methylsulfate and Transfectam™ (dioctadecylamidoglcyl spermine) to facilitate infection.

5,798,251

ANTIBODY AND ANTIBODY DERIVATIVE IMMUNOREAGENTS REACTIVE WITH A CONSERVED EPITOPE OF HUMAN IMMUNODEFICIENCY VIRUS TYPE 1 (HIV-1) GP 120

James E. Robinson, New Orleans, La., assignor to Cedars-Sinai Medical Center, Los Angeles, Calif., and Louisiana State University and Agricultural and Mechanical College, New Orleans, La.

Continuation-in-part of Ser. No. 530,850, May 29, 1990, abandoned. This application May 16, 1991, Ser. No. 701,129

Int. Cl.[6] C12N *5/12*; C07K *16/10*

U.S. Cl. 435—240.27 2 Claims

1. A cell line deposited with the ATCC under Accession No. CRL10464 and designed N70-1.5e.

5,798,252

ENCAPSULATED PRODUCT CONTAINING ESSENTIAL OIL AND DYED MICROBIAL CELL WALL MATERIAL

John Charles Hobson, Staffordshire, and Roderick Norman Greenshields, Swansea, both of United Kingdom, assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed May 14, 1996, Ser. No. 647,489

Claims priority, application United Kingdom, May 17, 1995, 9509937

Int. Cl.[6] C12N *1/00;1/16;1/18*; A23L *1/27*

U.S. Cl. 435—243 18 Claims

1. Encapsulated product comprising a shell of microbial cell wall-derived material and an essential oil used in flavors and fragrances encapsulated within the shell, wherein said shell of microbial cell wall derived material is dyed with a dye which is adsorbed on the surface of said shell of microbial cell wall-derived material to give a visible color to said shell before said shell is ruptured.

5,798,253

METHOD OF CULTURING MICRO-ORGANISMS UNDER A MUTAGENIC INFLUENCE

Peter Bartholmes, Witten; Michael Kaufmann, Dortmund, and Thomas Schwarz, Leichlingen, all of Germany, assignors to Bitop Gesellschaft für Biotechnische Optimierung mbH, Witten, Germany

PCT No. PCT/EP95/00752, § 371 Date Oct. 29, 1996, § 102(e) Date Oct. 29, 1996, PCT Pub. No. WO95/23845, PCT Pub. Date Sep. 8, 1995

PCT Filed Mar. 1, 1995, Ser. No. 704,749

Claims priority, application Germany, Mar. 2, 1994, 44 06 343.3; Mar. 1, 1995, 195 07 103.4

Int. Cl.[6] C12N *1/00;1/36;1/20*

U.S. Cl. 435—243 8 Claims

1. Method of culturing micro-organisms suitable for the degradation of a chemical compound by which existing micro-organisms are cultured in a growth-promoting nutritive solution, subjected to a mutagenic acting influence selected from the group consisting of a chemically acting influence, a physically acting influence, and chemically and physically mutagenic acting influences, stabilized under growth-promoting conditions, and selected under the influence of the chemical compound under growth-limiting conditions, in which said selected micro-organisms are returned to start of the process, comprising the steps of:

(a) carrying out the cultivation, mutagenic treatment and stabilization simultaneously in a mutation fermenter containing a nutrient-rich medium;

(b) having selection take place in a selection fermenter containing a low-nutrient medium enriched with the chemical compound;

(c) withdrawing biomass in small amounts from the mutation fermenter, and removing from the biomass the nutrient-rich medium of the mutation fermenter and transferring the biomass into the selection fermenter;

(d) withdrawing biomass in small amounts from the selection fermenter, and removing from the biomass the low-nutrient medium of the selection fermenter and transferring the biomass into the mutation fermenter;

(e) said method entirely taking place continuously by way of a repeating circulation in alternating selection phase and mutation phase; and

(f) providing computer-controlled control circuits associated with the mutation fermenter, and with the selection fermenter for adjusting the fermentation parameters in both fermenters independently of one another.

5,798,254

GAS DRIVEN FERMENTATION METHOD USING TWO OXYGEN-CONTAINING GASES

Alan Tat Yan Cheng, Livingston, N.J., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Sep. 13, 1996, Ser. No. 713,328

Int. Cl.[6] C12N *1/00*

U.S. Cl. 435—243 4 Claims

1. A method for carrying out fermentation comprising:

(A) injecting a first oxygen-containing gas into the lower portion of a vessel containing a broth comprising a constituent capable of undergoing fermentation;

(B) passing said first oxygen-containing gas in a set of first bubbles upwardly through said vessel in a heterogeneous flow having a superficial velocity greater than 0.03 m/sec causing an upward flow of said broth;

(C) injecting a second oxygen-containing gas into the lower portion of said vessel and passing said second oxygen-containing gas in a set of second bubbles upwardly through said vessel in a homogeneous flow having a superficial velocity less than 0.05 m/sec; and

(D) utilizing oxygen from both the first oxygen-containing gas and the second oxygen-containing gas to carry out fermentation of said constituent.

5,798,255

BEAUVERICIN DETOXIFICATION COMPOSITIONS AND METHODS

Jon Duvick, and Tracy A. Rood, both of Des Moines, Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Nov. 22, 1996, Ser. No. 753,287
Int. Cl.[6] C12N *1/12;1/20*
U.S. Cl. 435—252.1 4 Claims

1. An isolated microorganism which is deposited under ATCC accession number 55850.

5,798,256

CATABOLITE NON-REPRESSED SUBSTRATE-LIMITED YEAST STRAINS

David J. Domingues, Plymouth, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Division of Ser. No. 335,685, Nov. 8, 1994, Pat. No. 5,508,047, which is a continuation-in-part of Ser. No. 144,236, Oct. 27, 1993, Pat. No. 5,494,686, and Ser. No. 87,616, Jul. 2, 1993, Pat. No. 5,492,702, which is a continuation-in-part of Ser. No. 26,927, Mar. 5, 1993, abandoned, said Ser. No. 144,236 is a continuation-in-part of Ser. No. 829,453, Jan. 31, 1992, abandoned, which is a continuation-in-part of Ser. No. 732,081, Jul. 18, 1991, abandoned. This application Apr. 12, 1996, Ser. No. 631,529
Int. Cl.[6] C12N *1/18*
U.S. Cl. 435—255.2 2 Claims

1. An isolated yeast cell of the genus species *Saccharomyces cerevisiae* capable of growth in a mixture having a concentration of ethanol of at least 6% by weight selected from the group consisting of ATCC strains 74306, 74307, 74308, 74309, 74310 and mixtures thereof.

5,798,257

NUCLEIC ACID ENCODING HUMAN MTS-1 PROTEIN

Sayeeda Zain, Pittsford, N.Y., and Eugene Lukanidin, Copenhagen, Denmark, assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 981,455, Nov. 25, 1992, abandoned, which is a continuation of Ser. No. 550,600, Jul. 9, 1990, abandoned. This application Jan. 31, 1994, Ser. No. 190,560
Int. Cl.[6] C12N *15/12;15/81;15/85*
U.S. Cl. 435—252.3 20 Claims

1. An isolated nucleic acid encoding a human mts-1 protein.

5,798,258

CART PROTEIN AND DNA ENCODING THEREFOR

James O. Douglass, Thousand Oaks, Calif., assignor to Oregon Health Sciences University, Portland, Oreg.

Filed May 4, 1995, Ser. No. 434,705
Int. Cl.[6] C12N *1/20;15/00;* C07H *17/00;* C07K *14/00*
U.S. Cl. 435—252.3 10 Claims

1. A purified and isolated CART nucleic acid comprising a nucleotide sequence selected from the group consisting of:

a) a nucleotide sequence as shown in FIG. 1 (SEQ ID No.:3), FIG. 2 (SEQ ID No.:7), or FIG. 3 (SEQ ID No.:9);

b) a nucleotide sequence which hybridizes under stringent conditions to a nucleotide sequence defined in (a) wherein stringent hybridization conditions comprise incubation at 42° C. in hybridization buffer comprising 400 mM sodium phosphate (pH 7.0), and 50% formamide; and

c) a nucleotide sequence encoding the same polypeptide as encoded by the nucleotide sequences of (a) or (b) by means of degenerate codons.

5,798,259

GENE CODING FOR EICOSAPENTAENOIC ACID SYNTHESIZING ENZYMES AND PROCESS FOR PRODUCTION OF EICOSAPENTAENOIC ACID

Kazunaga Yazawa; Akiko Yamada; Seishi Kato, all of Sagamihara, and Kiyosi Kondo, Yamato, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Continuation-in-part of Ser. No. 375,709, Jan. 20, 1995, Pat. No. 5,683,898, which is a continuation-in-part of Ser. No. 178,251, Jan. 10, 1994, abandoned. This application Nov. 20, 1996, Ser. No. 752,929
Claims priority, application Japan, May 15, 1992, 4-147945
Int. Cl.[6] C12N *15/52;1/21;* C12P *7/64*
U.S. Cl. 435—252.3 14 Claims

1. An isolated DNA comprising nucleotides 5661 to 34631 in SEQ ID NO: 1, coding for a group of eicosapentaenoic acid synthesis enzymes.

5,798,260

ESCHERICHIA COLI O157:H7 EPITHELIAL ADHESIN

Phillip I. Tarr, Seattle; Sima S. Bilge, Bellevue, both of Wash.; Thomas E. Besser, Moscow, Id., and James C. Vary, Jr., Seattle, Wash., assignors to Children's Hospital and Medical Center; University of Washington, both of Seattle, and Washington State University Research Foundation, Pullman, all of Wash.

PCT No. PCT/US95/06994, § 371 Date Mar. 26, 1996, § 102(e) Date Mar. 26, 1996, PCT Pub. No. WO96/00233, PCT Pub. Date Jan. 4, 1996
Continuation-in-part of Ser. No. 265,714, Jun. 24, 1994, abandoned. This PCT application Jun. 7, 1995, Ser. No. 765,081
Int. Cl.[6] C12N *1/21;15/63;* C07H *21/04*
U.S. Cl. 435—252.3 3 Claims

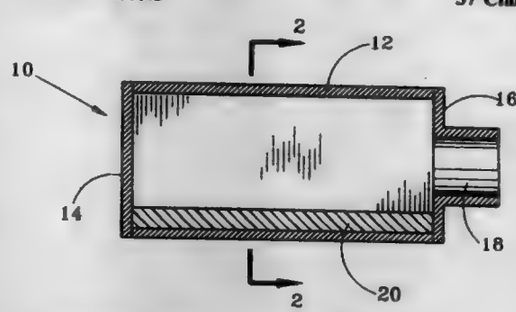
1. An isolated nucleic acid molecule comprising the nucleotide sequence of SEQ ID NO:4.

5,798,261

DISTRIBUTED PORE CHEMISTRY IN POROUS ORGANIC POLYMERS

Steven L. Koontz, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 857,901, Mar. 26, 1992, Pat. No. 5,369,012, and a continuation-in-part of Ser. No. 997,265, Feb. 23, 1993, Pat. No. 5,332,551, which is a division of Ser. No. 894,505, Jun. 2, 1992, Pat. No. 5,215,790, which is a division of Ser. No. 429,739, Oct. 31, 1989, Pat. No. 5,141,806. This application Jun. 3, 1994, Ser. No. 254,361
Int. Cl.[6] C12M *1/12;* C12N *11/08*
U.S. Cl. 435—283.1 37 Claims



1. A distributed pore chemistry solid, comprising:

an exterior surface;

an interstitial surface comprising interconnected pores having an effective pore diameter up to about 2000 microns formed in an organic polymer opening to the exterior surface; and

a distributed chemistry of the pores including adjacent hydrophobic and hydrophilic regions;

wherein the pores in the regions are interconnected at a boundary separating the adjacent regions and the adjacent regions have about the same void fraction;

wherein the hydrophilic region is essentially free of leachable surfactant.

9. The distributed pore chemistry solid of claim 1, prepared by the method comprising the steps of:

exposing the exterior surface to an oxidizing or reducing gas, containing an oxidizing or reducing species selected from atomic oxygen, hydroxyl and amino radicals, at conditions and for a time effective to hydrophilicize the interstitial surface of said polymer; and

recovering the polymer having a hydrophilic interstitial surface to a depth spaced from said exterior surface.

5,798,262

METHOD FOR CHROMOSOMES CLASSIFICATION

Yuval Garini, Koranit; Nir Katzir, Elah; David Wine, and Dario Cabib, both of Timrat, all of Israel, assignors to Applied Spectral Imaging Ltd., Migdal Haemek, Israel

Continuation-in-part of Ser. No. 635,820, Apr. 22, 1996, which is a continuation-in-part of Ser. No. 575,191, Dec. 20, 1995, which is a continuation-in-part of Ser. No. 571,047, Dec. 12, 1995, which is a continuation-in-part of Ser. No. 392,019, Feb. 21, 1995, Pat. No. 5,539,517, which is a continuation-in-part of Ser. No. 107,673, Aug. 18, 1993, abandoned. This application Apr. 18, 1997, Ser. No. 844,516

Claims priority, application Israel, Feb. 22, 1991, 97328

Int. Cl.[6] C12M *1/34;* **G02B** *21/00;* **G06F** *15/00*

U.S. Cl. 435—287.2 **6 Claims**

1. An apparatus for displaying chromosomes, the apparatus comprising:

(a) a multi-band collection device being supplemented with algorithms for providing a visual presentation device with an image of all chromosomes or portions of chromosomes of a cell, each of said chromosomes or portions of chromosomes being painted with a different fluorophore or a combination of fluorophores, said image presenting said chromosomes or portions of chromosomes in different distinctive colors, wherein each of said chromosomes or portions of chromosomes is attributed one of said different distinctive colors; and

(b) a visual presentation device for displaying said chromosomes or portions of chromosomes.

5,798,263

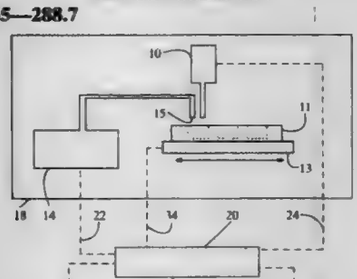
APPARATUS FOR QUANTIFYING DUAL-LUMINESCENT REPORTER ASSAYS

Keith V. Wood, Madison, and Bruce A. Sherf, Waunakee, both of Wis., assignors to Promega Corporation, Madison, Wis.

Filed Sep. 5, 1996, Ser. No. 708,533

Int. Cl.[6] C12M *1/34*

U.S. Cl. 435—288.7 **13 Claims**



1. An apparatus for quantifying integrated photon-generating assays which utilize two distinct photon-generating reactions within a non-compartmentalized sample container, the apparatus comprising:

sample holding means dimensioned and configured to releasibly grip a non-compartmentalized sample container workpiece;

injecting means for sequentially injecting distinct first and then second reagents into the sample container workpiece at a user-defined time interval greater than zero;

a single photon measuring means for measuring photons emanating from the sample container workpiece and generating signals proportional to the measured photons, the photon measuring means dimensioned and configured to sequentially generate a first corresponding signal subsequent to injection of the first reagent into the sample container workpiece and a second corresponding signal subsequent to injection of the second reagent into the sample container workpiece;

signal storage and retrieval means for storing and retrieving the first and second signals, the signal storage and retrieval means operationally linked to the photon measuring means;

programmable control means operationally linked to and dimensioned and configured to control operation of the injecting means, the photon measuring means, and the signal storage and retrieval means, the programmable control means further dimensioned and configured to perform mathematical manipulations on the first and second signals generated by the photon measuring means; and

display means to display the first and second signals and any mathematical manipulations performed thereon.

5,798,264

ISOLATED NUCLEIC ACID MOLECULES WHICH ENCODE RENAL CANCER SPECIFIC ANTIGENS, AND USES THEREOF

Michael Pfreundschuh, Homburg/Saar, Germany, assignor to Ludwig Institute For Cancer Research, New York, N.Y.

Division of Ser. No. 479,328, Jun. 7, 1995, Pat. No. 5,698,396. This application Dec. 6, 1996, Ser. No. 761,119

Int. Cl.[6] C12N *15/63;15/85;15/80;* **C07H** *21/04*

U.S. Cl. 435—326 **8 Claims**

1. An isolated nucleic acid molecule fragment which encodes the protein encoded by the isolated nucleic acid molecule having the nucleotide sequence set forth in SEQ ID NO: 1.

5,798,265

PSEUDORABIES VIRUS (PRV) POLYNUCLEOTIDES AND THEIR USE FOR PREPARING VIRUS-RESISTANT EUKARYOTIC CELLS

Wolfgang Springer; Jörg Baumgarten, both of Wuppertal; Axel Kretschmer, Bergisch Gladbach; Heinz Kölbl, Cologne; Antonius Löbberding, Wuppertal; Walter Strube, Cologne, and Peter Thein, Oberzeitlbach, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 29,202, Mar. 10, 1993, abandoned. This application Nov. 22, 1994, Ser. No. 343,281

Claims priority, application Germany, Mar. 13, 1992, 42 08 107.6

Int. Cl.[6] C12N *5/10;15/86;* **C07H** *21/02;21/04*

U.S. Cl. 435—364 **25 Claims**

1. A DNA molecule selected from the group consisting of:

(i) DNA encoding RNA that is complementary to mRNA transcribed from nucleotides 879-1058 of the gII region of pseudorabies virus; and

(ii) a continuous DNA fragment of (i) of about 15 to about 100 nucleotides in length.

5,798,266

METHODS AND KITS FOR OBTAINING AND ASSAYING MAMMARY FLUID SAMPLES FOR BREAST DISEASES, INCLUDING CANCER

Steven C. Quay, and Debra L. Quay, both of Edmonds, Wash., assignors to K-Quay Enterprises, LLC, Edmonds, Wash.

Filed Aug. 27, 1996, Ser. No. 709,207

Int. Cl.[6] G01N *33/48;33/53;33/567;33/542;* **A61M** *1/06*

U.S. Cl. 436—64 **37 Claims**

1. A non-invasive method for obtaining a biological sample from a mammary organ of a patient, comprising the steps of:

administering to the patient an effective amount of a natural or synthetic oxytocin to stimulate expression of mammary fluid from a nipple of the patient;

applying a breast pump to the nipple; and

collecting a biological sample by exposing the expressed mammary fluid to a solid phase medium removably placed within said breast pump to retain a breast disease marker from the expressed mammary fluid.

5,798,267

METHOD FOR DETERMINING ALCOHOL CONSUMPTION RATES

James W. Harasymiw, W243 S7630 Evergreen Dr., Mukwonago, Wis. 53140

Continuation-in-part of Ser. No. 275,101, Jul. 14, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 481,656

Int. Cl.[6] G01N *33/48;33/72*

U.S. Cl. 436—97 **31 Claims**

1. A method of initially assessing alcohol consumption rates, comprising:

using a blood specimen from a human subject to develop an individual blood constituent panel, said panel having at least ten constituents including a ratio of direct bilirubin concentration to total bilirubin concentration as a constituent;

comparing said individual panel with a reference blood constituent panel to provide categories corresponding to rates of alcohol consumption, said blood reference panel including the ratio of direct bilirubin concentration to total bilirubin concentration as a constituent; and

identifying the category of consumption rate for said subject indicated by said comparison.

5,798,268

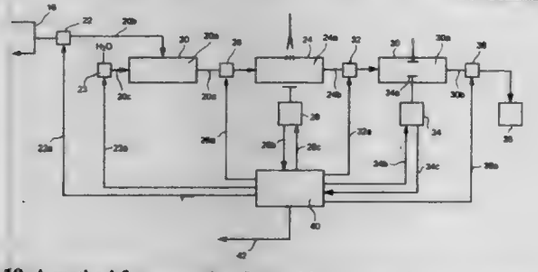
MEASURING FREE ACID CONCENTRATION IN SOLUTION

Richard C. Swider, Toronto, and Steven A. Webster, Peterborough, both of Canada, assignors to Lakefield Research Ltd., Ontario, Canada

Filed Sep. 20, 1996, Ser. No. 717,398

Int. Cl.[6] G01N *33/00*

U.S. Cl. 436—100 **20 Claims**



10. A method for measuring free acid concentration in a solution comprising the steps of:

forming a test sample of said solution,

measuring the concentration of an ionic constituent in solution in said test sample;

measuring conductivity of said test sample; and

calculating the concentration of free acid in said test sample based on said conductivity and the concentration of said ionic constituent in solution;

wherein said step of measuring the concentration of said ionic constituent in solution in said test sample includes the step of measuring the absorption of radiation of a predetermined wavelength by said test sample, said absorption being indicative of the concentration of said ionic constituent in solution;

wherein said step of calculating includes the stop of calculating said concentration of free acid according to the formula:

$$\text{Free Acid Concentration} = C1(K) - C2(K)(A) - C3$$

where

C1, C2 and C3 are constants,

K=conductivity; and

A=absorbance of light at a predetermined wavelength.

5,798,269

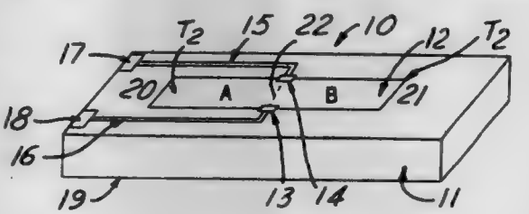
METHOD FOR DETECTING CHANGE IN OXYGEN PARTIAL PRESSURE BASED ON METAL/METAL OXIDE PHASE TRANSFORMATIONS

Eleftherios Miltiadis Logothetis, Birmingham, and Richard E. Soltis, Saline, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Aug. 4, 1997, Ser. No. 905,662

Int. Cl.[6] G01N *27/12*

U.S. Cl. 436—136 **18 Claims**



1. A method for detecting a change of oxygen partial pressure in an ambient atmosphere, said method comprising the steps of:

locating a sensor in contact with an ambient atmosphere containing oxygen, said sensor comprising:

a sensing material present, during active sensing operation, in at least two phases defining a boundary line therebetween, said phases being selected from metal and oxides thereof wherein at least one of the phases is an oxide phase which, when at an elevated temperature and exposed to a gas containing a changing partial pressure of oxygen, is capable of changing from one of the metal or metal oxide phases to another such oxide phase and vice versa and associated therewith a change of a measurable physical property thereof;

maintaining a temperature gradient across said sensing material so as to maintain said material, during active sensing operation, in at least two phases defining a boundary line therebetween generally perpendicular to the longitudinal axis of said temperature gradient, said boundary line traversing longitudinally along said axis in response to changes in the oxygen partial pressure of the ambient atmosphere;

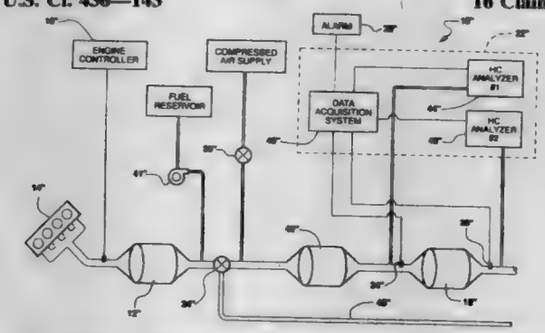
furnishing an output signal in response to traversal of said boundary line across a fixed detecting location of the sensing material.

5,798,270

ASSEMBLY AND METHOD FOR MONITORING HYDROCARBON CONCENTRATION IN EXHAUST GAS

Andrew A. Adamczyk, Jr.; James D. Pakko, and Jeffrey S. Hepburn, all of Dearborn, Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Aug. 9, 1996, Ser. No. 694,721
Int. Cl.[6] C01B *17/16;* G01N *33/00;7/00;* F01N *3/00*
U.S. Cl. 436—143 16 Claims



1. A method of monitoring hydrocarbon concentration in exhaust gas on a vehicle comprising the steps of:

selectively sampling exhaust gas on an operating vehicle containing a variety of chemicals;

isolating hydrocarbons from the sampled exhaust gas on the vehicle;

directly measuring an amount of hydrocarbons isolated from the sampled exhaust gas on the vehicle by directly sensing the presence of hydrocarbons in the sampled exhaust gas and providing an indication based on the amount of hydrocarbons;

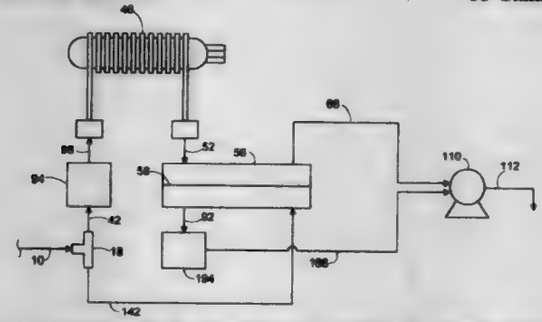
the step of measuring includes measuring the sampled exhaust gas before the step of isolating the hydrocarbons producing an upstream signal and measuring the sampled exhaust gas after the step of isolating the hydrocarbons producing a downstream signal, and determining the difference between the upstream and downstream signals the difference representing the amount of hydrocarbons.

5,798,271

APPARATUS FOR THE MEASUREMENT OF DISSOLVED CARBON IN DEIONIZED WATER

Richard D. Godec, Longmont; Kevin J. O'Neill, Boulder, and Paul K. Kosenka, Denver, all of Colo., assignors to Sievers Instruments, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 501,597, Jul. 12, 1995, which is a continuation-in-part of Ser. No. 869,308, Apr. 16, 1992, Pat. No. 5,443,991, which is a division of Ser. No. 487,720, Mar. 2, 1990, Pat. No. 5,132,094. This application Apr. 8, 1996, Ser. No. 629,033
Int. Cl.[6] G01N *25/18*
U.S. Cl. 436—146 53 Claims



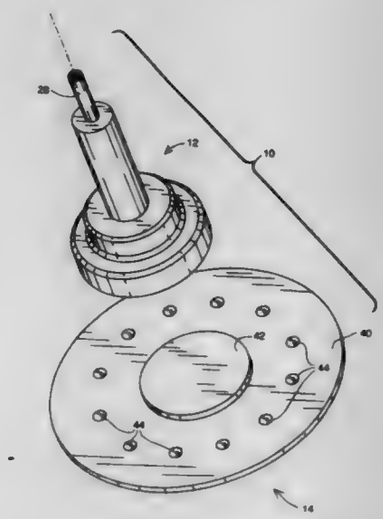
1. An apparatus for measurement of carbon in a water sample stream, comprising: means for splitting the sample stream into a first set of conduits to contain a first sample stream and a second set of conduits to contain a second sample stream; a first temperature and conductivity cell in communication with the first set of conduits to measure the conductivity of the first sample stream, an oxidation reactor in communication with the first set of conduits to oxidize organic compounds in the first sample stream to carbon dioxide; a gas permeable membrane to divide the first sample stream from the second sample stream and to allow at least a portion of said carbon dioxide to permeate from the first sample stream to the second sample stream; and a second temperature and conductivity cell in communication with the second set of conduits to measure conductivity of the second sample stream, wherein output from at least one of said temperature and conductivity cells is used for said measurement of carbon.

5,798,272

METHOD FOR PLASMA SEPARATION AND MEASUREMENT

Michael P. Allen, Los Altos; Robert F. Zuk, Burlingame, and Lawrence M. Ensler, Los Altos, all of Calif., assignors to First Medical, Inc., Mountain View, Calif.

Division of Ser. No. 326,974, Oct. 21, 1994, Pat. No. 5,589,399. This application Dec. 9, 1996, Ser. No. 761,909
Int. Cl.[6] G01N *33/49*
U.S. Cl. 436—169 16 Claims



1. A method for transferring measured amounts of plasma from unmeasured blood samples to a test substrate, said method comprising

applying a volume of whole blood to an absorptive element through a filter member, said absorptive element on a surface of a test substrate, wherein (a) the filter member permits the passage of plasma and plasma macromolecules but inhibits the passage of blood cells and (b) blood cells are retained on the filter member;

removing the filter member from the absorptive element to separate excess blood and blood cells from the measured amount of plasma absorbed in the absorptive element; and

transferring plasma from the absorptive element to a reaction zone on the surface of the test substrate.

5,798,273

DIRECT READ LATERAL FLOW ASSAY FOR SMALL ANALYTES

John K. Shuler, Baltimore; Stephen J. Lovell, Towson, both of Md.; Abigail S. Fisher, Belmont; Alan J. Weiss, Acton, both of Mass., and Robert W. Rosenstein, Ellicott City, Md., assignors to Becton Dickinson and Company, Franklin Lakes, N.J., and Millipore Corporation, Bedford, Mass.

Filed Sep. 25, 1996, Ser. No. 719,221

Int. Cl.[6] G01N *33/558;33/566;33/564;33/563*

U.S. Cl. 436—514 32 Claims

1. A process for determining the presence or amount of an analyte in a sample comprising:

a) contacting said sample with a preparation containing

i) anti-analyte antibodies, which bind to analyte or to both analyte and an analyte analog, and

ii) an assay tracer, wherein said assay tracer comprises a detectable particulate substance having immobilized on its surface, analyte or analyte analog and a first member of a binding pair, to provide a sample/preparation mixture containing analyte/anti-analyte antibody complexes and/or assay tracer/anti-analyte complexes;

b) contacting said sample/preparation mixture with a sample addition area of a lateral flow device, wherein said device comprises a solid support containing, in sequence,

i) said sample addition area,

ii) a capture area, wherein analyte or analyte analog is immobilized, to capture said analyte/anti-analyte antibody complexes and/or assay tracer/anti-analyte complexes,

iii) a read-out area comprising at least one zone, wherein a second member of said binding pair, which binds to said first member, is immobilized, to bind assay tracer not captured in said capture area, in proportion to the amount of analyte in said sample;

c) allowing said sample/preparation mixture to flow through said lateral flow device; and

d) detecting the presence or amount of assay tracer bound in said at least one zone of said read-out area as a measure of analyte in said sample.

5,798,274

METHOD FOR SELECTING MONOCLONAL ANTIBODIES FOR HUMAN G-CSF PERMITTING LOW-LEVEL DETECTION IN HUMAN FLUIDS

Takanori Ichikawa, Takasaki; Tomoaki Kuwaki, Maebashi; Shigeru Matsuki, Takasaki, and Katsumi Tachibana, Maebashi, all of Japan, assignors to Kirin-Amgen, Inc., Wilmington, Del.

Division of Ser. No. 199,493, Feb. 22, 1994, Pat. No. 5,468,846. This application Jun. 7, 1995, Ser. No. 477,328

Claims priority, application Japan, Jun. 30, 1993, 5-162268

The portion of the term of this patent subsequent to Feb. 22, 2014, has been disclaimed.

Int. Cl.[6] G01N *33/531;33/543*

U.S. Cl. 436—518 5 Claims

1. In a method for selecting a monoclonal anti-human Granulocyte Colony Stimulating Factor (G-CSF) antibody preparation for use in an immunoassay for quantification of human G-CSF in a human fluid sample wherein hybridoma cell lines secreting candidate monoclonal anti-human G-CSF antibodies are prepared and selected on the basis of capacity to produce monoclonal antibodies having a human G-CSF affinity of at least 1.8×10^8 l/Mol., an improvement in screening procedures for identification of candidate monoclonal antibodies capable of detecting low levels of human G-CSF in human fluid samples, said improvement comprising:

(1) preparing a series of serially diluted plasma solutions having increasing concentrations of human G-CSF using human plasma from which human G-CSF has been removed;

(2) employing a candidate monoclonal antibody as a G-CSF capture antibody in enzyme immunoassay procedures applied to plasma solutions prepared according to step (1) and preparing a standard curve of the assay result;

(3) determining a detection limit of a G-CSF concentration read from the standard curve, based on the G-CSF concentration corresponding to the sum of an average value of G-CSF-free plasma samples measured plus a value of 2 times its standard deviation; and

(4) selecting candidate monoclonal anti-human G-CSF antibodies for an immunoassay of which the detection limit of G-CSF in plasma is equal or less than 0.5 pg/ml.

5,798,275

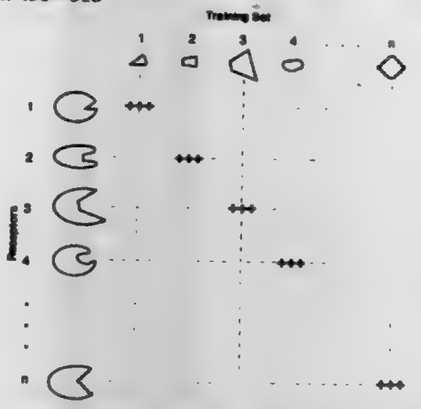
PROFILING REFERENCE PANEL ENRICHED BY NON-IG PROTEINS

Lawrence M. Kauvar, San Francisco, and Hugo O. Villar, Newark, both of Calif., assignors to Terrapin Technologies, Inc., S. San Francisco, Calif.

Continuation-in-part of Ser. No. 177,673, Jan. 6, 1994, Pat. No. 5,587,293. This application Sep. 19, 1994, Ser. No. 308,813

Int. Cl.[6] G01N *33/543;33/53;* C12Q *1/00*

U.S. Cl. 436—518 6 Claims



1. A reference panel of members comprising proteins, wherein at least one of the members of the panel is a protein other than an immunoglobulin (Ig) or fragment thereof, said protein being selected from the group consisting of of enzymes, lectins, T-cell receptors, and olfactory receptors; and

wherein said panel provides members binding in a multiplicity of differing degrees with respect to a population of compounds; and

wherein the presence of said non-Ig protein enriches the panel.

5,798,276

REACTIVE DERIVATIVES OF SULFORHODAMINE 101 WITH ENHANCED HYDROLYTIC STABILITY

Richard P. Haugland, and Wojciech Szalecki, both of Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Filed Jun. 7, 1995, Ser. No. 485,033

Int. Cl.[6] G01N *33/533*

U.S. Cl. 436—546 34 Claims

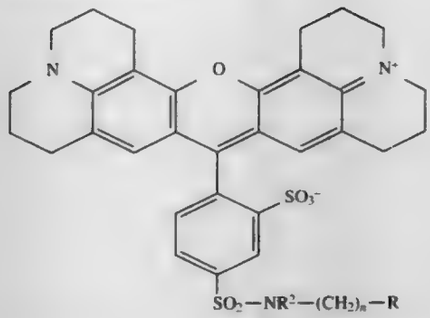
1. A method of detecting a complementary member of a specific binding pair in a sample, said specific binding pair having a first member and a complementary member, comprising:

a) adding to said sample a fluorescent conjugate of the first member of the specific binding pair;

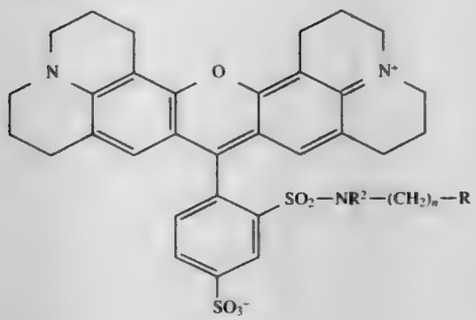
wherein said fluorescent conjugate is prepared by the reaction of at least one functional group on said first member with a reactive dye;

where said functional group is an amine, a thiol, an alcohol, a phenol, an aldehyde, a ketone, a phosphate, an imidazole, a hydrazine, a hydroxylamine, a disubstituted amine, a trisubstituted amine, a halide, an epoxide, a sulfonate ester, a purine, a pyrimidine, or a carboxylic acid; and said reactive

dye has the formula



or the formula



wherein

R^2 is H, C_1–C_6 alkyl or C_1–C_6 acyl;

n=1–8; and

R is a halomethylbenzamidyl, maleimidyl, (3,5-dichloro-2,4,6-triazin-1-yl)amino, isocyanato or an isothiocyanato;

or R is a carboxylic acid, an alkali or alkaline earth metal salt of a carboxylic acid, or R is an activated ester of a carboxylic acid;

b) allowing sufficient time for said fluorescent conjugate to form a complex with said complementary member; and

c) detecting said complex, where the presence of said complex indicates the location of said complementary member.

5,798,277

METHOD FOR FABRICATING HETEROJUNCTION BIPOLAR TRANSISTOR

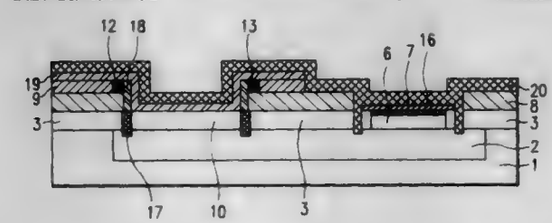
Byung-Ryul Ryum; Tae-Hyeon Han; Deok-Ho Cho; Soo-Min Lee, and Kwang-Eui Pyun, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecommunication Authority, Seoul, both of Rep. of Korea

Filed Oct. 15, 1996, Ser. No. 729,841

Claims priority, application Rep. of Korea, Dec. 20, 1995, 95-52690

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **4 Claims**



1. A method for fabricating a heterojunction bipolar transistor, comprising the steps of:

a first step of forming a buried collector, a collector thin film, and a collector region on a semiconductor substrate in order;

a second step of sequentially forming a first silicon oxide film, a polysilicon layer for forming a base electrode, a nitride film, and an oxidation film on a first structure formed as a result of the first step;

a third step of exposing the first silicon oxidation film by etching, forming a first insulating spacer at a lateral side of an exposed region of the first silicon oxidation film, thereby defining an active region;

a fourth step of exposing the collector thin film in the active region using a second structure formed as a result of the third step as a mask, and forming a second spacer on the collector film for isolating of the transistor, and forming a masking thermal oxide over a collector depression;

a fifth step of selectively forming the collector region by ion-implanting a dopant to the active region which is defined by the second spacer;

a sixth step of removing the second spacer, anisotropic etching to remove a portion of buried collector to form a trench and filling the trench with oxide for device isolation;

a seventh step of forming a polysilicon spacer to have a height which is the same as a height of the polysilicon layer for a base electrode on the trench;

an eighth step of exposing the polysilicon layer and the collector thin film by removing the nitride film and the masking thermal oxide, and forming a self-aligned base layer on the oxidation film; and

a ninth step of sequentially removing a part of the base layer, the polysilicon layer, the insulating spacer and the polysilicon spacer except for a base electrode region using a mask defining the base electrode, and depositing a passivation layer on a removed part of the base layer, the polysilicon layer, the insulating spacer and the polysilicon spacer except for the base electrode region.

5,798,278

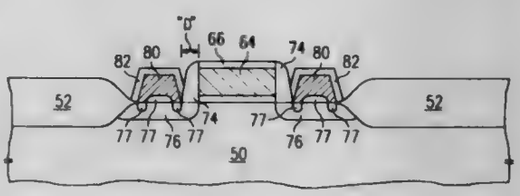
METHOD OF FORMING RAISED SOURCE/DRAIN REGIONS IN AN INTEGRATED CIRCUIT

Tsiu Chiu Chan, and Gregory C. Smith, both of Carrollton, Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 331,691, Oct. 31, 1994, abandoned. This application Jul. 22, 1996, Ser. No. 681,065

Int. Cl.[6] H01L *21/265;29/76*

U.S. Cl. 437—43 **20 Claims**



1. A method of forming a semiconductor integrated circuit, comprising the steps of:

forming a transistor over a substrate having a gate electrode overlying a gate oxide, wherein the transistor is electrically isolated by a plurality of field oxide regions;

forming a dielectric capping layer over the gate electrode;

forming LDD regions in the substrate adjacent to the gate electrode after the dielectric capping laver is formed;

forming sidewall oxide spacers adjacent to the gate electrode and capping layer after the LDD regions are formed; and

forming planarizing raised metal source/drain regions adjacent to the sidewall oxide spacers and substantially overlying the LDD regions.

5,798,279
METHOD OF FABRICATING NON-VOLATILE MEMORIES WITH OVERLAPPING LAYERS

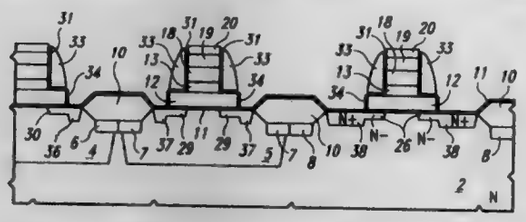
Giuseppe Crisenza, Trezzo sull'Adda, and Cesare Clementi, Busto Arsizio, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate-Brianza, Italy

Continuation of Ser. No. 129,776, Sep. 30, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,431

Claims priority, application European Pat. Off., Sep. 30, 1992, 92830541

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 437—43 **16 Claims**



1. A method of fabricating non-volatile memories, including integrated devices in a substrate of semiconductor material, said method comprising the steps of:

depositing a first polycrystalline silicon layer on said substrate;

depositing a layer of insulating material on said first polycrystalline silicon layer;

depositing at least a second polycrystalline silicon layer on said layer of insulating material; and

defining the gate regions of said devices, said defining the gate regions including the steps of:

selectively etching said second polycrystalline silicon layer for forming first gate regions of a first length in a first direction;

selectively etching said first polycrystalline silicon layer for forming second gate regions of a second length, greater than said first length, in said first direction;

following said step of selectively etching said second polycrystalline silicon layer, and prior to said step of selectively etching said second polycrystalline silicon layer, the step is performed of forming, in said substrate and self-aligned with said first gate regions, first substrate regions having a first doping level; and

following said step of selectively etching said first polycrystalline silicon layer, the step is performed of forming in said substrate, self-aligned with said second gate regions, and partially overlapping said first substrate regions, second substrate regions having a second doping level, greater than said first doping level;

wherein said step of depositing said second polycrystalline silicon layer is preceded by the step of shaping said layer of insulating material for defining insulating portions of said layer of insulating material of a selected width in a second direction perpendicular to said first direction; and

during said step of depositing said second polycrystalline silicon layer, said second polycrystalline silicon layer contacts said first polycrystalline silicon layer electrically at least a portion of said second polycrystalline silicon layer extending from said insulating portions in said second direction.

5,798,280
PROCESS FOR DOPING HEMISPHERICAL GRAIN SILICON

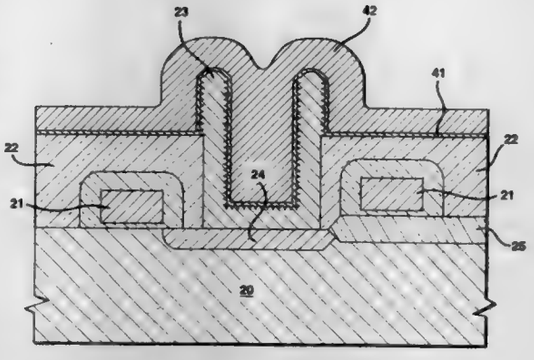
Viju K. Mathews; Nanseng Jeng, and Pierre Fazan, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 2, 1996, Ser. No. 753,828

Int. Cl.[6] H01L *21/223*

U.S. Cl. 437—165 **17 Claims**

1. A process for doping hemispherical grain silicon comprising the steps of:



providing hemispherical grain silicon;

providing a source of a dopant material; and

exposing said hemispherical grain silicon to said dopant material at a temperature less than the formation temperature of said hemispherical grain silicon for a time and at a pressure sufficient for diffusion of said dopant material into said hemispherical grain silicon to occur.

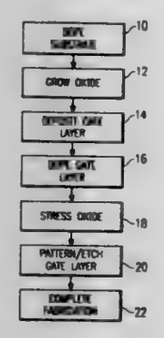
5,798,281
METHOD FOR STRESSING OXIDE IN MOS DEVICES DURING FABRICATION USING FIRST AND SECOND OPPOSITE POTENTIALS

Michael C. Smayling, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 8, 1995, Ser. No. 554,302

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—14 **2 Claims**



1. A method of fabricating an MOS integrated circuit comprising:

forming an oxide layer on a semiconductor substrate;

forming a gate layer on top of the oxide layer;

following forming said oxide layer and following forming said gate layer applying a first potential during fabrication of the MOS integrated circuit between the gate layer and the semiconductor substrate to stress the oxide layer in order to cause defective oxide layers to fail later functional tests; and

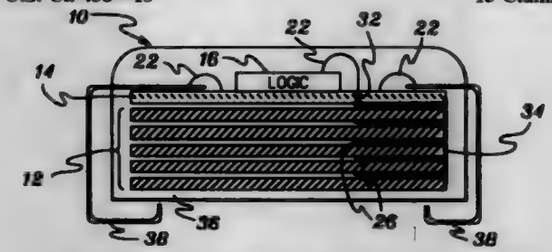
following applying said first potential applying a second potential during fabrication of the MOS integrated circuit between the gate layer and the semiconductor substrate to stress the oxide layer, wherein the second potential has a polarity opposite that of the first potential.

5,798,282

SEMICONDUCTOR STACK STRUCTURES AND FABRICATION SPARING METHODS UTILIZING PROGRAMMABLE SPARE CIRCUIT

Claude Louis Bertin, South Burlington; Erik Leigh Hedberg, Essex Junction, and Wayne John Howell, South Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 220,086, Mar. 30, 1994, Pat. No. 5,502,333. This application Apr. 27, 1995, Ser. No. 429,981
Int. Cl.[6] H01L 21/50
U.S. Cl. 438—15 13 Claims



1. A method for sparing a packaged semiconductor device comprising multiple semiconductor chips, a first semiconductor chip of said multiple semiconductor chips having a memory array with m memory cells, wherein m is an integer, and a second semiconductor chip of said multiple semiconductor chips having a spare memory circuit having n memory cells, wherein n is an integer and $n \leqq m$, said first semiconductor chip and said spare memory circuit of said second semiconductor chip being electrically coupled together, said sparing method comprising the steps of:

(a) for said first semiconductor chip of said multiple semiconductor chips, testing operability of and monitoring for failure at a memory cell of said m memory cells of said memory array; and

(b) after detecting a failed memory cell in said step (a), programming a memory cell of said n memory cells of said spare memory circuit on said second semiconductor chip to functionally replace the failed memory cell of said memory array on said first semiconductor chip wherein said programming (b) results in selective replacement of at least one memory cell of said m memory cells of said first semiconductor chip, and wherein subsequent to said programming (b), said memory array comprises functional memory cells of said first semiconductor chip and at least one functional memory cell of said second semiconductor chip.

5,798,283

METHOD FOR INTEGRATING MICROELECTROMECHANICAL DEVICES WITH ELECTRONIC CIRCUITRY

Stephen Montague; James H. Smith; Jeffry J. Sniegowski, and Paul J. McWhorter, all of Albuquerque, N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Sep. 6, 1995, Ser. No. 524,700
Int. Cl.[6] H01L 21/00
U.S. Cl. 438—24 34 Claims

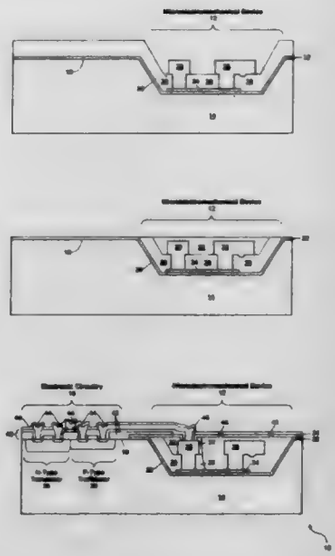
1. A method for integrating at least one microelectromechanical (MEM) device with electronic circuitry on a substrate comprising the steps of:

(a) etching a cavity within the substrate extending below a device surface of the substrate;

(b) forming the MEM device within the cavity by depositing a plurality of material layers in the cavity and patterning at least one of the material layers, the MEM device being entirely below the device surface of the substrate;

(c) encapsulating the MEM device with at least one sacrificial material, and planarizing the substrate;

(d) fabricating electronic circuitry comprising a plurality of transistors on the device surface of the substrate, including forming electrical interconnections to the encapsulated MEM device; and



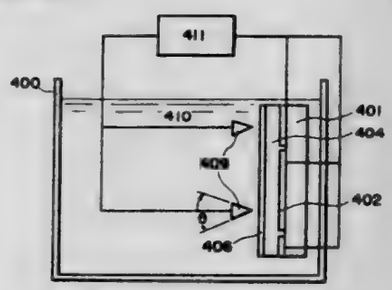
(e) removing the sacrificial material at least in part for releasing the MEM device for operation thereof.

5,798,284

PROCESS FOR FABRICATING ARRAY OF PHOTOVOLTAIC ELEMENTS CONNECTED IN SERIES

Katsumi Nakagawa, Nara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1996, Ser. No. 647,730
Claims priority, application Japan, May 16, 1995, 7-117021
Int. Cl.[6] H01L 31/18;31/20
U.S. Cl. 438—80 27 Claims



1. A process for fabricating an array of photovoltaic elements connected in series, comprising:

a step of depositing an electrically conductive layer on a substrate, at least the surface of which is electrically insulating;

a step of forming grooves in the electrically conductive layer to form a plurality of electrically divided first electrodes;

a step of depositing a photovoltaic layer on the first electrodes and in said grooves;

a step of depositing a transparent electrode layer on the photovoltaic layer;

a step of forming insulating strips in the transparent electrode layer in parallel with the grooves and at positions a predetermined planar distance apart from immediately above said grooves in the electrode layer to form a plurality of electrically divided second electrodes; and

a step of forming electrical connection portions in parts of said photovoltaic layer for connecting the first electrodes with the second electrodes of adjacent elements;

wherein the step for forming said insulating strips is carried out by immersing in a solution the substrate on which the transparent electrode layer is deposited and an opposed electrode of a concentrated electric field type disposed in the vicinity of

the surface of the transparent electrode layer and applying a voltage between said first electrodes and said opposed electrode.

5,798,285

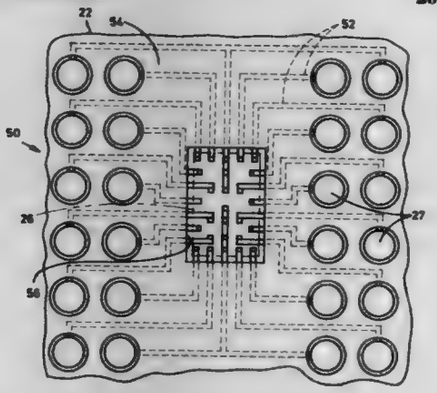
METHOD OF MAKING ELECTRONIC MODULE WITH MULTIPLE SOLDER DAMS IN SOLDERMASK WINDOW

Mark Rudolf Bentlage, Johnson City; Kenneth Michael Fallon, Vestal, both of N.Y., and Lawrence Harold White, Coravallis, Oreg., assignors to International Business Machines Corpoation, Armonk, N.Y.

Division of Ser. No. 450,441, May 25, 1995, Pat. No. 5,650,595. This application Feb. 27, 1997, Ser. No. 806,863

Int. Cl.[6] H01L *21/44;21/48;21/50*

U.S. Cl. 438—108 26 Claims



1. A method of making an electronic module on a carrier substrate, comprising the steps of:

masking the carrier substrate with a first plating resist which has openings for end portions of circuit lines, the end portions of the circuit lines extending into and terminating within a chip site;

depositing a conductive material in the openings in the first plating resist for forming the circuit lines;

depositing a layer of solder-wettable material in the openings of the first plating resist on top of the circuit lines;

masking the carrier substrate with a second plating resist over the first plating resist with openings for exposing solder sites on the end portions of the circuit lines within the chip site; and

providing a solderable material in the exposed solder sites on the circuit lines.

5,798,286

CONNECTING MULTIPLE MICROELECTRONIC ELEMENTS WITH LEAD DEFORMATION

Tony Faraci, Georgetown, Tex.; Thomas H. DiStefano, Monte Sereno, and John W. Smith, Palo Alto, both of Calif., assignors to Tessera, Inc., San Jose, Calif.

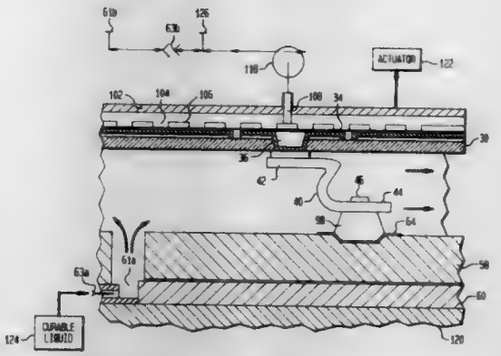
Filed Sep. 22, 1995, Ser. No. 532,528

Int. Cl.[6] H01L *21/44*

U.S. Cl. 438—113 26 Claims

1. A method of making a plurality of semiconductor chip assemblies comprising the steps of:

(a) providing an array including a plurality of separate semiconductor chips each having a contact-bearing surface and contacts on such surface, the contact-bearing surfaces of said chips facing in a common direction and defining a first surface of the array, a dielectric element overlying the first surface of the array and a plurality of elongated leads disposed between said array of chips and said dielectric element, each said lead having a first end fastened to said dielectric element and a second end fastened to a chip in said array; and



(b) forming the leads by moving said dielectric element and said array relative to one another to simultaneously displace all of said first ends of said leads relative to said second ends.

5,798,287

METHOD FOR FORMING A POWER MOS DEVICE CHIP

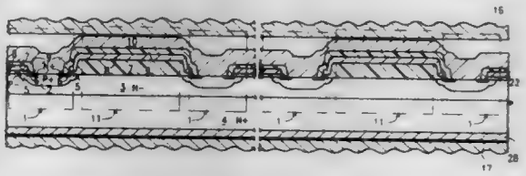
Cesare Ronsisvalle, Catania, Italy, assignor to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Continuation of Ser. No. 487,838, Jun. 7, 1995, abandoned and a division of Ser. No. 360,596, Dec. 21, 1994, abandoned. This application May 22, 1997, Ser. No. 861,496

Claims priority, application European Pat. Off., Dec. 24, 1993, 93830523

Int. Cl.[6] H01L *21/332*

U.S. Cl. 438—133 33 Claims



1. A method of forming a power MOS device, the method comprising steps of:

A. fabricating a chip on a semiconductor substrate including a plurality of first regions and a plurality of second regions, the first regions being functionally inactive regions and thicker than the second regions;

B. placing the chip in a device package with the plurality of first regions and the plurality of second regions adjacent a conductive washer that contacts the plurality of first regions; and

C. sealing the package to establish an electrical connection between the chip and an external electrical terminal.

5,798,288

PROCESS FOR THE PRODUCTION OF RANDOM ACCESS MEMORIES OF THE PRELOADING STATIC TYPE

Charles Grenouilloux, Montreuil, and Francis Joffre, Bures-sur-Yvette, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

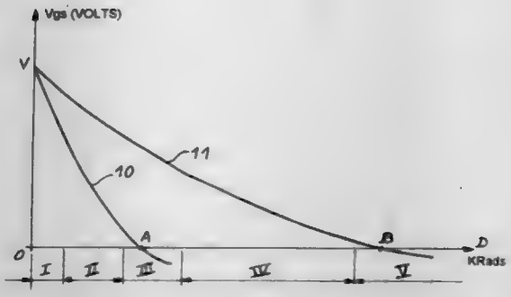
Filed Aug. 31, 1995, Ser. No. 521,864

Claims priority, application France, Sep. 2, 1994, 94 10572

Int. Cl.[6] H01L *21/8234*

U.S. Cl. 438—238 6 Claims

1. Process for the production of a preloading static random access memory, comprising the steps of exposing radiation to a static random access memory formed from MOS transistors constituting a memory flip-flop array; measuring the accumulated radiation dose received by said MOS transistors; and regulating the



accumulated radiation dose to be greater than a first value, but less than a second value, wherein said first and second values correspond to progressive fixation of the memory flipflops.

5,798,289

METHOD OF MANUFACTURING STACKED CAPACITORS IN A DRAM WITH REDUCED ISOLATION REGION BETWEEN ADJACENT CAPACITORS

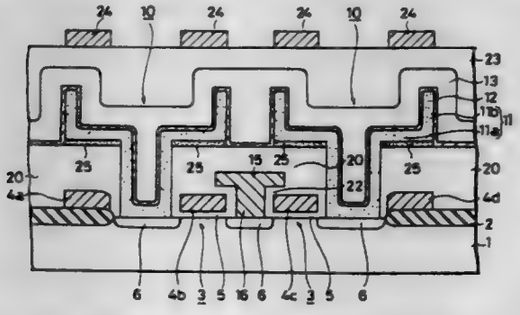
Natsuo Ajika; Hideaki Arima, and Atsushi Hachisuka, all of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 457,193, Jun. 1, 1995, Pat. No. 5,597,755, which is a division of Ser. No. 163,647, Dec. 9, 1993, Pat. No. 5,434,439, which is a continuation of Ser. No. 645,980, Jan. 23, 1991, abandoned. This application Sep. 10, 1996, Ser. No. 716,851

Claims priority, application Japan, Jan. 26, 1990, 2-16960; Apr. 3, 1990, 2-89869; Sep. 19, 1990, 2-251306

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 438—239 **1 Claim**



1. A method of manufacturing a semiconductor memory device having first and second stacked capacitors which are formed on first and second capacitor forming regions, respectively, separated from each other on a main surface of a semiconductor substrate, comprising the steps of:

forming a first insulation layer having an opening reaching the main surface of said semiconductor substrate,

forming a first conductive layer on a surface of said first insulation layer and inside said opening,

forming a second insulation layer on a surface of said first conductive layer,

patterning said second insulation layer to form a capacitor isolating layer having vertical sidewall surfaces on a region interposed between said first and second capacitor forming regions,

forming a second conductive layer on the surface of said first conductive layer and the upper and side surfaces of said capacitor isolating layer,

removing a portion of said second conductive layer positioned on the upper surface of said capacitor isolating layer,

removing said capacitor isolating layer and then a portion of said first conductive layer just under said capacitor isolating layer,

forming a dielectric layer on a surface of said second conductive layer, and

forming a third conductive layer on a surface of said dielectric layer.

5,798,290

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A CAPACITOR

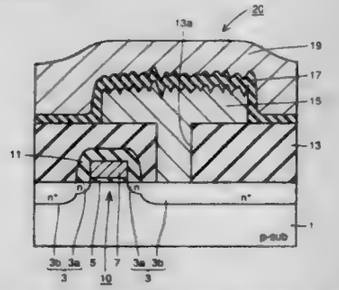
Kiyoshi Mori, and Junichi Tsuchimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1996, Ser. No. 648,461

Claims priority, application Japan, Nov. 6, 1995, 7-287427

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 438—245 **3 Claims**



1. A method of manufacturing a semiconductor device having a capacitor formed of a pair of opposite electrode layers with an insulating layer therebetween, comprising the steps of:

forming a lower electrode layer of said capacitor, which has a surface with concaves and convexes, by polycrystalline silicon;

rounding tips of said concaves and convexes at the surface of said lower electrode layer by ion implantation of at least any one of phosphorus and arsenic into said lower electrode layer with a dose of less than $3.0\times10^{15}cm^{-2}$; and

forming an upper electrode layer on the surface of said lower electrode layer with a capacitor insulating layer therebetween.

5,798,291

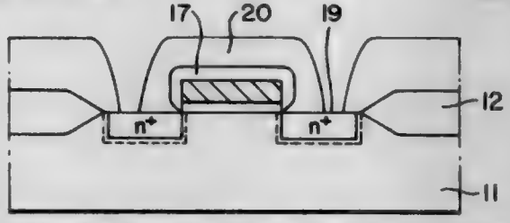
METHOD OF MAKING A SEMICONDUCTOR DEVICE WITH RECESSED SOURCE AND DRAIN

Joon Sung Lee, and Won Young Jung, both of Seoul, Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Continuation-in-part of Ser. No. 406,710, Mar. 20, 1995, abandoned. This application Apr. 1, 1997, Ser. No. 831,343

Int. Cl.[6] H01L *21/336*

U.S. Cl. 438—301 **5 Claims**



1. A method for fabricating a semiconductor device comprising the steps of:

successively forming on a conductive silicon substrate, a gate insulating film and a conductive layer;

patterning the conductive layer and the gate insulating film with a gate pattern to form a gate;

etching portions of the silicon substrate on both sides of the gate to form recesses in the silicon substrate;

forming nitride films so as to fill the recesses;

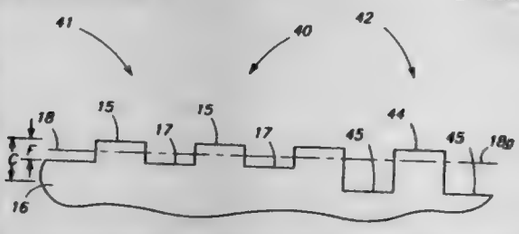
forming an oxide film on all exposed surfaces of the gate by thermal oxidation;

removing the nitride films;
forming impurity doped conductive layers filling the recesses so as to form a source and drain.

5,798,292
METHOD OF FORMING WAFER ALIGNMENT PATTERNS

Mark E. Jost; David J. Hansen, both of Boise, and Steven M. McDonald, Meridian, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 691,855, Aug. 2, 1996, Pat. No. 5,700,732. This application Sep. 29, 1997, Ser. No. 939,982
Int. Cl.[6] H01L *21/465*
U.S. Cl. 438—401 **27 Claims**

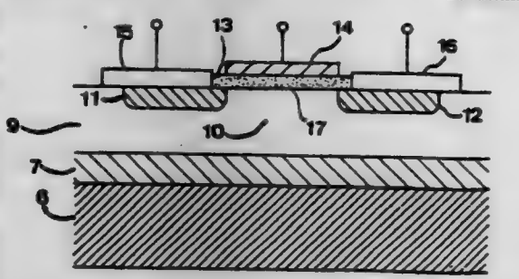


1. A semiconductor processing method of forming wafer alignment patterns on a semiconductor wafer comprising:
forming at least two discrete wafer alignment patterns on the wafer, the two discrete alignment patterns having respective series of elevation steps provided therein; and
superimposing a secondary step over only a portion of the elevation steps in at least one of the wafer alignment patterns.

5,798,293
METHOD FOR PRODUCING A SEMICONDUCTOR LAYER OF SIC OF THE 3C-POLYTYPE AND A SEMICONDUCTOR DEVICE HAVING AN INSULATOR BETWEEN A CARRIER AND THE ACTIVE SEMICONDUCTOR LAYER

Christopher Harris, Sollentuna, Sweden, assignor to ABB Research Ltd., Zurich, Switzerland

Filed Feb. 25, 1997, Ser. No. 804,685
Int. Cl.[6] H01L *21/30;21/46*
U.S. Cl. 438—459 **10 Claims**

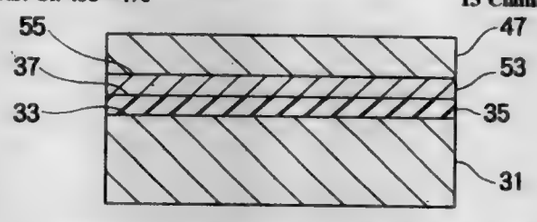


1. A method for producing a semiconductor layer of SiC of the 3C-polytype on top of a semiconductor substrate layer, comprising the steps of:
1) growing a buffer layer (1) on a first substrate layer (2) of a first material and a layer (3) of 3C-SiC on top of the buffer layer,
2) forming a first amorphous layer (4) on top of the layer of 3C-SiC,
3) forming a second amorphous layer (5) of the same material as the first amorphous layer on top of a second substrate layer (6) of a second material,
4) placing the upper surfaces of said amorphous layers (4, 5) carried by said two substrate layers (2, 6) face to face and bonding thereof by heating them for forming a single piece,
5) removing said first substrate layer (2) and the buffer layer (1) from said piece by etching,
6) annealing said piece at such a high temperature that the material of the amorphous layers (4, 5) undergoes viscous flow for relaxing said 3C-SiC-layer (3) for forming a surface layer of a substrate onto which 3C-SiC may be epitaxially grown,
7) epitaxially regrowing a second layer (8) of 3C-SiC on top of said relaxed 3C-SiC-layer (3),
said steps 1)–7) being carried out in the order mentioned except for the removal of the buffer layer, which may be carried out before step 6) or after step 6) but before step 7).

5,798,294
SEMICONDUCTOR SUBSTRATE HAVING A SERIOUS EFFECT OF GETTERING HEAVY METAL AND METHOD OF MANUFACTURING THE SAME

Kensuke Okonogi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 160,352, Nov. 29, 1993. This application May 19, 1995, Ser. No. 446,056
Claims priority, application Japan, Nov. 27, 1992, 4-318983
Int. Cl.[6] H01L *21/322*
U.S. Cl. 438—476 **13 Claims**



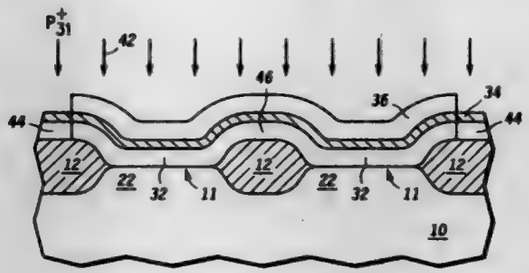
1. A method of manufacturing a semiconductor substrate, comprising the steps of:
preparing a monocrystal silicon substrate having a principal surface;
forming a silicon dioxide layer on said principal surface so that said silicon dioxide layer has an upper surface;
preparing a monocrystal silicon film having a first lower surface;
forming a monocrystal silicon layer on said first lower surface so that said monocrystal silicon layer has phosphorus atoms diffused in said monocrystal silicon layer and a second lower surface;
bonding said silicon dioxide layer to said monocrystal silicon layer with said upper surface placed adjacent to said second lower surface; and
grinding said monocrystal silicon film, leaving a portion of said monocrystal silicon film and all of said monocrystal silicon layer on said substrate, whereby said portion of said monocrystal silicon film and said monocrystal silicon layer on said substrate are for Bettering heavy metal.

5,798,295
METHOD FOR FORMING A BURIED CONTACT ON A SEMICONDUCTOR SUBSTRATE

Andrew Paul Hoover, Austin; Gregory Alan Miller, Manchaca; Dale John McQuirk, Round Rock, all of Tex., and Winford Lee Hill, II, Radebeul, Germany, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 9, 1997, Ser. No. 871,787
Int. Cl.[6] H01L *21/425;21/22*
U.S. Cl. 438—533 **22 Claims**

1. A method for forming an electrical contact, the method comprising the steps of:
providing a substrate;
forming field isolation overlying the substrate wherein the field isolation has an opening which exposes a first contact portion of the substrate;



depositing a semiconductor layer overlying the field isolation and being in contact with the first contact portion of the substrate;

forming a masking layer overlying the semiconductor layer;

processing the masking layer to make a masking region, the masking region overlying a first portion of the semiconductor layer where the first portion of the semiconductor layer overlies the first contact portion of the substrate, the masking layer exposing a second portion of the semiconductor layer wherein the second portion of the semiconductor layer surrounds the first portion of the semiconductor layer;

exposing the second portion of the semiconductor layer to dopant atoms; and

elevating the temperature of the semiconductor layer to move the dopant atoms from the second portion of the semiconductor layer through the first portion of the semiconductor layer into the first contact portion of the substrate whereby a first electrical contact is formed between the first contact portion of the substrate and the semiconductor layer.

5,798,296

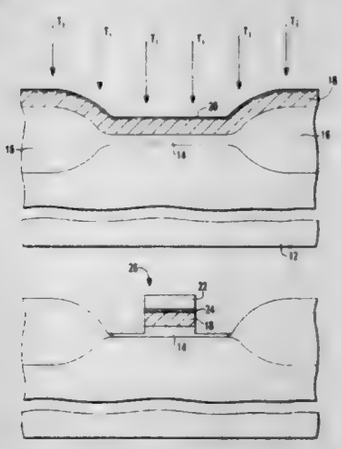
METHOD OF FABRICATING A GATE HAVING A BARRIER OF TITANIUM SILICIDE

Pierre C. Fazan, Boise, Id., and Hiang C. Chan, Fremont, Calif., assignors to Micron Technology, Inc., Boise, Id.

Filed May 17, 1996, Ser. No. 649,803

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—592 **15 Claims**



1. A method of fabricating a gate having a barrier layer of titanium silicide, comprising the steps of:

forming a layer of gate oxide;

forming a layer of doped polysilicon over the layer of gate oxide;

forming a layer of titanium silicide in a predetermined relationship with respect to the layer of doped polysilicon;

forming a layer of tungsten silicide on top of the layer of titanium silicide; and

etching the layers of gate oxide, doped polysilicon, titanium silicide, and tungsten silicide to form a gate.

5,798,297

METHOD FOR PRODUCING A SEMICONDUCTOR COMPONENT WITH ELECTRICAL CONNECTION TERMINALS FOR HIGH INTEGRATION DENSITY

Josef Winnerl, and Johann Aksmeier, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

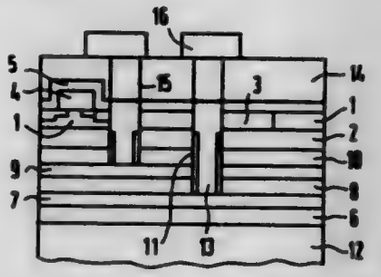
PCT No. PCT/DE94/00485, § 371 Date Jan. 2, 1996, § 102(e) Date Jan. 2, 1996, PCT Pub. No. WO94/25986, PCT Pub. Date Nov. 10, 1994

PCT Filed May 2, 1994, Ser. No. 545,648

Claims priority, application Germany, May 5, 1993, 43 14 906.5

Int. Cl.[6] H01L *21/4763*

U.S. Cl. 438—622 **5 Claims**



1. A method for producing a semiconductor component having at least one buried full-area metal layer which is provided with a connection terminal for an external power supply, and having active functional elements in a silicon layer, comprising the steps of:

in a first step, producing a layer structure having at least one buried full-area metal layer and having said silicon layer for the active functional elements, on a substrate; and applying dielectric layers for electrical insulation between said layers;

in a second step producing said, active functional elements;

in a third step, etching openings which extend as far as one of said metal layers such that a region, intended for making contact, of a functional element is exposed in each opening;

in a fourth step, applying a dielectric onto a wall of said openings up to a height provided for electrical insulation, said region for making contact remaining exposed in each opening;

in a fifth step, said openings are filled with metal to produce vertical electrically conductive connections between the respective metal layer and said region, provided for making contact, of the functional element.

5,798,298

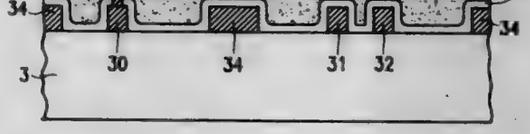
METHOD OF AUTOMATICALLY GENERATING DUMMY METALS FOR MULTILEVEL INTERCONNECTION

Ming-Tzong Yang, Hsinchu, and Hong-Tsz Pan, Hsinchu Hsien, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Feb. 9, 1996, Ser. No. 598,802

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—622 **6 Claims**



1. A method of forming a metal pattern for use in an integrated circuit device fabrication process, the metal pattern including metal lines having an length and width, the method comprising:

providing a first pattern having first lines corresponding to the metal lines, the first lines having a length and width larger by a first distance b than the length and width of corresponding metal lines;

providing an inverse of the first pattern;

providing a block array pattern having a plurality of dummy lines, each with a length f, a width d, and a spacing e, between adjacent dummy lines;

providing a second pattern of second lines having a length and width by ANDing the block array pattern and the inverse of the first pattern;

providing a third pattern having third lines corresponding to the second lines of the second pattern, the third lines having a height and width larger by a second distance c than the length and width of corresponding second lines; and

forming the metal pattern by ORing the metal lines with the third pattern.

5,798,299

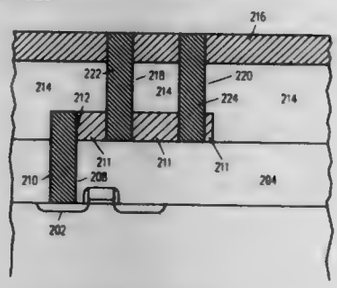
INTERCONNECT STRUCTURES FOR INTEGRATED CIRCUITS

Henry Wei-Ming Chung, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 295,957, Aug. 24, 1994, Pat. No. 5,571,751, which is a division of Ser. No. 240,044, May 9, 1994, abandoned. This application May 1, 1996, Ser. No. 641,583

Int. Cl.[6] **H01L** *21/44*

U.S. Cl. 438—625 **24 Claims**



1. A process comprising the steps of:

forming an electrically conductive region;

forming a first dielectric layer on the electrically conductive layer;

forming a first metallic layer on the first dielectric layer;

removing a first portion of the first metallic layer to form a first opening in the first metallic layer;

removing a portion of the first dielectric layer through the opening in the first metallic layer to form an opening in the first dielectric layer;

forming a second metallic layer to fill the first opening in the first metallic layer and the opening in the first dielectric layer, wherein a first vertical interface is formed between the first metallic layer and the second metallic layer;

forming a second dielectric layer disposed over the first metallic layer and over the second metallic layer;

forming a third metallic layer on the second dielectric layer;

removing a portion of the third metallic layer to form an opening in the third metallic layer;

removing a portion of the second dielectric layer through the opening in the third metallic layer to form an opening in the second dielectric layer;

removing a second portion of the first metallic layer through the openings in the third metallic layer and the second dielectric layer to form a second opening in the first metallic layer terminating at the first dielectric layer; and

forming a fourth metallic layer to fill the second opening in the first metallic layer, the opening in the third metallic layer, and the opening in the second dielectric layer, wherein a second vertical interface is formed between the first metallic layer and an end region of the fourth metallic layer, and a third vertical interface is formed between the third metallic layer and the other end region of the fourth metallic layer.

5,798,300

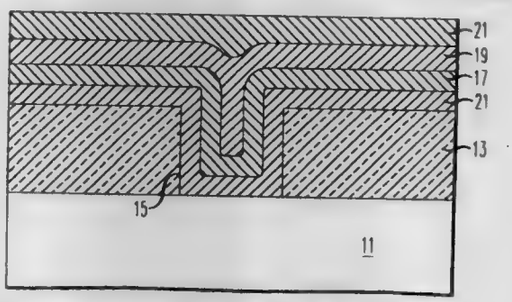
METHOD FOR FORMING CONDUCTORS IN INTEGRATED CIRCUITS

Sailesh Chittipeddi, Austin, Tex., and Sailesh Mansinh Merchant, Orlando, Fla., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 499,509, Jul. 7, 1995, abandoned. This application May 15, 1997, Ser. No. 857,079

Int. Cl.[6] **H01L** *21/28*

U.S. Cl. 438—627 **10 Claims**



1. A method of integrated circuit fabrication comprising:

forming a layer overlying a substrate by:

directing a collimated beam of aluminum particles at said substrate, thereby forming a first conductive layer;

then sputtering non-collimated aluminum particles at said substrate, thereby forming a second conductive layer contacting said first conductive layer; and

depositing a third conductive layer of polysilicon over said second conductive layer such that said third conductive layer contacts said second conductive layer.

5,798,301

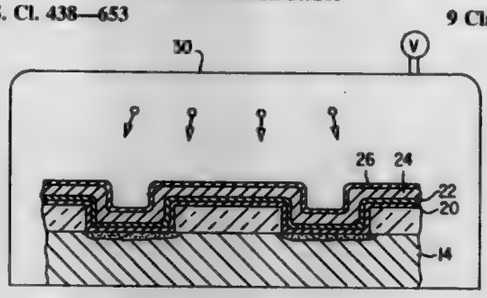
METHOD OF MANUFACTURING METAL INTERCONNECT STRUCTURE FOR AN INTEGRATED CIRCUIT WITH IMPROVED ELECTROMIGRATION RELIABILITY

Pei-Ing Paul Lee, Lagrangeville; Bernd Vollmer, Wappingers Falls; Darryl Restaino, Modena, all of N.Y., and Bill Klaasen, Underhills, Vt., assignors to Siemens Aktiengesellschaft, Munich, Germany, and International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 634,492, Apr. 18, 1996, abandoned, which is a division of Ser. No. 513,494, Aug. 10, 1995, Pat. No. 5,641,992. This application Apr. 29, 1997, Ser. No. 841,030

Int. Cl.[6] **H01L** *21/283*

U.S. Cl. 438—653 **9 Claims**



7. A method of forming a multilayer interconnect structure on a substrate, comprising the steps of:

placing said substrate in a vacuum deposition chamber;

evacuating said chamber to a pressure below 10^{-6} Pa;

depositing a titanium layer on said substrate at a first temperature;

depositing a titanium nitride layer on said titanium layer at a second temperature;

depositing an aluminum alloy layer directly on said titanium nitride layer at a third temperature in excess of 500° C.; and

depositing a second titanium nitride layer on said aluminum alloy layer at a fourth temperature;

wherein said pressure of below 10^{-6} Pa is consistently maintained during said steps of depositing a titanium layer, depositing a titanium nitride layer, depositing an aluminum alloy layer and depositing a second titanium nitride layer.

5,798,302

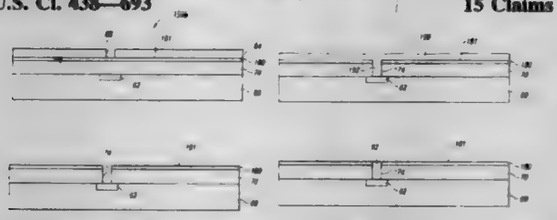
LOW FRICTION POLISH-STOP STRATUM FOR ENDPOINTING CHEMICAL-MECHANICAL PLANARIZATION PROCESSING OF SEMICONDUCTOR WAFERS

Guy F. Hudson, and Russell C. Zahorik, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 28, 1996, Ser. No. 608,186

Int. Cl.[6] H01L *21/302*

U.S. Cl. 438—693 **15 Claims**



1. A method of chemical-mechanical planiarization of a semiconductor wafer, comprising:

sputtering a graphitic carbon stratum to a thickness of approximately 100 Å to approximately 600 Å over a semiconductor substrate to form a polish-stop surface of low friction material positioned at a level substantially proximate to a desired end-point:

covering the low friction stratum with an upper layer of material having a polishing rate higher than that of the graphitic carbon stratum:

mounting the substrate to a wafer carrier of a chemical-mechanical planarization machine

pressing the upper layer against a polishing pad of the chemical-mechanical planarization machine in the presence of a slrry; and

moving at least one of the wafer carrier or the polishing pad to impart relative motion between the wafer and the polishing pad, wherein the graphitic carbon stratum resists the planarization pad to substantially stop the planarization process at the desired end-point.

5,798,303

ETCHING METHOD FOR USE IN FABRICATION OF SEMICONDUCTOR DEVICES

Darwin A. Clampitt, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Sep. 5, 1996, Ser. No. 708,694

Int. Cl.[6] H01L *21/302*

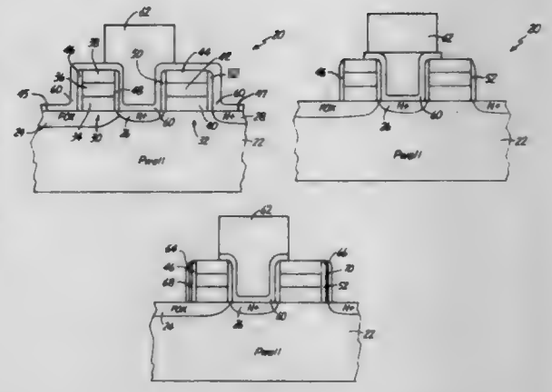
U.S. Cl. 438—696 **30 Claims**

1. An etching method for use in the fabrication of semiconductor devices, the method comprising the steps of:

providing a first surface and a second surface, the second surface lying substantially vertical to the first surface with a material formed over at least a portion of the first and second surface;

anisotropically etching the material from at least a portion of the first surface resulting in a blocking material formed over at least a portion of the material formed over the second surface;

removing the blocking material; and



isotropically etching the at least a portion of the material formed over the second surface.

5,798,304

CAMOUFLAGE FABRIC

George Maclean Clarkson, 62 Sheriffs Park, Linlithgow, United Kingdom, EH49 7SS

PCT No. PCT/GB94/01893, § 371 Date May 2, 1996, § 102(e) Date May 2, 1996, PCT Pub. No. WO95/06850, PCT Pub. Date Mar. 9, 1995

PCT Filed Sep. 1, 1994, Ser. No. 612,909

Claims priority, application United Kingdom, Sep. 1, 1993, 9318098

Int. Cl.[6] F41H *3/00*

U.S. Cl. 442—289 **13 Claims**

1. A fabric which presents a non camouflage pattern under visible light and a camouflage pattern under infra-red radiation.

5,798,305

HOT-MELT-ADHESIVE CONJUGATE FIBERS AND A NON-WOVEN FABRIC USING THE FIBERS

Shingo Horiuchi, Moriyama, Japan, assignor to Chisso Corporation, Osaka, Japan

Continuation-in-part of Ser. No. 496,689, Jun. 29, 1995, abandoned. This application Aug. 12, 1997, Ser. No. 909,952

Claims priority, application Japan, Jul. 4, 1994, 6-175945; Oct. 21, 1994, 6-283011

Int. Cl.[6] D02G *3/00*

U.S. Cl. 442—361 **5 Claims**

1. A non-woven fabric containing 20% by weight or more of the following hot-melt-adhesive conjugate fibers and having the points of intersection of the fibers hot-melt-adhered with the polyethylene as the low melting point component in the conjugate fibers of the hot-melt-adhesive conjugate fibers:

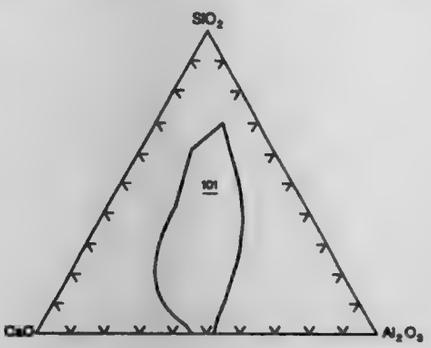
said hot-melt-adhesive conjugate fibers being those of side-by-side type or sheath-and-core type, composed of a high melting pint component of a polypropylene or a polyester and a low melting point component of a methyl branched polyethylene, said methyl branched polyethylene continuously forming at least one portion of the fiber surface in the direction of the fibers, said methyl branched polyethylene having up to 1.5 methyl branch/1,000 C in the molecular chain, a density of 0.950 to 0.965 g/cm^3 and a Q value (weight average molecular weight (Mw)/number average molecular weight (Mn)) of 4.5 or less.

5,798,306

RARE EARTH DOPED OXYHALIDE LASER GLASS

James Edward Dickinson, Jr., Corning, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Apr. 14, 1997, Ser. No. 835,899
Int. Cl.[6] H01S *3/17*; C03C *3/112*; C09K *11/186*
U.S. Cl. 501—57 22 Claims



1. An erbium doped aluminum silicon calcium oxyfluoride laser glass, said glass having a fluorescence lifetime of at least approximately 6 msec, wherein said glass contains 0.005–6 wt. % Er_2O_3 and 6.2–20 wt. % F.

5,798,307

ALKALINE ALUMINO-SILICATE GEOPOLYMERIC MATRIX FOR COMPOSITE MATERIALS WITH FIBER REINFORCEMENT AND METHOD FOR OBTAINING SAME

Joseph Davidovits, 16, rue Galilée, F-02100 Saint-Quentin; Michel Davidovics, Pont-Sainte-Maxence, and Nicolas Davidovits, Roanne, all of France, assignors to Cordi-Geopolymere SA, and Joseph Davidovits, both of Saint-Quentin, France

PCT No. PCT/FR96/00388, § 371 Date Apr. 29, 1997, § 102(e) Date Apr. 29, 1997, PCT Pub. No. WO96/28398, PCT Pub. Date Sep. 19, 1996
PCT Filed Mar. 13, 1996, Ser. No. 836,099
Claims priority, application France, Mar. 15, 1995, 95/03015
Int. Cl.[6] C01B *33/26*
U.S. Cl. 501—95.2 20 Claims

1. An alkali alumino-silicate geopolymeric matrix for composite materials with fibrous reinforcement, whose composition after dehydration is of the formula:

$$yM_2O:Al_2O_3:xSiO_2$$

where x is a value lying between 6.5 and 70, y is a value lying between 0.95 and 9.50, and M is either Na, K or a mixture Na+K, wherein the geopolymeric matrix is composed of a nanocomposite with at least two phases, comprising

(a) a first nodular siliceous phase composed of nanospheres of diameter smaller than 1 micron;

(b) a second polymeric phase, composed of alkali poly(alumino-silicate) having at least one or several sialate bridge (—Si—O—Al—O—) cross-linking sites, the cross-linking site having an empirical formula lying between $M_4Si_2AlO_{10}$ and $M_2Si_4AlO_{16}$, such that in this alkali alumino-silicate, the ratio $(SiO_4):(AlO_4)$ is >3.5,

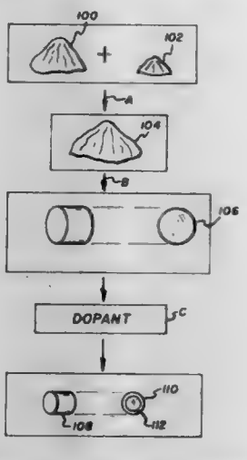
the geopolymeric matrix having a ^{29}Si MASNMR spectrum exhibiting three resonances: −87±5 ppm, −98±5 ppm and −107±5 ppm.

5,798,308

CERAMIC ARTICLE

Dilip K. Chatterjee; Debasis Majumdar, and Thomas N. Blanton, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1997, Ser. No. 946,321
Int. Cl.[6] C04B *35/488*
U.S. Cl. 501—103 4 Claims



1. A sintered ceramic article having an elemental composition including Zr, O, and at least one element selected from the group consisting of Mg, Ca, Y, Sc, Ce and rare earth elements, said ceramic article including a core and a casing, said casing being exterior to and continuous with said core, said core comprising a mass of sintered particles having a essentially tetragonal zirconia crystalline structure and, said casing comprising a mass of sintered particles having a mixture of monoclinic zirconia crystalline structure and zircon crystalline structure.

5,798,309

PROCESS FOR PREPARING A POLY-1-OLEFIN

Werner Breuers, Eppstein; Rainer Lecht, Kelkheim, and Ludwig Böhm, Hattersheim, all of Germany, assignors to Hostalen Polyethylen GmbH, Germany

Continuation of Ser. No. 202,831, Feb. 28, 1994, abandoned. This application Dec. 22, 1995, Ser. No. 576,858
Claims priority, application Germany, Mar. 2, 1993, 43 06 382.9
Int. Cl.[6] C08F *4/654*; *10/02*
U.S. Cl. 502—111 1 Claim

1. A process for preparing a transition metal component for a catalyst for the polymerization of an alpha-olefin, said process comprising:

a) reacting an organomagnesium compound of the formula $R^1_xMgR^2_{2-x}$, in which R^1 and R^2 are identical or different alkyl radicals having from 2 to 12 carbon atoms and x is a number from 0 to 2, with an aliphatic primary chlorinated hydrocarbon in an amount from 0.5 to 2.5 mol of the chlorinated hydrocarbon per 1 mol of the organomagnesium compound, the resulting product being a spherical solid particle.

b) treating the solid thus obtained with an alcohol in an amount from 0.001 to 1 mol per gram atom of magnesium contained in the solid at a temperature from −20° to 150° C., thereby obtaining a support material,

c) reacting the support material thus obtained with one or more compounds of the formula $M^1X_m(OR^5)_{4-m}$, in which M^1 is titanium or zirconium. R^5 is an alkyl radical having from 2 to 10 carbon atoms. X is a halogen atom and m is an integer from 0 to 4, in an amount from 0.1 to 5 mol per gram atom of magnesium contained in the support material at a temperature from 20° to 180° C., and

wherein said steps (b) and (c) are carried out simultaneously.

5,798,310

GLYPHOSATE COMPOSITIONS AND THEIR USE

Marc Emile Toussaint, Corroy-le-Grand, and Robert William Mitchell, Overijse, both of Belgium, assignors to Monsanto Europe S.A., Brussels, Belgium

PCT No. PCT/EP96/01171, § 371 Date Nov. 21, 1996, § 102(e) Date Nov. 21, 1996, PCT Pub. No. WO96/29873, PCT Pub. Date Oct. 3, 1996

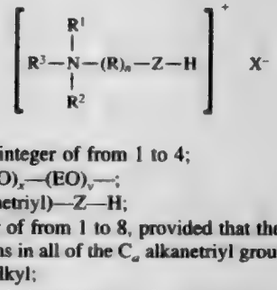
PCT Filed Mar. 19, 1996, Ser. No. 737,983

Claims priority, application European Pat. Off., Mar. 24, 1995, 95870025

Int. Cl.[6] A01N *25/30;57/02;* **C07C** *217/40*

U.S. Cl. 504—206 **31 Claims**

1. A tank mix adjuvant for use with glyphosate herbicide, comprising a quaternary ammonium compound having the Formula I:



wherein n is an integer of from 1 to 4;

Z is —O—$(PO)_x$—$(EO)_y$—;

R is (C_a alkanetriyl)—Z—H;

a is an integer of from 1 to 8, provided that the total number of carbon atoms in all of the C_a alkanetriyl groups is from 3 to 8;

R^1 is a C_{1-5} alkyl;

R^2 and R^3 are independently a C_{1-5} alkyl or R^4—Z—H;

R^4 is a C_{1-5} alkylene or $(A)_m$;

m is an integer of from 1 to 4;

A is (C_b alkanetriyl)—Z—H;

b is an integer of from 1 to 8, provided that the total number of carbon atoms in all of the C_b alkanetriyl groups is from 3 to 8;

PO is a propylene oxide radical;

EO is an ethylene oxide radical;

x and y are integers, provided that x and y may be different at each occurrence in Formula I, such that the total number of propylene oxide radicals in Formula I is 15–35, and the total number of ethylene oxide radicals in Formula I is 0–15; and

X^- is an agriculturally acceptable anion.

5,798,311

N-ARYL-3-ARYL-4-SUBSTITUTED-4,5-DIHYDRO-1H-PYRAZOLE-1-CARBOXAMIDES AND METHODS OF THEIR PRODUCTION

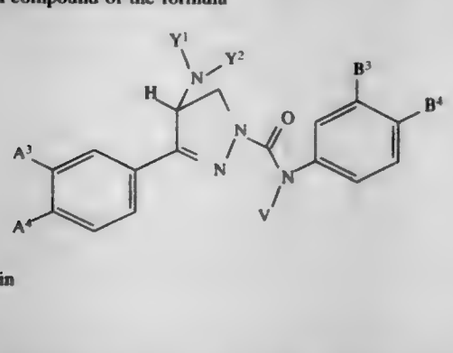
Richard Martin Jacobson, Chalfont, Pa., assignor to Rohm and Haas Company, Phila., Pa.

Continuation-in-part of Ser. No. 415,117, Mar. 29, 1995, abandoned, which is a continuation of Ser. No. 49,891, Apr. 19, 1993, abandoned, which is a division of Ser. No. 713,692, Jun. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 553,220, Jul. 13, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 468,284

Int. Cl.[6] A01N *43/56;* **C07D** *231/40;403/04*

U.S. Cl. 504—282 **22 Claims**

1. A compound of the formula



wherein

A^3 and A^4 are each independently a hydrogen atom, alkyl, halo, haloalkyl, polyhaloalkyl, alkoxy, haloalkoxy, polyhaloalkoxy, alkoxyalkoxy, alkoxycarbonyl or nitro;

B^3 is a hydrogen atom, halo, haloalkyl, polyhaloalkyl, haloalkoxy or polyhaloalkoxy;

B^4 is halo, haloalkyl, polyhaloalkyl, haloalkoxy or polyhaloalkoxy;

V is a hydrogen atom, alkyl, alkylcarbonyl, alkoxycarbonyl or formyl;

Y^1 is a hydrogen atom, alkyl, alkenyl, alkynyl, phenyl, halophenyl, alkoxyalkyl, alkoxycarbonylalkyl or cyanoalkyl;

Y^2 is a hydrogen atom, alkyl, alkoxycarbonyl, phenalkoxycarbonyl, phenoxycarbonyl, haloalkoxycarbonyl, polyhaloalkoxycarbonyl, alkoxyalkoxycarbonyl, alkenyloxycarbonyl, alkynyloxycarbonyl, formyl, alkylcarbonyl, haloalkylcarbonyl, polyhaloalkylcarbonyl, benzoyl, alkenylcarbonyl, polyhaloalkenylcarbonyl, alkylcarbonylcarbonyl, alkoxycarbonylcarbonyl, alkylthiocarbonyl, alkylsulfonyl, phenylsulfonyl, halophenylsulfonyl, phenylaminocarbonyl, polyhaloalkoxyphenylaminocarbonyl, cyano, monoalkylaminocarbonyl or dialkylaminocarbonyl, dialkylphosphoryl or dialkylthiophosphoryl wherein the alkyl groups are the same or different; or

agronomically acceptable salt thereof.

5,798,312

ELONGATE SUPERCONDUCTOR ELEMENTS COMPRISING OXIDE SUPERCONDUCTORS, SUPERCONDUCTING COILS AND METHODS OF MAKING SUCH ELEMENTS

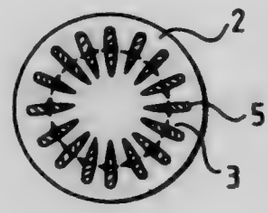
Michiya Okada, Eindhoven, Netherlands; Kazuhide Tanaka; Toyotaka Yuasa, both of Hitachi, Japan; Toshimi Matsumoto, Katsuta, Japan; Katsuzo Aihara, Hitachioota, Japan, and Shinpei Matsuda, Toukai-mura, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 747,881, Aug. 21, 1991, abandoned. This application Jun. 21, 1994, Ser. No. 267,003

Claims priority, application Japan, Aug. 22, 1990, 2-218921

Int. Cl.[6] H01B *12/00*

U.S. Cl. 505—230 **10 Claims**



1. An elongate superconductor wire, comprising a metal matrix cladding selected from the group consisting of silver, silver alloy, gold and gold alloy, said metal matrix cladding containing a plurality of flat oxide superconductor bodies, each of said flat oxide superconductor bodies having a planar direction, oxide superconductor crystals having c-axes, and an average c-axis direction normal to the planar direction of the flat oxide superconductor body, the planar direction of the flat oxide superconductor bodies being oriented in a radial direction of the wire, and wherein at least 50% of said oxide superconductor crystals having c-axes have their c-axes oriented within 30 degrees of the average c-axis direction.

5,798,313

HETEROGENEOUS CATALYST REGENERATION

Kevin M. Carroll, Havertown; Edrick Morales, and Yuan-Zhang Han, both of West Chester, all of Pa., assignors to ARCO Chemical Technology, L.P., Greenville, Del.

Filed Dec. 20, 1996, Ser. No. 770,822
Int. Cl.[6] B01J *20/34;38/02;38/12*
U.S. Cl. 502—38 16 Claims

1. A method of regenerating a used non-zeolitic heterogeneous catalyst composition comprised of an oxygen compound of silicon in chemical combination with an inorganic compound of titanium and which has been used in an epoxidation process wherein an olefin is reacted with an organic hydroperoxide, said method comprising heating said used heterogeneous catalyst composition at a temperature of at least 700° C. in the presence of oxygen to produce a reactivated heterogeneous catalyst composition.

5,798,314

SUPPORTED OLEFIN POLYMERIZATION CATALYST

Lee Spencer, Pearland, and Marc A. Springs, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 289,992, Aug. 12, 1994, Pat. No. 5,661,097. This application Jun. 4, 1996, Ser. No. 657,572
The portion of the term of this patent subsequent to Aug. 26, 2014, has been disclaimed.
Int. Cl.[6] B01J *31/00*
U.S. Cl. 502—115 7 Claims

1. An olefin polymerization supported catalyst composition comprising

(I) a supported catalyst component consisting essentially of

(A) a solid particulate support having

(i) a specific surface area of from 100 to 1000 m^2/g;

(ii) a surface hydroxyl content of from 0.5 to not more than 5 mmol hydroxyl groups per g of solid support;

(iii) a pore volume of from 0.3 to 3.0 cc/g;

(iv) a median particle size of 1 to 200 μm; and

(v) a majority of particles of the solid particulate support in the form of an agglomerate of subparticles;

(B) a magnesium halide;

(D) a Group 4 or 5 transition metal compound;

(E) a Group 2 or 13 organometal compound; and

(II) a cocatalyst selected from the group consisting of alumoxanes and compounds corresponding to the formula $R''_zGX''_{3-z}$, wherein G is aluminum or boron, R'' independently each occurrence is hydrocarbyl, X'' independently each occurrence is halide or hydrocarbyloxide, and z is a number from 1 to 3.

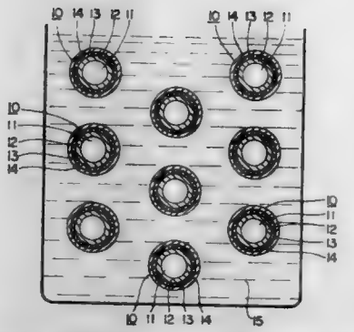
5,798,315

MICROCAPSULE-CONTAINING OIL-BASED COATING LIQUID, INK, COATED SHEET, AND METHOD OF PREPARING THE SAME

Kei Etoh; Akira Hirasawa; Hisano Higurashi, and Makoto Kawamura, all of Tokyo, Japan, assignors to Toppan Moore Co., Ltd., Tokyo, Japan

Division of Ser. No. 413,690, Mar. 30, 1995, Pat. No. 5,646,203. This application Feb. 6, 1997, Ser. No. 797,452
Claims priority, application Japan, Mar. 31, 1994, 6-85978; Jul. 29, 1994, 6-209029; Jul. 29, 1994, 6-209030
Int. Cl.[6] B41M *5/165*
U.S. Cl. 503—215 4 Claims

1. A sheet printed in a selected area with a microcapsule containing non-aqueous ink comprising microcapsule particles filled with a hydrophobic material and individually dispersed in an oil varnish for ink use or a resin for coating use, and a solvent which has an affinity for both the varnish or the resin and the surface layer of the microcapsule wall material in a state of having been attracted to both the varnish or the resin and the surface layer of



the microcapsule wall material, said microcapsule particles prepared by mixing a microcapsule-containing aqueous dispersion with said oil varnish or said resin and said solvent, and removing the water in the mixture by distillation in vacuum to convert said microcapsules in said aqueous system into said microcapsules in said non-aqueous system in a state of individually dispersed microcapsule particles intact.

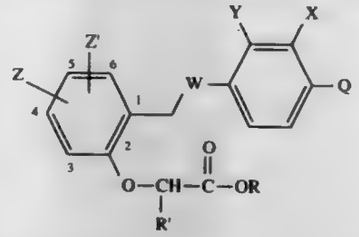
5,798,316

HERBICIDAL COMBINATIONS CONTAINING 2-[(4-HETEROCYCLIC-PHENOXYMETHYL)PHENOXY]ALKANOATES

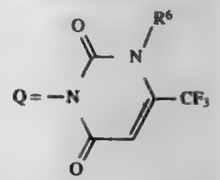
George Theodoridis, 45 Monroe La., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 523,991, Sep. 5, 1995, Pat. No. 5,674,810, which is a continuation-in-part of Ser. No. 107,560, Aug. 17, 1993, Pat. No. 5,344,812, which is a continuation-in-part of Ser. No. 935,601, Aug. 26, 1992, Pat. No. 5,262,390. This application May 29, 1997, Ser. No. 865,306
Int. Cl.[6] A01N *43/54*
U.S. Cl. 504—136 13 Claims

1. A herbicidal composition comprising a herbicidally effective amount of a mixture of a compound of the formula



in which R'=CH_3, W=O, Q=



R is hydrogen, M, lower alkyl; cycloalkyl comprising from 3 to 6 carbon atoms; lower alkenyl; or lower alkynyl, each optionally substituted with one or more chlorine or fluorine, or $—[CHR^7—(CH_2)_m—O]_nR^8$,

each of R^1 through R^5 is lower alkyl or lower haloalkyl;

R^6 is lower haloalkyl, lower alkoxyalkyl, or amino;

R^7 is hydrogen or methyl;

R^8 is lower alkyl;

X is hydrogen, methyl, fluorine, or chlorine;

Y is hydrogen;

Z is hydrogen, fluorine, chlorine, bromine, lower alkyl, or methoxy;

Z' is hydrogen, fluorine, or chlorine;
Z and Z' taken together may be —$(CH_2)_4$— to form a tetrahydronaphthyl moiety;
m is 0 to 2, and n is 1 to 6; and
M is sodium, potassium or ammonium, and a herbicide of a different structure in admixture with at least one agriculturally acceptable carrier.

5,798,317

HERBICIDAL MIXTURES COMPRISING ANILOFOS AND OTHER HERBICIDES

Thalia Pappas-Fader, Landenberg, Pa.; Daniel Carl Leep, Newark; Marc Ruggiero, Wilmington, both of Del.; William Francis Smith, III, Elkton, Md., and Alexander Yung Shing Yang, Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 549,107, Oct. 27, 1995, Pat. No. 5,736,486, which is a continuation-in-part of Ser. No. 334,720, Nov. 4, 1994, abandoned. This application Oct. 6, 1997, Ser. No. 944,214

Int. Cl.[6] **A01N** *57/06;47/36;43/68;37/22*

U.S. Cl. 504—128 **23 Claims**

1. A herbicidally effective mixture of anilofos (Formula I) with one or more herbicidal compounds selected from
(a) chlorimuron ethyl (Formula IIc),
(b) metsulfuron methyl (Formula IIb),
(c) azimsulfuron (Formula IIa),
(d) bensulfuron methyl (Formula IId),
(e) ethametsulfuron methyl (Formula IIe),
(f) nicosulfuron (Formula IIf),
(g) rimsulfuron (Formula IIg),
(h) sulfometuron methyl (Formula IIh),
(i) thifensulfuron methyl (Formula IIi),
(j) tribenuron methyl (Formula IIj),
(k) triflusulfuron methyl (Formula IIk),
(l) methyl 2-[[[[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl] amino]sulfonyl]-6-(trifluoromethyl)-3-pyridinecarboxylate (Formula III),
(m) chlorsulfuron (Formula IIm),
(n) propanil (Formula IIn), and
(o) hexazinone (Formula IIo),
and their agriculturally suitable salts, providing that when a herbicidally effective amount of bensulfuron methyl is present in the mixture, then one or more compounds of Formula IIa to IIc and IIe to IIo are also present in herbicidally effective amounts, and providing that when a herbicidally effective amount of propanil is present in the mixture, then one or more compounds of Formula IIa to IIm and IIo are also present in herbicidally effective amounts.

5,798,318

REACTION FOR HIGH PERFORMANCE $(BI,PB)_2SR_2CA_2CU_3O_Y$ COMPOSITES

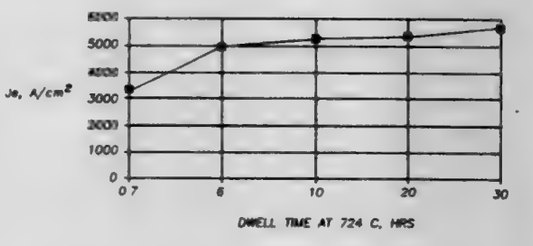
Qi Li, Waltham; William J. Michels, Brookline; Ronald D. Parrella, Natick; Gilbert N. Riley, Jr., Marlborough; Mark D. Teplitsky, Westborough, and Steven Fleshler, Brookline, all of Mass., assignors to American Superconductor Corp., Westborough, Mass.

Filed May 21, 1996, Ser. No. 651,169

Int. Cl.[6] **H01B** *12/02;* **H01L** *39/24*

U.S. Cl. 505—501 **24 Claims**

1. A method of processing a (Bi,Pb)SCCO-2223 oxide superconductor composite after oxide superconductor phase formation, comprising:
providing an oxide superconductor composite wire or tape comprising (Bi,Pb)SCCO-2223;
heating the oxide superconductor composite wire or tape under conditions selected to reduce the lead content of the (Bi,Pb)SCCO-2223 oxide superconductor by about 5 percent to about 50 percent by weight and to localize the exsolved lead in a secondary phase at high energy sites of the composite, whereby the oxide superconducting composite wire or tape is characterized by retention or improvement of electrical transport carrying properties, wherein said conditions comprise heating said composite wire or tape above 500° C. for at least 6 hours.



5,798,319

HIGH STABILITY AND LOW METALS ESTERS BASED ON 3,5,5-TRIMETHYL-1-HEXANOL

Richard Henry Schlosberg, Bridgewater, N.J.; David Wayne Turner; Martin Anthony Krevalis, both of Baton Rouge, La.; William Joseph Munley, Jr., Houston, Tex., and Haven Scott Aldrich, Annandale, N.J., assignors to Exxon Chemical Patents Inc., Houston, Tex.

Filed Jan. 16, 1996, Ser. No. 586,117

Int. Cl.[6] **C09K** *7/00;* **C10M** *105/32*

U.S. Cl. 507—138 **44 Claims**

1. A synthetic ester composition exhibiting thermal and oxidative stability which comprises the reaction product of 3,5,5-trimethyl-1-hexanol and an acid or anhydride; wherein said synthetic ester composition exhibits the following properties: a thermal/oxidative stability, measured by HPDSC at 220° C., 3.395 MPa air and 0.5 wt. % dioctyl diphenyl amine, of at least 20 minutes; a metals content of 10 ppm or less metals based on the total synthetic ester composition; an ash content of 15 ppm or less ash based on the total synthetic ester composition; a total acid number of 0.05 mg KOH/g or less; and a volume resistivity of at least about 1×10^{11} ohm cm.

5,798,320

GELATION ADDITIVE FOR HYDRAULIC FRACTURING FLUIDS

Jeffrey C. Dawson, Spring, and Hoang Van Le, Houston, both of Tex., assignors to BJ Services Company, Houston, Tex.

Continuation of Ser. No. 858,652, May 19, 1997, abandoned, which is a continuation of Ser. No. 428,378, Apr. 25, 1995, abandoned. This application Sep. 29, 1997, Ser. No. 939,963

Int. Cl.[6] **C09K** *3/00;* **C07F** *7/00;* **E21B** *43/17*

U.S. Cl. 507—271 **17 Claims**

6. A method of preparing a zirconium crosslinker for use in crosslinking viscous polymer gels for hydraulic fracturing fluids, the method comprising the steps of:
combining in solution an amount of lactic acid or lactate salt with an amount of zirconium carbonate at a temperature of at least 200° F., wherein the amount of lactic acid or lactate salt combined with zirconium carbonate is in a molar ratio of at least about 3 to 1, and wherein the pH of the reacting solution is below about 6, and allowing the solution to react to form a precipitate of a zirconium compound and carbon dioxide gas, and allowing the carbon dioxide gas to evolve from the solution; and
neutralizing the solution with triethanolamine in an amount sufficient to dissolve the precipitate.

5,798,321

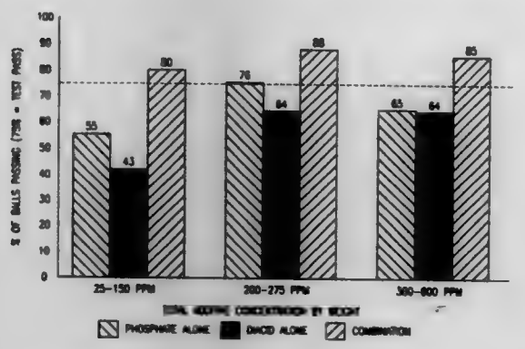
RUST RESISTANT TURBO OILS CONTAINING MONOBASIC AMINO PHOSPHATES AND DICARBOXYLIC ACIDS

Max J. Wisotsky, Highland Park; Morton Beltzer, Westfield, both of N.J.; Thomas L. Ashcraft, Leander, Tex., and Paul Joseph Berlowitz, East Windsor, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 447,509, May 23, 1995, abandoned. This application Feb. 9, 1996, Ser. No. 599,641

Int. Cl.[6] C10M *129/26;129/92;137/08*

U.S. Cl. 508—437 7 Claims



1. A method for enhancing the resistance to rust and corrosion of a synthetic polyol ester based turbo oil by adding to said turbo oil a minor portion of an additive comprising a mixture of amine phosphate and dicarboxylic acid said dicarboxylic acid being a C_9 to C_{40} total carbon number dicarboxylic acid or mixture thereof and wherein the amine phosphate consists of monobasic amine phosphate wherein the dicarboxylic acid is present in an amount in the range 25 to 1000 ppm and the amine phosphate is present in an amount in the range 25 to 500 ppm and the ratio of amine phosphate to dicarboxylic acid is in the range 5:1 to 1:5.

5,798,322

FRICTION-MODIFYING ADDITIVES FOR SLIDEWAY LUBRICANTS

William Brannen, Westlake, Ohio; Aaron Myers, Spartanburg, S.C.; Harish Patel, Spartanburg, S.C., and Philip R. Miller, Spartanburg, S.C., assignors to Gateway Additive Company, Spartanburg, S.C.

Filed Aug. 30, 1996, Ser. No. 705,614

Int. Cl.[6] C10M *141/02;141/06;141/10*

U.S. Cl. 508—442 15 Claims

1. A slideway lubricant additive composition consisting essentially of:

(a) at least one polymeric ester of a mixture of dibasic and monobasic acids wherein each acid contains 5 to 22 carbon atoms and wherein the ester group is an aliphatic group and wherein the resultant polymer has a weight average molecular weight (M_w) from about 50,000 to 3,000,000 and having an Acid Number of about 0.5 to about 30;

(b) at least one organo phosphorous compound selected from the group consisting of dialkyl hydrogen phosphites, trialkyl phosphites, aryl organo phosphites, alkyl-aryl phosphates, and alkyl amine salt of organo phosphoric acid; and

(c) a sufficient coupling agent amount of petroleum oil to contain (a) and (b) in a solution; wherein the weight ratio of said polymeric ester to said organo phosphorus compound is from about 2:1 to about 12:1 and wherein said viscosity of said petroleum oil is ISO-22 to ISO-680.

12. A slideway lubricant composition comprising a lubricant base stock and about 0.75% to about 4% by weight of the additive composition of claim 1.

5,798,323

NON-CORROSIVE STRIPPING AND CLEANING COMPOSITION

Kenji Honda, Barrington, R.I.; Richard M. Molin, Phoenix, and Gale L. Hansen, Chandler, both of Ariz., assignors to Olin Microelectronic Chemicals, Inc., Cheshire, Conn.

Filed May 5, 1997, Ser. No. 850,991

Int. Cl.[6] C11D *7/26;7/32;7/50*

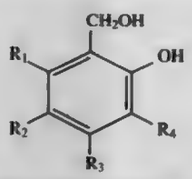
U.S. Cl. 510—176 7 Claims

1. A non-corrosive stripping and cleaning composition which is free of hydroxylamine compound, comprising:

(a) about 5% to about 50% of solvent selected from the group consisting of N-methyl-2-pyrrolidinone, N-hydroxyethyl-2-pyrrolidinone, 1,3-dimethyl-2-imidazolidinone, dimethylsulfoxide, N,N-dimethylacetamide, diacetone alcohol, ethylene glycol, propylene glycol and admixtures thereof;

(b) about 10% to about 90% alkanolamine selected from the group consisting of diethyleneglycolamine, monoethanolamine, diethanolamine, triethanolamine, 2-(2-aminoethylamino)ethanol and admixtures thereof;

(c) about 0.1 to about 4% of a corrosion inhibitor of Formula (I)



(I)

where R_1–R_4 are individually selected from the group consisting of hydrogen, alkyl group having 1–4 carbon atoms, alkoxy group having 1–4 carbon atom, halogen group, amino group, hydroxyl group, carboxylic group; and

(d) about 0.1% to about 40% water;

all percentages by weight, based on the total weight of the stripping and cleaning composition.

5,798,324

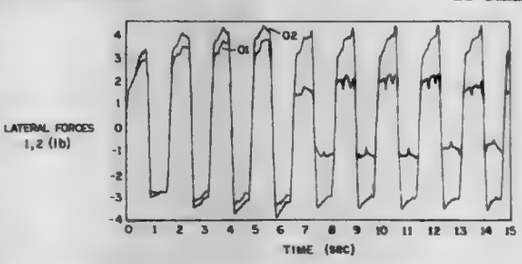
GLASS CLEANER WITH ADJUSTABLE RHEOLOGY

George J. Svoboda, Whitefish Bay, Wis., assignor to S.C. Johnson & Son, Inc., Racine, Wis.

Filed Apr. 5, 1996, Ser. No. 628,877

Int. Cl.[6] C11D *1/12;1/88;3/43*

U.S. Cl. 510—182 21 Claims



1. A composition for cleaning glass, comprising:

water;

a synthetic cross-linked polymeric agent with high thickening efficiency in an amount less than or equal to about 0.1 total weight percent;

at least one compound selected from the group consisting of

nonionic surfactants,

linear alcohols,

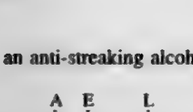
an organic ether having the formula:

R_1—O—R_2

wherein R_1 is a C_1–C_8 linear, branched or cyclic alkyl or alkenyl optionally substituted with —OH, and R_2 is a C_1–C_6 linear, branched or cyclic alkyl or alkenyl substituted with —OH,

and mixtures thereof; and

an anti-streaking alcohol having the formula

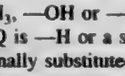


wherein A, D, E, G, L and M are independently —H, $—CH_3$, —OH or $—CH_2OH$; J is a single bond or —O—; and Q is —H or a straight chain or branched C_1–C_5 alkyl optionally substituted with —OH, with the proviso that:

(i) if Q is not alkyl substituted with —OH, then at least one of A, D, E, G, L and M is —OH or $—CH_2OH$;

(ii) when only one of A and E is —OH and J is a single bond, D, G, L, M and Q may not be —H simultaneously;

(iii) when A, D, E, G and L are —H simultaneously, J is a single bond and M is $—CH_2OH$, Q may not be —H or



and

(iv) when J is a single bond, none of E, G, L and M is $—CH_3$ or $—CH_2OH$ and Q is $—CH_2CH_2CH_2CH_3$, then at least two of A, D, E, G, L and M are —OH, or at least one of A and D is —CH or $—CH_2OH$,

the composition having a pH of at least 7, and a viscosity in the range of at about 20 centipoise to about 140 centipoise.

5,798,325

COMPOSITION AND PROCESS FOR BARRIER COATING AND/OR CLEANING PAINT MASKS

Scott J. Beleck, St. Clair Shores, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Jan. 24, 1997, Ser. No. 789,674

Int. Cl.[6] C09D *9/00*

U.S. Cl. 510—201 **20 Claims**

1. An aqueous liquid composition suitable either as such or after dilution with water for simultaneously (i) removing a previously formed barrier coating and any paint residues thereon from a paint mask in a conventional power washer for paint masks and (ii) redepositing on the paint mask a barrier coating suitable for reuse of the paint mask, said aqueous liquid composition comprising:

(A) an amount of a component of dissolved organic film-forming polymer;

(B) an amount of a component of dissolved inorganic salts; and

(C) an amount of a component of dissolved organic molecules that (i) are hydrocarbons except for having hydroxyl substituents and, optionally, having one or more other types of substituents selected from halogen atoms, keto groups, and aldehydo groups, (ii) have a number ratio of oxygen atoms to carbon atoms that is at least 0.5, and (iii) are not part of any of the previously recited components.

5,798,326

AUTOMATIC DISHWASHING COMPOSITIONS COMPRISING COBALT III CATALYSTS

Alan Scott Goldstein, Blue Ash; Edward Eugene Getty, Cincinnati, both of Ohio, and William Michael Scheper, Lawrenceburg, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 382,546, Feb. 2, 1995, abandoned. This application Feb. 10, 1997, Ser. No. 799,588

Int. Cl.[6] C11D *1/722;3/39;3/26;3/395*

U.S. Cl. 510—221 **6 Claims**

1. An automatic dishwashing composition which is particularly effective in removing tea stains comprising:

(a) an amount sufficient to provide from about 0.1 ppm to about 50 ppm in aqueous solution of a cobalt catalyst having the formula:

$$[Co(NH_3)_n(X)_m]Y_y$$

wherein cobalt is in the +3 oxidation state, n is an integer from 3 to 5; X is one or more labile coordinating moieties; m is an integer from 1 to 3; m+n=6; and Y is a counteranion; and y is an integer from 1 to 3;

(b) from about 0.1% to about 70% by weight of the composition of a source of hydrogen peroxide;

(c) from about 0.1% to about 10% by weight of the composition of a polyoxypropylene/polyoxyethylene/polyoxypropylene block copolymer low foaming nonionic surfactant; and

(d) from about 30% to about 99.9% adjunct materials formulated to provide low foaming compositions for use in an automated dishwashing machine;

wherein a 1% aqueous solution of said automatic dishwashing composition has a pH of less than 11.

5,798,327

ENZYMATIC DETERGENT COMPOSITIONS

Eric Casteleijn, Vlaardingen; Willem R. van Dijk, Oud Beijerland; Jan Klugkist, and Pieter Dirk van Wassenaar, both of Vlaardingen, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 20, 1996, Ser. No. 752,108

Claims priority, application European Pat. Off., Nov. 27, 1995, 95203261

Int. Cl.[6] C11D *3/386;3/395*

U.S. Cl. 510—303 **3 Claims**

1. An aqueous, isotropic liquid detergent composition comprising:

(a) 0.1% to 60% by weight of one or more surfactants;

(b) 0.06 to 600 CMCU per gram of said detergent composition of active endoglucanase E5 which is produced by *Thermomonospora fusca;* and

(c) a proteolytic enzyme whereby the pH of a solution of 1 gram of the detergent composition in 1 liter of water with a hardness of 10° German before the addition of the detergent composition at 20° C., is in the range of 7 to 11.

5,798,328

DETERGENT COMPOSITION COMPRISING CARBONATE-AMORPHOUS SILICATE COMPOUND AS BUILDER AND PROCESSES OF USING SAME

Beatrix Kottwitz; Joerg Poethkow, both of Duesseldorf, and Horst Upadek, Ratingen, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP95/00506, § 371 Date Aug. 22, 1996, § 102(e) Date Aug. 22, 1996, PCT Pub. No. WO95/22592, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 13, 1995, Ser. No. 702,568

Claims priority, application Germany, Feb. 22, 1994, 44 05 511.0

Int. Cl.[6] C11D *17/00;3/08;3/10;3/12*

U.S. Cl. 510—438 **18 Claims**

1. A detergent composition containing surfactants selected from the group consisting of anionic, nonionic, cationic, amphoteric and zwitterionic surfactants, said composition further containing a builder component comprising amorphous alkali metal silicates and alkali metal carbonates in the form of a compound which consists of at most 25% by weight of water, about 40% to 80% by weight of alkali metal carbonate and about 10% to 40% by weight of alkali metal silicate, with the proviso that the alkali metal carbonate content is always greater than the alkali metal silicate content of said compound, and wherein said compound has a particle size distribution wherein at most 20% by weight of the

particles have a smaller length diameter than 250 μm, and at most 15% by weight of the particles have a larger length diameter than 1.5 mm.

10. The process of washing a soiled surface comprising contacting said surface with a detergent composition containing surfactants selected from the group consisting of anionic, nonionic, cationic, amphoteric and zwitterionic surfactants, said composition further containing a builder component comprising amorphous alkali metal silicates and alkali metal carbonates in the form of a compound which consists of at most 25% by weight of water, about 40% to 80% by weight of alkali metal carbonate and about 10% to 40% by weight of alkali metal silicate, with the proviso that the alkali metal carbonate content is always greater than the alkali metal silicate content of said compound and wherein said compound has a particle size distribution wherein at most 20% by weight of the particles have smaller length diameter than 250 μm, and at most 15% by weight of the particles have a larger length diameter than 1.5 mm.

5,798,329

GERMICIDAL LIQUID LAUNDRY DETERGENT COMPOSITIONS

Timothy J. Taylor, Edison, and Alan F. Richter, Branchburg, both of N.J., assignors to Reckitt & Colman Inc., Montvale, N.J.

Filed Jun. 20, 1996, Ser. No. 666,897

Claims priority, application United Kingdom, Jan. 31, 1996, 9601904

Int. Cl.[6] C11D *1/06;1/12;1/62;1/86*

U.S. Cl. 510—384 **20 Claims**

1. An aqueous liquid laundry detergent composition having germicidal efficacy comprising:

A) 1–40 parts by weight of one or more anionic surfactant compositions selected from alkylethercarboxylates and alkylethersulfonates;

B) 1–25 parts by weight of one or more quaternary ammonium surfactant compositions having germicidal properties;

C) 3–50 parts by weight of one or more nonionic surfactant compositions selected from linear and secondary alcohol alkoxylates, alkylphenol ethoxylates, alkyl polyglycosides, amine oxides, alkanolamides;

D) 0–10 parts by weight of one or more anionic co-surfactant compositions selected from alkylsulfates, alkylsulfonates, alkylethersulfates, alkylarylsulfonates, alkylarylethersulfates present in a proportion not exceeding one half of the weight of the one or more quaternary ammonium surfactant compositions having germicidal properties;

wherein the weight ratios of B:A are at 1:2 to 2.5:2

with the remaining balance to 100 parts by weight of water.

5,798,330

LIQUID CLEANING COMPOSITIONS

Anne-Marie Misselyn, Villers-l'eveque; Patrick Durbut, Verviers, and Guy Broze, Grace-Hollogne, all of Belgium, assignors to Colgate-Palmolive Co, Piscataway, N.J.

Filed Jul. 9, 1996, Ser. No. 677,183

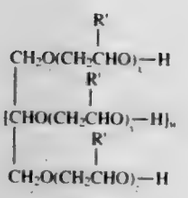
Int. Cl.[6] C11D *3/20;3/37;1/83;1/02*

U.S. Cl. 510—421 **13 Claims**

1. A microemulsion composition comprising approximately by weight:

(a) 1% to 30% of an anionic surfactant;

(b) 0.1% to 10% of a Lewis base which is an alkoxylated polyhydric alcohol having the formula:



wherein w equals one to four, x, y and z have a value between 0 and 60, provided that (x+y+z) equals 2 to 100, and wherein R' is either hydrogen atom or methyl group, said Lewis base being complexed with said anionic surfactant;

(c) 0.1% to 25% of a cosurfactant;

(d) 0 to 10% of a water insoluble hydrocarbon or perfume; and

(e) the balance being water, said composition not containing an alkali metal builder or an alkali metal silicate.

5,798,331

SUCCINIC ACID DERIVATIVES AND THEIR USE AS SURFACTANTS

Steven John Anderson, and Neil Michael Carpenter, both of Cleveland, United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

PCT No. PCT/GB95/02785, § 371 Date May 28, 1997, § 102(e) Date May 28, 1997, PCT Pub. No. WO96/16930, PCT Pub. Date Jun. 6, 1996

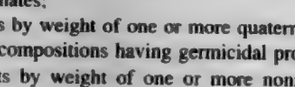
PCT Filed Nov. 29, 1995, Ser. No. 849,099

Claims priority, application United Kingdom, Dec. 2, 1994, 9424353

Int. Cl.[6] C11D *1/66*

U.S. Cl. 510—501 **22 Claims**

1. A succinic acid derivitve of the formula (I):



(I)

where

one of R^1 and R^2 in the succinic acid derivitve is C_6 to C_{22} alkenyl or alkyl and the other is hydrogen;

R^3 is a polyhydroxy hydrocarbyl radical;

R^4 is hydrogen, C_1 to C_{22} hydrocarbyl, or R^4 is independently as defined above for R^3;

R^5 is a group: $—NR^3R^4$ where R^3 and R^4 are independently as defined above; or

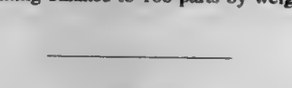
R^5 is a group: $—O.(AO)_n.R^6$ where:

AO is an alkylene oxide residue;

n is 1 to 200; and

R^6 is hydrogen or C_1 to C_{22} hydrocarbyl; or

R^6 is a group:



where R^1, R^2, R^3 and R^4 are independently as defined above; or

R^6 is a group: $—NR^7R^8$ where:

R^7 is hydrogen or C_1 to C_{22} hydrocarbyl; and R^8 is C_1 to C_{22} hydrocarbyl; or

$—NR^7R^8$ is a pyrrolidino-, piperidino-, morpholino-, piperazino, or a N—(C_1 to C_6 alkyl) piperazino- group; or

$—NR^7R^8$ is a group of the formula $—NH.(AO)_n.R^9$ where AO and n are as defined above and R^9 is a C_1 to C_{22} hydrocarbyl group; or

$—NR^7R^8$ is a group of the formula $—NH.(AO)_p.CH_2CH_2.OR^{10}$

where AO is as defined above; p is from 0 to 200; and

R^{10} is a C_1 to C_{22} hydrocarbyl; or

R^{10} is a group:

$(R^1H).C.CO.NR^3R^4$
|
$(R^2H).C.CO.$

where R^1, R^2, R^3 and R^4 are independently as defined above.

5,798,332

GLYCOSYLATION-MEDIATED INHIBITION OF FACTOR X

Uma Sinha, San Francisco, and David L. Wolf, Palo Alto, both of Calif., assignors to COR Therapeutics, Inc., South San Francisco, Calif.

Continuation of Ser. No. 854,109, Mar. 20, 1992, abandoned. This application Sep. 6, 1994, Ser. No. 302,226

Int. Cl.[6] A61K *38/16;38/36;38/43*

U.S. Cl. 514—8 **18 Claims**

1. A method to treat thrombosis and conditions whose pathogenesis involves thrombin generation in a human subject, which method comprises administering to a subject in need of such treatment an amount of a reagent that binds to SA(α2-6)Gal or SA(α2-6)GalNAc or a pharmaceutical composition thereof effective to inhibit thrombosis.

5,798,333

WATER-SOLUBLE CONCENTRATES CONTAINING CYCLOSPORINS

Bernard C. Sherman, 50 Oldcolony Rd., Willowdale, Ontario, Canada, M2L 2K1

Filed Sep. 17, 1996, Ser. No. 715,033

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—11 **15 Claims**

1. A pharmaceutical composition in the form of a solution preconcentrate comprising a cyclosporin dissolved in tocophersolan and a hydrophillic organic solvent.

5,798,334

PHARMACEUTICAL COMPOSITIONS FOR SCARLESS TISSUE REPAIR AND REGENERATION AND METHODS RELATED THERETO

Kenneth R. Cutroneo, Burlington, Vt., assignor to Colla-Gene, Inc., Burlington, Vt.

Filed Sep. 28, 1995, Ser. No. 535,672

Int. Cl.[6] A61K *38/18;* **C07K** *14/475;14/495*

U.S. Cl. 514—12 **9 Claims**

1. A pharmaceutical composition for bringing the level back to control the fibrogenic effect of a fibrotic growth factor TGFB-1, which acts through the serine threonine kinase signal transduction mechanism and causes scarring, which comprises an effective amount of said growth factor to stimulate collagen synthesis, and an effective amount of an glucocosticoid to reduce the growth factor-mediated increased of collagen synthesis and collagen gene expression, together with a pharmaceutically acceptable carrier in a mammal suffering from a wound or injury repair disorder.

5,798,335

METHOD FOR THE TREATMENT OR PREVENTION OF ECZEMA/DERMATITIS

Jurgen Michaelis, Karlong, and Timothy Elliot Trigg, Warawee, both of Australia, assignors to Peptide Technology Limited, Dee Why, Australia

PCT No. PCT/AU94/00574, § 371 Date May 7, 1996, § 102(e) Date May 7, 1996, PCT Pub. No. WO95/08338, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 26, 1994, Ser. No. 619,462

Claims priority, application Australia, Sep. 24, 1993, PM1449

Int. Cl.[6] A61K *38/00;38/08;* **C07K** *7/00;7/04*

U.S. Cl. 514—15 **2 Claims**

1. A method of treating eczema and/or dermatitis in a subject, comprising administering to the subject a therapeutic amount of the peptide D-Ala-Ser-Thr-Thr-Thr-Thr-Asn-Tyr-Thr-NH_2.

5,798,336

ANTIMICROBIAL PEPTIDES

James Travis, Athens; William M. Shafer, Lithonia, both of Ga.; Neelesh Bangalore, Gaithersburg, Md., and Jan Pohl, Doraville, Ga., assignors to Emory University, Atlanta, and University of Georgia Research Foundation Inc., Athens, both of Ga.

Continuation of Ser. No. 956,848, Oct. 2, 1992, Pat. No. 5,447,914, which is a continuation-in-part of Ser. No. 541,635, Jun. 21, 1990, abandoned. This application Jun. 6, 1995, Ser. No. 471,956

Int. Cl.[6] A61K *38/00;* **C07K** *7/08;14/00*

U.S. Cl. 514—16 **2 Claims**

1. A method of inhibiting microbial growth by a bacterium, said method comprising the step of administering an effective amount of a composition, said composition comprising a pharmaceutically acceptable carrier and at least one antimicrobial peptide comprising an amino acid sequence, containing from about five to about twenty-seven amino acids, selected from the group consisting of IIGGR SEQ ID NO:1), IVGGR (SEQ ID NO:2), HPQYNQR (SEQ ID NO:3), IIGGRESRPHSRPYMAYLQI (SEQ ID NO:16), RRENTQQHITARRAIRHPQY (SEQ ID NO:19), RPGTLCTVAGWGRVSMRRGT (SEQ ID NO:22), GKSSGVPPEVFTRFVSSFLPWIRTTMR (SEQ ID NO:26), CTVAGWGRVSMRRGT (SEQ ID NO:39), WGRVSMRRGT (SEQ ID NO:40), and D-R-D-P-D-G-D-T-D-L-D-C-D-V-D-A-D-G-D-W-D-G-D-R-D-V-D-S-D-M-D-R-D-R-D-G-D-T, wherein the bacterium is sensitive to at least one antimicrobial peptide of said composition.

5,798,337

LOW MOLECULAR WEIGHT PEPTIDOMIMETIC GROWTH HORMONE SECRETAGOGUES

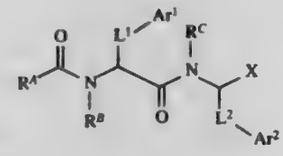
Todd C. Somers, Foster City; Kathleen A. Elias, San Francisco; Ross G. Clark, Pacifica; Robert S. McDowell, San Francisco; Mark S. Stanley; John P. Burnier, both of Pacifica, and Thomas E. Rawson, Mountain View, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Nov. 16, 1994, Ser. No. 340,767

Int. Cl.[6] A61K *38/05*

U.S. Cl. 514—19 **26 Claims**

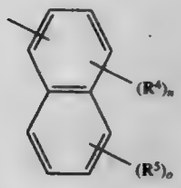
1. A compound represented by Formula II



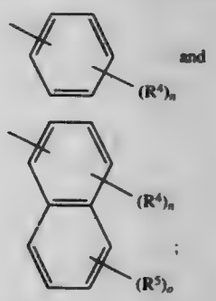
II

where

Ar^1 is



and Ar^2 is selected from the group consisting of indolyl,



and

;

n and o are independently 1, 2 or 3;

n and o are independently 1, 2 or 3;

L^1 is selected from the group consisting of

$—CH_2—O—$,

$—CH_2—CH_2—O—$

$—CH_2—$,

$—CH_2—CH_2—$ and

$—CH_2—CH_2—CH_2—$;

L^2 is selected from the group consisting of

a covalent bond,

$—O—$,

$—O—CH_2—$ and

L^1;

R^A is selected from the group consisting of

C_0–C_3alkyl-heterocycle,

$O—C_0$–C_3alkyl-heterocycle and

$NR^2—C_2$–C_6alkyl-heterocycle,

where the heterocycle is a mono-, bi- or tricycle containing 5–12 ring atoms, one or two of which are heteroatoms selected from the group consisting of O, S and N, provided at least one heteroatom is N, where any N atom is optionally substituted with R^1,

C_0–C_6alkyl substituted with one or two substituents,

$O—C_2$–C_6alkyl substituted with one or two substituents and

$NR^2—C_2$–C_6alkyl substituted with one or two substituents

where the substituents are selected from the group

NR^2R^3,

imidazolinyl,

pyridinyl,

dihydropyridinyl and

piperidinyl;

R^B and R^C are selected from the group consisting of

hydrogen,

C_1–C_6alkyl optionally substituted with a group selected from the group consisting of

NR^2R^3 and

phenyl-C_1–C_3alkyl-NR^2R^3, and

halo(F, Cl, Br, I)C_1–C_6alkyl;

R^1 is selected from the group consisting of

hydrogen,

C_1–C_6alkyl,

$C(=O)—C_1$–C_6alkyl,

$C(=O)—NR^2R^3$,

$C(=NR^2)—NR^2R^3$,

$C(=O)O—C_1$–C_6alkyl,

halo(F, Cl, Br, I)C_1–C_6alkyl and

C_1–C_6alkyl substituted with 1–3 hydroxyl groups;

R^2 and R^3 are independently selected from the group consisting of

C_1–C_6alkyl-NH_2,

C_1–C_6alkyl-heterocycle,

C_1–C_6alkyl-$NH—C_1$–C_6alkyl,

C_1–C_6alkyl-$N—$(di-C_1–C_6alkyl),

R^1 and

piperidinyl;

R^2 and R^3 together with the N to which they are bonded may form a 5- or 6-member heterocycle, optionally containing one additional hetero atom selected from the group consisting of O, S and N where any N is optionally substituted with R^1, any carbon is optionally substituted with R^6 and where the heterocycle is optionally fused to a phenyl ring, optionally substituted with R^4;

R^4 and R^5 are independently selected from the group consisting of

hydrogen,

halo(F, Cl, Br and I),

cyano,

amino,

amido,

nitro,

hydroxy,

C_1–C_6alkyl optionally substituted with 1–3 R^6,

C_2–C_6alkynyl optionally substituted with 1–3 R^6,

C_2–C_6alkyloxy optionally substituted with 1–3 R^6,

C_1–C_6acylamino optionally substituted with 1–3 R^6,

C_1–C_6alkylcarbonyl optionally substituted with 1–3 R^6,

C_1–C_6alkyloxycarbonyl optionally substituted with 1–3 R^6,

$N—(C_1$–C_6alkyl),$N—(C_1$–C_6acyl)amino optionally substituted with 1–3 R^6,

$N—(C_1$–C_6alkyl)carboxamido optionally substituted with 1–3 R^6,

N,N-di(C_0–C_6alkyl)amino optionally substituted with 1–3 R^6,

N,N-di(C_1–C_6alkyl)carboxamido optionally substituted with 1–3 R^6,

C_1C_4perfluoroalkyl and

C_1–C_3perfluoroalkoxy;

R^6 is selected from the group consisting of

$COOR^2$,

$CONR^2R^3$,

cyano,

NR^2R^3,

NR^2COR^3,

azido,

nitro and

hydroxy;

X is selected from the group consisting of

hydrogen,

oxo (=O),

$COOR^2$,

$CONR^2R^3$,

C_0–C_6alkyl-$O—C_1$–C_6alkyl optionally substituted with 1–2 R^6 and

C_1–C_6alkyl optionally substituted with 1–2 R^6;

or a pharmaceutically acceptable salt thereof.

5,798,338

SOLID DOSAGE FORMS THAT CONTAIN CLATHRATES OF 17α-ETHINYL ESTRADIOL

Thomas Backensfeld, and Johannes Tack, both of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

PCT No. PCT/EP95/02656, § 371 Date Apr. 2, 1997, § 102(e) Date Apr. 2, 1997, PCT Pub. No. WO96/02277, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 10, 1995, Ser. No. 765,823

Claims priority, application Germany, Jul. 20, 1994, 44 26 709.6

Int. Cl.[6] A61K *31/705;31/565*

U.S. Cl. 514—26 **14 Claims**

1. A pharmaceutical composition comprising an effective amount of 17α-ethinylestradiol, and an amount of a β-cyclodextrin which is effective in reducing the oxidative degradation of the 17α-ethinylestradiol, wherein the composition is a clathrate.

5,798,339

TREATMENT METHOD FOR CANCER

Lorne J. Brandes, Winnipeg, Canada, assignor to University of Manitoba, Winnipeg, Canada

Continuation-in-part of Ser. No. 711,975, Jun. 7, 1991, which is a continuation-in-part of Ser. No. 627,863, Dec. 17, 1990, abandoned. This application Jun. 28, 1993, Ser. No. 82,785

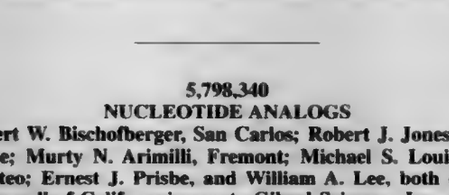
Claims priority, application United Kingdom, Feb. 17, 1993, 9303210

Int. Cl.[6] H61K *31/70;31/135*

U.S. Cl. 514—34 **2 Claims**

1. A method for the treatment of cancer cells susceptible of chemotherapy treatment by adriamycin in an animal, which comprises:

(a) administering to said animal a diphenyl compound of the formula:



in the form of its hydrochloride for a period of about sixty minutes, and

(b) at the end of said sixty minute period, administering to said animal adriamycin in an amount toxic to the cancer cells.

5,798,340

NUCLEOTIDE ANALOGS

Norbert W. Bischofberger, San Carlos; Robert J. Jones, Millbrae; Murty N. Arimilli, Fremont; Michael S. Louie, San Mateo; Ernest J. Prisbe, and William A. Lee, both of Los Altos, all of Calif., assignors to Gilead Sciences, Inc., Foster City, Calif.

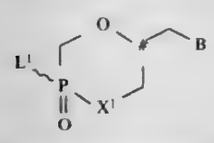
PCT No. PCT/US94/10539, § 371 Date May 6, 1996, § 102(e) Date May 6, 1996, PCT Pub. No. WO95/07920, PCT Pub. Date Mar. 23, 1995

Continuation-in-part of Ser. No. 193,341, Feb. 8, 1994, abandoned, and Ser. No. 597,005, Feb. 5, 1996, Pat. No. 5,591,851, each which is a continuation-in-part of Ser. No. 123,483, Sep. 17, 1993, Pat. No. 5,656,745. This PCT application Sep. 16, 1994, Ser. No. 617,849

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—45 **41 Claims**

1. A compound of the formula Ib



Ib

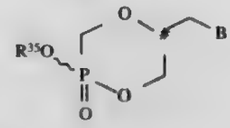
and stereoisomers and salts of such compounds wherein

X^1 is S;

L^1 is an oxyester or a thio ester; and

the carbon atom designated # has linked substituents that are in the R, S or RS configuration.

28. A method comprising orally administering to a subject an antivirally-effective dose of a compound having the structure



and salts of such compounds wherein the carbon atom designated # has linked substituents that are in the R, S or RS configuration, B is cytosine and R^{35} is alkylsalicylphenyl (C_1–C_4 alkyl).

5,798,341

USE OF COBALAMINS FOR TOPICAL TREATMENT OF SKIN DISORDERS

Karsten Klingelhöller, Eintrachtstrasse 39, 42275 Wuppertal, Germany

PCT No. PCT/EP94/01951, § 371 Date Mar. 25, 1996, § 102(e) Date Mar. 25, 1996, PCT Pub. No. WO94/28907, PCT Pub. Date Dec. 22, 1994

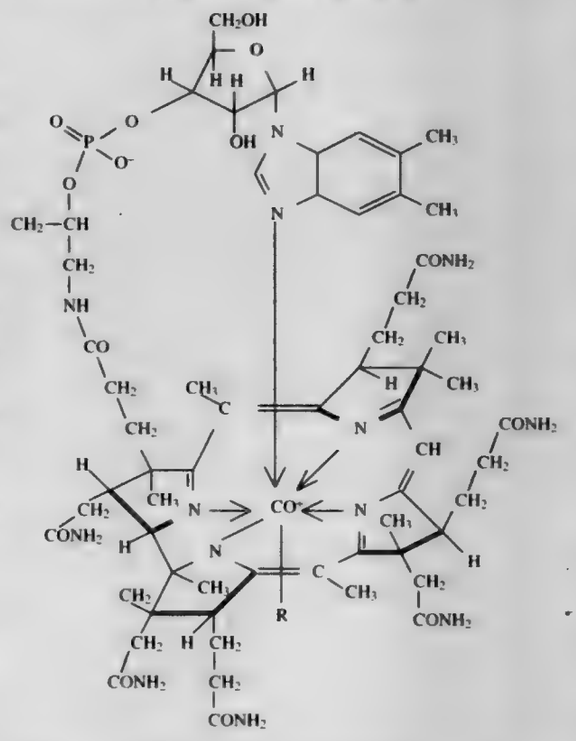
PCT Filed Jun. 15, 1994, Ser. No. 553,542

Claims priority, application Germany, Jun. 15, 1993, 43 19 629.3

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—52 **3 Claims**

1. A method of carrying out a topical treatment of inflammatory and hyperproliferative skin elements and/or cutaneous manifestations of illnesses which are immunologic in origin, the method comprising using compounds having the formula



wherein R is selected from the group consisting of CN, OH, CH_3 and H_2O.

5,798,342

USE OF NATURAL CYCLODEXTRINS AND THEIR DERIVATIVES FOR THE SOLUBILIZATION OF PLATELET ANTI-AGGREGATING AGENTS FROM THE FAMILY OF GINKGOLIDES

Jacques Defaye, St. Ismier; Valérie Laine, St. Jean de Bournay; Florence Djedaini-Pilard, Etampes, and Bruno Perly, La Verriere, all of France, assignors to Commissariat A L' Energie Atomique, Paris, France

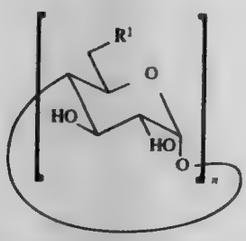
Filed Sep. 9, 1996, Ser. No. 711,265

Claims priority, application France, Sep. 20, 1995, 95 11040

Int. Cl.[6] A61K *31/715;31/335;31/365*

U.S. Cl. 514—58 **24 Claims**

1. A process for solubilization in an aqueous medium of an antagonizing agent of the platelet aggregation factor belonging to the family of Ginkgolides, characterized in that it consists of combining said agent with a cyclodextrin of formula:



(I)

in which n is equal to 6, 7 or 8 and the R^1, which can be the same or different, represent OH or SR^2, with R^2 representing a group derived from a monosaccharide or an oligosaccharide, in order to form therewith an inclusion complex soluble in water.

5,798,343

7-O-CARBAMOYLHEPTOSE DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND THEIR USE IN TREATING PSEUDOMONAS INFECTIONS

Ulrich Zähringer; Frank Beckmann, and Hermann Moll, all of Borstel, Germany, assignors to Forschungsinstitut Borstel Institut fur Experimentelle Biologie und Medizin, Borstel, Germany

PCT No. PCT/EP95/02780, § 371 Date Jan. 15, 1997, § 102(e) Date Jan. 15, 1997, PCT Pub. No. WO96/02550, PCT Pub. Date Feb. 1, 1996

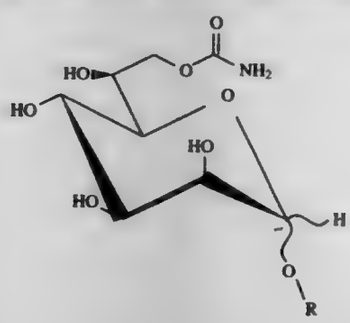
PCT Filed Jul. 14, 1995, Ser. No. 765,970

Claims priority, application Germany, Jul. 15, 1994, 44 25 090.3

Int. Cl.[6] A61K *31/735;31/70;* **C07H** *1/00;13/12*

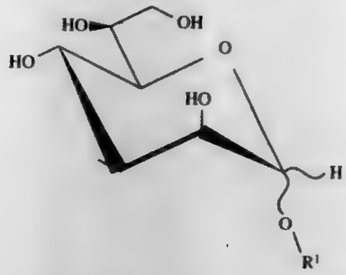
U.S. Cl. 514—54 **6 Claims**

1. 7-O-Carbamoylheptose derivatives of the formula



(I)

wherein R is R^1 or a group of the formula (II)



(II)

wherein R^1 is a hydrogen atom, a methyl group or a linker substituent suitable for covalent coupling.

5. A method for treating Pseudomonas infections comprising administering to a patient in need thereof an effective amount of at least one carbamoylheptose derivative according to claim 1.

5,798,344

PHOSPHONIC ESTER DERIVATIVES OF QUINAZOLINONES

Yasuhisa Kuroki; Kazuyoshi Miyata; Yoshihiko Tsuda; Yasuhide Inoue, all of Naruto; Jun Kanaya, and Keigo Sato, both of Tokushima-ken, all of Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

PCT No. PCT/JP95/00303, § 371 Date Sep. 5, 1996, § 102(e) Date Sep. 5, 1996, PCT Pub. No. WO95/24410, PCT Pub. Date Sep. 14, 1995

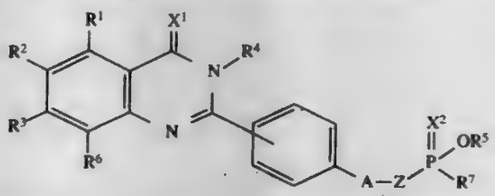
PCT Filed Feb. 27, 1995, Ser. No. 704,740

Claims priority, application Japan, Mar. 8, 1994, 6-037361; Jun. 8, 1994, 6-126526; Sep. 19, 1994, 6-251484

Int. Cl.[6] A61K *31/675;* **C07F** *9/6512*

U.S. Cl. 514—80 **17 Claims**

1. A phosphonic ester derivative of the formula:



(I)

wherein R^1, R^2, R^3 and R^6 are the same or different and each represents a hydrogen atom, a lower alkyl group, a halogen atom, a nitro group, a lower alkoxy group, a cyano group, a phenylsulfonylamino group, a benzoylamino group, an amino group or a halogen-substituted lower alkyl group, R^4 represents a phenyl group, a lower alkyl group, a phenyl(lower)alkyl group optionally substituted by halogen on the phenyl ring, a lower alkenyl group, a carboxy(lower)alkyl group, a (lower)alkoxycarbonyl(lower)alkyl group, a (lower)alkoxy(lower)alkyl group, a lower alkynyl group, a benzoyl(lower)alkyl group, an amino group, a di(lower)alkanoylamino group, a benzylideneamino group optionally having lower alkoxy on the phenyl ring or a pyridylmethylideneamino group, R^5 represents a lower alkyl group, R^7 represents a lower alkoxy group, a hydroxyl group, a phenyl group, a phenyl(lower)alkoxy group optionally having halogen on the phenyl ring or a phenyl(lower-)alkylamino group, X^1 and X^2 independently represent an oxygen atom or a sulfur atom, A represents an oxygen atom or a single bond, and Z represents a lower alkylene group.

5,798,345

METHOD OF INHIBITING THE HYPERPROLIFERATION OF MALIGNANT CELLS

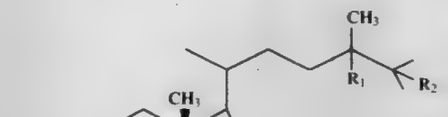
Joyce C. Knutson, Madison, and Charles W. Bishop, Verona, both of Wis., assignors to Bone Care International, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 265,438, Jun. 24, 1994, which is a continuation of Ser. No. 886,554, May 20, 1992, abandoned, which is a continuation-in-part of Ser. No. 800,045, Nov. 29, 1991, abandoned, which is a continuation of Ser. No. 586,854, Sep. 21, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 486,387

Int. Cl.[6] A61K *31/59*

U.S. Cl. 514—167 18 Claims

1. A method of inhibiting the hyperproliferative activity of malignant cells, comprising treating the malignant cells with an antihyperproliferative-effective amount of compound of formula (I):



(I)

wherein R_1 is either H or OH and R_2 is either H or OH and salts, hydrates and solvates thereof.

5,798,346

PESTICIDAL FORMULATION AND METHOD OF COMBATING PESTS

Martin David Bloomberg; Coenrand Jacobus Beukes Scholtz, and Ian Francois Brink, all of Johannesburg, South Africa, assignors to Gouws & Scheepers (Proprietary) Limited, South Africa

Continuation of Ser. No. 900,178, Jun. 17, 1992, abandoned. This application Jul. 12, 1994, Ser. No. 273,609

Claims priority, application South Africa, Jun. 18, 1991, 91/4674

Int. Cl.[6] A01N *57/10;57/26;57/28;25/02*

U.S. Cl. 514—137 14 Claims

1. A pecticidal stem paint formulation for direct application to a trunk, stem or branch of perennial plants and trees, the formulation having systemic pesticidal activity and consisting essentially of:

a first active ingredient being the compound methamidophos; and

a second ingredient selected from the group consisting of polyhydric alcohols, aryl ethoxylates, polyethylene glycol, ethoxylated propyleneoxide polymers, and mixtures thereof, the second ingredient being present in a quantity to serve as a solvent for the first active ingredient.

5,798,347

THERAPEUTIC METHODS AND DELIVERY SYSTEMS UTILIZING SEX STEROID PRECURSORS

Fernand Labrie, Quebec, Canada, assignor to Endorecherche, Inc., Quebec, Canada

Division of Ser. No. 180,361, Jan. 18, 1994, which is a continuation-in-part of Ser. No. 5,619, Jan. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 477,170

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—178 10 Claims

1. A method for inhibiting the development and proliferation, or treatment, of ovarian cancer comprising administering to a female patient in need thereof a therapeutically effective amount of an agent selected from the group consisting of DHEA, DHEA-S, and compounds converted in vivo to either.

5,798,348

FATTY-ACID MONOESTERS OF ESTROGENS FOR THE TREATMENT OF OBESITY AND/OR OVERWEIGHT

Maria Alemany, Barcelona, Spain, assignor to Laboratorios S.A.L.V.A.T., S.A., Esplugues de Llobregat, Spain

Filed Oct. 30, 1996, Ser. No. 739,165

Claims priority, application Spain, Oct. 30, 1995, 9502101

Int. Cl.[6] A61K *31/56;* C07J *1/00;* C07C *69/00*

U.S. Cl. 514—182 20 Claims

1. A substantially pure fatty-acid monoester of an estrogen and a fatty acid, said fatty acid including an acyl group; wherein the estrogen is selected from the group consisting of estrone, diethylstilbestrol, estriol and ethinyl estradiol; the fatty acid is selected from the group consisting of oleic, linoleic, linolenic, stearic, palmitic, palmitoleic and arachidonic acids; and with the proviso that, when the estrogen is steroidal and has a steroid ring system with a C-3 position and a hydroxyl group at the C-3 position, the acyl group of the fatty acid is attached to the hydroxyl group at the C-3 position of the steroid ring system in the fatty acid monoester.

5,798,349

USE OF GREEN PORPHYRINS TO TREAT NEOVASCULATURE IN THE EYE

Julia Levy, Vancouver, Canada; Joan W. Miller; Evangelos S. Gradoudas, both of Boston, Mass.; Tayyaba Hasan, Arlington, Mass., and Ursula Schmidt-Erfurth, Luebeck, Germany, assignors to The General Hospital Corporation, Boston, Mass.; Quadra Logic Technologies, Inc., Vancouver, B.C., Canada, and Massachuesetts Eye & Ear Infirmary, Boston, Mass.

Continuation-in-part of Ser. No. 209,473, Mar. 14, 1994. This application Feb. 17, 1995, Ser. No. 390,591

Int. Cl.[6] A61K *31/555*

U.S. Cl. 514—185 20 Claims

1. A method to treat conditions of the eye characterized by unwanted neovasculature, which method comprises:

administering to a primate subject in need of such treatment an amount of liposomal formulation of green porphyrin sufficient to permit an effective amount to localize in said neovasculature;

permitting sufficient time to elapse to allow an effective amount of said green porphyrin to localize in said neovasculature; and

irradiating the neovasculature with light from a laser, said light being absorbed by the green porphyrin so as to occlude said neovasculature.

5,798,350
DOPAMINE RECEPTOR LIGANDS

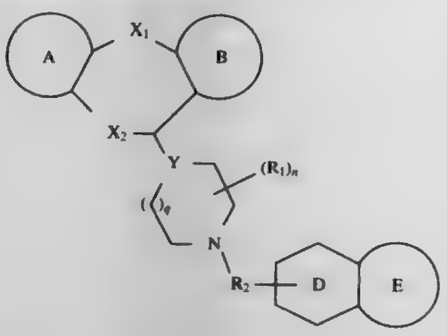
Ashok Tehim, Mississauga; Jian-Min Fu, Brampton, and Sumanas Rakhit, Mississauga, all of Canada, assignors to Allelix Biopharmaceuticals, Inc., Mississauga, Canada

Division of Ser. No. 355,297, Dec. 12, 1994, Pat. No. 5,538,965, which is a continuation-in-part of Ser. No. 172,208, Dec. 23, 1993, abandoned. This application May 3, 1996, Ser. No. 642,264

Int. Cl.[6] A61K *31/495;31/435;* **C07D** *401/14;403/14*

U.S. Cl. 514—212 **34 Claims**

1. A compound of Formula I:



wherein

A and B both are optionally substituted benzene;

X_1 is selected from O, S, SO_2 and SO;

X_2—is selected from CH═;

Y is selected from CH and N;

R_1 represents C_{1-4}alkyl;

n is 0, 1 or 2;

q is 1 or 2;

R_2 is C_{1-6}alkylene optionally incorporating an intervening or terminating heteroatom selected from N, O and S;

D is cyclohexane or benzene; and

E is a saturated or unsaturated 5- or 6-membered heterocycle incorporating 1, 2 or 3 heteroatoms selected from O, N, and S, wherein E is optionally substituted with 1 or 2 substituents selected from halogen, C_{1-4}alkyl and halogen-substituted C_{1-4}alkyl;

and acid addition salts, solvates or hydrates thereof.

5,798,351
SULFONATE AND CARBAMATE DERIVATIVES OF 3-AROYLBENZO[B]THIOPHENES

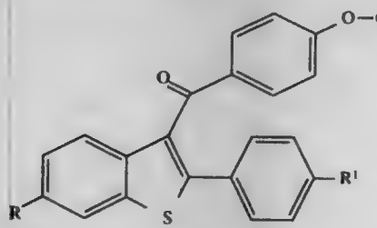
Larry J. Black; Henry U. Bryant, both of Indianapolis, and George J. Cullinan, Trafalgar, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 392,445, Feb. 22, 1995, which is a continuation of Ser. No. 35,121, Mar. 19, 1993, Pat. No. 5,482,949. This application Oct. 27, 1997, Ser. No. 958,535

Int. Cl.[6] A61K *31/55;* **C07D** *409/10*

U.S. Cl. 514—212 **10 Claims**

1. A compound of the formula

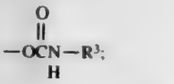


where

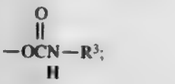
X is a bond or —CH_2—;

R^2 is a heterocyclic ring selected from hexamethyleneimino;

R is OH, —OSO_2—$(CH_2)_n$—CH_3 or

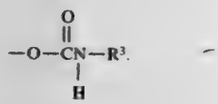


R^1 is hydrogen, OH, fluoro, chloro, —OSO_2—$(CH_2)_n$—CH_3 or



each R^3 is independently C_1–C_6 alkyl, C_3–C_6 cycloalkyl, unsubstituted or substituted phenyl where the substituent is fluoro, chloro, C_1–C_3 alkyl or C_1–C_3 alkoxy;

each n is independently 3, 4 or 5; and pharmaceutically acceptable salts and solvates thereof; provided that at least one of R and R^1 is



5,798,352
ANTITHROMBOTIC AMIDINOTETRAHYDROPYRIDYLALANINE DERIVATIVES

John Christopher Danilewicz, Sandwich, United Kingdom, assignor to Pfizer Inc., New York, N.Y.

PCT No. PCT/EP96/01459, § 371 Date Oct. 9, 1997, § 102(e) Date Oct. 9, 1997, PCT Pub. No. WO96/33993, PCT Pub. Date Oct. 31, 1996

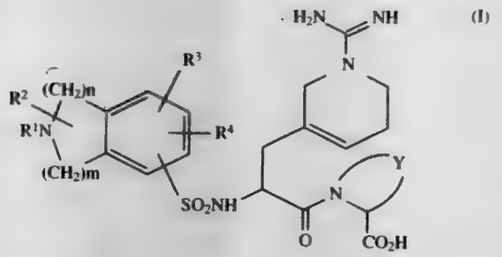
PCT Filed Apr. 1, 1996, Ser. No. 930,596

Claims priority, application United Kingdom, Apr. 28, 1995, 9508622

Int. Cl.[6] C07D *401/14;* **A61K** *31/47;31/55*

U.S. Cl. 514—213 **18 Claims**

1. A compound of formula (I):



or a pharmaceutically acceptable salt thereof, or a pharmaceutically acceptable solvate of either entity,

wherein

Y is optionally monounsaturated C_3–C_5 alkylene optionally substituted with C_1–C_4 alkyl or methylene;

R^1 is H; C_1–C_4 alkyl optionally substituted with C_1–C_4 alkoxy, OH, NR^5R^6, $CONR^5R^6$, C_3–C_6 cycloalkyl or aryl; or C_3–C_6 alkenyl;

R^2 is H; C_1–C_4 alkyl optionally substituted with C_1–C_4 alkoxy, OH, NR^5R^6, $CONR^5R^6$, C_3–C_6 cycloalkyl or aryl; or $CONR^5R^6$;

R^3 and R^4 are each independently selected from H; C_1–C_4 alkyl optionally substituted with NR^5R^6; C_1–C_4 alkoxy; halo; $CONR^5R^6$ and aryl;

aryl is phenyl optionally substituted with one, two or three substituents independently selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, OH, halo and CF_3;

R^5 and R^6 are each independently selected from H and C_1–C_4 alkyl; and

m and n are each independently 1, 2 or 3.

5,798,353

POLYSUBSTITUTED 3-ACYLAMINO-5-PHENYL-1,4-BENZODIAZEPIN-2-ONE DERIVATIVES, PROCESS FOR THEIR PREPARATION AND THE PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Alain Badorc, Roquettes; Pierre Despeyroux, Portet/Garonne; Daniele Gully, Muret; Paul De Cointet; Daniel Frehel, both of Toulouse, and Jean-Pierre Maffrand, Portet/Garonne, all of France, assignors to Sanofi, Paris, France

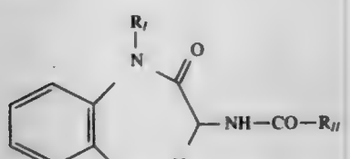
Division of Ser. No. 390,770, Feb. 14, 1995, Pat. No. 5,719,143. This application Nov. 20, 1997, Ser. No. 975,003

Claims priority, application France, Feb. 14, 1994, 94 01642; Jul. 12, 1994, 94 08665

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—221 **8 Claims**

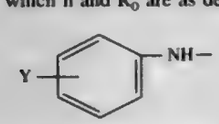
1. A method of treating a pathology selected from the group consisting of an eating behavior disorder, obesity, diabetes, emotional, sexual, and mnemonic behavior disorders, and psychosis comprising administering to a patient in need thereof a compound of formula (I)



in which

R_I is (i) hydrogen; (ii) a (C_1–C_4) alkyl; (iii) a group —CH_2—CHOH—$(CH_2)_m$—Z in which m is 0 or 1 and Z is a (C_1–C_4) alkyl group, (C_3–C_8) cycloalkyl group, (C_6–C_{10}) carbocyclic aryl group optionally substituted with (C_1–C_4) alkyl, (C_1–C_4) alkoxy or halogen, saturated or unsaturated heterocycle selected from the group consisting of furan, thiophene, pyrrole, imidazole, pyrrolidine, piperidine, piperazine, pyridine, and morpholine, optionally substituted with a radical selected from the group consisting of (C_1–C_4) alkyl, (C_1–C_4) alkoxy, and halogen; or (iv) a group —$(CH_2)_nCOR_0$ in which n is 1 to 3, R_0 is OR_2 or NR_2, R_3, R_2 and R_3, which may or may not be identical, being selected from the group consisting of H and (C_1–C_4) alkyl or, alternatively, R_2 and R_3 forming, together with the nitrogen atom to which they are attached, a saturated or unsaturated heterocycle selected from the group consisting of furan, thiophene, pyrrole, imidazole, pyrrolidine, piperidine, piperazine, pyridine, and morpholine;

R_{II} is (i) a nitrogen-containing aromatic heterocycle selected from the group consisting of quinoline, isoquinoline, benzimidazole, indole, and indole substituted on the nitrogen with a group W where W is CO—(C_1–C_4) alkyl or $(CH_2)_nCOR_0$ in which n and R_0 are as defined for R_I; or (ii) a group



(R_{IIb})

in which Y is a halogen atom, a (C_1–C_3) alkyl group, or a (C_1–C_3) alkoxy group;

X_1, X_2 and X_3 are identical or different and are selected from the group consisting of (C_1–C_3) alkyl, (C_1–C_3) alkoxy, a halogen atom, and a trifluoromethyl group;

X_4 is hydrogen or is identical to X_1, X_2 or X_3; or a stereoisomer or addition salt, thereof.

5,798,354

USE OF ADAMANTYL-SUBSTITUTED POLYCYCLIC ACETYLENE COMPOUNDS IN SKIN AND HAIR TREATMENT

Jean-Michel Bernardon, Le Rouret, and Bruno Charpentier, Biot, both of France, assignors to Centre International De Recherches Dermatologiques Galderma, Valbonne, France

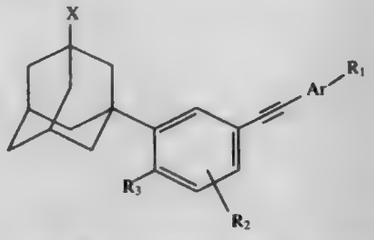
Division of Ser. No. 429,045, Apr. 26, 1995, Pat. No. 5,574,036. This application Jul. 2, 1996, Ser. No. 678,416

Claims priority, application France, Apr. 26, 1994, 94 05018

Int. Cl.[6] A61K *7/06;7/48;31/19;31/535*

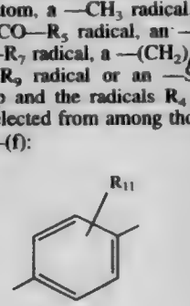
U.S. Cl. 514—239.2 **24 Claims**

1. A method for treating a skin or hair disorder on a mammalian organism in need of such treatment, comprising administering to such organism a cosmetically/therapeutically effective amount of a cosmetic/therapeutic composition comprising a cosmetically or therapeutically effective amount of an adamantyl-substituted polycyclic acetylene compound having the structural formula (I) an adamantyl-substituted polycyclic acetylene compound having the structural formula (I):



(I)

in which X represents a hydrogen atom or a halogen atom; R_1 represents a hydrogen atom, a —CH_3 radical, a —CH_2—O—R_4 radical, a —CH_2—O—CO—R_5 radical, an —O—R_6 radical, an —O—$(CH_2)_m$—$(CO)_n$—R_7 radical, a —$(CH_2)_p$—CO—R_8 radical, a —$(CH_2)_p$—CO—O—R_9 radical or an —$S(O)_p$—R_{10} radical, wherein the m, n and p and the radicals R_4 to R_{10} are defined below; Ar is a radical selected from among those of the following radicals of formulae (a)–(f):



(a)

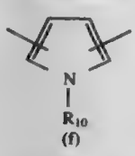
(b)

(c)

(d)

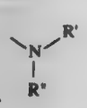
(e)

-continued

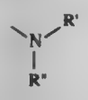


(f)

wherein R_{10} and R_{11} are as defined below; R_2 is a hydrogen atom or a halogen atom, a linear or branched alkyl radical having from 1 to 20 carbon atoms, an —O—CH_2—O—CH_2—CH_2—O—CH_3 radical or an —O—R_{13} radical, wherein R_{13} is as defined below; R_3 is an —O—CH_2—O—CH_2—CH_2—O—CH_3 radical, a —$(Y)_n$—$(CH_2)_q$—R_{14} radical, a —$(CH_2)_m$—Y—$(CH_2)_q$—R_{14} radical or a —CH=CH—$(CH_2)_t$—R_{14}, radical, wherein m, n, q and t and the Y and R_{14} radicals are as defined below; m, is an integer equal to 1, 2 or 3, n, is an integer equal to 0 or 1, p is an integer equal to 0, 1, 2 or 3, q is an integer ranging from 0 and 12, inclusive, and t is an integer ranging from 0 to 10, inclusive, R_4 is a hydrogen atom or a lower alkyl radical; R_5 is a lower alkyl radical; R_6 is a hydrogen atom or a lower alkyl radical; R_7 is a lower alkyl radical or a radical:



in which R' and R", identical or different, are each a hydrogen atom, a lower alkyl radical, a mono- or polyhydroxyalkyl radical, an optionally substituted aryl radical or an amino acid or peptide or sugar residue, with the proviso that R' and R" may together form, with the nitrogen atom from which they depend, a nitrogen-containing heterocycle; R_9 is a hydrogen atom, a linear or branched alkyl radical having from 1 to 20 carbon atoms, an alkenyl radical, a mono- or polyhydroxyalkyl radical, an optionally substituted aryl or aralkyl radical, or a sugar residue or an amino acid or peptide residue, R_{10} is a hydrogen atom or a lower alkyl radical; R_{11} is a hydrogen atom, a halogen atom, a lower alkyl radical, a hydroxyl radical, or an —O—R_{12} or —O—COR_{12} radical, R_{12} is as defined below; R_{12} is as a lower alkyl radical; R_{13} is a hydrogen atom or a linear or branched alkyl radical having from 1 to 20 carbon atoms; R_{14} is a hydrogen atom, a lower alkyl radical, an alkenyl radical, an alkynyl radical, a C_3-C_6 cycloaliphatic radical, a mono- or polyhydroxyalkyl radical, said hydroxyls are optionally being protected as methoxy, acetoxy or acetonide groups, an aryl or aralkyl radical, a —CO—R_8 radical, a —COOR_9 radical, an —$S(O)_p$—R_{10} radical, a radical:



or, but only in the event that n is equal to 0 and R_3 is —$(Y)_n$—$(CH_2)_q$—R_{14}, a hydroxyl radical, an —O—R_{12} radical or an —O—COR_{12} radical, Y is an oxygen or sulphur atom or an —$S(O)_p$ radical; or a pharmaceutically/cosmetically acceptable salt or optical or geometric isomer thereof.

5,798,355

INHIBITORS OF ROTAMASE ENZYME ACTIVITY

Joseph P. Steiner, Hampstead; Solomon Snyder, Baltimore; Gregory S. Hamilton, Catonsville, and Ted Dawson, Baltimore, all of Md., assignors to GPI NIL Holdings, Inc., Wilmington, Del., and John Hopkins University School of Medicine, Baltimore, Md.

Filed Jun. 7, 1995, Ser. No. 474,072

Int. Cl.[6] A61K *31/50;31/44;31/445*

U.S. Cl. 514—248 **34 Claims**

1. A method of treating a neurological disorder in an animal, comprising:

administering to an animal an effective amount of a non-immunosuppressive pipecolic acid derivative having an affinity for FKBP-type immunophilins to stimulate growth of damaged peripheral nerves or to promote neuronal regeneration, wherein the FKBP-type immunophilin exhibits rotamase activity and the non-immunosuppressive pipecolic acid derivative inhibits said rotamase activity of the immunophilin.

5,798,356

ANGIOSTATIC COMPOUNDS

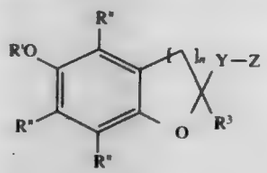
Rupa Doshi, Ft. Worth, Tex., assignor to Alcon Laboratories, Inc., Ft. Worth, Tex.

Continuation-in-part of Ser. No. 511,944, Aug. 7, 1995, Pat. No. 5,719,167. This application May 9, 1996, Ser. No. 644,018

Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—249 **10 Claims**

1. A method for treating glaucoma filtration surgery bleb failure, pterygium, hyperkeratosis, cheloid formation and/or polyp formation which comprises administering to a human patient an effective amount of a pharmaceutical composition comprising a compound according to formula (I):



(I)

wherein:

n is 1 or 2;

R is H, C_1–C_6 alkyl or C_3–C_6 cycloalkyl;

Y is H, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, O, NR, $C(R)_2$, CH(OH) or $S(O)_{n'}$;

n' is 0 to 2;

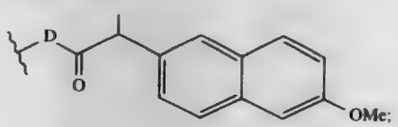
R' is H, C(O)R, $C(O)N(R)_2$, PO_3^-, SO_3^- or $HO_2C(CH_2)_2(C{=}O)$—;

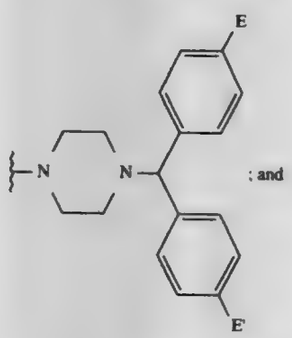
R" is H or C_1–C_6 alkyl;

R^3 is H, C_1–C_6 alkyl, $(CH_2)_q(OH)$, —$(C{=}O)O(CH_2)_qCH_3$;

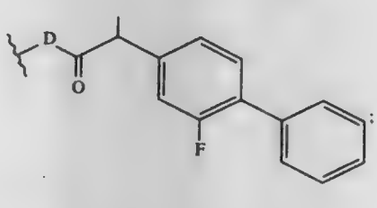
q is 1 to 10; and

Z, if present, is H, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, or selected from the group consisting of:





; and



wherein:

D is O or NR; and

E and E' are independently H, F or Cl; and pharmaceutically acceptable salts thereof.

5,798,357

AGENT FOR PROPHYLAXIS AND TREATMENT OF THROMBOXANE A2-MEDIATED DISEASES

Ruriko Ikegawa; Teruaki Imada; Norifumi Nakamura, all of Hirakata; Keizo Tanikawa, Funabashi, and Nobutomo Tsuruzoe, Minamisaitama-gun, all of Japan, assignors to The Green Cross Corporation, Osaka, and Nissan Chemical Industries, Ltd., Tokyo, both of Japan

PCT No. PCT/JP95/00244, § 371 Date Aug. 8, 1996, § 102(e) Date Aug. 8, 1996, PCT Pub. No. WO95/22329, PCT Pub. Date Aug. 24, 1995

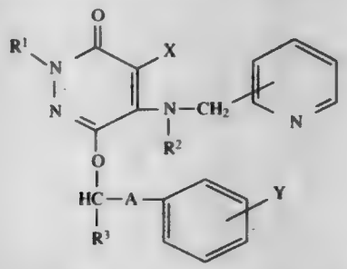
PCT Filed Feb. 20, 1995, Ser. No. 687,604

Claims priority, application Japan, Feb. 22, 1994, 6-024556

Int. Cl.[6] A61K *31/495*

U.S. Cl. 514—252 **6 Claims**

1. A method for the prophylaxis or treatment of a disease selected from the group consisting of arteriosclerosis obliterans, diabetic nephropathy, diabetic neuropathy, and hypertriglyceridemia caused by diabetes, comprising administering a pyridazinone compound of the formula (I)



(I)

wherein R^1, R^2 and R^3 are each independently a hydrogen atom or a lower alkyl group, X is a halogen atom, a cyano group or a hydrogen atom, Y is a halogen atom, a trifluoromethyl group or a hydrogen atom and A is a C_1–C_8 alkylene group optionally substituted by a hydroxyl group, or a pharmacologically acceptable salt thereof.

5,798,358

APOPTOSIS REGULATING COMPOSITION

Satoru Nakai; Koutoku Aihara, both of Itano-gun; Hitomi Mori, Tokushima; Michiaki Tominaga, Itano-gun; Masakazu Adachi, Takasaki; Hiroyuki Ichikawa, Tokushima; Seiji Akamatsu, Naruto, and Fumio Saito, Takasaki, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

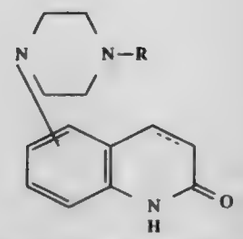
Division of Ser. No. 466,449, Jun. 6, 1995, Pat. No. 5,672,603, which is a continuation of Ser. No. 989,028, Apr. 30, 1993, abandoned. This application May 9, 1997, Ser. No. 853,746

Claims priority, application Japan, Jul. 3, 1991, 3-162587; Feb. 20, 1992, 4-33469; Mar. 3, 1992, 4-45178; Mar. 25, 1992, 4-100585

Int. Cl.[6] A61K *31/495;31/50*

U.S. Cl. 514—254 **1 Claim**

1. A method for treatment of liver cirrhosis which comprises administering to a host afflicted with liver cirrhosis an effective amount of at least one carbostyril derivative represented by general formula (1) or a salt thereof:



(I)

wherein R is a benzoyl group which may optionally be substituted with a lower alkoxy group in the phenyl ring, and the carbon-carbon bond in the 3 and 4 positions of the carbostyril skeleton is a single bond or a double bond.

5,798,359

PIPERAZINO DERIVATIVES AS NEUROKININ ANTAGONISTS

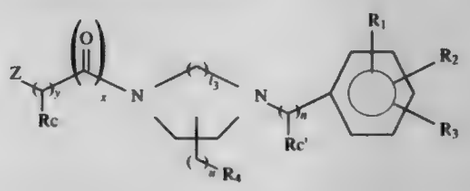
Ho-Jane Shue, Pine Brook; Neng-Yang Shih, North Caldwell; John Piwinski, Clinton Township; Xiao Chen, Edison, and David J. Blythin, North Caldwell, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 432,739, May 2, 1995. This application May 25, 1995, Ser. No. 451,113

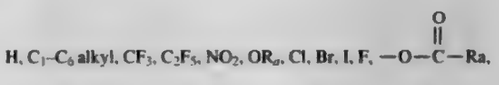
Int. Cl.[6] A61K *31/495;31/395;* **C07D** *401/00;403/00*

U.S. Cl. 514—255 **12 Claims**

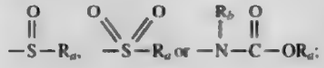
1. A compound of the formula:



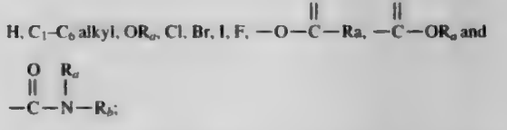
wherein each R_1 is independently selected from the group consisting of



provided R_a is not H in

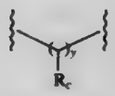


and each R_2, and R_3 is independently selected from the group consisting of

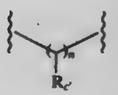


each R_a and R_b is independently selected from the group consisting of H, C_1–C_6 alkyl, CF_3, C_2F_5, phenyl, and benzyl;

each R_c and $R_{c'}$ is selected from the group consisting of H, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, unsubstituted or substituted phenyl, and unsubstituted or substituted benzyl, with the proviso that no more than one R_c is other than H in the

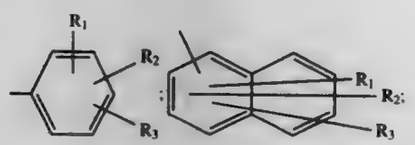


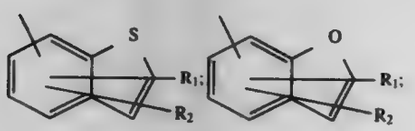
moiety, and no more than one $R_{c'}$ is other than H in the

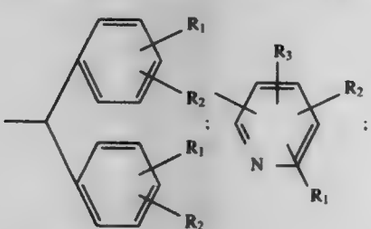


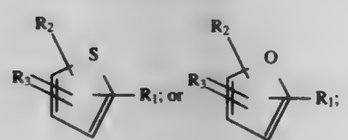
moiety;

R_4 is









n is 0to 5;

l_3 is 2,

x is 0, and y is 2 to 4; or x is 1, and y is 0 to 3;

Z is

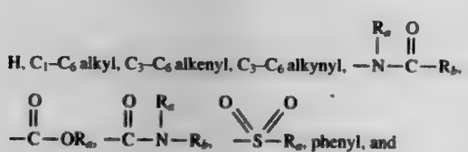


p_1 and p_2 are each independently 1 to 4 with the proviso that p_1 and p_2 added together are 2 to 6;

each t is 0 to 4;

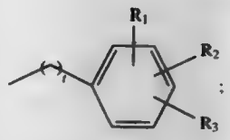
each u is independently 0 to 2;

R_5 is selected from the group consisting of

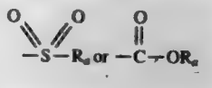


H, C_1–C_6 alkyl, C_3–C_6 alkenyl, C_3–C_6 alkynyl, $-N(R_a)-C(=O)-R_b$, $-C(=O)-OR_a$, $-C(=O)-N(R_a)-R_b$, $-S(=O)_2-R_a$, phenyl, and

-continued

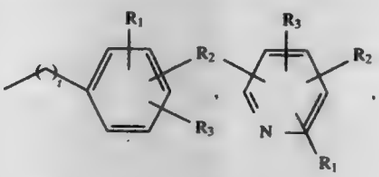


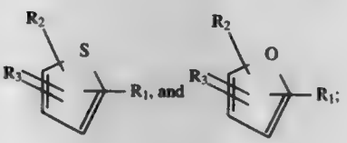
wherein R_a is not H when R_5 is



and with the proviso that when R_5 is C_3–C_6 alkenyl or C_3–C_6 alkynyl, the double or triple bond cannot be directly attached to nitrogen;

R_6 is selected from the group consisting of H, C_1–C_6 alkyl,





and wherein substituted means 1 to 3 substituents independently selected from the group consisting of H, C_1–C_6 alkyl, CF_3, C_2F_5, OH, OC_1–C_6 alkyl, Cl, Br, I and F;

or a pharmaceutically acceptable salt thereof.

5,798,360

N-(AMINOALKYL)- AND/OR N-(AMIDOALKYL)-DINITROGEN HETEROCYCLIC

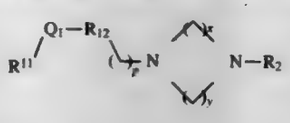
Phillip Dan Cook, Vista; Andrew M. Kawasaki, Oceanside, and Pei Pei Kung, Leucadia, all of Calif., assignors to ISIS Pharmaceuticals, Inc., Carlsbad, Calif.

Filed Aug. 1, 1996, Ser. No. 688,993

Int. Cl.[6] A61K *31/505*

U.S. Cl. 514—255 **24 Claims**

1. A composition comprising at least three different compounds, each of said compounds having the formula:



wherein

each p is independently 0, 1 or 2;

each x and y are independently 1, 2 or 3;

each Q_1 is independently —$N(R_{15})$—, —O— or —S—;

each R_2 is hydrogen, C_1–C_6 alkyl, C_6–C_{15} aryl, C_7–C_{20} alkaryl, or a moiety of the formula —$(CH_2)_m$—R_3—R_4, where:

each m is 0 or 1;

each R_3 is $—CH_2—$, $—C(=O)—$ or $—C(=S)—$; and
each R_4 is $—O—R_5$, C_1–C_6 alkyl, C_6–C_{15} aryl or where R_5 is hydrogen, C_1–C_6 alkyl, C_6–C_{15} aryl, C_3–C_{12} cycloalkyl, or C_7–C_{20} alkaryl;
each R_{11} is independently hydrogen, C_1–C_6 alkyl, C_7–C_{20} alkaryl, C_6–C_{20} aryl, or C_3–C_{20} cycloalkyl;
each R_{12} is independently $—CH_2—$ or $—C(=O)—$; and
each R_{15} is independently hydrogen or C_1–C_6 alkyl.

5,798,361

5H-THIAZOLO[3,2-A]PYRIMIDIN-5-ONE DERIVATIVES

Rafael Foguet; Lluis Anglada; Aurelio Sacristan; Josep M. Castello, and Jose A. Ortiz, all of Barcelona, Spain, assignors to Ferrer Internacional, S.A., Barcelona, Spain

PCT No. PCT/EP96/02254, § 371 Date Mar. 14, 1997, § 102(e) Date Mar. 14, 1997, PCT Pub. No. WO96/37498, PCT Pub. Date Nov. 28, 1996

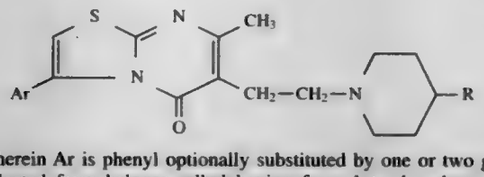
PCT Filed May 24, 1996, Ser. No. 765,935

Claims priority, application Spain, May 26, 1995, 9501029

Int. Cl.[6] **A61K** *31/505*; **C07D** *513/04*

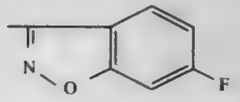
U.S. Cl. 514—258 **7 Claims**

1. A 5H-thiazolo[3,2-a]pyrimidin-5-one derivative having the formula (I):

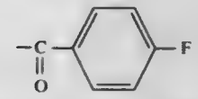


(I)

wherein Ar is phenyl optionally substituted by one or two groups selected from halogen, alkyl having from 1 to 4 carbon atoms, methylendioxy, alkoxy having from 1 to 4 carbon atoms, and trifluoromethyl; and R is a group selected from (a) or (b):



(a)



(b)

or a pharmaceutically acceptable acid addition salt thereof.

5,798,362

QUINAZOLINYL-AMINO DERIVATIVES HAVING α-ANTAGONIST ACTIVITY

Amedeo Leonardi, Milan; Gianni Motta, Barlassina; Carlo Boi, Cinisello Balsamo, and Rodolfo Testa, Vignate, all of Italy, assignors to Recordati S.A. Chemical and Pharmaceutical Company, Chiasso, Switzerland

PCT No. PCT/EP95/01001, § 371 Date Sep. 17, 1996, § 102(e) Date Sep. 17, 1996, PCT Pub. No. WO95/25726, PCT Pub. Date Sep. 28, 1995

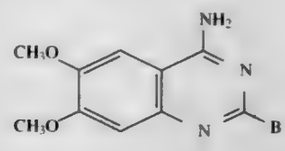
PCT Filed Mar. 17, 1995, Ser. No. 716,160

Claims priority, application Italy, Mar. 18, 1994, MI94A0506

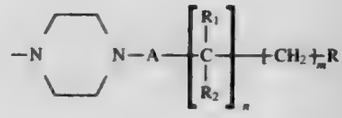
Int. Cl.[6] **A61K** *31/505*; **C07D** *403/04*

U.S. Cl. 514—260 **30 Claims**

1. Compound of general formula (I):



wherein B is one of the following groups:



(B1)

wherein:

A is selected from the group consisting of:

a chemical bond and —CO—;

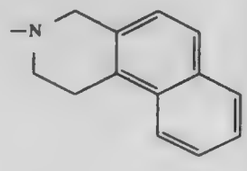
R_1 and R_2, same or different, represent independently from each other an hydrogen atom or a linear or branched alkyl group having from 1 to 4 carbon atoms;

n is 0 or 1;

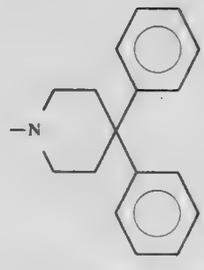
m is an integer from 0 to 4 and

R is selected from the group consisting of (i) diphenylmethyl; (ii) benzoyl; (iii) phenoxy substituted with one or more groups selected from the group consisting of alkoxy and branched or linear alkyl having from 1 to 4 carbon atoms: and (iv) $—N(R_4)R_5$ wherein:

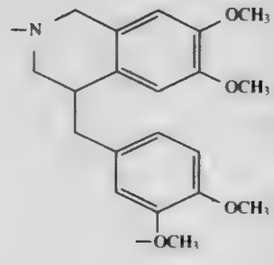
R_4 and R_5, same or different, represent independently from each other: H, linear or branched alkyl having from 1 to 4 carbon atoms, benzyloxycarbonyl, methanesulfonyl, benzyloxycarbonylglycinoyl, provided that when m=n=0, R is different from $—NR_4R_5$ and benzoyl;



(B3)



(B4)



(B5)

or an enantiomer, diasteroisomer, N-oxide, addition salt with a pharmaceutical acceptable acid thereof.

5,798,363

USE FOR TACHYKININ ANTAGONISTS TO TREAT EMESIS

Russell Michael Hagan, and Keith Thomas Bunce, both of Ware, Great Britain, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 269,079, Jun. 30, 1994, Pat. No. 5,538,982, which is a division of Ser. No. 946,635, Sep. 8, 1992, Pat. No. 5,360,820. This application Dec. 27, 1995, Ser. No. 579,294

Int. Cl.[6] A61K *31/44;31/55;31/205;31/19*

U.S. Cl. 514—299 12 Claims

1. A method for the treatment of a mammal, suffering from or susceptible to emesis, wherein said emesis is induced by pregnancy, vestibular disorders, post-operative sickness, gastrointestinal obstruction, reduced gastrointestinal motility, visceral pain, migraine, increased intercranial pressure or decreased intercranial pressure, comprising administering to said mammal an effective amount of a tachykinin antagonist, including substance P antagonists and other neurokinin antagonists, of formula H, V' or W, as hereindefined, or a pharmaceutically acceptable salt thereof.

5,798,364

IMIDAZOPYRIDINES

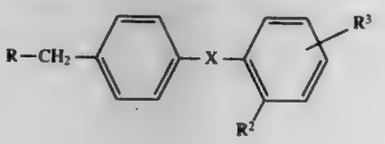
Werner Mederski, Erzhausen; Johannes Sombroek, Darmstadt; Pierre Schelling, Mühltal; Norbert Beier, Reinheim; Ingeborg Lues, Darmstadt, and Klaus-Otto Minck, Ober-Ramstadt, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Germany

Continuation of Ser. No. 182,321, Jan. 18, 1994, which is a continuation-in-part of Ser. No. 34,954, Mar. 22, 1993, abandoned, which is a division of Ser. No. 857,855, Mar. 26, 1992, abandoned. This application Oct. 4, 1996, Ser. No. 725,242

Int. Cl.[6] A61K *31/415;* C07D *471/06*

U.S. Cl. 514—303 8 Claims

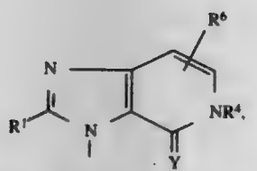
1. An imidazopyridine derivative of formula I:



I

wherein

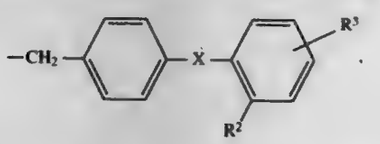
R is



(a)

R^1 is A, alkenyl or alkynyl each having up to 6 C atoms,

R^2 is COOH, COOA, CN, NO_2, NH_2, $NHCOR^5$, $NHSO_2R^5$ or tetrazol-5-yl, R^3 is H, R^4 is aralkyl having 7–11 C atoms which is unsubstituted or mono- or disubstituted by Hal, R^5, COOH, COOA, CN, NO_2, NH_2, NHA, $N(A)_2$, $NHCOR^5$, NHCOOA, $NHSO_2R^5$, OH, OA or tetrazol-5-yl, or



R^5 is alkyl having 1–4 C atoms, in which one or more H atoms can also be replaced with F,

R^6 is H,

X is a bond,

Y is O,

A is alkyl having 1–6 C atoms and

Hal is F, Cl, Br or I, or a physiologically acceptable salt thereof.

5,798,365

SUBSTITUTED QUINOLINE DERIVATIVES, A PROCESS FOR THEIR PREPARATION, AND THEIR USE

Reinhard Kirsch, Brunswick; Jörg-Peter Kleim, Kelkheim; Günther Riess, Hattersheim; Manfred Rösner, Eppstein, and Irvin Winkler, Liederbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

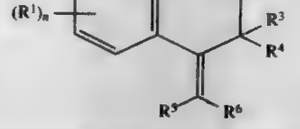
Filed Aug. 14, 1995, Ser. No. 515,556

Claims priority, application Germany, Aug. 16, 1994, 44 28 932.4

Int. Cl.[6] C07D *215/227;215/38;* A61K *31/47*

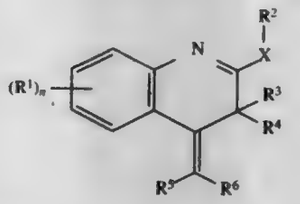
U.S. Cl. 514—312 10 Claims

1. A compound of the formula I,



(I)

or one of its tautomeric forms of the formula,



(Ia)

in which:

n is zero, one, two, three or four,

the individual substituents R^1 are, independently of each other, fluorine, chlorine, bromine, iodine, trifluoromethyl, trifluoromethoxy, hydroxyl, alkyl, cycloalkyl, alkoxy, alkoxy-(alkoxy), alkylthio, alkylsulfinyl, alkylsulfonyl, acyl, acyloxy, carbamoyl, carboxyl, alkyloxycarbonyl, hydroxysulfonyl or sulfamoyl, or

a phenyl, phenoxy, phenoxycarbonyl, phenylthio, phenylsulfinyl, phenylsulfonyl, phenoxysulfonyl, phenylsulfonyloxy, anilinosulfonyl, phenylsulfonyl-amino, or benzoyl radical which is substituted by up to five radicals R^7 which are independent of each other,

where R^7 is fluorine, chlorine, bromine, iodine, cyano, trifluoromethyl, trifluoromethoxy, nitro, amino, azido, alkyl, cycloalkyl, alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkylamino, dialkylamino, or alkyloxycarbonyl,

X is oxygen, sulfur, or N—OH,

R^2 is hydrogen or alkyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl, carbamoyl or alkoxycarbonyl;

alkenyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

alkynyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

cycloalkyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alky-

lamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

cycloalkenyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

(cycloalkyl)-(alkyl) which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

(cycloalkenyl)-(alkyl) which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

R^5 and R^6 are identical or different and are, independently of each other, hydrogen, carboxyl,

alkyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl, carbamoyl or alkoxycarbonyl;

alkenyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

alkynyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

cycloalkyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

cycloalkenyl which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

(cycloalkyl)-(alkyl) which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

(cycloalkenyl)-(alkyl) which is unsubstituted or substituted by fluorine, chlorine, bromine, iodine, cyano, amino, mercapto, hydroxyl, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, phenylsulfonyl, oxo, thioxo, carboxyl or carbamoyl;

alkyloxycarbonyl which is unsubstituted or substituted by fluorine, chlorine, bromine, hydroxyl, alkoxy, alkylamino, dialkylamino or alkylthio;

R^5 and R^6 can also together be a carbocycle which is of a ring size of C_3–C_8 and which is linked to the quinoline system via the double bond, and

R^3 and R^4 are identical or different and are, independently of each other, hydrogen, alkyl which is unsubstituted or substituted by fluorine, chlorine, hydroxyl, amino, mercapto, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, alkylsulfinyl, carboxyl or carbamoyl;

alkenyl which is unsubstituted or substituted by fluorine, chlorine, hydroxyl, amino, mercapto, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, alkylsulfinyl, carboxyl or carbamoyl;

cycloalkyl which is unsubstituted or substituted by fluorine, chlorine, hydroxyl, amino, mercapto, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, alkylsulfinyl, carboxyl or carbamoyl;

cycloalkenyl which is unsubstituted or substituted by fluorine, chlorine, hydroxyl, amino, mercapto, acyloxy, benzoyloxy, benzyloxy, phenoxy, alkoxy, alkylamino, dialkylamino, alkylthio, alkylsulfonyl, alkylsulfinyl, carboxyl or carbamoyl;

or aryl or arylalkyl which is substituted by up to five radicals R^7 which are independent of each other, where R^7 is defined as above,

R^3 and R^4 can also together be a carbocycle which is of a ring size of C_3–C_9 and which is linked to the quinoline system in a spiro manner;

an optical isomer or diastereomer thereof in pure form, or a mixture thereof, an addition salt thereof, or prodrug thereof,

with the exception of

the compounds of the formula I in which R^1, R^2, R^5 and R^6 are hydrogen, R^3 and R^4 are methyl or are together a cyclopentyl ring which is linked in a spiro manner, and X is oxygen;

the compounds of the formula I in which R^1 is methoxy, R^2 is methyl, R^3, R^4, R^5, and R^6 are hydrogen, and X is oxygen; and

the compounds of the formula I in which R^2, R^4, R^5, and R^6 are hydrogen, R^3 is cyclopentyl, X is oxygen, and n is 0.

5,798,366

METHOD FOR TREATMENT OF CNS-INVOLVED LYSOSOMAL STORAGE DISEASES

Frances M. Platt, Oxford, United Kingdom; Gabrielle R. Neises, Chesterfield, Mo.; Raymond A. Dwek, and Terry D. Butters, both of Oxford, United Kingdom, assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 393,640, Feb. 24, 1995, Pat. No. 5,656,641, and Ser. No. 588,027, Jan. 17, 1996, which is a division of Ser. No. 396,989, Mar. 1, 1995, Pat. No. 5,580,884, which is a division of Ser. No. 102,654, Aug. 5, 1993, which is a continuation-in-part of Ser. No. 61,645, May 13, 1993, Pat. No. 5,399,567, said Ser. No. 393,640 is a continuation of Ser. No. 61,645. This application Jan. 13, 1997, Ser. No. 782,321

Int. Cl.[6] **A61K** *31/445*

U.S. Cl. 514—315 **6 Claims**

1. A method for the treatment of a lysosomal storage disease having a significant central nervous system (CNS) involvement in a patient in need thereof comprising administering to said patient a storage-inhibitory effective amount of an N-alkyl derivative of a 1,5-iminosugar in which said alkyl group contains from about 2 to about 8 carbon atoms and said 1,5-iminosugar is 1,5dideoxy-1,5-imino-D-glucitol or 1,5-dideoxy-1,5-imino-D-galactitol, wherein from 1 to 4 of the free hydroxyl groups of said 1,5-iminosugar are optionally O-acylated.

5,798,367

INDAZOLECARBOXAMIDES

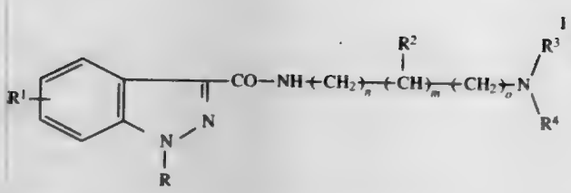
John T. Catlow, Indianapolis; Marlene L. Cohen, Carmel; Michael J. Martinelli, Indianapolis; John M. Schaus, Zionsville; Steven Swanson; Dennis C. Thompson, both of Indianapolis, and Thomas M. Wilson, Speedway, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 485,956, Jun. 7, 1995, Pat. No. 5,654,320, which is a continuation-in-part of Ser. No. 405,119, Mar. 16, 1995, abandoned. This application Jan. 10, 1997, Ser. No. 781,421

Int. Cl.[6] **A61K** *31/445*

U.S. Cl. 514—322 **9 Claims**

1. A method of antagonizing the 5-HT_4 receptor in the gastrointestinal tract or genitourinary tract comprising administering to a subject in need of such treatment an effective 5-HT_4 antagonizing amount of a compound of the formula



wherein:

R is hydrogen, C_1–C_6 alkyl, C_3–C_6 cycloalkyl;

R^1 is hydrogen, halo, C_1–C_4 alkyl, hydroxy, C_1–C_4 alkoxy or alkylthio, cyano, trifluoromethyl, carboxamido, mono- or di(C_1–C_4 alkyl)carboxamido;

m, n and o are independently 0–5, provided that the sum of m, n and o is 2–5;

R^2 is hydrogen or C_1–C_4 alkyl;

R^3 and R^4 combine with the nitrogen atom to which they are attached to form 1-pyrrolidinyl, 1-piperidinyl or 1-hexamethyleneiminyl, substituted with

phenyl, naphthyl, (phenyl or naphthyl)(C_1–C_3 alkyl), (phenyl or naphthyl)(C_1–C_3 alkanoyl), amino, mono- or di(C_1–C_4 alkyl)amino, or a group of the formula —NH—Y—R^5;

wherein a phenyl or naphthyl group is unsubstituted or substituted with 1–3 halo, C_1–C_3 alkyl or C_1–C_3 alkoxy groups;

Y is carbonyl, sulfonyl, aminocarbonyl or oxycarbonyl;

R^5 is C_1–C_6 alkyl, C_3–C_8 cycloalkyl, C_6–C_{11} bicyclo- or tricycloalkyl, (phenyl or naphthyl)(C_1–C_3 alkyl), phenyl or naphthyl;

wherein a cycloalkyl, bicyclo- or tricycloalkyl, phenyl or naphthyl group is unsubstituted or substituted with 1–3 hydroxy, halo, C_1–C_3 alkyl or C_1–C_3 alkoxy groups;

or a pharmaceutically acceptable salt thereof.

5,798,368

TETRASUBSTITUTED 2-(2,6-DIOXOPIPERIDIN-3-YL)-1-OXOISOINDOLINES AND METHOD OF REDUCING TNFα LEVELS

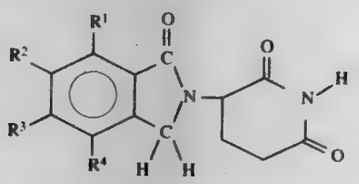
George W. Muller, Bridgewater; David I. Stirling, Branchburg, and Roger Shen-Chu Chen, Edison, all of N.J., assignors to Celgene Corporation, Warren, N.J.

Filed Aug. 22, 1996, Ser. No. 701,494

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—323 **8 Claims**

1. A compound of the formula:



I.

in which each of R^1, R^2, R^3, and R^4, independently of the others, is halo, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms.

5,798,369

2-PHENYL-3-AZOYLBENZOTHIOPHENE FOR LOWERING INTRAOCULAR PRESSURE

Niels Korsgaard, Værløse, and John Römer, Copenhagen, both of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

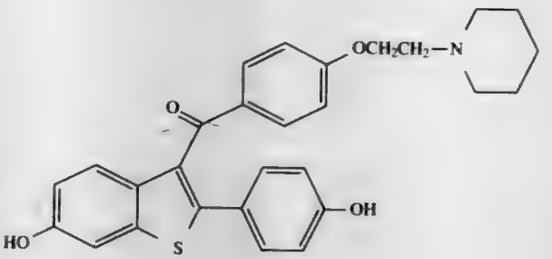
Filed Jul. 7, 1997, Ser. No. 888,707

Claims priority, application Denmark, Jul. 12, 1996, 0782/96

Int. Cl.[6] A61K *31/445*

U.S. Cl. 514—324 **7 Claims**

1. A method for lowering intraocular pressure, comprising administering to a patient an effective amount of a compound of the formula



or a pharmaceutically and/or physiologically acceptable salt or solvate thereof.

5,798,370

PLATELET AGGREGATION INHIBITORS

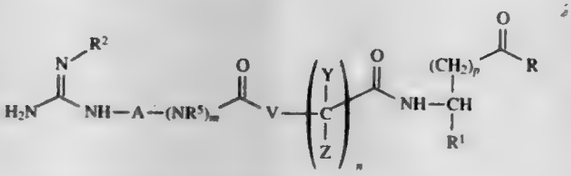
Peter Gerrard Ruminski, Ballwin, Mo., assignor to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 375,338, Jan. 17, 1995, Pat. No. 5,602,155. This application Dec. 6, 1996, Ser. No. 762,823

Int. Cl.[6] A61K *31/43;* **C07D** *401/12;403/12*

U.S. Cl. 514—343 **7 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein

R^2 is selected from the group consisting of hydrogen, and lower alkyl;

A is lower alkylene, optionally substituted by lower alkyl, cycloalkyl or aryl;

m is an integer 0 or 1;

R^5 is selected from the group consisting of hydrogen and lower alkyl;

V is pyrrolidino;

Y and Z are independently selected from the group consisting of hydrogen, branched or straight lower alkyl and cycloalkyl;

n is an integer selected from 0, 1, 2 or 3;

p is an integer selected from 1, 2 or 3;

R is X—R^3 wherein X is selected from the group consisting of O, S and —NR^4, wherein R^3 and R^4 are independently selected from the group consisting of hydrogen, lower alkyl, aryl and arylalkyl; and

R^1 is pyridyl.

5,798,371

PHARMACEUTICAL COMPOSITION ENDOWED WITH AN ANTIALCOHOLIC AND NOOTROPIC EFFECT

Irina Alexeevna Komissarova, ulitsa Medikov, 24, kv.47; Julia Vasilievna Gudkova, Zelenograd, korpus 165, kv. 131; Tatyana Dmitrievna Soldatenkova, Pokrovsky bulvar, 14/5, kv.73; Tatyana Tikhonovna Kondrashova, ul.Severodvinskaya, 9, kv.305, all of Moscow, and Natalya Mikhailovna Burbenskaya, Ozersky r-n, p/o Sennitsy, Moskovskaya obl., all of Russian Federation

PCT No. PCT/RU96/00006, § 371 Date Sep. 6, 1996, § 102(e) Date Sep. 6, 1996, PCT Pub. No. WO96/21446, PCT Pub. Date Jul. 18, 1996

PCT Filed Jan. 4, 1996, Ser. No. 704,745

Claims priority, application Russian Federation, Jan. 13, 1995, 95100307

Int. Cl.[6] A61K *31/44;31/195*

U.S. Cl. 514—345 **11 Claims**

1. A pharmaceutical composition having an antialcoholic and nootropic affect consisting essentially of as active ingredients a mixture of the amino acid L-threonine or a pharmaceutically acceptable salt thereof and vitamin B_6 in therapeutically effective amounts and a pharmaceutically acceptable solvent, diluent or carrier said composition formulated for sublingual administration.

5,798,372

METHOD FOR PREVENTING ONSET OF RESTENOSIS AFTER ANGIOPLASTY EMPLOYING A RETINOID

Peter A. J. Davies, Houston, Tex.; Roshantha A. Chandraratna, Mission Viejo, Calif., and Claude R. Benedict, Houston, Tex., assignors to Allergan, Irvine, Calif., and The University of Texas, Austin, Tex.

Continuation of Ser. No. 407,733, Mar. 20, 1995, abandoned. This application Feb. 3, 1997, Ser. No. 794,289

Int. Cl.[6] A61K *31/44;31/35;31/19*

U.S. Cl. 514—356 **9 Claims**

1. A method for preventing restenosis following angioplasty, which comprises administering to a mammalian specie in need thereof of an effective amount of a retinoid wherein said retinoid is a selective RAR receptor agonist or a pan agonist.

5,798,373

TRI-SUBSTITUTED PHENYL DERIVATIVES USEFUL AS PDE IV INHIBITORS

Graham John Warrellow, Northwood, United Kingdom, assignor to Celltech Therapeutics, Limited, Berkshire, England

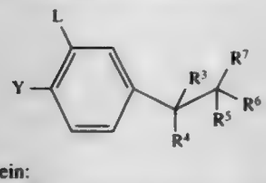
Filed Dec. 20, 1996, Ser. No. 769,464

Claims priority, application United Kingdom, Dec. 21, 1995, 9526246

Int. Cl.[6] C07D *213/02;* **A61K** *31/44*

U.S. Cl. 514—357 **27 Claims**

1. A compound of formula (1):



(1)

wherein:

Y is halogen or an alkyl or $—XR^a$ group;

Z is —O—, $—S(O)_p—$ or $—N(R^b)—$, where p is zero or an integer 1 or 2;

L is —XR, $—C(R^{11})=C(R^1)(R^2)$ or $—(CHR^{11})_nCH(R^1)(R^2)$, where n is zero or the integer 1;

each of R^a and R^b is independently hydrogen or an optionally substituted alkyl group;

R is an optionally substituted alkyl, alkenyl, cycloalkyl or cycloalkenyl group;

each of R^1 and R^2, which may be the same or different, is hydrogen, fluorine, —CN, $—NO_2$, or an optionally substituted alkyl, alkenyl, alkynyl, alkoxy, alkylthio, $—CO_2R^8$, $—CONR^9R^{10}$ or $—CSNR^9R^{10}$ group, or R^1 and R^2, together with the carbon atom to which they are attached, are linked to form an optionally substituted cycloalkyl or cycloalkenyl group;

R^3 is hydrogen, fluorine, hydroxy or an optionally substituted straight or branched alkyl group;

R^4 is hydrogen, $—(CH_2)_tAr$ or $—(CH_2)_t—Ar—(L^1)_n—Ar^1$, where t is zero or an integer 1, 2 or 3;

R^5 is $—(CH_2)_tAr$ or $—(CH_2)_t—Ar—(L^1)_n—Ar'$;

R^6 is hydrogen, fluorine, or an optionally substituted alkyl group;

R^7 is hydrogen, fluorine, an optionally substituted straight or branched alkyl group, $—OR^c$, where R^c is hydrogen or an optionally substituted alkyl or alkenyl group, or a formyl, alkoxyalkyl, alkanoyl, carboxamido or thiocarboxamido group;

each of R^8, R^9 and R^{10} is independently hydrogen or an optionally substituted alkyl, aralkyl or aryl group;

R^{11} is hydrogen, fluorine or a methyl group;

L^1 is a divalent linking group;

Ar is a monocyclic or bicyclic aryl group, optionally containing one or more heteroatoms selected from oxygen, sulphur and nitrogen atoms;

Ar' is Ar, $—CO(Alk)_mAr$, $—SO_2NH(Alk)_mAr$, $—SO_2N(Alk^1)(Alk)_mAr$, $—SO_2N((Alk)_mAr)_2$, $—CONH(Alk)_mAr$, $—CON(Alk^1)(Alk)_mAr$, $—CON((Alk)_mAr)_2$, $—N(Alk^1)SO_2(Alk)_mAr$, $—NHSO_2(Alk)_mAr$, $—N(SO_2(Alk)_mAr)_2$, $—NHSO_2NH(Alk)_mAr$, $—N(Alk^1)SO_2NH(Alk)_mAr$, $—NHSO_2N(Alk^1)(Alk)_mAr$, $—N(Alk^1)SO_2N(Alk^1)(Alk)_mAr$, $—NHSO_2N((Alk)_mAr)_2$, $—N(Alk^1)SO_2N((Alk)_mAr)_2$, $—NHCO(Alk)_mAr$, $—N(Alk^1)C(O)(Alk)_mAr$, $—N(CO(Alk)_mAr)_2$, $—NHCONH(Alk)_mAr$, $—N(Alk^1)CONH(Alk)_mAr$, $—NHCON(Alk^1)(Alk)_mAr$, $—N(Alk^1)CON(Alk^1)(Alk)_mAr$, $—NHCOO(Alk)_mAr$, $—N(Alk^1)COO(Alk)_mAr$, $—CSNH(Alk)_mAr$, $—CSN(Alk^1)(Alk)_mAr$, $—CSN((Alk)_mAr)_2$, $—NHCS(Alk)_mAr$, $—N(Alk^1)CS(Alk)_mAr$, $—N(CS(Alk)_mAr)_2$, $—NHCSNH(Alk)_mAr$, $—N(Alk^1)CSNH(Alk)_mAr$, $—NHCSN(Alk^1)(Alk)_mAr$, $—N(Alk^1)CSN(Alk^1)(Alk)_mAr$, $—SO_2(Alk)_mNHet$, $—CO(Alk)_mNHet$, $—CS(Alk)_mNHet$, $—NHSO_2(Alk)_mNHet$, $—NHCO(Alk)_mNHet$, $—NHCS(Alk)_mNHet$, $—SO_2NH(Alk)_mHet'$, $—CONH(Alk)_mHet'$, $—CSNH(Alk)_mHet'$, $—NHSO_2NH(Alk)_mHet'$, $—NHCONH(Alk)_mHet'$ or $—NHCSNH(Alk)_mHet'$;

m is zero or the integer 1;

Alk is an optionally substituted, straight or branched C_{1-6}alkylene, C_{2-6}alkenylene or C_{2-6}alkynylene chain optionally interrupted by one, two or three —O—or —S— atoms or $—S(O)_4—$ or $—N(R^b)—$ groups, where q is an integer 1 or 2;

Alk^1 is an optionally substituted, straight or branched C_{1-6}alkyl, C_{2-6}alkenyl or C_{2-6}alkynyl chain optionally interrupted by one, two or three —O—or —S— atoms or $—S(O)_q—$ or $—N(R^b)—$ groups;

NHet is an optionally substituted C_{5-7}heterocyclic amino group optionally containing one or more additional —O— or —S— atoms or $—N(R^b)—$, —CO— or —CS— groups;

Het' is an optionally substituted C_{5-7}monocyclic carbocyclic group optionally containing one or more —O—or —S— atoms or $—N(R^b)—$ groups;

or a salt, solvate, hydrate, prodrug or N-oxide thereof;

with the provisos that when R^5 is $—(CH_2)_tAr$, then R^4 is $—(CH_2)_t—Ar—(L^1)_nAr'$ in which Ar' is $—CO(Alk)_mAr$, $—SO_2NH(Alk)_mAr$, $—SO_2N(Alk^1)(Alk)_mAr$, $—SO_2N((Alk)_mAr)_2$, $—CONH(Alk)_mAr$, $—CON(Alk^1)(Alk)_mAr$, $—CON(Alk)_mAr)_2$, $—N(Alk^1)SO_2(Alk)_mAr$, $—NHSO_2(Alk)_mAr$, $—N(SO_2(Alk)_mAr)_2$, $—NHSO_2NH(Alk)_mAr$, $—N(Alk^1)SO_2NH(Alk)_mAr$, $—NHSO_2N(Alk^1)(Alk)_mAr$, $—N(Alk^1)SO_2N(Alk^1)(Alk)_mAr$, $—NHSO_2N((Alk)_mAr)_2$, $—N(Alk^1)SO_2N((Alk)_mAr)_2$,

—NHCO(Alk)$_m$Ar, —N(Alk^1)CO(Alk)$_m$Ar, —N(CO(Alk)$_m$Ar)$_2$, —NHCONH(Alk)$_m$Ar, —N(Alk^1)CONH(Alk)$_m$Ar, —NHCON(Alk^1)(Alk)$_m$Ar, —NAlk^{1}CON(Alk^1)(Alk)$_m$Ar, —NHCOO(Alk)$_m$Ar, —N(Alk^1)COO(Alk)$_m$Ar, —CSNH(Alk)$_m$Ar, —CSN(Alk^1)(Alk)$_m$Ar, —CSN((Alk)$_m$Ar)$_2$, —NHCS(Alk)$_m$Ar, —N(Alk^1)CS(Alk)$_m$Ar, —N(CS(Alk)$_m$Ar)$_2$, —NHCSNH(Alk)$_m$Ar, —N(Alk^1)CSNH(Alk)$_m$Ar, —NHCSN(Alk^1)(Alk)$_m$Ar, —N(Alk^1)CSN(Alk^1)(Alk)$_m$Ar, —SO$_2$(Alk)$_m$NHet, —CO(Alk)$_m$NHet, —CS(Alk)$_m$NHet, —NHSO$_2$(Alk)$_m$NHet, —NHCO(Alk)$_m$NHet, —NHC(S)(Alk)$_m$NHet, —SO$_2$NH(Alk)$_m$Het', —CONH(Alk)$_m$Het', —CSNH(Alk)$_m$Het', —NHSO$_2$NH(Alk)$_m$Het', —NHCONH(Alk)$_m$Het' or —NHCSNH(Alk)$_m$Het' and m is the integer 1, and when each of R^4 and R^5 is —(CH$_2$)$_t$—Ar—(L^1)$_n$Ar', then at least one of said Ar' groups is —CO(Alk)$_m$Ar, —SO$_2$NH(Alk)$_m$Ar, —SO$_2$N(Alk^1)(Alk)$_m$Ar, —SO$_2$N((Alk)$_m$Ar)$_2$, —CONH(Alk)$_m$Ar, —CON(Alk^1)(Alk)$_m$Ar, —CON((Alk)$_m$Ar)$_2$, —N(Alk^1)SO$_2$(Alk)$_m$Ar, —NHSO$_2$(Alk)$_m$Ar, —N(SO$_2$(Alk)$_m$Ar)$_2$, —NHSO$_2$NH(Alk)$_m$Ar, —N(Alk^1)SO$_2$NH(Alk)$_m$Ar, —NHSO$_2$N(Alk^1)(Alk)$_m$Ar, —N(Alk^1)SO$_2$N(Alk^1)(Alk)$_m$Ar, —NHSO$_2$N((Alk)$_m$Ar)$_2$, —N(Alk^1)SO$_2$N((Alk)$_m$Ar)$_2$, —NHCO(Alk)$_m$Ar, —N(Alk^1)CO(Alk)$_m$Ar, —N(CO(Alk)$_m$Ar)$_2$, —NHCONH(Alk)$_m$Ar, —N(Alk^1)CONH(Alk)$_m$Ar, —NHCON(Alk^1)(Alk)$_m$Ar, —NAlk^{1}CON(Alk^1)(Alk)$_m$Ar, —NHCOO(Alk)$_m$Ar, —N(Alk^1)COO(Alk)$_m$Ar, —CSNH(Alk)$_m$Ar, —CSN(Alk^1)(Alk)$_m$Ar, —CSN((Alk)$_m$Ar)$_2$, —NHCS(Alk)$_m$Ar, —N(Alk^1)CS(Alk)$_m$Ar, —N(CS(Alk)$_m$Ar)$_2$, —NHCSNH(Alk)$_m$Ar, —N(Alk^1)CSNH(Alk)$_m$Ar, —CS(Alk)$_m$NHet, —NHSO$_2$(Alk)$_m$NHet, —NHCO(Alk)$_m$NHet, —NHCS(Alk)$_m$NHet, —SO$_2$NH(Alk)$_m$Het', —CONH(Alk)$_m$Het', —CSNH(Alk)$_m$Het', —NHSO$_2$NH(Alk)$_m$Het', —NHCONH(Alk)$_m$Het' or —NHCSNH(Alk)$_m$Het' in which m is the integer 1.

5,798,374

METHODS OF INHIBITING PHOSPHATASE ACTIVITY AND TREATMENT OF DISORDERS ASSOCIATED THEREWITH

Peng Cho Tang, Moraga, and Gerald McMahon, Kenwood, both of Calif., assignors to Sugen Inc., Redwood City, Calif.

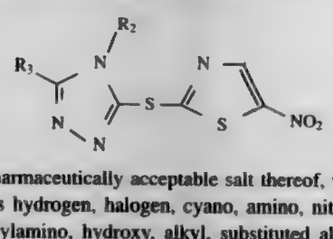
Filed Jun. 7, 1995, Ser. No. 481,954

Int. Cl.^{6} A61K *31/425;* **C07D** *417/12*

U.S. Cl. 514—369 **14 Claims**

1. A method of inhibiting protein tyrosine phosphatase activity which comprises administering to a mammal an effective amount of a compound having the formula:

Formula IV



or a pharmaceutically acceptable salt thereof, wherein:

R_2 is hydrogen, halogen, cyano, amino, nitro, amido, carboxy, acylamino, hydroxy, alkyl, substituted alkyl, alkoxy, substituted alkoxy, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, arylalkyl, substituted arylalkyl, a five or six membered heterocyclic ring containing 1 to 2 hetero atoms which are either sulfur, nitrogen or oxygen, which heterocyclic ring may be substituted or unsubstituted; and

R_3 is hydrogen, alkyl, substituted alkyl, alkoxy, substituted alkoxy, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl; arylalkyl, substituted arylalkyl.

5,798,375

TREATMENT OF ARTERIOSCLEROSIS AND XANTHOMA

Yoshio Tsujita, Tokyo; Hiroyoshi Horikoshi, and Takashi Ito, both of Kobe, all of Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Jul. 2, 1996, Ser. No. 676,090

Claims priority, application Japan, Jul. 3, 1995, 7-167291

Int. Cl.^{6} A61K *31/425;31/21*

U.S. Cl. 514—369 **6 Claims**

1. A method for the prevention or treatment of arteriosclerosis or xanthoma, which method comprises administering to a patient suffering from or susceptible to arteriosclerosis or xanthoma a first agent selected from the group consisting of HMG-CoA reductase inhibitors and a second agent selected from the group consisting of insulin sensitizers, said first and second agents being administered together in a synergistic mixture or individually in amounts and within such a period as to act synergistically together;

wherein said HMG-CoA reductase inhibitor is pravastatin and said insulin sensitizer is troglitazone.

5,798,376

AZATRIOXASPIROALKENES AND THEIR USE AS INSECTICIDAL, ACARICIDAL AND NEMATOCIDAL AGENTS

Reiner Fischer, Monheim; Ulrike Wachendorff-Neumann, Neuwied; Christoph Erdelen, Leichlingen; Andreas Turberg, Erkrath, and Norbert Mencke, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP95/00023, § 371 Date Jul. 11, 1996, § 102(e) Date Jul. 11, 1996, PCT Pub. No. WO95/19364, PCT Pub. Date Jul. 20, 1995

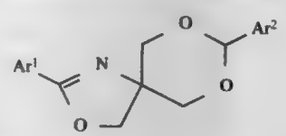
PCT Filed Jan. 4, 1995, Ser. No. 676,155

Claims priority, application Germany, Jan. 17, 1994, 44 01 105.9; Sep. 2, 1994, 44 31 225.3

Int. Cl.^{6} C07D *498/10*

U.S. Cl. 514—374 **3 Claims**

1. An Azatrioxaspiroalkene of the formula (I)



(I)

in which

Ar^1 represents phenyl which maybe monosubstituted to disubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, hydroxyl, methyl, ethyl, n- or i-propyl, methoxy, ethoxy, n- or i-propoxy, trifluoromethyl or trifluoromethoxy, and

Ar^2 represents phenyl which may be monosubstituted to trisubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, cyano, nitro, hydroxyl, or methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, n-, i-, s- or t-pentyl, n-, i-, s- or t-hexyl, n- or i-octyl, n- or i-nonyl, n- or i-decyl, n- or i-dodecyl, methoxy, ethoxy, n- or i-propoxy, n-, i-, s- or t-butoxy, n-, i-, s- or t-pentyloxy, n-, i-, s- or t-hexyloxy, n- or i-octyloxy, n- or i-nonyloxy, n- or i-decyloxy, n- or i-dodecyloxy, methylthio, ethylthio, n- or i-propylthio, n-, i-, s- or t-butylthio, n-, i-, s- or t-pentylthio, n-, i-, s- or t-hexylthio, n- or i-octylthio, n- or i-nonylthio, n- or i-decylthio, n- or i-dodecylthio, acetyl, propionyl, n- or i-butyroyl, n-, i-, s- or t-valeroyl, methoxycarbonyl, ethoxycarbonyl, n- or i-propoxycarbonyl, n-, i-, s- or t-butoxycarbonyl, n-, i-, s- or t-pentoxycarbonyl, methylenedioxy, ethylenedioxy, each of which maybe substituted by fluorine or chlorine, or cyclohexyl, cyclohexylmethyl or cyclohexyloxy, each of which maybe substituted by methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, methoxy, ethoxy, n- or i-propoxy, n-, i-, s- or t-butoxy, cyclohexyl or phenyl.

5,798,377

THROMBIN INHIBITORS

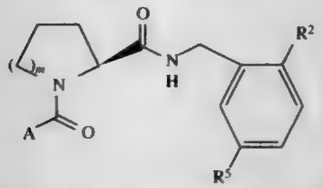
William C. Lumma, Pennsburg; Thomas J. Tucker, North Wales; Keith M. Witherup, Telford; Stephen F. Brady, Philadelphia; Willie L. Whitter, Norristown; Joseph P. Vacca, Telford; Craig Coburn, Skippack, and Jules A. Shafer, Gwynedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 21, 1996, Ser. No. 734,148

Int. Cl.[6] A61K *31/40;* **C07D** *207/08;207/09*

U.S. Cl. 514—423 **17 Claims**

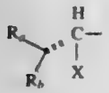
1. A compound having the following structure:



I

or a pharmaceutically acceptable salt thereof wherein

A is



wherein

R_a and R_b are independently selected from

hydrogen,

C_{1-4} alkyl unsubstituted or substituted with CH_3 or C_{3-7} cycloalkyl,

aryl,

substituted aryl with one or two substituents selected from

C_{1-4} alkyl,

C_{1-4} alkoxy,

methylenedioxy,

halogen or

hydroxy,

C_{3-7} cycloalkyl, or

R_a and R_b, along with the carbon to which they are attached, form a C_{3-7} cycloalkyl ring;

X is —NHR$_c$, wherein,

R_c is

hydrogen,

—CH_3,

—$(CH_2)_{1-3}CH_3$,

—$(CH_2)_{2-4}OH$,

—$(CH_2)_{1-3}COOH$,

—$(CH_2)_{1-3}COOR^6$, where R^6 is C_{1-4}alkyl,

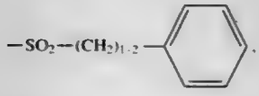
—$(CH_2)_{1-3}CONR^7R^8$,

where R^7 and R^8 are independently hydrogen or C_{1-4}alkyl,

—$SO_2(CH_2)_{1-3}$aryl,

—$(CH_2)_{1-3}NH_2$,

C_{3-7} cycloalkyl ring unsubstituted or substituted with —OH, —C(O)OH, or —C(O)OR$_d$, where R_d is C_{1-4} alkyl,



R^2 and R^5 are independently selected from

hydrogen, provided that R^2 and R^5 are not both hydrogen,

C_{1-4} alkyl,

C_{1-4} alkoxy,

halogen,

—COOH,

—OH,

—$COOR^6$, where R^6 is C_{1-4}alkyl,

—$CONR^7R^8$, where R^7 and R^8 are independently hydrogen or C_{1-4}alkyl,

—OCH_2CO_2H,

—$OCH_2CO_2CH_3$,

—$OCH_2CO_2(CH_2)_{1-3}CH_3$,

—$O(CH_2)_{1-3}C(O)NR^3R^4$, wherein R^3 and R^4 are independently hydrogen, C_{1-4}alkyl, C_{3-7} cycloalkyl, or —CH_2CF_3,

—$(CH_2)_{1-4}OH$,

—$NHC(O)CH_3$,

—$NHC(O)CF_3$,

—$NHSO_2CH_3$, and

—SO_2NH_2; and

m is 1.

5,798,378

CYCLOPENTANE(ENE) HEPTENOIC OR HEPTANOIC ACIDS AND DERIVATIVES THEREOF USEFUL AS THERAPEUTIC AGENTS

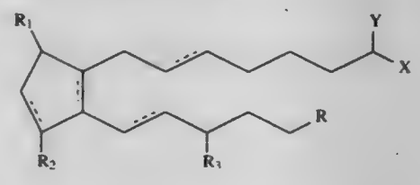
Robert M. Burk, Laguna Beach, Calif., assignor to Allergan, Waco, Tex.

Division of Ser. No. 740,883, Nov. 4, 1996, Pat. No. 5,681,848, which is a division of Ser. No. 445,842, Jul. 11, 1995, Pat. No. 5,587,391, which is a division of Ser. No. 174,535, Dec. 28, 1993, Pat. No. 5,545,665. This application May 21, 1997, Ser. No. 861,414

Int. Cl.[6] A61K *31/38;* **C07D** *333/12;333/16;333/24*

U.S. Cl. 514—438 **8 Claims**

1. A method of treating ocular hypertension which comprises applying to the eye an amount sufficient to treat ocular hypertension of a compound of formula (I)



wherein either the cyclopentane(ene) radical or the α or ω chain may be unsaturated; R is thienyl; R_1, R_2 and R_3 are selected from the group consisting of hydroxy and hydrocarbyloxy radicals wherein said hydrocarbyloxy radical comprises up to 20 carbon atoms; Y represents 2 hydrogen radicals or an oxo radical and X represents a hydroxyl, a hydrocarbylcarboxy, a hydrocarbyloxy, an amino or a mono or dialkyl amino radical; provided, however, at least one of R_1, R_2 and R_3 is a hydrocarbyloxy radical.

5,798,379

UCS1025 COMPOUNDS

Tamio Mizukami; Harumi Ogawa; Ryuichiro Nakai, all of Tokyo; Akira Asai, Kanagawa; Yoshinori Yamashita; Katsuhiko Ando, both of Tokyo; Tsutomu Agatsuma; Shiro Akinaga, both of Shizuoka; Kozo Ouchi, Saitama, and Hideki Kawasaki, Ibaraki, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

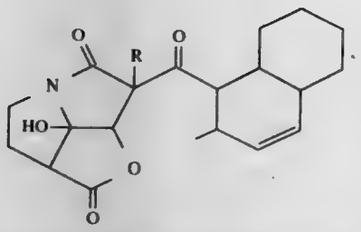
Filed Dec. 18, 1997, Ser. No. 994,029

Claims priority, application Japan, Dec. 18, 1996, 8-337765; Jan. 6, 1997, 9-000120

Int. Cl.[6] A61K *31/40;* **C07D** *487/02*

U.S. Cl. 514—441 **5 Claims**

1. A UCS1025 compound represented by the following formula (I):



(I)

wherein R represents hydrogen or hydroxyl group, or tautomers or pharmacologically acceptable salts thereof.

5,798,380

CYTOSKELETAL ACTIVE AGENTS FOR GLAUCOMA THERAPY

Paul L. Kaufman, Madison, Wis., and Benjamin Geiger, Rehovot, Israel, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Feb. 21, 1996, Ser. No. 604,568
Int. Cl.[6] A67K *31/35*
U.S. Cl. 514—456 **4 Claims**

1. A method of enhancing aqueous humor outflow in the eye of a subject to treat glaucoma, comprising:

a) providing a subject with glaucoma; and

b) administering to said subject an ophthalmic preparation comprising an effective amount of latrunculin-A or a pharmaceutically acceptable salt thereof, thereby enhancing aqueous humor outflow in the eye and treating the glaucoma.

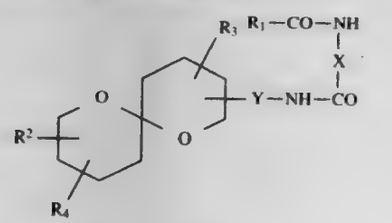
5,798,381

BIOLOGICALLY ACTIVE BISTRAMIDES, PROCESS FOR THEIR PRODUCTION AND THEIR APPLICATIONS IN THERAPY

Jean-Francois Biard, Nantes; Dominique Cortadellas, Montpellier Cedex 1; Cécile Debitus, Noumea, all of France; Dominique Laurent, La Paz, Bolivia; Cristos Roussakis, Nantes, and Jean-Francois Verbist, Aigrefeuille sur Maine, both of France, assignors to Institut Francais de Recherche Scientifique pour le Development en Cooperation (Orstom), Paris, France

PCT No. PCT/FR94/00256, § 371 Date Mar. 4, 1996, § 102(e) Date Mar. 4, 1996, PCT Pub. No. WO94/20503, PCT Pub. Date Sep. 15, 1994
PCT Filed Mar. 8, 1994, Ser. No. 513,923
Claims priority, application France, Mar. 8, 1993, 93 02662; Jun. 29, 1993, 93 07925
Int. Cl.[6] C07D *403/04*; A61K *31/55*
U.S. Cl. 514—456 **33 Claims**

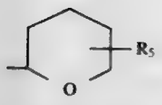
1. A compound of the formula (I)



(I)

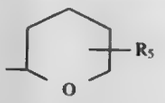
in which

R_1 and R_2, identical to or different from each other, represent a saturated or unsaturated hydrocarbon chain with 1 to 20 carbon atoms, substituted by at least one group selected from an —OH group, a ketone group, and optionally, at least one



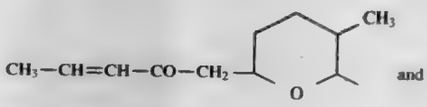
ring, this ring being able to contain one or more unsaturations,

X and Y, identical to or different from each other represent a saturated or unsaturated hydrocarbon chain with 1 to 20 carbon atoms, optionally substituted by at least one group selected from an —OH, a ketone group and at least one



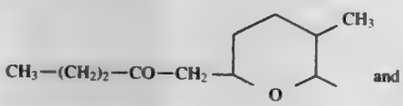
ring, this ring being able to contain one or more substitutions,

R_3, R_4 and R_5, identical to or different from each other, are chosen from hydrogen, alkyl or alkoxy radicals with 1 to 4 carbon atoms, a —COOH, —OH, the corresponding ethers or esters, —NH_2, —NO_2 group, or a halogen atom, with the proviso that when R_3 and R_4 each represent a hydrogen atom, R_1 and R_2 do not respectively represent the following chains:



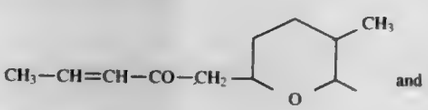
and

$(CH_3, OH)CH-C(CH_3)=$ or



and

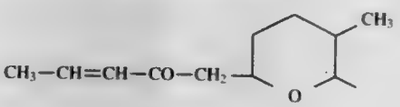
(CH_3). $OH)CH-C(CH_3)=$ or,



and

$CH_3-CO-C(CH_3)=$.

and with the further proviso that when R_3 is CH_3 and R_4 is H R_1 and R_2 do not respectively represent



and

$CH_3CH(OH)C(CH_3)=CHC(CH_3)CH_2CH_2$.

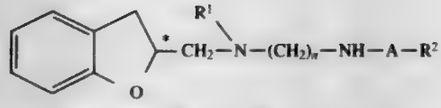
5,798,382

2,3-DIHYDROBENZOFURAN DERIVATIVES, METHOD FOR PRODUCING THE SAME, AND USE THEREOF

Yuji Kogami; Naomi Aono, and Daisuke Mochizuki, all of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/01160, § 371 Date Dec. 12, 1996, § 102(e) Date Dec. 12, 1996, PCT Pub. No. WO96/01816, PCT Pub. Date Jan. 25, 1996
PCT Filed Jun. 9, 1995, Ser. No. 750,578
Claims priority, application Japan, Jul. 7, 1994, 6-155898
Int. Cl.[6] A61K *31/34;31/38;31/44*
U.S. Cl. 514—469 **8 Claims**

1. A 2,3-dihydrobenzofuran derivative represented by formula (1) or a salt thereof:



(1)

wherein R^1 represents a hydrogen atom or a lower alkyl group; R^2 represents a naphthyl group, a pyridyl group, a furyl group or a thienyl group; n is an integer of from 2 to 6; A represents a carbonyl group or a sulfonyl group; and * represents an asymmetric carbon atom.

5,798,383

ARYLOXYCYCLOALKENYL AND ARYLOXYIMINOCYCLOALKENYLHYDROXYUREAS

Akiyoshi Kawai, Handa; Makoto Kawai, Chita-Gun, and Rodney W. Stevens, Handa, all of Japan, assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/IB95/00399, § 371 Date Jul. 28, 1997, § 102(e) Date Jul. 28, 1997, PCT Pub. No. WO96/15106, PCT Pub. Date May 23, 1996

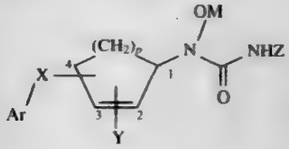
PCT Filed May 26, 1995, Ser. No. 836,452

Claims priority, application WIPO, Nov. 10, 1994, PCT/JP94/1987

Int. Cl.[6] **A01N** *47/28;* **C07C** *67/02;69/66;69/76*

U.S. Cl. 514—482 **8 Claims**

1. A compound of formula (I):



(I)

wherein

Ar is selected from the group consisting of:

(a) phenyl, naphthyl and biphenyl, each optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} hydroxyalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, C_{2-4} alkoxyalkoxy, C_{1-4} alkylthio, hydroxy, halo, cyano, amino, C_{1-4} alkylamino, di (C_{2-8}) alkylamino, C_{2-6} alkanoylamino, carboxy, C_{2-6} alkoxycarbonyl, phenyl optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, cyano and halo, phenoxy optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, cyano and halo, phenylthio optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, cyano and halo, and phenylsulfinyl optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, cyano and halo; and

(b) furyl, benzo[b]furyl, thienyl, benzo[b]thienyl, pyridyl and quinolyl, optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, halo, C_{1-4} alkoxy, hydroxy, phenyl optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, cyano and halo, phenoxy optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, cyano and halo, and phenylthio optionally substituted with one to three substituents selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, cyano and halo;

X is selected from C_1–C_4 alkylene, C_2–C_4 alkenylene, $—(CHR^1)_m—Q^1—(CHR^2)_n—$, $—O(CHR^1)_j—Q^2—$ and $—(CHR^1)—O—N=$ in which the N= moiety is attached to the cycloalkene ring; and in which Q^1 is O, S, SO, SO_2, NR^3, CH=N—O or CO, Q^2 is O, S, SO, SO_2 or NR^3, and R^1, R^2 and R^3 are each hydrogen or C_1–C_4 alkyl, m and n are each an integer from 0 to 4 and j is an integer from 1 to 4;

p is an integer of 1 or 2;

Y is hydrogen, C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{2-4} alkoxyalkyl, C_{1-4} alkylthio, hydroxy, halo, cyano or amino;

Z is hydrogen or C_{1-4} alkyl; and

M is hydrogen, a pharmaceutically acceptable cation or a pharmaceutically acceptable metabolically cleavable group.

5,798,384

MICROBICIDAL COMPOSITION

Rei Matsunaga, Kobe, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

Filed Feb. 28, 1997, Ser. No. 808,552

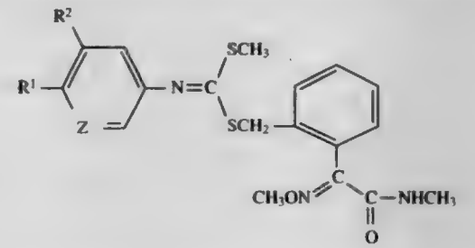
Claims priority, application Japan, Feb. 29, 1996, 8-043705

Int. Cl.[6] **A01N** *37/34;37/52*

U.S. Cl. 514—508 **11 Claims**

1. A microbicidal composition comprising synergistic microbicidally effective amounts of the mixture of active ingredients:

(I) a dithiocarbonimide compound represented by the formula:



wherein Z represents CH group R^1 and R^2 are the same or different and represent hydrogen atom, C_1-C_6 alkyl group, halogen atom, C_1–C_6 alkoxy group, C_1–C_6 haloalkyl group or C_{1-C6} haloalkoxy group, and

(II) chlorothalonil, wherein a weight ratio of compound (I) to compound (II) is 1:0.1 to 100 parts by weight.

5,798,385

INSECT REPELLENT COMPOSITION AND METHOD OF USING SAME TO REPEL INSECTS

Anna Belle Marin, Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 691,197, Aug. 7, 1996. This application Aug. 21, 1997, Ser. No. 915,604

Int. Cl.[6] **A01N** *47/06;35/02;27/00;* **A61K** *7/46*

U.S. Cl. 514—512 **3 Claims**

1. A composition which is both an insect repellent and a perfume, the composition comprising on a weight percentage basis:

about 0 percent to about 5 percent Para-Isopropylcyclohexanol;

about 50 percent to about 90 percent, 3,7-dimethyl-2,6-Octadien-1-al;

about 1 percent to about 10 percent 5,9-dimethyl-4,8-decadienal;

about 5 percent to about 20 percent p-Mentha-1,8-diene;

about 5 percent to about 15 percent o-methyl-betaphenylethyl alcohol; and

about 0 percent to about 5 percent 4-Cyclooctenyl methyl carbonate.

5,798,386

ANGIOGENIC LIPID FORMULATIONS

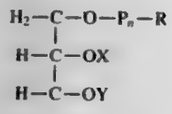
Edward D. Nudelman, Seattle, Wash., assignor to Cell Therapeutics, Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 285,153, Aug. 3, 1994, abandoned. This application Mar. 4, 1996, Ser. No. 611,980

Int. Cl.[6] A01N *37/02;37/06*

U.S. Cl. 514—547 10 Claims

1. An aqueous formulation for vascularizing ischemic or grafted tissue, comprising a glycerol derivative having the following formula:



wherein R is a straight or branched C_{1-24} saturated or unsaturated alkyl or a straight or branched C_{1-24} aryl; P_n is —CH=HC—; n is 0 to 1, with the proviso that when n is 0, R is C_{6-24}, and X and Y are each independently H or an aryl or alkyl group having from 2 to 26 carbon atoms, or a monoglyceride having a C_{8-24} ether-linked saturated alkyl in an aqueous buffered pharmaceutical carrier.

5,798,387

AMINO ACID DERIVATIVES

Masaaki Ishizuka, Mishima; Masaji Kawazu, Numazu; Toshiaki Katsumi; Yoshihide Fuse, both of Himeji; Kenji Maeda, and Tomio Takeuchi, both of Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, and Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, both of Japan

Continuation of Ser. No. 244,810, Jun. 13, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 753,381

Claims priority, application Japan, Oct. 15, 1992, 4-301559

Int. Cl.[6] A61K *31/22*

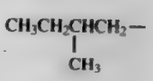
U.S. Cl. 514—551 7 Claims

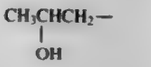
1. An amino acid derivative having the formula

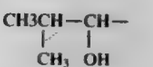


(I)

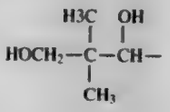
wherein R^{1a} is a linear or branched alkyl group or a mono- or di-hydroxy-substituted linear or branched alkyl group selected from the group consisting of the alkyl groups and mono- or di-hydroxy-substituted alkyl groups which are represented by the formulae (i)–(iv):

(i) 

(ii) 

(iii) 

and

(iv) 

R^{3a} is a group represented by the formula $—(CH_2)_cR^{14a}$ (where R^{14a} is a hydroxyl group, a C_1–C_3 alkoxy group or an aralkyloxy group and c is an integer of 1, 2 or 3); R^{4a} is a hydrogen atom or C_1–C_3 alkyl group, and R^{5a} is a hydroxyl group, a C_1–C_3 alkoxy group or an aralkyloxy group.

5,798,388

METHOD AND COMPOSITION FOR TREATING MAMMALIAN DISEASES CAUSED BY INFLAMMATORY RESPONSE

Stanley E. Katz, Milltown, N.J., assignor to Cellular Sciences, Inc., Flemington, N.J.

Filed Sep. 6, 1996, Ser. No. 709,043

Int. Cl.[6] A61K *31/19;31/22*

U.S. Cl. 514—557 9 Claims

1. A method for treating asthma in mammals caused by mammalian cells involved in the inflammatory response comprising:

contacting the mammalian cells with an inflammatory mediator;

wherein the inflammatory mediator is selected from the group consisting of pyruvate and a pyruvate precursor and is present in an amount capable of reducing the undesired inflammatory response and is an antioxidant provided that said pyruvate or pyruvate precursor is not administered together with albuterol.

5,798,389

GLOMERULONEPHRITIS INHIBITOR

Toshiji Kanayama; Taro Uchiyama, and Isao Yanagisawa, all of Yokohama, Japan, assignors to Shiseido Co., Ltd., Tokyo, Japan

Filed Sep. 25, 1996, Ser. No. 719,231

Claims priority, application Japan, Sep. 26, 1995, 7-273557

Int. Cl.[6] A61K *31/20*

U.S. Cl. 514—560 13 Claims

1. A method for inhibiting glomerulonephritis comprising:

administering to a host of a therapeutically effective amount of docosahexaenoic acid or a docosahexaenoic acid derivative.

5,798,390

TRI- AND TETRA-SUBSTITUTED GUANIDINES AND THEIR USE AS EXCITATORY AMINO ACID ANTAGONISTS

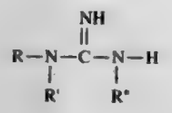
Eckard Weber, Laguna Beach, Calif., and John F. W. Keana, Eugene, Oreg., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon, Eugene, Oreg.

Division of Ser. No. 105,456, Aug. 11, 1993, Pat. No. 5,559,154, which is a continuation of Ser. No. 663,134, Mar. 4, 1991, Pat. No. 5,262,568, which is a continuation-in-part of Ser. No. 487,036, Mar. 2, 1990, abandoned. This application May 22, 1995, Ser. No. 446,451

Int. Cl.[6] A61K *31/155;31/655;31/37;* C07C *279/18*

U.S. Cl. 514—634 200 Claims

1. A method of inhibiting NMDA receptor-ion channel related neurotoxicity in a mammal exhibiting such neurotoxicity or susceptible thereto comprising administering to the mammal an effective amount of a N,N,N'-trisubstituted guanidine having the formula:



wherein R, R' and R" are independently a C_1–C_8 alkyl group, a C_2–C_6 alkenyl group, C_2–C_6 alkynyl group, cycloalkyl group, cycloalkyl group substituted by one or more substituents, cycloalkenyl group, cycloalkenyl group substituted with one or more substituents, carbocyclic aryl group, carbocyclic aryl group substituted by one or more substituents, alkaryl group, alkaryl group substituted by one or more substituents, aralkyl group, aralkyl group substituted with one or more substituents, heterocyclic group, heterocyclic group substituted by one or more substituents, heteroaryl group, or a heteroaryl group substituted by one or more substituents:

or a physiologically acceptable salt thereof;

wherein said substituent is chloro, fluoro, bromo, iodo, C_1–C_8 alkyl, C_1–C_8 alkoxy, cyano, C_3–C_{15} dialkylaminoalkyl, carboxy, carboxamido, C_1–C_8 alkylthio, allyl, aralkyl, alkaryl, C_3–C_6 cycloalkyl, aroyl, aralkoxy, C_2–C_8 acyl, aryl, heteroaryl, an aryl fused to a benzene ring, a heteroaryl fused to a benzene ring, C_3–C_6 heterocycloalkyl, a C_3–C_6 heterocycloalkyl ring fused to a benzene ring, C_1–C_8 alkylsulfonyl, arylthio, amino, C_1–C_8 alkylamino, C_2–C_{15} dialkylamino, hydroxy, hydroxyalkyl, carbamoyl, C_1–C_8 N-alkylcarbamoyl, C_2–C_{15} N,N-dialkylcarbamoyl, nitro, azido or C_2–C_{15} dialkylsulfamoyl; and

wherein said guanidine exhibits high binding to the PCP receptor in mammalian nerve cells.

5,798,391

INJECTABLE SOLUTION OF BENZALKONIUM FLUORIDE

Pierre Lagny, Kildare, Ireland, and Pierre Bourbon, Toulouse, France, assignors to Aromafarm Limited, Isle of Man, United Kingdom

PCT No. PCT/FR95/00070, § 371 Date Oct. 22, 1996, § 102(e) Date Oct. 22, 1996, PCT Pub. No. WO95/19766, PCT Pub. Date Jul. 27, 1995

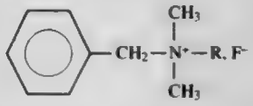
PCT Filed Jan. 23, 1995, Ser. No. 682,500

Claims priority, application France, Jan. 24, 1994, 94 00695

Int. Cl.[6] A61K *31/14*

U.S. Cl. 514—643 **23 Claims**

11. Method of treatment of viral or infectious diseases in a human or an animal, which comprises administering by intravascular injection a solution of at least one benzalkonium fluoride of the formula:



where R is an alkyl radical which may vary between C_8H_{17} and $C_{18}H_{37}$, dissolved at an effective concentration of up to 0.23% by weight in an excipient injectable intravascularly, wherein the disease is induced by picornavirus, adenovirus, herpetovirus, HIV virus, parvovirus or is Carré's disease.

5,798,392

SULFONYL FLUORIDES FOR THE TREATMENT OF ALZHEIMER'S DISEASE

Donald Eugene Moss, El Paso, Tex., assignor to The Board of Regents of the University of Texas System, Austin, Tex.

Filed Aug. 28, 1996, Ser. No. 705,858

Int. Cl.[6] A61K *31/135;31/10*

U.S. Cl. 514—649 **13 Claims**

5. A method of treating Alzheimer's disease in a human, comprising the step of administering to said human a therapeutically effective dose of a sulfonyl fluoride selected from the group consisting of methanesulfonyl fluoride and ethanesulfonyl fluoride.

5,798,393

BETAXOLOL HYDROCHLORIDE FOR THE TREATMENT OF ANXIETY DISORDERS

Conrad Melton Swartz, P.O. Box 2952, Greenville, N.C. 27836-0952

Filed Apr. 2, 1996, Ser. No. 627,685

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—652 **2 Claims**

1. A method of relieving the symptoms of anxiety of Generalized Anxiety Disorder, Panic Disorder, Post Traumatic Stress Disorder, or Adjustment Disorder with Anxiety comprising administering to a patient an anxiolytically effective amount of the compound betaxolol or a pharmaceutically acceptable addition salt thereof.

5,798,394

RUBBER DEVULCANIZATION PROCESS

Ronald Damian Myers, and John Brenton MacLeod, both of Calgary, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 549,593, Oct. 27, 1995, Pat. No. 5,602,186. This application Oct. 21, 1996, Ser. No. 734,323

Int. Cl.[6] C08J *11/16;11/18;* **C08F** *8/00*

U.S. Cl. 521—42.5 **6 Claims**

1. A process for preparing a functioned devulcanized rubber comprising:

reacting a mixture of rubber vulcanizate crumb and an alkali metal in the absence of oxygen and in the presence of a solvent at a temperature below the rubber's thermal cracking temperature in order to form a functionalized devulcanized rubber wherein the functionalized devulcanized rubber contains functional groups that are bonded to the devulcanized rubber and are derived from the solvent molecules.

5,798,395

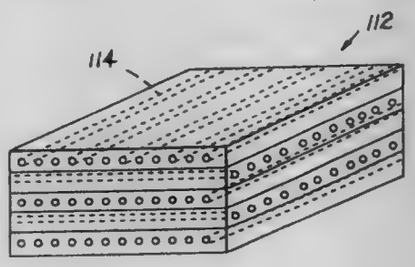
ADHESIVE BONDING USING VARIABLE FREQUENCY MICROWAVE ENERGY

Robert J. Lauf, Oak Ridge; April D. McMillan, Knoxville; Felix L. Paulauskas, Oak Ridge, all of Tenn.; Zakaryae Fathi, Cary, and Jianghua Wei, Raleigh, both of N.C., assignors to Lambda Technologies Inc., Raleigh, N.C., and Lockheed Martin Energy Research Corporation, Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 523,902, Sep. 6, 1995, Pat. No. 5,721,286, which is a continuation-in-part of Ser. No. 221,188, Mar. 31, 1994, abandoned. This application Mar. 29, 1996, Ser. No. 626,207

Int. Cl.[6] C09J *5/06;* **H05B** *6/64;* **B32B** *31/28*

U.S. Cl. 522—1 **13 Claims**



1. A method of uniformly heating a first substrate, said first substrate having a plurality of first conductive fibers disposed therein in a first direction and having an edge portion generally parallel with said first direction, said method comprising the steps of:

positioning a second substrate edge portion in contacting relation with said first substrate edge portion, said second substrate having a plurality of second conductive fibers disposed therein in a second direction and extending between said second substrate contacting edge portion and a second susbstrate non-contacting edge portion, said second substrate positioned such that said second fibers are substantially perpendicular to said first fibers; and

sweeping said first and second substrates with variable frequency microwave energy such that one or more microwave modes enters said second substrate non-contacting edge portion to facilitate uniformly heating said first substrate.

5,798,396

SULFONIUM SALT-CONTAINING COMPOUNDS AND INITIATORS OF POLYMERIZATION

Eiji Takahashi, and Hiroo Muramoto, both of Ichihara, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

PCT No. PCT/JP95/00364, § 371 Date Sep. 4, 1996, § 102(e) Date Sep. 4, 1996, PCT Pub. No. WO95/24387, PCT Pub. Date Sep. 14, 1995

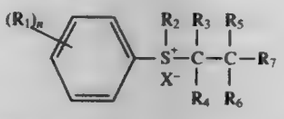
PCT Filed Mar. 7, 1995, Ser. No. 704,631

Claims priority, application Japan, Mar. 9, 1994, 6-065719

Int. Cl.[6] C08F *2/50;4/00;* **C07C** *381/12*

U.S. Cl. 522—15 **16 Claims**

1. Sulfonium salt-containing compounds represented by a general formula (I):



(I)

wherein

R_1 is alkyl containing from 1 to 18 carbon atoms, hydroxy, alkoxy containing from 1 to 18 carbon atoms, alkylcarbonyloxy containing from 1 to 18 carbon atoms or halogen,

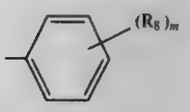
n is any of 0, 1, 2 or 3, however, each of R_1 may be different from the others when n is 2 or more,

R_2 is alkyl containing from 1 to 6 carbon atoms,

R_3 and R_4 are each independently hydrogen or alkyl containing from 1 to 6 carbon atoms,

R_5 and R_6 are each independently hydrogen, alkyl containing from 1 to 6 carbon atoms, hydroxy, alkoxy containing from 1 to 6 carbon atoms, alkylcarbonyloxy containing from 1 to 18 carbon atoms or aromatic carbonyloxy, and

R_7 is a group represented by a following formula:



wherein

R_8 is alkyl containing from 1 to 18 carbon atoms, hydroxy, alkoxy containing from 1 to 18 carbon atoms, alkylcarbonyloxy containing from 1 to 18 carbon atoms, aromatic carbonyloxy or halogen,

m is any of 0, 1, 2 or 3, however, each of R_8 may be different from others if m is 2 or more, and

X is non-nucleophilic anion residue.

5,798,397

ACTIVE ENERGY RAY-CURABLE COMPOSITION, RECORDING MEDIUM AND IMAGE-FORMING METHOD EMPLOYING THE SAME

Hiromichi Noguchi, Hachioji; Makiko Kimura, Sagamihara; Masato Katayama; Akio Kashiwazaki, both of Yokohama; Yoshie Nakata, Kawasaki, and Yuko Nishioka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

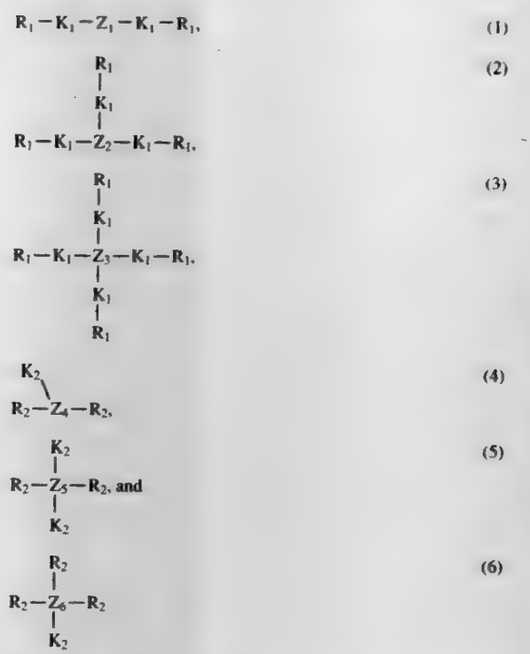
Division of Ser. No. 542,042, Oct. 12, 1995, Pat. No. 5,681,643. This application Dec. 24, 1996, Ser. No. 772,909

Claims priority, application Japan, Oct. 13, 1994, 6-247675; Oct. 5, 1995, 7-258814

Int. Cl.[6] C08F *2/50;* **B32B** *5/16*

U.S. Cl. 522—81 **29 Claims**

1. A composition curable by active energy rays, comprising an initiator and which is activated by activated energy rays a cationic polyacryloyl compound having two or more acryloyl groups and one or more cation groups in a molecule, represented by any of General Formulae (1) to (6)



(1)

(2)

(3)

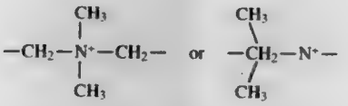
(4)

(5)

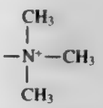
(6)

wherein Z_1 to Z_6 represent independently a residue derived from a polyhydric alcohol or a polyepoxide,

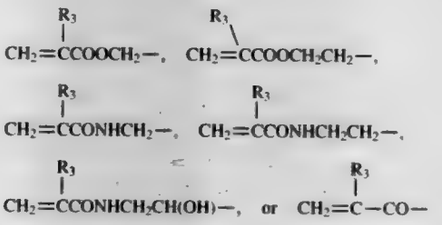
K_1 represents independently a radical of the formula



K_2 represents a radical of the formula



R_1 represents independently a radical of the formula



wherein R_3 is independently H— or CH_3—, and

R_2 represents independently a radical of the formula

$CH_2=CHCOO-$, or $CH_2=C(CH_3)COO-$.

5,798,398

EPOXY CURING AGENT COMPRISING A METAXYLYLENEDIAMINE-EPICHLOROHYDRIN ADDUCT

Shailesh Shah, Dresher; Ronald J. Cash, North Wales; Ronald LaFreeda, Plymouth Meeting; James Aloye, Reading, and Joseph L. Mulvey, Lansdale, all of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

Filed Oct. 18, 1996, Ser. No. 733,453

Int. Cl.[6] C08L *63/00;63/02*

U.S. Cl. 523—404 **15 Claims**

1. An epoxy curing agent composition which is a reaction product produced by reacting components consisting of about 2 to about 10 moles of unreacted metaxylylenediamine and about 1 mole of epichlorohydrin, wherein said reaction product contains no greater than 4.9 weight percent metaxylylenediamine, and an aqueous alcohol solvent, wherein the water contributed by the aqueous alcohol solvent is present from about 20 to about 80 weight percent, based on the weight of said composition.

5,798,399

CURING AGENT COMPOSITIONS AND A METHOD OF MAKING

Allen L. Griggs, and Taun L. McKenzie, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 572,729, Dec. 14, 1995, Pat. No. 5,717,011. This application Aug. 28, 1997, Ser. No. 924,044

Int. Cl.[6] C08L *63/00*

U.S. Cl. 523—414 **8 Claims**

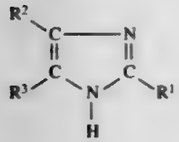
1. A curable composition comprising:

(a) a curing agent composition prepared according to a method comprising the steps of:

(A) providing a mixture having a temperature range of about 15 to about 50 degrees C., the mixture consisting essentially of:

(i) an epoxy compound(s) having an average of at least one vicinal epoxy group per molecule and an epoxy equivalent weight of less than about 350, wherein if the epoxy compound is water insoluble it must have a ball and ring softening point of about 40 degrees C. or less;

(ii) an imidazole compound(s) selected from the group consisting of



wherein

R^1 is independently selected from the group consisting of hydrogen, aryl radicals, alkyl radicals comprising up to about 18 carbon atoms, and cycloalkyl radicals comprising up to about 18 carbon atoms;

R^2 is independently selected from the group consisting of hydrogen, aryl radicals, alkyl radicals comprising up to about 18 carbon atoms, and cycloalkyl radicals comprising up to about 18 carbon atoms;

R^3 is independently selected from the group consisting of hydrogen, aryl radicals, alkyl radicals comprising up to about 18 carbon atoms, and cycloalkyl radicals comprising up to about 18 carbon atoms;

wherein R^2 and R^3 may alternatively together form a fused ring structure; and

(iii) at least about 5 percent by weight water based on the total weight of components of elements (i) plus (ii) plus (iii);

(B) agitating the mixture and allowing the mixture to react while heating the mixture, if necessary, such that the temperature of the mixture reaches a temperature range of about 120 to about 160 degrees C. in order to form a curing agent composition;

wherein the total amount of epoxy compound(s) and imidazole compound(s) used according to the method is such that about 0.55 to about 1.3 equivalents of secondary amino group of the imidazole compound(s) per equivalent of epoxy group are used;

(b) an epoxy compound(s) having an average of greater than 1 vicinal epoxy group per molecule; and

(c) an optional epoxy co-curing agent(s);

wherein about 0.1 to about 20 weight percent of the curing agent composition of (a) is present based on the total weight of the curable composition.

5,798,400

EPOXY RESIN COMPOUND

Atsuto Tokunaga, Nagoya; Yasushi Sawamura, Otsu, and Masayuki Tanaka, Nagoya, all of Japan, assignors to Toray Industries, Inc., Japan

PCT No. PCT/JP95/02742, § 371 Date Aug. 22, 1996, § 102(e) Date Aug. 22, 1996, PCT Pub. No. WO96/20969, PCT Pub. Date Jul. 11, 1996

PCT Filed Dec. 27, 1995, Ser. No. 696,916

Claims priority, application Japan, Jan. 5, 1995, 7-000163

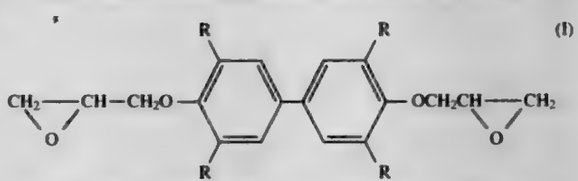
Int. Cl.[6] C08L *63/00*

U.S. Cl. 523—443 **8 Claims**

1. A moldable epoxy resin compound comprising:

an epoxy resin (A), a hardener (B), and an inorganic filler comprising silica (C) as an essential component,

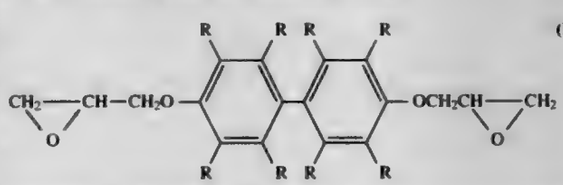
wherein said epoxy resin (A) contains as an essential component a biphenyl epoxy resin selected from the group consisting of the formulas (I) and (II) below, said formula (I) being:



(I)

where the R's identically or differently denote hydrogen atoms or monovalent organic groups with 1 to 4 carbons,

and a biphenyl resin has formula (II) being:



(II)

where the R's identically or differently denote hydrogen atoms or monovalent organic groups with 1 to 4 carbons,

wherein said hardener contains at least two phenolic hydroxyl groups and/or naphtholic hydroxyl groups in the molecule, and

wherein said silica (C) accounts for more than 85 wt % of the total amount of the epoxy resin composition, and said silica (C) is composed of 5–50 wt % of spherical synthetic silica and 95-50 wt % of natural fused silica.

5,798,401

BITUMINOUS COMPOSITION

Jan Korenstra; Willem Cornelis Vonk, and Jeroen Van Westrenen, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 13, 1996, Ser. No. 713,708
Claims priority, application European Pat. Off., Sep. 9, 1995, 95306463
Int. Cl.[6] C08L 95/00
U.S. Cl. 524—68 5 Claims

1. A bituminous composition comprising (a) a bituminous component and (b) a block copolymer composition which comprises at least one selected from the group consisting of linear triblock copolymers, multi-armed block copolymers, and diblock copolymers, which block copolymers comprise at least one block of a monovinylaromatic hydrocarbon (A) and at least one block of a conjugated diene (B), wherein the block copolymer composition which is present in an amount in the range of from 2 to 8% by weight, based on the total bituminous composition, has a vinyl content of from 35 to 65% by weight, based on the total diene content, and any diblock copolymer (AB) present has an apparent molecular weight in the range of from 60,000 to 100,000 and any triblock copolymer prepared via the full sequential preparation method has an apparent molecular weight in the range of from 120,000 to 200,000.

5,798,402

FLUORINATED SULFONE MELT ADDITIVES FOR THERMOPLASTIC POLYMERS

Patrick Henry Fitzgerald, Pitman, N.J.; Kimberly Gheysen Raiford, and Edward James Greenwood, both of Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1995, Ser. No. 579,043
Int. Cl.[6] C08K 5/41;5/02
U.S. Cl. 524—167 15 Claims

1. A composition having repellency to low surface tension fluids comprising a material prepared by forming a mixture of a polymer selected from the group consisting of polyolefin, polyamide, polyester and polyacrylate and a fluorochemical compound selected from the group consisting of formula III

$$R_fSO_2R \qquad \text{III}$$

wherein

R_f is $F(CF_2)_x$—$(CH_2)_m$ wherein x is from about 4 to about 20, and m is from about 2 to about 6; and

R is a aliphatic hydrocarbon having from about 12 to about 66 carbon atoms; and

melt extruding the mixture.

5,798,403

THERMOPLASTIC RESIN COMPOSITION HAVING HIGH HEAT RESISTANCE

Koichi Yamashita; Hiroshi Kobayashi, both of Settsu, and Masahiro Asada, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP95/02261, § 371 Date May 13, 1997, § 102(e) Date May 13, 1997, PCT Pub. No. WO96/15192, PCT Pub. Date May 23, 1996
PCT Filed Nov. 7, 1995, Ser. No. 836,050
Claims priority, application Japan, Nov. 16, 1994, 6-308301
Int. Cl.[6] C08K 3/34
U.S. Cl. 524—447 6 Claims

1. A heat resistant thermoplastic resin composition comprising (A) 5 to 95 parts by weight of a polyamide resin, (B) 5 to 95 parts by weight of a copolymer containing an unsaturated carboxylic acid, which comprises 40 to 80% by weight of an aromatic vinyl compound, 15 to 50% by weight of a vinyl cyanide compound, 0.1 to 20% by weight of an unsaturated carboxylic acid and 0 to 30% by weight of other vinyl compounds copolymerizable therewith, (C) 5 to 50 parts by weight of a graft copolymer, which is obtained by graft copolymerizing 60 to 5% by weight of a vinyl compound in the presence of 40 to 95% by weight of a diene rubber of an average particle size of 0.1 to 2.0 μm, and (D) 0.1 to 30 parts by weight of a kaolin having an average particle size of 0.1 to 4.0 μm to 100 parts by weight of the sum of (A), (B) and (C).

5,798,404

HAIR CARE APPLIANCE WITH THERMOCHROMIC HAIR CURLERS AND METHOD OF MANUFACTURING SAME

Lawrence P. Monty, and Patrick T. Monty, both of 193 Cooper Rd., Milton, Vt. 05468

Division of Ser. No. 348,735, Dec. 2, 1994, Pat. No. 5,606,983. This application Aug. 8, 1996, Ser. No. 694,033
Int. Cl.[6] C08K 5/01
U.S. Cl. 524—490 9 Claims

1. A process for preparing a reversibly thermochromic thermoplastic elastomer molding composition, comprising the steps of:

a) mixing 100 parts of a block copolymer having a polystyrene phase and a polyisoprene phase, 50 to 200 parts of a paraffinic or naphthalenic plasticizer oil,0 to 200 parts of an inert particulate filler, 1 to 5 parts of an anti-oxidant and UV stabilizer,0 to 10 parts of a lubricant, 10 to 100 parts of a thermochromic particulate material, and optionally,0 to 100 parts of conventional dyes and pigments to form a homogeneous mixture; and

b) plastic-extrusion-compounding said homogeneous mixture to produce thermoplastic elastomer pellets suitable for insert-molding.

5,798,405

TIRE WITH TREAD OF RUBBER COMPOSITION CONTAINING TWO DIFFERENT CARBON BLACKS

René Jean Zimmer, Howald; Friedrich Visel, Bofferdange, both of Luxembourg; Uwe Ernst Frank, Marpingen, Germany; Thierry Florent Edmé Materne, Attert, Belgium, and Giorgio Agostini, Colmar-Berg, Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 30, 1997, Ser. No. 941,180
Int. Cl.[6] C08K 3/00
U.S. Cl. 524—496 37 Claims

1. A rubber composition which comprises (A) 100 parts by weight of at least one diene-based elastomer, (B) about 35 to about 120 phr particulate carbon black reinforcing filler and from zero up to about 10 phr of precipitated silica wherein said carbon black reinforcement is comprised of (i) about 25 to about 100 phr of a first carbon black having a dibutylphthalate (DBP) Adsorption Number in a range of about 120 to about 140 cc/100 gm with a corresponding Iodine Adsorption Number in a range of about 110 to about 130 g/kg and (ii) about 10 to about 45 phr of a second carbon black having a DBP Adsorption Number in a range of about 80 to about 110 cc/100 gm with a corresponding Iodine Adsorption Number in a range of about 25 to about 45 g/kg; wherein the weight ratio of the first carbon black to the second carbon black is in a range of about 55/45 to about 80/20; and wherein the DBP Number of the first carbon black differs from that of the second carbon black by at least 30 and the Iodine Number of the first carbon black differs from that of the second carbon black by at least 80.

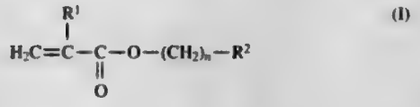
5,798,406

FLUORINATED ACRYLIC AND METHACRYLIC LATICES AND MIXTURES THEREOF, PROCESSES FOR MANUFACTURING THEM AND THEIR APPLICATIONS IN THE FIELD OF HYDROPHOBIC COATINGS

Bruno Feret, Levallois; Laure Sarrazin, Boisney, and Didier Vanhoye, Bernay, all of France, assignors to Elf Atochem S.A., France

Filed Oct. 18, 1995, Ser. No. 544,693
Claims priority, application France, Oct. 18, 1994, 94 12431
Int. Cl.[6] C08J 3/02
U.S. Cl. 524—501 36 Claims

1. A fluorinated (meth)acrylic latex comprising at least one dispersion of polymeric particles, said dispersion being obtained by emulsion copolymerization in an aqueous medium, in at least one stage, wherein at least one perfluorinated monomer of formula (I):



(I)

in which:

R^1 represents CH_3 or H;

R^2 represents a perfluorinated C_1–C_{10} alkyl radical; and

$0<n\leq 4$,

has been used as sole fluorinated comonomer for the formation of the polymeric particles, and is distributed statistically in unstructured copolymeric particles, the latter being formed in one stage, or distributed statistically in the shell of structured particles of core-shell or core-intermediate layer(s)-shell structure, said core-shell structured particles resulting from a polymerization in two stages and said core-intermediate layer(s)-shell structured particles resulting from a polymerization in more than two stages, said latex comprising a mixture of at least one dispersion of unfluorinated statistically copolymerized unstructured particles and at least one dispersion selected from the group consisting of (a) a dispersion of said fluorinated structured particles and (b) a dispersion of said fluorinated unstructured particles, the at least one monomer of formula (I) representing less than 80% by weight of the shell of the fluorinated structured particles, the proportion of monomer of formula (I) relative to the collective monomers used to form all of the particles of the said latex being between 1.8 and 20% by weight, the nature and proportion of the monomers participating in the composition of the fluorinated or unfluorinated unstructured particles, as well as the structured particles being such that the glass transition temperature of the polymers of which the said unstructured particles or the structured particles are composed is below or equal to 40° C., and wherein the monomer composition of the unfluorinated unstructured particles and of the core of fluorinated structured particles is as follows, by weight, for a total of 100 parts by weight:

20–80% of at least one (meth)acrylic or vinyl monomer capable of yielding a homopolymer having a low glass transition temperature between −80° and −20° C.;

20–80% of at least one (meth)acrylic, styrene or vinyl monomer capable of yielding a homopolymer having a high glass transition temperature between +10° and 200° C.;

0.5–10% of at least one carboxylic (meth)acrylic monomer;

0.3–5% of at least one crosslinking (meth)acrylic monomer; and, in the case of the core of structured particles,

0–0.3% of at least one of (a) at least one bifunctional compatibilizing monomer and (b) in the case where the crosslinking monomer is N-methylolacrylamide, at least one grafting monomer,

and wherein the content of the dispersion of fluorinated particles is sufficient to provide a resultant coating having a water contact angle of at least 90°.

5,798,407

HYDROPHILIC RESIN COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Kazunori Yano; Hiroyoshi Kaito; Akeharu Wakayama, and Shuhei Yada, all of Yokkaichi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo-To, Japan

PCT No. PCT/JP96/00407, § 371 Date Oct. 22, 1996, § 102(e) Date Oct. 22, 1996, PCT Pub. No. WO96/26244, PCT Pub. Date Aug. 29, 1996
PCT Filed Feb. 22, 1996, Ser. No. 722,221
Claims priority, application Japan, Feb. 22, 1995, 7-033853; Jun. 30, 1995, 7-166067; Feb. 6, 1996, 8-020243
Int. Cl.[6] C08L 33/06;31/02;37/00
U.S. Cl. 524—504 9 Claims

1. A process for producing a hydrophilic resin composition, comprising

kneading a water-absorptive resin (component A), to obtain a rubber-like resin,

incorporating a thermoplastic modified ethylene polymer (component B) and, if desired, a thermoplastic polymer (component C) and an additive (component D) into the rubber-like resin, and

melt kneading the mixture;

wherein said water-absorptive resin (component A) contains 25 to 80% by weight water; said thermoplastic modified ethylene polymer (component B) has a functional group that can chemically bond to or is compatible with said water-absorptive resin; said thermoplastic polymer (component C) is different from component B; said water-absorptive resin (component A) is present in an amount of 0.1 to 70% by weight of the total amount of the components A to C; and said component A is uniformly dispersed in the thermoplastic polymers (components B and C), in the form of particles having an average particle diameter of 5 μm or less.

5,798,408

TIRE TREAD OF COUPLED SIBR

David John Zanzig, Uniontown; Wen-Liang Hsu, Cuyahoga Falls; Adel Farhan Halasa, Bath, and Barry Allen Matrana, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 5, 1997, Ser. No. 811,629
Int. Cl.[6] C08L 53/00
U.S. Cl. 524—505 10 Claims

1. A tire having a tread of a rubber composition which comprises, based upon 100 parts by weight of elastomers, (1) elastomers comprised of (A) about 40 to about 75 phr of a tin or silicon coupled, isoprene terminated, styrene/isoprene/butadiene (SIBR) terpolymer elastomer comprised of about 1 to about 20 weight percent units derived from styrene, about 12 to about 40 weight percent units derived from isoprene and about 40 to about 87 weight percent units derived from 1,3-butadiene in a relatively random distribution except for terminal isoprene units and having a Tg within a range of about −60° C. to about −85° C., (B) about 20 to about 50 phr of isoprene/butadiene copolymer elastomer having an isoprene content in a range of about 10 to about 30 percent and a Tg in a range of about −65° C. to about −95° C., and (C) about 5 to about 25 phr of at least one other elastomer consisting essentially of at least one of isoprene/butadiene copolymer elastomer having a Tg in a range of about −50° C. to about −40° C., trans 1,4-polybutadiene polymer having a Tg in a range of about −65° C. to about −80° C., a styrene/isoprene/butadiene terpolymer rubber other than said isoprene terminated SIBR terpolymer, cis 1,4-polyisoprene rubber, cis 1,4-polybutadiene rubber, high vinyl polybutadiene rubber, styrene/isoprene copolymer rubber, styrene/butadiene copolymer rubber, and 3,4-polyisoprene rubber, (2) about 40 to about 115 phr of reinforcing filer comprised of (a) about 30 to about 90 phr of silica and (b) about 2 to about 25 phr of carbon black and (3) a silica coupler for said silica having a moiety reactive with the surface of the silica and another moiety interactive with said elastomers.

5,798,409

REACTIVE TWO-PART POLYURETHANE COMPOSITIONS AND OPTIONALLY SELF-HEALABLE AND SCRATCH-RESISTANT COATINGS PREPARED THEREFROM

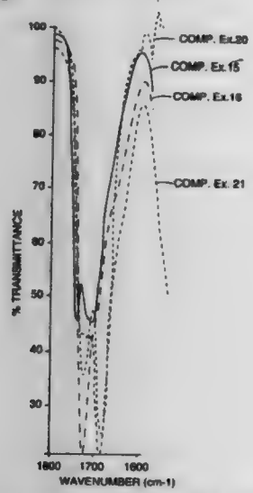
Chia-Tie Ho, Woodbury, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US95/12812, § 371 Date Apr. 1, 1997, § 102(e) Date Apr. 1, 1997, PCT Pub. No. WO96/10595, PCT Pub. Date Apr. 11, 1996

PCT Filed Oct. 3, 1995, Ser. No. 817,610

Int. Cl.[6] C08J *3/00*

U.S. Cl. 524—506 **46 Claims**



1. A two-part curable composition having a Part A and a Part B wherein Part A is a composition comprising:

(a) optionally a urethane prepolymer, wherein said prepolymer has:

(i) a sufficient number of carboxylic acid functional groups such that the acid number of the prepolymer ranges from about 10 to 100;

(ii) optionally a segment(s) selected from the group consisting of polyalkyl siloxane diol segment(s), fluorinated-polyether diol segment(s), fluorinated-polyester diol segment(s), polyalkyl siloxane diamine segment(s), fluorinated-polyether diamine segment(s), fluorinated-polyester diamine segment(s), and combinations thereof;

(iii) an average hydroxyl functionality of the prepolymer of about 1.85 to about 2.7;

(iv) a hydroxyl equivalent-weight of the prepolymer in the range of about 500 to about 5000;

(b) optionally a water-reducible first acrylic polymer having at least one hydroxyl functional group and optionally 1 or more carboxyl functional groups such that said first acrylic polymer has an acid number in the range of about 0 to about 150;

(c) optionally a water-reducible second acrylic polymer free of hydroxyl functionality and optionally having 1 or more carboxyl functional groups, wherein said second acrylic polymer has an acid number in the range of about 0 to about 150;

(d) optionally a water-reducible first compound selected from the group consisting of polyalkylsiloxane diols, polyalkylsiloxane diamines, fluorinated-polyether diols, fluorinated polyether diamines, fluorinated polyester diols, fluorinated polyester diamines, and mixtures thereof, said first compound having a hydroxyl equivalent weight in the range of about 200 to about 2000;

(e) optionally a water-reducible second compound selected from the group consisting of diols and polyols wherein said second compound optionally has one or more pendant carboxyl functional groups;

(f) water;

(g) optionally a surfactant;

(h) optionally an organic coalescing solvent; and wherein at least one of (a) or (d) is present; provided that when (d) is absent then (a) must contain segment(s) (ii); and

wherein not greater than about 35 weight percent total of segment(s) of (a)(ii) plus compound(s) of (d) are present based upon the total solids content of Part A; and wherein Part B is a water-reducible composition which comprises:

(1) a crosslinker selected from the group consisting of polyisocyanates, blocked polyisocyanates, and mixtures thereof; and

(2) optionally a coalescing solvent based upon the total weight of Part B;

wherein the NCO:OH ratio of Part B to Part A ranges from about 1:1 to about 1.15:1.

5,798,410

AQUEOUS DISPERSIONS OF LINEAR OLEFIN COPOLYMERS

Brian W. Walther, and James R. Bethea, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 463,150, Jun. 5, 1995, Pat. No. 5,574,091. This application Aug. 23, 1996, Ser. No. 702,824

Int. Cl.[6] C08J *27/00*

U.S. Cl. 524—570 **6 Claims**

1. A film-forming, artificial latex comprising a stable aqueous dispersion of a linear copolymer of ethylene and a C_3–C_{20}α-olefin having:

a) a polydispersity index not greater than 2.5;

b) a random distribution of comonomer units along the polymer backbone;

c) a homogeneity index of at least 75; and either or both of

d) an absence of polar substituents along the polymer backbone; and

e) a weight average molecular weight of at least 45,000 amu.

5,798,411

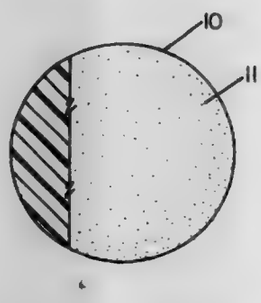
COMPRESSIBLE POLYURETHANE COMPOSITIONS HAVING MINIMAL TACK AND ARTICLES THEREFROM

John Riazi, Akron, Ohio, assignor to The Hygenic Corporation, Akron, Ohio

Filed Sep. 19, 1997, Ser. No. 933,719

Int. Cl.[6] C08J *3/00;* **C08K** *3/26;* **C08L** *75/00;* **C08G** *18/00*

U.S. Cl. 524—590 **6 Claims**



1. A polyurethane composition comprising:

140 parts by weight of a diol;

from about 50 to 70 parts by weight of a diisocyanate compound, said diols and diisocyanate compounds being selected from the group consisting of reactants capable of forming polyurethanes;

from about one to 30 percent by weight of a plasticizer based upon the weight of the polyurethane composition; and

from 0 to about 100 parts by weight of a mineral filler, based upon 100 parts by weight of the polyurethane composition.

5,798,412

ALKYLENE GLYCOL PRODUCTION USING CARBON CATALYSTS

John R. Sanderson, and Edward T. Marquis, both of Austin, Tex., assignors to Huntsman Petrochemical Corporation, Austin, Tex.

Filed Jul. 16, 1997, Ser. No. 895,286
Int. Cl.[6] C08K *3/00*; C08G *59/00*
U.S. Cl. 524—847 22 Claims

1. A process for preparing alkylene glycols, comprising combining alkylene oxide with water in the presence of carbon, wherein said carbon catalyzes the reaction of said alkylene oxide with said water to form alkylene glycol.

5,798,413

FLEXIBLE POLAR THERMOPLASTIC POLYOLEFIN COMPOSITIONS

Heinz H. Spelthann, Trier, Germany, and Karlheinz Hausmann, Neuchatel, Switzerland, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 205,439, Mar. 4, 1994, Pat. No. 5,434,217. This application Aug. 29, 1996, Ser. No. 702,622
Int. Cl.[6] C08G *67/02*
U.S. Cl. 525—66 12 Claims

1. A flexible, nonhalogen-containing polymer composition which comprises a blend of:

(1) 50–98% by weight of a non-polar thermoplastic polyolefin,

(2) 1–25% by weight of a compatibilizing polymer which is an olefin polymer containing less than 20% by weight of a copolymerized polar monomer and containing 0.01–10% by weight of reactive groups selected from the group consisting of an epoxy, a carboxylic acid or anhydride, an amino and a hydroxyl; and

(3) 1–49% by weight of a polar copolymer consisting essentially of:

(a) 30–90% by weight of ethylene;

(b) 0–60% by weight of at least one copolymerizable, ethylenically unsaturated organic compound; and

(c) 0–30% by weight of carbon monoxide; wherein the total of (a), (b), and (c) is 100%;

said polar copolymer (3) containing 0.01–20% by weight of functionalizing groups selected from the group consisting of an epoxy, a carboxylic acid or a derivative thereof, an amino and a hydoxyl; whereby

if an epoxy group is used to functionalize the compatibilizing polymer (2), then the polar ethylene copolymer (3) is functionalized with a carboxylic acid or derivative thereof or with an amino or hydroxyl group;

if a carboxylic acid or derivative thereof is used to functionalize the compatibilizing coplymer (2), then the polar ethylene copolymer (3) is functionalized with an epoxy, an amino or a hydroxyl group; and

if an amino or hydroxyl group is used to functionalize the compatibilizing polymer (2), then the polar ethylene copolymer (3) is functionalized with an epoxy group or with a carboxylic acid or derivative thereof.

5,798,414

RESIN COMPOSITION EXCELLENT IN IMPACT STRENGTH

Ikuhiro Mishima, Kakogawa; Norito Doi; Youichi Matsumura, both of Takasago, and Shigemi Matsumoto, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka-fu, Japan

PCT No. PCT/JP95/02243, § 371 Date Jun. 13, 1996, § 102(e) Date Jun. 13, 1996, PCT Pub. No. WO96/15188, PCT Pub. Date May 23, 1996
PCT Filed Nov. 2, 1996, Ser. No. 656,295
Claims priority, application Japan, Nov. 15, 1994, 6-306779; Nov. 15, 1994, 6-306780
Int. Cl.[6] C08L *51/04*
U.S. Cl. 525—77 2 Claims

1. A resin composition of graft copolymers (I and II) and copolymers (III and IV) excellent in impact strength comprising:

a graft copolymer (I) comprising a rubber polymer part (A) whose volume average particle size determined by the transmission type electron microscope analysis—image analysis method (TEM method) is 250–800 nm and a graft part (a) whose volume ratio to said rubber copolymer part (A): (a)/(A) is 0.10–0.80, and

a graft copolymer (II) comprising a rubber polymer part (B) whose volume average particle size by the TEM method is 60–160 nm and a graft part (b) whose volume ratio to said rubber copolymer part (B): (b)/(B) is 0.30–1.00, wherein

(i) the volume ratio of said rubber polymer part (A) to said rubber polymer parts (A) plus (B): A/(A+B) is 0.4–0.9,

(ii) said rubber polymer parts (A) and (B) are at least one selected from the group consisting of diene rubber polymers, olefin rubber polymers and acryl rubber polymers,

(iii) said rubber polymer part (A) is a rubber polymer produced by a coagulation growth method using an acid group-containing latex (C) to control the volume average particle size of a (A) while avoiding substantial formation of coagulates, latex (C) being prepared by polymerizing 5–25 weight % of at least one of unsaturated acids (c) selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid and crotonic acid, 5–30 weight % of at least one of alkyl acrylates (d) 1–12 in carbon number of alkyl group, 80–20 weight % of at least one of alkyl methacrylates (e) 1–12 in carbon number of alkyl group, and 0–40 weight % of at least one of other monomers (f) copolymerizable with (c), (d), (e), consisting of aromatic vinyl compounds, compounds having at least two polymerizable functional groups in a molecule said compounds being selected from the group consisting of aryl methacrylate, polyethylene glycol dimethacrylate, triaryl cyanulate, triaryl isocyanulate and triaryl trimellitate and vinyl cyanide compounds,

(iv) said graft parts (a), (b) are polymers comprising 15–60 mol % of a vinyl cyanide compound, 40–85 mol % of an aromatic vinyl compound and 0–30 mol % of a copolymerizable monomer (100 mol % in total),

a copolymer (III) comprising 15–60 mol % of a vinyl cyanide compound, 40–85 mol % of an aromatic vinyl compound and 0–30 mol % of a monomer copolymerizable therewith (100 mol % in total), and/or

a copolymer (IV) comprising 15–60 mol % of a vinyl cyanide compound, 2–45 mol % of a maleimide compound, 35–80 mol % of an aromatic vinyl compound and 0–30 mol % of a monomer copolymerizable therewith (100 mol % in total),

the reduced viscosity of the resin composition of methyl ethyl ketone soluble matters (30° C., in N, N-dimethylformamide solution) is 0.3–1.2 dl/g, and

the content of said rubber polymer part is 5–40 weight % of the resin composition.

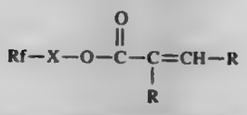
5,798,415
CATIONIC FLUORO COPOLYMERS FOR THE OLEOPHOBIC AND HYDROPHOBIC TREATMENT OF BUILDING MATERIALS

Jean-Marc Corpart, Sannois; Marie-Jose Lina; Christian Bonardi, both of Lyons, and Andre Dessaint, Clermont, all of France, assignors to Elf Atochem S.A., France

Filed Nov. 29, 1995, Ser. No. 565,615
Claims priority, application France, Nov. 29, 1994, 94 14281
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—129 **6 Claims**

1. Fluoro copolymer comprising an aqueous fluoro copolymer in salified or quaternized form, of (% by weight):

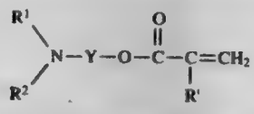
(a) 50 to 92% of at least one polyfluoro monomer of formula:



(I)

in which Rf represents a perfluoroalkyl radical with a straight or branched chain containing 2 to 20 carbon atoms, X represents a divalent grouping linked to O by a carbon atom and optionally containing at least one oxygen, sulphur and/or nitrogen atom, one of the symbols R represents a hydrogen atom and the other represents a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms;

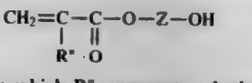
(b) 1 to 25% of at least one monomer of formula:



(II)

in which Y represents a linear or branched alkylene radical containing 1 to 4 carbon atoms, R' represents a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms, R^1 and R^2, which may be identical or different, each represent a hydrogen atom; a linear or branched alkyl radical containing 1 to 18 carbon atoms or a hydroxyethyl or benzyl radical, or R^1 and R^2, together with the nitrogen atom to which they are attached, form a morpholino, piperidino or pyrrolidinyl radical;

(c) 1 to 25% of at least one monomer of formula:



(III)

in which R" represents a hydrogen atom or an alkyl radical containing 1 to 4 carbon atoms and Z represents an alkylene radical containing 2 to 4 carbon atoms; and

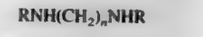
(d) 0 to 30% of at least one monomer other than the monomers of formulae I, II and III.

5,798,416
AUTOMOBILE VIBRATION-ISOLATING RUBBER COMPOSITION AND AUTOMOBILE VIBRATION-ISOLATING DEVICE

Tsuneo Kamata; Makoto Niki, and Yoshihide Ueda, all of Osaka, Japan, assignors to Toyo Tire & Rubber Co., Ltd., Osaka, Japan

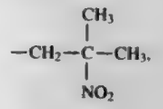
Filed Jul. 11, 1996, Ser. No. 679,691
Claims priority, application Japan, Jul. 18, 1995, 7-181806; Sep. 26, 1995, 7-247410
Int. Cl.[6] C08K *5/32*
U.S. Cl. 524—259 **6 Claims**

1. An automobile vibration-isolating rubber composition, characterized in that a rubber component, which is to be vulcanized, comprises from 10 to 80% by weight of a polybutadiene rubber which is obtained through polymerization using a neodymium catalyst and which has a cis content of 97% or more, from 90 to 20% by weight of at least one type of a rubber selected from a natural rubber, a synthetic polyisoprene rubber or a polystyrene-butadiene copolymer rubber, carbon black having a nitrogen adsorption specific surface area of 40 m^2/g or less and a dibutyl phthalate oil absorption of 80 ml/100 g or more, and a compound represented by formula (1)



(1)

wherein
R represents



and
n is between 2 and 12.

5,798,417
(FLUOROVINYL ETHER)-GRAFTED HIGH-SURFACE-AREA POLYOLEFINS AND PREPARATION THEREOF

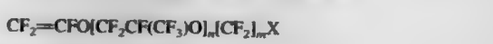
Edward G. Howard, Jr., Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1996, Ser. No. 732,540
Int. Cl.[6] C08F *255/02;8/20*
U.S. Cl. 525—276 **19 Claims**

1. A homogeneous powdered graft copolymer having a surface area of at least about 0.5 m^2/g, comprising an olefinic polymer having about 0.1 to about 17 mol % of at least one fluorinated monomer chemically grafted thereto;

said olefinic polymer comprising repeat units of ethylene and, optionally, one or more 1-olefin comonomers having the formula CH_2=CHR, carbon monoxide, vinyl acetate, alkyl (meth)acrylate, and alkylvinyl ethers, wherein said R is selected from the group consisting of n-alkyl containing 2–8 carbon atoms and the aforesaid alkyl groups contain 1–8 carbon atoms; and

said fluorinated monomer having the formula



wherein:

X is —SO_2Y, —CN, —COF or —CO_2Y', n is 0 or 1–6, m is 1–3;

Y is F, OH or M and Y'is H,R'or M;

R' is C_{1-8} alkyl; and

M is alkali metal, ammonium or quaternary ammonium.

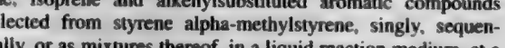
5,798,418
STAR POLYMERS FROM MIXED INITIATORS

Roderic P. Quirk, Akron, Ohio, assignor to FMC Corporation, Philadelphia, Pa.

Filed Jul. 18, 1996, Ser. No. 683,487
Int. Cl.[6] C08F *297/04;6/00*
U.S. Cl. 525—314 **79 Claims**

1. Multi-branched or star-shaped polymers having mixed functional and non-functional ends produced by a process comprising the steps of:

(a) polymerizing conjugated alkadienes, selected from butadiene, isoprene and alkenylsubstituted aromatic compounds selected from styrene alpha-methylstyrene, singly, sequentially, or as mixtures thereof, in a liquid reaction medium, at a temperature of −30° C. to 150° C., for a period of at least one hour, with mixtures of (a) alkyllithium initiators, selected from n-butyllithium, sec-butyllithium, and tert-butyllithium and (b) protected functional organolithium initiators, having the formula:



where Q is an unsaturated hydrocarbyl group derived by incorporation of one or more conjugated diene hydrocarbons, one

or more alkenylaromatic compounds, or mixtures of one or more dienes with one or more alkenylaromatic compounds into the Li—Z linkage at a carbon-lithium bond thereof; Z is defined as a branched or straight chain hydrocarbyl connecting group containing 3 to 25 carbon atoms; T is an element selected from the group of oxygen, sulfur, and nitrogen; $(A—R^1R^2R^3)_m$ is a protecting group in which A is an element selected from Group IVa of the Periodic Table of the Elements, as exemplified by carbon and silicon; R^1,R^2, and R^3 are independently selected from hydrogen, alkyl, substituted alkyl groups containing lower alkyl, lower alkylthio, and lower dialkylamino groups, aryl or substituted aryl groups containing lower alkyl, lower alkylthio, lower dialkylamino groups, or cycloalkyl and substituted cycloalkyl groups containing 5 to 12 carbon atoms; m is 1 when T is oxygen or sulfur and 2 when T is nitrogen; and n is an integer from 0 to 5, to produce protected "living" polymer anions;

(b) Reacting the living polymer anions with a polyfunctional linking compound selected from silicon tetrachloride, tin tetrachloride, phosphorus trichloride, isomeric diisopropenylbenzenes and isomeric divinylbenzenes, and mixtures of these compounds at a temperature of 20° C. to 135° C., for a period of at least one hour, to produce multi-arm star polymers, followed by termination with a protic terminating agent;

(c) Removing the protecting group to produce functionalized multichelic multi-arm or star polymers with hydroxyl, sulfhydryl, or amino groups on the end of some of the arms of the multi-arm or star polymers;

(d) Reaction of the functionalized groups on the ends of the arms of the multi-arm or star polymers with a selected difunctional or polyfunctional comonomer or comonomers selected from the group consisting of organic dicarboxylic acids, organic polycarboxylic acids, organic diisocyanates, organic polyisocyanates, organic diamides, organic polyamides, cyclic amides, organic diols, organic polyols, ethylene oxide in the presence of potassium butoxide, and methacryloyl chloride, acryloyl chloride, or styrenyldimethylchlorosilane, the last three of which are subsequently copolymerized with a free radically polymerizable monomer;

(e) Recovering the multi-arm star polymers from the reaction medium.

5,798,419

METHOD OF PREPARATION OF COPOLYMERS OF 1,3-BUTADIENE AND STYRENE USEFUL FOR THE PRODUCTION OF TIRES WITH LOW ROLLING RESISTANCE AND COPOLYMERS OF 1,3-BUTADIENE AND STYRENE THUS OBTAINED

Valentin Ruiz Santa Quiteria; Juan Antonio Delgado Oyague; Luisa Fraga Trillo, and Carmen Sierra Escudero, all of Madrid, Spain, assignors to Repsol Quimica S.A., Madrid, Spain

Filed Jul. 15, 1996, Ser. No. 680,425
Claims priority, application Spain, Jul. 17, 1995, 9501431
Int. Cl.[6] C08F *8/42*
U.S. Cl. 525—370 **21 Claims**

1. A method of preparation of copolymers of 1,3-butadiene and styrene useful for the production of tires with low rolling resistance, the method comprising:

a. anionic polymerization of the styrene and 1,3-butadiene monomers in a solvent using a lithium alkyl initiator and in the presence of a polar modifier, under inert conditions and at temperatures between 0° and 150° C., preferably between 20° and 120° C.;

b. followed by optionally adding us to 2% by weight of a terminal monomer selected from among the monomers which comprise the copolymer or another selected from among the conjugated dienes or aromatic vinyl compounds;

c. followed by a coupling reaction of a maximum of 70% of star-shaped chains using the halide compound of tin or silicon of the formula Cl_nMeR_{4-n} (I), where n represents 3 through 4, Me is Si or Sn, and R is an organic radical of the alkyl, cycloalkyl, or aryl type selected from among radicals with 1 to 20 carbon atoms;

d. followed by optionally adding us to 2% by weight of a terminal monomer, with respect to the remainder of the polymer, selected from among one of the monomers which comprise the copolymer and another selected from among the conjugated dienes or aromatic vinyl compounds; and

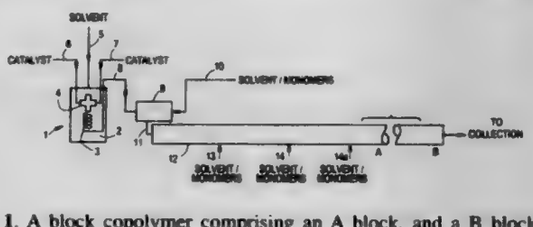
e. followed by a termination reaction of the linear chains using a compound of the type $ClSnR_3$ (II), where R is an organic radical of the alkyl, cycloalkyl, or aryl type, selected from among compounds with 1 to 20 carbon atoms.

5,798,420

ETHYLENE-ALPHA OLEFIN BLOCK COPOLYMERS AND METHODS FOR PRODUCTION THEREOF

Charles Cozewith, Watchung; Gary William Ver Strate, Manalapan; Roger K. West, Montclair, and Gaetano A. Capone, Dumont, all of N.J., assignors to Exxon Chemical Patents, Inc.

Continuation of Ser. No. 525,435, Sep. 7, 1995, abandoned, which is a continuation of Ser. No. 223,912, Apr. 6, 1994, abandoned. This application May 19, 1997, Ser. No. 858,328
Int. Cl.[6] C08F *297/06*
U.S. Cl. 525—323 **14 Claims**



1. A block copolymer comprising an A block, and a B block, wherein:

said A block consists of ethylene; and

said B block includes a first polymer segment and a tip segment each of said first polymer segment and said tip segment comprising at least 5 weight percent of the B block said first polymer segment being contiguous to a junction of said A block and said B block said first segment comprising ethylene and an alpha-olefin;

said tip segment being further from said junction, said tip segment being a polymer of ethylene, and an alpha-olefin having an ethylene content of at least about 60 mole percent based on the total moles of the monomers of said tip segment, the ethylene content of said tip segment being at least 5 mole percent greater than the ethylene content of said first portion.

5,798,421

WATER-SOLUBLE ASSOCIATIVE TRIBLOCK COPOLYMERS

Jean-Marc Corpart, Sannois; Bernard Boutevin, Montpellier; Christian Collete, Paris, and Raphaelle Ciampa, Istres, all of France, assignors to Elf Atochem S.A., France

Filed Oct. 9, 1996, Ser. No. 728,051
Claims priority, application France, Oct. 9, 1995, 95 11849
Int. Cl.[6] C08F *293/00;4/04*
U.S. Cl. 525—326.9 **11 Claims**

1. Water-soluble thickening polymers, of number molecular masses of between 5,000 and 300,000, comprising a central hydrophilic portion resulting from the radical polymerization of water-soluble unsaturated monomers and two hydrophobic, non-polymeric, identical or nonidentical, radicals,

the hydrophilic central portion being a chain made up of a sequence of ethylenic hydrophilic monomer residues selected from the group consisting of acrylamide and its N-substituted compounds, acrylic acid, its salts and its aminoalkyl esters.

5,798,422
AROMATIC HYDROXYCARBOXYLIC ACID RESINS AND THEIR USE

Akio Karasawa; Akihiro Yamaguchi, both of Kanagawa-ken; Keizaburo Yamaguchi, Chiba-ken, and Yuko Ishihara, Kanagawa-ken, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

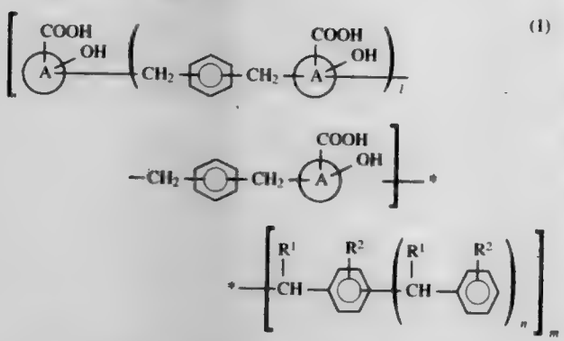
Filed Aug. 7, 1995, Ser. No. 511,809

Claims priority, application Japan, Aug. 25, 1994, 6-200836; Aug. 25, 1994, 6-200837; Aug. 25, 1994, 6-200838; Oct. 13, 1994, 6-247883

Int. Cl.[6] C08G *61/02*; C08F *6/02;6/00*

U.S. Cl. 525—450 **11 Claims**

1. An aromatic hydroxycarboxylic acid resin having a number-average molecular weight of 370–50,000 and being represented by the following formula (1):



(1)

wherein each A group is the same or different and individually represents a substituted or unsubstituted phenylene or naphthylene group, R^1 represents a hydrogen atom or a C_{1-4} alkyl Group, R^2 represents a hydrogen atom, l stands for an integer of 0–100, m stands for an integer of 0–20 and n stands for an integer of 0–3 with the proviso that m stands for an integer other than 0 when all of the A groups represent a substituted or unsubstituted phenylene group.

5,798,423

Patent Not Issued For This Number

5,798,424
OLEFIN POLYMERIZATION CATALYST AND PROCESS FOR THE POLYMERIZATION OF OLEFINS USING THE SAME

Gap-goung Kong, and Youn-Seok Park, both of Taejeon-si, Rep. of Korea, assignors to Samsung General Chemicals Co., Ltd., Chungnam, Rep. of Korea

Filed Mar. 5, 1997, Ser. No. 811,841

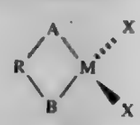
Claims priority, application Rep. of Korea, Oct. 9, 1996, 1996/44736

Int. Cl.[6] C08F *4/646*

U.S. Cl. 526—124.2 **8 Claims**

1. A catalyst for olefin (co)polymerization, comprising:

(a) a solid catalyst component employing chelated transition metal compound supported on inorganic magnesium compound, wherein the chelated transition metal compound is represented by Formula (I),



Formula (I)

Wherein, M is group IV transition metal; X is halide; A and B independently contain an element O, S, Se, N, P, or Si that form chelate bond with transition metal M; R is aliphatic or aromatic hydrocarbon to form five membered ring with element A, B, and transition metal M;

(b) organoaluminum compound represented by $R'nAlCl_{3-n}$ where R' is aliphatic hydrocarbon and n is 2 or 3, and which does not employ methylaluminoxane (MAO).

5,798,425
CO-POLYMERS BASED ON OXYALKYLENEGLYCOL ALKENYL ETHERS AND UNSATURATED DICARBOXYLIC ACID DERIVATIVES

Gerhard Albrecht, Trostberg; Josef Weichmann, Pleiskirchen; Johann Penkner, Tacherting, and Alfred Kern, Kirchweidach, all of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Germany

Filed Apr. 8, 1996, Ser. No. 628,057

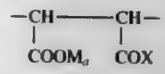
Claims priority, application Germany, Apr. 7, 1995, 195 13 126.6

Int. Cl.[6] C08F *222/06;230/08;222/02;216/14*

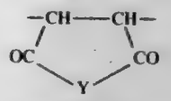
U.S. Cl. 526—271 **11 Claims**

1. A co-polymers based on oxyalkyleneglycol-alkenyl ethers and unsaturated dicarboxylic acid derivatives, comprising

a) 10 to 90 mol % of component of the formula: Ia and/or Ib:



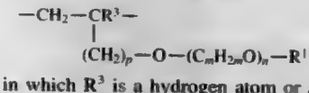
Ia



Ib

in which M is a hydrogen atom, a mono- or divalent metal cation, an ammonium ion or an organic amine residue, a is 1 or, when M is a divalent metal cation, is ½, X is also $—OM_a$ or $—O—(C_mH_{2m}O)_n—R^1$, in which R^1 is a hydrogen atom, an aliphatic hydrocarbon radical containing from 1 to 20 carbon atoms, a cycloaliphatic hydrocarbon radical containing 5 to 8 carbon atoms or an optionally substituted aryl radical containing 6 to 14 carbon atoms, m is 2 to 4, n is 0 to 100, $—NHR^2$ and/or $—NHR^2_2$, in which R^2=R^1 or —CO—NH_2, as well as Y is an oxygen atom or $—NR^2$,

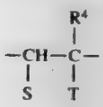
b) 1 to 89 mol % of components of the general formula:



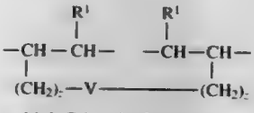
II

in which R^3 is a hydrogen atom or an aliphatic hydrocarbon radical containing from 1 to 5 carbon atoms, p is 0 to 3 and R^1, m and n have the above-given meanings, as well as

c) 0.1 to 10 mol % of components of the general formulae:

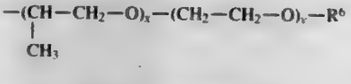


IIIa

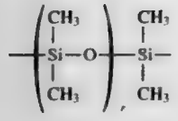


IIIb

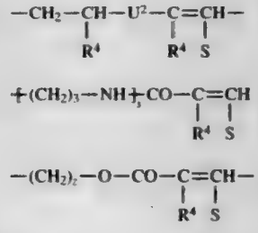
in which S is a hydrogen atom or $—COOM_a$ or $—COOR^5$, T is a radical of the general formula:

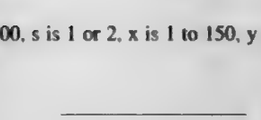


$—(CH_2)_z—V—(CH_2)_z—CH=CH—R^1$ or $—COOR^5$ or, when S is $—COOR^5$ or $—COOM_a$, U^1 is —CO—NHM—, —O— or $—CH_2O$, U^2 is —NH—CO—, —O— or $—OCH_2$, V is $—O—CO—C_6H_4—CO—O—$ or —W— and W is



R^4 is a hydrogen atom or a methyl radical, R^5 is an aliphatic hydrocarbon radical containing 3 to 20 carbon atoms, a cycloaliphatic hydrocarbon radical containing 5 to 8 carbon atoms or an aryl radical containing 6 to 14 carbon atoms, R^6=R^1.





r is 2 to 100, s is 1 or 2, x is 1 to 150, y is 0 to 15 and z is 0 to 4.

5,798,426

ACRYLIC POLYMER COMPOUNDS

Waifong Liew Anton; Harry Joseph Spinelli, both of Wilmington, Del., and Anjali Abhimanyu Patil, Westfield, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 644,149, May 10, 1996, abandoned. This application Aug. 13, 1997, Ser. No. 915,542

Int. Cl.[6] C08F *20/10*

U.S. Cl. 526—318.41 **11 Claims**

1. An acrylic polymer consisting essentially of polymerized monomers of about 55–80% by weight selected from the group consisting of butyl methacrylate, styrene, isobornyl methacrylate, a mixture of butyl methacrylate and butyl acrylate, a mixture of methyl methacrylate, butyl acrylate and butyl methacrylate, a mixture of ethyl methacrylate, styrene, isobornyl methacrylate, and a mixture of tris(trimethylsiloxy)silylpropyl methacrylate and isobornyl methacrylate and contains 5–40% by weight of aceto acetoxy ethyl methacrylate and 5–15% by weight of an ethylenically unsaturated acid and the acrylic polymer has a weight average molecular weight of about 10,000–3,000,000 determined by gel permeation chromatography using polymethyl methacrylate as the standard and a glass transition temperature of about 10° to 50° C.; wherein said acrylic polymer forms a hard adherent coating.

5,798,427

ETHYLENE POLYMERS HAVING ENHANCED PROCESSABILITY

George Norris Foster, Bloomsbury; Tong Chen, Neshanic Station; Scott Hanley Wasserman, Bridgewater, all of N.J.; Day-Chyuan Lee, Doylestown, Pa.; Stuart Jacob Kurtz, Martinsville, N.J.; Laurence Herbert Gross, Bridgewater, N.J., and Robert Harold Vogel, Ringoes, N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 442,453, May 16, 1995, abandoned. This application Oct. 10, 1996, Ser. No. 728,848

Int. Cl.[6] G08F *10/02;10/04;10/14*

U.S. Cl. 526—352 **18 Claims**

1. An ethylene polymer having:

a Polydispersity Index of at least 3.0;

a melt index, MI, and a Relaxation Spectrum Index, RSI, such that $(RSI)(MI^{0.7})$ is greater than about 26;

a Crystallizable Chain Length Distribution Index, L_w/L_n, less than about 3; and

at least about 0.3 long chain branches per 1000 main chain carbon atoms.

5,798,428

METHOD OF PREPARING POLYSILANES AND RESULTANT PRODUCTS

Stuart T. Schwab; Partha P. Paul, both of San Antonio, Tex., and Ryoichi Nishida, Nara, Japan, assignors to Osaka Gas Co., Ltd., Osaka, Japan

Filed Sep. 20, 1996, Ser. No. 710,752

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—14 **7 Claims**

1. A method of making a linear, unbranched polysilane comprising polymerizing a silane monomer of the formula $R_xSiH_{(4-x)}$ under anaerobic and anhydrous conditions at a temperature and pressure and for a time sufficient to form said polysilane in the presence of a catalyst comprising a phosphine-stabilized polyhydride of an early transition metal of Group 4 to 7 of the Periodic Table, wherein R is a substituted or unsubstituted alkyl, aryl, or alkylarly group and X is 1 or 2.

5,798,429

COMPOSITION FOR THE WATER- AND OIL-REPELLENT TREATMENT OF ABSORBENT MATERIALS

Rudolf Hager, Altötting; Günther Kolleritsch, Zangberg, and Wolfgang Knaup, Burgkirchen, all of Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed Jan. 14, 1997, Ser. No. 782,873

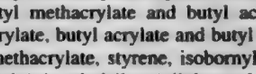
Claims priority, application Germany, Mar. 14, 1996, 196 10 111.5

Int. Cl.[6] C08G *77/24*

U.S. Cl. 528—42 **11 Claims**

1. A composition, comprising;

(A) an organosilicon compound comprising units of the formula

 (I)

where

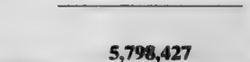
R are identical or different monovalent SiC-bonded hydrocarbon radicals having from 1 to 20 carbon atoms,

R^1 are hydrogen atoms or identical or different hydrocarbon radicals having from 1 to 6 carbon atoms,

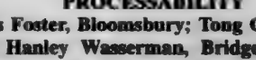
a is 0, 1, 2 or 3 and

b is 1, 2, 3 or 4, with the proviso that the sum of a and b is less than or equal to 4, and

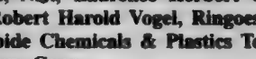
(B) a fluorinated organic siloxane comprising at least one unit of the formula

 (IIa)

at least 5 units of the formula

 (IIb)

per each unit (IIa), and, optionally, units of the formula

 (IIc)

where

R^2 is a radical R,

E is an organic radical having at least one fluoroalkyl radical comprising from 4 to 20 carbon atoms, which organic radical has, in addition to the fluoroalkyl radicals, a further 3 to 200 atoms which are selected from the group consisting of the elements carbon, hydrogen, oxygen, sulfur, nitrogen and chlorine, where the carbon atoms of the fluoroalkyl radicals are saturated with at least 90 mol % fluorine atoms,

E^1 is a radical E or an organic radical having from 3 to 200 atoms which are selected from the group consisting of the elements carbon, hydrogen, oxygen, sulfur, nitrogen and chlorine,

x and y are each 0, 1 or 2 and

z is 0, 1, 2 or 3.

5,798,430

MOLECULAR AND OLIGOMERIC SILANE PRECURSORS TO NETWORK MATERIALS

Michael Joseph Michalczyk, Wilmington, Del., and Kenneth George Sharp, Landenburg, Pa., assignors to E. I. du Pont de Nemours and Compnay, Wilmington, Del.

Filed Jun. 14, 1996, Ser. No. 663,834

Int. Cl.[6] C08G *77/00;77/24;77/60*

U.S. Cl. 528—42 **13 Claims**

1. A compound having the formula

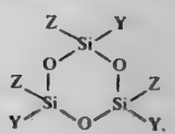
$$X(Si(Oc_zH_{2z}R_f)_3)_n \quad \text{I}$$

wherein:

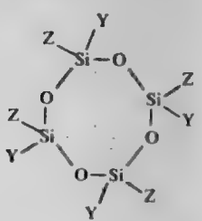
X is at least one organic link selected from the group consisting of:

(a) $R^1{}_mSiY_{4-m}$;

(b) ring structures

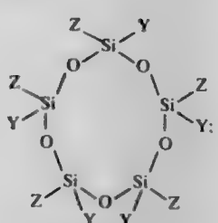


IIb(i)



IIb(ii)

and



IIb(iii)

(c) $R^1{}_mSi(OSi(CH_3)_2Y)_{4-m}$;

(d) $CH_3SiY_2OSiY_2CH_3$;

(e) $Y_3SiOSiY_3$;

(f) $Y_2(CH_3)Si(CH_2)_bSi(CH_3)Y_2$;

(g) $Y_3Si(CH_2)_bSiY_3$;

(h) $Y_3SiC_6H_4SiY_3$;

(i) substituted benzene, including all isomers, selected from the group consisting of:

(i) $C_6H_3(SiZ_{3-c}Y_c)_3$;

(ii) $C_6H_2(SiZ_{3-c}Y_c)_4$;

(iii) $C_6H(SiZ_{3-c}Y_c)_5$; and

(iv) $C_6(SiZ_{3-c}Y_c)_6$; and

(j) substituted cyclohexane, including all stereoisomers, selected from the group consisting of:

(i) 1,2-$C_6H_{10}(Y)_2$; 1,3-$C_6H_{10}(Y)_2$; 1,4-$C_6H_{10}(Y)_2$;

(ii) 1,2,4-$C_6H_9(Y)_3$; 1,2,3-$C_6H_9(Y)_3$; 1,3,5-$C_6H_9(Y)_3$;

(iii) 1,2,3,4-$C_6H_8(Y)_4$; 1,2,4,5-$C_6H_8(Y)_4$; 1,2,3,5-$C_6H_9(Y)_4$;

(iv) 1,2,3,4,5-$C_6H_7(Y)_5$; and

(v) $C_6H_6(Y)_6$;

(k) $Y(CF_2)_vY$

R_f has up to about 18 carbon atoms and is selected from the group consisting of:

(a) C_1 to about C_{18} perfluoroalkyl;

(b) $—[CF_2CF(CF_3)O]_r—CF_2—CF_2—CF_3$, wherein r is an integer of at least 1;

(c) $—CF_2—(CF_2—O)_q—CF_3$, wherein q is an integer of at least 2; and

(d) $—CH_2—C(CF_3)_2—CF_2—CF_2—CF_3$;

wherein up to 50% of the fluorine of the R_f group is optionally substituted with hydrogen;

a is an integer from 1 to about 10;

b is an integer from 1 to about 10;

c is 1, 2 or 3;

m is 0, 1 or 2;

n is an integer greater than or equal to 2;

v is an even integer from 2 to about 14;

R^1 is C_1 to about C_8 alkyl or aryl;

Y is $—(CR^2R^3)_kCR^4R^5CR^6R^7(CR^8R^9)_h—$

R^2 to R^9 are each independently hydrogen, C_1 to about C_8 alkyl, or aryl, provided that at least one of R^4 to R^7 is hydrogen;

k and h are each independently an integer from 0 to 10, provided that at least one of k or h is zero;

Z is C_1 to about C_4 alkyl, 3,3,3-trifluoropropyl, aralkyl or aryl.

5,798,431

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES CONTAINING ISOCYANURATE GROUPS FROM ALIPHATIC AND AROMATIC ISOCYANATE COMPOUNDS

Martin Brahm, Leverkusen; Carl-gerd Dieris, Dormagen; Lutz Schmalstieg, Köln, and Reinhard Halpaap, Odenthal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jul. 15, 1996, Ser. No. 679,888

Claims priority, application Germany, Jul. 24, 1995, 195 26 920.9

Int. Cl.[6] C08G *18/79;* **C07D** *251/34*

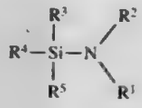
U.S. Cl. 528—73 **20 Claims**

1. A process for the production of an isocyanurate group-containing polyisocyanate which comprises catalytically trimerizing a mixture of

a) 10 to 90 parts by weight of a low molecular weight isocyanate component A) having aliphatically and/or cycloaliphatically bound isocyanate groups, an average molecular weight of 128 to 800 and an average NCO functionality of 1.7 to 2.2 and

b) 10 to 90 parts by weight of a low molecular weight isocyanate component B) having aromatically bound isocyanate groups, an average molecular weight of 148 to 800 and an average NCO functionality of 1.7 to 2.2,

in the presence of 0.1 to 10 parts by weight, per 100 parts by weight of isocyanate components A) and B), of an aminosilyl compound C) corresponding to the formula



wherein

R^1 represents hydrogen or a saturated or unsaturated C_1–C22 aliphatic, C_5–C_{20} cycloaliphatic or C_6–C_{24} aromatic hydrocarbons optionally substituted with Cl or Br,

R^2 represents a saturated or unsaturated C_1–C_{22} aliphatic, C_5–C_{20} cycloaliphatic or C_6–C_{24} aromatic hydrocarbons optionally substituted with Cl or Br or represents the group $SiR^3R^4R^5$ group, provided that R^1 and R^2 may also form a heterocyclic ring having 2 to 6 carbon atoms in which carbon atoms present in the ring may be replaced by heteroatoms and

R^3, R^4 and R^5 are the same or different and represent saturated or unsaturated C_1–C_{22} aliphatic, C_1–C_{20} cycloaliphatic or C_6–C_{24}, aromatic hydrocarbons optionally substituted with Cl or Br,

and subsequently removing excess, distillable isocyanate components A) and B) to obtain a polyisocyanate having a monomer content of less than 0.7%, based on the weight of polyisocyanate solids.

5,798,432

METHOD OF MAKING THERMOTROPIC LIQUID CRYSTALLINE POLYMERS CONTAINING HYDROQUINONE

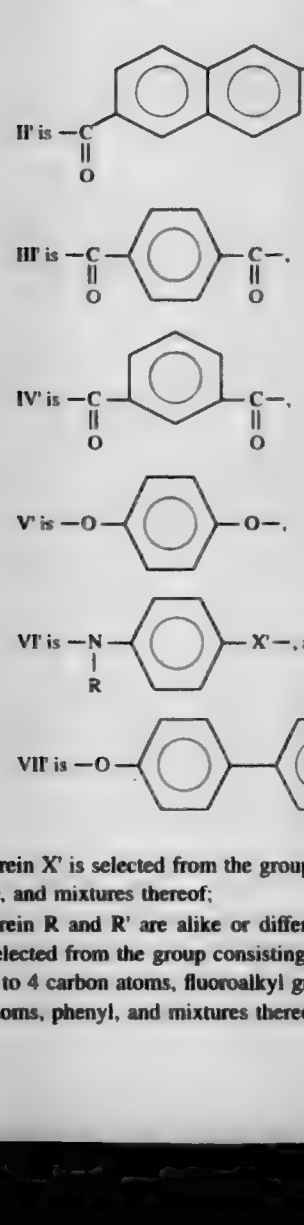
Cherylyn Lee, Fanwood; Vincent J. Provino, Clifton, and H. Clay Linstid, III, Clinton, all of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Filed Mar. 22, 1996, Ser. No. 620,780

Int. Cl.[6] C08G *69/44;73/00*

U.S. Cl. 528—176 **28 Claims**

1. A thermotropic liquid crystalline poly(esteramide) consisting essentially of monomer repeat units I', II', III', IV', V', VI', and optional VII', where



wherein X' is selected from the group consisting of NR', C=O, O, and mixtures thereof;

wherein R and R' are alike or different and are independently selected from the group consisting of H, alkyl groups having 1 to 4 carbon atoms, fluoroalkyl groups having 1 to 4 carbon atoms, phenyl, and mixtures thereof;

wherein said liquid crystalline poly(esteramide) on a mole basis consists essentially of about 20% to about 70% of monomer repeat unit I', about 5% to about 35% of monomer repeat unit II', about 2% to about 20% of monomer repeat unit III', about 0.5% to about 10% of monomer-repeat unit IV', about 5% to about 35% of monomer repeat unit V', about 2% /to about 25% of monomer repeat unit VI', and 0 to about 15% of monomer repeat unit VII'.

5,798,433

PROCESS FOR PRODUCTION OF POLYPROPYLENE TEREPHTHALATE

Wolfgang Schmidt, Geinhausen; Ulrich Thiele, Bruchkoebel; Stephanie Schauhoff, Frankfurt am Main, and Dahai Yu, Bad Orb, all of Germany, assignors to Zimmer Aktiengesellschaft, and Degussa Aktiengesellschaft, both of Frankfurt am Main, Germany

Filed Oct. 1, 1997, Ser. No. 941,997

Claims priority, application Germany, Feb. 12, 1997, 197 05 249.5

Int. Cl.[6] C08G *63/82*

U.S. Cl. 528—279 **7 Claims**

1. A method for synthesizing polypropylene terephthalate containing no more than 5 ppm acrolein and no more than 3 ppm allyl alcohol comprising

a) esterification of terephthalic acid with 1,3-propanediol in the presence of 30 to 200 ppm titanium in the form of an inorganic esterification catalyst containing at least 50 mol % TiO_2 precipitate,

b) blocking the esterification catalyst after esterification by adding 10 to 100 ppm phosphorus in the form of a phosphorus-oxygen compound, and

c) subsequent precondensation and polycondensation in the presence of 100 to 300 ppm antimony in the form of a conventional antimony polycondensation catalyst and optionally adding one or more coloring agents.

5,798,434

MONOMER MIXTURE AND METHOD FOR THE PREPARATION THEREOF

Hitoshi Kigawa; Hiroshi Yamagishi; Noriko Suzuki, and Yoshikazu Asao, all of Tokyo, Japan, assignors to Lion Corporation, Tokyo, Japan

PCT No. PCT/JP95/00423, § 371 Date Aug. 30, 1996, § 102(e) Date Aug. 30, 1996, PCT Pub. No. WO95/25133, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 15, 1995, Ser. No. 702,589

Claims priority, application Japan, Mar. 16, 1994, 6-71539

Int. Cl.[6] C08G *63/52*

U.S. Cl. 528—306 **27 Claims**

1. A monomer mixture obtained by subjecting a dimer diol/trimer triol mixture selected from the group consisting of

(a) dimer diol/trimer triol mixtures each substantially consisting of dimer diols and trimer triols which are prepared by polymerizing an unsaturated compound selected from the group consisting of fatty acids having, in the molecule, one carboxyl group and 1 to 4 double bonds and having 11 to 22 carbon atoms and lower alkyl esters thereof to give dimers and trimers and then converting, into hydroxyl group, the carboxyl group (or the lower alkyl ester group in case of the lower alkyl esters) of the resulting dimers and trimers through reduction and having a weight ratio: dimer diol/trimer triol ranging from 30/70 to 99/1; and

(b) mixtures each substantially comprising dimer diols and trimer triols which are prepared by polymerizing an unsaturated compound selected from the group consisting of aliphatic alcohols having, in the molecule, one hydroxyl group and 1 to 4 double bonds and having 11 to 22 carbon atoms and having a weight ratio: dimer diol/trimer triol ranging from 30/70 to 99/1, to an esterification reaction with an α, β-unsaturated carboxylic acid or to a transesterification reaction with a lower alkyl ester of an α, β-unsaturated carboxylic acid.

5,798,435

VISCOSITY-MODIFIED LACTIDE POLYMER COMPOSITION AND PROCESS FOR MANUFACTURE THEREOF

Patrick Richard Gruber, St. Paul; Jeffrey John Kolstad, Wayzata; David Roy Witzke, Minneapolis; Mark Henry Hartmann, Minnetonka, and Andrea Lee Brosch, Eden Prairie, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 279,732, Jul. 27, 1994, Pat. No. 5,594,095, which is a continuation-in-part of Ser. No. 100,550, Jul. 30, 1993, Pat. No. 5,359,026. This application Sep. 3, 1996, Ser. No. 707,245

Int. Cl.[6] C08G *63/08*

U.S. Cl. 528—354 **28 Claims**

1. A polymer composition comprising:

(a) a melt processable polylactide polymer comprising:

(i) repeating units, wherein a majority of the repeating units comprise lactic acid residues; and

(ii) epoxidized soybean oil residue in an amount resulting from providing a reaction mixture comprising 0.1 to 1.0% by weight, based on total weight of polylactide polymer forming units, of epoxidized soybean oil.

5,798,436

MELT-STABLE AMORPHOUS LACTIDE POLYMER FILM AND PROCESS FOR MANUFACTURE THEREOF

Patrick Richard Gruber, St. Paul; Jeffrey John Kolstad, Wayzata; Christopher M. Ryan, Dayton; Eric Stanley Hall, Crystal, and Robin Sue Eichen Conn, Minneapolis, all of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Continuation of Ser. No. 527,705, Sep. 13, 1995, Pat. No. 5,585,191, which is a continuation of Ser. No. 110,424, Aug. 23, 1993, Pat. No. 5,484,881, which is a continuation-in-part of Ser. No. 955,690, Oct. 2, 1992, Pat. No. 5,338,822. This application Sep. 5, 1996, Ser. No. 708,321

Int. Cl.[6] C08G *63/08*

U.S. Cl. 528—354 **29 Claims**

1. An amorphous film containing polylactide polymer composition, said polylactide polymer composition comprising:

(i) a plurality of poly(lactide) polymer chains, said plurality having a number average molecular weight of from about 40,000 to about 250,000;

(ii) residual lactide, if present at all, present in a concentration of less than about 0.5% by weight;

(iii) residual polymerization catalyst, if present at all, present in a concentration of less than about 0.7 milliequivalents of catalyst per kg of polylactide polymer.

5,798,437

THERMOPLASTIC BLOCK COPOLYMERS

Lawrence Francis Hancock, North Andover, Mass.; Alan Jay Kishbaugh, Columbia, Md., and Marc Ellous Parham, Bedford, Mass., assignors to Circe Biomedical, Inc., Lexington, Mass.

Filed Jul. 29, 1996, Ser. No. 681,946

Int. Cl.[6] C08G *75/00*

U.S. Cl. 528—373 **19 Claims**

1. A block copolymer having the formula:

$$R—[OCH_2A]_n—X—Y$$

wherein R is H, C_{1-20} alkyl, C_{7-20} alkylaryl, C_{7-20} arylalkyl, or C_{1-20} perfluoroalkyl;

each A is independently selected from CH_2 and $CH(CH_3)$;

n is between 1 and 10,000;

X is $—Z^1—(OAr^1OAr^2)_m—$ or $—(OAr^2Q)_m—$, Q being OAr^1 or $[OCH_2E]_u$, wherein m is between 1 and 500, each E is independently selected from $CH_2—$ and $CH(CH_3)—$, and u is between 1 and 10,000; and

Y is hydroxy, $—(OAr^3O)—Z^2—[BCH_2O]_p—R^1$, or $—(OAr^4O)—[BCH_2O]_p—R^1$, wherein each B is independently selected from CH_2 and $CH(CH_3)$, and p is between 1 and 10,000;

wherein Z^1 is selected from $—N(R^2)—(SO_2)—C_6H_4—$ and $—N(R^2)—(C=O)—C_6H_4—$, R^2 being C_{1-12} alkyl or C_{6-20} aryl;

Z^2 is selected from $—C_6H_4—(SO_2)—N(R^3)—$ and $—C_6H_4—(C=O)—N(R^3)—$, R^3 being C_{1-12} alkyl or C_{6-20} aryl;

R^1 is H, C_{1-20} alkyl, C_{7-20} alkylaryl, C_{7-20} arylalkyl, or C_{1-20} perfluoroalkyl;

each Ar^1 and each Ar^3 is independently selected from 1,4-phenylene, 1,3-phenylene, naphthyl-1,4-diyl, naphthyl-1,5-diyl, 4,4'-biphenylene, diphenyl ether-4,4'-diyl, diphenylthioether-4,4'-diyl, diphenylisopropylidene-4,4'-diyl, diphenylhexafluoroisopropylidene-4,4'-diyl, diphenylalkylene-4,4'-diyl wherein alkylene is $—(CH_2)_q—$, q being 1, 3, 5, 7 or 9, p-terphenyl-4,4'-diyl, and bivalent radicals of binaphthalene, anthracene, and phenylnaphthalene; and

each Ar^2 and each Ar^4 is independently selected from diphenylsulfoxide-4,4'-diyl, diphenylsulfone-4,4'-diyl, diphenyl ketone-4,4'-diyl, and bivalent radicals of diphenyl-C_{1-12} alkyl phosphine oxide and diphenyl-C_{6-20} aryl phosphine oxide.

5,798,438

POLYMERS WITH INCREASED ORDER

Samuel P. Sawan, Tyngsborough, Mass.; Abdelhafid Talhi, Rochester, Mich., and Craig M. Taylor, Jemez Springs, N. Mex., assignors to University of Massachusetts, Boston, Mass., and The Regents of the University of California, Oakland, Calif.

Filed Sep. 9, 1996, Ser. No. 709,775

Int. Cl.[6] C08J *9/08;9/10*

U.S. Cl. 528—483 **25 Claims**

1. A method of increasing the order of a polymeric material, said method comprising:

(a) exposing said polymeric material to a dense gas system at a specific temperature greater than room temperature and at a pressure greater than atmospheric pressure;

(b) applying an orienting force to said polymeric material, wherein step (a) and step (b) are performed during overlapping time intervals; and thereafter

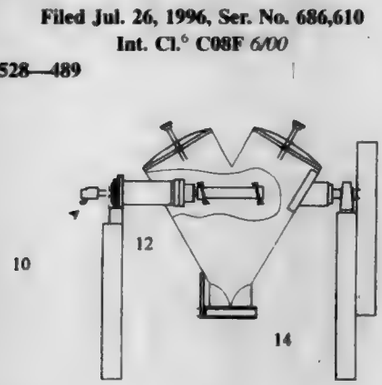
(c) removing some or all of the dense gas system from the polymeric material, thereby increasing the order of said polymeric material.

5,798,439

COMPOSITE INSULATING COATINGS FOR POWDERS, ESPECIALLY FOR MAGNETIC APPLICATIONS

Louis-Philippe Lefebvre, Longueuil; Sylvain Pelletier, Ste-Julie, and Blaise Champagne, Boucherville, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Jul. 26, 1996, Ser. No. 686,610
Int. Cl.[6] C08F *6/00*
U.S. Cl. 528—489 8 Claims



1. A process for preparing a mass of solid particles each comprising a solid core and an electro-insulating layer encapsulating said core, the process comprising

providing a gellable sol which comprises at least one compound selected from the group consisting of a metal salt and an organometallic compound, providing a liquid solution or suspension of a polymer selected from a group consisting of thermoplastic and thermosetting polymers,

coating simultaneously or sequentially said sol and said liquid solution or suspension onto said mass of said particles to encapsulate substantially each of said solid particles, and

solidifying said coating in conditions sufficient to form an electrically insulating solid coating on substantially each of said particles.

5,798,440

INCREASING THE PARTICLE SIZE OF POLYMERS

John Macdonald Liddell, Stockton on Tees, and Neil George, Ingleby Barwick, both of England, assignors to Zeneca Limited, London, England

PCT No. PCT/GB93/01465, § 371 Date Jan. 24, 1995, § 102(e) Date Jan. 24, 1995, PCT Pub. No. WO94/02622, PCT Pub. Date Feb. 3, 1994
PCT Filed Jul. 13, 1993, Ser. No. 374,662
Claims priority, application United Kingdom, Jul. 24, 1992, 9215791
Int. Cl.[6] C08F *6/18;* C12P *7/64*
U.S. Cl. 528—499 15 Claims

1. A process in which polyester particles in suspension in a liquid medium agglomerated by maintaining the suspension at a temperature in excess of 100° C. and 30° to 80° C. below the peak melting point of the polyester as determined by differential scanning calorimetry for a time sufficient to cause substantial agglomeration, the agglomeration being carried out in the substantial absence or any solvent.

5,798,441

RECOMBINANT DNA VECTORS CAPABLE OF EXPRESSING APOAEQUORIN

Milton J. Cormier, Bogart, Ga., and Douglas Prasher, East Falmouth, Mass., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation of Ser. No. 960,195, Oct. 9, 1992, Pat. No. 5,422,266, which is a continuation of Ser. No. 569,362, Aug. 13, 1990, abandoned, which is a continuation of Ser. No. 165,422, Feb. 29, 1988, abandoned, which is a continuation of Ser. No. 942,273, Dec. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 687,903, Dec. 31, 1984, abandoned. This application Nov. 29, 1994, Ser. No. 346,379
Int. Cl.[6] C07K *14/435*
U.S. Cl. 530—324 2 Claims

1. An isolated apoaequorin polypeptide sequence comprising,

VAL LYS LEU THR SER ASP PHE ASP ASN PRO ARG TRP ILE GLY ARG HIS LYS HIS MET PHE ASN PHE LEU ASP VAL ASN HIS ASN GLY LYS ILE SER LEU ASP GLU MET VAL TYR LYS ALA SER ASP ILE VAL ILE ASN ASN LEU GLY ALA THR PRO GLU GLN ALA LYS ARG HIS LYS ASP ALA VAL GLU ALA PHE PHE GLY GLY ALA GLY MET LYS TYR GLY VAL GLU THR ASP TRP PRO ALA TYR ILE GLU GLY TRP LYS LYS LEU ALA THR ASP GLU LEU GLU LYS TYR ALA LYS ASN GLU PRO THR LEU ILE ARG ILE TRP GLY ASP ALA LEU PHE ASP ILE VAL ASP LYS ASP GLN ASN GLY ALA ILE THR LEU ASP GLU TRP LYS ALA TYR THR LYS ALA ALA GLY ILE ILE GLN SER SER GLU ASP CYS GLU GLU THR PHE ARG VAL CYS ASP ILE ASP GLU SER GLY GLN LEU ASP VAL ASP GLU MET THR ARG GLN HIS LEU GLY PHE TRP TYR THR MET ASP PRO ALA CYS GLU LYS LEU TYR GLY GLY ALA VAL PRO.

5,798,442

PEPTIDYL DERIVATIVES AS INHIBITORS OF PRO-APOPTOTIC CYSTEINE PROTEINASES

Michel Gallant, Montréal; Marc Labelle, Ville d'Ile Perrot; Yves Gareau, Ile Perrot, and Donald W. Nicholson, Montreal, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Apr. 21, 1995, Ser. No. 426,547
Int. Cl.[6] A61K *38/07*
U.S. Cl. 530—330 3 Claims

1. A compound selected from the group consisting of:

(a) N-(N-Acetyl-aspartyl-glutamyl-valinyl)-3-amino-3-formylpropionic acid,

(b) N-(N-(1,1-Dimethylethoxycarbonyl)-aspartyl-glutamyl-valinyl)-3-amino-formylpropionic acid,

(c) N-(N-(1,1-Dimethylethoxycarbonyl)-aspartyl-glutamyl-valinyl)-3-amino-3-(trifluoromethylcarbonyl)propionic acid,

(d) N-(N-(N-(1,1-Dimethylethoxycarbonyl)anthranilyl)-aspartyl-glutamyl-valinyl)-3-amino-3-formylpropionic acid,

(e) N-(N-(3-(2-oxo-hexahydro-thieno[3,4-d]imidazol-4-yl)pentanoyl)-aspartyl-glutamyl-valinyl)-3-amino-3-formylpropionic acid, and

(f) N-(N-(N-(5-(3a-(S)-6a-(R)-2-oxo-hexahydro-thieno[3,4-d]imidazol-4-yl)pentanoyl)-6-aminohexanoyl)-aspartyl-glutamyl-valinyl)-3-amino-3-formylpropionic acid.

5,798,443

REACTION AND DISSOLVING MEDIUM FOR PEPTIDES AND SYNTHESIS METHOD USING THIS MEDIUM

Marie Galvez, Toussieu, and Marie-France Maurice, Caluire, both of France, assignors to Rhone-Poulenc Chimie, Cedex, France

Continuation of Ser. No. 998,758, Dec. 30, 1992, abandoned, which is a continuation of Ser. No. 621,468, Dec. 4, 1990, abandoned. This application Mar. 10, 1994, Ser. No. 208,190
Claims priority, application France, Dec. 4, 1989, 89/15957; Jul. 6, 1990, 90/08593
Int. Cl.[6] C07K *1/02*
U.S. Cl. 530—333 23 Claims

1. A reaction and dissolving medium for peptide synthesis and/or purification comprising a peptide, a water-immiscible diluent A or a mixture of water-immiscible diluents A, and a hydroxyaromatic compound or a mixture of hydroxyaromatic compounds selected from the group consisting of:

hydroxypyridines, which may be monosubstituted with a straight chain or branched alkyl group having at most 6 carbon atoms;

hydroxyquinolines which may be monosubstituted with a straight chain or branched alkyl group having at most 6 carbon atoms;

monohalogenophenols;

polyfluorophenols;

phenols monosubstituted with C_3 to C_4 alkyl radicals or disubstituted by C_1 to C_4 alkyl radicals, or phenols monosubstituted or disubstituted by C_1 to C_4 alkoxy radicals, C_1 to C_2 perfluoroalkyl radicals and 2,2,2-trifluoroethyl;

bis-phenols; and

naphthols;

said hydroxyaromatic compound or mixture of hydroxyaromatic compounds being present in an amount effective to increase the solubility of at least 0.01 mole of said peptide in said reaction and dissolving medium, the effective amount being at least 0.015 mole of hydroxyaromatic compound, said hydroxyaromatic compound or said mixture of hydroxyaromatic compounds being different from said water-immiscible diluent A and having a hydroxyl group substituted on the aromatic ring structure and wherein said diluent A is substantially inert, is not a hydroxyaromatic compound and has a solubility of at most 10% in water, the ratio by weight of said hydroxyaromatic compound to said diluent A being between 1/20 and 1/1.

5,798,444

LIGAND PRECURSORS FOR INCORPORATION INTO PEPTIDES

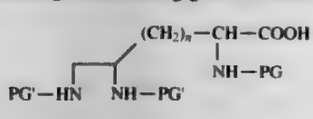
T. Jeffrey Dunn, 9505 Byrnseville Rd., Cedar Hill, Mo. 63016, and Ananthachari Srinivasan, 332 Woodmere Dr., St. Charles, Mo. 63304

Continuation of Ser. No. 382,839, Feb. 3, 1995, abandoned, which is a continuation of Ser. No. 62,099, May 14, 1993, abandoned. This application Sep. 5, 1996, Ser. No. 711,375
Int. Cl.[6] C07K *1/00*
U.S. Cl. 530—333 8 Claims

1. A process for incorporating a ligand at a predetermined location within a peptide comprising the steps of:

(a) beginning peptide synthesis;

(b) incorporating a ligand precursor into the peptide, said ligand precursor having the following general formula:



where PG and PG' are orthogonal protecting groups and n is from 0 to 3; and

(c) completing the peptide synthesis and the ligand synthesis.

5,798,445

PURIFIED DUCTAL CARCINOMA ANTIGEN

Tsann Ming Chu, Williamsville, and Lawrence D. Papsidero, Orchard Park, both of N.Y., assignors to Health Research, Inc., Buffalo, N.Y.

Division of Ser. No. 408,817, Sep. 18, 1989, Pat. No. 5,652,114, which is a division of Ser. No. 755,062, Sep. 11, 1985, Pat. No. 4,939,240, which is a continuation-in-part of Ser. No. 472,222, Mar. 4, 1983, abandoned. This application Oct. 17, 1996, Ser. No. 733,631
Int. Cl.[6] C07K *14/00;1/00;16/00;* C12N *5/00*
U.S. Cl. 530—350 3 Claims

1. An isolated carcinoma antigen isolated from breast or ovarian carcinoma comprising a mucin-like glycoprotein characterized by a molecular weight greater than about 669 Kd and least than 2,000 Kd as measured by gel filtration chromatography, an isoionic point of about pH 4.2 as determined by isoelectric focusing, a density of about 1.45 g/ml as determined by isopycnic ultracentrifugation in the absence of 4M guanidine hydrochloride, the presence of multiple antibody combining sites, a preferential reactivity with wheat germ lectin, as compared to reactivity with concanavalin A, peanut agglutinin and lentil lectin, said antigen having an epitope recognized by monoclonal antibody F36/22 assigned ATCC accession number HB 8215.

5,798,446

METHOD OF EXTRACTING PROTEINS UTILIZABLE IN FOODSTUFF FROM A PROTEIN-CONTAINING SUBSTANCE

Waldemar Neumüller, Göttngen, Germany, assignor to Nupron GmbH Proteinwerk, Northen-Hardenberg, Germany

Continuation-in-part of Ser. No. 211,602, Aug. 15, 1994, abandoned. This application Oct. 16, 1996, Ser. No. 730,991
Claims priority, application Germany, Oct. 10, 1991, 41 35 538.4
Int. Cl.[6] A23J *3/14;1/00;3/00;* C07K *14/415*
U.S. Cl. 530—370 17 Claims

1. A method for the production of proteins suitable for foodstuff from a protein-containing, plant based substance, comprising the steps of:

homogenizing a mixture of the protein-containing substance and an alkaline alcohol solution having a pH greater than 11.5 to form a second solution, said homogenizing conducted at room temperature and by high pressure disintegration, whereby the proteins contained in the substance are dissolved into the second solution;

during the step of homogenizing, extracting thermal energy from the second solution introduced by the homogenization so that the temperature of the second solution is maintained at room temperature;

separating insoluble components from the second solution;

neutralizing the second solution;

desalinating the second solution; and

concentrating the proteins contained in the second solution by a drying process.

5,798,447

ANTIBODIES SPECIFIC FOR D-MYO-INOSITOL 1, 4, 5-TRISPHOSPHATE AND THE ENZYME-LINKED IMMUNOSORBENT ASSAY OF D-MYO-INOSITOL 1, 4, 5-TRISPHOSPHATE

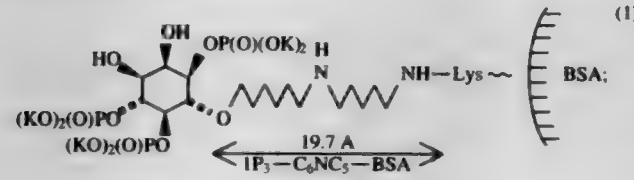
Ching-Shih Chen, Wakefield, R.I., assignor to The Board of Governors for Higher Education State of Rhode Island and Providence Plantations, Providence, R.I.

Continuation of Ser. No. 331,924, Oct. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 181,188, Jan. 13, 1994, Pat. No. 5,393,912. This application Jan. 11, 1996, Ser. No. 584,095

Int. Cl.[6] C07K *16/00*

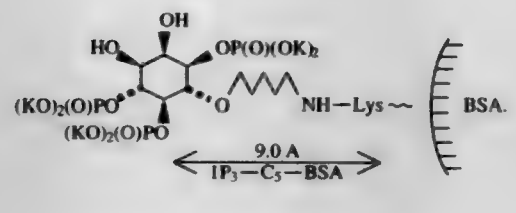
U.S. Cl. 530—387.1 **6 Claims**

1. Purified polyclonal antibodies which bind to the D-myo-inositol 1.4.5-trisphosphate ($Ins(1.4.5)P_3$) portion of a compound having the structure of



(1)

or



(2)

5,798,448

AL-1 NEUROTROPHIC FACTOR ANTIBODIES

Ingrid W. Caras, San Francisco, and John W. Winslow, El Granada, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 330,128, Oct. 27, 1994. This application May 15, 1995, Ser. No. 440,815

Int. Cl.[6] C07K *16/00;1/00;* A61K *38/00;51/00*

U.S. Cl. 530—387.1 **9 Claims**

1. A antibody or antigen-binding fragment thereof capable of specifically binding to the amino acid sequence (SEQ ID NO: 4) shown in FIG. 2 for AL-1.

5,798,449

Patent Not Issued For This Number

5,798,450

Patent Not Issued For This Number

5,798,451

QUINOLINE-3-CARBOXAMIDES, THEIR MANUFACTURE AND USE

Wolfgang von Deyn, Neustadt; Hans Theobald, Limburgerhof; Christoph Nuebling, Hassloch; Uwe Kardorff, Mannheim; Helmut Walter, Obrigheim; Karl-Otto Westphalen, Speyer, all of Germany; Thomas Kappe, Graz, Austria, and Matthias Gerber, Mutterstadt, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

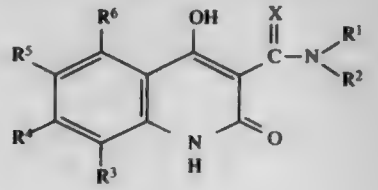
Continuation of Ser. No. 542,136, Oct. 12, 1995, abandoned, which is a continuation of Ser. No. 241,390, May 11, 1994, abandoned, which is a continuation of Ser. No. 981,356, Nov. 25, 1992, abandoned. This application Feb. 3, 1997, Ser. No. 794,572

Claims priority, application Germany, Nov. 26, 1991, 41 38 828.8

Int. Cl.[6] C07D *215/56*

U.S. Cl. 546—155 **1 Claim**

1. A quinoline-3-carboxamide of the formula



(I)

wherein

R^1 is hydrogen,

R^2 is tert.-butyl,

R^3 is hydrogen,

R^4 is hydrogen,

R^5 is hydrogen,

R^6 is hydrogen, and

X is oxygen.

5,798,452

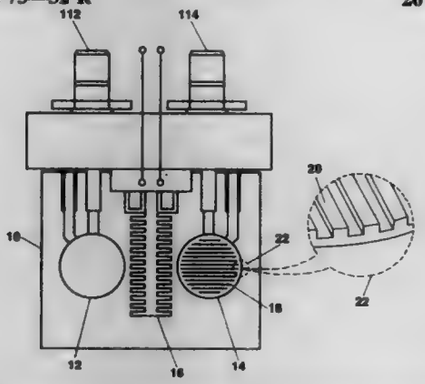
TEXTURED-SURFACE QUARTZ RESONATOR FLUID DENSITY AND VISCOSITY MONITOR

Stephen J. Martin; James J. Wiczer; Richard W. Cernosek, all of Albuquerque; Gregory C. Frye, Cedar Crest; Charles T. Gebert, Albuquerque; Leonard Casaus, Bernalillo, and Mary A. Mitchell, Tijeras, all of N. Mex., assignors to Sandia Corporation, Albuquerque, N. Mex.

Division of Ser. No. 108,397, Aug. 18, 1993, Pat. No. 5,741,961. This application Apr. 25, 1997, Ser. No. 846,085

Int. Cl.[6] G01N *9/00*

U.S. Cl. 73—32 R 26 Claims



1. An apparatus for measurement of fluid density and viscosity comprising:

resonator means comprising a textured surface; and

measuring means for measuring viscosity and density of a fluid disposed on said resonator means.

5,798,453

PRESSURE SLEEVE

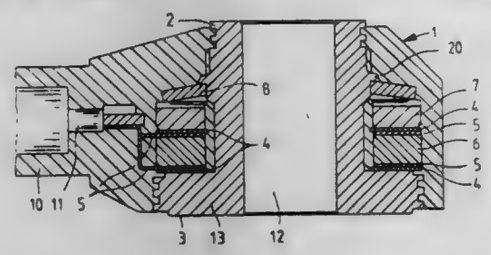
Hartmut Brammer, Vaihingen; Friedrich Jaki, Erdmannhausen; Uwe Hackel, Gerlingen, and Holger Krebs, Erdmannhausen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 2, 1996, Ser. No. 674,544

Claims priority, application Germany, Jul. 3, 1995, 195 24 152.5

Int. Cl.[6] G01L *23/22*

U.S. Cl. 73—35.09 11 Claims



1. A pressure sleeve for a vibration pickup, comprising a body part having a central opening for a mounting element and a supporting surface to be placed on a component causing vibrations; detecting means arranged radially outwardly on said body part with an axial pretensioning; a pressure spring located between said body part and said detecting means and providing said axial pretensioning of said detecting means and providing said axial pretensioning of said detecting means, said body part having an outer periphery provided with at least two curved portions located at a distance from one another, said pressure spring abutting against said curved portions of said body part.

5,798,454

MAGNETICALLY SUSPENDED DEVICE WITH FUNCTION OF MEASURING VISCOSITY

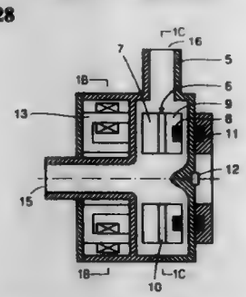
Tsugito Nakazeki, Shizuoka, and Toshihiko Nojiri, Kanagawa, both of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Jan. 16, 1997, Ser. No. 783,911

Claims priority, application Japan, Jan. 31, 1996, 8-014859

Int. Cl.[6] G01N *11/14*

U.S. Cl. 73—54.28 6 Claims



1. Apparatus for measuring a liquid viscosity, comprising:

a rotor;

a magnetic bearing for suspending said rotor in a liquid; and means for producing a stepwise change in a position of said suspended rotor and for determining a response time for said rotor to respond to the stepwise change and thereby determining a viscosity of the liquid.

5,798,455

STOREHOUSE FOR USE IN STORAGE OF CLEAN MATERIALS

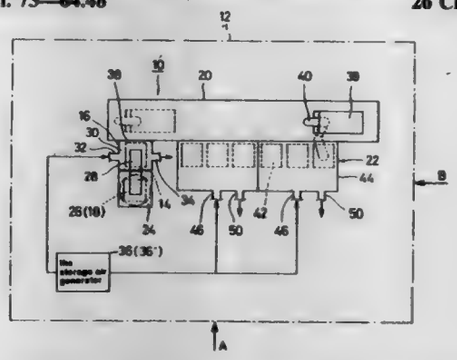
Soichiro Sakata; Hideto Takahashi, and Katsumi Sato, all of Kanagawa-ken, Japan, assignors to Takasago Thermal Engineering Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1996, Ser. No. 660,458

Claims priority, application Japan, Jun. 13, 1995, 7-171374; Mar. 14, 1996, 8-087576; May 10, 1996, 8-140767

Int. Cl.[6] G01N *13/00*; G01R *27/00*; G01B *11/00*; F24F *7/00*

U.S. Cl. 73—64.48 26 Claims



1. A storehouse for use in the storage of a clean material comprising:

an environmental clean space being kept at a level of a first cleanliness;

a first local clean space which is isolated from said environmental clean space and is provided with a storage means for storing the clean material;

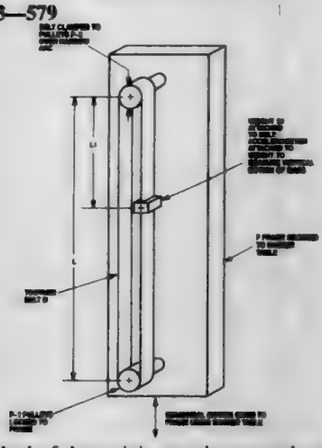
means for generating clean air for storage, said clean air for storage being controlled to have a second cleanliness level that it contains a hydrocarbon group including methane at less than 10 ppb; and

means for supplying said clean air for storage to said first space.

5,798,456
PREDICTING BEHAVIOR OF SYNCHRONOUS FLEXIBLE WEBS

Michael N. Tranquilla, Livonia, Mich., assignor to Unisys Corp., Blue Bell, Pa.

Filed Nov. 19, 1996, Ser. No. 752,668
Int. Cl.[6] G01N *29/12*
U.S. Cl. 73—579 **24 Claims**



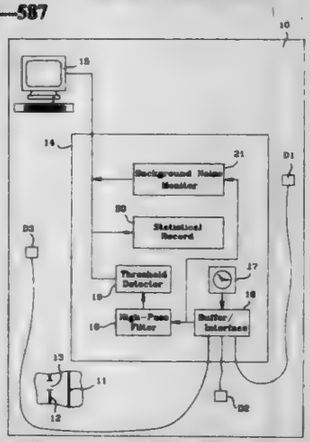
1. A method of determining motion-control and damping characteristics for a resilient, multi-element elastomeric belt used in a prescribed servo system yet without need to test in a use environment, said method comprising the steps of:

stretching a prescribed length L of said belt between a pair of guide means mounted on frame means with prescribed tension; attaching a prescribed test weight on said length at a prescribed test-distance L_1 from one said guide means; shaking said frame means at resonance frequency, sinusoidally; while determining the amplitude of excursion for said weight and frame means; then changing distance L_1 and repeating the foregoing method steps one or more times to determine a damping characteristic.

5,798,457
CONTINUOUS MONITORING OF REINFORCEMENTS IN STRUCTURES

Peter O. Paulson, Calgary, Canada, assignor to Pure Technologies Inc., Calgary, Canada

Continuation-in-part of Ser. No. 436,986, May 8, 1995, abandoned, which is a continuation of Ser. No. 81,878, Jun. 25, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,666
Int. Cl.[6] G01N *29/14*
U.S. Cl. 73—587 **9 Claims**



1. A method for monitoring the failure of tensioned reinforcements in a structure comprising the steps of:

(a) positioning a plurality of acoustic or seismic detectors about the structure in a known arrangement and in close proximity to the structure;

(b) processing signals from the detectors;

(c) identifying those of said signals which are due to the failure of a tensioned reinforcement in the structure;

(d) identifying at least one signal received at more than two sensors after passage from an origin through a medium to such sensors;

(e) determining the relative times of arrival of said identified signal at more than two sensors;

(f) calculating the origin of said identified signal from the difference of its time of arrival at each of said more than two sensors.

5,798,458
ACOUSTIC CATASTROPHIC EVENT DETECTION AND DATA CAPTURE AND RETRIEVAL SYSTEM FOR AIRCRAFT

David A. Monroe, San Antonio, Tex., assignor to Raytheon TI Systems, Inc., Lewisville, Tex.

Continuation-in-part of Ser. No. 729,139, Oct. 11, 1996. This application Oct. 28, 1996, Ser. No. 738,487
Int. Cl.[6] H04N *7/18*; G11B *5/02*; G06F *15/74*
U.S. Cl. 73—587 **21 Claims**



1. A wireless acoustic sensor and data generation system for providing in flight safety and surveillance for aircraft, the system comprising:

a. a plurality of acoustic sensors each adapted for monitoring a selected condition aboard the aircraft, each sensor adapted for generating a unique data signal representing the specific condition to be monitored at a specific location;

b. a collector adapted for collecting the plurality of sensors and generating therefrom a combined signal incorporating each of the plurality of signals into combined output signal; and

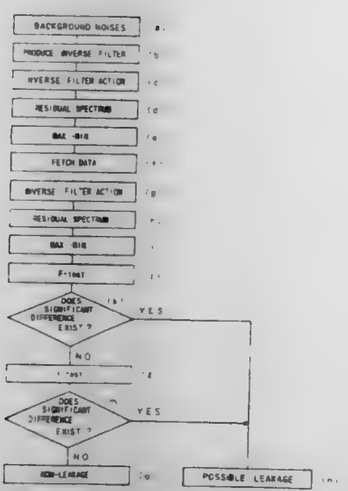
c. a processing system for receiving and processing the combined output signal, wherein said sensors are adapted for transmitting the data signal to the collector and processing system via wireless radio frequency transmission.

5,798,459
SUBJECT IDENTIFICATION METHOD, APPARATUS AND SYSTEM

Ryoji Ohba, Hokkaido, and Yoshihito Tamanoi, Yamaguchi-ken, both of Japan, assignors to Japan as represented by President of Hokkaido University, Sapporo, and Koa Oil Company, Limited, Tokyo, both of Japan

PCT No. PCT/JP96/00266, § 371 Date Apr. 1, 1997, § 102(e) Date Apr. 1, 1997, PCT Pub. No. WO96/35926, PCT Pub. Date Nov. 14, 1996
PCT Filed Feb. 8, 1996, Ser. No. 716,208
Claims priority, application Japan, May 12, 1995, 7-114366
Int. Cl.[6] G08B *21/00*; G06F *15/46;17/10*; G05B *13/02*
U.S. Cl. 73—587 **16 Claims**

1. A subject identification method comprising:



a first step of obtaining a plurality of first time sequential signals each carrying a predetermined physical amount from a predetermined first subject;

a second step of producing an inverse filter on the basis of at least one of said plurality of first time sequential signals;

a third step of evaluating a plurality of first residual signals by means of letting said inverse filter interact with at least part of said plurality of first time sequential signals;

a fourth step of evaluating a plurality of predetermined statistical variables on the basis of said plurality of first residual signals;

a fifth step of obtaining a plurality of second time sequential signals each carrying said predetermined physical amount from a predetermined second subject;

a sixth step of evaluating a plurality of second residual signals by means of letting said inverse filter interact with said plurality of second time sequential signals;

a seventh step of evaluating said plurality of predetermined statistical variables on the basis of said plurality of second residual signals; and

an eighth step of presuming or testing, using a technique of a statistical test, a statistical difference between the plurality of predetermined statistical variables evaluated in the fourth step and the plurality of predetermined statistical variables evaluated in the seventh step.

5,798,460

VIBRATION SENSOR EMPLOYING A FLEXIBLE DIAPHRAGM AND AN ELECTRET FILM

Yoshimori Nakagawa, Tokyo, and Jun Kishigami, Saitama, both of Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 592,397, Feb. 1, 1996. This application Jan. 23, 1997, Ser. No. 792,857

Claims priority, application Japan, Jun. 20, 1994, 6-137586

Int. Cl.[6] G01H *11/08*; G01P *15/12*;*15/125*

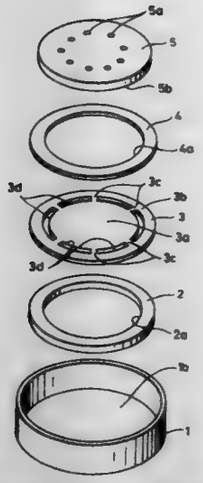
U.S. Cl. 73—654 **19 Claims**

1. A vibration sensor for use in a navigation apparatus comprising:

a substrate;

a circular diaphragm from which are integrally formed a diaphragm portion, a supporting portion and an plurality of flexible displacement portions for coupling said diaphragm portion and said supporting portion such that said diaphragm portion is able to move relative to said substrate, wherein said plurality of flexible displacement portions define therebetween a plurality of openings in said diaphragm which are sized and arranged to decrease said diaphragm's responsiveness to sound vibrations;

an electret film disposed either on said substrate on opposite said diaphragm or on said diaphragm opposite said substrate; and



a holder for holding said substrate and said supporting portion of said diaphragm in such a manner that said diaphragm portion comes close to or away from said substrate in parallel.

5,798,461

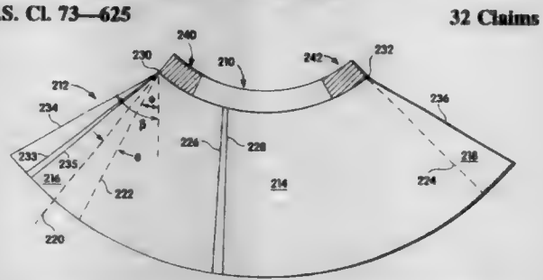
METHODS AND APPARATUS FOR ULTRASOUND IMAGING USING COMBINED SCAN PATTERNS

Robert H. Banta, Jr., Andover, Mass.; Richard A. Snyder, Chester, N.H., and William J. Ossmann, Acton, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 544,247, Oct. 17, 1995, which is a continuation of Ser. No. 71,423, Jun. 2, 1993, abandoned. This application May 30, 1996, Ser. No. 655,521

Int. Cl.[6] G01N *29/00*

U.S. Cl. 73—625 **32 Claims**



1. A method for ultrasound imaging, comprising the steps of:

transmitting ultrasound energy with an array of equally-spaced and equally-dimensioned ultrasound transducer elements along parallel lines originating at different points on said array and oriented at a nonzero angle θ with respect to a normal to the array, said parallel lines defining a linear scan pattern;

transmitting ultrasound energy with said array along sector lines originating from an apex, said sector lines defining a sector scan pattern, wherein each of the sector lines of said sector scan pattern is transmitted through a sector aperture of said array, wherein each of the parallel lines of said linear scan pattern is transmitted through a linear aperture of said array and wherein, at an end of the linear scan pattern, the sector aperture overlaps the linear aperture such that said sector scan pattern and said linear scan pattern abut to form a composite scan pattern in which said sector scan pattern and said linear scan pattern are nonoverlapping; and

receiving ultrasound echoes with said array along said parallel lines and said sector lines and providing signals representative of an image along said parallel lines and said sector lines.

5,798,462

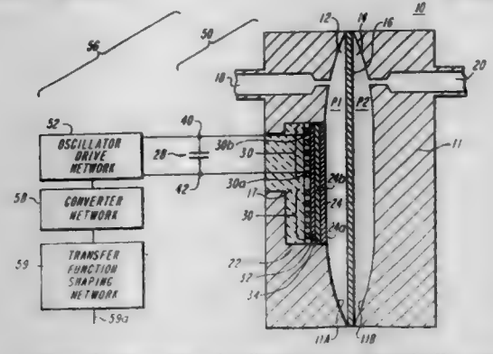
MAGNETIC POSITION SENSOR WITH MAGNETIC FIELD SHIELD DIAPHRAGM

Dennis K. Briefer, Marlborough, and Gino A. Pinto, Westboro, both of Mass., assignors to Setra Systems, Inc., Boxboro, Mass.

Division of Ser. No. 477,327, Jun. 7, 1995. This application Nov. 6, 1996, Ser. No. 744,921

Int. Cl.[6] G01L *9/10;9/14*

U.S. Cl. 73—722 **50 Claims**



1. A sensor for measuring the distance to an electrically conductive layer comprising:

A. an elongated electrical conductor being characterized by an associated inductance value, said electrically conductive layer establishing a magnetic field shield such that magnetic flux generated by said elongated electrical conductor and adjacent to one side of said electrically conductive layer is substantially constrained to be on that side, said inductance value being a function of a distance between said electrically conductive layer and said elongated electrical conductor, said inductance value decreasing in response to decreases in said distance and increasing in response to increases in said distance;

B. an electrically conductive element disposed between said electrical conductor and said electrically conductive layer, said electrically conductive element including substantially no full circumferentially extending current path about a central portion of said electrically conductive element; and

C. means for maintaining said electrically conductive element at a predetermined electric potential.

5,798,463

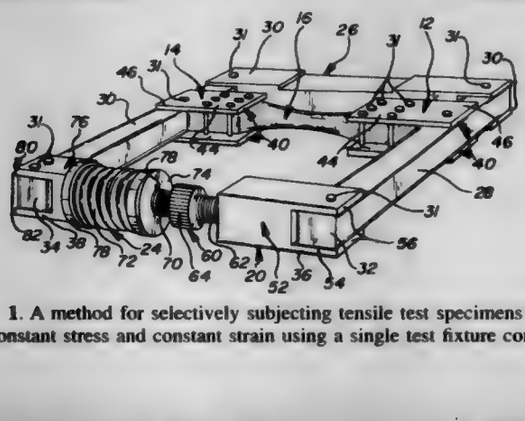
SELF-CONTAINED CONSTANT STRESS/CONSTANT STRAIN TEST FIXTURE

John C. Doudican, Tulsa, Okla.; Edward M. Hagerman, Royal Oak, Mich.; John M. Henshaw, Tulsa, Okla.; Laura J. Meyer, Urbana, Ill., and Daniel Q. Houston, Dearborn, Mich., assignors to Automotive Composites Consortium, Mich., and University of Tulsa, Okla.

Filed Feb. 12, 1997, Ser. No. 797,971

Int. Cl.[6] G01D *1/16*

U.S. Cl. 73—789 **16 Claims**



1. A method for selectively subjecting tensile test specimens to constant stress and constant strain using a single test fixture comprising a frame supporting first and second mounting grips and a force-applying assembly comprising a strain module connectable between said first and second mounting grips to subject tensile test specimens to constant strain, said force-applying assembly additionally comprising a stress module interchangeably connectable between said first and second mounting grips in place of said strain module to subject tensile test specimens to constant stress, said method comprising the steps of:

constructing the test fixture;

installing one of the stress module and strain module;

attaching a tensile test specimen to the mounting grips;

adjusting the force-applying assembly;

placing the specimen and tensile test fixture in a desired test environment for a desired test period;

detaching the test specimen from the mounting grips;

removing the installed module;

installing the other of the modules to the frame;

attaching a second test specimen to the mounting grips ; and

adjusting the force-applying assembly.

5,798,464

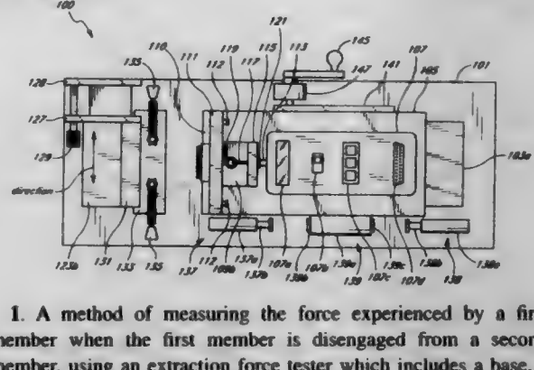
METHOD OF MEASURING EXTRACTION FORCES

Craig L. Boe, Nampa, Id., assignor to Micron Electronics, Inc., Nampa, Id.

Division of Ser. No. 769,786, Dec. 18, 1996, Pat. No. 5,731,525. This application May 5, 1997, Ser. No. 851,467

Int. Cl.[6] G01N *3/08*

U.S. Cl. 73—830 **12 Claims**



1. A method of measuring the force experienced by a first member when the first member is disengaged from a second member, using an extraction force tester which includes a base, a tensile force gauge coupled to the first member, and a stage for holding the second member in position to engage the first member, the method comprising:

installing the second member onto the stage;

moving the first member into proximity with the second member;

aligning the second member such that it is positioned to properly engage the first member;

engaging the first member with the second member;

initializing the tensile force gauge reading;

sliding the tensile force gauge away from the second member, thereby disengaging the first member from the second member, wherein the tensile force gauge is slidably coupled to the base; and

while sliding the tensile force gauge away from the second member, producing an output of the tensile force gauge indicative of the force required to disengage the first member from the second member.

5,798,465

METHOD FOR ACTIVELY DAMPING GLOBAL FLOW OSCILLATIONS IN SEPARATED UNSTABLE FLOWS AND AN APPARATUS FOR PERFORMING THE METHOD

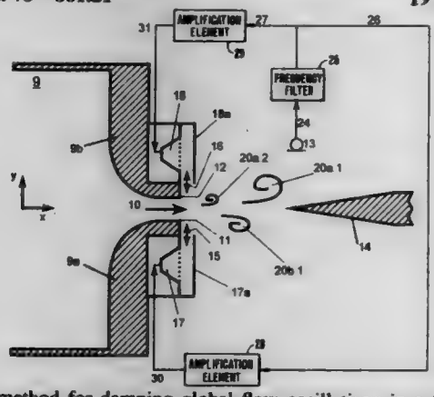
Samir Ziada, Neftenbach, and Hans Rudolf Graf, Winterthur, both of Switzerland, assignors to Sulzer Innotec AG, Winterthur, Switzerland

Filed Feb. 28, 1996, Ser. No. 608,397

Claims priority, application European Pat. Off., Mar. 14, 1995, 95810167

Int. Cl.[6] B64C *21/00;23/00*

U.S. Cl. 73—861.21 **19 Claims**



1. A method for damping global flow oscillations in a flowing medium in a region of an unstable flow separating itself from at least one boundary surface, the method comprising:

placing a sensor system in the flowing medium;

detecting the global flow oscillations with the sensor system, the sensor system generating signals in response thereto; and

superimposing a compensatory flow oscillation, controlled via the signals of the sensor system, onto the flowing medium in a separation zone of the unstable flow.

5,798,466

FLOW METER AND METHOD OF CALIBRATING SAME

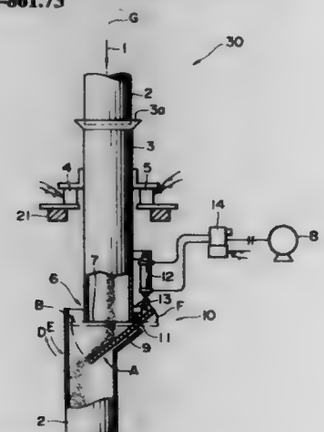
Satoru Satake, Tokyo, and Yoshimasa Tomoyasu, Hiroshima, both of Japan, assignors to Satake Corporation, Tokyo, Japan

Filed Jan. 8, 1997, Ser. No. 780,738

Claims priority, application Japan, Jan. 26, 1996, 8-032885

Int. Cl.[6] G01F *1/30*

U.S. Cl. 73—861.73 **9 Claims**



1. A flow meter comprising:

a tubular member forming a flow passage for a particulate material;

an opening-closing valve member connected to the tubular member so as to open and close a the downstream end of the tubular member, the opening-closing valve member being adapted to receive a dynamic load corresponding to a flow rate of the particulate material flowing through the flow passage, when the opening-closing valve member is in its open position to open the downstream end of the tubular member; and

a load detector for detecting the load acting on the opening-closing valve member;

wherein the flow meter further comprising:

an arithmetic and control unit including:

dynamic load flow rate calculation means for calculating a dynamic load flow rate of the particulate material from a measured value of the load detector when the opening-closing valve member allows the flow of the particulate material, so that the particulate material is flowing through the flow passage;

actual flow rate calculation means for calculating an actual flow rate of the particulate material based on a measured value of the load detector, representing the static load of the particulate material accumulated within the tubular member for a predetermined time period after the flow of the particulate material is interrupted by the opening-closing valve member, and a value of the predetermined time period; and

means for obtaining a correction factor for converting the dynamic load flow rate value into the actual flow rate value.

5,798,467

PLUCK RESISTANCE MEASURING INSTRUMENT FOR SNAP MEMBERS

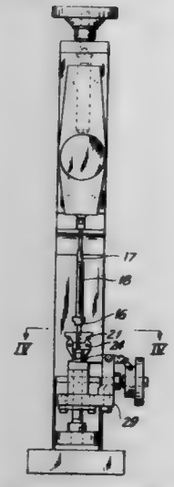
Kenji Hasegawa, and Katsushi Kitano, both of Tokyo, Japan, assignors to Scovill Japan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1996, Ser. No. 691,346

Claims priority, application Japan, Aug. 3, 1995, 7-216503

Int. Cl.[6] G01L *5/00*

U.S. Cl. 73—862.01 **10 Claims**



1. A pluck-resistance measuring instrument for snap members which comprises means for pressing the fabric of a garment to which a snap member is attached, securely around the member, a plurality of jaws for constraining the sides of the snap member, tensile means for pulling the snap member away in the direction at right angles to the fabric surface to which the member is attached, and means for measuring the tensile force exerted by the tensile means, wherein the fabric presser means comprises a fabric presser arm, a horizontal shaft supporting the arm, and means for acting on the rear end of the arm to move the rear end pivotally round the horizontal shaft.

5,798,468

SINTERING MATERIAL CONTAINING SILVER-TIN OXIDE FOR ELECTRICAL CONTACTS AND PROCESS FOR ITS MANUFACTURE

Wolfgang Weise, Frankfurt; Roger Wolmer, Hanau, and Peter Braumann, Alzenau, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 31, 1996, Ser. No. 594,143

Claims priority, application Germany, Feb. 1, 1995, 195 03 182.2

Int. Cl.[6] B22F *3/20*; C22C *1/05*; *5/06*

U.S. Cl. 75—232 **8 Claims**

1. A process for the manufacture of a sintering material manufactured by powder metallurgy for use as an electrical contact, comprising mixing powders of the following components: 3.2 to 19.9 wt-% tin oxide, 0.05 to 0.4 wt-%, in each case, of indium oxide and bismuth oxide, the remainder being silver, cold isostatic pressing the powder mixture, sintering at temperatures from 500° to 940° C. and extruding so as to form wires or profiles, wherein more than 60 wt-% of the tin-oxide powder exhibits a particle size of more than 1 μm.

5,798,469

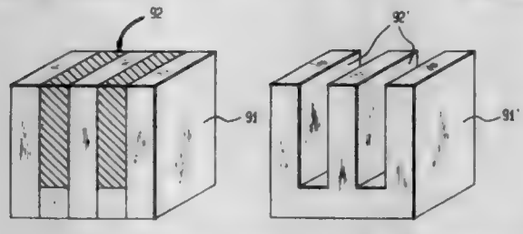
NON-SINTERING CONTROLLED PATTERN FORMATION

Robert Wolff Nufer, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 375,205, Jan. 18, 1995, abandoned, which is a continuation of Ser. No. 997,808, Dec. 29, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 486,632

Int. Cl.[6] B22F *7/02*

U.S. Cl. 75—246 **39 Claims**



1. A method of forming a sintered structure with an insitu mold comprising:

(a) forming at least one layer comprising of at least one first material and at least one second material, wherein said at least one second material does not fuse into said at least one first material and wherein the sintering temperature of said at least one second material is higher than the sintering temperature of said at least one first material,

(b) sintering said first material and said second material to the sintering temperature of said at least one first material,

(c) cooling said sintered first material and said second material, such that said first material forms an insitu mold, and

(d) removing said at least one second material, and thereby forming said sintered structure with said at least one first material.

5,798,470

Patent Not Issued For This Number

5,798,471

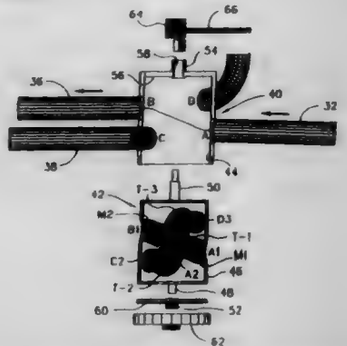
ROTARY VALVE FOR MUSICAL INSTRUMENTS

Robert M. Miller, 406 Meyer Ave., St. Louis, Mo. 63122

Continuation-in-part of Ser. No. 552,605, Nov. 3, 1995, abandoned. This application May 9, 1997, Ser. No. 854,189

Int. Cl.[6] G10D *9/04*

U.S. Cl. 84—390 **28 Claims**



1. A rotary valve for a brass musical instrument, said valve having means for controlling air passage directly between a mouth tube and a bell tube in a disengaged position and diverting said air passage into and out of an intermediate loop in an engaged position, said valve comprising a housing and a rotor closely received within said housing, said housing having a plurality of ports comprising a mouthpiece inlet port, a bell tube outlet port, an inlet loop port and an outlet loop port, and said rotor having first, second and third passages, each of said passages having an inlet and outlet opening, each of said passages passing substantially across the axis of and through said rotor, said rotor being moveable to the disengaged position to register said inlet and outlet ports of said housing communicating said mouth tube and bell tube with said first passage and said rotor being moveable to the engaged position to register said inlet port from the mouth tube with said inlet opening to said second passage communicating said second passage outlet opening with said inlet port to said loop and to register said third passage inlet opening communicating with said outlet port from said loop to said third passage outlet opening communicating with said outlet port to the bell tube, said first passage being located between said second and third passages and each of said second and third passages crossing over said first passage on opposite sides of said first passage by means of curvature in said second and third passages.

5,798,472

DRUM BEATER FOR BASS DRUM EQUIPPED WITH EXACTLY ADJUSTABLE RETURN SPRING REGULATOR

Fumihiro Shigenaga, Shizuoka, Japan, assignor to Yamaha Corporation, Shizuoka-ken, Japan

Filed May 21, 1996, Ser. No. 651,838

Claims priority, application Japan, May 22, 1995, 7-122283

Int. Cl.[6] G10D *13/02*

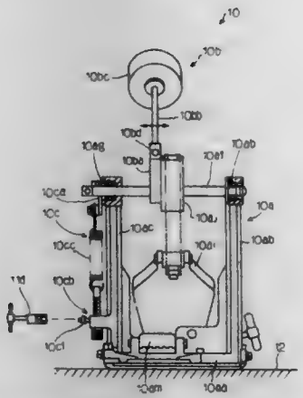
U.S. Cl. 84—422.1 **2 Claims**

1. A drum beater for a drum having a skin stretched over a shell, comprising:

a foot pedal assembly including a rotatable shaft and a foot board which a player steps on for rotating said rotatable shaft from a home position toward said skin;

a beater connected to said rotatable shaft for beating said skin; and

a righting moment generating means connected to said rotatable shaft for urging said beater toward said home position, and including an arm member fixed to said rotatable shaft, a spring member connected at one end to said arm member and generating an elastic force for imparting a righting moment to said rotatable shaft and a spring regulator connected to the other end of said spring member so as to change said elastic force exerted to said arm member,



said spring regulator including a regulating nut member having an inner threaded portion, a first portion rotatable inserted into a through-hole formed in said foot pedal assembly and a second portion larger in the maximum dimension of a cross section than said through-hole, a regulating bolt member connected to said other end of said spring member and having an outer threaded portion engaged with said inner threaded portion so as to be screwed into or out of said first portion and a clamper for preventing said first portion from rotating in said through-hole, said clamper being implemented by a first clamp bolt screwed into a threaded hole open to said through-hole, and a hoop retaining said skin on said shell by means of second clamp bolts, a tool being configured to engage said first clamp bolt and said second clamp bolts.

5,798,473

HARMONIC OPTIMIZATION SYSTEM FOR RIFLES

Steven Roblyer, 721 Snyder, and Kevin Schwinkendorf, 1121 Pine, both of Richland, Wash. 99352

Filed Apr. 30, 1997, Ser. No. 846,375
Int. Cl.[6] F41A *21/00*; F41C *27/00*
U.S. Cl. 89—14.3 **33 Claims**



1. A harmonic optimization technology system comprising:

A. a harmonic oscillator affixed by means at a muzzle of a rifle barrel; the barrel having a bore, a bore axis, a barrel surface, a bore surface and a prominent vibration frequency; the muzzle having a dispersion angle relative to the bore axis; the harmonic oscillator having mass, wall thickness, material composition, extension length and flexible cylinder discontinuities; the harmonic oscillator is tuned to the prominent vibration frequency of the barrel to produce a moment between the muzzle and the harmonic oscillator, that bends the barrel proximal to the muzzle, in response to barrel vibrations so that the muzzle dispersion angle remains parallel with the bore axis;

B. an inertial mass affixed intermediate a rifle cartridge chamber and the muzzle; the inertial mass reducing the transmission of vibrations generated near a cartridge chamber, of the rifle, to a section of barrel proximal the muzzle; reacting to a lower frequency barrel vibration, in relationship to the harmonic oscillator, by bending the portion of the barrel proximal the muzzle to reduce the dispersion angle at the muzzle and by discouraging the formation of vibrational modes that do not correspond to the node of the prominent vibration frequency;

C. a barrel spring suspension system having biasing means affixed proximal the cartridge chamber intermediate the cartridge chamber and the inertial mass; the biasing means providing a biasing function and vibrational coupling between the barrel and a rifle stock; vibrational coupling boundary conditions existing between the barrel and the rifle stock; the barrel having vibrational modes; the vibrational modes having a vibrational frequency; the barrel spring suspension system providing an adjustment of the vibrational coupling boundary conditions between the barrel and the rifle stock and providing an adjustment to the vibrational frequency of the vibrational modes in the barrel; and

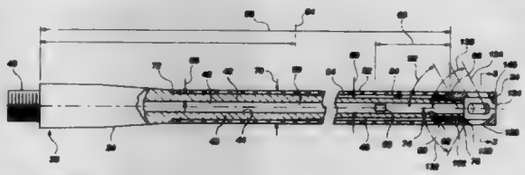
wherein a rifle with any ammunition load, achieving improved bullet accuracy by reducing the magnitude of the barrel muzzle dispersion angle caused by vibrations.

5,798,474

MUZZLE BLAST DEFLECTOR

Ernest E. Rogers, 1735 E. Cherokee, Pleasant Grove, Utah 84062; Blaine A. Frandsen, 1240 Riverview Dr., Garland, Utah 84312, and Steven W. Soffe, 114 S. 1250 E., Logan, Utah 84321

Filed Dec. 26, 1996, Ser. No. 773,372
Int. Cl.[6] F41A *21/28;21/36*
U.S. Cl. 89—14.05 **48 Claims**



1. A firearm comprising:

receiver means for receiving a propellant and a projectile and for activating said propellant to discharge said projectile therefrom;

support means connected to said receiver means for supporting said receiver means;

barrel means for communicating said projectile, said barrel means having an inner tube defining a bore, an outer tube positioned about said inner tube to define a sealed chamber there between and aperture structure to communicate propellant from said bore to said sealed chamber, said barrel means having a receiver end connected to said receiver means to receive said projectile into said bore and a muzzle end for discharging said projectile from said bore;

a blast deflector for deflecting a muzzle blast upon activation of said propellant and discharge of said projectile, said blast deflector having an attachment end configured for attachment to the muzzle end of said barrel means and a distal end for discharging said projectile therefrom, said blast deflector having a central passage for alignment with said bore of said barrel means and for transmission of said projectile from said attachment end to said distal end, and said blast deflector having a sidewall with a plurality of transverse channels formed therein and spaced radially about said central passage to be in communication through said sidewall from said central passage, through said sidewall to exterior said barrel means; and

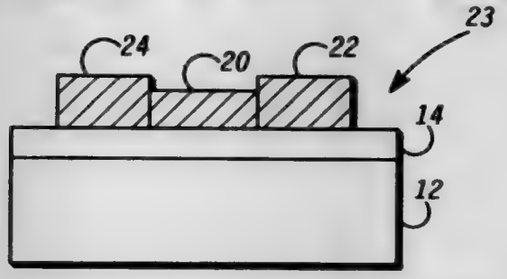
attaching means mechanically associated with said blast deflector and said barrel means for attaching the attachment end of said blast deflector to said muzzle end of said barrel means.

5,798,475

SEMICONDUCTOR FUSE DEVICE AND METHOD FOR FORMING A SEMICONDUCTOR FUSE DEVICE

Jean-Michel Reynes, Pompertuzat; Jean-Francois Allier, Ramonville, and Jean Caillaba, Vacquiers, all of France, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 29, 1996, Ser. No. 681,780
Claims priority, application France, Sep. 5, 1995, 95 10374
Int. Cl.[6] F42B 3/13
U.S. Cl. 102—202.5 13 Claims



1. A method for forming a semiconductor fuse device having a fuse element for an igniter device, the method comprising the steps of:

providing a semiconductor substrate;

forming an insulator layer on the semiconductor substrate;

atomically bonding a single active layer to the insulator layer;

grinding and polishing the single active layer to a predetermined depth greater than 4 microns; and

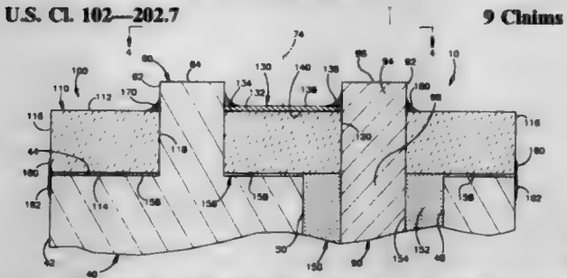
patterning and etching the single active layer to form the fuse element.

5,798,476

INITIATOR FOR AN AIR BAG INFLATOR

Todd R. Bailey, Higley, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Mar. 25, 1996, Ser. No. 621,441
Int. Cl.[6] F42C 19/12
U.S. Cl. 102—202.7 9 Claims



1. An electrically actuatable initiator for use in an inflator for an inflatable vehicle occupant device, said initiator comprising:

first and second electrical conductors for electrical connection with vehicle circuitry;

a header having an end surface, said first electrical conductor extending through said header;

glass insulator means connected with said header for supporting said first electrical conductor in spaced relation to said header and to said second electrical conductor;

an ignition charge supported adjacent to said first and second electrical conductors and ignitable by thermal energy;

an insulator member disposed on said header adjacent to said ignition charge and to said first and second electrical conductors;

a resistive element on said insulator member, said insulator member being disposed intermediate said resistive element and said end surface of said header, said resistive element electrically connecting said first and second electrical conductors for, when electrically actuated by electric current flowing between said first and second electrical conductors, generating thermal energy to ignite said ignition charge; and

a glass member integral with said glass insulator means for securing said insulator member to said end surface of said header;

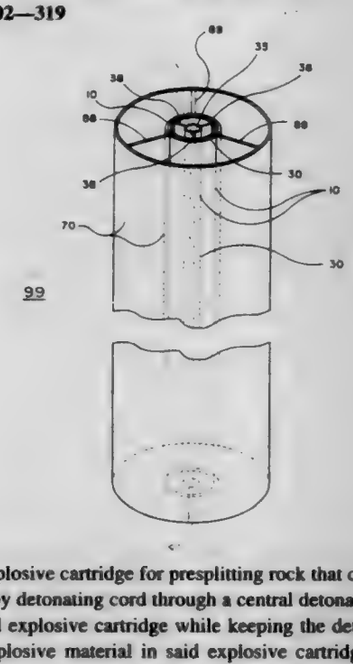
wherein said glass member has a first portion which extends between and bonds together a surface of said insulator member and said end surface of said header, said glass member having a second portion which overlies outer peripheral surfaces of said insulator member and said header.

5,798,477

EXPLOSIVE CARTRIDGE ASSEMBLY FOR PRESPLITTING ROCK

Richard W. Givens, 980 Norway Dr., Columbus, Ohio 43221, and Greg S. Williams, 4434 Raccoon Valley Rd., Alexandria, Ohio 43001

Filed Dec. 18, 1996, Ser. No. 769,598
Int. Cl.[6] F42B 3/00; F42D 3/00
U.S. Cl. 102—319 34 Claims



1. An explosive cartridge for presplitting rock that can be axially detonated by detonating cord through a central detonation passageway in said explosive cartridge while keeping the detonating cord and the explosive material in said explosive cartridge physically separate, said explosive cartridge comprising:

an outer tube having an inner surface and an outer surface;

an inner tube inside of said outer tube, said inner tube having an inner surface and an outer surface;

two or more continuous webs extending radially between said outer surface of said inner tube and said inner surface of said outer tube, said radial webs extending longitudinally along said inner tube and said outer tube; and

the space between said outer surface of said inner tube and said inner surface of said outer tube filled with explosive material;

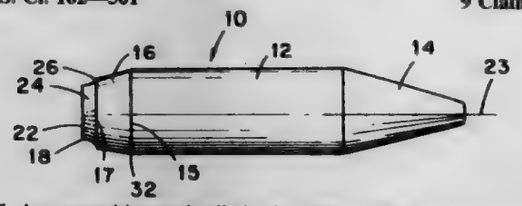
wherein the inside of said inner tube forms a central detonation passageway axially through said explosive cartridge through which detonating cord can be strung to provide axial detonation and to ensure detonation between explosive cartridges while keeping the detonating cord and said explosive material in said explosive cartridge physically separate.

5,798,478

AMMUNITION PROJECTILE HAVING ENHANCED FLIGHT CHARACTERISTICS

Harold F. Beal, Rockford, Tenn., assignor to Cove Corporation, Knoxville, Tenn.

Filed Apr. 16, 1997, Ser. No. 834,377
Int. Cl.[6] F42B *10/32*
U.S. Cl. 102—501 **9 Claims**



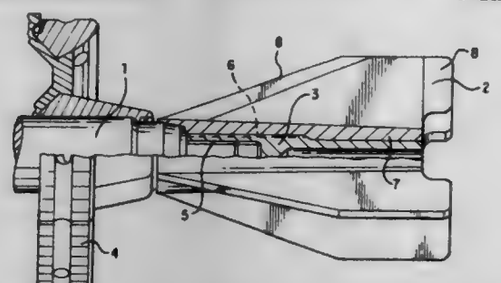
1. An ammunition projectile having enhanced flight characteristics comprising a cylindrical body portion having a longitudinal centerline, a leading end, and a rear end, a boattail portion including a non-radiussed sharp circumferential edge defining a non-radiussed sharp juncture between said rear end of said body portion of the projectile and said boattail portion, and a truncated frustoconical wall which tapers from said non-radiussed sharp circumferential edge gradually inwardly toward the longitudinal centerline of the projectile to terminate in a flat rear end surface having a non-radiussed outer sharp circumferential edge, a circular land defined on the rear end of said boattail portion and extending rearward therefrom to define a flat circular surface distally of said land, and a continuous concave arcuate wall connecting said flat rear end surface of said trailing end of said boattail portion to said flat circular surface of said land, the continuous concave arcuate wall of said land subtends an angle of 90 degrees or less, and the area of said flat circular surface of said land being between about 60% and about 90% of the area of the flat rear end surface of said boattail portion whereby said projectile exhibits a lesser rate of velocity deceleration during flight to a target than a like projectile without a land and its accompanying concave arcuate wall fired under like circumstances.

5,798,479

UNDERSIZED KINETIC-ENERGY PRACTICE PROJECTILE OF THE DART TYPE

Jean-Pierre Bonamy, Crosses, France, assignor to Etat Francais represente par le Deleque General pour l'Armement, Paris, France

Filed Oct. 7, 1996, Ser. No. 725,828
Claims priority, application France, Oct. 5, 1995, 95 11699
Int. Cl.[6] F42B *10/48;8/12*
U.S. Cl. 102—529 **9 Claims**



1. A kinetic-energy practice projectile, comprising a penetrator and a tail unit separably connected to the penetrator, wherein a separable connection includes a center member extending from a tail end of the penetrator having an external threaded portion thereon, said tail unit includes a hollow tubular member having threads on an inner surface thereof which mates with said external threaded portion, wherein the separable connection between the penetrator and the tail unit separates after a predetermined flight duration by rotation of the tail unit with respect to the penetrator in response to aerodynamic forces exerted on a plurality of fins mounted on the tail unit.

5,798,480

HIGH PERFORMANCE SPACE MOTOR SOLID PROPELLANTS

Rodney L. Willer, Newark, Del., and David K. McGrath, Elkton, Md., assignors to Cordant Technologies Inc., Ogden, Utah

Filed Aug. 2, 1990, Ser. No. 561,973
Int. Cl.[6] C06B *45/10*
U.S. Cl. 149—19.4 **14 Claims**

1. A high energy, space motor, solid propellant having a theoretical specific impulse, at 1,000 psi and expansion ratio of 50:1, of at least about 350 lb-sec/lb and comprising an isocyanate cured polyglycidyl nitrate binder and from about 40 to about 75% by weight high energy particulate solids comprising oxidizer particulates selected from the ammonium perchlorate and hydroxy ammonium perchlorate and fuel particulates selected from beryllium and beryllium hydride and wherein the polyglycidyl nitrate is an isocyanate curable polyglycidyl nitrate polymer having a functionality of nearly 2.0 or more and a hydroxyl equivalent weight of from about 1000 to about 1700 and has less than about 2 to 5% by weight cyclic oligomer present in the polyglycidyl nitrate.

5,798,481

HIGH ENERGY TNAZ, NITROCELLULOSE GUN PROPELLANT

Thelma Manning, Montville; Bernard Strauss, Rockaway; Joseph P. Prezelski, Budd Lake, and Sam Moy, Parsippany, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 7, 1996, Ser. No. 743,782
Int. Cl.[6] C06B *45/10*
U.S. Cl. 149—19.8 **3 Claims**

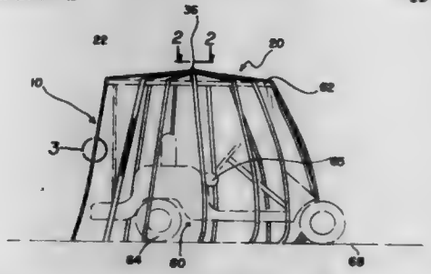
1. A high energy gun propant having an impetus of at least about 1350 Joules/gram adapted for use in tank ammunition and providing said ammunition with a LOVA style response to threat, said propellant having improved mechanical properties and a composition consisting essentially of (a) about 51% by wt. nitrocellulose, (b) about 1% by wt. ethyl centralite, (c) about 15% by wt. trintrioazetidine, and (d) about 33% by weight of a mixture of nitroglycerin and diethylene glycol dinitrate.

5,798,482

LIGHTNING PROTECTION DEVICE

Michael John Reeves, 14 Gun Wharf, 124 Wapping High St, London, England, E19NH

Filed Jan. 23, 1997, Ser. No. 787,954
Int. Cl.[6] H01B *17/58*
U.S. Cl. 174—2 **15 Claims**



1. A lightning protection device for a golf cart having a passenger area and a canopy support frame being extended over said passenger area, said lightning protection device comprising:

a golf cart having a passenger area and a canopy support frame being extended over said passenger area;

a center post being coupled to said canopy support frame; and

a plurality of electrically conducting bands being spaced apart and being extended outwardly and downwardly from said center post, whereby said electrically conducting bands and said center post define an electrically conductive cage around said passenger area of said golf cart thereby protecting individuals within said passenger area from lightning strikes.

5,798,483

GROUNDING DEVICE FOR AN IMAGE FORMING MACHINE

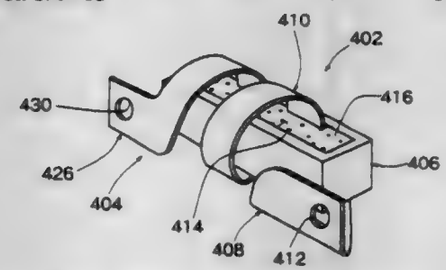
Kazuhiro Nishitani, and Haruya Osaka, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 29, 1996, Ser. No. 753,763

Claims priority, application Japan, Nov. 29, 1995, 7-311080

Int. Cl.[6] H01Q *1/00*

U.S. Cl. 174—51 **5 Claims**



1. A grounding device for use with an image forming machine, said grounding device comprising an electric conductive member, and radio wave absorbing means associated with said electric conductive member, wherein:

said radio wave absorbing means comprises a radio wave absorbing member having a through-hole, and

said electric conductive member is formed of a metal plate and is passed through said through-hole of said radio wave absorbing member a plurality of times.

5,798,484

ENCLOSED ELECTRIC CONDUCTOR ARRANGEMENT

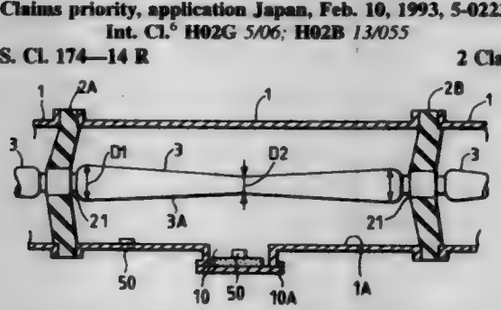
Tokio Yamagiwa; Fumihiro Endo, both of Hitachi, and Kazutoshi Asano, Yonezawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1994, Ser. No. 194,375

Claims priority, application Japan, Feb. 10, 1993, 5-022357

Int. Cl.[6] H02G *5/06;* **H02B** *13/055*

U.S. Cl. 174—14 R **2 Claims**



1. An enclosed electric conductor arrangement for DC current transmission, comprising a horizontally disposed grounded cylindrical tank, a plurality of insulator spacers disposed in said grounded tank and an electric conductor supported by said insulator spacers and insulated with respect to said grounded cylindrical tank;

wherein a surface of the electric conductor facing a bottom surface of said grounded cylindrical tank is inclined by gradually reducing a cross section of said electric conductor in relation to a distance between said electric conductor and said insulator spacers, whereby during an actual rated DC voltage application onto said electric conductor, a conductive foreign particle which moves back and forth between said grounded cylindrical tank and said electric conductor is shifted away from the insulator spacers.

5,798,485

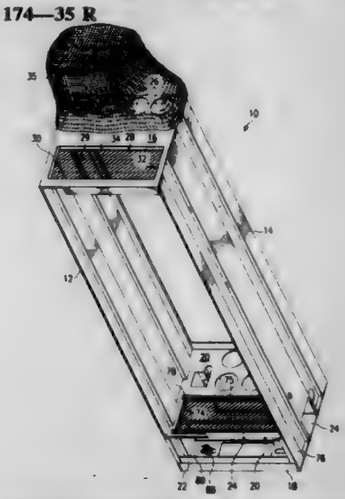
CABINET FOR HOUSING ELECTRONIC EQUIPMENT

Sheldon L. Rohde, Allen; Rodney Barclay, Richardson; Mark L. Slotterback, Frisco; Brian S. Spate, Dallas; Richard K. Fultz, Carrollton; C. Gordon Harrison, Plano, and Douglas N. Laube, Nevada, all of Tex., assignors to DSC Telecom L.P., Plano, Tex.

Filed Dec. 31, 1996, Ser. No. 777,852

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 R **8 Claims**



1. A cabinet for housing electronic equipment, comprising:

two vertical frame members;

upper and lower horizontal frame members connected to the two vertical frame members to form a generally rectangular frame, the upper horizontal frame member having input and output ports to provide for external connections to cables, the upper horizontal frame member having a recess to slidably receive an air filter, the lower horizontal frame member including reinforced joints to provide seismic protection;

an intermediate horizontal frame member connected to the two vertical frame members, the intermediate horizontal frame member having integrated ports to provide internal cable routing, the intermediate horizontal frame member having a recess to slidably receive another air filter;

a cable tube connected to the two vertical frame members, the cable tube providing cable access between the intermediate horizontal frame member and adjacent cabinets while maintaining cable shielding integrity.

5,798,486

CASING FOR A JUNCTION IN A FLAT CABLE

Herbert Elsinger, Holzkirchen; Johannes Oberndorfer, Miesbach, and Friedrich Plappert, Holzkirchen, all of Germany, assignors to Euro-Matsushita Electric Works Aktiengesellschaft, Holzkirchen, Germany

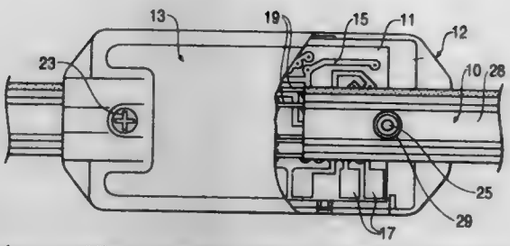
Filed Dec. 10, 1996, Ser. No. 763,293

Claims priority, application Germany, Dec. 14, 1995, 195 46 781.7

Int. Cl.[6] H01R *4/10*

U.S. Cl. 174—92 **12 Claims**

1. A casing for a junction in a flat cable, including two casing portions adapted to be fixed to each other and cooperating to form lead-through regions for the cable, each of said lead-through



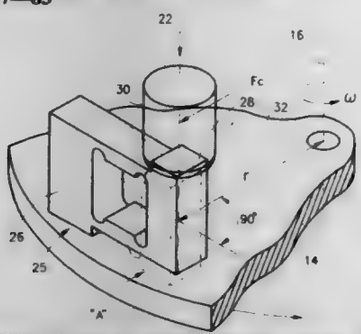
regions providing a cramping region for engaging said cable and securing said casing directly to said cable.

5,798,487

WEIGHING DEVICE FOR ROTARY FILLING MACHINES

Tal Goichman, Bnei Brak, and Leon Kaimikov, Netanya, both of Israel, assignors to Tedea Huntleigh Intl. Ltd., Herzliya, Israel

Filed Jan. 18, 1996, Ser. No. 588,090
Int. Cl.[6] G01G *13/00;13/22*
U.S. Cl. 177—83 **9 Claims**



1. A weighing device for determining the weight of an object while both weighing device and object are placed on a rotating table, the weighing device comprising:

at least one load cell having at least one deflectable beam and a loading point, said load cell being arranged on the rotating table such that said deflectable beam extends in a plane perpendicular to a radial line from the center of the table, said beam being deflectable within said plane, said plane being in tangential orientation to the direction of table rotation; and

means in said load cell supported by said deflectable beam for measuring its deflection within said plane and generating a proportional signal output,

such that when the object to be weighed is placed on said loading point, centrifugal forces caused by table rotation do not act within said plane on said deflectable beam so that no moment of force is developed therein, and said load cell generates said output signal without errors associated with said centrifugal forces, to provide accurate weighing.

5,798,488

ACOUSTIC SENSOR

John M. Beresford, Sherbourne, and Paul A. Crowther, London, both of United Kingdom, assignors to GEC Marconi Limited, United Kingdom

PCT No. PCT/GB95/00684, § 371 Date Nov. 11, 1996, § 102(e) Date Nov. 11, 1996, PCT Pub. No. WO95/27222, PCT Pub. Date Oct. 12, 1995
PCT Filed Mar. 27, 1995, Ser. No. 716,137
Claims priority, application United Kingdom, Mar. 30, 1994, 9406378; Apr. 25, 1994, 9408139; Jan. 6, 1995, 9500250
Int. Cl.[6] G01V *1/40*
U.S. Cl. 181—102 **35 Claims**



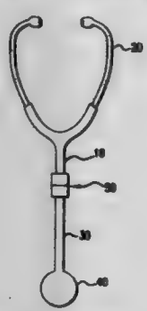
1. A drilling apparatus, comprising: a drill string extending along an axis and having a drill bit for forming a borehole in rock; an acoustic transmitter for generating first acoustic signals in the rock at an end of the borehole formed by the drill bit; an acoustic receiver for receiving second acoustic signals returned from the rock; said transmitter and said receiver being mounted in the drill string; and said transmitter being operative for vibrating the drill bit to generate the first acoustic signals as axial compression waves which propagate through the rock ahead of the drill bit.

5,798,489

DETACHABLE STETHOSCOPE

Robert G. Gillio, 2001 Pine Dr., Lancaster, Pa. 17601

Filed Jun. 26, 1996, Ser. No. 669,736
Int. Cl.[6] A61B *7/02*
U.S. Cl. 181—131 **8 Claims**



1. A stethoscope device comprising:

an upper assembly including a headset and an upper sound conducting tube connected to the headset, the upper sound conducting tube having a free end and an outer surface;

a lower assembly including a sound receiving portion and a lower sound conducting tube, the lower sound conducting tube having a free end and an outer surface; and

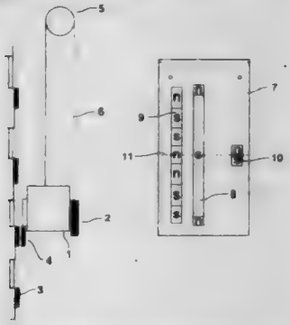
a tube connector, wherein the tube connector detachably interconnects the free ends of the upper and lower sound conducting tubes and is attached to the outer surfaces of the upper and lower sound conducting tubes and wherein said tube connector includes a first male coupler sealably attached to the outer surface of the free end of one of the upper or lower sound conducting tubes and a second female coupler sealably attached to the outer surface of the free end of the other upper or lower sound conducting tube.

5,798,490

PROCEDURE AND APPARATUS FOR DETERMINING THE POSITION OF AN ELEVATOR CAR

Olavi Vairio; Jarmo Mäenpää, both of Hyvinkää, and Seppo Suur-Askola, Riihimäki, all of Finland, assignors to Kone Oy, Helsinki, Finland

Continuation of Ser. No. 365,130, Dec. 28, 1994, abandoned. This application Mar. 5, 1997, Ser. No. 813,012
Claims priority, application Finland, Dec. 28, 1993, 935909
Int. Cl.[6] B66B *1/42;1/34*
U.S. Cl. 187—394 22 Claims



1. A method for determining the position of an elevator car, comprising the steps of:

providing code data contained in code units mounted in the building; and reading the code data by means of a code data detector unit mounted on the car,

wherein the code unit contains floor data and door zone data and is mounted at the threshold of the landing door on each floor, and the door zone data includes a first magnet extending in a direction of movement of the car in an elevator shaft, the first magnet being adjacent a second magnet at one end and adjacent a third magnet at an opposite end, the second and third magnets being of opposite polarity than the first magnet, and

further wherein the detector unit reading the floor data and door data is mounted at the threshold of the car.

5,798,491

MULTI-MECHANISTIC CHEMICAL CLEAVAGE USING CERTAIN METAL COMPLEXES

Darren Magda, Cupertino, Calif., and Jonathan L. Sessler, Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex., and Pharmacyclics, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 452,261, May 26, 1995, abandoned, and Ser. No. 310,501, Sep. 21, 1994, Pat. No. 5,567,687, each which is a continuation-in-part of Ser. No. 227,370, Apr. 14, 1994, Pat. No. 5,559,207, which is a continuation-in-part of Ser. No. 75,123, Jun. 9, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 458,347
Int. Cl.[6] C07B *61/00*
U.S. Cl. 204—157.15 27 Claims

1. A method of both hydrolyzing and photocleaving a polymer of ribonucleic acid, the method comprising:

contacting the polymer of ribonucleic acid with a texaphyrin metal complex that exhibits catalytic activity for both hydrolysis and photocleavage of ribonucleic acid polymers,

incubating the polymer of ribonucleic acid and the metal complex under conditions and for a time sufficient to hydrolyze the phosphate ester bond of the polymer, and

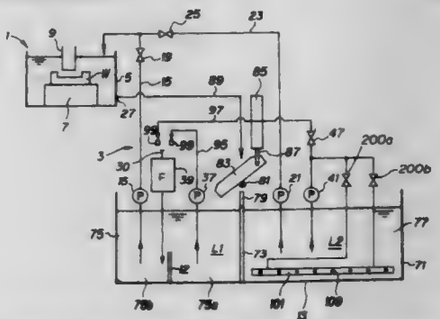
exposing the texaphyrin metal complex to light for a time sufficient to photocleave the polymer.

5,798,492

MACHINING LIQUID PROCESSING UNIT IN ELECTRIC DISCHARGE MACHINE

Toshihiro Enya, and Hidetoshi Kawatsu, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1996, Ser. No. 697,722
Claims priority, application Japan, Oct. 13, 1995, 7-265981
Int. Cl.[6] B23H *1/10*
U.S. Cl. 219—69.14 7 Claims



1. A machining liquid processing unit in an electric discharge machine selectively using a first machining liquid not containing powder material or a second machining liquid containing powder material mixed therein comprising:

a machining liquid tank having a first storage section for storing the first machining liquid therein and a second storage section for storing the second machining liquid therein;

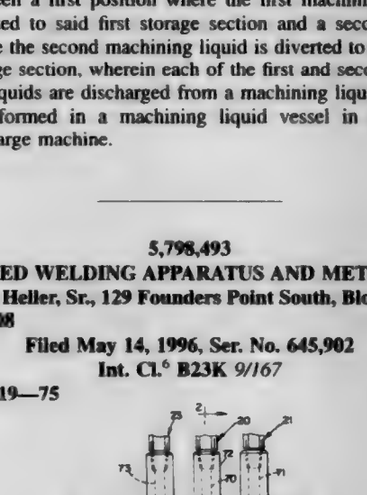
a movable shooter, having a chute shape, movably provided between a first position where the first machining liquid is diverted to said first storage section and a second position where the second machining liquid is diverted to said second storage section, wherein each of the first and second machining liquids are discharged from a machining liquid discharge port formed in a machining liquid vessel in the electric discharge machine.

5,798,493

FIXED WELDING APPARATUS AND METHOD

Walter R. Heller, Sr., 129 Founders Point South, Bloomingdale, Ill. 60108

Filed May 14, 1996, Ser. No. 645,902
Int. Cl.[6] B23K *9/167*
U.S. Cl. 219—75 14 Claims



1. Fixed welding apparatus comprising:

a torch body including an opening formed through its length;

a pusher rod slidably fitting into the torch body opening, the pusher rod including an opening formed therethrough;
a reverse collet including a portion positioned in the pusher rod opening;
a collet attached to the torch body and contacting the reverse collet; and
a heat shield attached to the collet.

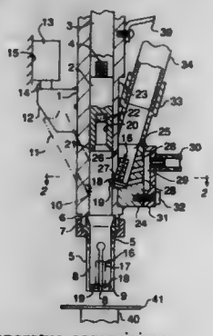
4. Fixed welding apparatus comprising:
a torch housing;
an adjusting knob extending outward from the torch housing;
an adjusting shaft connected to the adjusting knob;
a beveled gear set in communication with the adjusting shaft;
an adjusting screw in communication with the beveled gear set;
an indicator block having formed therein a threaded opening for receiving the adjusting screw;
an indicator arm connected to the indicator block; and
a torch body connected to the indicator arm.

5,798,494

WELDING APPARATUS

Yoshitaka Aoyama, and Shoji Aoyama, both of 20-11, Makitsukadai 2-cho, Sakai-shi, Osaka 590-01, Japan

Filed Nov. 6, 1996, Ser. No. 744,833
Claims priority, application Japan, Jun. 24, 1996, 8-199518
Int. Cl.[6] B23K *9/20*
U.S. Cl. 219—98 **12 Claims**



1. A welding apparatus comprising:
a guide cylinder;
a retractable feeding rod axially positioned in the guide cylinder;
a workpiece retaining pipe connected to an outward end of the guide cylinder;
a feed-in passage for supplying workpieces to the guide cylinder and positioned at an acute angle with respect to the guide cylinder to form an intersection therewith;
the feed-in passage communicating with an interior of the guide cylinder, the feed-in passage further having
a) control surface means formed in an internal wall of the feed-in passage, at an outward end thereof, for intercepting a supplied workpiece and arresting its motion prior to entering the retaining pipe; and
b) an opening formed in the guide cylinder at the intersection to allow passage of a workpiece therein from the feed-in passage.

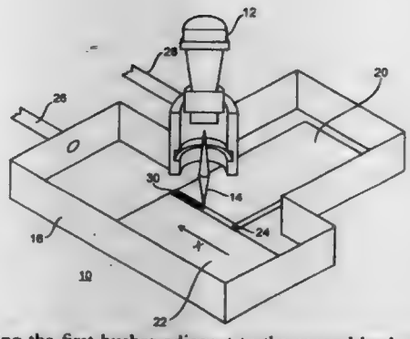
5,798,495

CONDUCTIVE JOINT FORMED BY ELECTRON BEAM WELDING AND METHOD THEREOF

Douglas A. Hinkley, Lincoln; James V. Fixemer, Denton, and John J. Barta, Lincoln, all of Nebr., assignors to Square D Company, Palatine, Ill.

Filed Oct. 30, 1996, Ser. No. 741,091
Int. Cl.[6] B23K *15/00*
U.S. Cl. 219—121.14 **19 Claims**

1. A method for welding together components of electrical distribution equipment including a first busbar and a second busbar made of a metal alloy material, the method comprising the following steps:



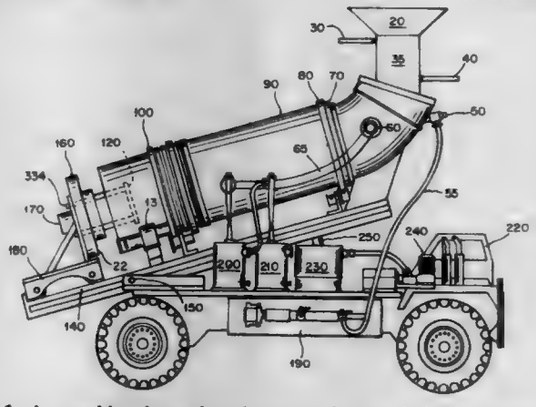
retaining the first busbar adjacent to the second busbar inside a chamber;
securing a cover onto the chamber;
securing an electron beam gun onto the chamber;
removing air from the electron beam gun to create a vacuum therein;
operating the electron beam gun at a first predefined energy level to generate an electron beam;
traversing the electron beam gun past the first busbar and the second busbar at a first predefined speed to form a joint which is constructed substantially of a portion of the first busbar and the second busbar;
wherein the first predefined energy level and the first predefined speed are selected to be such that the electron beam penetrates, heats and mixes the busbar material at the joint to form the joint;
operating the electron beam gun at a second predetermined energy level to generate a second electron beam; and
traversing the electron beam gun past the joint at a second predetermined speed;
wherein the second predetermined energy level and the second predetermined speed are selected to be such that the second electron beam heats and melts the material at the joint so that the material flows to a level not above the surface of the first and second busbars, thereby preventing the build up of excess weld material at the joint.

5,798,496

PLASMA-BASED WASTE DISPOSAL SYSTEM

Paul S. Eckhoff, 7580 County Rd. 25, Stockport, N.Y. 12173, and George Farrall, 51 Bluff Rd., Rexford, N.Y. 12148

Continuation-in-part of Ser. No. 370,392, Jan. 9, 1995, abandoned. This application Apr. 8, 1996, Ser. No. 629,238
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.36 **41 Claims**



1. A portable plasma-based reactor for pyrolytically treating waste material, the portable reactor comprising:
a rotatable kiln comprising an upper end for introduction of waste material and a lower end, said rotatable kiln mounted on a movable vehicle;

a breech disposed adjacent said lower end of said kiln, at least one of said breech and said lower end forming an outlet for discharge of pyrolytically treated waste material;

at least two plasma guns attached to said breech and disposed so as to direct an arc into said kiln; and

at least two target electrodes spaced from said plasma guns and attached to at least one of said breech and said kiln, wherein at least one of said plasma guns and at least one of said target electrodes is movable.

5,798,497

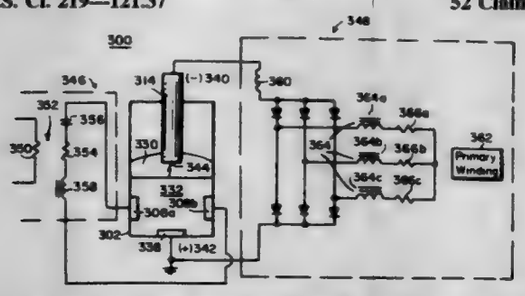
TUNABLE, SELF-POWERED INTEGRATED ARC PLASMA-MELTER VITRIFICATION SYSTEM FOR WASTE TREATMENT AND RESOURCE RECOVERY

Charles H. Titus, Newtown Square, Pa.; Daniel R. Cohn, Chestnuthill, Mass., and Jeffrey E. Surma, Kennewick, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 382,730, Feb. 2, 1995. This application Jun. 19, 1995, Ser. No. 492,429

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.37 **52 Claims**



1. An integrated arc plasma-joule heated melter waste conversion unit, comprising:

means for generating an arc plasma on top of or within a molten pool in the unit; and

means for providing volumetric joule heating in the molten pool, the means for generating the arc plasma and the means for providing volumetric joule heating configured such that each is separately and independently controlled during simultaneous operation in response to a sensed process parameter.

5,798,498

METHOD AND APPARATUS FOR APPLYING LASER BEAMS TO A WORKING SURFACE, PARTICULARLY FOR ABLATING TISSUE

Eliezer Zair, Bnei Brak, Israel, assignor to Laser Industries, Ltd., Israel

Division of Ser. No. 358,386, Dec. 19, 1994, Pat. No. 5,582,752. This application Sep. 19, 1996, Ser. No. 715,745

Claims priority, application Israel, Dec. 17, 1993, 108059

Int. Cl.[6] B23K *10/00*

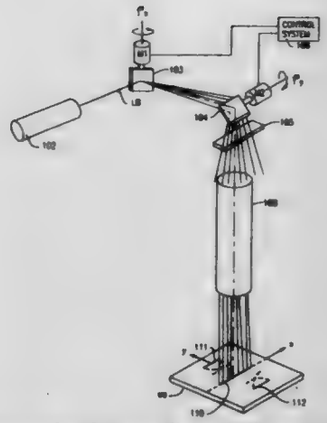
U.S. Cl. 219—121.83 **8 Claims**

1. A method of checking the alignment of a radiant energy beam with respect to the inlet of a tubular member by viewing an observable trace resulting from the energy beam passing through the tubular member, comprising:

a) reciprocating the radiant energy beam along a first orthogonal axis;

b) reciprocating the radiant energy beam along a second orthogonal axis; and

c) coordinating steps (a) and (b) such that a curved non-linear configuration of the observed trace, indicating a misalignment of the radiant energy beam with respect to the inlet end of the



tubular member, becomes linear, indicating an absence of said misalignment.

5,798,499

ELECTRICALLY HEATING WINDSHIELD GLASS HAVING A SUBSTANTIALLY UNIFORM THERMAL DISTRIBUTION

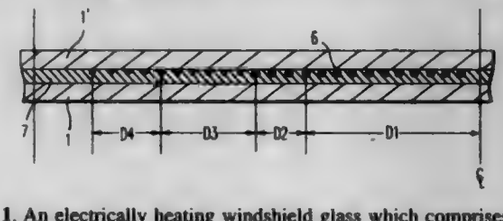
Kiyoshi Shibata, and Seiichi Miyasaka, both of Tokyo, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation of Ser. No. 498,800, Jul. 6, 1995, abandoned. This application Mar. 20, 1997, Ser. No. 821,322

Claims priority, application Japan, Jul. 8, 1994, 6-179770

Int. Cl.[6] B60L *1/02;* **E06B** *7/00;* **H05B** *3/06*

U.S. Cl. 219—203 **24 Claims**



1. An electrically heating windshield glass which comprises:

first and second glass plates;

a resinous interlayer interposed between the first and second glass plates;

at least a pair of bus bars provided at peripheral portions of the glass plates and between the glass plates; and

a number of electrically heating wires connected between a pair of the bus bars, wherein the windshield glass has at least a substantially triangular area and diameters of the electrical heating wires which are located in a vicinity of a center line of said glass plates are greater than diameters of the electrical heating wires which are located in a vicinity of the peripheral portions of the glass plate, such that the diameter of each of the electrically heating wires continuously decreases in response to a decrease of a distance between the bus bars.

5,798,500

CURLING IRON STOVE WITH INTERNAL CAVITY WITH ELECTRIC HEATER POSITIONED THEREBELOW

Ross I. Stillwagon, Jr., and Fernando Fischbuch, both of 13033 Park St., Santa Fe Springs, Calif. 90670

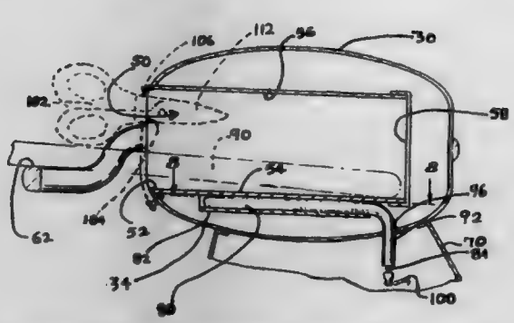
Continuation-in-part of Ser. No. 103,987, Aug. 10, 1993, abandoned. This application Aug. 23, 1995, Ser. No. 538,184

Int. Cl.[6] H05B *3/00*

U.S. Cl. 219—242 **3 Claims**

1. A thermal curling iron stove including:

an encapsulating outer case having an upper outside surface and an inside internal cavity member formed with a bottom floor



adapted to hold at least one thermal iron adjacent to an interior surface of said cavity member on said bottom floor;

an electrical, tubular heating element carried within said case controllably capable of heating thermal irons positioned within said internal cavity member, said heating element having internal resistance wiring which is only beneath said floor and carried immediately adjacent only where irons to be heated are held;

sufficient insulation carried within said case between said upper outside of said outer case and said internal cavity member to keep said outer surface temperature of said case low enough to prevent burning a user's hands if touching said outer surface of said case remote from said heating element;

even at 1500 degrees Fahrenheit, whereby a thermal iron held by said internal cavity is heated by said heating element;

and temperature controller means connected to said tubular heating element capable of changing temperature in said cavity member so as to be able to quickly raise the temperature of said cavity member adjacent to a thermal iron placed therein while minimizing the temperature of said outer case remote from where a thermal iron As carried during heating;

said tubular heating element adjacent to and only beneath said bottom floor of said internal cavity member within said case wherein said internal cavity member is spaced from said upper outside surface of said outer case to create an insulation space for heat control and heat insulation is contained within said space

wherein said stove is compact and portable and its said internal member has an entry opening terminating at a remote end wall said case is supported by a base which inclines

said bottom floor of said cavity member down away from said entry opening toward said end wall when said base is placed on a horizontal surface,

a curling iron rest support integrally formed as a part of said stove, said support extending forward from said stove around, and in front of, said internal cavity opening entry member in a position to support the handle of a curling iron placed thereon so that said iron portion to be heated will be tilted downwardly in said internal cavity member from said entry opening,

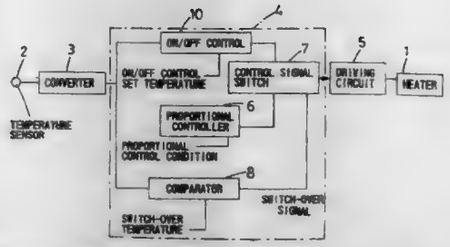
wherein said heat insulation space, above said internal cavity member's upper surface and the top outer surface of said case, is enlarged sufficiently to accommodate special heat insulation material capable of reducing intense, extreme heat generated by special heating elements positioned below said internal cavity member, wherein said heat insulation in said heat insulation is special high temperature refractory ceramic fiber, and wherein said heating element under said internal cavity member is a tubular element capable of quickly generating high temperatures up to 1500 degrees Fahrenheit.

5,798,501

METHOD AND APPARATUS FOR TEMPERATURE CONTROL IN PHOTOGRAPH DEVELOPMENT

Seiji Yamane, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan

Filed Sep. 19, 1995, Ser. No. 530,438
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—497 **6 Claims**



1. A temperature control system for use in photographic development, in which a preset temperature is rapidly reached and accurately maintained within a desired temperature range, said temperature control system comprising:

a heating system having an heating element;

a proportional controller for maintaining an amplitude of variation of the preset temperature of said heating element within the desired temperature range; and

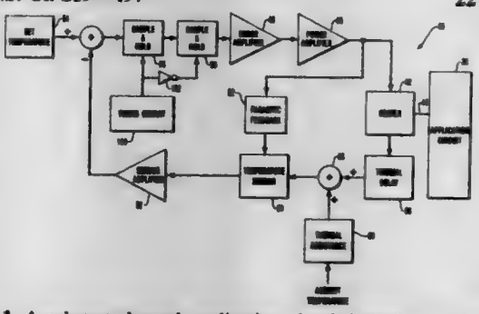
a switch for allowing the temperature of said heating element to reach the preset temperature, and for switching a control of said heating element to said proportional controller when the temperature of said heating element has reached the preset temperature.

5,798,502

TEMPERATURE CONTROLLED SUBSTRATE FOR VLSI CONSTRUCTION HAVING MINIMAL PARASITIC FEEDBACK

Donald T. Comer, Mapleton, Utah, assignor to Oak Frequency, Mount Holly Springs, Pa.

Filed May 10, 1996, Ser. No. 644,234
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—497 **22 Claims**



1. A substrate heated application circuit including an improved closed loop control circuit, formed on a substrate and in thermal contact with the application circuit, for controlling temperature of at least the substrate, said closed loop control circuit comprising:

heater means for heating the substrate;

temperature sensing means for sensing the temperature of at least the substrate, said temperature sensing means comprising at least one bipolar transistor device having a base region formed on the substrate;

heater control means, electrically connected to both the heater means and the temperature sensing means, for controlling the heater means in response to the temperature sensed by the temperature sensing means; and

means, formed in the control loop, for substantially reducing the effects of parasitic feedback in said closed loop control system, said means for substantially reducing the effects of parasitic feedback comprising in combination (a) means for minimizing parasitic collection of minority carriers around the base region of said bipolar transistor device, and (b) a plurality of sample and hold circuit means connected in series in said closed circuit control loop, and configured so that at least one sample and hold circuit means is open when at least one other sample and hold circuit means is closed.

5,798,503

METHOD OF ACHIEVING A COMFORTABLE TEMPERATURE IN A ROOM, AND DEVICE FOR CARRYING OUT THIS METHOD

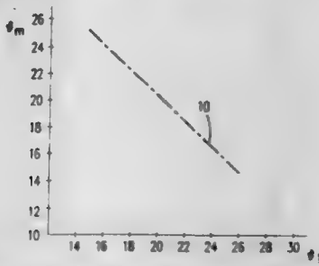
Reinhard Kersten, and Klaus Klinkenberg, both of Aachen, Germany, assignors to U.S. Philips Corporation, Tarrytown, N.Y.

Filed Jan. 17, 1997, Ser. No. 785,458

Claims priority, application Germany, Jan. 20, 1996, 196 02 085.9

Int. Cl.[6] H05B *1/02*

U.S. Cl. 219—497 10 Claims



1. A method of providing a comfortable temperature in an area occupied by any person (15) in a room (12) of low temperature, by means of a radiator (18), comprising:

a) continuously measuring the temperature of the surroundings of the radiator (18) outside of the field of radiation of the radiator (18),

b) calculating a required irradiation of said area from said temperature by an electronic unit (21),

c) measuring the distance(A) between said area and said radiator (18), and

d) providing such power in the radiator (18) as is required by the calculated irradiation and the measured distance (A).

5,798,504

LENGTH-ADJUSTABLE ELECTRICAL SLEEVE HEATER

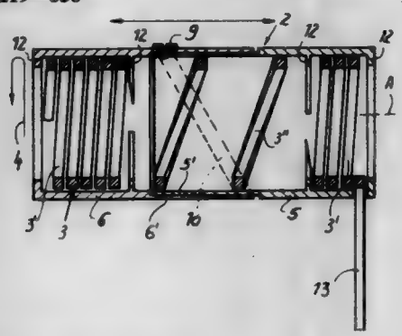
Eugen Schwarzkopf, Lüdenscheid, Germany, assignor to Hotset Seizpatronen U. Zubehor GmbH, Ludenscheid, Germany

Filed Sep. 27, 1996, Ser. No. 724,013

Claims priority, application Germany, Oct. 13, 1995, 19538205.6

Int. Cl.[6] H05B *3/02;3/58;* F16L *13/02;15/02*

U.S. Cl. 219—550 9 Claims



1. A sleeve heater comprising:

a pair of end tubes centered on a common axis and having axially confronting and spaced inner ends;

an electrically resistive helicoidal heating coil centered on the axis and having a pair of end sections of relatively shallow pitch in the end tubes and a center section of relatively steep pitch between the inner ends; and

at least one tubular center tube coupled to the end tubes at the inner ends thereof and axially and angularly slidable on at least one of the end tubes, whereby the length of the heater can be adjusted.

5,798,505

MICROWAVE OVEN WITH UPWARDLY DIRECTED AIR DISCHARGE DUCT

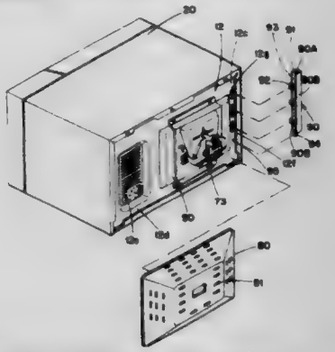
Jeong Hee Lee, Euiwang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 26, 1996, Ser. No. 721,541

Claims priority, application Rep. of Korea, Oct. 7, 1995, 1995-28066

Int. Cl.[6] H05B *6/80;* F24C *1/02*

U.S. Cl. 219—681 2 Claims



1. A convection microwave oven comprising:

a housing including first and second housing side walls and a housing rear wall arranged to form a cooking chamber, the housing forming an electric component compartment arranged along an outer surface of the first housing side wall;

a magnetron arranged in the electric component compartment for generating microwaves to be supplied to the cooking chamber;

an air exhaust passage arranged along an outer surface of the second housing side wall to exhaust air through a vertical row of exhaust holes disposed in the housing rear wall, the housing rear wall including slits formed on opposite sides of the vertical row of exhaust holes;

an electric heater disposed in the cooking chamber;

a duct spaced behind the housing rear wall to form therewith a hot air chamber;

a first fan disposed in the hot air chamber for circulating hot air to the cooking chamber;

a protective cover spaced behind the duct to form therewith a cooling chamber;

a motor and second fan disposed in the cooling chamber for circulating cooling air through vents formed in the protective cover; and

a vertical duct of generally U-shaped cross section including a duct rear wall and a pair of duct side walls protecting forwardly from the duct rear wall, each duct side wall including a vertical edge from which vertically spaced hooks project, the hooks removably inserted in respective ones of the slits, whereby the vertical duct encompasses the exhaust holes, the vertical duct being closed at a bottom end thereof and open at an upper end thereof for directing exhaust air from the exhaust holes upwardly through the open upper end.

5,798,506

MEMORY CARD AND A METHOD FOR MAKING MORE RELIABLE A REQUEST FOR ACCESS TO AN APPLICATION

Fabien Thiriet, Orleans, France, assignor to Solaic, Puteaux, France

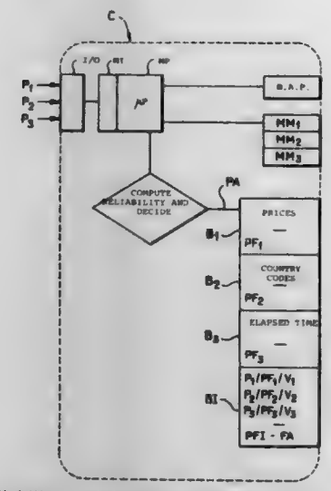
Filed Mar. 26, 1996, Ser. No. 621,609

Claims priority, application France, Mar. 31, 1995, 95 03837

Int. Cl.[6] G06K *19/067*

U.S. Cl. 235—379 9 Claims

1. A memory card including a main microprocessor associated with an input/output block and with memory blocks, wherein at least one of the memory blocks contained reliability parameters and respective reliability weights for said parameters, a series of



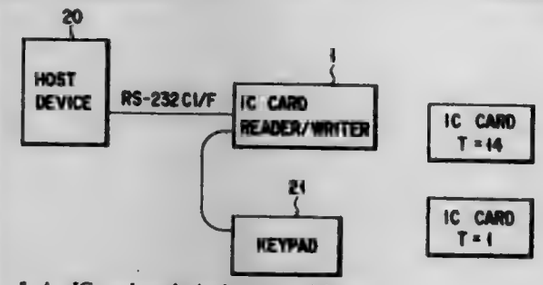
values of reliability weights being assigned for each reliability parameter according to corresponding values of said parameter.

5,798,507

IC CARD READER/WRITER

Toshiyuki Kawagishi, Tokyo, and Youko Kondou, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 20, 1996, Ser. No. 603,207
Claims priority, application Japan, Feb. 20, 1995, 7-030712
Int. Cl.[6] G06K *5/00*
U.S. Cl. 235—380 **13 Claims**



1. An IC card reader/writer comprising:

receiving means for receiving a command from a host device, said command containing protocol information corresponding to a particular one of various protocols that differ from each other;

analyzing means for analyzing the command received by said receiving means;

setting means for setting a protocol for communication with an IC card in accordance with the protocol information contained in the command analyzed by said analyzing means; and

communication means for communicating with said IC card based on the protocol set by said setting means.

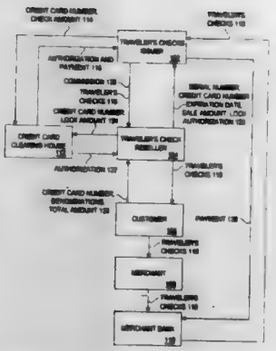
5,798,508

POSTPAID TRAVELER'S CHECKS

Jay S. Walker, Ridgefield, and T. Scott Case, Darien, both of Conn., assignors to Walker Asset Management, L.P., Stamford, Conn.

Filed Dec. 9, 1996, Ser. No. 762,128
Int. Cl.[6] G06F *15/30;* **G06K** *5/00*
U.S. Cl. 235—380 **44 Claims**

1. A method of issuing traveler's checks by a traveler's check seller comprising the steps of:



distributing a plurality of traveler's checks, a face value corresponding to each of said plurality of traveler's checks, said plurality of traveler's checks having a total monetary value;

receiving an account identifier identifying an account;

processing a lock against the account for a lock value based on the total monetary value; and

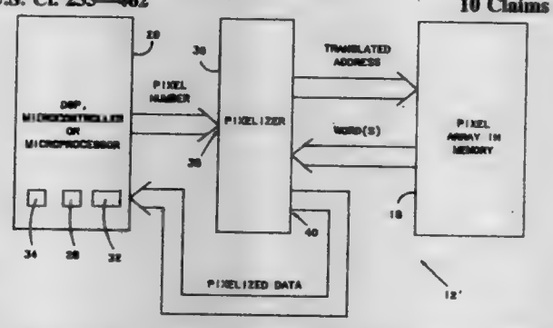
decreasing the lock value placed against the account, the step of decreasing based on said face value of each of said plurality of traveler's checks.

5,798,509

SCANNER WITH DIRECT PIXEL ACCESSING FROM MULTIPLE PIXEL MEMORY ARRAY

Paul S. Swanson, Colorado Springs, Colo.; William M. McDonald, Lake Stevens, and Kenneth L. Coffman, Mount Vernon, both of Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Jan. 2, 1996, Ser. No. 581,829
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—462 **10 Claims**



1. Apparatus for scanning a field of view for two-dimensional data and for rapidly processing the data comprising:

a) a video device viewing the field of view and producing a two-dimensional matrix of pixel data as an output representing a plurality of pixel positions of the field of view;

b) a digital memory receiving and holding said two-dimensional matrix of pixel data output from said video device in a plurality of multiple pixel data words;

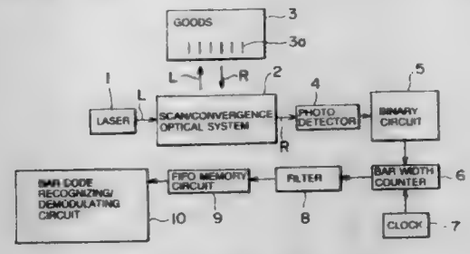
c) a digital processor including a register for receiving pixel data and logic for processing data; and,

d) logic and associated circuitry connected between said digital memory and said digital processor for removing data associated with a specified pixel position within the field of view from an associated one of said plurality of multiple pixel data words in said digital memory and for placing said data into a pre-established bit position within said register of said digital processor.

5,798,510
APPARATUS FOR AND METHOD OF READING A BAR CODE

Mitsuo Watanabe; Shinichi Sato; Isao Iwaguchi, and Ichiro Shinoda, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 28, 1996, Ser. No. 654,417
Claims priority, application Japan, Sep. 14, 1995, 7-237326
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—462 **8 Claims**



1. An apparatus for reading a bar code, comprising:

bright/dark pattern detecting means for scanning a bar code interposed between a first bar and a second bar and detecting a bright/dark pattern along a scan trajectory thereof;

overlapped portion determining means for determining whether an overlapped portion having the same content is contained in each of a first bright/dark pattern and a second bright/dark pattern when said bright/dark pattern detecting means detects the first bright/dark pattern along the scan trajectory that passes through not the second bar but the first bar, and the second bright/dark pattern along the scan trajectory that passes through not the first bar but the second bar;

joining means for joining the first bright/dark pattern and the second bright/dark pattern when said overlapped portion determining means determines that the overlapped portion is contained in each of the first bright/dark pattern and the second bright/dark pattern; and

number-of-characters specifying means for specifying the number of characters of the bar code to be read,

wherein said overlapped portion determining means comprises:

total sum calculating means for calculating a total sum of the number of characters of the first bright/dark pattern and the number of characters of the second bright/dark pattern;

number-of-digits-of-joined-data setting means for setting the minimum number of digits of joined data that corresponds to the number of characters, specified by said number-of-characters specifying means; and

comparing means for comparing the minimum number of digits of joined data that is set by said number-of-digits-of-joined data setting means with the total sum calculated by said total sum calculating means, and

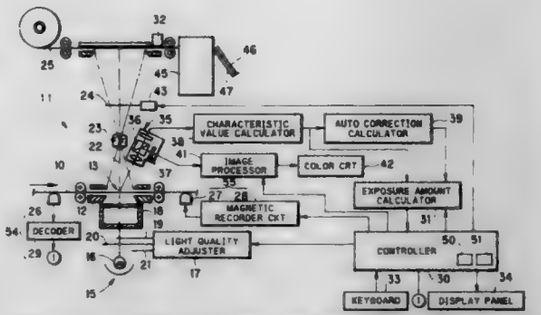
wherein said overlapped portion determining means makes the determination only when the total sum exceeds the minimum number of digits of joined data.

5,798,511
PHOTOGRAPHIC PRINTER AND PRINTING METHOD

Takaaki Terashita, Kanagawa, Japan, assignor to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Jul. 26, 1996, Ser. No. 686,533
Claims priority, application Japan, Jul. 28, 1995, 7-193727
Int. Cl.[6] G05K *7/10*
U.S. Cl. 235—462 **26 Claims**

1. A photographic printing method, in which a second printing operation is effected for one original frame on a developed photo film after effecting a first printing operation, first correcting information being used in said first printing operation for correcting an exposure amount of said original frame, said photographic printing method comprising steps of:



predetermining first and second equipment information associated respectively with said first and second printing operations, said first and second equipment information representing an ID of each photographic printer for effecting said first and second printing operation, or representing an ID of a printer group to which said each photographic printer belongs;

writing said first correcting information of said original frame and said first equipment information to information recording medium in said first printing operation, said recording medium being combined with said photo film;

reading said first correcting information of said original frame and said first equipment information from said recording medium before said second printing operation;

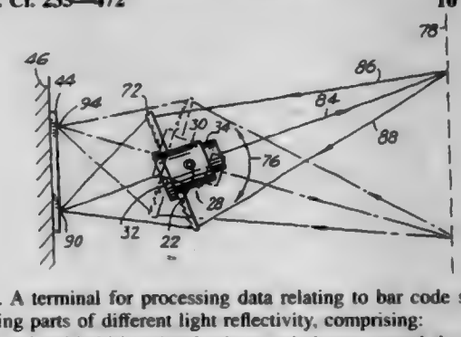
determining whether said first equipment information coincides with said second equipment information; and

if said first equipment information coincides with said second equipment information, then effecting said second printing operation of said original frame by use of said first correcting information.

5,798,512
HAND-HELD TERMINAL WITH MOVABLE WINDOW

Mark J. Krichever, Hauppauge; Boris Metlitsky, Stony Brook; Edward D. Barkan, South Setauket; Howard M. Shepard, Great River, and Jerome Swartz, Old Field, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Division of Ser. No. 592,071, Jan. 26, 1996, Pat. No. 5,583,332, which is a continuation of Ser. No. 400,616, Mar. 8, 1995, Pat. No. 5,525,791, which is a division of Ser. No. 181,925, Jan. 14, 1994, Pat. No. 5,367,152, which is a continuation of Ser. No. 092,851, Jul. 19, 1993, abandoned, which is a division of Ser. No. 823,588, Jan. 17, 1992, Pat. No. 5,254,844, which is a continuation of Ser. No. 626,612, Dec. 7, 1990, abandoned, which is a continuation of Ser. No. 193,265, May 11, 1988, Pat. No. 5,144,120. This application Oct. 8, 1996, Ser. No. 727,782
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—472 **10 Claims**



1. A terminal for processing data relating to bar code symbols having parts of different light reflectivity, comprising:

a) a hand-held housing having a window mounted thereon for movement relative to the housing between a plurality of fixed positions;

b) a laser diode within the housing for generating a laser beam;

c) an optical component within the housing for optically modifying and directing the laser beam along a transmission path through the window in a selected one of the fixed positions;

d) a drive for jointly oscillating the diode and the optical component to sweep the modified laser beam across a symbol located externally of the housing;

e) a photodetector within the housing for sensing light reflected from the symbol along a return path, and for generating an electrical signal indicative of the detected light intensity;

f) a reflector mounted in both the transmission and return paths for reflecting the laser beam from the diode through the window, and for reflecting the reflected light to the photodetector;

g) a keyboard on the housing for manually entering data relating to the symbol; and

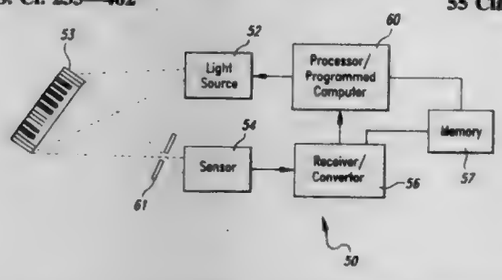
h) a display on the housing for visually displaying data relating to the symbol.

5,798,513

METHOD AND APPARATUS FOR DECODING UNRESOLVED PROFILES PRODUCED FROM RELIEF FORMED SYMBOLS

H. Sprague Ackley, Seattle, Wash., assignor to Intermec Corporation, Everett, Wash.

Filed Dec. 3, 1996, Ser. No. 759,787
Int. Cl.[6] G06K *7/10*
U.S. Cl. 235—462 **55 Claims**



1. A method of decoding a bar code symbol representing encoded information and formed as a relief pattern, the bar code symbol including a plurality of relatively spaced bars having at least first, second and third widths, and spaces between the bars having at least first, second and third widths, the second and third widths being greater than the first width, the bars differing in height from the spaces, the method comprising the steps of:

receiving light reflected from the bar code symbol and producing an output signal therefrom that represents the relative heights of the bars and spaces comprising the bar code symbol;

receiving the output signal and producing a wide feature signal resolving the bars and spaces having the second and third widths, but the wide feature signal failing to resolve at least some of the bars and spaces having the first width;

receiving the wide feature signal and determining which of the bars and spaces are resolved by defining at least one threshold and identifying a plurality of portions in the wide feature signal that extend beyond the threshold, each of the plurality of portions corresponding to one of the resolved bars and spaces;

measuring distances between the plurality of portions in the wide feature signal;

determining a narrow width of the bars and spaces having the first width based on the distances measured;

determining a number and location of the bars and spaces having the first width based on the determined width and the distances measured; and

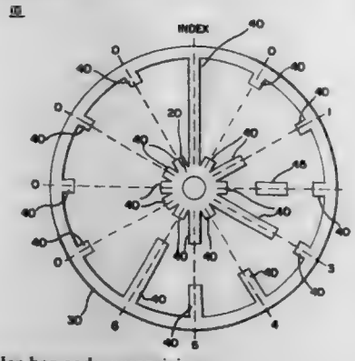
determining the information encoded as the relief pattern in the bar code symbol based on the determined number and location of bars and spaces having the first width.

5,798,514

CIRCULAR BAR CODE

Richard A. Domanik, Libertyville, Ill., assignor to AccuMed Inc., Chicago, Ill.

Filed Jan. 11, 1996, Ser. No. 584,287
Int. Cl.[6] G06K *7/10;19/06*
U.S. Cl. 235—464 **20 Claims**



1. A circular bar code comprising:

an outer ring;

a plurality of first teeth, each first tooth directed radially inward from said outer ring and defining a radial position at which information is encoded;

an inner ring; and

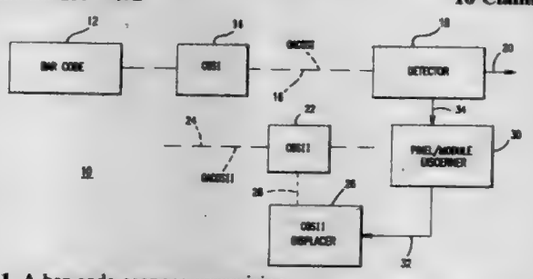
a plurality of second teeth, each second tooth directed radially outward from said inner ring and opposing a corresponding one of said first teeth, wherein the information is encoded based on subdivisions of a gap between opposing first and second teeth.

5,798,515

OPTICAL SCANNER WITH FAST ZOOM CAPABILITY AND SCANNING SYSTEM

Yajun Li, Oakdale, and Edward Barkan, Miller Place, both of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Apr. 3, 1996, Ser. No. 627,168
Int. Cl.[6] G06G *7/10*
U.S. Cl. 235—472 **16 Claims**



1. A bar code scanner comprising:

(a) a first collection optical system having a first collection optical axis and a first magnification;

(b) an optical detector disposed along said first collection optical axis and in optical communication with said first collection optical system;

(c) a second collection optical system having a second magnification greater than said first magnification and having a second collection optical axis; and

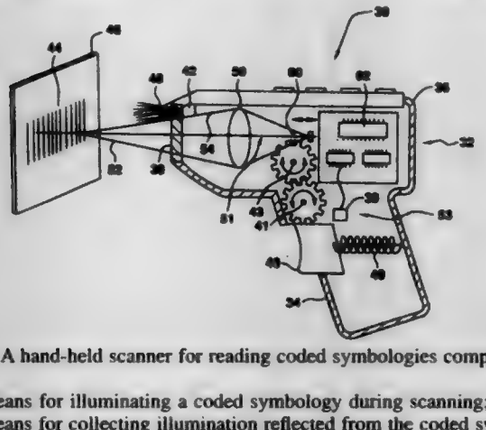
(d) an automatic insertion mechanism operable for selectively inserting said second collection optical system along a direction normal to said first collection optical axis to dispose said second collection optical axis thereof in coincidence with said first collection optical axis of said first collection optical system, wherein activation of said insertion mechanism is dependent upon an output of the detector and a combination of said first and said second collection optical systems produces a required system magnification for discerning a bar code image on the optical detector.

5,798,516

FOCUSING MECHANISM FOR HAND-HELD CCD SCANNERS

Vasanth Shreesha, Quakertown, Pa., assignor to Accu-Sort Systems, Inc., Telford, Pa.

Filed May 28, 1996, Ser. No. 654,189
Int. Cl.[6] G06K 7/10
U.S. Cl. 235—472 20 Claims



1. A hand-held scanner for reading coded symbologies comprising:

means for illuminating a coded symbology during scanning;

means for collecting illumination reflected from the coded symbology, the collection means including a lens and a detector means which are positioned in a variable spatial relationship relative to each other; and

means for varying the spatial relationship between the lens and detector means during the scanning to establish multiple depths of field,

said varying means including trigger means constructed and arranged so as to be manually squeezed and depressed, and

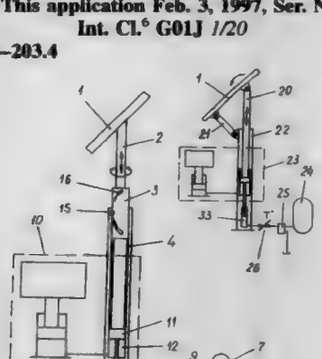
means mechanically linking said trigger means to said lens or detector means, whereby movement of the trigger is translated to said lens or detector means so as to vary said spatial relationship in response to said trigger means being manually squeezed and depressed.

5,798,517

SUN TRACKER SYSTEM FOR A SOLAR ASSEMBLY

Alexander Berger, Konigsbergerstrasse 196, D-7500 Karlsruhe 1, Germany

Division of Ser. No. 244,125, May 19, 1994, Pat. No. 5,600,124. This application Feb. 3, 1997, Ser. No. 792,785
Int. Cl.[6] G01J 1/20
U.S. Cl. 250—203.4 21 Claims



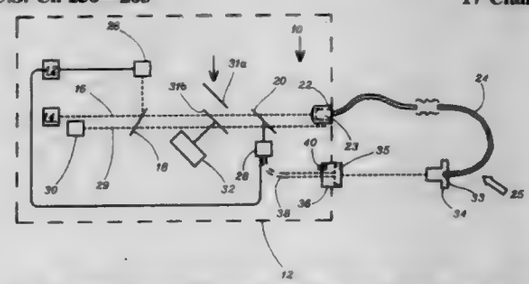
1. Azimuthal sun tracker system working according to the gravitational force principle for a solar assembly with a rotary pole carrying the solar assembly being supported by a first chamber of variable volume including a single-acting regulating cylinder, and the fluid contained in the chamber being displaced from the chamber by the effect of the dead load force of the solar assembly and of said rotary pole, causing said rotary pole to sink and being tracked according to the course of the sun by interaction of a guide element, with a complementary guide groove, said rotary pole being supported on an additional power block, carrying the main part of the weight of the solar assembly and of said rotary pole, and said power block stores energy during the sinking of the solar assembly for reuse during lifting.

5,798,518

MEDICAL LASER CALIBRATION SYSTEM AND METHOD

Tony D. Coleman, San Jose, and Scott A. Davenport, Half Moon Bay, both of Calif., assignors to Laserscope, San Jose, Calif.

Filed Jul. 28, 1995, Ser. No. 508,518
Int. Cl.[6] G01J 1/32; A61B 17/36
U.S. Cl. 250—205 17 Claims



1. A laser calibration system for a medical laser, the medical laser having a radiation detector for assisting in setting output levels of a laser light source and a safety detector for detecting overload conditions, the laser calibration system comprising:

(a) an output port affixed to the medical laser;

(b) an optical fiber removably attachable to the output port for transmitting the output of the medical laser therethrough;

(c) an input port for accepting the output of the fiber optic cable back into the medical laser;

(d) a light transmission means for transmitting the output of the fiber optic cable from the input port to a calibration detector;

(e) a beam splitter disposed to direct a portion of the output of the laser light source to the safety detector;

(f) during calibration the safety detector records readings which are in substantial excess of the readings at the safety detector during normal operation of the medical laser;

(g) said safety detector includes a safety shutter; and

(h) means for preventing said safety shutter from operating during calibration such that operation of the medical laser will not be terminated due to the substantially higher readings obtained by the safety detector during calibration.

5,798,519

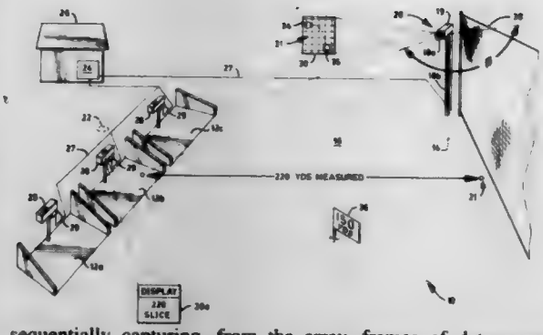
METHOD OF AND APPARATUS FOR GOLF DRIVING RANGE DISTANCING USING FOCAL PLANE ARRAY

Curtis A. Vock, Salem; Kevin J. Grealish, Westwood; Robert D. Frey, Bolton; Dennis Darcy, Dracut, all of Mass., and Joseph Bianco, Deep River, Conn., assignors to Golf Age Technologies, Inc., Westwood, Mass.

Filed Feb. 12, 1997, Ser. No. 800,203
Int. Cl.[6] G01C 21/02; A63B 69/36
U.S. Cl. 250—206.1 24 Claims

1. A method for tracking golf balls within a driving range, the driving range being of the type having a fairway for driving balls therein and a plurality of tee-off positions adjacent to the fairway, comprising:

imaging a portion of the fairway and at least one tee-off position onto a solid-state detector focal plane array with a plurality of detectors;



sequentially capturing, from the array, frames of data corresponding to an image of the fairway and position on the detectors;

detecting each moving golf ball within the frames by determining frame-to-frame movement of an image of the golf ball through one or more detectors; and

tracking the golf ball motion to determine a distance traveled for each golf ball originating from the tee-off position.

5,798,520

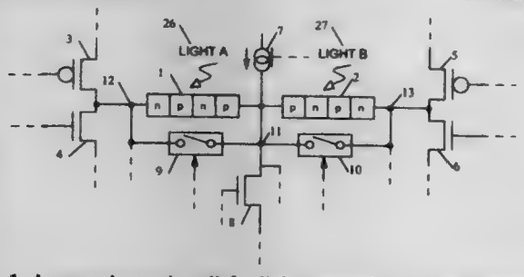
CELL FOR OPTICAL-TO-ELECTRICAL SIGNAL CONVERSION AND AMPLIFICATION, AND OPERATION METHOD THEREOF

Maarten Kuijk, Berchem; Paul Heremans, Leuven; Gustaaf Borghs, Kessel-Lo, and Roger Vounckx, Schaarbeek, all of Belgium, assignors to IMEC vzw, Leuven, Belgium

Continuation-in-part of Ser. No. 692,919, Jul. 31, 1996, abandoned. This application Dec. 30, 1996, Ser. No. 774,522

Int. Cl.[6] **H01J** *31/50;* **H04B** *10/00*

U.S. Cl. 250—214 A **36 Claims**



1. An optoelectronic cell for light conversion and amplification comprising:

a plurality of circuits, each of said circuits including:

a device with S-shaped current-voltage characteristics and having a first and a second terminal;

means for applying an injection current and an extraction current on said device, said means for applying being connected to said first terminal of said device; and

essentially each of said circuits being connected at a competition node connecting essentially each of said second terminals of the devices.

5,798,521

APPARATUS AND METHOD FOR MEASURING STRAIN IN BRAGG GRATINGS

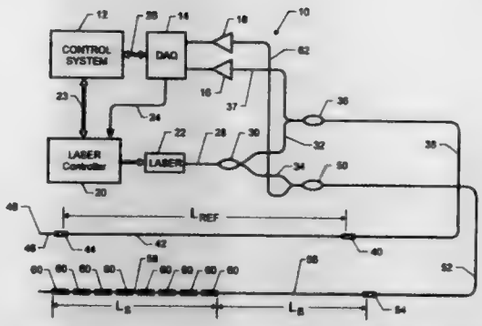
Mark E. Froggatt, Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 27, 1997, Ser. No. 806,732

Int. Cl.[6] **H01J** *5/16*

U.S. Cl. 250—227.19 **30 Claims**

1. A method for measuring strain of gratings written in an optical fiber comprising the steps of:



a) providing a reference optical fiber network having a reference optical fiber;

b) transmitting optical radiation over a plurality of contiguous predetermined wavelength ranges into the reference optical fibef network and an optical fiber network under test, the optical fiber network under test including a reflector and a sensing optical fiber having a plurality of gratings written thereon, the transmission of optical radiation over each wavelength range into the reference optical fiber network and the optical fiber network under test producing a plurality of reference interference fringes and measurement interference fringes, respectively;

c) detecting the reference and measurement interference fringes;

d) sampling the detected reference and measurement interference fringes such that each sampled value of the reference and measurement interference fringes is associated with a corresponding sample number;

e) determining for each sample number the wavelength change of the reference optical fiber due to the wavelength of the optical radiation;

f) matching each wavelength change determined in step (e) with a corresponding sampled value of each measurement interference fringe;

g) transforming each sampled measurement interference fringe into a spatial domain waveform such that each spatial domain waveform corresponds to one of the contiguous predetermined wavelength ranges;

h) summing the spatial domain waveforms to form a summation spatial domain waveform;

i) determining from the summation spatial domain waveform the location of each grating with respect to the reflector of the optical fiber network under test;

j) determining from each spatial domain waveform of transforming step (g) a portion of the spatial domain waveform corresponding to a particular grating;

k) transforming each portion determined in step (j) into a corresponding frequency spectrum representation; and

l) determining the strain on the grating at each wavelength of optical radiation by determining the difference between the current wavelength and an earlier, zero-strain wavelength measurement.

5,798,522

METHOD OF DRIVING A CASSETTE SCANNING SYSTEM

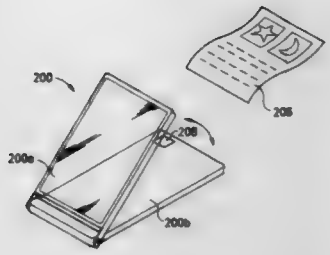
John Lin, Hsinchu, Taiwan, assignor to Mustek Systems Inc., Hsinchu, Taiwan

Filed Apr. 3, 1997, Ser. No. 828,809

Int. Cl.[6] **H01L** *27/00*

U.S. Cl. 250—234 **10 Claims**

1. A method for driving a scanning system, said scanning system having a document holder to hold a document, wherein said document holder having an opening for feeding said document into said document holder and said document holder can be fed into said scanning system, a first sensor being set in said scanning system to detect said document holder, a second sensor being set in said scanning system for detecting said document, a recognition



region being formed on said document holder to recognize that said document being inside said document, said method comprising the steps of:

feeding said document holder into said scanning system; and

detecting said document holder by using said first sensor and detecting said document by using said second sensor, simultaneously, an image capturing element being responsive to a signal of said first sensor and said second sensor to capture the image of said document.

5,798,523

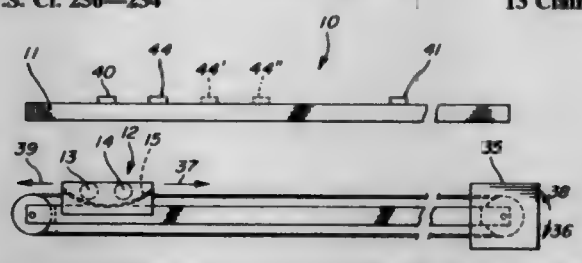
IRRADIATING APPARATUS USING A SCANNING LIGHT SOURCE FOR PHOTODYNAMIC TREATMENT

Luc Villeneuve, Montréal; Gérard Miller; Robert Bernier, both of Dorval; Claude Laurendeau, Boucherville, all of Canada, and Prabir Kumar Pal, Calcutta, India, assignors to Theratechnologies Inc., Montreal, Canada

Filed Jul. 19, 1996, Ser. No. 685,598

Int. Cl.[6] A61N *5/01;5/06*

U.S. Cl. 250—234 **13 Claims**



1. An apparatus for homogeneously irradiating cells contained in a living biological substance, comprising:

a radiation-generating device for producing a substantially constant radiation along a given axis;

a motorized mechanism for reciprocating at generally constant speed the radiation-generating device along a given path angularly spaced apart from said given axis, the living biological substance being placed along the given path to receive radiation energy from the radiation-generating device as said radiation-generating device reciprocates;

stationary radiation sensor means exposed to radiation energy from the reciprocating radiation-generating device upon each passage of said reciprocating radiation-generating device for sensing and measuring the quantity of radiation energy reaching the living biological substance; and

means for de-energizing the radiation-generating device and the motorized mechanism when the measured quantity of radiation energy has reached a predetermined value.

5,798,524

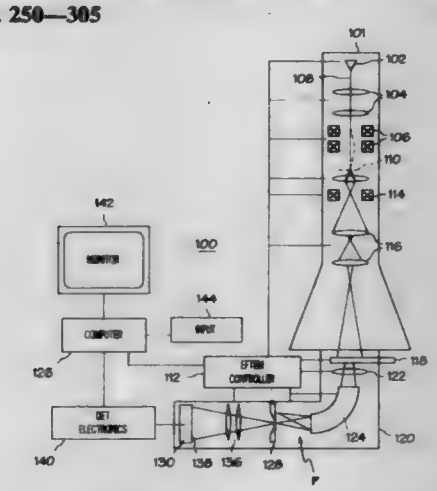
AUTOMATED ADJUSTMENT OF AN ENERGY FILTERING TRANSMISSION ELECTRON MICROSCOPE

Michael Karl Kundmann, Downers Grove, Ill.; Alexander Jozef Gubbens, Walnut Creek; Stuart Lawrence Friedman, Palo Alto, both of Calif., and Ondrej L. Krivanek, Herts, England, assignors to Gatan, Inc., Pleasanton, Calif.

Filed Aug. 7, 1996, Ser. No. 684,973

Int. Cl.[6] H01J *47/00*

U.S. Cl. 250—305 **25 Claims**



21. An energy filtering transmission electron microscope system including a transmission electron microscope and an associated energy filter, said system comprising:

an entrance aperture assembly for selectively inserting a mask of known geometry and dimensions and defining known positions into an electron beam entering said energy filter;

an energy-selecting slit assembly for defining a slit opening within said energy filter;

a beam detector assembly for detecting electron images produced by said energy filtering transmission electron microscope system;

electron optics; and

a computer coupled to said energy filter and said transmission electron microscope for controlling said microscope, said entrance aperture assembly, said energy-selecting slit, said beam detector assembly and said electron optics to automatically adjust said energy filtering transmission electron microscope system.

5,798,525

X-RAY ENHANCED SEM CRITICAL DIMENSION MEASUREMENT

Peter Benizri-Carl, Alzey; Wolfgang Egert, Bodenheim; Manfred Jung, Limburg, all of Germany, and Theodore Gerard van Kessel, Millbrook, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 26, 1996, Ser. No. 670,484

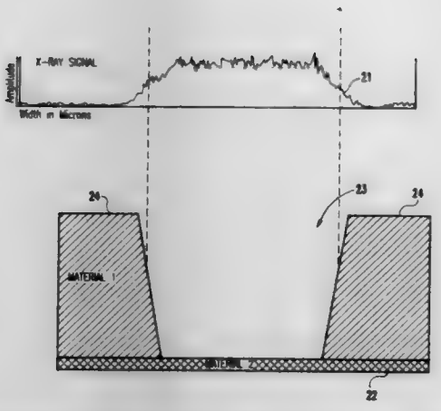
Int. Cl.[6] H01J *37/252*

U.S. Cl. 250—310 **6 Claims**

1. A method of measuring the lateral dimension of a structure where said structure is composed of at least two atomically different materials comprising the steps of:

scanning an electron beam across a feature to be measured, said electron having a primary beam energy sufficient to excite flourescent X-rays characteristic of one of the at least two atomically different materials and having a lateral beam dimension that is sufficiently small compared to the lateral dimension of the feature being measured;

detecting, counting and recording a counted number of characteristic X-rays so produced against a known position of the electron beam; and



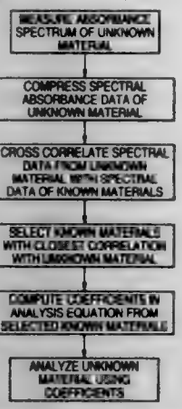
analyzing the recorded X-ray counts versus beam position to determine the width dimension of the feature.

5,798,526

CALIBRATION SYSTEM FOR SPECTROGRAPHIC ANALYZING INSTRUMENTS

John S. Shenk, Port Matilda, and Mark O. Westerhaus, State College, both of Pa., assignors to Infrasoft International LLC, Port Matilda, Pa.

Filed Jan. 24, 1997, Ser. No. 788,259
Int. Cl.[6] G01J *3/02*
U.S. Cl. 250—339.09 **11 Claims**



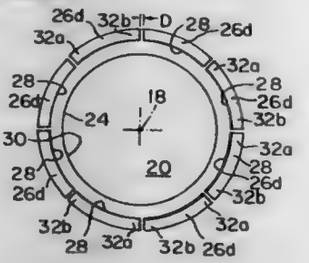
1. A method of analyzing an unknown material to measure at least one measurable characteristic of said material comprising storing a library of a multiplicity of spectra obtained from the reflectance or transmittance of a multiplicity of sample materials in each of which the value of said measurable characteristic is known, measuring a target spectrum obtained from the transmittance or reflectance of said unknown material, selecting a subset of spectra from said multiplicity which most closely match said target spectrum, determining coefficients of at least one equation which relates said measurable characteristic to values in the target spectrum, said coefficients being determined from said subset of spectra and the known values of said measurable characteristic in said sample materials corresponding respectively to said spectra of said subset, and calculating said measurable characteristic of said unknown material from said coefficients and said target spectrum in accordance with said equation.

5,798,527

TOMOGRAPHIC EMISSION SCANNER HAVING CURVED ELEMENT DETECTORS

Gerd Muehllehner, and Michael Geagan, both of Wayne, Pa., assignors to UGM Laboratory, Inc., Philadelphia, Pa.

Filed Oct. 21, 1996, Ser. No. 734,283
Int. Cl.[6] G01T *1/161;1/202*
U.S. Cl. 250—363.03 **10 Claims**



1. A positron emission coincidence detection scanner comprising:

a detection chamber having an axial center line and an axial periphery; and

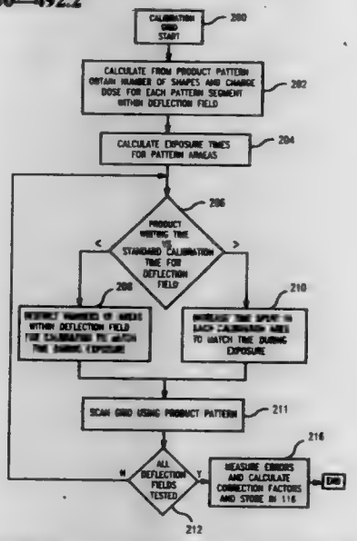
a plurality of single element non-collimated positron emission detector units positioned around the axial periphery of the detection chamber, each detector unit including a single detecting element having a detection face oriented toward the detection chamber, the detection face of each detecting element being curved along the axial periphery of the detection chamber.

5,798,528

CORRECTION OF PATTERN DEPENDENT POSITION ERRORS IN ELECTRON BEAM LITHOGRAPHY

Rainer Butsch, Fairport; John George Hartley, Fishkill, both of N.Y., and Werner Stickel, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 11, 1997, Ser. No. 814,211
Int. Cl.[6] H01J *37/304*
U.S. Cl. 250—492.2 **21 Claims**



1. A method for correcting for electron-beam apparatus errors by improving the process used to calibrate an electron-beam apparatus which apparatus is used to make product pattern masks comprising:

preparing a first calibration plate having a number of fields on a substrate with registration marks in each field;

mounting the first calibration plate on an X/Y stepping fixture;

registering the first calibration plate by scanning the electron beam across the field;

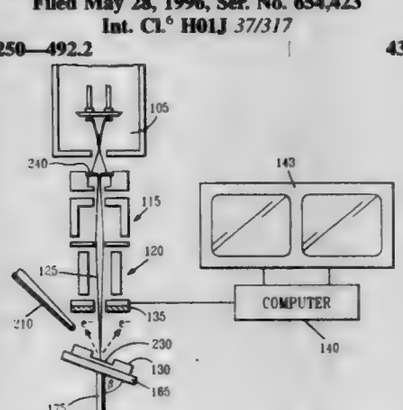
exposing the plate with the product pattern;
stepping the plate to the next field using the sequence for exposure of the product pattern;
repeating the above procedure for all the fields of the product pattern;
registering the first calibration plate by scanning the electron beam across the field;
exposing the plate with an L pattern using the stepping procedure of the product pattern;
stepping the plate to the next field using the product pattern stepping sequence;
repeating the above for all the fields of the product pattern;
measuring the errors for each registration procedure;
determining first calibration plate correction errors based on the measured errors of the first calibration plate;
storing the correction data generated by calibration of the first calibration plate;
preparing a second calibration grid having fields and subfields defined by metal lines on a silicon substrate in the form of a grid;
mounting the grid on an X/Y stepping fixture;
calculating product pattern data for subfields of the grid based on the product pattern;
calculating subfield exposure times based on the product pattern;
comparing the product writing time and the standard calibration time subfield by subfield;
adjusting the exposure time for each subfield to correspond to the product exposure time for that subfield;
exposing the grid using the same exposure times as for the product pattern;
measuring the errors for each subfield;
determining if all the product pattern fields have been tested;
determining second correction errors based on the measured errors of the second calibration grid;
storing the second calibration grid correction data; and
creating a mask based on the product pattern and first and second correction error data.

5,798,529

FOCUSED ION BEAM METROLOGY

Alfred Wagner, Brewster, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1996, Ser. No. 654,423
Int. Cl.[6] H01J *37/317*
U.S. Cl. 250—492.2 **43 Claims**



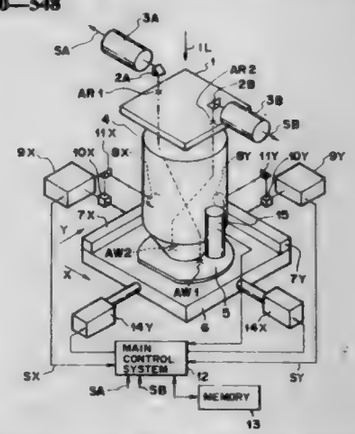
1. A focused ion beam metrology device comprising:
a focused ion beam source which produces low intensity focused ion beams directed to a semiconductor device having features thereon;
a detector which detects electrons or ions emitted from said semiconductor device;
a processor which receives data from said detector and measures dimensions of said features from said data;
a discharge device which introduces an etch-enhancing material toward said semiconductor device; and
a control device connected to said ion beam device to vary intensity of said focused ion beams for generating high intensity focused ion beams to etch said semiconductor device;
said etch-enhancing material being one of H_2O gas, H_2O_2 gas, and a combination of said two gases.

5,798,530

METHOD AND APPARATUS FOR ALIGNING A MASK AND A SET OF SUBSTRATES TO BE EXPOSED

Masahiko Okumura, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 351,568, Dec. 7, 1994, abandoned, which is a continuation of Ser. No. 158,984, Nov. 30, 1993, abandoned. This application Oct. 15, 1996, Ser. No. 729,938
Claims priority, application Japan, Nov. 30, 1992, 4-319979
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—548 **22 Claims**



1. An exposure method using a projection exposure apparatus including a projection optical system for projecting a pattern formed on a mask onto a substrate, a substrate stage holding the substrate and capable of moving within a plane substantially perpendicular to an optical axis of said projection optical system, a mask stage holding the mask, and a sensor for detecting a relative position of said substrate stage and said mask stage in a direction perpendicular to said optical axis, comprising:
the first step of detecting a positional shift amount in said direction of a mark on a first substrate with respect to a mark on the mask through said projection optical system;
the second step of detecting an output signal of said sensor while said relative position is changing so that said positional shift amount is cancelled;
the third step of detecting a position of a mark on a second substrate without the mediacy of the mask; and
the fourth step of aligning the second substrate in accordance with the position of the mark obtained in the third step, and adjusting the relative position of said mask and said second substrate in a direction perpendicular to said optical axis in accordance with said output signal detected in the second step when said pattern of said mask is to be projected on said second substrate.

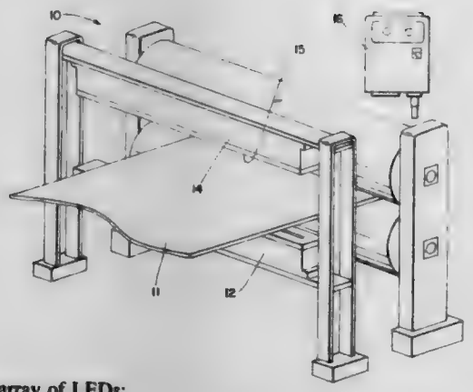
5,798,531

SYSTEM FOR DETECTING SMALL HOLES IN MOVING ARTICLES

David E. Harris, Powell, Ohio, assignor to Harris Instrument Corporation, Delaware, Ohio

Filed Jun. 10, 1996, Ser. No. 661,214
Int. Cl.[6] G01B *11/04*; **G01N** *21/00*
U.S. Cl. 250—559.03 **20 Claims**

1. A system for detecting small holes in moving sheet products, comprising:



an array of LEDs;

an array of photocells positioned directly across from said array of LEDs for detecting light emitted from said array of LEDs;

a preamplifier circuit electrically connected to said photocells;

a video processing circuit electrically connected to said preamplifier circuit for processing a video signal from said preamplifier circuit and wherein said video processing circuit outputs an appropriate video signal when a hole is detected in said moving sheet product;

a processing unit electrically connected to said video processing circuit for processing a video signal from said video processing circuit, and wherein said processing unit indicates when a hole in said moving sheet material has been detected.

5,798,532

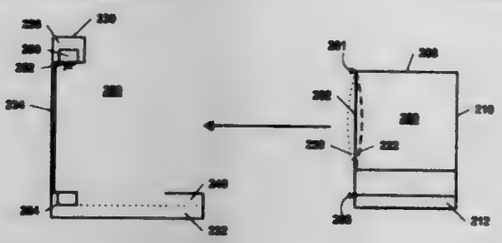
APPARATUS FOR DETERMINING WARP IN SEMICONDUCTOR WAFER CASSETTES

Daniel S. Linehan, Monterey, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Jun. 9, 1997, Ser. No. 871,543

Int. Cl.[6] G01N *21/86*

U.S. Cl. 250—559.22 **31 Claims**



1. An apparatus for measuring warp of a wafer cassette, the apparatus comprising:

a mounting structure, for securing the wafer cassette in a predetermined position;

a light transmitter, disposed at a top end of a first surface of the wafer cassette, when the wafer cassette is secured by said mounting structure, said light transmitter for transmitting a light reference along a plane substantially parallel to the first surface of the wafer cassette; and

a light receiver, disposed at a bottom end of the first surface of the wafer cassette, when the wafer cassette is secured by said mounting structure, said light receiver for receiving said light reference transmitted by said light transmitter; and

a housing, connected to said mounting structure, to said light transmitter, and to said light receiver, said housing for establishing a repeatable reference position between the wafer cassette and said light transmitter and said light receiver;

wherein measurement of light received by said light receiver from said light transmitter indicates warp on the first surface of the wafer cassette.

5,798,533

POLYOL COMPOSITIONS HAVING GOOD FLOW AND WATER BLOWN RIGID POLYURETHANE FOAMS MADE THEREBY HAVING GOOD DIMENSIONAL STABILITY

Thomas L. Fishback, Gibraltar; Curtis J. Reichel, and Thomas B. Lee, both of Southgate, all of Mich., assignors to BASF Corporation, Mt. Olive, N.J.

Continuation of Ser. No. 125,070, Sep. 22, 1993, abandoned. This application Apr. 21, 1995, Ser. No. 528,138

Int. Cl.[6] C08J *9/08;* **C08G** *18/18;18/22;18/48*

U.S. Cl. 252—182.25 **27 Claims**

1. A polyol composition comprising a polyol component, a tertiary amine blow catalyst, a tertiary amine delayed action gel catalyst, and water as the sole blowing agent, said polyol component comprising:

a) a polyoxyalkylene polyether polyol having an equivalent weight of 130 or less, and an average functionality of 3.1 or greater;

b) a polyoxyalkylene polyether polyol having an average functionality from 1.8 to less than 3.1, an equivalent weight of from greater than 130 to 1500, and a viscosity of 800 cP or less at 25° C.;

c) a polyoxyalkylene polyether polyol having an average functionality of greater than 3.1 and an equivalent weight of greater than 130,

wherein the combined amount of said blow catalyst and said delayed action gel catalyst is from greater than 0.4 pbw to 4.0 pbw based on 100 pbw of the polyol component.

5,798,534

MANUFACTURE OF ELECTRONIC DEVICES COMPRISING THIN-FILM CIRCUITRY

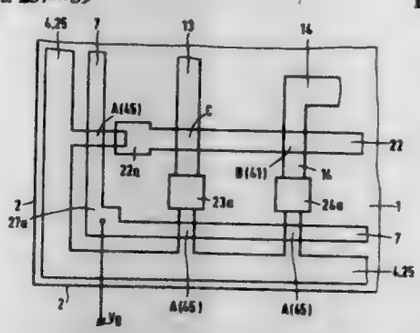
Nigel D. Young, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 8, 1995, Ser. No. 512,429

Claims priority, application United Kingdom, Aug. 20, 1994, 9416899

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—59 **12 Claims**



1. An electronic device having on an insulating substrate a plurality of thin-film circuit elements including a group of thin-film connection tracks, a group of thin-film transistors on the substrate in such an arrangement with the thin-film circuit elements that a channel region of a respective transistor provides a gateable link to a respective thin-film track of the group of tracks for connecting that thin-film track in a charge leakage path, which leakage path serves for protecting the circuit elements against a damaging electrostatic discharge, the group of transistors having a common gate line for applying a gate bias voltage to control current flow through the channel regions of the transistors, which device is characterised in that each thin-film transistor of the group is constructed, in the area of its channel region and the common gate line, with a thin-film structure suitable for rendering the transistor open-circuit by evaporation of its channel region by the application of a sufficiently high gate bias to the common gate line, wherein the thin-film structure comprises, for the transistors of the gateable links, a gate dielectric which has a smaller thickness than a thicker

insulating thin-film pattern which provides a gate dielectric of other transistors in a circuit of the device.

5,798,535

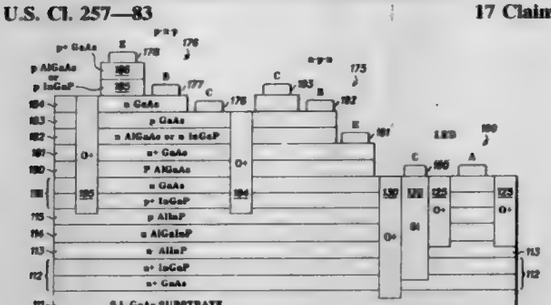
MONOLITHIC INTEGRATION OF COMPLEMENTARY TRANSISTORS AND AN LED ARRAY

Rong-Ting Huang, Gilbert; Phil Wright, Scottsdale, and Chan-Long Shieh, Paradise Valley, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 20, 1996, Ser. No. 771,763

Int. Cl.[6] H01L *27/15;31/12;33/00;31/153*

U.S. Cl. 257—83 **17 Claims**



1. Monolithic integrated transistors and a light emitting diode matrix comprising:

a semiconductor substrate;

a matrix including a plurality of light emitting diodes organized into a plurality of rows and a plurality of columns, the matrix of light emitting diodes including semiconductor material positioned on the substrate; and

a row driver including a plurality of transistors with one each transistor coupled to each row of the matrix and a column driver including a plurality of complementary transistors with one each complementary transistor coupled to each column of the matrix, so as to define a driving circuit for each light emitting diode in the matrix, each driving circuit including a transistor of the plurality of transistors coupled to a light emitting diode of the matrix coupled to a complementary transistor of the plurality of complementary transistors in series to complete a series current path the transistors and the complementary transistors each being a heterojunction bipolar transistor including semiconductor material positioned on the semiconductor material forming the matrix.

5,798,536

LIGHT-EMITTING SEMICONDUCTOR DEVICE AND METHOD FOR MANUFACTURING THE SAME

Tsuyoshi Tsutsui, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jan. 17, 1997, Ser. No. 785,037

Claims priority, application Japan, Jan. 25, 1996, 8-011224; Mar. 25, 1996, 8-068572; Apr. 30, 1996, 8-109196; May 23, 1996, 8-128764

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—99 **7 Claims**

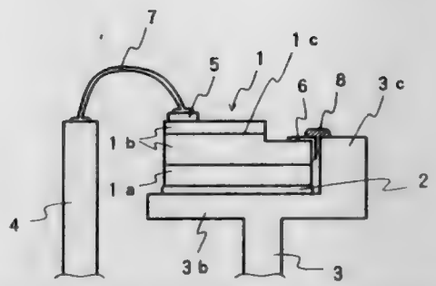
1. A light-emitting semiconductor device comprising:

a light-emitting chip having an insulator substrate and semiconductor layers made of gallium-nitride base compound semiconductor overlying said substrate, said semiconductor layers having first and second conductivity type layers, and said second conductivity type layer having an exposed surface formed by removing part of said semiconductor layers;

a top electrode formed on a surface of said first conductivity type layer;

an end electrode formed on an exposed surface of said second conductivity type layer at an end portion thereof;

a first electrode lead mounted with said light-emitting chip;



a second electrode lead extending near said first electrode lead;

a conductor wire electrically connected between said second electrode lead and said top electrode; and

wherein said end electrode and said first electrode lead are electrically connected through an electrically-conductive paste material.

5,798,537

BLUE LIGHT-EMITTING DEVICE

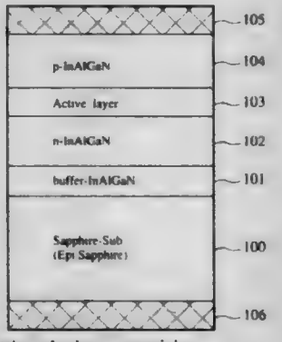
Koichi Nitta, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 29, 1996, Ser. No. 705,123

Claims priority, application Japan, Aug. 31, 1995, 7-223996

Int. Cl.[6] H01L *33/00;* **H01S** *3/18*

U.S. Cl. 257—103 **13 Claims**



1. A light emitting device comprising:

(a) a conductive sapphire substrate having a resistivity of less than 1 Ω-cm;

(b) a buffer layer formed of a first conductivity type $In_xAl_yGa_{1-x-y}N$ having mole fraction values x, y selected as $0 \leqq x \leqq 0.5$, $0.5 \leqq y \leqq 1$, $x+y \leqq 1$ formed on the top surface of said conductive sapphire substrate;

(c) a first cladding layer formed of said first conductivity type $In_xAl_yGa_{1-x-y}N$ having mole fraction values x, y selected as $0 \leqq x \leqq 0.3$, $0.1 \leqq y \leqq 1.0$ and $x+y \leqq 1$ formed on said buffer layer;

(d) an active layer formed of substantially intrinsic $In_xAl_yGa_{1-x-y}N$ having mole fraction values x, y selected as $0 \leqq x \leqq 0.6$, $0 \leqq y \leqq 0.5$, and $x+y \leqq 1$ formed on said first cladding layer;

(e) a second cladding layer formed of a second conductivity type $In_xAl_yGa_{1-x-y}N$ having mole fraction values x, y selected as $0 \leqq x \leqq 0.3$, $0.1 \leqq y \leqq 1.0$ and $x+y \leqq 1$ formed on said active layer, said second conductivity type being opposite to said first conductivity type;

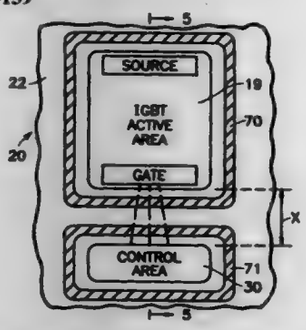
(f) a transparent electrode layer formed on said second cladding layer;

(g) a metal electrode layer formed beneath the bottom surface of said conductive sapphire substrate.

5,798,538
IGBT WITH INTEGRATED CONTROL

Bruno C. Nadd, Puyvert, France, and Niraj Ranjan, El Segundo, Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Filed Nov. 17, 1995, Ser. No. 560,328
Int. Cl.[6] H01L *29/74;23/58;31/141*
U.S. Cl. 257—139 **39 Claims**

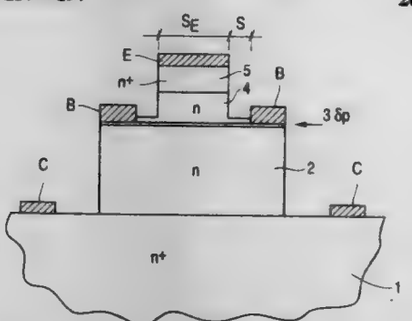


1. An insulated gate bipolar transistor and a control circuit therefor integrated into a common semiconductor chip; said semiconductor chip having a silicon substrate having a common low concentration N type region formed on a top surface thereof and a P^+ region on a bottom surface thereof; a first area of said common low concentration region having diffusion regions defining base, source and channel regions of an insulated gate bipolar transistor; a second area of said common low concentration region being laterally spaced from said first area; said second area including a P well diffusion and control circuit diffusions in said P well; and coupling means coupling said insulated gate bipolar transistor in said first area to said control circuit diffusions; and means disposed in at least a portion of a region of said common low concentration region located between said first and second areas for limiting the injection of holes from said P^+ region into said P well diffusion during the injection of holes that operates said insulated gate bipolar transistor in said first area.

5,798,539
BIPOLAR TRANSISTOR FOR VERY HIGH FREQUENCIES

Helmut Jorke, Gestetten, Germany, assignor to Daimler Benz AG, Stuttgart, Germany

Continuation of Ser. No. 448,506, Jul. 31, 1995, abandoned. This application Apr. 11, 1997, Ser. No. 838,913
Claims priority, application Germany, Dec. 10, 1992, 42 41 609.4
Int. Cl.[6] H01L *31/0328;31/0336;31/072*
U.S. Cl. 257—197 **20 Claims**

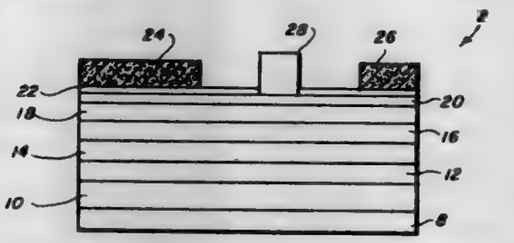


1. A bipolar transistor for very high frequencies, comprising:
an n^+-doped collector terminal layer;
a delta-p-doped base layer containing no germanium; and
a layer including a drift zone having a drift direction provided between the delta-p-doped base layer and the n^+-doped collector terminal layer,
wherein the drift zone is comprised, at least in an end region thereof adjacent to the delta-p-doped base layer, of a material having a split conduction band structure whose multiply degenerated conduction band minimum is split into at least two energetically separated conduction band minima with different anisotrophic effective masses of electrons, and
wherein an energetically deeper-lying conduction band minimum comprises electrons with a lesser effective mass which are energetically favored in the drift direction.

5,798,540
ELECTRONIC DEVICES WITH INALASSB/ALSB BARRIER

John Bradley Boos, Springfield; Walter Kruppa, Fairfax, both of Va.; Doewon Park, Greenbelt, Md., and Brian R. Bennett, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1997, Ser. No. 848,203
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—194 **12 Claims**

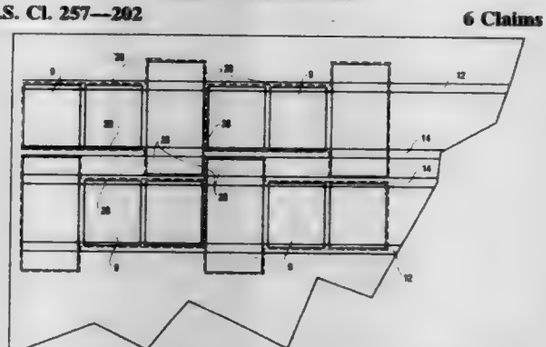


1. An electronic device comprising a first layer of a semiconducting material, a second layer of a semiconducting material, a third layer of a semiconducting material, and Schottky gate in contact with said third layer; said third layer is of a wider band gap than said first layer, said second layer is an AlSb-based material and is disposed between and is in contact with said first and said third layers.

5,798,541
STANDARD SEMICONDUCTOR CELL WITH CONTOURED CELL BOUNDARY TO INCREASE DEVICE DENSITY

Michael Jassowski, Shingle Springs, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 603,896, Feb. 22, 1996, abandoned, which is a continuation of Ser. No. 349,308, Dec. 2, 1994, abandoned. This application Mar. 17, 1997, Ser. No. 818,414
Int. Cl.[6] H01L *27/02*
U.S. Cl. 257—202 **6 Claims**



1. A non-rectangular contour semiconductor cell wherein the contour allows for density optimization, the contoured cell comprising:

a plurality of circuit devices arranged on a semiconductor substrate to form a contoured cell, wherein a plurality of interconnections couple between the plurality of circuit devices;

a plurality of busing conductors that are coupled to the plurality of circuit devices wherein the plurality of busing conductors define the row positions of the contoured cell in a larger circuit, the plurality of busing conductors providing a voltage to at least one of the plurality of circuit devices;

a non-rectangular cell contour defined in relation to the outermost border of each of the plurality of circuit devices and each of the plurality of interconnections, wherein the outermost boundary of the cell contour of adjacent cells will abut when the larger circuit is assembled from the plurality of contoured cells,

wherein the plurality of busing conductors includes a first pair of parallel busing conductors, between which the circuit devices and interconnections are arranged, and wherein the non-rectangular contour semiconductor cell is arranged on the semiconductor substrate such that a circuit element including a second busing conductor is adjoined to the non-rectangular contour semiconductor cell along the cell contour such that the first pair of parallel busing conductors is parallel with the second busing conductor.

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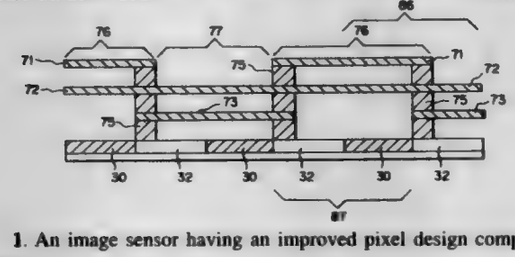
IMAGE SENSOR HAVING ITO ELECTRODES WITH OVERLAPPING COLOR FILTERS FOR INCREASED SENSITIVITY

Constantine N. Anagnostopoulos, Mendon; Stephen Lawrence Kosman, Rochester, and Win-chyi Chang, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 8, 1996, Ser. No. 731,036

Int. Cl.[6] H01L *31/062;31/113*

U.S. Cl. 257—232 **7 Claims**



1. An image sensor having an improved pixel design comprising:

a substrate of a first conductivity type;

a plurality of pixel elements formed within the substrate;

at least one gate electrode within each of the pixel elements comprising indium tin oxide;

at least one gate electrode within each of the pixel elements comprising polysilicon; and

a plurality of overlapping color filters arranged such that overlapping of the color filters occurs above the polysilicon electrode.

5,798,543

SEMICONDUCTOR ELEMENT STRUCTURE WITH STEPPED PORTION FOR FORMATION OF ELEMENT PATTERNS

Migaku Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 625,039

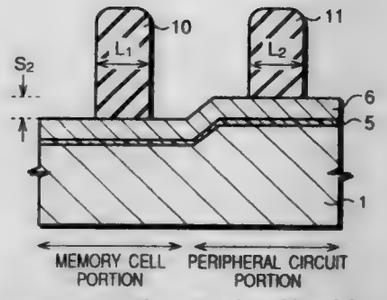
Claims priority, application Japan, Mar. 31, 1995, 7-075715

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—288 **13 Claims**

1. A semiconductor device comprising:

a semiconductor substrate having a first portion having a first height and a second portion having a second height;



semiconductor patterns formed and positioned in accordance with a patterned photoresist layer patterned by exposure through a mask having similarly sized features using light having a wavelength over said first region and said second region of said semiconductor substrate; and

a stepped portion joining said first region and said second region,

said stepped portion having a height substantially equal to a value S, wherein $S=m\lambda/2n$, wherein λ is said wavelength of light used for patterning said patterned photoresist film, m is a positive integer, and n is a refractive index of said photoresist film, whereby semiconductor patterns formed in accordance with exposure of said resist in accordance with said similarly sized features of said mask are produced to be of substantially equal size.

5,798,544

SEMICONDUCTOR MEMORY DEVICE HAVING TRENCH ISOLATION REGIONS AND BIT LINES FORMED THEREOVER

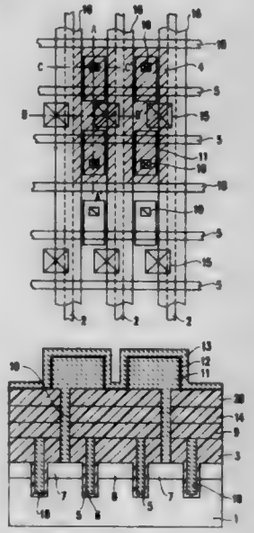
Shuichi Ohya; Masato Sakao; Yoshihiro Takaishi; Kiyonori Kajiyana; Takeshi Akimoto; Shizuo Oguro, and Seiichi Shishiguchi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 13, 1994, Ser. No. 242,345

Claims priority, application Japan, Apr. 22, 1994, 6-084760

Int. Cl.[6] H01L *27/108;29/76*

U.S. Cl. 257—296 **8 Claims**



1. A semiconductor memory device having a plurality of memory cells each including a cell transistor and a storage capacitor, each of said memory cells comprising:

an active region defined in a first direction by a pair of trench isolation regions formed in a semiconductor substrate in parallel to each other and in a second direction perpendicular to said first direction by a pair of isolation gate conductor lines

formed on a first insulating film covering said semiconductor substrate in parallel to each other;

first and second regions selectively formed in said active region apart from each other to define a channel region of said cell transistor therebetween;

a gate insulating film formed on said channel region, said first insulating film having the same thickness as said gate insulating film;

a word line formed on said gate insulating film;

a second insulating film formed to cover said active region and said word line;

a bit line formed on said second insulating film to overlap with one of said trench isolation regions;

a third insulating film covering said bit line and said second insulating film;

a connection conductor buried in said second and third insulating films and having a first end portion formed in contact with a part of said first region and a second end portion formed in contact with at least a sidewall surface of said bit line;

a capacitor contact hole selectively formed in said second and third insulating films to expose a part of said second region; and

a capacitor electrode for said storage capacitor formed in contact with said part of said second region through said capacitor contact hole.

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SEMICONDUCTOR STORAGE DEVICE

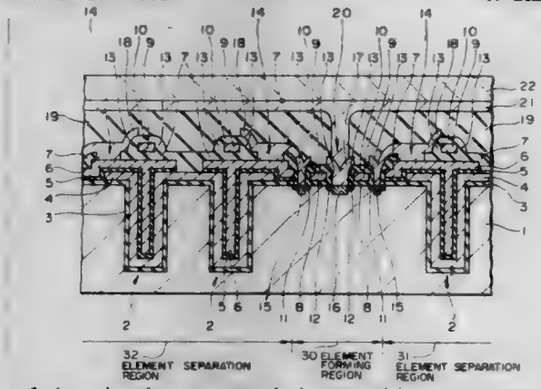
Shoichi Iwasa, and Tomofune Tani, both of Tokyo, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 27, 1995, Ser. No. 580,461

Claims priority, application Japan, Dec. 28, 1994, 6-338737; Jan. 13, 1995, 7-021087; Dec. 20, 1995, 7-349062

Int. Cl.[6] H01L *27/108;29/76;29/94*

U.S. Cl. 257—301 **47 Claims**



1. A semiconductor storage device comprising:

a semiconductor substrate having two element forming regions and one element separation region disposed between said two element forming regions;

a shield electrode formed above said semiconductor substrate so as to surround said two element forming regions for electrically separating said two element forming regions; and

a trench capacitor formed in said semiconductor substrate at said element separation region, said trench capacitor having a trench, a first conductive layer formed covering at least an inner wall of said trench, a dielectric layer formed at least on said first conductive layer in said trench, and a second conductive layer formed at least on said dielectric layer in said trench,

wherein said shield electrode and said first conductive layer are made of the same single layer; and

said first conductive layer is formed covering at least the inner walls of said trench via an insulating layer.

5,798,546

NONVOLATILE SEMICONDUCTOR DEVICE

Yukihiro Watsuji, and Akira Maruyama, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

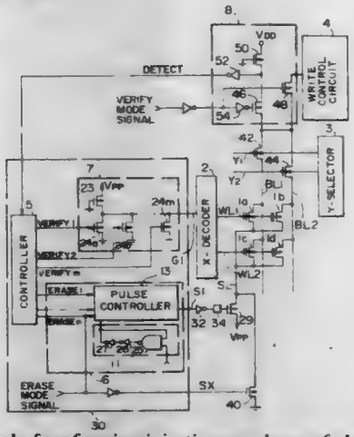
Division of Ser. No. 72,396, Jun. 7, 1993, Pat. No. 5,475,249.

This application Aug. 24, 1995, Ser. No. 518,996

Claims priority, application Japan, Jun. 9, 1992, 4-149530; Jun. 15, 1992, 4-155083; Jun. 3, 1993, 5-160076

Int. Cl.[6] H01L *29/788;29/76;* **G11C** *11/34;7/00*

U.S. Cl. 257—316 **10 Claims**



1. A method of performing injection or release of electrons in at least one memory transistor, said at least one memory transistor comprising a floating gate electrode, a control gate electrode and first and second diffusion layers, one of the injection of electrons and said release of electrons performing a writing operation and the other of said injection of electrons and said release of electrons performing an erasing operation, said method comprising the steps of:

applying at least one potential difference between said control gate electrode and said first diffusion layer to release the electrons;

detecting a threshold voltage of the at least one memory transistor after the release of electrons; and

varying an application time of at least one subsequent potential difference applied between the control gate electrode and said first diffusion layer based on the detected threshold voltage.

5,798,547

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING NAND STRUCTURE CELLS

Takahiko Urai, Tokyo, Japan, assignor to NEC Corporation, Japan

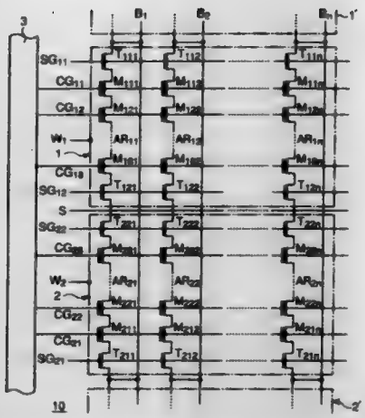
Filed Nov. 13, 1996, Ser. No. 748,278

Claims priority, application Japan, Nov. 29, 1995, 7-311260

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—316 **4 Claims**

1. A flash EEPROM (electrically erasable programmable read-only memory) with NAND structure cells having a plurality of memory cell arrays formed respectively in at least first and second wells of one conductivity type in turn formed in the surface of a semiconductor substrate of opposite conductivity type, each said memory cell arrays having a plurality of memory cell transistors of said NAND structure cells arranged in parallel in column direction symmetrically with a predetermined line lying between said wells in row direction, each said memory cell transistors being capable of retaining in its floating gate hot electrons injected by the Fowler-Nordheim (F-N) tunnelling, source and drain of every two adjacent ones of said memory cell transistors being formed of a single highly doped diffusion region formed in said wells, control gates of corresponding ones of said memory cell transistors included respectively in said memory cell arrays being connected respectively to control gate lines lying in parallel in row direction to form word lines, first and second ends of each of said NAND structure cells being connected to source and drain respectively of



first and second select transistors having control gates connected respectively to first and second select gate lines lying in parallel with said control gate lines, and drain and source respectively of said first and second select transistors of respective ones of said memory cell arrays being connected respectively to bit lines lying in parallel in column direction, characterized by further comprising:

means connected to said control gate lines and responsive to row address signal designating selected one of said control gate lines for erasure of data stored in said memory cell transistors associated therewith, for generating erase control signal consisting of first voltage to be supplied to said selected one of said control gate lines and second voltage to be supplied to unselected ones of said control gate lines, said first voltage being sufficient to remove said electrons retained in said memory cell transistors associated with said selected control gate line and,

wherein said erase control signal generating means comprises:

a first portion responsive to less significant bits of said row address signal for providing decode outputs respectively for said control gate lines; and

a second portion responsive to more significant bits of said row address signal for selectively allowing said decode outputs to be provided to said control gate lines of one of said first and second wells.

5,798,548

SEMICONDUCTOR DEVICE HAVING MULTIPLE CONTROL GATES

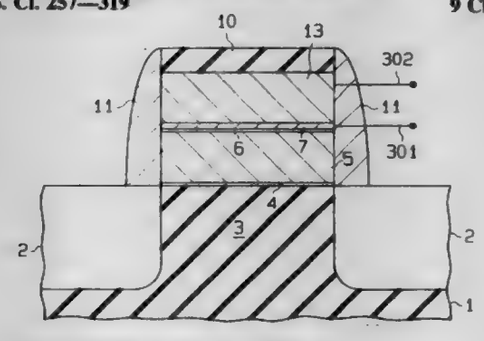
Hideaki Fujiwara, Gifu, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 17, 1996, Ser. No. 649,176

Claims priority, application Japan, May 18, 1995, 7-120128; Apr. 22, 1996, 8-100011

Int. Cl.[6] H01L *29/76;29/788*

U.S. Cl. 257—319 **9 Claims**



1. A semiconductor device comprising:

a semiconductor substrate;

source and drain regions defined in said semiconductor substrate, with a channel region therebetween;

a first insulating layer located over said semiconductor substrate including over said channel region;

a floating gate locating over said first insulating layer;

a second insulating layer located over said floating gate;

a first control gate located over said second insulating layer; and

a second control gate located over said first control gate, wherein said first and second control gates constitute a Schottky junction and allow the injection of hot carriers onto said floating gate from said first control gate when predetermined first and second voltages are applied to said first and second control gates, respectively.

5,798,549

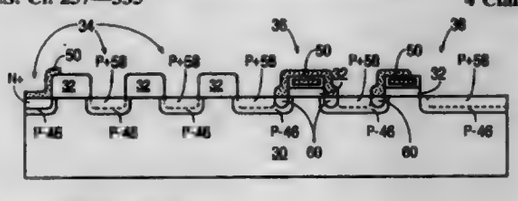
CONDUCTIVE LAYER OVERLAID SELF-ALIGNED MOS-GATED SEMICONDUCTOR DEVICES

Richard A. Blanchard, Los Altos, Calif., assignor to Calogic Corporation, Fremont, Calif.

Continuation of Ser. No. 409,615, Mar. 22, 1995, Pat. No. 5,528,063, which is a continuation of Ser. No. 151,336, Nov. 12, 1993, abandoned. This application May 1, 1996, Ser. No. 649,956

Int. Cl.[6] H01L *29/76;29/94;31/62*

U.S. Cl. 257—335 **4 Claims**



1. A transistor comprising:

a semiconductor body;

a first region of a first conductivity type in said body and extending to a principal surface of said body;

first and second spaced apart regions of a second conductivity type in said first region and each extending to said principal surface;

first and second spaced apart gate electrodes overlying said principal surface;

a first insulating layer overlying at least a portion of a top surface and a side of said first gate electrode;

a second insulating layer overlying at least a portion of a side of said second gate electrode and at least a portion of a top surface of said second gate electrode;

a first electrically conductive polycrystalline silicon layer overlying said first insulating layer and contacting said first region of said second conductivity type at said principal surface, wherein said first polycrystalline silicon layer is wider in a lateral dimension at said principal surface than its thickness in a vertical dimension at the top surface of said first gate electrode; and

a second electrically conductive polycrystalline silicon layer spaced apart from said first polycrystalline silicon layer at said principal surface and overlying said second insulating layer and contacting said second region of said second conductivity type at said principal surface, wherein said second polycrystalline silicon layer is wider in a lateral dimension at said principal surface than its thickness in a vertical dimension at the top surface of said second gate electrode.

5,798,550

VERTICAL TYPE SEMICONDUCTOR DEVICE AND GATE STRUCTURE

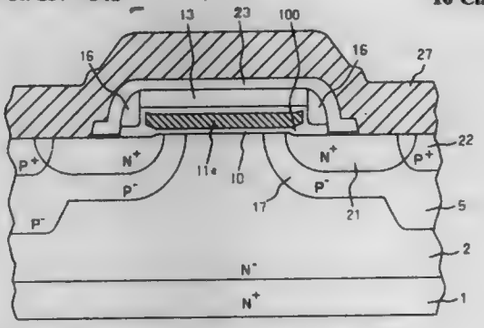
Akira Kuroyanagi, Okazaki; Masami Yamaoka, Anjo; Yoshifumi Okabe, Anjo; Yasuaki Tsuzuki, Anjo, and Yutaka Tomatsu, Okazaki, all of Japan, assignors to Nippondenso Co. Ltd., Kariya, Japan

Continuation of Ser. No. 38,096, Mar. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 767,313, Sep. 30, 1991, Pat. No. 5,250,449. This application Jun. 6, 1995, Ser. No. 469,622

Claims priority, application Japan, Oct. 1, 1990, 2-264701; Mar. 30, 1992, 4-073696; Mar. 30, 1992, 4-074493

Int. Cl.[6] H01L *29/76;29/94;31/062*

U.S. Cl. 257—341 **10 Claims**



1. A vertical semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

a gate electrode having sides and being formed above a surface of said semiconductor substrate, said gate electrode having a thick central portion and a thin edge portion;

a gate insulation film positioned between said gate electrode and said semiconductor substrate;

an insulating mask member for covering each side of said gate electrode;

a channel well region of a second conductivity type formed on said surface of said substrate, a lateral diffusion edge of said channel well region reaching and terminating at a position below said gate electrode; and

a source region of said first conductivity type formed shallower than said channel well region on a surface of said channel well region, a lateral diffusion edge of said source region reaching and terminating at a position below said gate electrode,

wherein said gate insulation film has a thick portion located below a side edge portion of said gate electrode where said source region and said gate electrode overlap each other, and a thin portion located on said channel well region where an inversion layer is formed, said thick portion of said gate insulation film being thermally oxidized polysilicon from said gate electrode and having an inclined portion most proximate to said thin portion; and

said side edge portion of said gate electrode is disposed over said inclined portion of said gate insulation film.

5,798,551

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHOD OF MANUFACTURING THE SAME

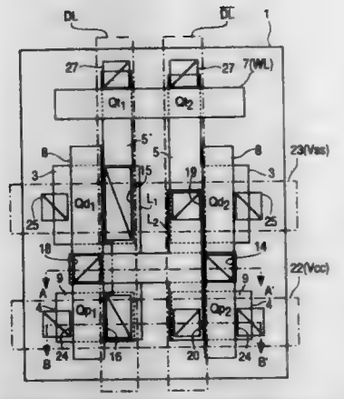
Kenichi Kikushima, Ome; Fumio Ootsuka, Tokorozawa, and Kazushige Sato, Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 17, 1997, Ser. No. 784,998

Claims priority, application Japan, Jan. 17, 1996, 8-005487; Feb. 23, 1996, 8-035872

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—368 **28 Claims**



1. A semiconductor integrated circuit device, comprising an SRAM including memory cells each having a flip-flop circuit, each flip-flop circut having a pair of drive MISFETs and a pair of load MISFETs, each memory cell also including a pair of transfer MISFETs, the pair of drive MISFETs and the pair of load MISFETs forming a pair of inverter circuits, the inverter circuits being cross-connected by first and second local wiring lines, wherein gate electrodes of each of the drive MISFETs and the load MISFETs are formed from a first layer of conductive material overlying a semiconductor substrate, the first local wiring line is formed from a second layer of conductive material further from the substrate than said first layer of conductive material, and the second local wiring line is formed from a third layer of conductive material further from the substrate than said second layer of conductive material.

5,798,552

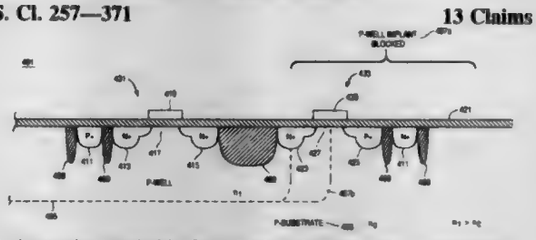
TRANSISTOR SUITABLE FOR HIGH VOLTAGE CIRCUIT

Mohsen Alavi, and Tahir Ghani, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 623,673, Mar. 29, 1996, abandoned. This application Jul. 8, 1997, Ser. No. 889,718

Int. Cl.[6] H01L *29/76;29/94*

U.S. Cl. 257—371 **13 Claims**



1. A transistor suitable for a high voltage circuit, comprising:

a well implant formed in a portion of a substrate of a complementary metal oxide semiconductor (CMOS) integrated circuit, the substrate having a first doping concentration and the well implant having a second doping concentration wherein the second doping concentration is greater than the first doping concentration, the well implant being formed in the portion of the substrate outside a well implant blocked region;

a first diffusion formed in the substrate wherein at least a portion the first diffusion is disposed within the well implant;

a second diffusion formed in the substrate entirely within the well implant blocked region and separated from well implant, the second diffusion spaced apart from the first diffusion forming a channel between the first and second diffusions; and

a gate disposed above the channel.

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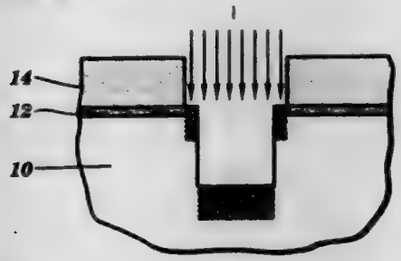
TRENCH ISOLATED FET DEVICES, AND METHOD FOR THEIR MANUFACTURE

Toshiharu Furukawa, Essex Junction, Vt.; Jack Allan Mandelman, Stormville, N.Y., and William R. Tonti, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 681,104, Jul. 22, 1996, abandoned, which is a division of Ser. No. 370,703, Jan. 10, 1995, Pat. No. 5,643,822. This application Sep. 16, 1997, Ser. No. 931,222

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—394 **2 Claims**



1. A guard structure useful in the preparation of an improved trench-isolated FET device, comprising:

a) an oxide-covered substrate which includes a horizontal upper surface;

b) at least one isolation trench extending into said substrate; said trench having a trench bottom and substantially vertical trench sidewalls, said sidewalls being substantially perpendicular to said horizontal upper surface of said substrate;

c) a horizontal ledge formed by said horizontal upper surface of said oxide-covered substrate, said horizontal ledge being adjacent said trench; and

d) a dopant implanted into said horizontal ledge at a concentration of about 5×10^{16} to about 5×10^{18} dopant atoms per cc, wherein said dopant concentration is about two to four times that of the peak channel doping concentration at the mid-width of said device, wherein said dopant is of the same conductivity type as that of said substrate; and

wherein the concentration of said dopant atoms implanted into said sidewalls of said trench is less than about 30% of the concentration of said dopant atoms implanted into said horizontal ledge.

5,798,554

MOS-TECHNOLOGY POWER DEVICE INTEGRATED STRUCTURE AND MANUFACTURING PROCESS THEREOF

Antonio Grimaldi, Mascalucia, and Antonino Schillaci, Messina, both of Italy, assignors to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, Italy

Filed Feb. 22, 1996, Ser. No. 605,381

Claims priority, application European Pat. Off., Feb. 24, 1995, 95830055; Dec. 22, 1995, 95830535

Int. Cl.[6] H01L *29/76;21/265*

U.S. Cl. 257—401 **61 Claims**

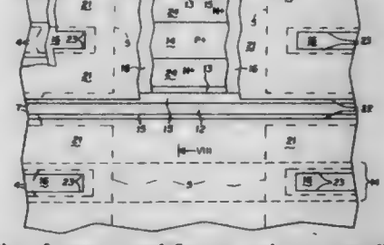
1. A MOS-technology power device integrated structure comprising:

a plurality of first regions of a first conductivity type formed in a semiconductor layer of a second conductivity type, each of said first regions including a source region of the second conductivity type;

a frame region of the first conductivity type formed in the semiconductor layer, surrounding and merged with said first regions at each end of said first regions;

a plurality of gate regions, each gate region being insulatively disposed over the semiconductor layer between adjacent first regions, and extending over a lateral portion of each adjacent first region;

a plurality of gate metal fingers, each gate metal finger extending over and being electrically connected to at least a portion of a respective one of said gate regions; and



a plurality of source metal fingers, each one extending over at least a portion of a respective first region and contacting the at least a portion of said first region and the respective source region within the at least a portion of the first region, so that the plurality of source metal fingers and the plurality of gate metal fingers are interdigitated.

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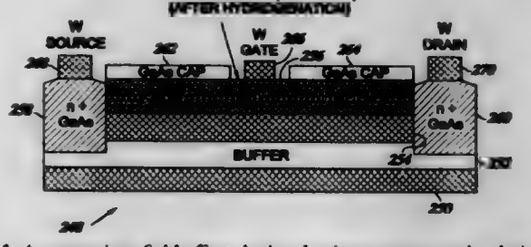
ENHANCEMENT-DEPLETION LOGIC BASED ON GE MOSFETS

Umesh Kumar Mishra, Santa Barbara, and Steven P. DenBaars, Goleta, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 27, 1996, Ser. No. 756,415

Int. Cl.[6] H01L *29/76;29/94*

U.S. Cl. 257—410 **14 Claims**



1. A germanium field effect device, having a source and a drain, comprising:

a germanium channel layer;

a gate layer, the gate layer being an aluminum oxide layer, formed over the germanium channel layer from a deposited aluminum arsenide layer;

an arsenic controlling layer in contact with the gate layer for controlling excess arsenic atoms in the gate layer; and

electrodes respectively formed over the source, the drain and the gate layer.

5,798,556

SENSOR AND METHOD OF FABRICATION

Henry G. Hughes, Scottsdale; Marilyn J. Stuckey; Margret L. Kniffin, both of Tempe, and Ping-chang Lue, Scottsdale, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1996, Ser. No. 620,729

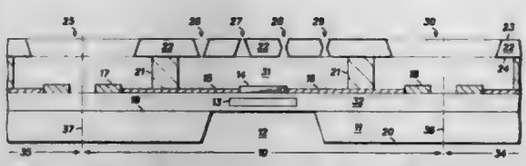
Int. Cl.[6] H01L *27/14;29/82;29/84*

U.S. Cl. 257—414 **19 Claims**

1. A sensor comprising:

a substrate having a recess;

a sensing element overlying the substrate, the sensing element located outside of the recess;



a filter overlying the sensing element wherein the filter is electrically unbiased; and

an adhesive coupling the substrate and the filter.

5,798,557

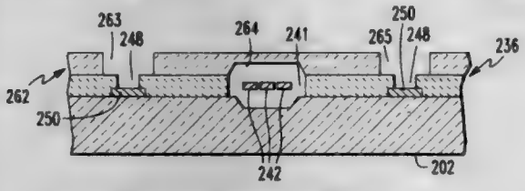
LID WAFER BOND PACKAGING AND MICROMACHINING

Matthew M. Salatino, Satellite Beach; William R. Young, Palm Bay, and Patrick A. Begley, West Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Aug. 29, 1996, Ser. No. 705,536

Int. Cl.[6] H01L *29/82*

U.S. Cl. 257—416 **16 Claims**



1. A packaged integrated circuit comprising:

a semiconductor substrate comprising a first portion and a second portion on one side of the substrate; at least one device formed therein on said first portion;

a protective cover bonded to the first portion semiconductor device substrate for sealing and covering the at least one device formed herein; and

at least one electrical bond pad on the second portion of the semiconductor substrate, each said bond pad located outside the protective cover and electrically connected to the device in the semiconductor substrate.

5,798,558

MONOLITHIC X-RAY IMAGE DETECTOR AND METHOD OF MANUFACTURING

Scott M. Tyson, Albuquerque, and Eugene L. Atlas, Carlsbad, both of Calif., assignors to Mission Research Corporation, Santa Barbara, Calif.

Filed Jun. 27, 1995, Ser. No. 495,239

Int. Cl.[6] H01L *31/075;31/105;31/117*

U.S. Cl. 257—458 **12 Claims**



1. An x-ray imaging apparatus comprising;

a printed circuit board;

connecting means connecting said printed circuit board to electronic processing means;

a plurality of x-ray imaging detectors arranged in a multi-chip module array on said printed circuit board, said multi-chip module array comprising:

a high resistivity substrate,

a plurality of PIN diodes formed in said substrates,

electronic read-out means formed on said substrate in which PIN diode detectors have been fabricated which transforms the charge collected by each PIN diode into an analog voltage,

interconnecting means interconnecting said multi-chip module array;

a plastic substrate covering and encapsulating said multi-chip module array;

whereby said multi-chip module array forms a large x-ray image detecting panel.

5,798,559

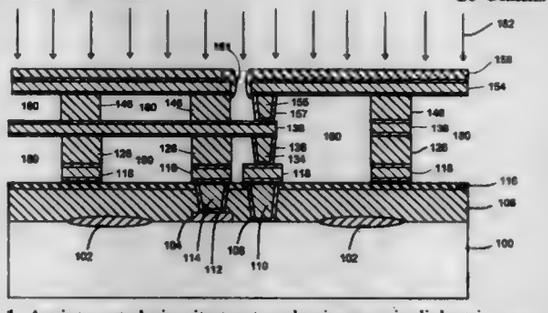
INTEGRATED CIRCUIT STRUCTURE HAVING AN AIR DIELECTRIC AND DIELECTRIC SUPPORT PILLARS

Subhas Bothra, and Ling Q. Qian, both of San Jose, Calif., assignors to VLSI Technology, Inc., San Jose, Calif.

Continuation of Ser. No. 623,883, Mar. 29, 1996, abandoned. This application Sep. 3, 1997, Ser. No. 922,953

Int. Cl.[6] H01L *29/00;23/48;23/52;29/40*

U.S. Cl. 257—522 **20 Claims**



1. An integrated circuit structure having an air dielectric, comprising:

a substrate supporting a substrate-level metallization layer defining a plurality of substrate-level interconnect metallization lines and a substrate-level dummy metallization line;

an air dielectric layer being positioned over said substrate, said air dielectric layer having a bottom surface in contact with said substrate and having a top surface;

a supported layer over said air dielectric layer having a bottom surface and a top surface, said bottom surface of said supported layer being in contact with said top surface of said air dielectric layer, said supported layer having at least one aperture extending there through from its bottom surface to its top surface such that there is at least one air path through said aperture of said supported layer to said substrate;

a patterned metallization layer formed from said supported layer to define a plurality of interconnect metallization lines and a dummy metallization line; and

at least one pillar being positioned between said substrate-level metallization layer and said bottom surface of said supported layer, such that said at least one pillar is partially constructed from at least one of said plurality of substrate-level interconnect metallization lines and said substrate-level dummy metallization line, and said at least one pillar being configured to at least partially support said supported layer, and said at least one pillar being used for non-electrical interconnect support and is non-conducting.

5,798,560

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A SPARK KILLER DIODE

Shigeaki Ohkawa, Ashikaga, and Toshiyuki Ohkoda, Ohra, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 30, 1996, Ser. No. 742,184

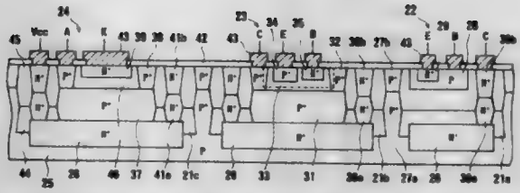
Claims priority, application Japan, Oct. 31, 1995, 7-284086

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—555 **5 Claims**

1. A semiconductor integrated circuit having a spark-killer diode, said spark-killer diode comprising:

a semiconductor substrate of a first conductivity type;



first and second epitaxial layers disposed on said semiconductor substrate and being of a second conductivity type opposite said first conductivity type;

a first buried layer of said second conductivity type disposed between said semiconductor substrate and said first epitaxial layer, said first buried layer having a peak of an impurity concentration thereof at a surface between said semiconductor substrate and said first epitaxial layer;

a second buried layer of said first conductivity type disposed between said first epitaxial layer and said second epitaxial layer, said second buried layer having a peak of an impurity concentration thereof at a surface between said first epitaxial layer and said second epitaxial layer;

a first lead region of said second conductivity type extending from a surface of said second epitaxial layer to said first buried layer, and a second lead region of said first conductivity type extending from a surface of said second epitaxial layer to said second buried layer; and

a cathode layer of said second conductivity type disposed on said second buried layer, said cathode layer being surrounded by said second lead region in said second epitaxial layer, said second buried layer and said second lead region being an anode region.

5,798,561

BIPOLAR TRANSISTOR WITH POLYSILICON BASE

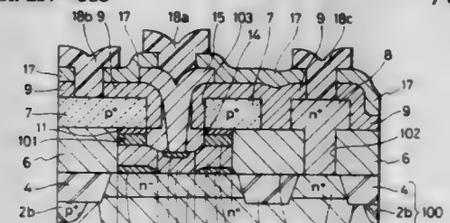
Fumihiko Sato, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Oct. 15, 1996, Ser. No. 730,083

Claims priority, application Japan, Oct. 16, 1995, 7-267173

Int. Cl.[6] H01L *27/082;27/102;29/70;31/11*

U.S. Cl. 257—588 **7 Claims**



1. A semiconductor device comprising;

(a) a semiconductor base region having a first semiconductor active region of a first conductivity type in its inside;

said first active region being exposed from a main surface of said base region;

(b) a first insulating layer formed on said main surface of said base region to cover said first active region;

said first insulating layer having a first penetrating window which exposes said first active region;

(c) a semiconductor contact region of a second conductivity type opposite in polarity to said first conductivity type;

said contact region being formed on said first insulating layer;

said contact region having a second window whose size is smaller than that of said first window;

said contact region having an overhanging part which overhangs said first window;

said second window being defined by the inner end of said overhanging part to be entirely overlapped with said first window;

said contact region being made of a polycrystalline semiconductor;

(d) a second semiconductor active region of said second conductivity type formed on said first active region to be contacted therewith in said first window;

(e) a semiconductor connection region of said second conductivity type formed in said first opening to surround said second active region;

said connection region being contacted with said overhanging part of said contact region and said second active region, thereby electrically interconnecting said second active region with said contact region;

said connection region being made of a polysilicon polycrystalline semiconductor.

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SEMICONDUCTOR DEVICE HAVING AN ISOLATION LAYER AND TWO PASSIVATION LAYERS WITH EDGES THAT ARE NOT ALIGNED WITH EACH OTHER

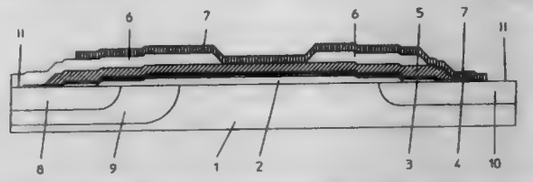
Johannes Rabovsky, and Bernd Sievers, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 28, 1996, Ser. No. 738,513

Claims priority, application Germany, Oct. 28, 1995, 195 40 309.6

Int. Cl.[6] H01L *23/58;29/00*

U.S. Cl. 257—632 **6 Claims**



1. A semiconducting device with a substrate, an isolation layer having a window defining an edge of the isolation layer, a passivation layer scheme lying on the isolation layer, and a metallization lying on the passivation layer scheme, wherein the passivation layer scheme comprises first and second dielectric layers, the first dielectric layer covering the isolation layer and the edge of the isolation layer and extending beyond the edge of the isolation layer to cover a portion of the substrate in the window adjacent the edge of the isolation layer, and the second dielectric layer covering the first dielectric layer everywhere that the first dielectric layer overlies the isolation layer and the edge of the isolation layer but which extends beyond the edge of the isolation layer not as far as the first dielectric layer.

5,798,563

POLYTETRAFLUOROETHYLENE THIN FILM CHIP CARRIER

Natalie Barbara Feilchenfeld, Endwell; John Steven Kresge, Binghamton; Scott Preston Moore, Apalachin; Ronald Peter Nowak, Endicott, and James Warren Wilson, Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 28, 1997, Ser. No. 790,245

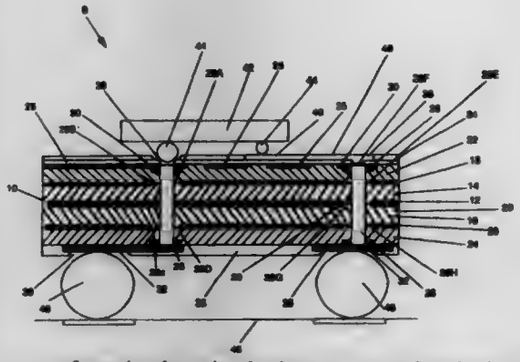
Int. Cl.[6] H01L *23/495;23/04;23/48;23/52*

U.S. Cl. 257—668 **22 Claims**

1. An organic chip carrier comprising:

a. a dielectric layer having a dielectric constant of from about 1.5 to 3.5;

b. a first layer of circuitry disposed on and adhering to the dielectric layer;



c. a conformational coating having a percent planarization of greater than about 30% and a dielectric constant of from about 1.5 to about 3.5, disposed on the first layer of circuitry and the dielectric layer;

d. a second layer of circuitry disposed on the conformational coating, comprising lines having a line width less than 1 mil and line spacing of 1.5 mil or less; and

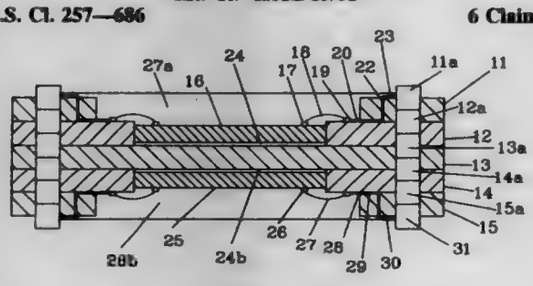
e. at least one conductive via disposed through the conformational coating to connect the first layer of circuitry and the second layer of circuitry.

5,798,564

MULTIPLE CHIP MODULE APPARATUS HAVING DUAL SIDED SUBSTRATE

Kian Teng Eng, and Jing Sua Goh, both of Singapore, Singapore, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1996, Ser. No. 770,884
Int. Cl.[6] H01L *23/02*
U.S. Cl. 257—686 **6 Claims**



10

1. A double sided semiconductor module, comprising:

a first substrate having first and second sides, with one semiconductor device, having bond pads thereon, on each of said first and second sides;

at least one additional substrate on each of said first and second sides having an opening in the substrate through which a semiconductor device is mounted on said first and second sides of the first substrate; and

a plurality of solder pins associated with each of said first and additional substrates, connected to contact pads on the semiconductor devices, and extending from and to openings in said first and additional substrates.

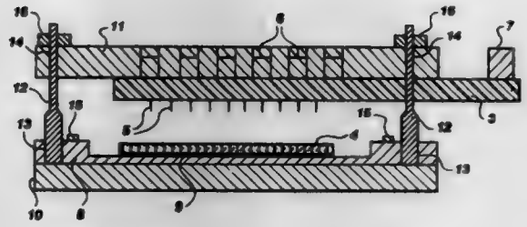
5,798,565

REPAIRABLE WAFER SCALE INTEGRATION SYSTEM

Glen G. Atkins; Michael S. Cohen, both of Boise; Karl H. Mauritz, Eagle, and James M. Shaffer, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 107,436, Aug. 16, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 659,866
Int. Cl.[6] H01L *23/53;23/12*
U.S. Cl. 257—701 **30 Claims**

1. A repairable module for integrating a plurality of diced integrated circuits, comprising:



a mounting structure;

a plurality of diced integrated circuits having a plurality of contact pads, the plurality of diced integrated circuits removably secured in a wafer-scale relationship to said mounting structure; and

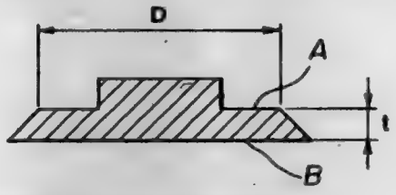
an interface removably secured relative to said mounting structure positioned above said mounting structure and in electrical contact with the plurality of contact pads of the plurality of diced integrated circuits.

5,798,566

CERAMIC IC PACKAGE BASE AND CERAMIC COVER

Kazuhisa Sato, Konan; Masanori Kitou, Inuyama; Hisashi Wakako, and Kazuo Kimura, both of Komaki, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 584,277, Jan. 11, 1996, abandoned. This application Nov. 24, 1997, Ser. No. 976,501
Int. Cl.[6] H01L *23/34;23/06;23/15;23/10*
U.S. Cl. 257—712 **37 Claims**



1. A ceramic IC package base comprising:

a ceramic substrate; and

a heat radiating member directly adhered to a side surface of said ceramic substrate by brazing through a metallized layer or by DBC, wherein said heat radiating member is made of one or more of copper and copper containing a small amount of another element;

said heat radiating member having an adhering portion at which it is directly adhered to said ceramic substrate by said brazing or DBC;

wherein said adhering portion, when said heat radiating member is observed in a plan view, has one side which is equal to or larger than 8 mm, and said adhering portion is of the thickness within the range from 0.25 mm to 0.76 mm.

5,798,567

BALL GRID ARRAY INTEGRATED CIRCUIT PACKAGE WHICH EMPLOYS A FLIP CHIP INTEGRATED CIRCUIT AND DECOUPLING CAPACITORS

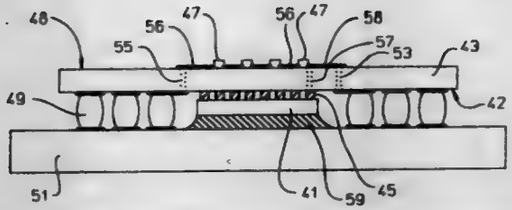
Michael G. Kelly, and Pirooz Emad, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 21, 1997, Ser. No. 915,969
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—723 **8 Claims**

1. A ball grid array interconnection comprising:

a ball grid array substrate having a first surface and a second surface, the first surface comprising a plurality of substrate interconnection conductive pads;

at least one power supply via connecting a power supply conductive pad of the first surface to a first conductive area on the second surface;



at least one ground via connecting a ground conductive pad of the first surface to a second conductive area on the second surface;

at least one decoupling capacitor connected between the first conductive area and the second conductive area;

an integrated circuit comprising a plurality of integrated circuit conductive pads;

a plurality of smaller solder balls interconnecting at least one of the integrated circuit conductive pads to at least one of the substrate interconnection conductive pads; and

a circuit board substrate electrically interconnected by larger solder balls to the ball grid array substrate.

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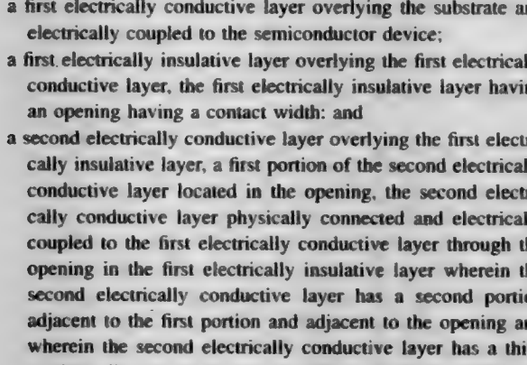
SEMICONDUCTOR COMPONENT WITH MULTI-LEVEL INTERCONNECT SYSTEM AND METHOD OF MANUFACTURE

David A. Abercrombie; Rickey S. Brownson, both of Cedar Park, and Michael R. Cherniawski, Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 26, 1996, Ser. No. 703,223

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—758 **22 Claims**



1. A semiconductor component with a multi-level interconnect system comprising:

a substrate;

a semiconductor device supported by the substrate;

a first electrically conductive layer overlying the substrate and electrically coupled to the semiconductor device;

a first electrically insulative layer overlying the first electrically conductive layer, the first electrically insulative layer having an opening having a contact width: and

a second electrically conductive layer overlying the first electrically insulative layer, a first portion of the second electrically conductive layer located in the opening, the second electrically conductive layer physically connected and electrically coupled to the first electrically conductive layer through the opening in the first electrically insulative layer wherein the second electrically conductive layer has a second portion adjacent to the first portion and adjacent to the opening and wherein the second electrically conductive layer has a third portion adjacent to the second portion and wherein widths of the first, second, and third portions are approximately equal to each other and approximately equal to the contact width.

5,798,569

SEMICONDUCTOR DEVICE HAVING MULTILAYERED WIRING STRUCTURE

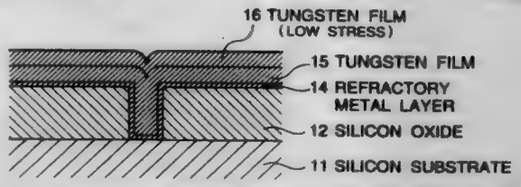
Kazuki Miyazaki; Kazunobu Shigehara, and Masanobu Zenke, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Division of Ser. No. 610,349, Mar. 4, 1996. This application Jul. 17, 1997, Ser. No. 895,823

Claims priority, application Japan, Mar. 3, 1996, 7-44613

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—763 **2 Claims**



1. A semiconductor device having a semiconductor substrate having a principal surface thereof, an interlayer insulator film formed on said principal surface of said semiconductor substrate, a contact hole formed through said interlayer insulator film to reach said principal surface, and a metal wiring conductor filling said contact hole to reach said principal surface and extending on said interlayer insulator film, said metal wiring conductor being formed of a lower level metal film having an excellent step coverage to fill said contact hole with no void, and an upper level metal film formed on said lower level metal film, said upper level metal film being formed of the same metal as that of said lower level metal film, and said upper level metal film having an internal stress smaller than that of said lower level metal film.

5,798,570

PLASTIC MOLDED SEMICONDUCTOR PACKAGE WITH THERMAL DISSIPATION MEANS

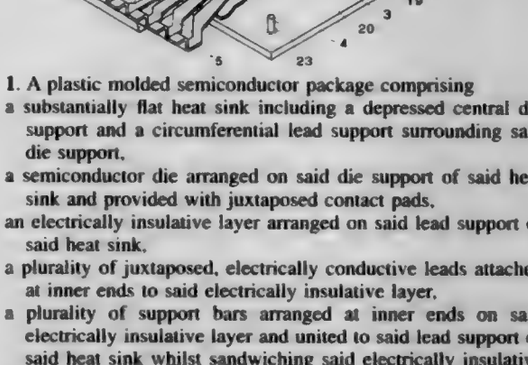
Norinaga Watanabe, and Shinichi Nishi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Gotoh Seisakusho, Yokohama, Japan

Filed Nov. 14, 1996, Ser. No. 749,215

Claims priority, application Japan, Jun. 28, 1996, 8-188283

Int. Cl.[6] H01L *23/48;29/44*

U.S. Cl. 257—796 **9 Claims**



1. A plastic molded semiconductor package comprising

a substantially flat heat sink including a depressed central die support and a circumferential lead support surrounding said die support,

a semiconductor die arranged on said die support of said heat sink and provided with juxtaposed contact pads,

an electrically insulative layer arranged on said lead support of said heat sink,

a plurality of juxtaposed, electrically conductive leads attached at inner ends to said electrically insulative layer,

a plurality of support bars arranged at inner ends on said electrically insulative layer and united to said lead support of said heat sink whilst sandwiching said electrically insulative layer,

bond wires each connecting one of said leads to one of said contact pads on said semiconductor die, and

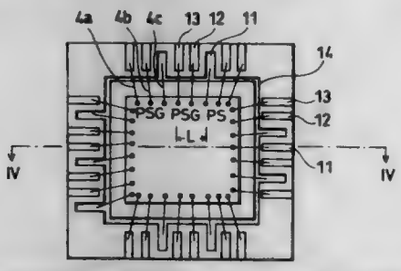
a plastic package encapsulating said heat sink, said semiconductor die, said inner ends of said leads, said support bars and said bond wires whilst exposing a projecting central surface of said heat sink opposite to said die support outside.

5,798,571

INDUCTANCE REDUCED WIRE-BONDING TYPE SEMICONDUCTOR DEVICE

Hirofumi Nakajima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 2, 1996, Ser. No. 674,721
Claims priority, application Japan, Jul. 4, 1995, 7-168562
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—784 **15 Claims**



1. A wire-bonding type semiconductor device comprising:
a semiconductor chip;
a plurality of power supply electrode pads formed on said semiconductor chip;
a plurality of signal electrode pads formed on said semiconductor chip;
a plurality of ground electrode pads formed on said semiconductor chip;
a plurality of first thin metal wires for electrically connecting said power supply electrode pads to associated internal terminals of a package;
a plurality of second thin metal wires for electrically connecting said signal electrode pads to associated internal terminals of a package; and
a plurality of third thin metal wires for electrically connecting said ground electrode pads to associated internal terminals of a package;
said power supply electrode pads, said signal electrode pads and said ground electrode pads being arranged in sets on said semiconductor chip so that each set includes at least one signal electrode pad being always disposed intermediate between a power supply electrode pad and a ground electrode pad, and the distance between said sets is larger than the distance between the power supply electrode pads, signal electrode pads, and ground electrode pads in each set, and
said first, second and third thin metal wires are designed so that a first thin metal wire, a third thin metal wire and at least one second thin metal wire located intermediate between said first and third thin metal wires are disposed substantially in parallel with one another and have substantially the same length.

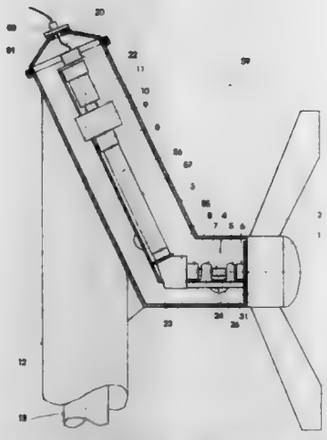
5,798,572

UNDER WATER HYDRO-TURBINE ENERGY GENERATOR DESIGN

Kalman N. Lehoczky, 6156 9th Ave. Cir. NE., Bradenton, Fla. 34202

Filed Apr. 15, 1996, Ser. No. 632,668
Int. Cl.[6] F03B *13/10*
U.S. Cl. 290—54 **7 Claims**

1. Hydro-turbine driven electrical generating unit, contained in a water tight bulb housing and submerged in a water current, is comprised of a rigid frame supporting a rotating system, consisting of a combination of turbine runner, turbine shaft, turbine shaft seal, bearings, speed-increasing transmission, generator, and couplings,



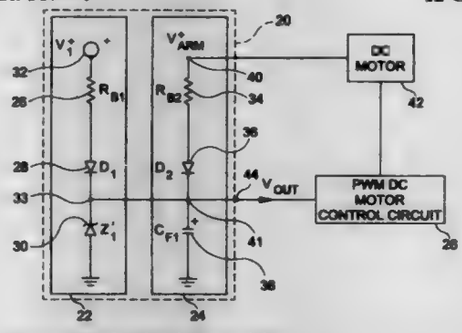
and a central terminal block for the connection of power, measuring and control cables and tubes, and the bulb housing is internally equipped with support surfaces corresponding with connection points on the generating unit where the connection between the support surfaces and the connection points is provided by removable fasteners.

5,798,573

SPLIT POWER SUPPLY

Abraham Saganovsky, Boca Raton, Fla., assignor to KB Electronics, Inc., Coral Springs, Fla.

Filed Apr. 1, 1997, Ser. No. 834,709
Int. Cl.[6] H02J *1/00*
U.S. Cl. 307—4 **12 Claims**



1. A power supply circuit comprising:
a first power supply branch for providing a fixed current, said first power supply branch including a first resistive element and a first diode operatively coupled between a first voltage source and a reference potential; and
a second power supply branch operatively coupled to the first power supply branch, the second power supply branch providing a variable current in correspondence with a current induced by a second voltage source, said variable current being combined with said fixed current to produce an output current.

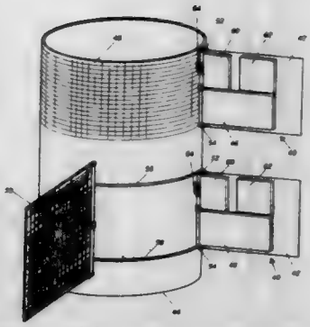
5,798,574

DISTRIBUTED ELECTRICAL POWER SYSTEM FOR MODULAR SPACECRAFT

Ramon Coronel, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 20, 1996, Ser. No. 770,477
Int. Cl.[6] H02J *4/00*
U.S. Cl. 307—9.1 **4 Claims**

1. A modular spacecraft having a distributed power supply system, the spacecraft comprising:
a spacecraft core structure;



multiple avionics module panels connected to the core structure;

at least two electronics units, each for performing a desired avionics function, installed on one or more of the avionics module panels; and

a power regulation and conversion unit associated with each electronics unit, for performing regulation and, if needed, conversion of electrical power for use by the electronics unit, without reliance on a centralized power regulator and converter.

5,798,575

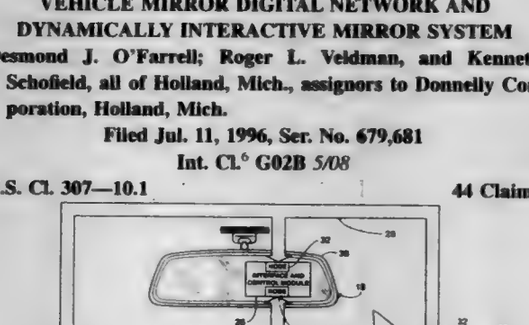
VEHICLE MIRROR DIGITAL NETWORK AND DYNAMICALLY INTERACTIVE MIRROR SYSTEM

Desmond J. O'Farrell; Roger L. Veldman, and Kenneth Schofield, all of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Jul. 11, 1996, Ser. No. 679,681

Int. Cl.[6] G02B *5/08*

U.S. Cl. 307—10.1 **44 Claims**



1. A vehicle rear vision system for a vehicle having a vehicle communication network, comprising:

at least two rearview assemblies, each including an image transfer device for transferring images rearwardly of the vehicle in order to be observable by a vehicle driver and a housing for the image transfer device; and

a rear vision communication system providing communication between said rearview assemblies and including a communication link defined by a node interconnected with the vehicle communication network;

wherein communication with other portions of the vehicle is provided while control commands for functions associated with said at least two rearview assemblies are handled without requiring access to the vehicle communication network.

5,798,576

METHOD FOR RESETTING A CENTRAL LOCK SYSTEM OF A MOTOR VEHICLE WITH A REMOTE ACTUATING DEVICE

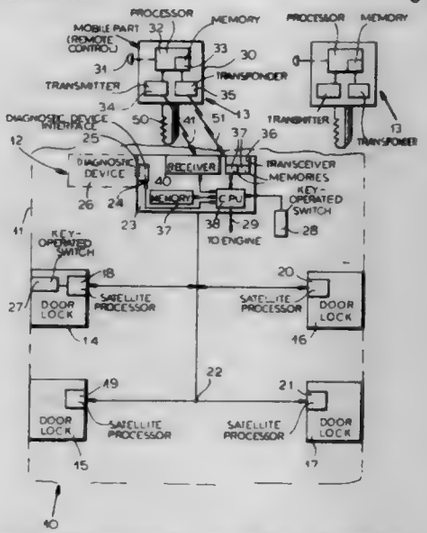
Wilfried Ostermann, Essen, and Fred Welskopf, Herne, both of Germany, assignors to Kiekert AG, Heiligenhaus, Germany

Filed Aug. 9, 1996, Ser. No. 694,908

Claims priority, application Germany, Sep. 8, 1995, 195 33 197.4

Int. Cl.[6] G06F *17/00*

U.S. Cl. 307—10.3 **6 Claims**



1. A method of operating a central lock system of a motor vehicle having a remote-control arrangement of locking and unlocking the central lock system and wherein the remote-control arrangement comprises a mobile part separate from the motor vehicle and a fixed part on the motor vehicle, said mobile part comprising a transmitter, a transponder and a key, said fixed part comprising a receiver, a transponder querying transceiver and a key-operated switch operable by said key, said method comprising the steps of:

(a) independently of a manual actuation of said transmitter, synchronously advancing a remote-control changing code word in said transmitter and a transceiver code word in said transceiver;

(b) for a NORMAL mode of operation, manually actuating said transmitter to transmit a then-effective remote-control changing code word to said receiver and effecting an identity comparison of said then-effective remote-control changing code work as transmitted to said receiver with a then-effective transceiver code word in said transceiver;

(c) selectively effecting a locking or unlocking operation upon said comparison registering correspondence of said then-effective remote-control changing code work as transmitted to said receiver with said then-effective transceiver code word in said transceiver within a given divergence window;

(d) upon occurrence of an event requiring resetting of said system, temporarily connecting a diagnostic device to said fixed part for initializing same and switching said fixed part into a SETUP mode;

(e) with said fixed part in said SETUP mode, inserting said key into said key-operated switch and actuating said key-operated switch, thereby interrogating said transponder with said transponder-querying transceiver, deriving a key-identification code word stored in said transponder as well as a transponder initial code word from said transponder and storing said key-identification code word and said transponder initial code word respectively in a key-identification code word memory and a transceiver code word memory of said transponder querying transceiver;

(f) then operating said transmitter to send a remote-control changing code word advancing in said transmitter to said

receiver and picking up the then-effective remote-control changing code word with said receiver; and

(g) then switching said fixed part to said NORMAL mode of operation and removing said diagnostic device.

5,798,577

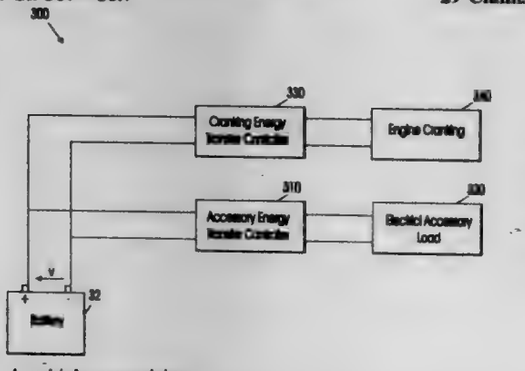
TRACTOR/TRAILOR CRANKING MANAGEMENT SYSTEM AND METHOD

Alan C. Lesesky, Charlotte, N.C.; Bruce A. Purkey, Rogers, Ark., and Bobby Ray Weant, Rock Hill, S.C., assignors to Vehicle Enhancement Systems, Inc., Rock Hill, S.C., and Purkey's Fleet Electrics, Inc., Rogers, Ark.

Filed Feb. 29, 1996, Ser. No. 608,814

Int. Cl.[6] F02N *11/08*

U.S. Cl. 307—10.7 **29 Claims**



1. A vehicle comprising:

a tractor adapted for mechanically connecting to a trailer;

an engine operatively connected to the tractor and having one of an active state or an inactive state, said engine producing mechanical energy to propel said tractor in said active state;

engine cranking means operatively connected to said engine for cranking said engine;

a battery mounted on said tractor to supply electrical energy to said engine cranking means, said battery operatively providing a battery output voltage signal;

means, responsive to said battery output voltage, for allowing transfer of electrical energy from said battery to an electrical accessory load while said engine is in said inactive state and sufficient energy remains in said battery to crank said engine to produce said active state, wherein said means comprises accessory energy transfer control means electrically connected to said battery and to said electrical accessory load for enabling transfer of electrical energy from said battery to said electrical accessory load when said battery output voltage signal is above a first predetermined voltage threshold and for inhibiting transfer of electrical energy from said battery to said electrical accessory load when said battery output voltage signal is below a second predetermined voltage threshold selected such that sufficient energy is conserved within said battery to crank said engine to produce said active state in said engine; and

temperature sensing means operatively connected to said engine for sensing a temperature of said engine and wherein said accessory energy transfer control means comprises voltage threshold determining means responsive to said temperature sensing means for determining said first and second predetermined voltage thresholds responsive to the sensed engine temperature.

5,798,578

SYNCHRONIZATION DEVICE FOR A REDUNDANT POWER SUPPLY SYSTEM

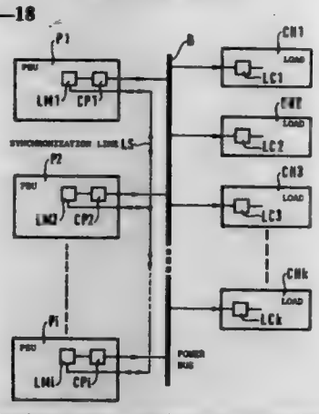
Jean-Marie Thereze, Lannion, France, assignor to Alcatel Converters, Paris, France

Filed May 26, 1995, Ser. No. 451,427

Claims priority, application France, May 31, 1994, 94 06604

Int. Cl.[6] H02J *1/10*

U.S. Cl. 307—18 **3 Claims**



2. In a redundant power supply system supplying power to a load from a plurality of power supply units each of which includes a corresponding one of a plurality of tripping current limiter devices which is reset automatically and which trips out when current flowing therethrough is greater than a predetermined value, a synchronization device comprising:

a coupling device coupling said plurality of power supply units to said load,

a synchronization link interconnecting said plurality of tripping current limiter devices, and

means for providing a synchronization signal on said synchronization link comprising only a single synchronization signal generator;

wherein each of said plurality of tripping current limiter devices includes a corresponding one of a plurality of synchronization means for resetting, in response to said synchronization signal, said each tripping current limiter device; and

wherein said only a single synchronization signal generator is operable so as periodically to provide, on said synchronization link, said synchronization signal to all of said plurality of tripping current limiter devices at the same time.

5,798,579

HIGH VOLTAGE PULSE GENERATOR

Andrew J. McPhee, Bristol, Great Britain, assignor to Matra BAe Dynamics (UK) Ltd., Hertfordshire, United Kingdom

Filed Jun. 13, 1996, Ser. No. 663,547

Claims priority, application United Kingdom, Jun. 20, 1996, 9512549

Int. Cl.[6] H02J *17/20*

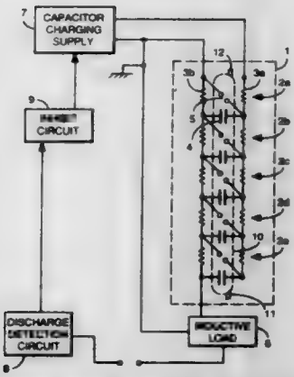
U.S. Cl. 307—106 **9 Claims**

1. A high voltage pulse generator comprising:

a Marx generator having N stages, where N is an integer, each of said N stages including a spark gap switch having a characteristic breakdown voltage;

a charging power supply connected across a first of said N stages of the Marx generator; and

means for periodically inhibiting the action of said charging power supply, wherein said first stage has a lower character



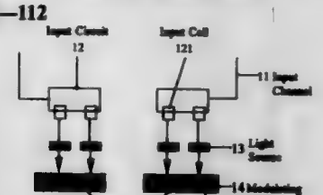
istic breakdown voltage than the characteristic breakdown voltage of the remaining stages.

5,798,580

CONTENTION FREE GLOBAL INTERCONNECTION

Valentin Morozov, 3208 Noble Ct., Boulder, Colo. 80301, and Robert L. Emerald, 25151 Iroquois Ct., Barrington, Ill. 60010

Filed Oct. 9, 1996, Ser. No. 728,542
Int. Cl.[6] H04J *14/00*
U.S. Cl. 307—112 **26 Claims**



Continuation From 2 x 2 Crossbar Switch

1. A contention free switch comprising

N input sources of signals and M output destinations for said signals, where N is a positive integer and M is a positive integer

an input circuit for each input source, said input circuit comprising an input cell for each output destination, wherein said input circuit directs each signal received from said input source to the input cell specific for the destination of said signal and wherein each input cell transmits said signal to a light source,

a light source for each input cell, wherein said light source receives said signal from said input cell and transmits said signal to a photodetector,

a photodetector for each light source, wherein said photodetector receives said signal transmitted from said light source and transmits said signal to an output cell,

an output cell for each photodetector, wherein said output cell receives said signal from said photodetector and transmits said signal to an output circuit,

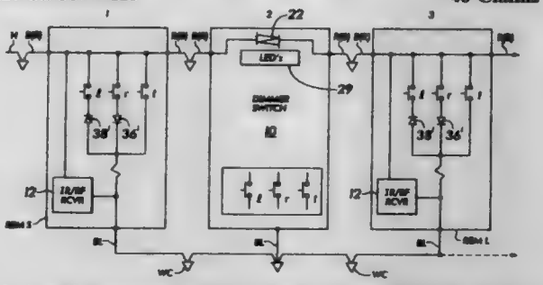
an output circuit for each output destination, said output circuit comprising an output cell for each input source, said output circuit receiving a signal from each said output cell and transmitting each said signal to said output destination.

5,798,581

LOCATION INDEPENDENT DIMMER SWITCH FOR USE IN MULTIPLE LOCATION SWITCH SYSTEM, AND SWITCH SYSTEM EMPLOYING SAME

Jon M. Keagy, North Wales; Donald R. Mosebrook, Bethlehem, and Joel S. Spira, Coopersburg, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Dec. 17, 1996, Ser. No. 768,141
Int. Cl.[6] H05B *37/02*
U.S. Cl. 307—115 **40 Claims**



1. A wall mountable dimmer switch for controlling the level of AC power delivered from an AC source to a load in a lighting control circuit having N switch locations each for receiving a device for controlling the load, where N is at least 3, the N switch locations being interconnected by AC wiring which is subjected to AC line voltage and at least one line being an AC load current carrying line, comprising:

a) a dimming circuit and hookup wires for connecting the dimmer switch to the AC wiring at one of the N locations; and,

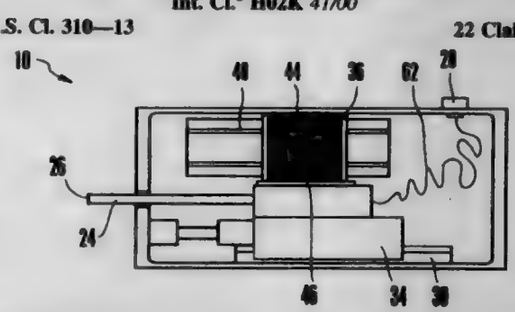
b) auxiliary circuitry connected to the dimming circuit enabling remote devices wired to the AC wiring at the remaining ones of the N locations, and the dimmer switch, to control the load irrespective of which one of the N locations wherein the dimmer switch is wired to the AC wiring.

5,798,582

LINEAR VOICE ACTUATOR WITH REPLACEABLE MAGNETIC COIL

Edward A. Neff, Rancho Santa Fe, Calif., assignor to Systems, Machines, Automation Components, Corporation, Carlsbad, Calif.

Filed Mar. 22, 1996, Ser. No. 620,404
Int. Cl.[6] H02K *41/00*
U.S. Cl. 310—13 **22 Claims**



1. A device for use with an electrical power source, the device comprising:

a magnet adapted for generating a first magnetic field;

a receptacle adapted to be electrically connected to the electrical power source; and

a base and coil bobbin formed as a single piece, the bobbin being adapted for generating a second magnetic field, the bobbin including a passageway for receiving at least a portion of the magnet, said bobbin being selectively and detachably engageable with said receptacle of said electric power source to generate said second magnetic field in response to current from said electric power source, said second magnetic field

being interactive with said first magnetic field to move said bobbin in said first magnetic field.

5,798,583

SPINDLE MOTOR HAVING RECESSED STATOR COILS

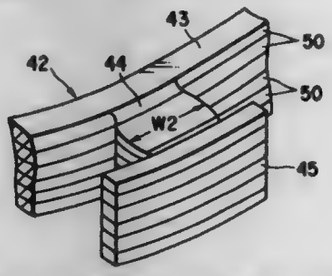
Isao Morita, Hanno, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa-ken, Japan

Division of Ser. No. 612,085, Mar. 7, 1996, Pat. No. 5,668,427. This application Jun. 2, 1997, Ser. No. 866,976

Claims priority, application Japan, Jul. 26, 1995, 7-190659

Int. Cl.[6] H02K *15/02;1/06;1/14*

U.S. Cl. 310—42 **5 Claims**



1. A method of manufacturing a spindle motor including a rotor supported to be rotatable about a central axis and having an inner circumferential surface on which a magnet is provided, and a stator arranged inside the inner circumferential surface to oppose the magnet, the stator including a substantially annular stator core having an annular portion, a plurality of winding portions extending from the annular portion radially outward with respect to the central axis, and pole portions formed on the extended ends of the respective winding portions and opposing the magnet, and a coil wound on each of the coil winding portions, said method comprising the steps of:

preparing a plurality of plate-shaped annular core forming members, each annular core forming member having an annular portion, a plurality of winding forming portions extending from the annular portion radially outward, and pole portion forming portions formed at the extended ends of the winding forming portion;

stacking said plurality of core forming members coaxially to form the stator core;

squeezing the entire plurality of winding portions, formed by stacking the annular core forming members, in a direction of the central axis by plastic formation such that a thickness of the winding portions in the direction of the central axis is smaller than those of the annular portion and each of the pole portions; and

winding a coil on the entire plurality of squeezed winding portion, thus constituting a stator.

5,798,584

ELECTRIC SWITCH, ESPECIALLY FOR ELECTRIC HAND TOOLS

Alois Schaeffeler, Spaichingen; August Geiger, Talheim, and Jens Mueller, Tuttlingen, all of Germany, assignors to Marquardt GmbH, Rietheim-Weilheim, Germany

Filed Mar. 12, 1996, Ser. No. 614,204

Claims priority, application Germany, Mar. 13, 1995, 195 08 925.1

Int. Cl.[6] H05K *7/20;5/00*

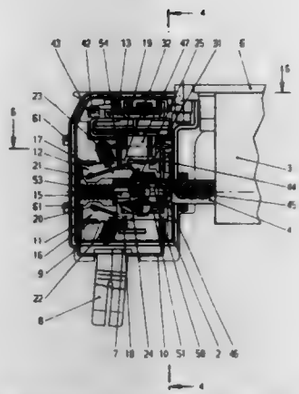
U.S. Cl. 310—50 **26 Claims**

1. An electric switch for an electric hand tool, comprising

(a) a housing defined by housing walls; one of said housing walls having a throughgoing aperture;

(b) a contact assembly supported in said housing;

(c) a movable actuating member for switching said contact assembly;



(d) control electronics, including a power semiconductor, supported in said housing for controlling a motor of the electric hand tool;

(e) a cooling body disposed externally of said housing; said cooling body having a throughgoing orifice in alignment with said throughgoing aperture of said housing wall;

(f) a heat-conducting and electrically conducting carrier part supported in said housing and being electrically and heat-conductingly connected to said power semiconductor; said carrier part extending through said throughgoing aperture of said housing wall and said throughgoing orifice of said cooling body; said carrier part being oriented substantially perpendicularly to said cooling body and being in a heat-transferring contact therewith; and

(g) fastening means for holding said cooling body against said housing wall; said fastening means including cooperating parts formed on said carrier part and said cooling body for directly affixing said cooling body to said carrier part by at least one of frictional engagement and form-fitting engagement.

5,798,585

Patent Not Issued For This Number

5,798,586

LIQUID COOLED A.C. GENERATOR FOR USE IN VEHICLE

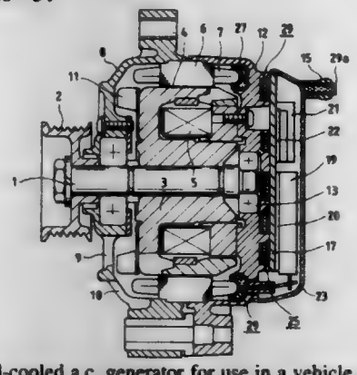
Katsumi Adachi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 635,783, Apr. 22, 1996, abandoned, which is a continuation of Ser. No. 225,312, Apr. 8, 1994, abandoned. This application Apr. 29, 1997, Ser. No. 848,699

Claims priority, application Japan, Apr. 9, 1993, 5-083270

Int. Cl.[6] H02K *9/00;11/00;9/16*

U.S. Cl. 310—54 **3 Claims**



1. A fluid-cooled a.c. generator for use in a vehicle, comprising:

a rotary shaft driven by an engine of the vehicle;

a rotor core fixed to said rotary shaft and adapted to be excited by an excitation coil;

a stator core surrounding said rotor disposed opposite an outer periphery of said rotor core and mounting a stator coil wound on said stator core:

a one piece thermoconductive fluid tube located within said generator and defining a cooling-fluid passage; and

a bracket member on which a tube trough is formed, and a bracket cover to close said tube trough;

wherein said one piece thermoconductive fluid tube is placed within said tube trough and in an internal space of said bracket member so as to house the tube therein.

5,798,587

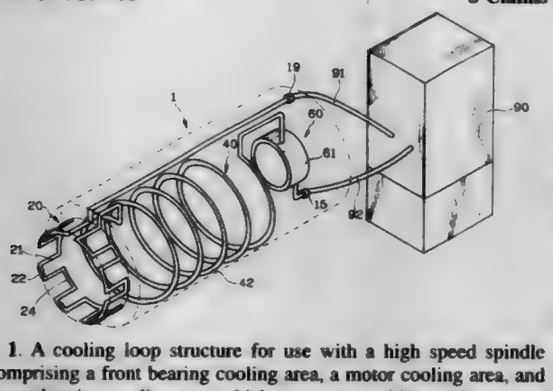
COOLING LOOP STRUCTURE OF HIGH SPEED SPINDLE

Wen-Yeu Lee, Tainai, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jan. 22, 1997, Ser. No. 787,093

Int. Cl.[6] H02K *9/00*

U.S. Cl. 310—58 **8 Claims**



1. A cooling loop structure for use with a high speed spindle comprising a front bearing cooling area, a motor cooling area, and a rear bearing cooling area which are connected in such a manner that when a cooling fluid is sent out from a cooling machine, the cooling fluid first passes through said front bearing cooling area, then said motor cooling area and said rear bearing cooling area, and finally back to said cooling machine to carry away heat energy, and thereby, form a cooling loop structure;

wherein:

(a) said front bearing cooling area comprises a plurality of axially extending holes each having a front and a rear end, and a plurality of chain-like grooves alternately connecting said front and rear ends of said axially extending holes so that said cooling fluid travels said front bearing cooling area in an up-and-down and circumferential manner; and

(b) said motor cooling area comprises a cooling jacket which is contained in said cooling loop structure with a first pair of O-rings of unequal diameters.

5,798,588

VIBRATING MOTOR, VIBRATING MOTOR CASING AND VIBRATING DEVICE CONTAINING VIBRATING MOTOR

Toshihide Okuyama, and Masahiro Kaneko, both of Sayama, Japan, assignors to Sayama Precision Industries Co., Ltd., Sayama, Japan

Filed Apr. 10, 1995, Ser. No. 419,279

Claims priority, application Japan, Apr. 11, 1994, 6-098208

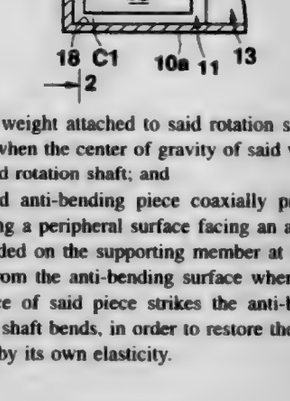
Int. Cl.[6] H02K *7/06*; F16F *15/22*

U.S. Cl. 310—81 **15 Claims**

1. A vibrating motor comprising:

a motor housing supported by a supporting member;

a rotation shaft projecting from said motor housing;



an eccentric weight attached to said rotation shaft providing a vibration when the center of gravity of said weight is rotated around said rotation shaft; and

a disk-shaped anti-bending piece coaxially provided on said shaft having a peripheral surface facing an anti-bending surface provided on the supporting member at a predetermined distance from the anti-bending surface wherein said peripheral surface of said piece strikes the anti-bending surface, when said shaft bends, in order to restore the linear shape of said shaft by its own elasticity.

5,798,589

BRUSHLESS MOTOR HAVING LUBRICATION SYSTEM FOR UPPER AND LOWER BEARINGS

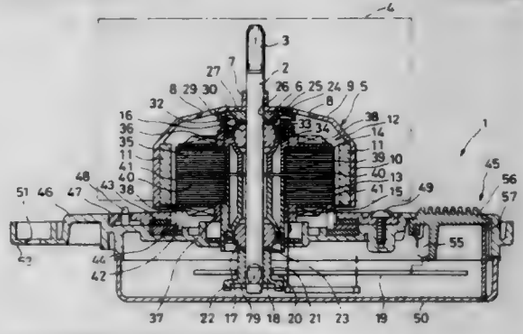
Shinichi Ohi; Fuhito Umegaki; Masami Takemasa; Tatsuo Haraguchi; Yoshihide Gunji, and Hiroshi Ohsawa, all of Konan, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Sep. 10, 1996, Ser. No. 711,591

Claims priority, application Japan, Sep. 13, 1995, 7-260877; Sep. 13, 1995, 7-260879

Int. Cl.[6] H02K *7/08; 5/16*

U.S. Cl. 310—90 **26 Claims**



1. A brushless motor comprising:

a stator including a stator core and coil winding portions, said stator core having a through hole formed therein;

an upper bearing and a lower bearing;

an upper bearing holder mounted in said through hole of said stator core, having at least one oil passage hole formed therein and holding said upper bearing;

a lower bearing holder mounted in said through hole of said stator core and holding said lower bearing, said lower bearing holder having at least one oil passage hole formed therein in fluid communication with said at least one oil passage hole of said upper bearing holder;

a rotary shaft rotatably held by said upper bearing and said lower bearing;

a rotor secured to said rotary shaft and including permanent magnets provided along a rotary direction;

an upper bearing stopper, provided between said upper bearing and said upper bearing holder, securing said upper bearing to

said upper bearing holder, said upper bearing stopper having at least one oil passage hole formed therethrough;

a first felt located under said at least one oil passage hole of said upper bearing stopper and contacting said upper bearing;

a lower bearing stopper, provided between said lower bearing and said lower bearing holder, securing said lower bearing to said lower bearing holder;

a second felt located under said at least one oil passage hole of said lower bearing holder and contacting said lower bearing; and

a thrust stopper for axially supporting said rotor, said thrust stopper having a through hole with said rotary shaft mounted therethrough and including a cylindrical portion surrounding said through hole, an oil guide being constituted by a lower surface of said cylindrical portion.

5,798,590

MULTI-DEGREE-FREEDOM ELECTRIC MOTOR

Kiyokatsu Sakakibara, Komaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

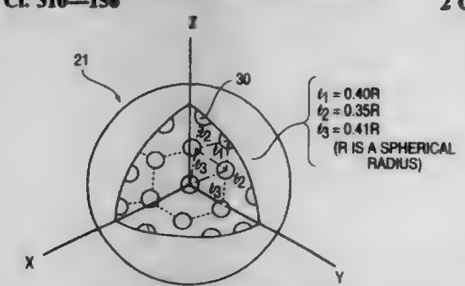
PCT No. PCT/JP96/03622, § 371 Date Aug. 8, 1997, § 102(e) Date Aug. 8, 1997, PCT Pub. No. WO97/23030, PCT Pub. Date Jun. 26, 1997

PCT Filed Dec. 12, 1996, Ser. No. 875,938

Claims priority, application Japan, Dec. 15, 1995, 7-326986

Int. Cl.[6] H02K *21/14;21/12;1/27*

U.S. Cl. 310—156 **2 Claims**



1. A multi-degree-of-freedom electric motor comprising:

a spherical rotor comprising a plurality of projections on a spherical surface of said spherical rotor, wherein said plurality of projections comprise a magnetic material;

a bearing supporting said spherical rotor so as to allow said spherical rotor to be rotatable; and

a stator disposed within a predetermined space from the spherical surface of said spherical rotor, wherein said stator comprises a plurality of electromagnets on a surface thereof which opposes the spherical surface of said spherical rotor;

wherein each of said plurality of projections of said spherical rotor is disposed at one of a plurality of triangular apexes of a plurality of triangles inscribing an outer spherical surface of said spherical rotor, wherein said plurality of triangles comprise a combination of two kinds of isosceles triangles wherein a first one of the two kinds of isosceles triangles has a side having a length of 0.40 R and has two other sides having a length of 0.35 R and wherein a second one of the two kinds of isosceles triangles has a first side having a length of 0.40 R and has two second sides having a length of 0.41 R, wherein R is a spherical radius of said spherical rotor.

5,798,591

ELECTROMAGNETIC MACHINE WITH PERMANENT MAGNET ROTOR

Paul Evan Lillington, Lugarno, and David John Lillington, Sylvania, both of Australia, assignors to T-Flux Pty Limited, Peakhurst, Australia

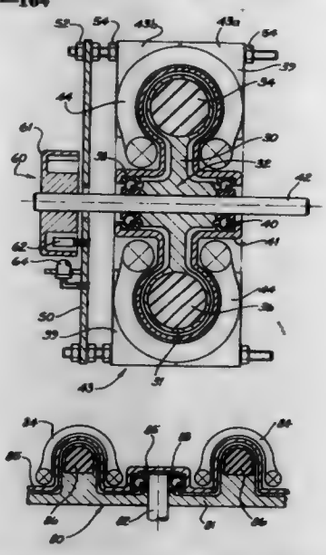
PCT No. PCT/AU94/00405, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO95/03646, PCT Pub. Date Feb. 2, 1995

PCT Filed Jul. 19, 1994, Ser. No. 592,324

Claims priority, application Australia, Jul. 19, 1993, PM0011

Int. Cl.[6] H02K *29/08;37/00*

U.S. Cl. 310—164 **20 Claims**



1. An electromagnetic machine of the type having a stator and a rotor, said rotor having a plurality of magnets arranged about said rotor at a given radius with polar axes being tangential to a circumference of a circle defined by said radius and perpendicular to a rotational axis of said rotor and said stator being an arrangement of saddle-shaped solenoidally wound stator coils formed onto a non-magnetic stator housing in an open hollow toroidal configuration, open such that said magnets of said rotor are enclosed within a hollow toroidal space defined by said stator coils.

5,798,592

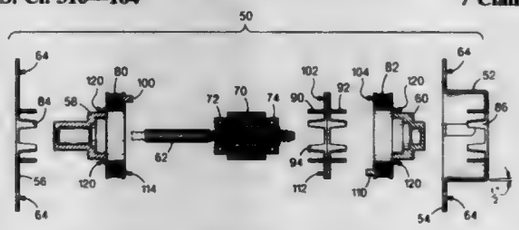
SIMPLIFIED ELECTRIC MOTOR CONSTRUCTION

Brian Peterson, Woodbury, Conn., assignor to Tri-tech, Inc., Waterbury, Conn.

Continuation-in-part of Ser. No. 398,093, Mar. 3, 1995, abandoned. This application Nov. 29, 1996, Ser. No. 770,378

Int. Cl.[6] H02K *21/14;1/04;5/04*

U.S. Cl. 310—164 **7 Claims**



1. An electric motor, comprising:

(a) first and second stator coils wound, respectively, on first and second bobbins;

(b) first and second stator poles closely engaging, respectively, slots defined in said first and second bobbins to radially align, respectively, said first and second stator poles with respect to said first and second bobbins;

(c) a central pole structure having formed thereon poles extending in proximity to said first and second bobbins; and

(d) alignment means extending between said first and second bobbins and through said central pole structure to radially align said poles on said central pole structure with respect to said first and second bobbins and said first and second poles.

5,798,593

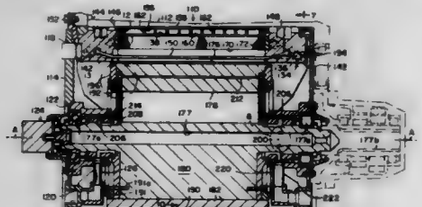
SOLID ROTOR ASSEMBLY

Richard T. Salter, II, Bedford; James L. Kirtley, Jr., Brookline; Gita P. Rao, Belmont; Dariusz A. Bushko, Hopkinton, and Gary Colello, Lunenberg, all of Mass., assignors to SatCon Technology Corporation, Cambridge, Mass.

Filed May 2, 1996, Ser. No. 642,146

Int. Cl.[6] H02K *17/00*

U.S. Cl. 310—166 **16 Claims**



1. An induction motor comprising:

a stator defining stator inner and stator outer diameters extending about a longitudinal axis, said stator including a plurality of windings extending longitudinally and circumferentially about the longitudinal axis between said stator inner diameter and said stator outer diameter and passing an electric current therethrough to create a magnetic field; and

a rotor extending along the longitudinal axis having a rotor length and a rotor outer diameter less than said stator inner diameter, said rotor being rotatable about the longitudinal axis relative to said stator in response to the magnetic field, said rotor including a hoop portion disposed adjacent said rotor outer diameter and extending radially inwardly toward the longitudinal axis, said hoop portion being a solid unitary structure having an outer peripheral wall with a continuous cylindrical surface;

said hoop portion having a plurality of slots extending parallel to the longitudinal axis, said slots adjacent to the outer peripheral wall but not penetrating said surface,

each slot containing an electrically conductive bar.

5,798,594

BRUSHLESS SYNCHRONOUS ROTARY ELECTRICAL MACHINE

Alexander Radovsky, Eder 42A, 34752, Haifa, Israel

Filed Mar. 24, 1997, Ser. No. 823,671

Claims priority, application Israel, Aug. 5, 1996, 119010

Int. Cl.[6] H02K *1/00;3/00;21/00*

U.S. Cl. 310—180 **23 Claims**

1. An electrical machine comprising:

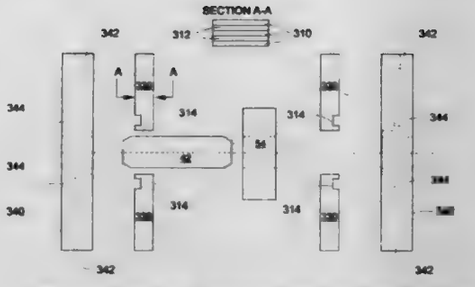
(a) a stator armature including a number of magnetically interactive axial bars;

(b) a substantially toroidal annular winding, rigidly attached to said stator armature and having two lateral sides;

(c) a rotor including:

(i) a shaft concentric with and extending axially through said annular winding and free to rotate therewithin, and

(ii) a magnetically interactive rotor member, rigidly attached to said shaft, and including two projections extending radially outward from said shaft, each of said projections



sweeping past said axial bars and past at least a portion of one of said lateral sides of said winding as said shaft rotates.

5,798,595

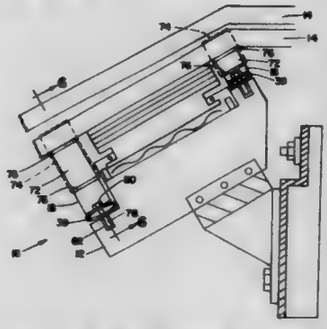
VIBRATIONAL CONTROL SYSTEM FOR STATOR COILS

Lennart S. Nilsson, Winter Springs; Charles M. Rowe, Orlando, and Donald Yaffee, Winter Springs, all of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1996, Ser. No. 777,560

Int. Cl.[6] H02K *3/46*

U.S. Cl. 310—260 **9 Claims**



1. A vibrational control system for coils of a stator in an electrodynamic apparatus, said system comprising:

a coil support brace mounted to the stator;

a push block compressed between the coils and the coil support brace;

a first spring interposed between said push block and said coil support brace for adjusting a characteristic frequency of the coils;

a first support ring positioned adjacent to one end of the push block and disposed between the coils and the coil support brace;

a second spring interposed between the coil support brace and the first support ring; and

pins running laterally across a cavity in the coil support brace and at opposing longitudinal ends of the cavity, the pins being mounted above a lip at either end of the push block to restrain movement of the push block out of the cavity.

5,798,596

PERMANENT MAGNET MOTOR WITH ENHANCED INDUCTANCE

Robert E. Lordo, Tega Cay, S.C., assignor to Pacific Scientific Company, Rock Hill, S.C.

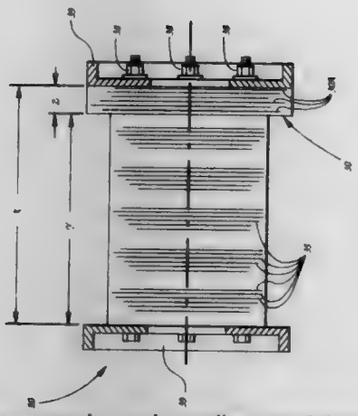
Filed Jul. 3, 1996, Ser. No. 718,046

Int. Cl.[6] H02K *1/22;21/12;1/06*

U.S. Cl. 310—261 **14 Claims**

1. A permanent magnet motor with enhanced inductance, comprising:

(a) a motor frame having annular inner walls defining a void therein;



(b) a stator mounted on and extending around the periphery of the inner walls of said frame in the void in the motor frame, said stator including windings positioned thereon for developing current from power supplied to the motor, the innermost portion of said stator defining a radial inner portion of said void;

(c) a rotor mounted in the void radially inwardly of said stator for concentric rotation in said motor frame in closely spaced-apart relation to said stator and having an iron core for air gap flux interaction with said stator, said rotor having a magnet zone and a lamination zone extending axially along the length of said rotor:

(i) said magnet zone having therein permanent magnets positioned on the rotor and projecting therefrom for interaction with the windings on the stator to produce magnetic-field induced torque for rotating the rotor, and defining a magnet zone air gap between the magnets and stator;

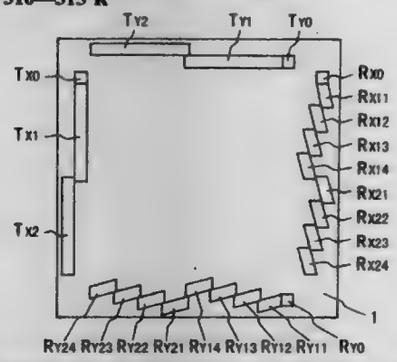
(ii) said lamination zone having therein a plurality of stacked laminations positioned on said rotor for rotation therewith, said lamination zone being axially adjacent to said magnet zone and devoid of magnets, said laminations extending radially outwardly from the rotor shaft into closely spaced-apart radial alignment with radially adjacent windings and forming an area of decreased air gap relative to the magnet zone air gap and with increased inductance between the stator and the rotor.

5,798,597

SURFACE ACOUSTIC WAVE DEVICE FOR SENSING A TOUCH-POSITION

Kohji Toda, 1-49-18 Futaba, Yokosuka 239, Japan*

Filed Mar. 6, 1997, Ser. No. 812,706
Int. Cl.[6] H01L *41/04*
U.S. Cl. 310—313 R **8 Claims**



1. A surface acoustic wave position-sensing device comprising:

a piezoelectric substrate having an upper- and a lower end surfaces running perpendicular to the thickness direction thereof;

a nonpiezoelectric plate having an upper- and a lower end surfaces running perpendicular to the direction of the thickness d thereof;

two surface acoustic wave transducing units X and Y, each thereof consisting of

an input interdigital transducer T_o formed on said upper end surface of said piezoelectric substrate,

N input interdigital transducers T_i (i=1, 2, . . . , N) formed on said upper end surface of said piezoelectric substrate,

an output interdigital transducer R_o opposed to said interdigital transducer T_o on said upper end surface of said piezoelectric substrate and placed such that the finger direction of said interdigital transducer R_o runs parallel with that of said interdigital transducer T_o,the thickness of said piezoelectric substrate being larger than three times an interdigital periodicity P of said interdigital transducers T_o, T_i and R_o, said thickness d of said nonpiezoelectric plate being smaller than said interdigital periodicity P, and

at least two output interdigital transducers R_{i1} and R_{i2} (i=1, 2, . . . , N) opposed to each interdigital transducer T_i on said upper end surface of said piezoelectric substrate and placed such that the finger direction of said interdigital transducers R_{i1} and R_{i2} is slanting to that of said interdigital transducer T_i by an angle α, respectively, an interdigital periodicity P_N along the vertical direction to the finger direction of said interdigital transducers R_{i1} and R_{i2} being equal to the product of said interdigital periodicity P and cos α, said lower end surface of said nonpiezoelectric plate being cemented on said upper end surface of said piezoelectric substrate through said interdigital transducers T_o,T_i, R_o, R_{i1} and R_{i2}; and

a controlling system connected with said surface acoustic wave transducing units X and Y,

each of said interdigital transducers T_o and T_i receiving an electric signal with a frequency approximately corresponding to said interdigital periodicity P, exciting a surface acoustic wave of the zeroth mode and the higher order modes on an area, in contact with said interdigital transducers T_o and T_i, of said upper end surface of said piezoelectric substrate, and transmitting said surface acoustic wave having the wavelength approximately equal to said interdigital periodicity P to an area, in contact with said interdigital transducers R_o, R_{i1} and R_{i2}, of said upper end surface of said piezoelectric substrate, through said nonpiezoelectric plate, the phase velocity of said surface acoustic wave of said zeroth mode being approximately equal to the phase velocity of the Rayleigh wave traveling on said piezoelectric substrate alone under the electrically shorted condition, the phase velocity of said surface acoustic wave of said higher order modes being approximately equal to the phase velocity of the Rayleigh wave traveling on said piezoelectric substrate alone under the electrically opened condition,

said interdigital transducer R_o transducing said surface acoustic wave excited by said interdigital transducer T_o to an electric signal with a phase θ_{base} and delivering said electric signal,

each of said interdigital transducers R_{i1} and R_{i2} transducing said surface acoustic wave excited by each interdigital transducer T_i to electric signals E_j (j=1, 2, . . . , χ) with phases θ_j (j=1, 2, . . . , χ), respectively, said phases θ_j corresponding to positions F_j (j=1, 2, . . . , χ) on said upper end surface of said nonpiezoelectric plate, respectively, each electric signal E_j having a frequency approximately corresponding to said interdigital periodicity P, the total phase $\Sigma\theta_j$ made by said phases θ_j being zero, the total electric signal ΣE_j made by said electric signals E_j being zero and not able to be detected at each of said interdigital transducers R_{i1} and R_{i2},

said nonpiezoelectric plate being made of a material such that the phase velocity of the surface acoustic wave traveling on said nonpiezoelectric plate alone is lower than that traveling on said piezoelectric substrate alone,

said interdigital transducers T_i and R_{i1} forming N propagation lanes D_{i1} (j=1, 2, . . . , N) of the surface acoustic wave on said upper end surface of said nonpiezoelectric plate, each

propagation lane D_{i1} consisting of minute propagation lanes Z_j (j=1, 2, . . . , χ) corresponding to said positions F_j,

said interdigital transducers T_i and Ri_2 forming N propagation lanes D_{i2} (j=1, 2, . . . , N) of the surface acoustic wave on said upper end surface of said nonpiezoelectric plate, each propagation lane D_{i2} consisting of minute propagation lanes Z_j (j=1, 2, . . . , χ) corresponding to said positions F_j,

one of said interdigital transducers R_{i1} and R_{i2} delivering an electric signal E with a phase θ only when touching a position F_x, out of said positions F_j, on a minute propagation lane Z_X out of said minute propagation lanes Z_j, said position F_x corresponding to an electric signal E_x with a phase θ_x, said total electric signal ΣE_j minus said electric signal E_x being equal to said electric signal E, said total phase $\Sigma\theta_j$ minus said phase θ_x being equal to said phase θ,

said controlling system sensing a touch with a finger or others on said position F_X by an appearance of said electric signal E at said one of said interdigital transducers R_{i1} and R_{i2}, and finding said position F_X by detecting said one, delivering said electric signal E, of said interdigital transducers R_{i1} and R_{i2}, and by evaluating a difference between said phases θ and θ_{base}.

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VIBRATION DRIVEN DEVICE

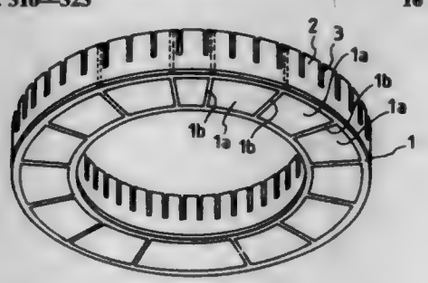
Kosuke Fujimoto, Murayama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 321,565, Oct. 12, 1994, abandoned. This application Nov. 18, 1996, Ser. No. 749,624

Claims priority, application Japan, Oct. 13, 1996, 5-255663

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—323 **16 Claims**



1. A vibration driven device comprising:

a vibration member having a plurality of projection portions defined by a respective plurality of grooves formed in a contact surface of the vibration member; and

an electro-mechanical energy conversion element contacting said vibration member, said conversion element having a plurality of electrodes for receiving an applied signal to generate a vibration in said vibration member, each electrode having radial boundary portions and inner and outer circumferential boundary portions,

wherein the inner and outer circumferential boundary portions of said plurality of electrodes of said conversion element are located substantially coincident with said plurality of projection portions of said vibration member, and each radial boundary portion of said plurality of electrodes of said conversion member is located coincident with one of said plurality of projection portions of said vibration member.

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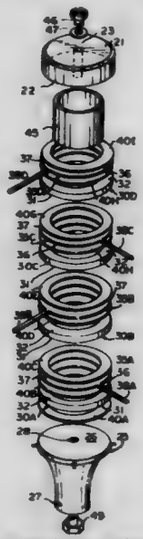
ULTRASONIC TRANSDUCER ASSEMBLY USING CRUSH FOILS

Philip C. Harewood, Elgin, Ill., assignor to Dukane Corporation, St. Charles, Ill.

Filed Oct. 24, 1996, Ser. No. 736,262

Int. Cl.[6] H02W *2/00*; H01L *41/08*

U.S. Cl. 310—323 **16 Claims**



1. In a pre-stressed sandwich-type ultrasonic transducer assembly having opposite end surfaces and including a stack of active elements and passive electrode elements each having front and rear surfaces which are substantially flat except for minute surface irregularities, with the stack subjected in operation to, a compressive pre-load, the improvement comprising:

a plurality of thin electrically conductive foil members respectively disposed between facing surfaces of adjacent elements of the stack and spaced from the end surfaces,

each of said foil members being sufficiently soft to deform to follow the surface irregularities of the adjacent element surfaces under the compressive pre-load of the stack and fill inter-element voids created by such irregularities, thereby to enhance acoustic performance of the transducer assembly.

5,798,600

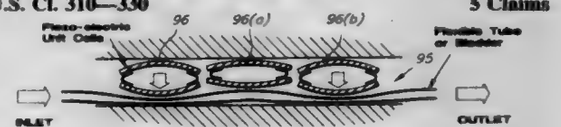
PIEZOELECTRIC PUMPS

Frank Everett Sager, Clear Lake Shores, Tex., and Christopher J. Matice, Bellbrook, Ohio, assignors to Oceaneering International, Inc., and Stress Engineering Services, Inc., both of Houston, Tex.

Continuation-in-part of Ser. No. 573,202, Dec. 15, 1995, abandoned, which is a continuation-in-part of Ser. No. 297,233, Aug. 29, 1994, abandoned. This application Feb. 18, 1997, Ser. No. 801,618

Int. Cl.[6] H01L *41/08*

U.S. Cl. 310—330 **5 Claims**



1. A piezoelectric pump which comprises:

a pump housing having a fluid chamber;

a piezoelectric unit cell in said housing comprising

a) a first mechanically biased bender-element;

b) a second mechanically biased bender-element, each said bender-element being mechanically biased in opposite directions; and

c) means for preventing separation of said ends of said bender-elements; and

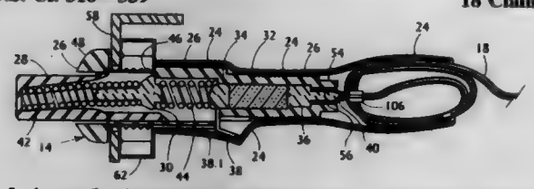
a piston which is activated by said piezoelectric unit cells to change the volume of said chamber.

5,798,601

ADJUSTABLE RETROFIT IGNITION KIT FOR PORTABLE GAS APPLIANCES

James M. Hansen, 2465 Mayfair Ave., White Bear Lake, Minn. 55110

Filed Jun. 3, 1996, Ser. No. 656,719
Int. Cl.[6] H01L *41/113;41/053*
U.S. Cl. 310—339 **18 Claims**



1. A retrofit piezoelectric ignition kit for an apparatus having a burner, a first frame portion readily accessible to the hand, and a second portion adjacent to the burner, with the retrofit piezoelectric ignition kit comprising:

a) a housing having an exterior with a threaded portion and an annular flange extending about the exterior adjacent the exterior threaded portion;

b) a nut threadingly engagable with the exterior threaded portion of the housing,

c) a piezoelectric crystal in the housing;

d) a hammer in the housing and strikeable against the piezoelectric crystal for generating a voltage;

e) first and second conductors between the piezoelectric crystal and a portion of the exterior for conducting voltage from the piezoelectric crystal out of the housing;

f) a hand-operated actuator on the housing and being engaged to the hammer to operate the hammer to produce the voltage;

g) an electrically insulative tube about at least a section of the exterior to insulate the hand against shocks produced by the voltage, with the electrically insulative tube tightly engaging the exterior section of the housing such that the tube follows the contour of the housing, with the exterior section of the housing having a portion adjacent to the actuator to insulate the hand against shocks, with the electrically insulative tube being formed of a heat-shrinkable material, with the heat required to shrink such material being of an intensity and temperature no greater than that which is hot to the touch;

h) an electrode unit having an electrically insulative body and an electrode extending therefrom, with the electrode having a distal tip from which a spark may emanate;

i) an insulated conductive lead between the electrode unit and the first conductor of the piezoelectric ignitor to electrically connect the piezoelectric ignitor and the electrode such that a spark may emanate from the distal tip of the electrode;

j) a first structural member electrically connected to the second conductor such that the first structural member is a ground for the piezoelectric ignitor, with the first structural member comprising:

i) a first end comprising a first plate portion having a first aperture for receiving the housing of the piezoelectric ignitor, with the first aperture being defined by an interior edge threadable onto the threaded portion of the housing, with the first plate portion being confrontable against the flange of the housing and being removably fixed in such a position via the nut being threaded onto the threaded portion of the housing; and

ii) a second end comprising a second plate portion, with the plate portions being integrally and rigidly engaged with each other at an angle, and with the second plate portion being removably fixed to the first frame portion of the apparatus such that the piezoelectric ignitor is removably fixable to the first frame portion of the apparatus; and

k) a second structural member comprising:

i) a first end removably engagable to the electrode unit; and

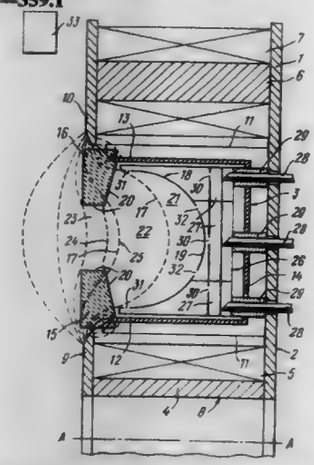
ii) a second end removably engagable to the second portion of the apparatus such that the electrode unit is removably engagable to the second portion adjacent the burner such that the distal tip of the electrode may be fixed adjacent the burner and at a customized distance from the burner, with the second end of the second structural member comprising a resilient clamp having a pair of arms resiliently biased toward each other such that the arms pinch the second portion therebetween, with each of the arms comprising a pinching portion which engages the second portion and a flared distal end portion integral with and extending away from the pinched portion to define an opening into the clamp for readily accepting the second portion and such that the arms extend resiliently apart when the clamp is pushed onto the second portion.

5,798,602

PLASMA ACCELERATOR WITH CLOSED ELECTRON DRIFT

Vladimir Gopanchuk, and Igor Sorokin, both of Kaliningrad, Russian Federation, assignors to Societe Nationale Industrielle Aerospatial, France

PCT No. PCT/RU94/00208, § 371 Date Feb. 20, 1997, § 102(e) Date Feb. 20, 1997, PCT Pub. No. WO96/06518, PCT Pub. Date Feb. 29, 1996
PCT Filed Aug. 25, 1994, Ser. No. 793,500
Int. Cl.[6] H01J *1/52*
U.S. Cl. 313—359.1 **4 Claims**



1. A plasma accelerator with closed electron drift, comprising an annular discharge chamber (3) having an outer side wall (16) and an inner side wall (15) and a channel (21) formed by internal surfaces (20) of these walls (15, 16) and having a ionization zone (22) for operating gas and an acceleration zone (23) for ions of this gas said zones being located within the outlet portion of the discharge chamber (3), in a channel (21) whereof on the side opposite to its outlet portion is placed an annular anode (18), behind which an annular gas distributor (26) is located which has at least one channel (28) for the supply of operating gas thereto and at least one channel (30) for the supply of operating gas into the ionization zone (22) of the channel (21) of the discharge chamber (3) connected with a magnetic system (2) having an external magnetic pole (10) mounted on the external side of the outer side wall (16) of the discharge chamber (3) approximately within its oulet portion, and an internal magnetic pole (9) mounted on the external side of the inner side wall (15) of the discharge chamber (3) approximately within its outlet portion, said poles being interconnected by a magnetic circuit (8) of the magnetic system (2) having at least one magnetic field source to produce a certain configuration of magnetic force lines (17) forming magnetic force surfaces (25) in the discharge chamber (3), inside and outside of which are coaxially located annular magnetic screens (12, 13) interconnected by the magnetic circuit and placed correspondingly near to its outer and inner side walls (16, 15) with gaps relative to

corresponding magnetic poles (**10**, **9**), thereby the accelerator has at least one cathode—neutralizer (**33**) of accelerated ions of operating gas, wherein, at least partially the internal surfaces (**20**) of the outer and inner side walls (**16**, **15**) of the discharge chamber (**3**) in the ionization zone (**22**) are made at an angle to a longitudinal axis (A—A) of the accelerator and an anode (**18**) surface (**19**) facing the ionization zone (**22**) on the side of the outlet portion of the discharge chamber (**3**) has a concave form encompassing the magnetic force surfaces (**25**) of the ionization zone (**22**), thereby, the edges of the concave surface (**19**) of the anode (**18**) are located in the area of the internal surfaces (**20**) of the outer and inner side walls (**16**, **15**) of the discharge chamber (**3**).

5,798,603

CATHODE RAY TUBE HAVING IMPROVED BEAM CONVERGENCE

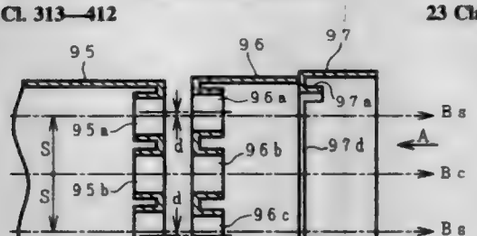
Atsushi Tsuruoka, Mobara, and Masayoshi Misono, Chousei-gun, both of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Electronic Devices Co., Ltd., Chiba-ken, both of Japan

Filed Mar. 8, 1996, Ser. No. 619,893

Claims priority, application Japan, Mar. 13, 1995, 7-052255

Int. Cl.[6] H01J *29/50*

U.S. Cl. 313—412 **23 Claims**



1. A cathode ray tube including:

an evacuated envelope including a panel portion carrying a phosphor screen, a neck portion housing an electron gun, and a funnel portion for connecting said panel portion and said neck portion;

said electron gun housed in said neck portion for emitting three electron beams arranged in an inline direction; and

a deflection device mounted in a transition region between said funnel portion and said neck portion in said evacuated envelope;

wherein said electron gun is provided with an electrode having a single opening common to said three electron beams and having correction electrodes disposed in vicinities of both edges of said single opening which extend substantially transverse to said inline direction of said three electron beams, the electrode having said single opening extending substantially parallel with a cathode ray tube axis into a region downstream of an end surface of an anode electrode forming a main lens on a cathode side thereof and provided with an electric field produced by said main lens, and the electrode having said single opening is electrically connected to said anode electrode, said correction electrodes having tips thereof disposed so as to not extend in a direction towards the cathode ray tube axis beyond a plane which contains the cathode ray tube axis and which extends perpendicular to the inline direction of the three electron beams.

5,798,604

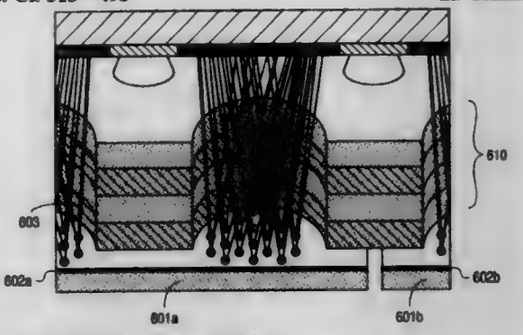
FLAT PANEL DISPLAY WITH GATE LAYER IN CONTACT WITH THICKER PATTERNED FURTHER CONDUCTIVE LAYER

Robert M. Duboc, Jr., Menlo Park, and Paul A. Lovoi, Saratoga, both of Calif., assignors to Candescent Technologies Corporation, San Jose, Calif.

Division of Ser. No. 12,297, Feb. 1, 1993, Pat. No. 5,541,473, which is a continuation-in-part of Ser. No. 867,044, Apr. 10, 1992, Pat. No. 5,424,605. This application Jan. 5, 1996, Ser. No. 583,323

Int. Cl.[6] H01J *29/70*

U.S. Cl. 313—495 **22 Claims**



1. A flat panel display comprising:

a cathode comprising a plurality of emitters;

an electrically conductive gate layer overlying the cathode, each one of at least part of the emitters being exposed through a corresponding one of a plurality of gate openings extending through the gate layer, the gate openings being clustered in a multiplicity of laterally separated sets;

a patterned electrically conductive further layer in contact with the gate layer above the cathode, the further layer being thicker than the gate layer, each set of gate openings being exposed through a corresponding one of a plural number of holes extending through the further layer; and

an anode overlying the gate and further layers.

5,798,605

THIN-TYPE DISPLAY DEVICE

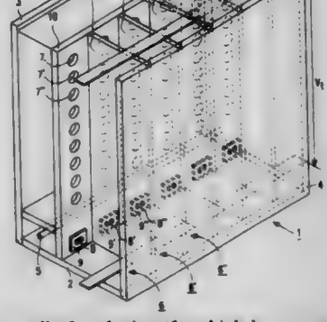
Nicolaas Lambert; Theunis S. Baller; Gerardus G. P. Van Gorkom; Edwin A. Montie; Petrus H. F. Trompenaars, and Siebe T. De Zwart, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 10, 1997, Ser. No. 798,347

Claims priority, application European Pat. Off., Feb. 9, 1996, 96200304

Int. Cl.[6] H01J *31/00*

U.S. Cl. 313—422 **10 Claims**



1. A thin-type display device (**1**) which has a vacuum envelope and which comprises a transparent front wall (**3**), which is provided with a display screen having a pattern of luminescent pixels,

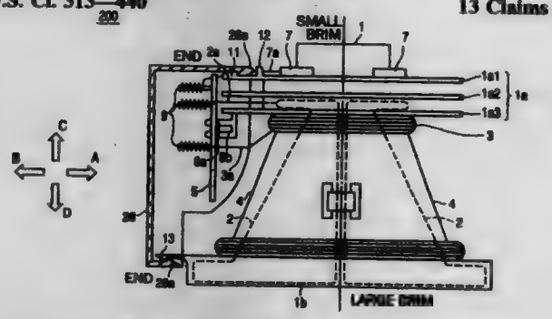
which display device (1) includes at least an electron source (5) and a duct structure, which cooperates with said electron source (5) and which extends substantially parallel to the front wall (3), the ducts (6, 6', 6") of the duct structure comprising electron-propagation means with walls (11, 11', 11") of an electrically insulating material having a secondary emission coefficient which is suitable for electron propagation, said electron-propagation means cooperating with the electron source (5) for transporting emitted electrons, characterized in that $1 \leqq s/w \leqq 5$ and $s \cdot w \geqq 5$ mm^2, where s indicates the depth of the ducts (6, 6', 6") and w denotes the width of the ducts (6, 6', 6"), in operation, the voltage difference per unit of length, measured over the length of the ducts (6, 6', 6") in a direction parallel to the front wall (3), is less than 75 V/cm.

5,798,606

DEFLECTION YOKE HAVING AN IMPROVED PROTECTION COVER FOR PROTECTING A TERMINAL BOARD

Takasuke Koga; Keiji Morimoto, and Naoki Hatakeyama, all of Ibaraki-ken, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 4, 1997, Ser. No. 794,377
Claims priority, application Japan, Feb. 5, 1996, 8-044293
Int. Cl.[6] H01J *29/70*
U.S. Cl. 313—440 **13 Claims**



1. A deflection yoke comprising:

separator means having a funnel shape and having a large brim and a small brim, said large brim being adapted to be located adjacent the front end of a cathode ray tube when the deflection yoke is mounted thereon and said small brim being adapted to be located adjacent the rear end of said cathode ray tube;

a first flange formed on said small brim;

a second flange formed on said large brim;

a substrate held by at least one of said first and second flanges;

a protective cover for protecting said substrate, said protective cover having a first end adapted to be mounted on said small brim and a second end adapted to be mounted on said large brim;

first coupling means for coupling said first flange to said protective cover at said first end; and

second coupling means for coupling said second flange to said protective cover at said second end.

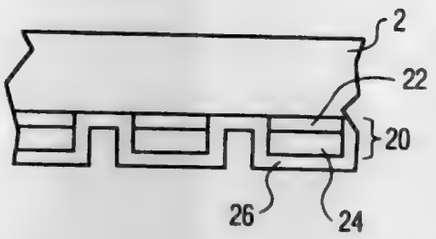
5,798,607

PHOSPHOR SEARCH INCLUDING A NON-PIGMENTED PHOSPHOR AND RGB PHOSPHOR ELEMENTS FOR A CRT

Robert L. Donofrio, Ann Arbor, Mich., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1997, Ser. No. 832,896
Int. Cl.[6] H01J *29/32*
U.S. Cl. 313—461 **11 Claims**

1. A color CRT including a display window, a phosphor screen on the inside surface of the display window, the screen comprised of particles of at least one cathode luminescent phosphor, and a reflective layer on top of the phosphor screen, characterized in that the phosphor particles are present in a composite layered structure of a first layer of phosphor particles disposed on said inside surface and having pigment particles adhered to the surfaces of the phosphor particles, and a second layer of said phosphor particles with substantially no pigment particles, the second layer positioned on top of the first layer.

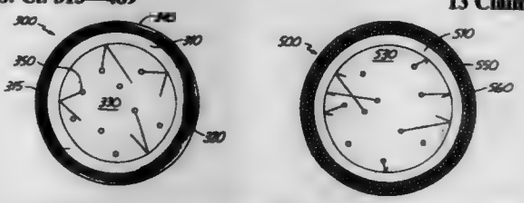


5,798,608

AVIONICS GRADE FLUORESCENT LAMP RESISTANT TO LUMEN DEPRECIATION

James E. Shaw, Cedar Rapids, Iowa, assignor to Rockwell International, Costa Mesa, Calif.

Filed Sep. 7, 1995, Ser. No. 526,128
Int. Cl.[6] H01J *61/35*
U.S. Cl. 313—489 **13 Claims**



1. A lumen depreciation resistant fluorescent lamp comprising:

a tube constructed of an ultraviolet (UV) radiation transmissive material;

a gas inside of the tube, the gas capable of producing UV radiation in response to an electrical stimulus; and

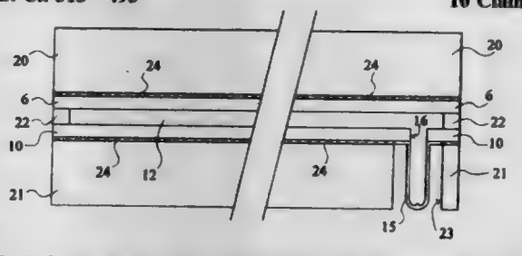
a phosphor particle containing coating adhered to an outer surface of the tube, phosphor particles in the phosphor particle containing coating absorbing UV radiation produced by the gas inside of the tube and producing visible light in response.

5,798,609

FLAT DISPLAY SCREEN WITH A WIDE INTER-ELECTRODE SPACING

Jean-Marc Sol, Montpellier, France, assignor to Pixtech S.A., Rousset, France

Filed Mar. 12, 1996, Ser. No. 614,398
Claims priority, application France, Mar. 17, 1995, 95 03376
Int. Cl.[6] H01J *1/66;1/70*
U.S. Cl. 313—495 **10 Claims**



1. A flat display screen including a first electrode (1) and a second electrode (5), said first and second electrodes separated by

an inner space (12), wherein at least one of said first and second electrodes (1, 5) is supported by a thin substrate plate (10) and by a thick rigidifying plate (21) flush-mounted to said thin substrate plate, said inner space (12) being defined by a peripheral frame (22) placed between said first and second electrodes (1, 5), outside their useful surface.

5,798,610

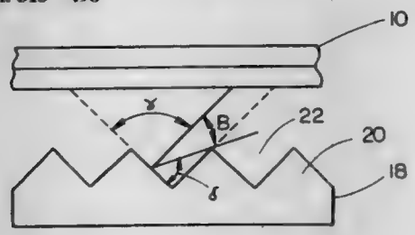
EFFICIENT ELECTROLUMINESCENT BACKLIGHT

Steven E. Koenck, 964 44th St., SE., Cedar Rapids, Iowa 52403, and William Henry Keehn, II, 2630 Indian Creek Rd., Marion, Iowa 52302

Filed Apr. 4, 1995, Ser. No. 417,042

Int. Cl.[6] H01J *17/49*

U.S. Cl. 313—498 **6 Claims**



1. An efficient electroluminescent light source for backlighting a liquid crystal display and the like comprising an electroluminescent panel having a multiplicity of photon point sources thereon for generating photons having a trajectory within a preferred volume.

5,798,611

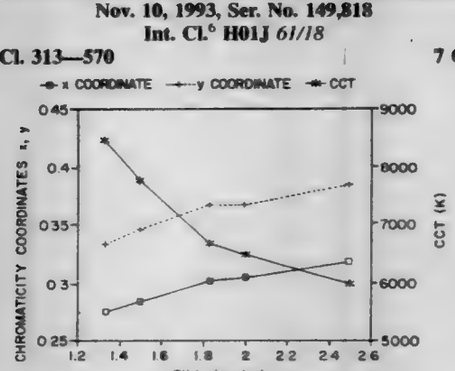
LAMP HAVING CONTROLLABLE SPECTRUM

James T. Dolan, Frederick; Michael G. Ury, Bethesda; Charles H. Wood, Rockville, and Brian Turner, Myersville, all of Md., assignors to Fusion Lighting, Inc., Rockville, Md.

Continuation of Ser. No. 60,553, May 13, 1993, abandoned, which is a continuation-in-part of Ser. No. 867,551, Apr. 13, 1992, abandoned, Ser. No. 875,769, Apr. 29, 1992, abandoned, Ser. No. 882,409, May 13, 1992, abandoned, and Ser. No. 779,718, Oct. 23, 1991, abandoned, which is a continuation-in-part of Ser. No. 604,487, Oct. 25, 1990. This application Nov. 10, 1993, Ser. No. 149,818

Int. Cl.[6] H01J *61/18*

U.S. Cl. 313—570 **7 Claims**



1. A visible discharge lamp which provides a spectral power distribution having a peak at one of many possible peak wavelengths comprising,

an envelope which contains a fill having at least one visible light emitting component, wherein the visible light emitting component which emits more visible light than any other such component which may be present is a substance selected from the group consisting of sulfur and selenium, wherein said sulfur or selenium emits principally visible light,

excitation power generating means, and

means for coupling power generated by said excitation power generating means to said envelope fill, said lamp during excitation producing an output spectral power distribution in a continuous band having a peak at a certain wavelength which corresponds to a first particular density of said sulfur or selenium, wherein other possible peak wavelengths correspond to other particular fill densities, and said lamp fill is provided with said sulfur or selenium at said first particular density during excitation so as to result in said spectral distribution which has a peak at said certain wavelengths.

5,798,612

METAL-HALIDE DISCHARGE LAMP FOR PHOTO-OPTICAL PURPOSES

Joachim Dirks, Lüderitzstrasse 1, D-13351 Berlin, Germany

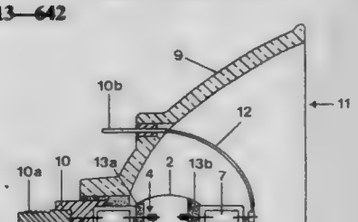
PCT No. PCT/DE95/01398, § 371 Date Mar. 17, 1997, § 102(e) Date Mar. 17, 1997, PCT Pub. No. WO96/13851, PCT Pub. Date May 9, 1996

PCT Filed Oct. 10, 1995, Ser. No. 793,776

Claims priority, application Germany, Oct. 26, 1994, 44 38 294.4

Int. Cl.[6] H01J *61/12*

U.S. Cl. 313—642 **15 Claims**



1. A metal-halide discharge lamp for photo-optical purposes, having a discharge vessel, at least two electrodes, and an ionizable fill within the discharge vessel, for generating light with a color temperature of more than 5000 K,

wherein

said fill consists essentially of mercury,

at least one noble gas, at least one halogen, aluminum (Al), indium (In), and gallium (Ga).

5,798,613

MAGNETRON WITH TEN ANODE VANES OPERATING AT 1250-1500 W

Jong Soo Lee, Kyungki-Do, Rep. of Korea, assignor to LG Electronics, Inc., Rep. of Korea

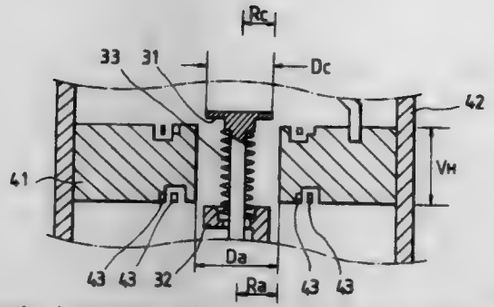
Filed Oct. 17, 1996, Ser. No. 734,381

Claims priority, application Rep. of Korea, Oct. 20, 1995, 36338/1995

Int. Cl.[6] H01J *25/587*

U.S. Cl. 315—39.51 **1 Claim**

1. In a magnetron which comprises a resonance means in which a plurality of vanes are radially disposed on an inner wall of a cylindrical anode, a cathode having a spiral filament at a central portion of the cylindrical anode, a magnetic means having a plurality of magnets at the upper and lower portion of the resonance means, respectively, and a cooling means having a plurality of cooling pins around its outer wall, the improvements are characterized in that the resonance means has ten vanes having each height of 10.5 mm–12.5 mm, an outer diameter of the cathode is 4.0 mm–4.6 mm, a diameter of the working space between each



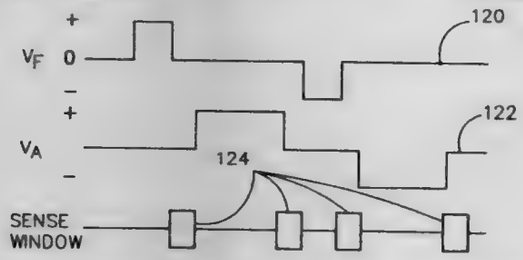
vane that is symmetrical is 9.0 mm–12.0 mm to obtain a high frequency output of 1250 W–1500 W from an operating voltage of 4.3 kV–4.7 kV.

5,798,614

FLUORESCENT LAMP FILAMENT DRIVE TECHNIQUE

Gary D. Bishop, Marion, Iowa, assignor to Rockwell International Corp., Costa Mesa, Calif.

Filed Sep. 26, 1996, Ser. No. 721,069
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—107 **12 Claims**



1. An apparatus for driving a fluorescent lamp having a plurality of filaments, the apparatus comprising:

(a) a filament driver for providing a filament preheat current to the filaments of the fluorescent lamp;

(b) an arc driver for providing an arc current between the filaments of the fluorescent lamp;

(c) means for synchronizing said filament driver and said arc driver such that the a sense window condition is thereby produced, said sense window condition comprising a duration in which the filament preheat current and the arc current are simultaneously zero-valued;

(d) means coupled to said synchronizing means for sensing the condition of the filaments during said sense window condition wherein a correctional signal is sent to said filament driver in response the sensed condition of the filaments.

5,798,615

UNIVERSAL HIGH INTENSITY DISCHARGE ELECTRONIC STARTER

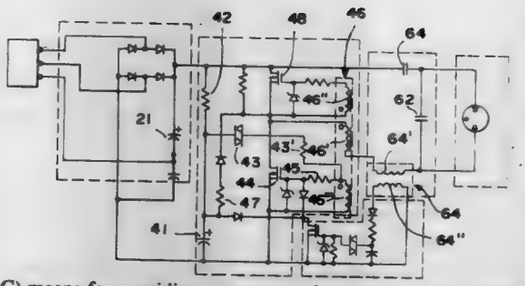
Ricardo Gasparini, and Alejandro Cavolina, both of Miami, Fla., assignors to Unitrend Power Technology, Corp., Miami, Fla.

Filed Aug. 30, 1996, Ser. No. 697,869
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—219 **8 Claims**

1. An electronic starter for a high intensity discharge load, comprising:

A) electricity source means for delivering a periodically variable direct voltage;

B) voltage controlled oscillator means selectively connected to said electricity source means and adapted to provide a start-up oscillating signal of approximately 300 kilohertz upon connection to said electricity source means;



C) means for providing a resonance frequency to said oscillator means including an inductance reactive element in series with first and second capacitive reactive members, also in series, and said load being connected in parallel with said second capacitive reactive member so that the operating resonant frequency of said combination is decreased when said load is ionized, wherein said operating resonance frequency periodically varies between 20 kilohertz and 100 kilohertz;

D) sensing means for monitoring the voltage across said inductance reactive element; and

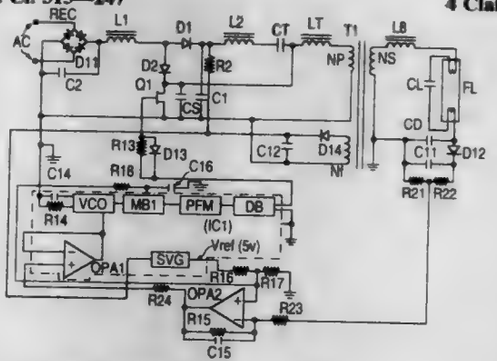
E) means for disabling said oscillator means connected to said sensing means so that said oscillator means is disabled when a predetermined voltage is sensed.

5,798,616

CIRCUIT EMPLOYING BOTH A STEP-UP CHOPPER AND AN INVERTER

Takao Takehara, Iwata-gun, and Masashi Norizuki, Yaizu, both of Japan, assignors to Minebea Co., Ltd., Kitasaku-gun, Japan

Filed Apr. 1, 1996, Ser. No. 625,233
Claims priority, application Japan, Apr. 6, 1995, 081110/1995
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—247 **4 Claims**



1. A fluorescent lamp circuit comprising:

a step-up chopper to improve a power factor and having a first switching circuit;

a quasi E-class voltage resonance inverter connected to the step-up chopper, having a second switching circuit;

a power switching element consisting of a single transistor operated as the first switching circuit and the second switching circuit;

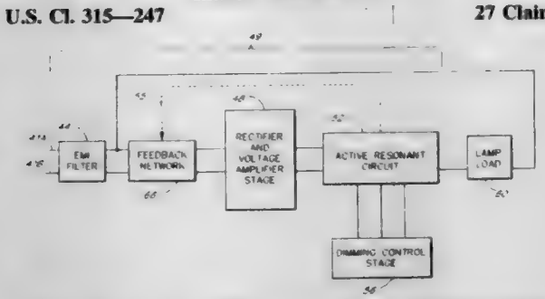
a fluorescent lamp connected as the load of the inverter; and

a stabilizer to detect a current flowing through said fluorescent lamp and to control an interrupted frequency of the inverter according to a detecting signal to stabilize the lighting current of the fluorescent lamp.

5,798,617
MAGNETIC FEEDBACK BALLAST CIRCUIT FOR FLUORESCENT LAMP

Mihail S. Moisin, Brookline, Mass., assignor to Pacific Scientific Company, Newport Beach, Calif.

Filed Dec. 18, 1996, Ser. No. 768,508
Int. Cl.[6] H05B *41/16*
U.S. Cl. 315—247 **27 Claims**



1. A ballast for a dimmable, screw-in compact fluorescent lamp, said ballast comprising:

an EMI filter stage connecting to line voltage;

a feedback network having an input connected to the output of said EMI filter stage

a rectification and voltage doubler stage having an input connected to the output of said feedback network;

a dimmer control;

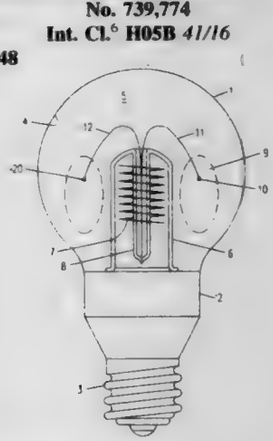
a single active stage comprising a high frequency resonant circuit, said resonant circuit connected to said dimmer control and to the output of said rectification and voltage doubler stage, said active stage producing an output having a first cycle portion and a second cycle portion, said active stage varying a duration of said second cycle portion in response to said dimmer control; and

a magnetic feedback path which couples said high frequency resonant circuit to said feedback network.

5,798,618
ELECTRODELESS DISCHARGE LAMP WITH CONTROL AMALGAM IN THE PLASMA

Ron van Os, Sunnyvale, and David Chazen, Palo Alto, both of Calif., assignors to Diablo Research Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 559,255, Nov. 15, 1995, Pat. No. 5,598,069, which is a continuation of Ser. No. 352,267, Dec. 7, 1994, abandoned, which is a continuation of Ser. No. 129,893, Sep. 30, 1993, abandoned. This application Oct. 30, 1996, Ser. No. 739,774
Int. Cl.[6] H05B *41/16*
U.S. Cl. 315—248 **37 Claims**



1. A lamp comprising:

a sealed lamp vessel containing a gaseous mixture including mercury;

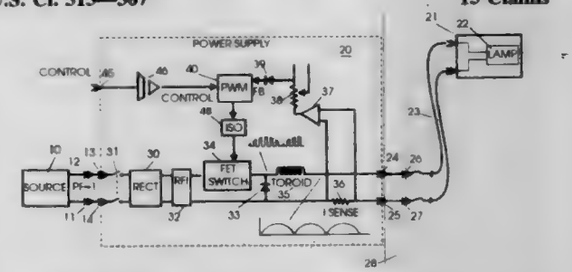
a power source, including an oscillator, configured to induce a high-frequency electromagnetic field into the gas to create a plasma; and

a control amalgam disposed within the plasma and including a mixture of materials selected to control mercury vapor pressure within the vessel during steady-state operation of the lamp.

5,798,619
TECHNIQUES FOR CONTROLLING REMOTE LAMP LOADS

John H. Covington, Dallas, Tex., assignor to Vari-Lite, Inc., Dallas, Tex.

Continuation of Ser. No. 389,113, Feb. 15, 1995, abandoned. This application Jun. 19, 1996, Ser. No. 666,106
Int. Cl.[6] H02B *37/02*
U.S. Cl. 315—307 **15 Claims**



1. A power supply for energizing a remote substantially resistive load connected to said supply over a conductive path of indeterminate resistance, said power supply being connectable to a power source supplying a source voltage waveform and an input current waveform at a source frequency to said power supply, said power supply comprising:

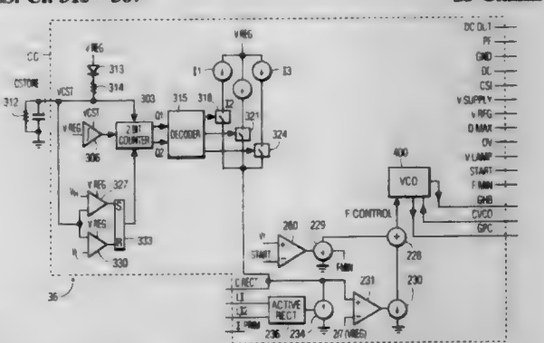
a. a load current sensing circuit; and

b. a current regulator couplable to the substantially resistive lamp load, said current regulator supplying a regulated current to said lamp load in response to the sensing circuit, said current regulator introducing no phase shift between said source voltage waveform and input current waveform, said current regulator having an unfiltered output with respect to said source frequency, and said current regulator having no substantially reactive components at said source frequency wherein said input current waveform is substantially in-phase with and proportional to said source voltage waveform.

5,798,620
FLUORESCENT LAMP DIMMING

Ihor T. Wacyk, Briarcliff Manor; Vinit Jayaraj, Ossining, both of N.Y., and Eugen J. De Mol, Eindhoven, Netherlands, assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 17, 1996, Ser. No. 768,346
Int. Cl.[6] G05F *1/00*
U.S. Cl. 315—307 **23 Claims**



1. A ballast switchably coupled to a voltage source for powering a discharge lamp, comprising:

an inverter responsive to a driving signal having a varying frequency;

sense circuitry for sensing each interruption in the coupling between the ballast and voltage source; and

an oscillator for generating the driving signal at a frequency which varies based on the number of sensed interruptions in the coupling between the ballast and voltage source.

5,798,621

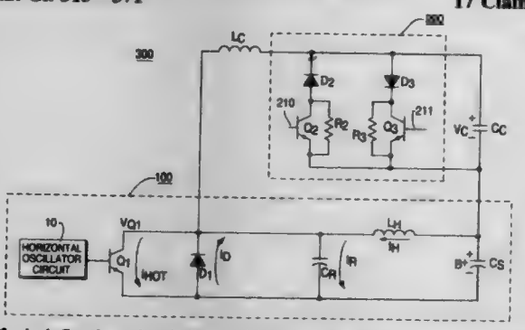
HORIZONTAL DEFLECTION CIRCUIT WITH RASTER CORRECTION

Walter Truskalo; Peter Ronald Knight, both of Indianapolis, and Lawrence Edward Smith, Noblesville, all of Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Id.

Filed Mar. 18, 1996, Ser. No. 617,335

Int. Cl.[6] G09G *1/04*; H01J *29/54*

U.S. Cl. 315—371 **17 Claims**



1. A deflection circuit for a video display apparatus, said circuit comprising:

a deflection coil for generating a raster responsive to a deflection current; and,

a parallel arrangement of first and second active devices coupled in parallel with said deflection coil such that each of said first and second active devices modulates said deflection current during a distinct portion of each vertical scan period to laterally shift a plurality of scan lines of said raster.

5,798,622

NONCONTACTING ELECTRIC POWER TRANSFER APPARATUS, NONCONTACTING SIGNAL TRANSFER APPARATUS, SPLIT-TYPE MECHANICAL APPARATUS EMPLOYING THESE TRANSFER APPARATUS, AND A CONTROL METHOD FOR CONTROLLING SAME

Junji Hirai; Yoshiji Hiraga; Kenji Hirose; Yuji Nitta; Hiroyuki Hamamoto, and Kenji Nomura, all of Iruma, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Kitakyushu, Japan

Division of Ser. No. 193,009, Feb. 17, 1994, Pat. No. 5,637,973. This application Jul. 3, 1996, Ser. No. 674,858

Claims priority, application Japan, Jun. 18, 1992, 4-159614; Jul. 15, 1992, 4-188306; Dec. 7, 1992, 4-351781

Int. Cl.[6] G05B *1/06*

U.S. Cl. 318—16 **16 Claims**

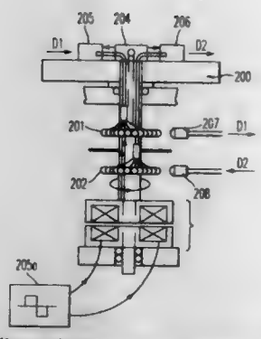
1. A main-shaft-end information transmission apparatus for detecting tip information at the tip of the main shaft of a motor that rotates at high speed and transmitting the tip information to a static unit, comprising:

sensor means installed on the main shaft for detecting and outputting the tip information;

power source means installed on the main shaft for rectifying a high-frequency alternating current and for providing a stabilized power supply to the sensor means;

a noncontacting power transfer apparatus for transmitting high-frequency power from said static unit to the power source means without direct electric contact; and

a noncontacting signal transfer apparatus for transmitting detection information detected by said sensor means to said static



unit without direct electric contact, wherein said noncontacting signal transfer apparatus comprises;

electric-to-light conversion means fixed to a transmission side for converting an electric signal to be transmitted to optical signals distributed uniformly in all directions with respect to the axis of rotation of said main shaft; and

photoelectric conversion means fixed to a reception side for receiving an optical signal emitted by said electric-to-light conversion means and converting it to an electric signal.

5,798,623

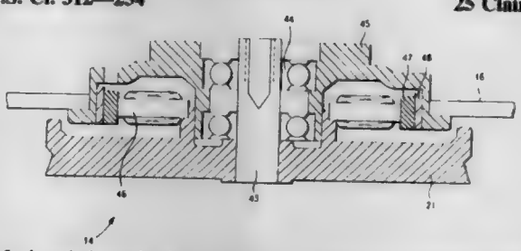
SWITCH MODE SINE WAVE DRIVER FOR POLYPHASE BRUSHLESS PERMANENT MAGNET MOTOR

Ashraf I. El-Sadi, Union City, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Feb. 12, 1996, Ser. No. 598,584

Int. Cl.[6] H02P *7/00*

U.S. Cl. 312—254 **25 Claims**



1. A switch mode sine wave driver circuit for a multiple phase brushless permanent magnet motor comprises;

a signal waveform monitoring circuit for monitoring electrical signals appearing at plural motor phase windings of the motor for putting out phase reference signals;

phase clock generators responsive to the phase reference signals for providing plural phase motor-synchronized clock signals;

plural phase counters each being clocked by a respective one of the plural phase motor-synchronized clock signals and reset by the phase reference signals for counting motor phase counts of one of plural motor phases within motor phase intervals,

a single quadrant sine wave lookup logic circuit separately addressed by the motor phase counts for sequentially putting out digital polyphase raw sine values,

phase adjustment logic for adjusting the digital polyphase raw sine values in accordance with rotational position of the motor to provide digital polyphase adjusted sine values,

polyphase pulse width modulators responsive to the digital polyphase adjusted sine values for recurrently generating fixed amplitude signed phase pulses having duty cycle duration controlled by the digital polyphase adjusted sine values wherein the sum of durations of signed phase pulses equals zero;

and,

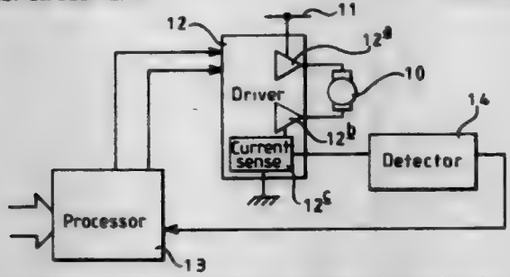
polyphase motor driver bridge circuitry for selectively sourcing and sinking driving currents to and from the plural motor windings in accordance with the fixed amplitude signed phase pulses in order to energize and rotate the motor with switched sine wave drive.

5,798,624

MOTOR CIRCUIT

Robert A. Wilke, and David P. Weichmann, both of Winona, Minn., assignors to Lucas Industries, Reston, Va.

Filed Feb. 28, 1997, Ser. No. 808,817
Int. Cl.[6] H02P 5/16;7/00; F02D 11/00
U.S. Cl. 318—254 10 Claims



1. A motor control arrangement comprising, in combination:
a dc permanent magnet motor having a motor commutator mounted on a motor shaft;
a motor driver circuit,
a path between said driver circuit and said commutator for carrying a motor current having a waveform with peaks and troughs resulting from interruptions of said motor current by the motor commutator, said waveform including a trough component having a base frequency that corresponds to a rate at which the motor current is interrupted by the motor commutator and that is relatively free of any higher order harmonics of said base frequency, said waveform also having a twin-peaked component that includes relatively many of said higher order harmonics, said trough component having a depth that is greatest at low load conditions of said motor and said twin-peaked component having a height that is greatest at high load conditions of said motor;
a signal processing circuit coupled to said driver circuit and responsive to an input signal representative both of said trough component and of said twin-peaked component, said signal processing circuit providing an output from which all d.c. and low frequency components below a predetermined upper frequency limit have been substantially eliminated such that said output is derived only from said higher order harmonics and not from said base frequency; and
a pulse generator circuit responsive to said output for providing a train of pulses indicative of an angular rotation of the motor shaft.

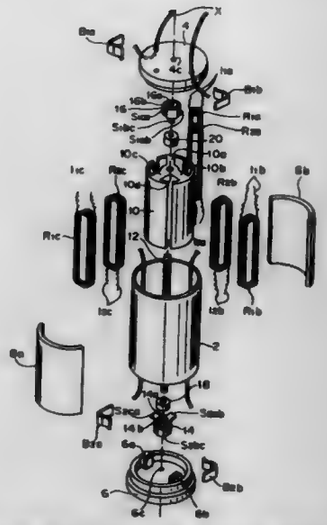
5,798,625

DC MOTOR AND CONTROLLING SYSTEM THEREFOR

Junichi Tanii; Hiroshi Ootsuka; Toshihiko Taniguchi, all of Sakai; Takahisa Shimada, and Sadafusa Tsuji, both of Osaka, all of Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan

Division of Ser. No. 727,101, Jul. 9, 1991, Pat. No. 5,461,694.
This application Jul. 31, 1995, Ser. No. 509,063
Claims priority, application Japan, Mar. 10, 1986, 61-52299; Dec. 9, 1986, 61-292949
Int. Cl.[6] H02K 13/00
U.S. Cl. 318—541 20 Claims

1. A dc motor, comprising:
a first coil;
a first commutator mounted for rotation and connected to said first coil;
a first brush mounted for contacting with said first commutator;
a second coil;
a second commutator mounted for rotation and connected to said second coil;
a second brush mounted for contacting with said second commutator;
a rotary motor shaft for transmitting rotational power to the outside of said motor;



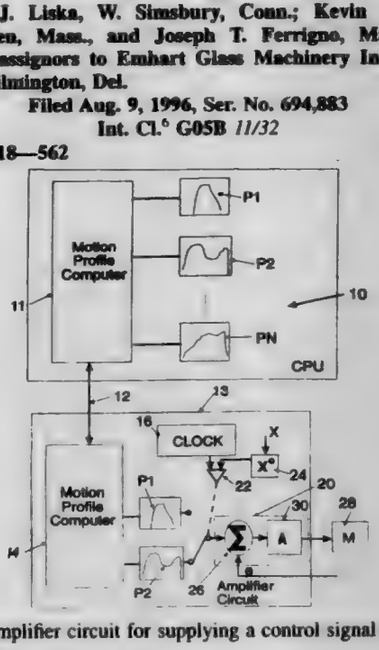
said first commutator and brush and said second commutator and brush being located adjacent only one of the opposite ends of said rotary motor shaft and said two commutators are arranged side by side in a direction of extension of the rotary motor shaft; and
power transmitting lines connected to said first and second brushes and said lines extending from the outside to the inside of said dc motor through a portion adjacent one end of said rotary motor shaft.

5,798,626

SERVO MOTOR CONTROL

Timothy J. Liska, W. Simsbury, Conn.; Kevin Moriarty, Hampden, Mass., and Joseph T. Ferrigno, Manchester, Conn., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Aug. 9, 1996, Ser. No. 694,883
Int. Cl.[6] G05B 11/32
U.S. Cl. 318—562 3 Claims



1. An amplifier circuit for supplying a control signal to a motor comprising
a first profile generating computer for simultaneously clocking at least two profiles,
a motor controller for supplying a control signal to the motor, and
switch means displaceable from a
first position for supplying one of said profiles to said motor controller while said profile generating computer continues to clock the second profile to a

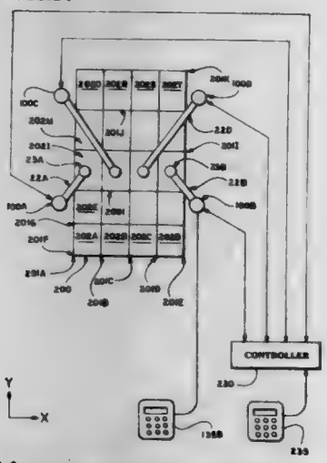
second position for supplying a second one of said profiles to said motor controller while said profile generating computer continues to clock the first profile.

5,798,627

METHOD FOR SIMULTANEOUS OPERATION OF ROBOT WELDERS

Malcolm T. Gilliland, 310 Pine Valley Rd., Marietta, Ga. 30067, and Kenneth Alan Gilliland, 2131 McKinley Rd., Atlanta, Ga. 30318

Filed Jan. 4, 1995, Ser. No. 368,705
Int. Cl.[6] G06F *9/00*
U.S. Cl. 318—568.14 **17 Claims**



1. A method for programming a first robot and a second robot to avoid collisions between said robots, comprising the steps of:

specifying a desired zone of operation for said first robot and a desired zone of operation for said second robot;

developing a job for each of said robots, said jobs instructing said robots how to reach said desired zones;

simultaneously stepping said first robot and said second robot through respective said jobs;

visually observing said robots as said robots are stepped through said respective jobs;

manually inserting stop points in said jobs as necessary to prevent a collision between said robots;

specifying resume conditions for said stop points;

storing said jobs with said stop points; and

authorizing said robots to begin execution of said jobs.

5,798,628

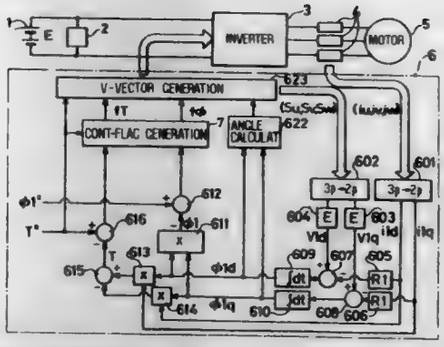
INVERTER CONTROL SYSTEM WHICH DYNAMICALLY VARIES A VOLTAGE VECTOR APPLIED TO THE INVERTER BASED ON PRIMARY FLUX AND TORQUE DEVIATIONS

Hiroshi Fujita, and Kazuyoshi Obayashi, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 7, 1996, Ser. No. 659,887
Claims priority, application Japan, Jun. 8, 1995, 7-142224; Jan. 30, 1996, 8-014287
Int. Cl.[6] H02P *5/28*
U.S. Cl. 318—805 **19 Claims**

1. An inverter control system for operating a multi-phase induction motor by controlling primary magnetic flux generated on a stator of said motor and output torque of said motor in accordance with a primary flux command value and a torque command value, respectively, said system comprising:

flux vector calculation means for calculating a primary flux vector from primary voltage applied to said motor and primary current flowing through said motor;



torque calculation means for calculating an instantaneous torque value from said primary flux vector and said primary current;

primary flux deviation calculation means for calculating a primary flux deviation of said primary flux vector from said primary flux command value;

torque deviation calculation means for calculating a torque deviation of said instantaneous torque value from said torque command value;

phase angle calculation means for calculating a phase angle of said primary flux vector;

pulse generation means for generating a pulse signal which alternates cyclically at a time interval that depends on said primary flux deviation or torque deviation;

control flag generation means for producing in response to said pulse signal a first control flag as a command of increasing or decreasing magnitude of said primary flux vector based on said primary flux deviation and a second control flag as a command of increasing, decreasing or retaining said instantaneous torque value based on said torque deviation; and

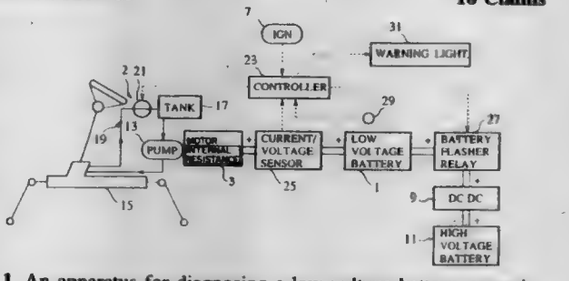
voltage vector generation means for producing a voltage vector to be delivered to said inverter based on said phase angle and said control flag.

5,798,629

APPARATUS FOR DIAGNOSING LOW VOLTAGE BATTERY

Kenji Terauchi, Isehara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 6, 1996, Ser. No. 659,178
Claims priority, application Japan, Jun. 7, 1995, 7-140557
Int. Cl.[6] H02J *7/00*
U.S. Cl. 320—15 **16 Claims**



1. An apparatus for diagnosing a low voltage battery, comprising:

a high voltage battery for powering an electric automobile;

a voltage reducing means for reducing the output of the high voltage battery to a low voltage;

a low voltage battery for powering auxiliaries of the automobile, said low voltage battery being connected to said high voltage battery by way of said voltage reducing means;

a resistor means to be connected to said low voltage battery;

a current/voltage sensing means for detecting the electric currents and voltages of said low voltage battery and said resistor means;

a battery diagnosing means for diagnosing said low voltage battery at a start of operation of the automobile by referring to an output of the current/voltage sensing means and a set of selected predetermined reference values for diagnosis;

a battery switching means for interrupting the connection between said high voltage battery and said low voltage battery for the battery diagnosing means to diagnose; and

a warning means operating according to a result of operation of the battery diagnosing means.

5,798,630

SWITCHING POWER CIRCUIT TO SUPPLY ELECTRIC-VEHICLE BATTERY CHARGER WITH HIGH-FREQUENCY POWER

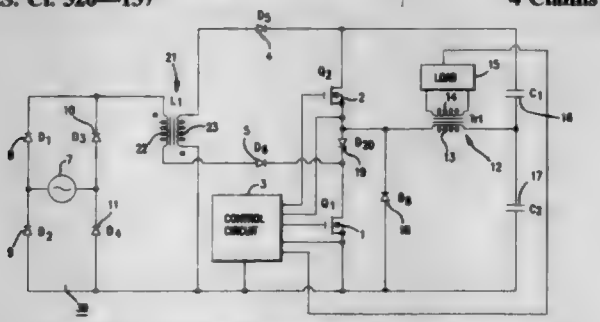
Katsunori Sugimori, Tokyo, and Hiroshi Sakamoto, Kumamoto, both of Japan, assignors to Nippon Electric Industry Co., Ltd., Tokyo, Japan

Filed Apr. 22, 1997, Ser. No. 844,816

Claims priority, application Japan, Jan. 24, 1997, 9-026170; Feb. 13, 1997, 9-047163

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—137 **4 Claims**



3. A switching power circuit for battery charger, comprising:

a single-phase full-wave rectifier circuit formed of diodes (**46**) to (**49**) to convert an AC input to a DC power;

a full bridge circuit composed of a half bridge circuit formed of a first switching element (**32**) and second switching element (**31**) connected in series to each other via a diode (**39**) and a half bridge circuit formed of a third switching element (**33**) and fourth switching element (**34**) connected in series to each other via a diode (**40**), connected in parallel to each other;

a first reactor (**51**) having a primary coil connected at one end thereof to the positive terminal of said rectifier circuit and at the other end to the drain terminal of said first switching element via a diode (**43**), and a secondary coil connected to the drain terminal of said second switching element via a diode (**41**) and to the negative terminal of said rectifier circuit;

a second reactor (**52**) having a primary coil connected at one end thereof to the positive terminal of said rectifier circuit and at the other end to the drain terminal of said third switching element via a diode (**44**), and a secondary coil connected to the drain terminal of said second switching element via a diode (**42**) and to the negative terminal of said rectifier circuit;

a capacitor (**45**) connected in parallel across said first half bridge circuit;

a series circuit formed of two diodes (**35**) and (**36**), with said diode (**35**) being connected in parallel between the drain and source terminals of said second switching element and said diode (**36**) being connected in parallel between the source terminal of said second switching element and that of said first switching element;

a series circuit formed of two diodes (**37**) and (**38**), with said diode (**37**) being connected in parallel between the drain and source terminals of said fourth switching element and said diode (**38**) being connected in parallel between the source terminal of said fourth switching element and that of said third switching element;

a high-frequency transformer (**54**) having a primary coil (**56**) connected between the source terminal of said second switching element and the source terminal of said fourth switching element, and a secondary coil (**57**) at which a high-frequency power is delivered to a load (**55**) forming a battery charger; and

a control circuit (**53**) consisting of a variable frequency multivibrator or a multivibrator driven by a VF converter having four drive circuits connected to the gate and source terminals of said four switching elements, respectively, in said full bridge circuit to turn on and off a group of said first and fourth switching elements and a group of said second and third switching elements alternately.

5,798,631

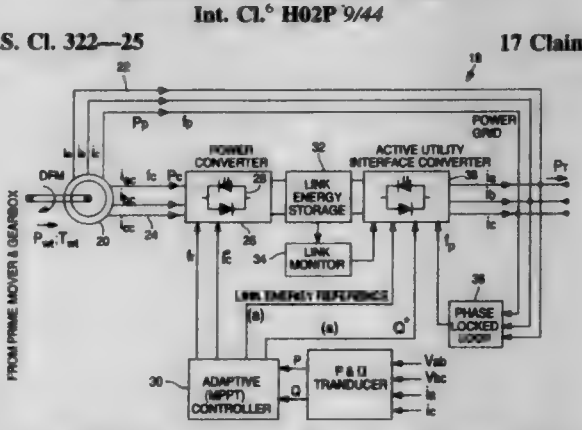
PERFORMANCE OPTIMIZATION CONTROLLER AND CONTROL METHOD FOR DOUBLY-FED MACHINES

Rene Spee; Shibashis Bhowmik, both of Corvallis, Oreg., and Johan H. R. Enslin, Stellenbosch, South Africa, assignors to The State of Oregon Acting by and Through the State Board of Higher Education on Behalf of Oregon State University, Eugene, Oreg.

Filed Oct. 2, 1996, Ser. No. 725,187

Int. Cl.[6] H02P *9/44*

U.S. Cl. 322—25 **17 Claims**



1. Apparatus for maximizing output power generated by a doubly-fed machine generator having a rotor, a stator and multiple windings including at least one control winding, the doubly-fed machine being responsive to changes in amplitude and frequency of a control winding excitation signal from a power converter coupled to said control winding, comprising:

a sensor for sensing the output power of the doubly-fed machine; and

a controller for controlling the power converter and responsive to the sensor, the controller adapted to maximize the output power by:

signaling the converter to adjust the frequency of its output signal so as to adjust the frequency of the control winding signal and thereby the rotor speed to maximize the output power; and

signaling the converter to adjust the amplitude of its output signal so as to adjust the amplitude of the control winding signal to maximize said output power,

whereby the maximum output power of the machine is determined as a function of both the frequency and amplitude of the output signal of the power converter.

5,798,632

VARIABLE SPEED WIND TURBINE GENERATOR WITH ZERO-SEQUENCE FILTER

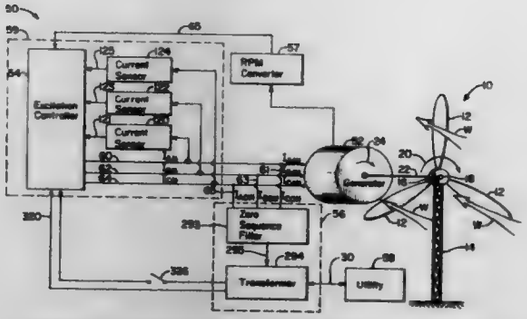
Eduard Muljadi, Golden, Colo., assignor to Midwest Research Institute, Kansas City, Mo.

Continuation of Ser. No. 503,818, Jul. 18, 1995, abandoned. This application Jun. 6, 1997, Ser. No. 870,858

Int. Cl.[6] H02P *9/00*

U.S. Cl. 322—29 **32 Claims**

1. Generator apparatus, comprising:



a variable speed rotor that is magnetically coupled to a plurality of electrically excited stator windings that are connected together at a common node;

filter means connected electrically to at least one of said stator windings for passing current that has a first characteristic and for blocking current that has a second characteristic;

a chargeable energy storage device connectable electrically, but not through said filter, to said stator windings;

switch means positioned between said energy storage device and said stator windings for connecting and disconnecting said energy storage device to and from said stator windings; and

load connection means for making an electrical connection of a load through said filter means to at least one of said stator windings, said electrical connection of the load to at least one of said stator windings being positioned between said stator winding and said switch means.

5,798,633

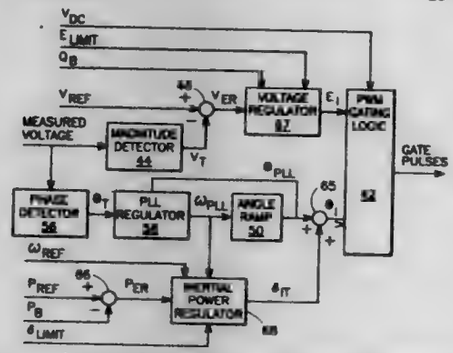
BATTERY ENERGY STORAGE POWER CONDITIONING SYSTEM

Einar V. Larsen, Saratoga, and Robert W. Delmerico, Clifton Park, both of N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jul. 26, 1996, Ser. No. 690,293

Int. Cl.[6] G05F *1/70*; H02M *3/24*; H02J *1/00*

U.S. Cl. 323—207 **15 Claims**



1. A control system for controlling a solid-state inverter coupling a direct current (DC) power source in parallel power transfer with a utility power system, each of the inverter and utility power system being adapted for supplying alternating current (AC) electric power to a load with a selected load voltage, the inverter including a plurality of solid-state, electronically controllable switches, each of the switches being responsive to electronic control signals for gating the switches into and out of conduction, the system comprising:

a gating logic circuit for generating the electronic control signals in response to a voltage command signal and a phase command signal, the voltage command signal establishing the conduction times of the controllable switches and the phase command signal establishing the output frequency and phase of the inverter output voltage;

a voltage regulator coupled for receiving a voltage error signal representative of any difference between the selected magnitude of load voltage and a measured magnitude of voltage representative of load voltage, the voltage regulator being responsive to the voltage error signal for generating the voltage command signal with a magnitude sufficient to minimize the voltage error signal;

a power regulator coupled for monitoring the frequency of the voltage from the inverter and comparing the frequency to a reference frequency for generating a power offset signal for maintaining the frequency of the voltage from the inverter at about the reference frequency, the power regulator further including:

a power processing circuit coupled for receiving the power offset signal, a power error signal representative of any difference between measured real component of power from the inverter and a desired power output of the inverter and for generating therefrom a phase shift signal for summation with a measured phase of the selected load voltage for regulating the real component of power supplied by the inverter.

5,798,634

LOAD MANAGEMENT AND CONTROL APPARATUS

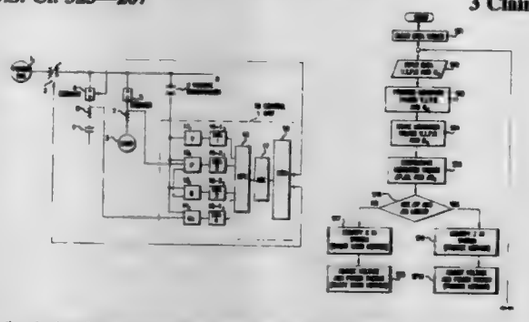
Makoto Terada; Isao Iyoda, both of Tokyo; Yoshiyuki Kobayashi, and Akifumi Iwamaru, both of Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 428,638, Apr. 25, 1995, abandoned. This application Apr. 25, 1997, Ser. No. 845,432

Claims priority, application Japan, Sep. 30, 1994, 6-237914

Int. Cl.[6] G05F *1/70*; *1/14*

U.S. Cl. 323—207 **3 Claims**



1. A load management and control apparatus installed in a receiving end substation, comprising:

a transformer having a tap changer and being connected between a load bus and a source of power;

a voltage adjusting unit for adjusting a tap of the transformer;

a reactive power supply unit connected to said load bus; and

a control unit for controlling connection or disconnection of said reactive power supply unit from said load bus and for changing said tap of said transformer, and including

means for detecting active power and reactive power in addition to a detection of system voltage,

means for varying the system voltage and a power flow state by the connection or disconnection of the reactive power supply unit,

means for estimating system reactance by using the resultant variations in the voltage and the reactive power, and

means for carrying out control operation by using the estimated system reactance and establishing a relationship between the tap changing operation of the transformer and the connection or disconnection operation of the reactive power supply unit for setting the voltage and power factor of the system receiving side within desired ranges.

5,798,635

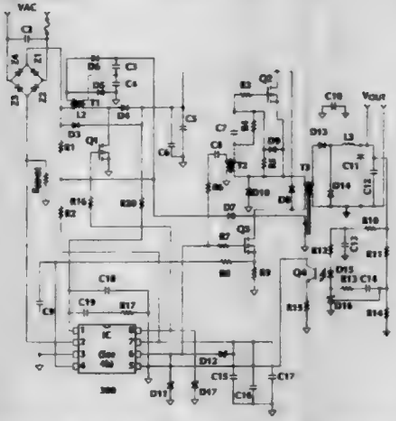
ONE PIN ERROR AMPLIFIER AND SWITCHED SOFT-START FOR AN EIGHT PIN PFC-PWM COMBINATION INTEGRATED CIRCUIT CONVERTER CONTROLLER

Jeffrey H. Hwang, Saratoga; Donald Yu, San Jose; Calvin Hsu, San Mateo, and Alland Chee, Union City, all of Calif., assignors to Micro Linear Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 670,181, Jun. 20, 1996. This application Feb. 6, 1997, Ser. No. 796,128

Int. Cl.[6] G05F *1/613;1/70*

U.S. Cl. 323—222 27 Claims



1. A converter controller for controlling a converter, the converter having a power factor correction stage, the power factor correction stage having a control loop for forming a regulated output voltage at an output node wherein the control loop comprises an error amplifier, the error amplifier comprising:

a. a first resistor having a first terminal and a second terminal wherein the first terminal of the first resistor is coupled to the output node of the power factor correction stage and the second terminal of the first resistor forms an output node of the error amplifier; and

b. means for drawing a constant current from the output node of the error amplifier.

5,798,636

Patent Not Issued For This Number

5,798,637

REFERENCE VOLTAGE GENERATING CIRCUIT

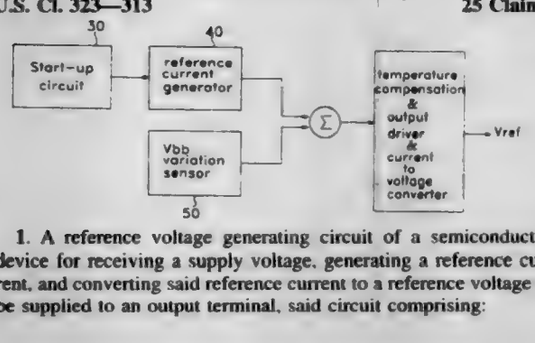
Daejeong Kim, and Sungho Wang, both of Seoul, Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jun. 24, 1996, Ser. No. 668,891

Claims priority, application Rep. of Korea, Jun. 22, 1995, 1995 16866

Int. Cl.[6] G05F *3/24*

U.S. Cl. 323—313 25 Claims



1. A reference voltage generating circuit of a semiconductor device for receiving a supply voltage, generating a reference current, and converting said reference current to a reference voltage to be supplied to an output terminal, said circuit comprising:

a start-up circuit, connected to a reset terminal, for generating a driving signal to a level of an operating point of said reference voltage generating circuit;

a reference current generator having a current mirror of a constant current source for receiving said driving signal from said start-up circuit and generating said reference current, and having a voltage divider for determining said reference current;

a substrate voltage variation sensor connected to said output terminal, for compensating a variation of said reference current caused by the variation of a substrate voltage;

a current-to-voltage converter for converting said reference current to said reference voltage, said current-to-voltage converter being driven together with said current mirror of said reference current generator; and

a temperature compensator connected to said output terminal, for compensating the variation of said reference current according to the variation of temperature.

5,798,638

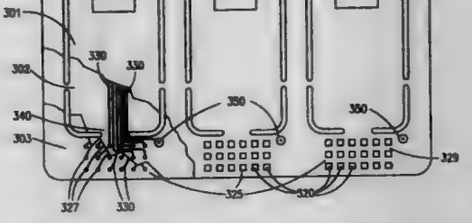
APPARATUS FOR TESTING OF PRINTED CIRCUIT BOARDS

Gregory S. Mendolia, Forest, Va., assignor to Ericsson, Inc., Research Triangle Park, N.C.

Filed Oct. 24, 1996, Ser. No. 736,573

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—158.1 2 Claims



1. An apparatus for facilitating testing of a multi-layered printed circuit board comprising:

a plurality of test point pads located on the surface of a manufacturing panel; and

a plurality of electrical traces originating from test circuits located on the printed circuit board, the electrical traces being routed from the printed circuit board to the manufacturing panel via router tabs between adjacent layers of the manufacturing panel, the electrical traces electrically connected to the plurality of test point pads for conducting electrical signals from the plurality of test point pads to the test circuits.

5,798,639

ROTARY POSITION SENSOR WITH IMPROVED BEARING TOLERANCE

Jeffrey L. McCurley, Elkhart; Robert J. Campbell, Granger; James E. White, Warsaw, and Scott L. Spence, Elkhart, all of Ind., assignors to CTS Corporation

Filed Mar. 4, 1994, Ser. No. 206,474

Int. Cl.[6] G01B *7/30;* F02P *5/00;* G01D *5/14*

U.S. Cl. 324—207.2 14 Claims

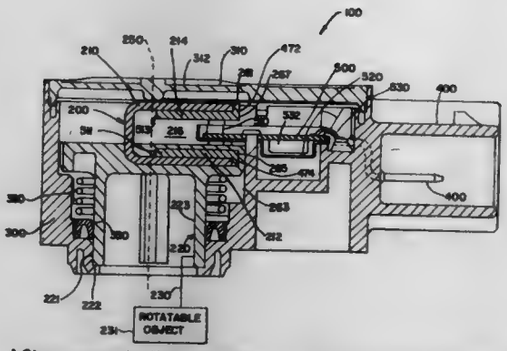
1. A rotary sensor comprising:

a) a housing;

b) an assembly for providing a closed magnetic circuit including:

b1) a first magnet;

b2) a second magnet; and



b3) a magnetically permeable pole piece interconnecting the first and second magnets; and

b4) a varying dimension air gap defined between the first magnet and the second magnet;

b5) the first and second magnets being structured and dimensioned to provide the varying dimension air gap and to form a variable magnetic field coupled therebetween;

b6) the assembly being rotatably mounted in the housing about an axis, generally parallel to the variable magnetic field coupled between the magnets;

c) the first magnet having a first inner radial edge positioned essentially coextensive with the axis and a first outer edge radially spaced from the axis; the second magnet having a second inner radial edge positioned essentially coextensive with the axis and a second outer edge radially spaced from the axis, the first and second inner positions and the first and second outer edges of the first and second magnets, respectively, being generally congruent; and

d) a magnetic field sensing means positioned in the air gap between the first and second magnets for sensing the variable magnetic field in the air gap; the sensing means being positioned at a location between the first and second inner positions and the first and second outer edges of the first and second magnets.

5,798,640

PASSIVE MAGNETIC POSITION SENSOR

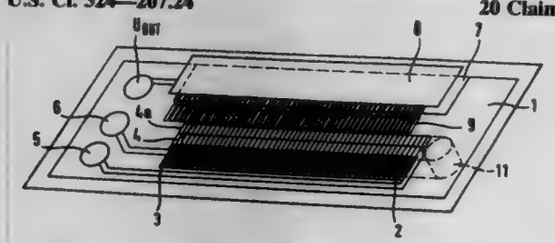
Lothar Gier, Bad Nauheim; Bernd Österle, Frankfurt; Rudolf Borchert, Bad Soden; Wolfgang Porth, Frankfurt; Sabine Stark, Königstein, and Werner Wallrafen, Hofheim, all of Germany, assignors to VDO Adolf Schindling AG, Frankfurt, Germany

Filed May 14, 1996, Ser. No. 649,141

Claims priority, application Germany, Jul. 19, 1995, 195 26 254.9

Int. Cl.[6] **G01B** *7/14;7/00;* **G01D** *5/14;* **H01H** *36/00*

U.S. Cl. 324—207.24 **20 Claims**



1. A passive magnetic position sensor comprising:

a magnet device, an electrically non-conductive, non-magnetic substrate, and resistance layer disposed on the substrate, the magnet device being movable relative to the substrate;

a soft-magnetic, electrically conductive bending-beam structure arranged spaced apart from the resistance layer with a spacing at a constant distance apart, the resistance layer and the bending-beam structure being arranged partially one above the other defining an overlapping region;

wherein said bending-beam structure has a laminar body extending in a direction of movement of said magnet device, said bending-beam structure having multiple bending beams spaced apart from and parallel to each other, and each of said bending beams extending from said body in a second direction traverse to said direction of movement;

the spacing distance provides that, under action of the magnet device during a guiding of the magnet device along the overlapping region of the bending-beam structure and resistance layer, contact is made between the resistance layer and the bending-beam structure; and

the resistance layer is electrically conductive and has, in a longitudinal direction thereof, a meandering structure comprising taps which have contact surfaces on regions lying opposite the bending-beam structure, wherein each of said taps is elongated in a direction away from the meandering structure for electrically connecting the meandering structure with a respective one of said contact surfaces.

5,798,641

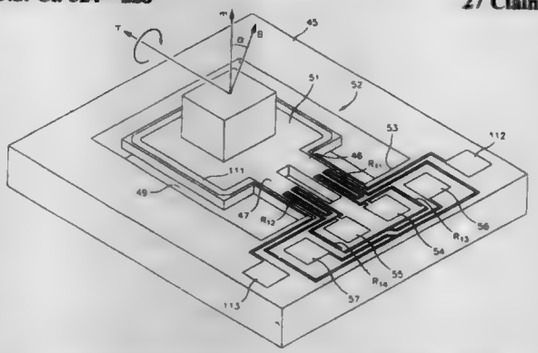
TORQUE MAGNETOMETER UTILIZING INTEGRATED PIEZORESISTIVE LEVERS

Stefano Spagna, La Jolla, and Michael Bancroft Simmonds, Del Mar, both of Calif., assignors to Quantum Design, Inc., San Diego, Calif.

Filed Mar. 17, 1997, Ser. No. 819,376

Int. Cl.[6] **G01R** *33/12;33/02;* **G01N** *27/72;* **G01L** *1/18*

U.S. Cl. 324—228 **27 Claims**



1. A torque magnetometer for sensing the magnetic moment of a sample in the presence of an applied changing magnetic field in a test chamber, said magnetometer comprising:

an electrically non-conductive substrate formed with a cantilevered torque lever extending from one edge of said substrate, said substrate being configured to be removably mounted in the test chamber, said torque lever comprising:

a sample holding paddle distally projecting from said one edge; and

bridging means connecting said paddle to said one edge;

a pair of parallel spaced piezoresistors surface-mounted on said bridging means;

means on said substrate for detecting, comparing and processing signals from said piezoresistors indicative of resistance changes therein resulting from torsion on said paddle caused by magnetically induced torque on the sample to produce output signals representing the physical effect on the sample of the applied magnetic fields;

output terminals on said substrate for connecting said output signals to external signal processing circuitry; and

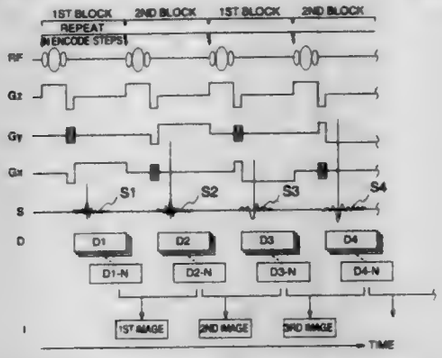
input terminals on said substrate for applying electrical power to said piezoresistors.

5,798,642

MAGNETIC RESONANCE IMAGING APPARATUS

Shigeru Watanabe, Ibaraki-ken, Japan, assignor to Hitachi, Medical Corporation, Tokyo, Japan

Filed Jul. 24, 1996, Ser. No. 686,071
Claims priority, application Japan, Jul. 27, 1995, 7-210249
Int. Cl.[6] G01V 3/00
U.S. Cl. 324—307 14 Claims



1. A magnetic resonance imaging apparatus comprising:

first executing means for executing a first pulse sequence block including a plurality of first pulse sequences wherein in each of said first pulse sequences, a gradient magnetic field Gz in a slice direction and radio frequency pulses are applied to an object placed in a static magnetic field, a phase encoding gradient magnetic field Gy is further applied to said object, and a readout gradient magnetic field Gx is applied to said object in a direction perpendicular to both the slice direction and the phase encoding direction, said readout gradient magnetic field Gx having a signal shape which is asymmetrical with respect to a peak point of echo signals radiated from said object so as to detect said echo signals within a period of time when said readout gradient magnetic fields Gx is applied, said first pulse sequence being repeated a plurality of times for a predetermined range of a low phase encoding region while an amount of said phase encoding gradient magnetic field Gy applied to said object is varied;

second executing means for executing a second pulse sequence block including a plurality of second pulse sequences wherein each of said second pulse sequences is the same as said first pulse sequence other than that the direction of said phase encoding gradient magnetic field is changed to the direction of the magnetic field Gx and the direction of said readout gradient magnetic field is changed to the direction of the magnetic field Gy, and then said second pulse sequence is repeated a plurality of times for a predetermined range of the low phase encoding region while an amount of said phase encoding gradient magnetic field Gx applied to said object is varied; and

reconstruction means for reconstructing a slice image of said object on the basis of a first echo signal group detected by said first executing means and a second echo signal group detected by said second executing means.

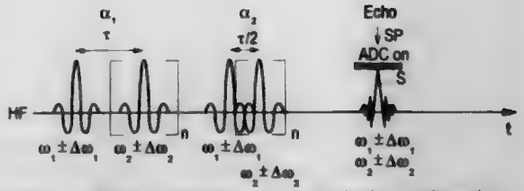
5,798,643

METHOD FOR OPERATING AN NMR TOMOGRAPHY APPARATUS SUITABLE FOR USE WITH A CHRONOLOGICALLY CONSTANT BASIC MAGNETIC FIELD INHOMOGENEITY

Harald Werthner, Fuerth, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 11, 1997, Ser. No. 814,241
Claims priority, application Germany, Mar. 27, 1996, 196 12 217.1
Int. Cl.[6] G01V 3/00
U.S. Cl. 324—309 10 Claims

1. A method for operating a nuclear magnetic resonance tomography apparatus, comprising the steps of:



emitting N(N>2) radio-frequency excitation pulses into an examination subject in the presence of a magnetic field gradient, said radio-frequency excitation pulses being spaced from each other by a chronological spacing τ and having respectively different frequency bands, said frequency bands being successive;

after a time interval following a last of said radio-frequency excitation pulses, emitting N radio-frequency refocusing pulses in the presence of said magnetic field gradient, said radio-frequency refocusing pulses having a chronological spacing from each other of τ/2 and having respectively different frequency bands, with the frequency band of an nth radio-frequency excitation pulse agreeing with the frequency band of a nth radio-frequency refocusing pulse; and

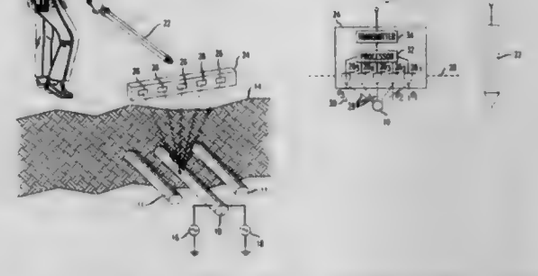
reading out a spin echo signal from said examination subject containing signal contributions produced by all of said radio frequency excitation pulses.

5,798,644

METHOD AND APPARATUS FOR LOCATING BURIED CONVEYANCES USING LOCATING & CONFIRMATION SIGNALS WITH AN ARRAY OF SENSORS

Hossein Eslambolchi, Basking Ridge, N.J., and John Sinclair Huffman, McDonough, Ga., assignors to AT&T Corp, Middletown, N.J.

Filed Feb. 20, 1997, Ser. No. 804,140
Int. Cl.[6] G01R 19/00; G01V 3/08;3/10
U.S. Cl. 324—326 12 Claims



1. A method for precisely locating a utility conveyance buried below the earth, comprising the steps of:

impressing a conveyance-locating signal on the conveyance so that the conveyance radiates a first electromagnetic field;

impressing on the conveyance a low frequency conveyance-confirmation signal that is pulsed in a particular pattern unique to the conveyance to be located so that the conveyance radiates a second electromagnetic field unique to the conveyance;

sensing, via a first signal detector located above the earth, where the first electromagnetic field has its greatest strength to establish a region where the conveyance is generally located;

sensing, within the region where the first electromagnetic field has its greatest strength, the second magnetic field via each of an array sensors located above the earth such that the array is generally orthogonal to the conveyance; and

vectoring, from the second magnetic field sensed by each of the second sensors, the location of the conveyance.

5,798,645

HARDWARE EMULATIONS SYSTEM WITH DELAY UNITS

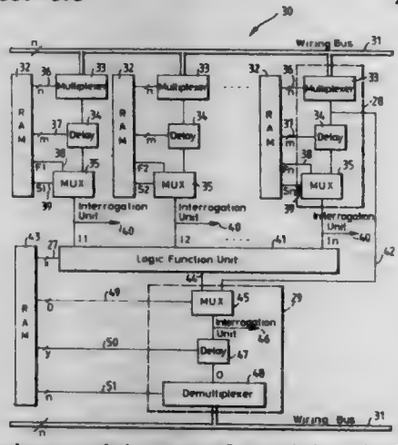
Manfred Zeiner, Winzerstrasse 57, 1000 Berlin 20, and Michael Budini, Leibnitzstrasse 28, 1000 Berlin 12, both of Germany, assignors to Manfred Zeiner, and Michael Budini, both of Berlin, Germany

Continuation of Ser. No. 38,359, Mar. 26, 1993, abandoned. This application Feb. 3, 1995, Ser. No. 384,391

Claims priority, application Germany, Mar. 31, 1992, 42 11 162.5

Int. Cl.[6] G06F *13/00*

U.S. Cl. 364—578 **26 Claims**



1. A hardware emulation system for emulating a hardware portion of an electronic apparatus, the system comprising:

a wiring bus containing a plurality of lines;

a multiplicity of configurable logic cells, said logic cells being connected with each other through said wiring bus to form logic blocks of configurable input/output cells and a configurable wiring arrangement, each of said multiplicity of configurable logic cells including an output unit, and each output unit including a programmable delay means for individually delaying an output of a respective said output unit for a programmable amount of time, said delay means delays an output signal of said output unit to represent time behavior of a respective said logic cell and wiring portions of the apparatus which is emulated, an interrogation means in each output unit for reporting a type of data in said logic cell and a demultiplexer means connected to said delay means and said wiring bus for selectively placing said output of said output unit onto one of said plurality of lines of said wiring bus.

5,798,646

APPARATUS FOR MEASURING REMAINING CAPACITY OF A BATTERY

Youichi Arai, Susono, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Aug. 30, 1996, Ser. No. 704,868

Claims priority, application Japan, Sep. 1, 1995, 7-225454

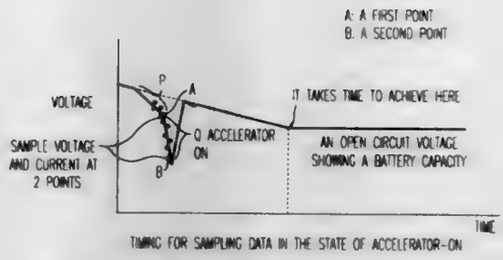
Int. Cl.[6] G01N *27/416*

U.S. Cl. 324—427 **2 Claims**

1. A battery remaining capacity measuring apparatus comprising:

first means for collecting values of a plurality of voltages of a battery and values of a plurality of currents passing through a load during a first time period occurring before a start of continuous running of said load;

second means coupled to said first means for obtaining a line corresponding to said values of said plurality of voltages and said values of said plurality of currents, said line showing a relationship between voltage and current from a plurality of points within a range from a first point near where voltage begins to decrease sharply during said first time period to a second point near a minimum voltage occurring during said first time period;



TIMING FOR SAMPLING DATA IN THE STATE OF ACCELERATOR-ON

third means coupled to said second means for finding an initial remaining capacity voltage at which a reference current value intersects said line: and

fourth means coupled to said third means for displaying said initial remaining capacity voltage.

5,798,647

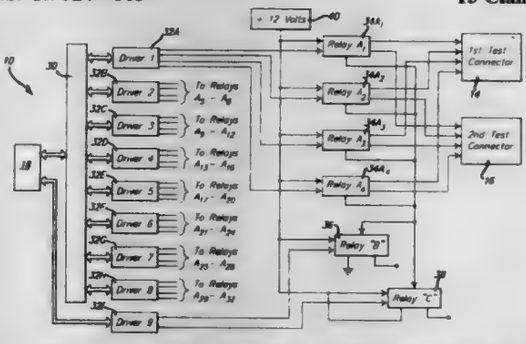
DIAGNOSTIC TEST CONTROLLER APPARATUS

Gregory A. Martin, Waterford, and Ray E. Bussard, Westland, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed May 6, 1996, Ser. No. 643,649

Int. Cl.[6] G01R *31/00*

U.S. Cl. 324—503 **15 Claims**



1. A diagnostic test apparatus for testing the integrity of an engine controller module (ECM) of a vehicle, said apparatus comprising:

a first test connector for coupling to a connector under test of an ECM;

a second test connector for coupling to a wiring harness of said vehicle to thereby place said apparatus in line between said wiring harness and said connector under test of said ECM;

a parallel port for coupling to an external computer;

a circuit responsive to control signals received at said parallel port for addressing, independently and controllably, one pin at a time of said connector under test; and

a plurality of electrical switches responsive to said circuit for selectively simulating at least one wiring harness fault condition of open, short to ground, and short to voltage, at each one of said pins of said connector under test of said ECM, independently, and in accordance with specific ones of said pins addressed by said circuit.

5,798,648

APPARATUS AND METHOD FOR INSPECTING AN ELECTROLYTIC CAPACITOR IN AN INVERTER CIRCUIT CONTAINING TRANSISTOR SWITCHING ELEMENTS

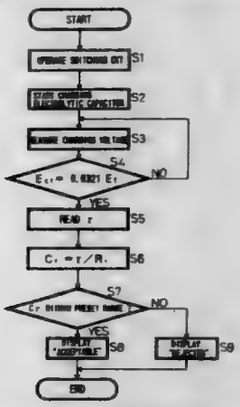
Atsushi Ueyama; Yoshinari Tsukada, and Fumitomo Takano, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 610,754, Mar. 4, 1996, Pat. No. 5,694,051, which is a division of Ser. No. 337,479, Nov. 8, 1994, Pat. No. 5,497,095. This application Dec. 17, 1996, Ser. No. 768,205

Claims priority, application Japan, Nov. 8, 1993, 5-278241; May 26, 1994, 6-112748; Sep. 22, 1994, 6-227965

Int. Cl.[6] G01R *31/02;27/26*

U.S. Cl. 324—548 **13 Claims**



1. A method of inspecting an electrolytic capacitor in an inverter circuit, the inverter circuit including a plurality of transistor switching elements therein for converting a direct current into an alternating current, the method comprising the steps of:

a) turning off the plurality of transistor switching elements included in the inverter circuit, and thereafter supplying a current from a DC power supply through a resistor to charge the electrolytic capacitor;

b) measuring a voltage across the electrolytic capacitor while the electrolytic capacitor is being charged and measuring a time period from the beginning of charging the electrolytic capacitor until a time at which a voltage across the electrolytic capacitor attains a predetermined voltage;

c) determining an electrostatic capacitance of the electrolytic capacitor based on the time period measured in said step b) and a resistance value of the resistor;

d) discharging the electrolytic capacitor which has been charged;

e) measuring a discharging voltage across the electrolytic capacitor and a discharging current flowing from the electrolytic capacitor while the electrolytic capacitor is being discharged; and

f) determining an equivalent series resistance of the electrolytic capacitor based on the voltage across the electrolytic capacitor at the beginning of discharging the electrolytic capacitor, the electrostatic capacitance of the electrolytic capacitor determined in said step c) and the discharging voltage across the electrolytic capacitor and the discharging current flowing from the electrolytic capacitor measured in said step e).

5,798,649

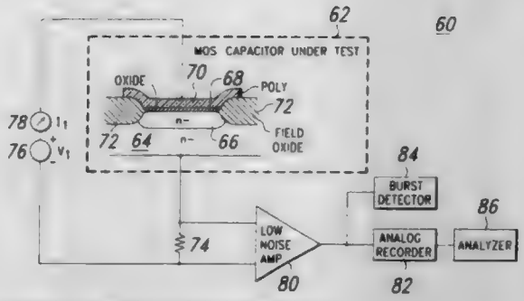
METHOD FOR DETECTING DEFECTS IN SEMICONDUCTOR INSULATORS

Michael C. Smayling, Missouri City, and Klaus A. Anselm, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 814,003, Dec. 26, 1991, abandoned. This application Aug. 19, 1993, Ser. No. 109,202

Int. Cl.[6] H01H *31/12;* **G01R** *31/26*

U.S. Cl. 324—551 **21 Claims**



3. A method for detecting defects in an insulator on a semiconductor device, comprising the steps of:

determining a reference current spectral density;

applying voltage across said insulator;

measuring currents induced by said voltage;

determining current spectral density of the measured currents; and

determining the presence of defects in the insulator by comparing said current spectral density to said reference current spectral density.

5,798,650

PROCESS AND DEVICE FOR DETERMINING THE MASS FRACTION OF ONE CONSTITUENT OF A LAYER, AND EFFECTING THE QUALITY CONTROL OF A COMPOSITE METAL SHEET

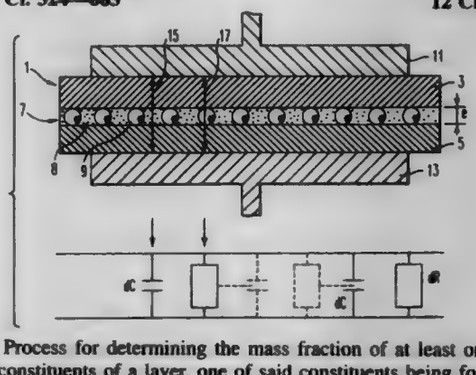
Jérôme Guth, rue des Jardins, France, assignor to Sollac, Puteaux, France

Filed Mar. 6, 1997, Ser. No. 812,697

Claims priority, application France, Mar. 8, 1996, 96 02979

Int. Cl.[6] G01R *27/02;* **G01N** *27/02*

U.S. Cl. 324—663 **12 Claims**



1. Process for determining the mass fraction of at least one of two constituents of a layer, one of said constituents being formed by conductive particles and the other of said constituents being formed by an electrically insulating material, said layer being interposed between two metal facing sheets which together form with said interposed layer a composite metal sheet, said conductive constituent establishing an electric contact between said two metal facing sheets, characterized in that it comprises:

measuring a voltage/current phase shift ϕ due to the resistive and capacitive properties of the composite metal sheet by applying a signal of given frequency f to two electrodes disposed in facing relation to each other, each electrode being in contact with a respective one of said metal facing sheets;

modeling a portion of said composite metal sheet between said electrodes as an equivalent parallel RC circuit; and

calculating, from the value of tan ϕ which is the expression of the ratio between the capacitive component and the resistive component of the impedance of said equivalent RC circuit, the mass fraction of at least one of said constituents, the mass fractions of said constituents being given by the following respective relations:

$$Y_R = \frac{1}{1 - \lambda \tan \phi} \quad \text{and}$$

-continued

$$Y_C = \frac{-\lambda \tan \phi}{1 - \lambda \tan \phi}$$

where λ is a constant determined by said frequency f of said signal applied to said two electrodes, by the electrical properties of each constituent of said layer interposed between said metal facing sheets and by the densities of said constituents, and where Y_R is the mass fraction of the resistive component and Y_C is the mass fraction of the capacitive component.

5,798,651

PROBE SYSTEM

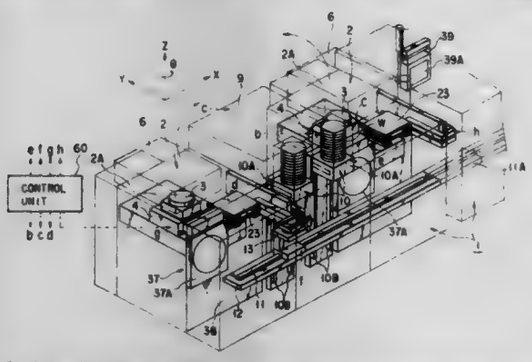
Tsuyoshi Aruga; Wataru Mochizuki; Shuji Akiyama, all of Kofu; Hisatomi Hosaka, Nirasaki, and Yuichi Abe, Hachioji, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

Filed Jun. 7, 1996, Ser. No. 661,405

Claims priority, application Japan, Jun. 8, 1995, 7-166879; Mar. 11, 1996, 8-082039

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **17 Claims**



1. A probe system for exploring electrical characteristics of a subject, comprising:

a plurality of exploration portions, aligned a predetermined distance apart from one another and each having a test head, for exploring electrical characteristics of the subject by electrically connecting the test head to electrodes of the subject;

a conveyance passage extending parallel to a direction in which the exploration portions are aligned;

at least one retainer portion, arranged directly above the conveyance passage and opposing the exploration portions, for retaining a plurality of subjects, the retainer portion moving vertically in a direction perpendicular to an extending direction of the conveyance passage to approach the conveyance passage;

at least one delivering/accepting mechanism moving along the conveyance passage, for passing the subject between the retainer portion and each of the exploration portions.

5,798,652

METHOD OF BATCH TESTING SURFACE MOUNT DEVICES USING A SUBSTRATE EDGE CONNECTOR

Brian Taraci, Foothill Ranch, Calif., assignor to Semicoa Semiconductors, Costa Mesa, Calif.

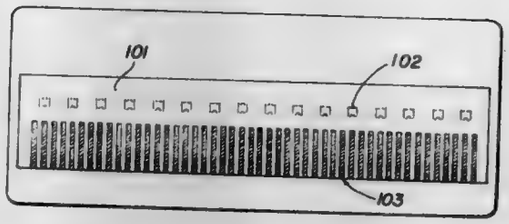
Continuation of Ser. No. 413,924, Mar. 29, 1995, abandoned, which is a continuation of Ser. No. 157,990, Nov. 23, 1993, abandoned. This application Jul. 29, 1996, Ser. No. 688,234

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **18 Claims**

1. A method for manufacturing packaged semiconductor devices, the method comprising the steps of:

providing a substrate including a plurality of receiving areas, each receiving area including at least one bonding pad



coupled to a portion of said substrate, said substrate adapted for electrical connection between each of the at least one bonding pad and a semiconductor device testing apparatus;

mounting a semiconductor device into each of said plurality of receiving areas;

coupling each of said semiconductor devices to each of said at least one bonding pad of said plurality of receiving areas;

sealing each of said semiconductor devices within said plurality of receiving areas to produce a plurality of individual packaged semiconductor devices integral to the substrate;

connecting said plurality of packaged semiconductor devices to said testing apparatus;

functional testing each of said plurality of packaged semiconductor devices; and

separating the plurality of packaged semiconductor devices from a remainder of said substrate.

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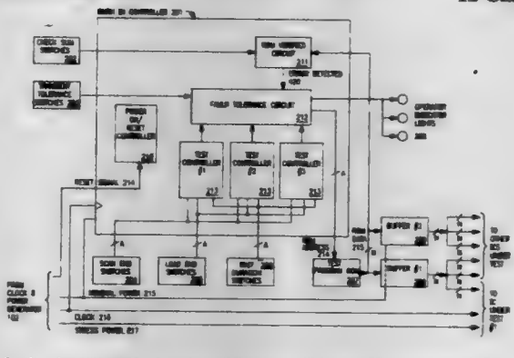
BURN-IN SYSTEM FOR RELIABLE INTEGRATED CIRCUIT MANUFACTURING

Arthur T. Leung, Jr., Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 20, 1995, Ser. No. 425,975

Int. Cl.[6] G01R *35/00;31/02*

U.S. Cl. 324—760 **12 Claims**



1. An integrated circuit (IC) burn-in system, comprising:

(a) a burn-in chamber operable to subject an IC within it to environmental stress; and

(b) an input-stimuli generator, located within said burn-in chamber, subject to said environmental stress, and coupled to input pins of said IC, said input stimuli generator being operable to generate a programmable input-stimuli sequence and to provide the same to said input pins;

said input-stimuli generator having a burn-in controller that includes,

(b1) a plurality of identical test controllers, each operable to generate signals to control the application of input stimuli to an integrated circuit (IC); and

(b2) a fault-tolerance circuit operable to compare said signals generated by said plurality of test controllers.

5,798,654

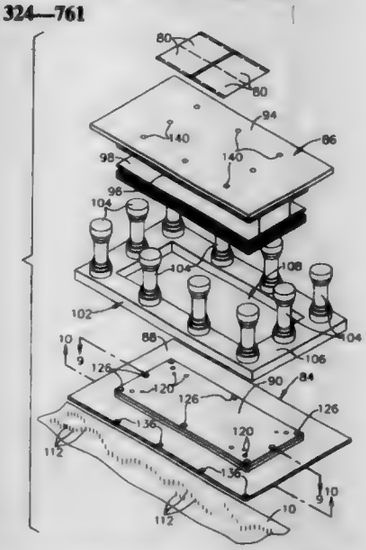
TRANSLATOR FIXTURE WITH MODULE FOR EXPANDING TEST POINTS

David R. Van Loan, Diamond Bar, and Mark A. Swart, Upland, both of Calif., assignors to Everett Charles Technologies, Inc., Pomona, Calif.

Division of Ser. No. 593,177, Feb. 1, 1996, Pat. No. 5,633,598, which is a continuation of Ser. No. 417,441, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 200,783, Feb. 23, 1994, abandoned, which is a continuation-in-part of Ser. No. 81,681, Jun. 23, 1993, abandoned. This application Dec. 2, 1996, Ser. No. 758,911

Int. Cl.[6] G01R 31/28

U.S. Cl. 324—761 6 Claims



1. In a grid-type test fixture for testing a printed circuit board in which the grid fixture includes a grid base supporting spring-loaded probes arranged in a grid pattern having an on-center spacing, the probes in the grid base being individually connected to corresponding electrical test circuits in an external automatic electronic test analyzer, and a translator fixture supporting the Printed circuit board and mounted between the grid base and the Printed circuit board, the translator fixture having vertically spaced-apart translator plates with holes drilled in patterns to support individual translator pins inserted into the holes of the translator plates for translating electrical connections between an off-grid pattern of test points in the printed circuit board to the grid pattern of corresponding spring probes in the grid base, the improvement comprising a translator module for use in testing circuits in a high density region on the printed circuit board having test point densities greater than the standard on-center density of the spring-loaded probes in the grid base, the translator module comprising a circuit translating board having parallel first and second sides, the first side having a first pattern of separate electrically isolated and electrically conductive contacts, the second side having a second pattern of separate electrically isolated and electrically conductive contacts, the first pattern of contacts having a higher density than the second pattern, the second pattern of contacts matching the pattern of the spring-loaded probes on the grid base, the circuit translating board mounted on the grid base to align the second contacts thereon for electrical contact with the spring probes on the grid base, the translator module further including a translator pin receiver plate mounted above the first surface of the circuit translator board and below the translator fixture, the! receiver plate having parallel first and second faces, the first face thereof facing toward the translator fixture and containing a pattern of electrically isolated receiver holes on a pattern aligned with the high density first pattern of contacts on the circuit translating board mounted below the receiver plate, the receiver holes adapted to receive the ends of separate translator test pins supported by the translator fixture which are inserted into the receiver holes for communicating between test points on the printed circuit board and the receiver holes in the translator pin receiver plate, and compliant electrical contact means within each receiver hole to produce compliant electrical contact between the inserted translator pins supported by the translator fixture and the high density first pattern of electrical contacts on the circuit translator board, wherein electrical test signals pass from the test points on the printed circuit board, through the translator pins, and to the test probes on the grid base via the circuit translating board.

5,798,655

CONTACT PROBE UNIT INCLUDING NEEDLE MEMBERS URGED BY A RESILIENT MATERIAL BLOCK

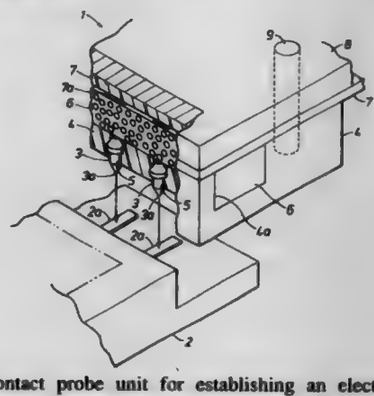
Toshio Kazama, and Kenji Nanseki, both of Nagano-ken, Japan, assignors to NHK Spring Co., Ltd., Japan

Continuation of Ser. No. 356,437, Dec. 15, 1994, abandoned. This application Mar. 10, 1997, Ser. No. 812,891

Claims priority, application Japan, Dec. 17, 1993, 5-343792

Int. Cl.[6] G01R 31/02

U.S. Cl. 324—761 13 Claims



1. A contact probe unit for establishing an electric contact between parts to be contacted and terminals of an external circuit, comprising:

a substantially rigid support block having a plurality of support holes passed between upper and lower surfaces of said support block;

a plurality of needle members slidably received individually in said support holes, each of said needle members having a front end which projects from said lower surface of said support block in a rest condition, and a rear end which projects from said upper surface of said support block when said front end of said needle member is pushed onto a corresponding one of said parts to be contacted;

a resilient block made of a resilient material placed over said upper surface of said support block, said resilient material having a property to become electroconductive when compressed, each of said terminals of said external circuit being placed over an upper surface of said resilient block substantially in alignment with the rear end of a corresponding one of said needle member;

wherein each of said needle members is provided with a large diameter portion on an upper end thereof, and each of said support holes is correspondingly provided with a small diameter portion in a lower end thereof so that said large diameter portion of said needle member rests on a shoulder surface defined at an upper end of said small diameter portion of said support hole to determine an extent by which said front end of said needle member projects from said lower surface of said support block in the rest condition; and

wherein the rear ends of said needle members in use are pushed into the resilient block and said resilient block resiliently urges the front ends of the needle members into direct electrical contact with the parts to be contacted.

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MATCH REGISTER WITH DUPLICATE DECODERS

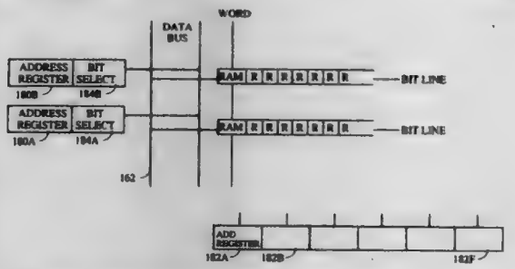
Thomas A. Kean, Edinburgh, Scotland, assignor to Xilinx, Inc., San Jose, Calif.

Division of Ser. No. 486,464, Jun. 7, 1995, Pat. No. 5,552,722, which is a division of Ser. No. 148,793, Nov. 5, 1993, Pat. No. 5,469,003. This application Aug. 27, 1996, Ser. No. 711,221

Claims priority, application United Kingdom, Nov. 5, 1992, 9223226

Int. Cl.[6] H03K *19/77*

U.S. Cl. 326—39 **6 Claims**



1. A programmable logic device comprising:

an array of cells arranged in rows and columns, wherein a plurality of said cells are grouped into words and each cell of a word is addressed by a common word line;

a plurality of match registers, more than one match register placed in operative relation to a word line, wherein if an address matches the stored value in any of said more than one match register, then any of said more than one match register activates said word line.

5,798,657

BIDIRECTIONAL DRIVER CIRCUIT FOR PCI BUS SYSTEMS

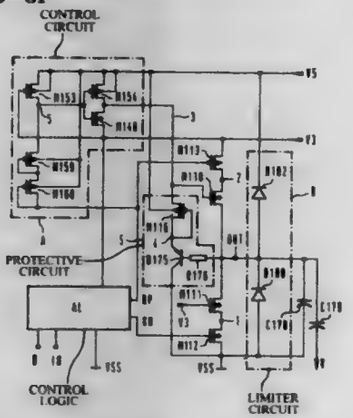
Gerhard Nebel, Immenstadt, Germany; Vincent Frechet, Louveciennes, France, and Doris Schmitt-Landsiedel, Ottobrunn, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 27, 1996, Ser. No. 722,485

Claims priority, application Germany, Sep. 27, 1995, 195 36 020.6

Int. Cl.[6] H03K *17/10;19/094*

U.S. Cl. 326—81 **8 Claims**



1. A driver circuit comprising:

a control logic, a control circuit, a p-channel MOS transistor, a first n-channel enhancement-mode type MOS transistor, a second n-channel MOS transistor and a third n-channel MOS transistor;

the control logic being supplied with a first supply voltage and a reference potential, the control logic having a blocking input and a signal input, which also is an input of the driver circuit;

the control logic having an output for a first control signal and an output for a second control signal, which is inverse to the first control signal, a gate terminal of the p-channel MOS transistor being charged with the first control signal and a gate of the third n-channel MOS transistor being charged with the second control signal;

the first output of the control logic being supplied with a second supply voltage via the control circuit by two diodes connected in series and by a current source transistor connected thereto in series, the second supply voltage being higher than the first supply voltage, a connection node, which is connected between one of the two diodes and the current source transistor, connected to an input of a CMOS inverter in the control circuit, and a gate terminal of the current source transistor is connected to the first supply voltage;

the control circuit having an output connected to a gate terminal of the first n-channel MOS transistor, a gate terminal of the second n-channel MOS transistor being connected to the first supply voltage;

a first terminal of the p-channel MOS transistor connected to the first supply voltage and a second terminal of the p-channel MOS transistor connected to a first terminal of the first n-channel MOS transistor, a second terminal of the first n-channel MOS transistor connected to the output of the driver circuit; and

a first terminal of the second n-channel MOS transistor is connected to the output of the driver circuit and a second terminal of the second n-channel MOS transistor connected to a first terminal of the third n-channel MOS transistor, a second terminal of the third n-channel MOS transistor connected to the reference potential.

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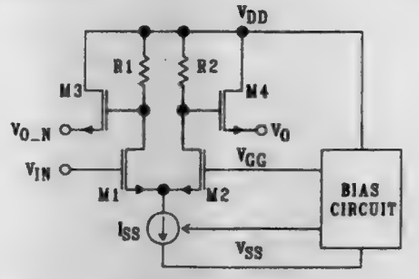
SOURCE-COUPLED LOGIC WITH REFERENCE CONTROLLED INPUTS

Paul M. Werking, 13620 Wagram Rd., Pickerington, Ohio 43147

Continuation of Ser. No. 490,336, Jun. 15, 1995, abandoned. This application Oct. 16, 1996, Ser. No. 732,209

Int. Cl.[6] H03K *19/0944*

U.S. Cl. 326—17 **20 Claims**



1. An MOSFET, reference controlled, source-coupled logic circuit for connection between a first power bus and a second power bus having a substantially constant potential difference between the buses, the logic circuit comprising:

(a) a pair of MOSFET input transistors each having a source and an output and connected in a source-coupled arrangement, a first one of the input transistors having a gate forming a logic circuit input and the other input transistor having a gate connected to an external bias circuit shared by other logic circuits, each input transistor having a threshold voltage V_T;

(b) first and second pull-up resistive circuit elements each connected between the output of a respective different one of the input transistors and the first power bus;

(c) at least one output transistor connected as a source-follower, the output transistor having an input connected to the output of one of the input transistors and having an output forming a circuit output, said output transistor having a logic low output voltage V_{OL} with respect to the second power bus; and

(d) a transistor, for conveying a substantially constant current, connected between the coupled input transistor sources and the second power bus and having an input connected to said bias circuit shared by multiple logic circuits, the constant current being controlled by the bias circuit and having a drain to source voltage at saturation V_{DSSAT} and wherein V_{OL} is substantially equal to $V_{DSSAT}+V_T$.

5,798,659

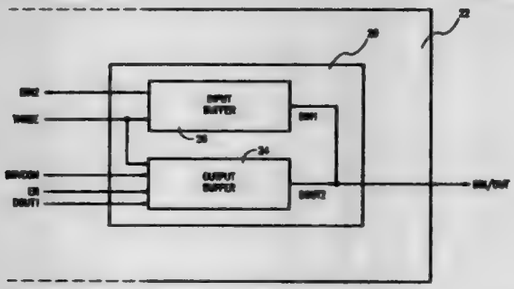
SUPPLY AND INTERFACE CONFIGURABLE INPUT/ OUTPUT BUFFER

Michael John Shay, Arlington, and Mark Douglas Koether, Grand Prairie, both of Tex., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 452,365, May 26, 1995, Pat. No. 5,612,637. This application Dec. 12, 1996, Ser. No. 766,572

Int. Cl.[6] H03K *19/0185*

U.S. Cl. 326—86 **4 Claims**



1. An input/output buffer, comprising:

a bidirectional node;

an output stage having a first n-channel transistor coupled between the bidirectional node and a voltage supply node for pulling-up the bidirectional node, and first and second p-channel transistors coupled between the bidirectional node and the voltage supply node for pulling-up the bidirectional node;

an input stage having a first inverter stage coupled between the bidirectional node and a first intermediate node and a second inverter stage coupled between the bidirectional node and a second intermediate node, the input stage having a second n-channel transistor coupled between the first intermediate node and a ground node and a third n-channel transistor coupled between the second intermediate node and the ground node; and

a control circuit, coupled to the output stage and to the input stage, which enables the output stage when in an output mode and which disables the output stage when in an input mode, the control circuit having a first mode which disables the first and second p-channel transistors and enables the first n-channel transistor for operation with a first voltage supply level present at the voltage supply node and which the enables the second inverter stage and which turns the third n-channel transistor off.

5,798,660

CASCODED DIFFERENTIAL PAIR AMPLIFIER WITH CURRENT INJECTION FOR GAIN ENHANCEMENT

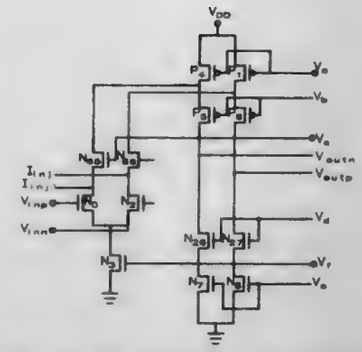
Michael C. H. Cheng, Singapore, Singapore, assignor to Tritech Microelectronics International Pte Ltd., Singapore, Singapore

Filed Jun. 13, 1996, Ser. No. 663,571

Int. Cl.[6] H03K *5/22*

U.S. Cl. 327—65 **15 Claims**

1. A cascoded differential amplifier coupled between a first and second power supply line to amplify a difference signal of the magnitude of a first and second input voltage signals, comprising:



a) a differential amplifier section for the amplification of the difference signal, comprising:

a differential pair having a first n-MOS FET and a second n-MOS FET, each comprising a drain, gate, and source,

a positive input terminal to couple the first input voltage signal to the gate of the first n-MOS FET,

a negative input terminal to couple the second input voltage signal to the gate of the second n-MOS FET, and

a current source coupled between the sources of the first and second n-MOS FET's, a first biasing voltage and the second power supply line;

b) a current injection section for the injection of current to the differential amplifier section for the enhancement of the gain of the differential amplifier section;

c) a first current source load to develop a negative form of the difference signal, comprising:

a first p-MOS FET, comprising a gate, source, and drain, wherein the source is connected to the first power supply line and the gate is connected to a second biasing voltage;

d) a second current source load to develop a positive form of the difference signal, comprising:

a second p-MOS FET, comprising a gate, source, and drain, wherein the source is connected to the first power supply line and the gate is connected to the second biasing voltage;

e) an isolation circuit connected between the first and second current source load circuits and the differential amplifier, comprising:

a third n-MOS FET comprising a gate, drain, and source, wherein the source is connected to the drain of the first n-MOS FET, the drain is connected to the drain of the first p-MOS FET, and the gate is connected to a third biasing voltage, and

a fourth n-MOS FET comprising a gate, drain and source, wherein the source is connected to the drain of the second n-MOS FET, the drain is connected to the drain of the second p-MOS FET, and the gate is connected to the third biasing voltage;

f) a negative output level translation circuit to buffer and translate the negative form of the difference signal, connected to a junction between the first current source load circuit and the first isolation circuit, comprising:

a third p-MOS FET comprising a gate, drain, and source, wherein the source is connected to the drain of the first p-MOS FET, and the gate is connected to a fourth biasing voltage,

a negative output terminal connected to the drain of the third p-MOS FET to transfer the negative form of the difference signal to external circuitry,

a fifth n-MOS FET comprising a gate, drain, and source, wherein the drain is connected to the negative output terminal and the drain of the third p-MOS FET, and the gate is connected to a fifth biasing voltage, and

a sixth n-MOS FET comprising a gate, drain, and source, wherein the drain is connected to the source of the fifth n-MOS FET, the source is connected to the second power supply line, and the gate is connected to a biasing sixth voltage;

g) a positive output level translation circuit to buffer and translate the positive form of the difference signal, connected to a

junction between the second current source load circuit and the second isolation circuit, comprising:

a fourth p-MOS FET comprising a gate, drain, and source, wherein the source is connected to the drain of the second p-MOS FET, and the gate is connected to the fourth biasing voltage of the plurality of the voltages provided by the voltage biasing generator section;

a positive output terminal connected to the drain of the fourth p-MOS FET to transfer the positive form of the difference signal to external circuitry;

a seventh n-MOS FET comprising a gate, drain, and source, wherein the drain is connected to the positive output terminal and the drain of the fourth p-MOS FET, and the gate is connected to the fifth biasing voltage;

an eighth n-MOS FET comprising a gate, drain, and source, wherein the drain is connected to the source of the seventh n-MOS FET, the source is connected to the second power supply line, and the gate is connected to the sixth biasing voltage;

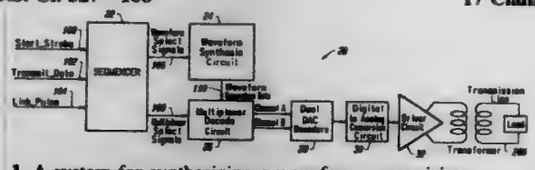
h) a voltage biasing generator section to provide a plurality of voltages to the differential amplifier sections, the current injection section, the first and second current source loads, the isolation circuit, and the negative and positive output level translation circuit to adjust the gain of the differential amplifier sections, to adjust the injected current from the current injection section, and to establish an output level of the negative and positive output level translation circuits.

5,798,661

METHOD FOR CONTINUOUS WAVEFORM SYNTHESIS

Thomas Jefferson Runaldue, and Yi Cheng, both of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 9, 1996, Ser. No. 599,187
Int. Cl.[6] G06F *1/02*
U.S. Cl. 327—106 **17 Claims**



1. A system for synthesizing a waveform, comprising:

combinatorial logic that generates digital data representative of each preselected waveform pulse in a set of preselected waveform pulses;

selection circuitry coupled to select from the combinatorial logic at a first rate a sequence of the preselected waveform pulses in response to a data signal such that the sequence conveys the information in the data signal;

conversion circuitry coupled to receive at a second rate the digital data representative of the sequence of the preselected waveform pulses, the conversion circuitry for converting the digital data into the waveform.

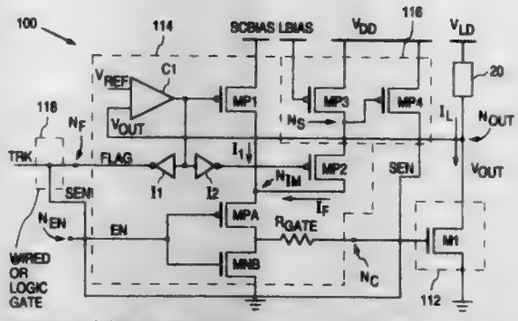
5,798,662

LOW-SIDE DRIVER WITH GATE LEAKAGE DETECTION CIRCUITRY

Mark W. Marosek, Sunnyvale, and Rich Philpott, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 19, 1996, Ser. No. 770,080
Int. Cl.[6] H03K *3/00*
U.S. Cl. 327—109 **23 Claims**

1. A low-side driver device for sinking current from a load, the device comprising:



a current sink stage connected to a control node and to the load via an output node, the current sink stage sinking a load current from the load in response to a control voltage on the control node;

a control stage connected to the current sink stage via the control node and the output node, the control stare controlling the control voltage in response to an enable signal, and indicating when an output voltage on the output node is less than a reference voltage, and when the output voltage is greater than the reference voltage;

a sense stage connected to the control stage via a sense node, the sense stage indicating when a sense voltage on the sense node is treater than a predetermined voltage, and when the sense voltage is less than the predetermined voltage, the sense voltage changing in response to changes in the control voltage when the output voltage is below the reference voltage and the enable signal enables the control stage; and

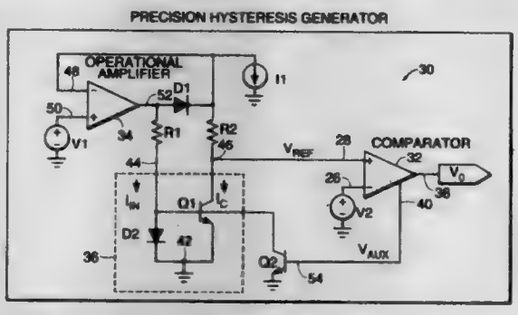
a logic stage connected to the control stage and the sense stage, the logic stage outputting a tracking signal having a first logic state when the output voltage is less than the reference voltage and the sense voltage is greater than the predetermined voltage, a second logic state when the output voltage is greater than the reference voltage, and the second logic state when the output voltage is less than the reference voltage and the sense voltage is less than the predetermined voltage.

5,798,663

PRECISION HYSTERESIS GENERATOR

Robert H. Fugere, North Providence, and James Alvernaz, West Greenwich, both of R.I., assignors to Cherry Semiconductor Corporation, East Greenwich, R.I.

Filed Aug. 22, 1996, Ser. No. 697,328
Int. Cl.[6] H03K *3/037*
U.S. Cl. 327—205 **16 Claims**



1. A hysteresis generator comprising:

a comparator having a first input and a second input and an output having a high state and a low state;

a first resistor having a first and a second end, the first end of said first resistor being coupled to the first input of the comparator;

a reference voltage connected to the second end of said first resistor;

a switch controlled by the state of said comparator for selectively applying a reference current that is a function of said reference voltage through said first resistor so that the first input of said comparator is at said reference voltage when no current is applied through said first resistor and is at said reference voltage minus a hysteresis voltage determined by the reference current and said first resistor when the reference current is applied through said first resistor;

a current mirror having an input circuit, the input circuit being switched to ground by said switch when the output of the comparator is in a high state, and having an output circuit for supplying current through said first resistor;

an amplifier having a first input for receiving a voltage, a second input connected to the second end of said first resistor and an output; and

a diode having an anode connected to the output of said amplifier and a cathode connected to the second end of said first resistor so that said reference voltage is maintained by said amplifier at the voltage of the first input of said amplifier in the absence of a reference current flowing through said first resistor; and

a second resistor connected between the output of said amplifier and an input of said current mirror such that the input current to said current mirror comes from said second resistor.

5,798,664

OFFSET CANCELLING AMPLIFIER CIRCUIT HAVING MILLER INTEGRATOR AS OFFSET DETECTOR

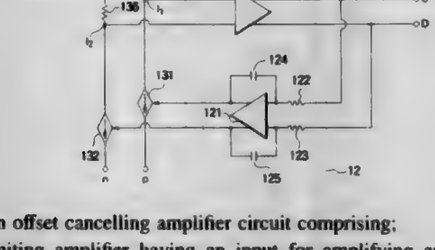
Takeshi Nagahori; Ichiro Hatakeyama; Soichiro Araki, and Kazunori Miyoshi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Apr. 5, 1996, Ser. No. 627,357

Claims priority, application Japan, Apr. 7, 1995, 7-082882

Int. Cl.[6] H03L *5/00*; H03F *3/45*

U.S. Cl. 327—307 **14 Claims**



1. An offset cancelling amplifier circuit comprising;

a limiting amplifier having an input for amplifying an input signal incoming through said input while preventing amplified amplitude from exceeding a predetermined level to provide an output signal;

an offset detector comprising only one Miller integrator for detecting an offset in said output signal to produce a detection signal representative of the offset amount detected; and

an offset controller coupled between said input of said limiting amplifier and said detection signal of said offset detector for controlling said input of said limiting amplifier in response to said detection signal to reduce said offset in said output signal.

5,798,665

BIAS CONTROLLER FOR DECREASING BIAS CURRENT SUPPLIED TO AMPLIFIER WITHOUT SACRIFICE IF DISTORTION

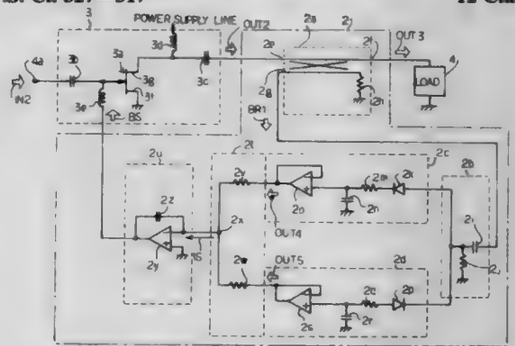
Masaki Ichihara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 24, 1996, Ser. No. 736,505

Claims priority, application Japan, Oct. 25, 1995, 7-276076

Int. Cl.[6] H03K *5/08*

U.S. Cl. 327—317 **12 Claims**



1. A bias current controlling circuit for an amplifier comprising:

a distortion detecting means for producing a first output signal representative of the magnitude of a distortion contained in a second output signal of said amplifier; and

a bias current regulating means responsive to said first output signal to regulate a bias current supplied to said amplifier to match said magnitude of said distortion with a target magnitude, wherein said bias current regulating means comprises an operational amplifier receiving an input comprising a positive half-wave signal of said amplifier and a negative half-wave signal of said amplifier.

5,798,666

CIRCUIT CONFIGURATION FOR TRIGGERING A POWER ENHANCEMENT MOSFET

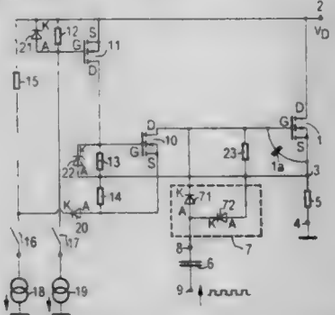
Jenoe Tihanyi, Kirchheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 26, 1996, Ser. No. 721,547

Claims priority, application Germany, Sep. 27, 1995, 195 35 987.9

Int. Cl.[6] H03K *17/04*

U.S. Cl. 327—377 **10 Claims**



1. A circuit configuration for triggering a power enhancement MOSFET, comprising:

a) a terminal for application of a supply voltage, said terminal being connected to a drain terminal connection of said power enhancement MOSFET of one channel type having a source-side load;

b) a first control input terminal for application of an alternating voltage signal, a capacitor connected to said first control input terminal, a rectifier configuration connected between said capacitor and a gate terminal connection of the first power MOSFET;

c) a second enhancement MOSFET of the same channel type as the first power MOSFET for discharging a gate-to-source capacitance of the first power MOSFET, said second enhancement MOSFET having a gate terminal connection and a source terminal connection;

d) a third enhancement MOSFET of the opposite channel type as the first power MOSFET having a load path and a gate terminal connection, a first resistor connected to the load path of said third MOSFET at a first junction connected to the gate terminal connection of said second MOSFET, said first resistor and the load path of said third MOSFET being connected in a series circuit between a source terminal connection and the drain terminal connection of the first power MOSFET;

e) a first controllable switch, a second resistor connected to said first controllable switch at a second junction, said second junction being connected to the gate terminal connection of said third MOSFET, a first current source connected through said first controllable switch and said second resistor to said terminal for the supply voltage;

f) a second controllable switch, a third resistor connected to said second controllable switch at a third junction, a second current source connected through said second controllable switch and said third resistor to said terminal for the supply voltage; and

g) a diode having a cathode terminal connection connected to said third junction and an anode terminal connection connected to the source terminal connection of said second MOSFET;

h) the first power MOSFET being turned on by opening said two controllable switches and the first power MOSFET being turned off by closing said two controllable switches.

5,798,667

METHOD AND APPARATUS FOR REGULATION OF POWER DISSIPATION

Brian K. Herbert, Colorado Springs, Colo., assignor to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios, Inc., Fort Collins, Colo.

Filed May 16, 1994, Ser. No. 243,679
Int. Cl.[6] H03L *1/02;7/00;* **H03B** *5/04*
U.S. Cl. 327—513 **40 Claims**



1. An improved integrated circuit device, comprising:

a temperature sensing circuit disposed on said integrated-circuit device; and

a controller, disposed on said integrated circuit device and operatively coupled to said temperature sensing circuit, comprising a phase-locked loop having an output, the output having a clock signal at a given frequency, and a divider circuit coupled to the output of the phase-locked loop and having a divide value based upon a sensed temperature.

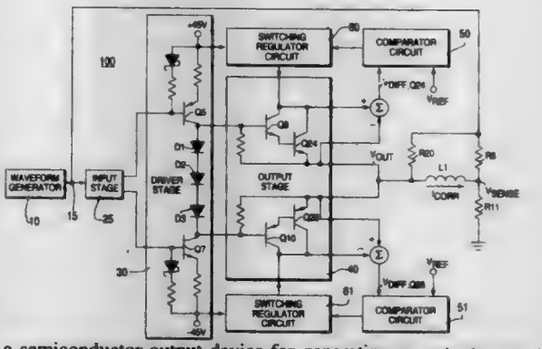
5,798,668

LOW-POWER TRANSCONDUCTANCE DRIVER AMPLIFIER

John Barrett George, Carmel, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Nov. 28, 1995, Ser. No. 563,528
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—538 **12 Claims**

1. An amplifier circuit, comprising:



a semiconductor output device for generating an output current for driving a load, said output device having first and second electrodes, said second electrode coupled to said load;

means for comparing a differential voltage potential between said first and second electrodes with a predetermined voltage potential;

a capacitor; and

means for charging said capacitor responsive to said comparing means to maintain said differential voltage potential greater in magnitude than said predetermined voltage potential despite variations in a voltage at said second electrode of said output device;

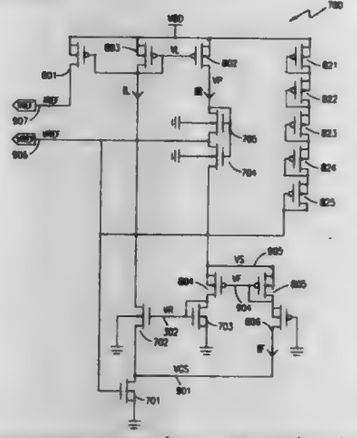
said comparing means causing said charging means to charge said capacitor when said differential voltage potential decreases in magnitude below said predetermined voltage potential, and said comparing means conducting a constant current regardless of variations in said voltage at said second electrode of said output device when said differential voltage potential is greater in magnitude than said predetermined voltage potential.

5,798,669

TEMPERATURE COMPENSATED NANOPOWER VOLTAGE/CURRENT REFERENCE

Kevin Mark Klughart, Addison, Tex., assignor to Dallas Semiconductor Corp., Dallas, Tex.

Filed Jul. 11, 1996, Ser. No. 678,339
Int. Cl.[6] G05F *1/10*
U.S. Cl. 327—539 **7 Claims**



1. A temperature compensated nanopower voltage/current reference, comprising:

a first N-channel enhancement MOSFET;

a second N-channel enhancement MOSFET;

a third N-channel enhancement MOSFET;

a fourth N-channel enhancement MOSFET;

a fifth N-channel enhancement MOSFET;

each of said first, second, third, fourth and fifth N-channel enhancement MOSFETs including a drain connection, a gate connection, a source connection, and a bulk connection;

a first P-channel enhancement MOSFET;
a second P-channel enhancement MOSFET;
a third P-channel enhancement MOSFET;
a fourth P-channel enhancement MOSFET;
a fifth P-channel enhancement MOSFET;
a sixth P-channel enhancement MOSFET;
a seventh P-channel enhancement MOSFET;
an eighth P-channel enhancement MOSFET;
a ninth P-channel enhancement MOSFET;
a tenth P-channel enhancement MOSFET;
an eleventh P-channel enhancement MOSFET;

each of said first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, tenth and eleventh P-channel enhancement MOSFETs including a drain connection, a gate connection, a source connection, and a bulk connection;

wherein a first node is created by connecting said source connections of each of said first, second, third and seventh P-channel enhancement MOSFETs, said bulk connections of each of said first, second, third and seventh P-channel enhancement MOSFETs;

a second node is created by said drain connection of said first P-channel enhancement MOSFET;

a third node is created by connecting each of said gate connections of said first, second and third P-channel enhancement MOSFETs, said drain connection of said fourth N-channel enhancement MOSFET, said drain connection of said third P-channel enhancement MOSFET;

a fourth node is created by connecting said gate connection of said third N-channel enhancement MOSFET, said source connection of said second N-channel enhancement MOSFET, said drain connection of said first N-channel enhancement MOSFET, said gate connection of said eleventh P-channel enhancement MOSFET, and said drain connection of said eleventh P-channel enhancement MOSFET;

a fifth node is created by connecting said drain connection of said third N-channel enhancement MOSFET, said source connection of said fourth N-channel enhancement MOSFET, and said drain connection of said sixth P-channel enhancement MOSFET;

a sixth node is created by connecting each of said gate connections of said fourth and fifth N-channel enhancement MOSFETs, said drain connection of said fifth N-channel enhancement MOSFET, and said drain connection of said fourth P-channel enhancement MOSFET;

a seventh node is created by connecting said drain connection of said second P-channel enhancement MOSFET, said gate connections of each of said first and second N-channel enhancement MOSFET and said drain connection of said second N-channel enhancement MOSFET;

an eighth node is created by connecting said source connections of each of said fourth and fifth P-channel enhancement MOSFETs, said source connection of said first N-channel enhancement MOSFET, and said bulk connections of each of said fourth and fifth P-channel enhancement MOSFETs;

a ninth node is created by connecting said gate connections of each of said fourth and fifth P-channel enhancement MOSFETs, said drain connection of said fifth P-channel enhancement MOSFET, said source connection of said sixth P-channel enhancement MOSFET, and said bulk connection of said sixth P-channel enhancement MOSFET,

a tenth node is created by connecting said gate connection of said seventh P-channel enhancement MOSFET, said drain connection of said seventh P-channel enhancement MOSFET, said source connection of said eighth P-channel enhancement MOSFET, and said bulk connection of said eighth P-channel enhancement MOSFET;

an eleventh node is created by connecting said gate connection of said eighth P-channel enhancement MOSFET, said drain connection of said eighth P-channel enhancement MOSFET, said source connection of said ninth P-channel enhancement MOSFET, and said bulk connection of said ninth P-channel enhancement MOSFET;

a twelfth node is created by connecting said gate connection of said ninth P-channel enhancement MOSFET, said drain connection of said ninth P-channel enhancement MOSFET, said source connection of said tenth P-channel enhancement MOSFET, and said bulk connection of said tenth P-channel enhancement MOSFET;

a thirteenth node is created by connecting said gate connection of said tenth P-channel enhancement MOSFET, said drain connection of said tenth P-channel enhancement MOSFET, said source connection of said eleventh P-channel enhancement MOSFET, and said bulk connection of said eleventh P-channel enhancement MOSFET; and

a fourteenth node is created by connecting said gate connection of said sixth P-channel enhancement MOSFET, said bulk connections of each of said first, second, third, fourth and fifth N-channel enhancement MOSFETs, and said source connections of each of said third and fifth N-channel enhancement MOSFETs.

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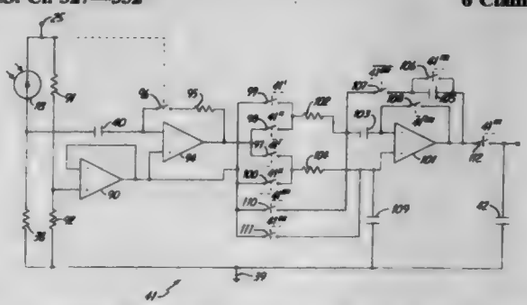
ACTIVE FILTER CIRCUIT

Thomas A. Lee, Apple Valley, Minn., assignor to Itron, Inc., Lakeville, Minn.

Continuation-in-part of Ser. No. 814,371, Mar. 11, 1997, which is a division of Ser. No. 638,794, Apr. 29, 1996. This application May 27, 1997, Ser. No. 863,412

Int. Cl.[6] H03B *1/00*

U.S. Cl. 327—552 **6 Claims**



1. An active filter having a frequency characteristic for signals from a selected controlled signal source differing from its frequency characteristic for signals from background sources at low frequencies, and having an input electrically connected to said sources and an output, said filter comprising:

an input filter having an input serving as said active filter input and an output, said input filter acting to attenuate low input signal frequencies relatively more than some selected higher input signal frequencies;

an analog multiplexer having a first signal input electrically connected to said input filter output, a second signal input electrically connected to a terminating region for receiving a reference voltage, a control input for receiving control signals, and further having a first output at which signals on a selected one of said first and second multiplexer signal inputs can be directed to appear by control signals provided at said control input, said control signals also controlling said selected controlled signal source to provide output signals to said active filter input only when said multiplexer has signals appearing at said output thereof from a selected one of said first and second signal inputs thereof, and

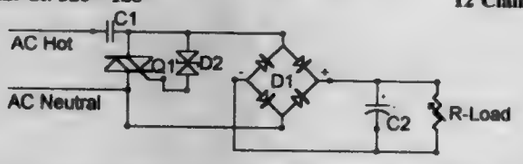
an integrator having a first input electrically connected to said multiplexer output and having an output, said integrator effectively providing at said output thereof time integrated versions of signals appearing at said first input thereof.

5,798,671

CHARGE COUPLED, SILICON CONTROLLED POWER SUPPLY/BATTERY CHARGER

Chris A. Riggio, Longmont, Colo., assignor to Renaissance Systems, Inc., Longmont, Colo.

Filed Apr. 4, 1997, Ser. No. 833,082
Int. Cl.[6] H01M 10/46
U.S. Cl. 320—128 12 Claims



5. A charge coupled DC power supply circuit connected to an AC line, the circuit comprising:

a first capacitor having first and second terminals, the first terminal being connected to a hot side of the AC line;

a power semiconductor device having first and second power terminals and a control terminal, the first power terminal being connected to the second terminal of said first capacitor, and the second power terminal being connected to a neutral side of the AC line;

biasing means connected between said first power terminal and said control terminal of said power semiconductor device;

a bridge rectifier having first and second input terminals and first and second output terminals, the first input terminal being connected to the first power terminal of said power semiconductor device and the second input terminal being connected to the neutral side of the AC line, said first and second output terminals serving as an output of said power supply circuit; and

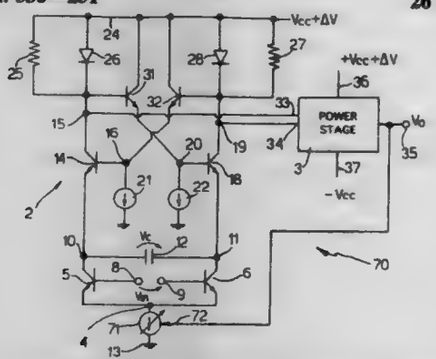
a second capacitor connected across said first and second output terminals of said bridge rectifier.

5,798,672

SINGLE-OUTPUT DUAL-SUPPLY CLASS D AMPLIFIER

Marco Masini, Milan; Claudio Tavazzani, Pavia, and Stefania Bolocchi, Certosa, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jul. 9, 1996, Ser. No. 678,515
Claims priority, application European Pat. Off., Jul. 13, 1995, 95830301
Int. Cl.[6] H03F 3/217
U.S. Cl. 330—251 26 Claims



16. A method for producing an output signal that varies based upon a value of an input signal, the method comprising the steps of:

generating a first signal that switches between two values, the first signal having a first duty cycle that is dependent upon the value of the input signal;

generating the output signal based upon the first signal, the output signal switching between first and second signal levels and having a duty cycle that is substantially equal to the first duty cycle, the first signal level being related to a first supply voltage, and the second level being related to a second supply voltage; and

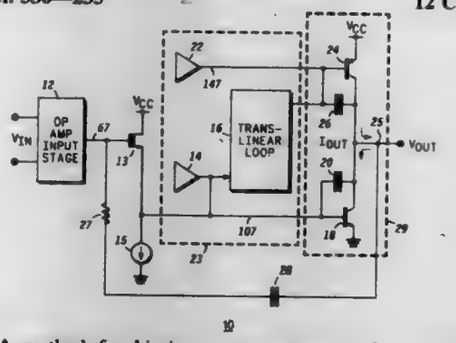
adjusting the first duty cycle based on variations in the first and second supply voltages.

5,798,673

LOW VOLTAGE OPERATIONAL AMPLIFIER BIAS CIRCUIT AND METHOD

Richard S. Griffith, Chandler; Thomas D. Petty, and Robert L. Vyne, both of Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 19, 1996, Ser. No. 619,446
Int. Cl.[6] H03F 3/45;3/30
U.S. Cl. 330—255 12 Claims



10

10. A method for biasing an output stage of an amplifier, comprising the steps of:

generating a single-ended signal in response to a differential input signal;

transferring the single-ended signal through an amplification path to a first input terminal of the output stage of the amplifier;

sensing a first voltage variation in the single-ended signal at the first input terminal; and

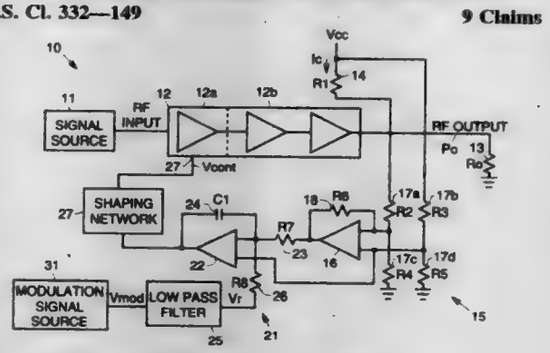
supplying a drive current through a conduction path to the first input terminal of the output stage in response to the sensed voltage variation, where the conduction path is exclusive of the amplification path.

5,798,674

BAND LIMITED AM MODULATOR USING LINEAR POWER AMPLIFICATION

Eric Fountain, Irvine, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 8, 1997, Ser. No. 835,775
Int. Cl.[6] H03C 1/06; H04L 27/04;27/08; H04B 1/04
U.S. Cl. 332—149 9 Claims



1. A band limited AM modulator comprising:

an RF signal source;

a power amplifier coupled to the RF signal source for generating an RF output signal, and wherein the power amplifier comprises a variable gain stage coupled to a Class C amplifier stage;

means for measuring output power of the power amplifier;

an integrator coupled to the output of the means for measuring output power of the power amplifier;

means for producing a low pass filtered modulation voltage signal coupled to the integrator; and

a shaping network coupled between the integrator and the variable gain stage of the amplifier.

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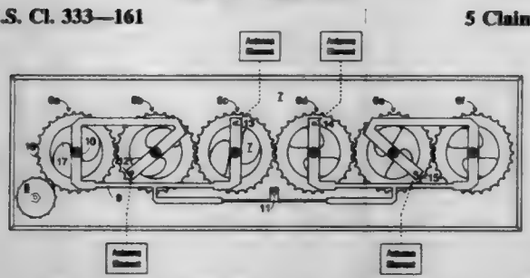
CONTINUOUSLY VARIABLE PHASE-SHIFTER FOR ELECTRICALLY DOWN-TILTING AN ANTENNA

William C. Drach, Neptune, N.J., assignor to Radio Frequency Systems, Inc., Marlboro, N.J.

Filed Feb. 25, 1997, Ser. No. 805,589

Int. Cl.[6] H01P *1/18*

U.S. Cl. 333—161 **5 Claims**



1. A phase-shifter capable of varying continuously the down-tilt of a radiation pattern associated with an antenna for an RF signal, the antenna having a plurality of antenna elements and having an element terminal (**12–15**) for each antenna element, and further having a feed system (**9** and **7**) for communicating the RF signal between each element terminal (**12–15**) and a common feed terminal (**11**), the feed system including a stripline (**9**) spaced above a metallic ground plane (**7**), the phase-shifter comprising:

a plurality of phase wheels (**6*a–f***) each having a shaped dielectric (**17**) distributed throughout, and each rotatably positioned between the metallic ground plane (**7**) and the stripline (**9**) wherein each phase wheel is held in tractive engagement with at least one of the other phase wheels in such an arrangement that all of the phase wheels are tractively coupled one to another; and

means (**8**) for rotating one of the phase wheels (**6*a–f***) relative to the stripline (**9**), whereby all of the phase wheels are turned in synchrony, with each varying, as it is turned, the amount of dielectric directly beneath the stripline;

thereby causing the overall radiation pattern to vary in its down-tilt, the variation in down-tilting thus being produced by purely rotational mechanical motion.

5,798,676

DUAL-MODE DIELECTRIC RESONATOR BANDSTOP FILTER

Douglas R. Jachowski, Maui, Hi., assignor to Allen Telecom Inc., Solon, Ohio

Filed Jun. 3, 1996, Ser. No. 657,405

Int. Cl.[6] H01P *1/20;7/10;5/107;1/207*

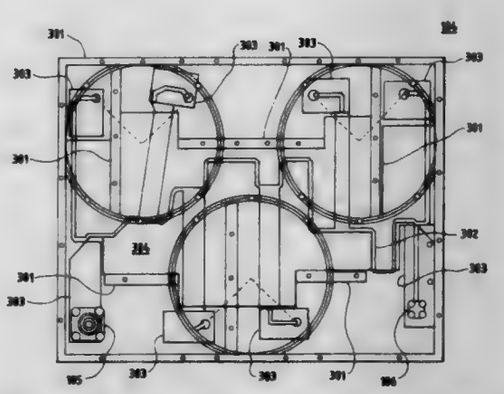
U.S. Cl. 333—202 **43 Claims**

1. An electromagnetic bandstop filter comprising:

a microwave circuit;

at least one microwave resonator;

coupling means that couples electromagnetic energy to and from said microwave resonator; and



an impedance transformer coupled to, and in series with, said coupling means, wherein said transformer is coupled to said resonator only through said coupling means, and wherein said impedance transformer is shunt coupled to said microwave circuit.

5,798,677

TUNABLE QUASI-STRIPLINE FILTER AND METHOD THEREFOR

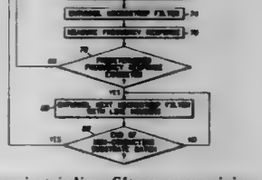
Dean Lawrence Cook, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 25, 1996, Ser. No. 755,937

Int. Cl.[6] H01P *1/203*

U.S. Cl. 333—204 **9 Claims**





1. A method for manufacturing quasi-stripline filters comprising the steps of:

a) selecting a first non-conductive substrate from a first batch of non-conducting substrates and a second non-conductive substrate from a second batch of non-conducting substrates;

b) fabricating a first microstrip filter utilizing said first non-conductive substrate and a second microstrip filter utilizing said second non-conductive substrate;

c) entunneling said first microstrip filter in a first conductive housing of a first predetermined cross-sectional area, said first microstrip filter having a predetermined frequency response;

d) entunneling said second microstrip filter in a second conductive housing of a second cross-sectional area, said second cross-sectional area being dimensioned so that said second microstrip filter has substantially said predetermined frequency response; and

e) varying said second cross-sectional area to achieve said predetermined frequency response whereby said quasi-stripline filters fabricated from said first and second batches of substrates have substantially a consistent frequency response.

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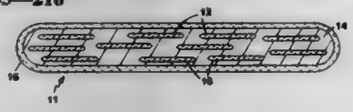
SUPERCONDUCTING WIND-AND-REACT-COILS AND METHODS OF MANUFACTURE

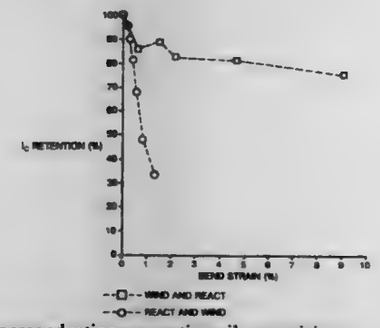
Michael D. Manlief, Westborough; Gilbert N. Riley, Jr., Marlborough; John Voccio, Somerville, and Anthony J. Rodenbush, Marlborough, all of Mass., assignors to American Superconductor Corporation, Westborough, Mass.

Division of Ser. No. 188,220, Jan. 28, 1994, Pat. No. 5,531,015. This application Jul. 1, 1996, Ser. No. 674,111

Int. Cl.[6] H01F 6/00

U.S. Cl. 335—216 **15 Claims**





1. A superconducting magnetic coil comprising:

a multi-layer coil of a multi-filament composite conductor comprising multiple superconducting filaments enclosed in a matrix-forming material, each of the filaments extending the length of the multi-filament composite conductor,

said multi-filament composite conductor formed into said multi-layer coil being subjected to a bend strain in excess of the critical strain of said multi-filament composite conductor when in a reacted state,

said multi-filament composite conductor having a minimum critical-current of 1.2 Amperes.

5,798,679

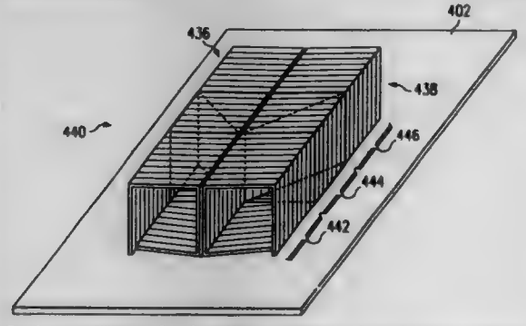
MAGNETIC FLUX BENDING DEVICES

Sergio Pissanetzky, The Woodlands, Tex., assignor to Houston Advanced Research Center, The Woodlands, Tex.

Filed Jun. 7, 1995, Ser. No. 484,057

Int. Cl.[6] H01F 5/00

U.S. Cl. 335—299 **11 Claims**



1. An apparatus for bending magnetic flux from a first to a second path, comprising:

first and second means for substantially confining magnetic flux along the first and second paths respectively, said first means having a first end and said second means having a second end; and

means for conducting a substantially planar electric current, said means for conducting a substantially planar electric current disposed at least partially between said first and second ends and oriented so that the magnetic field within said first means nearest said first end has a non-zero component normal to the plane of the substantially planar electric current and wherein said means for conducting a substantially planar electric current comprises a plurality of substantially parallel linear conductors and further wherein at least one of said first and second means for substantially confining magnetic flux comprises a conducting coil having a plurality of turns, at least one of said turns including a linear portion, and wherein said linear portion comprises one of said plural substantially parallel linear conductors.

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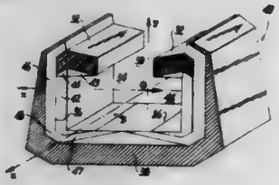
STRAPPED OPEN MAGNETIC STRUCTURE

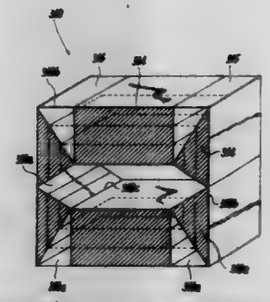
Manlio G. Abele, New York; Henry Rusinek, Great Neck, and Jens Jensen, Harrison, all of N.Y., assignors to New York University, New York, N.Y.

Continuation-in-part of Ser. No. 406,340, Mar. 13, 1995, Pat. No. 5,495,222, which is a continuation-in-part of Ser. No. 228,291, Apr. 15, 1994, Pat. No. 5,475,355. This application Feb. 26, 1996, Ser. No. 613,756

Int. Cl.[6] H01F 7/02

U.S. Cl. 335—301 **15 Claims**





1. An open magnetic structure comprising:

a generally C-shaped primary magnetic system defining a main cavity having a side access opening and generating a substantially uniform magnetic field within a first region of interest in the main cavity, the first region of interest being accessible via at least the side opening,

said primary magnetic system comprising first permanent magnets and spaced opposed first and second large ferromagnetic pole pieces coupled to the first permanent magnets and flanking the side opening,

a secondary magnetic system comprising second permanent magnets inset into the primary magnetic system,

said first and second permanent magnets intending to have equipotential surfaces along their facing surfaces,

magnetic straps embedded in the structure between the first and second permanent magnets and each comprising a thin non-saturated plate or layer of high permeability magnetic material having opposed major surfaces to reduce or eliminate distortions in the uniform magnetic field in the region of interest, the magnetic straps being embedded such that each of the major surfaces of the strap contact adjoining surfaces of the first and second permanent magnets that are intended to be equipotential surfaces, the straps being configured so as to follow and force the surfaces of the first and second permanent magnets that are intended to be equipotential surfaces

such that they actually become equipotential surfaces, a first magnetic strap terminating at one end at a side of the cavity and at its opposite end at the first pole piece and extending continuously from its one end to its opposite end, a second magnetic strap terminating at one end at a side of the cavity and at its opposite end at the second pole piece and extending continuously from its one end to its opposite end,

the side of the cavity where the first and second straps terminate being free of large pole pieces as a result of the presence of the first and second straps thereby increasing the cavity size and reducing the structure's weight in comparison with a similar magnetic structure but without the magnetic straps.

8. In a closed magnetic structure comprising a yoked magnet made up of permanently magnetized blocks surrounding a polygonal cavity for producing a uniform magnetic field within a region of interest of the cavity, the magnetic structure comprising permanent magnetic blocks and non-magnetic regions separating adjoining blocks, said blocks intending to define spaced parallel equipotential surfaces extending through the blocks and through the separating non-magnetic regions, the improvement comprising:

at least one magnetic strap embedded in or between permanently magnetized blocks of the structure, each strap comprising a thin non-saturated plate or layer of high permeability magnetic material having opposed major surfaces to reduce or eliminate distortions in the uniform magnetic field in the region of interest, each magnetic strap being embedded such that each of the major surfaces of the strap contact adjoining surfaces of the permanent magnets that are intended to be equipotential surfaces, each strap being configured so as to follow and force the surfaces of the permanent magnets that are intended to be equipotential surfaces such that they actually become equipotential surfaces, each magnetic strap terminating at one end at a side of the cavity and at its opposite end at an opposite side of the cavity and extending continuously from its one end to its opposite end and through the adjoining non-magnetic regions.

9. The closed magnetic structure of claim **8**, wherein at least two spaced generally parallel magnetic straps embedded in or between permanently magnetized blocks of the structure are provided.

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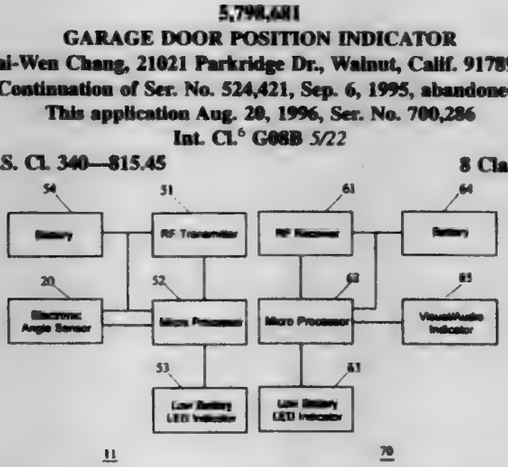
GARAGE DOOR POSITION INDICATOR

Nai-Wen Chang, 21021 Parkridge Dr., Walnut, Calif. 91789

Continuation of Ser. No. 524,421, Sep. 6, 1995, abandoned. This application Aug. 20, 1996, Ser. No. 700,286

Int. Cl.[6] **G08B** *5/22*

U.S. Cl. 340—815.45 **8 Claims**



1. An electronic indicator providing indications of changes of position of a garage door, comprising:

a transmitter unit including a housing to be easily attached onto a garage door, the housing enclosing: an electronic angle sensor comprising 3 IR RX LEDs, an encoder panel which is always in vertical position due to the gravity force, and 3 IR TX LEDs; wherein the 3 IR RX LEDs are individually aligned and faced to the 3 IR TX LEDs;

a micro processor coupling to said electronic angle sensor for generating and distinguishing signals when the garage door changes orientation from vertical to horizontal and from horizontal to vertical;

an RF transmitter coupled to said micro processor and responsive to the signals from said electronic angle sensor for transmitting RF signals during the changes of the orientation of the garage door; and

a receiver unit including a RF receiver responsive to the RF signals from said transmitter, and another micro processor couples to said RF receiver; an indicating means being activated by said another micro processor when receipt of the RF signals by the receiver, whereby activation of said indicating means indicates the changes of orientation of the garage door during operation.

5,798,682

SYNCHRONOUS CABLE COUPLING DEVICE OF FLYBACK TRANSFORMER

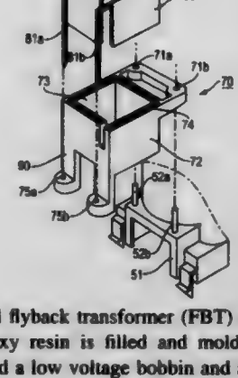
Myung Hwan Kim, and Tae Woo Goo, both of Kyongki-do, Rep. of Korea, assignors to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Aug. 5, 1996, Ser. No. 691,961

Claims priority, application Rep. of Korea, Nov. 21, 1995, 1995 34687; Nov. 21, 1995, 1995 34683; Nov. 21, 1995, 1995 42671

Int. Cl.[6] **H01F** *27/02;27/29;27/30*

U.S. Cl. 336—96 **5 Claims**



1. An improved flyback transformer (FBT) apparatus, in which an insulating epoxy resin is filled and molded between a high voltage bobbin and a low voltage bobbin and a case, the high and low voltage bobbins being wound with respective coils and operatively disposed with a "C"-shaped ferrite core inserted through the coils and fixed with predetermined gaps at the top and bottom of the case, wherein the improvement comprises:

a synchronous cable coupling device comprising

a terminal receiving element, in which coupling holes are defined so as to be coupled with corresponding coupling portions of the low voltage bobbin, in which a core inserting opening is defined within which an external portion of the ferrite core is located, and in which a terminal inserting groove is defined;

a synchronous terminal element comprising a plurality of terminal pins and formed to be inserted into the terminal inserting groove; and

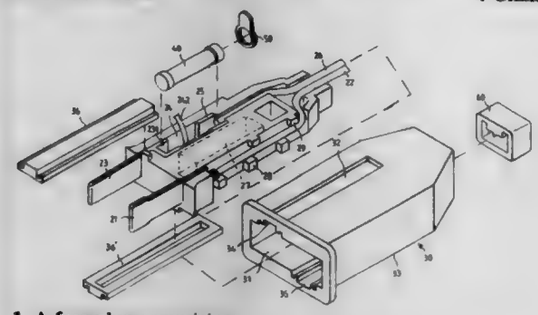
a supporting bracket supported to the terminal receiving element, provided with a plurality of holes to receive therein respective ones of the terminal pins when the synchronous terminal element is fitted into the terminal receiving groove, whereby the synchronous cable coupling device is securely supported and fixed to the FBT.

5,798,683

WATERPROOF FUSE PLUG INCLUDING A SAFETY FUSE DOOR & A FUSE PICK

Mei-Mei Lin, Suite 2, 7f, No. 95-8, Chang Ping Road, Sec. 1, Taichung, Taiwan, and Li-Wen Liu, Suite 2, 7f, No. 95-8, Chang Ping Road, Sec. 1, Taichung, Taiwan

Filed Jul. 19, 1996, Ser. No. 684,566
Int. Cl.[6] H01H 85/02; H01R 13/68
U.S. Cl. 337—198 4 Claims



1. A fuse plug comprising:

a plug having a housing, a first conductor blade secured to a front end of said housing and directly connected with a first cord, a second conductor blade symmetrical to the first conductor blade and including a first transverse portion of L-shaped section disposed into a forward end of a first fuse chamber for receiving an active cartridge fuse formed in one side of said housing, a U-shaped copper plate disposed into a rearward end of said first fuse chamber and connected with a second cord parallel to said first cord, a second fuse chamber for receiving a stand-in cartridge fuse formed in an opposite side of said housing, a plurality of first projections for friction engagement extended outward from along opposite lateral sides of the housing and a pair of second projections for securing said first cord extended outward from an inner wall thereof;

a sleeve member sleeved on said housing and comprising a rectangular opening in an fore end made in conforming with a forward end of said housing, a pair of rectangular slots formed in opposite sides of said sleeve member made in registry with said pair of chambers of the housing and a pair of entrance symmetrically formed in upper and lower edges of said rectangular opening;

a collapsible waterproof sleeve member sleeved on the cords adjacent a rear end of said housing;

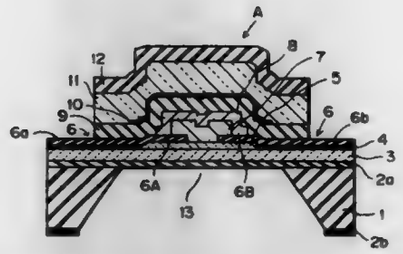
a pair of safety fuse doors slidably closed said first and second fuse chambers of the housing respectively, said fuse doors each comprising an elongate flat body of the length equal to the length of said fuse chambers and the conductor blades, a U-shaped slot for waterproof formed in an upper surface and an extension for preventing an electric shock extended inwardly from an inward end thereof.

5,798,684

THIN-FILM TEMPERATURE SENSOR

Haruyuki Endo; Takeshi Fuse, and Hiroyuki Ishida, all of Tokyo, Japan, assignors to Ishizuka Electronics Corporation, Tokyo, Japan

Filed Mar. 28, 1996, Ser. No. 623,089
Claims priority, application Japan, Mar. 31, 1995, 7-076084
Int. Cl.[6] H01C 7/10
U.S. Cl. 338—22 R 12 Claims



1. A thin-film temperature sensor comprising:

a substrate having a major surface;

a pair of electrode layers formed on the major surface of the substrate;

an insulating film formed between a portion of the pair of electrode layers and the substrate;

at least one layer of thermal sensitive resistor film in contact with the pair of electrode layers;

a protective insulating film formed over and in direct contact with the at least one layer of thermal sensitive resistor film and the pair of electrode layers;

a buffer film;

a glass layer covering the buffer film and undergoing heat treatment during production of the temperature sensor;

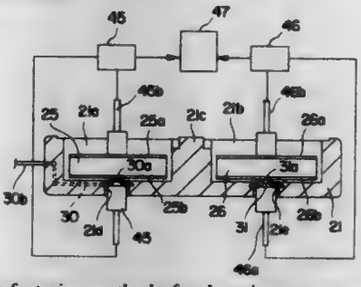
wherein said buffer film consists essentially of a metal oxide which protects the thermal sensitive resistor film from undergoing changes in electrical characteristics due to diffusion during said heat treatment of the glass layer during the production of the temperature sensor and wherein said thermal sensitive resistor film is more stable after the production with said buffer film present during the production than without the buffer film.

5,798,685

THERMISTOR APPARATUS AND MANUFACTURING METHOD THEREOF

Takayo Katsuki, Shiga-ken, and Takashi Shikama, Youkaichi, both of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Feb. 29, 1996, Ser. No. 608,722
Claims priority, application Japan, Mar. 3, 1995, 7-043697
Int. Cl.[6] H01C 10/00
U.S. Cl. 338—195 9 Claims



1. A manufacturing method of a thermistor apparatus, comprising the steps of:

preparing an insulating case;

randomly selecting from a plurality of thermistor devices having a variety of resistances two thermistor devices to be housed in said insulating case;

bracketing said two selected thermistor devices by two pairs of terminals when said two selected thermistor devices are in said insulating case;

measuring the resistances of said two selected thermistor devices;

trimming whichever selected thermistor device has a lower resistance of said two selected thermistor devices to have a resistance substantially the same as the resistance of the other thermistor device; and

placing said two selected thermistors devices in said insulating case.

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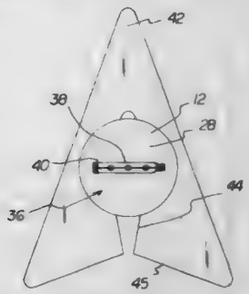
VOICE EMITTING PIN

Stefan C. Schreiner, 21570 Edge Cliff Dr., Euclid, Ohio 44123

Filed Jun. 18, 1997, Ser. No. 877,712

Int. Cl.[6] G08B *3/10*

U.S. Cl. 340—384.7 **7 Claims**



2. A voice emitting pin comprising:

a housing with a back opening and an interior space;

a back cover for releasably engaging the back opening of the housing;

a pin assembly coupled to a rear surface of the back cover with an associated pin, whereby the pin may be releasably coupled to a shirt of a user;

a triangular ornament coupled to the housing;

a watch battery situated within the interior space of the housing;

a voice chip situated within the interior space of the housing and connected to the battery for powering purposes, the voice chip having a switch for effecting transmission of an audible voice remark upon the depression thereof.

5,798,687

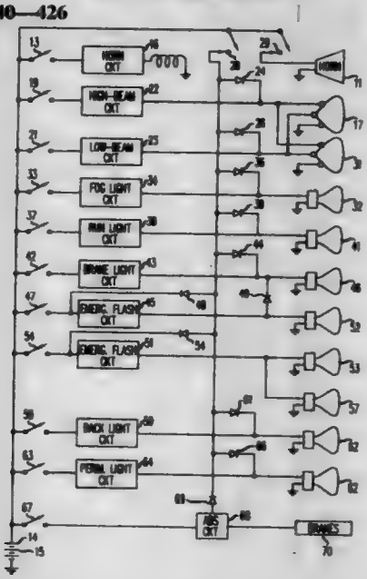
VEHICULAR SAFETY SYSTEM

Jerry D. Littlejohn, Wayne, and David F. Sears, Belleville, both of Mich., assignors to Terry Mijal, Westland, and James Golembieski, Garden City, both of Mich., a part interest

Filed Oct. 15, 1996, Ser. No. 729,863

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **18 Claims**



1. A warning system for a vehicle that comprises a battery, an electrically operated horn, a horn switch electrically connected in series between the battery and the horn to actuate the horn when the switch is closed, a plurality of electric lights visible from outside the vehicle, a plurality of switch-controlled circuits each connecting selected ones of the electric lights to the battery to turn on the selected electric lights when the respective switch-controlled circuit is actuated, a control circuit comprising:

(a) relay means comprising a control section connected to the horn switch to be actuated when the horn switch is actuated, and a contact section comprising a first contact connected to the battery and a second contact to be conductively connected to the first contact when the control section is actuated; and

(b) a plurality of unidirectionally conductive circuit means each connected in series between the second contact and specific ones of the electric lights and polarized to be conductive in the direction to conduct operating current from the battery to the specific lights to turn on the specific lights when the horn switch is closed to actuate the horn.

5,798,688

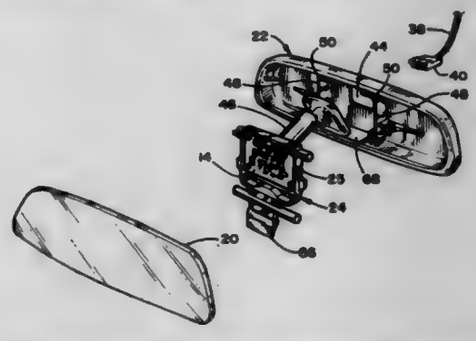
INTERIOR VEHICLE MIRROR ASSEMBLY HAVING COMMUNICATION MODULE

Kenneth Schofield, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.

Filed Feb. 7, 1997, Ser. No. 796,051

Int. Cl.[6] B60Q *1/00;* **H04B** *1/034*

U.S. Cl. 340—438 **21 Claims**



1. A vehicle interior rearview mirror assembly, comprising:

a reflective element;

a case for said reflective element;

a manual actuator including a user operable grasp handle for adjusting the position of said reflective element between day and night viewing positions; and

an electromagnetic communication module supported within said case by said manual actuator.

5,798,689

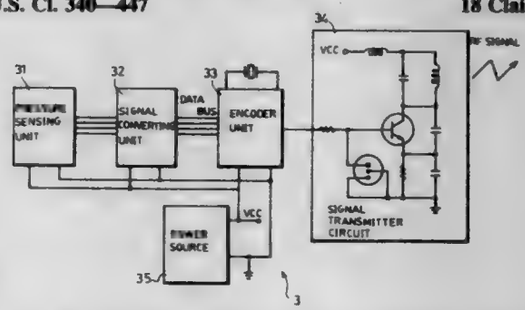
TIRE PRESSURE INDICATOR

Tien-Tsai Huang, No. 4, Lane 30, Wu-Chuan St., Pan-chiao City, Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 773,000, Dec. 23, 1996, Pat. No. 5,964,111. This application Feb. 26, 1997, Ser. No. 806,408

Int. Cl.[6] B60C *23/00*

U.S. Cl. 340—447 **18 Claims**



1. A tire pressure indicator for a set of pneumatic tires of a vehicle, each of the pneumatic tires having a metal wheel, said tire pressure indicator comprising:

a plurality of pressure gauges, each of which includes a casing formed with an aperture and adapted to be secured to the metal wheel of a respective one of the pneumatic tires such that said pressure gauges are concealed by the pneumatic tires, and a signal generating device disposed in said casings said signal generating device wirelessly transmitting a pressure signal when pressure within the respective one of the pneumatic tires is not within a predetermined normal operating pressure range;

a receiver device for receiving the pressure signal transmitted by said signal generating device of said pressure gauges;

a pressure sensing unit which generates an analog voltage signal that varies in accordance with the pressure entering said aperture:

a signal converting unit electrically connected to said pressure sensing unit for converting the analog voltage signal into a digital output signal:

an encoder unit electrically connected to said signal converting unit, said encoder unit comparing the digital output signal of said signal converting unit with high pressure and low pressure limits of the normal operating pressure and low pressure limits of the normal operating pressure range, said encoder unit generating said pressure signal which includes the digital output signal and an identification code unique to that gauge when the digital output signal is not within the normal operating pressure range: and

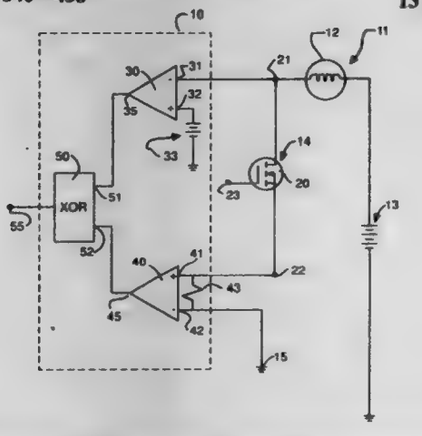
a signal transmitter circuit electrically connected to said encoder unit for transmitting the pressure signal from said encoder unit wirelessly.

5,798,690

MONITORING CIRCUIT FOR AN ABS WARNING LAMP

Stefan Grieser-Schmitz, Wuppertal, Germany, assignor to Varity GmbH, Koblenz, Germany

Filed Feb. 6, 1997, Ser. No. 795,623
Int. Cl.[6] B60Q 11/00
U.S. Cl. 340—458 **13 Claims**



1. An apparatus for monitoring a warning lamp circuit which includes a warning lamp electrically connected to a warning lamp driver, the monitoring apparatus comprising:

a first monitoring device having an input terminal adapted to be connected to the warning lamp, said first monitoring device also having an output terminal, said first monitoring device being responsive to a first condition of the warning lamp circuit to generate one of a first and a second output signals at said output terminal of said first monitoring device;

a second monitoring device having an input terminal adapted to be connected to the warning lamp driver, said second monitoring device as having an output terminal, said second monitoring device being responsive to a second condition of the warning lamp circuit to generate one of a first and a second output signals at said output terminal of said second monitoring device; and

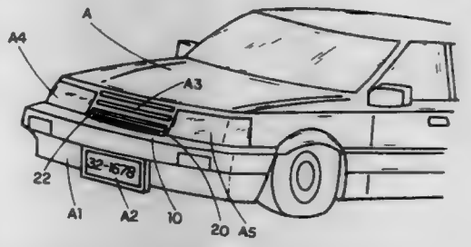
a decision device having a first input terminal connected to said output terminal of said first monitoring device and a second input terminal connected to said output terminal of said second monitoring device, said decision device further having an output terminal adapted to be connected to a warning device, said decision device being responsive to said first and second monitoring device output signals at said first and second input terminals to generate an output signal at said decision device output terminal.

5,798,691

ACCESSORY BRAKE LIGHT SYSTEM FOR AUTOMOBILE

Nien Tsu Tim Kao, 13018 Park View Dr., Baldwin Park, Calif. 91706

Filed Mar. 20, 1997, Ser. No. 821,060
Int. Cl.[6] B60Q 1/44
U.S. Cl. 340—479 **8 Claims**



1. An accessory brake light system for an automobile, comprising

an elongated housing having a receiving cavity therein and a front transparent shield covering said receiving cavity;

a lighting apparatus comprising a plurality of brake lighting LEDs mounted within said receiving cavity of said elongated housing;

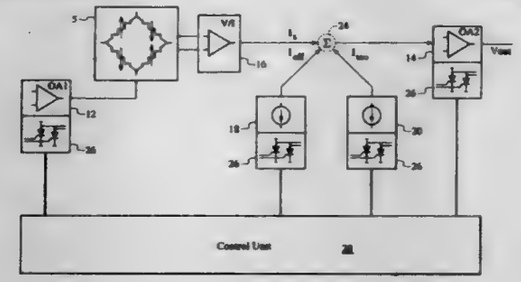
an electrical controlling device, electrically connected with said lighting apparatus, a power source of said automobile and a braking signal source, for activating said lighting apparatus to provide lighting when braking signals are received from said braking signal source during a braking condition of said automobile, wherein said electrical controlling device comprises power supply terminals electrically connected with a power wiring of said automobile and a signal activating circuitry connecting to said braking signal source of said automobile for activating said electrical controlling device when said braking signals from said braking signal source of said automobile are received, said signal activating circuitry comprising a manual activating switch which is to turn on said accessory brake light system manually under emergency situation, a coupler C1, two resistors R1, R2, and a transistor T1, in which said transistor T1 is connected in series with said power supply terminals and said manual activating switch which is further connected in parallel with a capacitor C2 and said coupler C1 which is connected in series with said resistors R1, R2, said resistors R1, R2 being connected to said braking signal source of said automobile through a brake switch assembly; and

a mounting means for firmly securing said elongated housing to a frontmost central position between two front head lamps of said automobile.

5,798,692
DIGITAL COMPENSATION CIRCUIT FOR CALIBRATION OF SENSORS

Finbarr J. Crispie, Mountain View; Bertram J. Rodgers, III, San Francisco, and Sofjan Goenawan, Milpitas, all of Calif., assignors to Integrated Sensor Solutions, San Jose, Calif.

Filed Apr. 1, 1996, Ser. No. 625,560
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—501 **9 Claims**



1. A digital compensation circuit for calibrating a sensor comprising:

a serial communication circuit for receiving data relating to a plurality of parameters;

a plurality of registers coupled to the serial communication circuit, one of the plurality of registers for reading temperature information;

a digital trim circuit for adjusting the temperature information in the one of the plurality of registers to a first predetermined value at an initial calibration temperature;

means responsive to the digital trim circuit for measuring gain and offset of a physical parameter being measured, the measuring means further including;

means responsive to the digital trim circuit for measuring an offset at a minimum value of the physical parameter being measured; and

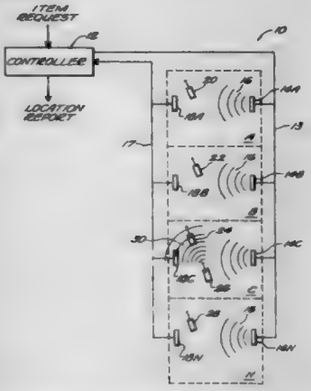
means responsive to the digital trim circuit for measuring a gain at a maximum value of the physical parameter being measured; and

means for determining a temperature coefficient of a sensor sensitivity.

5,798,693
ELECTRONIC LOCATING SYSTEMS

Thomas J. Engellenner, 11 Birch Hill Rd., Newton, Mass. 02165

Filed Jun. 7, 1995, Ser. No. 478,866
Int. Cl.[6] G08B *26/00*
U.S. Cl. 340—505 **1 Claim**



1. A method of taking inventory of distributed items comprising the steps of:

coding each item to be located with a tag responsive to a predetermined electromagnetic signal;

interrogating at least one spatial region with said electromagnetic signal to cause the tag to generate a responsive signal if present within the region;

detecting said responsive signal to confirm the tagged item's presence within a particular region;

storing an inventory of information on locations of particular tagged items in a data storage device,

inputting an inquiry for information on the location of an item;

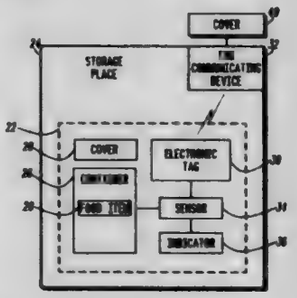
re-interrogating at least one spatial region to determine the location of the item;

updating said inventory of information on locations of particular tagged items in said data storage device, and providing a response to the inquiry.

5,798,694
FOOD STORAGE APPARATUS AND METHODS AND SYSTEMS FOR MONITORING A FOOD ITEM

William L. Reber, Schaumburg, Ill., and Cary D. Perttunen, Shelby Township, Mich., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1996, Ser. No. 770,932
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—540 **27 Claims**



1. A food storage apparatus comprising:

a container for containing a food item, the container having an opening;

a first electrical component associated with the container;

a cover for covering the opening of the container; and

a second electrical component associated with the cover;

wherein the first electrical component is in electrical communication with the second electrical component to monitor the food item.

5,798,695
IMPAIRED OPERATOR DETECTION AND WARNING SYSTEM EMPLOYING ANALYSIS OF OPERATOR CONTROL ACTIONS

Sam Anthony Metalis, Long Beach, and Samuel Lee Rodriquez, Costa Mesa, both of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Apr. 2, 1997, Ser. No. 832,397
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—576 **14 Claims**

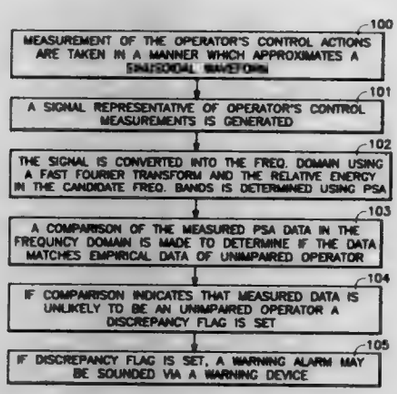
1. An impaired operator detection system comprising:

a sensing device that provides a measurement of the operator's control actions and that generates a signal indicative of said control actions; and

an analyzer comprising a processor which includes,

a Fast Fourier Transform processor portion capable of performing a Fast Fourier Transform on said signal and converting the transformed signal into a Power Spectrum Array (PSA) comprising a numeric description of the waveform energy present in each of a chosen series of frequency bands, and

a comparison processor portion capable of comparing the PSA derived from said measurement of the operator's control



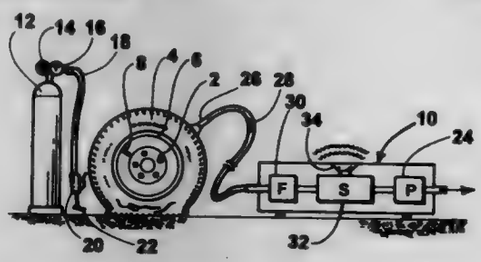
actions to at least one empirical PSA created from empirical data indicative of an unimpaired operator.

5,798,696

TIRE PUNCTURE LOCATOR

Jacob Y. Wong, Goleta, Calif., assignor to Jaesent Inc., Goleta, Calif.

Filed May 13, 1997, Ser. No. 855,174
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—605 **8 Claims**



1. Apparatus for determining the location of a leak in a tire comprising:

a source of pressurized carbon dioxide gas for use in injecting a quantity of carbon dioxide gas into the tire;

a gas sampling system for continuously measuring the concentration of carbon dioxide in an inflowing gas stream, said gas sampling system including

collector means for drawing the gas stream from selected locations adjacent the surface of the tire;

sensor means for producing an electrical signal representative of the instantaneous concentration of carbon dioxide in the gas stream; and,

alarm means responsive to said electrical signal for producing an audible alarm related to the instantaneous concentration of carbon dioxide.

5,798,697

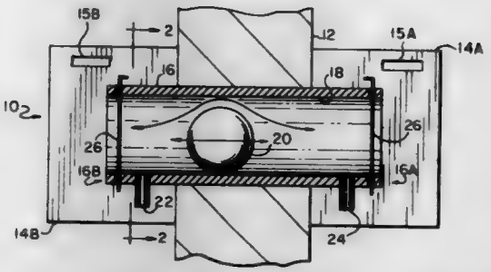
EXHAUST/SUPPLY DIRECTION INDICATOR

Brian Wiseman, 95 Fairmount Ave., Saugus, Mass. 01906

Continuation of Ser. No. 427,155, Dec. 5, 1994, Pat. No. 5,661,461, which is a continuation-in-part of Ser. No. 127,959, Sep. 28, 1993, Pat. No. 5,410,298, which is a continuation-in-part of Ser. No. 764,808, Sep. 24, 1991, Pat. No. 5,291,182.
This application May 16, 1997, Ser. No. 857,580
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—610 **10 Claims**

1. An apparatus for detecting the flow direction of a fluid, comprising:

a conduit having an inlet/outlet opening at each end and adapted to receive a fluid moving in either direction;



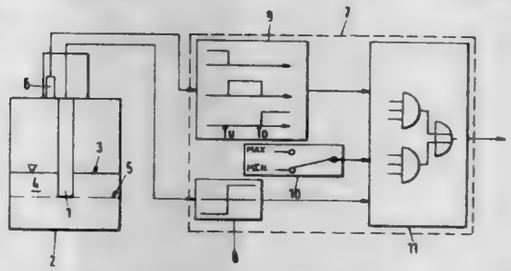
at least one detecting element observable by a user disposed within the conduit and movable in the direction of a fluid flow, so that the detecting element signals which direction said fluid is flowing.

5,798,698

METHOD OF MONITORING THE LEVEL OF A LIQUID IN A CONTAINER

Joachim-Christian Politt, Bremen; Holger Schroter, Achim, and Kerstin Borchers, Bremen, all of Germany, assignors to Gestra GmbH, Bremen, Germany

Filed Feb. 20, 1996, Ser. No. 604,057
Claims priority, application Germany, Mar. 7, 1995, 195 07 891.8
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—618 **3 Claims**



1. Method of monitoring the level of a liquid in a container comprising the steps of

using a level sensor for emitting a measuring signal conforming to the level of the liquid;

using an evaluator unit for forming an output signal by evaluating the measuring signal;

determining the temperature prevailing in the container by a temperature sensor located near the level sensor;

comparing the determined temperature in the evaluator unit with a preset first comparative temperature value Tu, said value Tu being below the critical temperature of the liquid to be monitored;

forming an output signal in the evaluator unit, wherein at temperature below the first comparative value Tu, said output signal is determined by the measuring signal of the level sensor and at a temperature exceeding the first comparative value Tu, said output signal is determined by the temperature; and

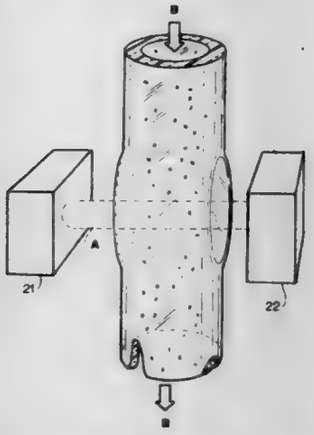
wherein when a minimum level of the liquid is monitored, said output signal formed in said evaluator unit is an "alarm" at a temperature exceeding the first comparative temperature value Tu.

5,798,699

METHOD FOR MONITORING AND SELECTIVELY SAMPLING A FLUID FLOW STREAM

Robert L. Bryant, DeKalb County, and Charles R. Veal, Gwinnett County, both of Ga., assignors to Chemtrac Systems, Inc., Norcross, Ga.

Filed Jan. 6, 1997, Ser. No. 779,051
Int. Cl.[6] G08B 21/00
U.S. Cl. 340—627 3 Claims



1. A method of collecting discrete samples of a fluid flow stream, in which an intense light beam is directed towards a detector and across a portion of the flow stream, each sample of the flow stream being collected only when concentrations of particulate matter in the flow stream exceed a predetermined limiting concentration, comprising:

(a) continuously measuring, on-line, numbers know as particle indices which are indicative of particulate matter concentrations in the flow stream, each particle index being proportional to a ratio equal to fluctuations in intensity of the light beam divided by absolute intensity of the light beam, the fluctuations being caused by particles which are present in said portion of the flow stream during a fixed interval of time;

(b) measuring how long the particulate matter concentration continuously exceeds the predetermined limiting concentration;

(c) comparing each time period over which the particulate matter concentration has been greater than the limiting concentration with a preset time interval; and

(d) automatically diverting the flow stream into a sample collection container when the particulate matter concentration, as indicated by the particle index, is greater than the predetermined limiting concentration over a time period which is at least as long as the preset time interval.

5,798,700

FALSE ALARM RESISTANT FIRE DETECTOR WITH IMPROVED PERFORMANCE

Jacob Y. Wong, Santa Barbara, Calif., assignor to Engelhard Sensor Technologies, Inc., Iselin, N.J.

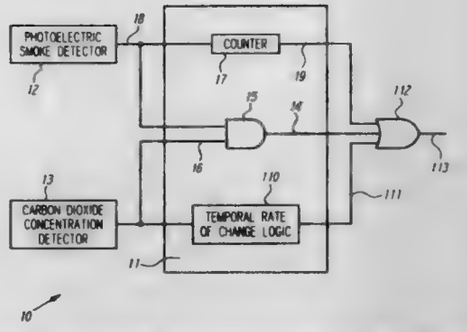
Continuation of Ser. No. 77,488, Jun. 14, 1993, Pat. No. 5,592,147. This application Nov. 5, 1996, Ser. No. 744,040
Int. Cl.[6] G08B 19/00
U.S. Cl. 340—628 7 Claims

1. A fire detector having a low rate of generating false alarms, comprising:

a CO_2 fire detector module;

a smoke detector module adapted to measure a second property that is indicative of the presence of a fire;

an AND gate, having an output, having a first input connected to an output of the CO_2 fire detector and having a second input connected to an output of the smoke detector module;



a clock, connected to the smoke detector module, for measuring a duration of each interval in which the smoke detector measures a smoke level exceeding a preselected smoke threshold level; and

alarm means, responsive to an output of the clock and the output of the AND gate, for producing an alarm if either of the following criteria are met:

the output of the clock exceeds a preselected clock threshold level, thereby indicating that the smoke level has exceeded the preselected smoke threshold level for longer than a preselected interval; or

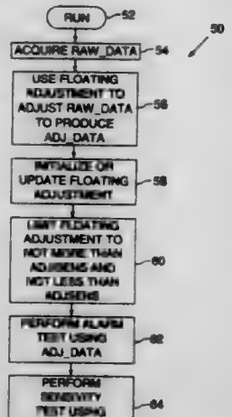
the output of the AND gate is high, indicating that a fire has been detected by both the CO_2 detector and the smoke detector.

5,798,701

SELF-ADJUSTING SMOKE DETECTOR WITH SELF-DIAGNOSTIC CAPABILITIES

Brian A. Bernal, Charlotte, N.C.; Daniel P. Croft, Beaverton, Oreg.; Kirk R. Johnson, Rindge, N.H.; Douglas H. Marman, Ridgefield, Wash., and Mark A. Peltier, Sherwood, Oreg., assignors to SLC Technologies, Inc., Tualatin, Oreg.

Continuation of Ser. No. 297,290, Aug. 26, 1994, abandoned. This application Feb. 27, 1997, Ser. No. 807,627
Int. Cl.[6] G08B 17/10
U.S. Cl. 340—628 20 Claims



17. A self-contained, self-adjusting smoke detector that communicates with a central controller and has self-diagnostic capabilities, comprising:

a smoke sensing element operable to produce a sensing element signal indicative of a smoke level in a spatial region, the smoke sensing element producing a clean air reference signal that represents a clean air smoke level in the spatial region; and

a processor receiving and processing the sensing element signal, the processor determining successive floating adjustments

from the clean air reference signal and from smoke level data acquired at different data acquisition times from the sensing element signal, each successive floating adjustment being determined by comparing over a data gathering time interval differences between multiple, time displaced smoke level data acquired from the sensing element signal and the clean air reference signal and calculating an offset value corresponding to the difference determined, and each floating adjustment determined in accordance with the offset value offsetting corresponding current smoke level data to produce adjusted smoke level data; the processor comparing the adjusted smoke level data to multiple threshold values, one of the threshold values representing a smoke obscuration alarm level and another of the threshold values representing a tolerance limit for the smoke sensing element; and the processor determining from the adjusted smoke level data corresponding to smoke obscuration levels that exceed the alarm level and from adjusted smoke level data corresponding to smoke observation levels that exceed the tolerance limit whether the adjusted smoke level data are indicative of an alarm condition or an out-of-calibration condition of the system.

5,798,702

RESIDUAL BATTERY CAPACITY DISPLAY DEVICE FOR ELECTRIC VEHICLE

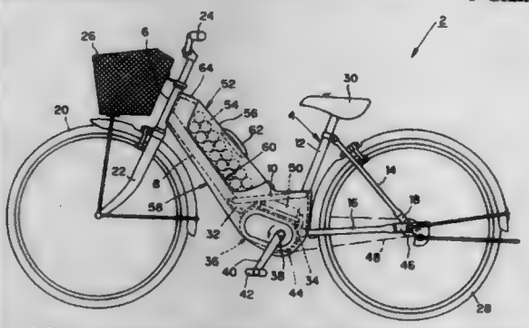
Yuichi Okamoto; Kenichi Higashi; Masahiko Akashiba; Yoshitaka Ijima, and Kazuhiko Matsunami, all of Shizuoka-ken, Japan, assignors to Suzuki Motor Corporation, Shizuoka-ken, Japan

Filed Sep. 13, 1996, Ser. No. 713,510

Claims priority, application Japan, Apr. 18, 1996, 8-121046; Apr. 20, 1996, 8-122738; Jun. 27, 1996, 8-186616

Int. Cl.[6] B62J *3/00*; G08B *21/00*

U.S. Cl. 340—636 **9 Claims**



1. A bicycle having an electric motor which provides auxiliary power for driving the bicycle in conjunction with a pedal effort provided by an operator, the bicycle comprising:

a frame having a head pipe communicating with a front wheel of the bicycle, a seat pipe communicating with a saddle, a main pipe communicating with the head pipe and the seat pipe, and seat and chain stays communicating with a rear wheel of the bicycle from the seat and main pipes;

an auxiliary drive unit including an electric motor disposed forward of the chain stay for generating auxiliary power, the auxiliary drive unit also including a crankshaft having cranks provided with foot pedals disposed on opposite sides of the frame;

a battery unit extending downwardly along the main pipe in a longitudinal direction thereof, and a frame cover secured to the main pipe and having a recess for receiving the battery unit therein, the frame cover also covering the auxiliary drive unit; and

a residual battery capacity meter for indicating residual capacity of the battery unit, the residual battery capacity meter being centrally mounted on the frame cover at a highest position thereof between the head pipe and the recess.

5,798,703

MAT SENSOR

Masayoshi Sakai; Koichi Futsuhara, and Toshihito Shirai, all of Urawa, Japan, assignors to The Nippon Signal Co., Ltd., Tokyo, Japan

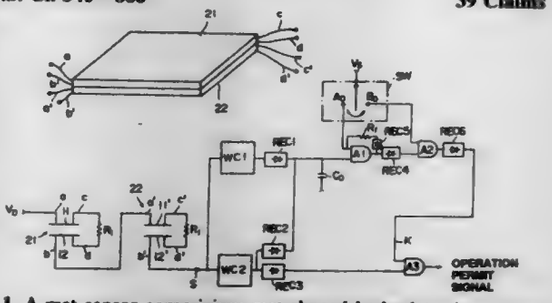
PCT No. PCT/JP96/01743, § 371 Date Feb. 28, 1997, § 102(e) Date Feb. 28, 1997, PCT Pub. No. WO97/01773, PCT Pub. Date Jan. 16, 1997

PCT Filed Jun. 24, 1996, Ser. No. 809,168

Claims priority, application Japan, Jun. 29, 1995, 7-164317

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—666 **39 Claims**



1. A mat sensor comprising: mat shaped body detection means including a plurality of sensor portions, wherein each sensor portion includes a pair of mutually facing electrode plates which are contacted when the pressure from a body acts from above, thus producing a body present detection signal, and which are separated when the pressure is released, thus producing a body absent detection signal, agreement or disagreement detection means for detecting agreement or disagreement between detection signals from the sensor portions of said body detection means,

judgment means for generating a normal judgment signal for said body detection means when agreement detection information is input from said agreement or disagreement detection means, and stopping said normal judgment signal when disagreement detection information is input from said agreement or disagreement detection means, and

sensor output generating means for generating, on the condition that the normal judgment signal is being generated from said judgment means, a sensor output signal indicating the absence of the body, only when all said detection signals from said respective sensor portions of said body detection means are body absent detection signals.

5,798,704

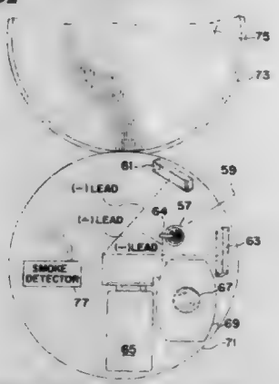
EARTHQUAKE ESCAPE LIGHT

Ohannes Sabuncu, 9757 Yolanda Ave., Northridge, Calif. 91324

Filed Aug. 13, 1996, Ser. No. 689,676

Int. Cl.[6] G08B *25/08*

U.S. Cl. 340—692 **2 Claims**



1. An earthquake escape light system within a common housing comprising:

a self-contained electrical power source;

a light source electrically connected to said power source;

at least two separated permanent magnetic sources electrically connected to said power source; and

an electrically conductive extending arm connected to said light source and said power source, said extending arm having a coil spring member with a free end, said free end normally being maintained in an equilibrium position between said two magnetic sources by the magnetic forces of the magnets whereby earthquake vibrations will cause said coil spring's free end to move and become attracted to one of said two magnets to thereby complete an electric circuit to said connected light source through the extending arm.

5,798,705

COMMUNICATION SYSTEM CAPABLE OF EASILY REFORMING TO HAVE COMMUNICATION UNITS

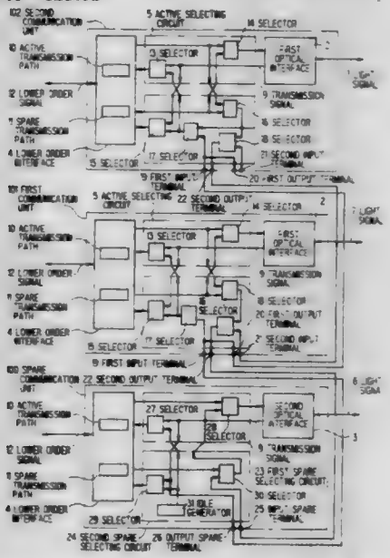
Tatsuhiko Nakagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 31, 1996, Ser. No. 657,791

Claims priority, application Japan, May 31, 1995, 7-132492

Int. Cl.[6] H04B *7/00;* **H04L** *12/00;* **H04K** *1/00*

U.S. Cl. 340—825.01 **4 Claims**



1. A communication system which comprises first and second active transmission paths for transmitting transmission signals, first and second spare transmission paths for transmitting transmission signals, active selecting means, and spare selecting means, wherein:

said active selecting means comprises;

a first selecting circuit for selecting one of transmission signals from said first active transmission path and said spare selecting means to supply said one of transmission signals to said second active transmission path;

said spare selecting means comprising;

a second selecting circuit and a third selecting circuit, said second selecting circuit being for selecting one of transmission signals from said first active transmission path and said third selecting circuit to supply said one of transmission signals to said second spare transmission path; said third selecting circuit having output and input terminals connected to each other for selecting transmission signal from said first spare transmission path to supply said transmission signal to said first and second selecting circuits.

5,798,706

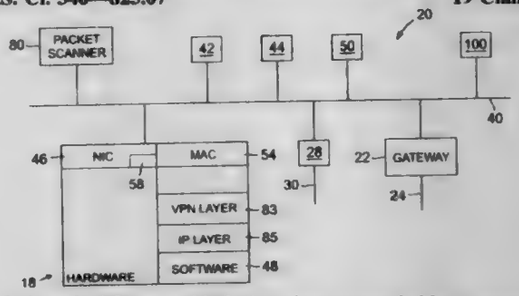
DETECTING UNAUTHORIZED NETWORK COMMUNICATION

Jeffrey A. Kraemer, Northborough, Mass.; Alan J. Kirby, Hollis, N.H., and David C. Waterman, Leominster, Mass., assignors to Raptor Systems, Inc., Waltham, Mass.

Filed Jun. 18, 1996, Ser. No. 665,293

Int. Cl.[6] G05B *23/02;* **G06F** *15/00;* **G06G** *7/00*

U.S. Cl. 340—825.07 **19 Claims**



1. A method for use with devices that are coupled by a communication medium to form an internal packet network, at least one of the devices not being an authorized conduit for communication with external devices that are not part of the internal packet network, the method comprising

observing packets passing on the medium,

based on the observation, detecting packets that pass between the internal packet network and one of the external devices via one of the devices that is part of the internal network, and

for detected packets associated with communication with the external device, determining if the one device via which the packets pass is an authorized conduit for communication with external devices.

5,798,707

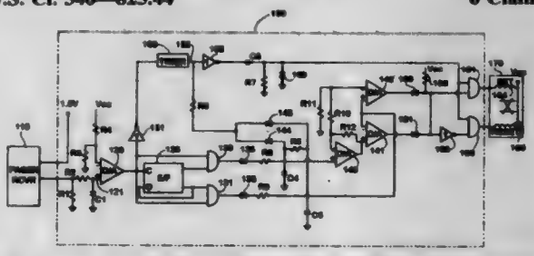
PAGER OPERATED CONTROL UNIT

Arthur J. Camire, Calumet City, Ill., assignor to New Product Development, Inc., Orland Park, Ill.

Continuation of Ser. No. 213,598, Mar. 16, 1994, abandoned. This application Dec. 12, 1995, Ser. No. 571,024

Int. Cl.[6] H04Q *1/00*

U.S. Cl. 340—825.44 **6 Claims**



1. A pager operated control circuit for use with a pager receiver generating bursts of pulses of a first type and bursts of pulses of a second type and comprising power terminals for connection to a power supply, the control circuit comprising:

an input terminal connectable to a power terminal of the pager receiver;

a detector circuit responsive to current flow in the pager receiver to generate a first detector output signal when pulses of the first type are generated by the pager receiver and to generate a second detector output signal when pulses of the second type are generated by the pager receiver; and

a two state output device responsive to the first and second detector output signals to selectively assume first and second output states;

the detector comprising first and second capacitors and a charge control circuit for alternately charging the first and second capacitors in response to sequentially occurring pulses of a burst of pulses generated by the pager receiver and output

circuitry responsive to electrical charge on the capacitors to generate the detector output signals;

the charge control circuit comprising an input circuit connected to the input terminal and responsive to a current flow in the pager receiver of a magnitude greater than a predetermined magnitude, indicative of the generation of pulses by the pager receiver, to generate an input control signal and circuitry responsive to the input control signal to alternately charge the first and second capacitors;

the charge control circuit further comprising a flip-flop circuit having an input terminal connected to the input circuit and first and second output terminals and wherein the charge control circuit further comprises a first gating circuit connected to the input circuit and to the first flip-flop output terminal and a second gating circuit connected to the input circuit and to the second flip-flop output terminal, the first and second gating circuits responsive to the input control signal and the state of the flip-flop to alternately charge the first and second capacitors, respectively.

5,798,708

MESSAGE PROTECTION RADIO DISPLAY PAGING USING CONFIDENTIAL CODE AND PASSWORD

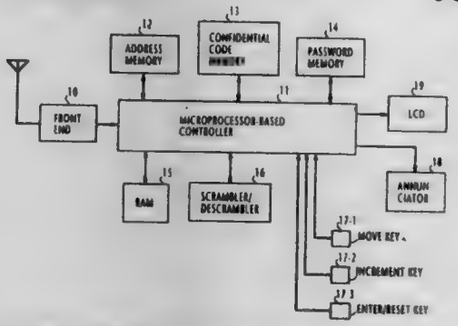
Hideyuki Katayama, Shizuoka, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 12, 1996, Ser. No. 662,366

Claims priority, application Japan, Jun. 13, 1995, 7-146181

Int. Cl.[6] H04Q 7/18

U.S. Cl. 340—825.44 **6 Claims**



3. A selective calling radio display pager for receiving a paging signal having a message field containing data which is an optional confidential code plus a message if the message is confidential and which is exclusively a message if the message is not confidential, comprising:

display means;

a message memory;

password input means;

control means for storing the data contained in the message field of the received paging signal into said message memory if the paging signal is addressed to the pager, displaying a prompt on the display means for urging a user to enter a password via the password input means if the optional confidential code is contained in the data in the message memory, and displaying the message in the message memory on the display means if one of the entered password is valid and the optional confidential code is not contained in the received paging signal; and

a scrambler/descrambler;

wherein the control means causes the scrambler/descrambler to scramble the message in the message memory if the optional confidential code is contained in the data in the message memory, and causes the scrambler/descrambler to descramble the scrambled message and display the descrambled message on the display means if the entered password is valid.

5,798,709

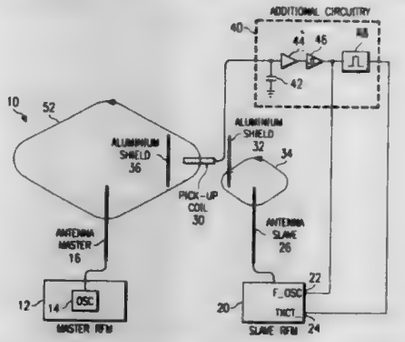
WIRELESS TRANSMITTER CARRIER PHASE SYNCHRONIZATION

Thomas Flaxl, Train, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 3, 1996, Ser. No. 581,008

Int. Cl.[6] H04Q 1/00

U.S. Cl. 340—825.54 **20 Claims**



1. A method of synchronizing transmit carrier phase signals between remotely disposed master and slave RF modules comprising the steps of:

transmitting an oscillator signal from a master RF module having an antenna;

placing an oscillator signal pick up coil between said antenna of said master RF module and an antenna of a slave RF module;

remotely receiving the transmitted oscillator signal from said master RF module with said pick up coil;

amplifying the transmitted oscillator signal received by said pick up coil; and

using said amplified signal as the oscillator input signal to said slave RF module.

5,798,710

DATA COMMUNICATION APPARATUS HAVING IMPROVED TRANSMISSION EFFICIENCY

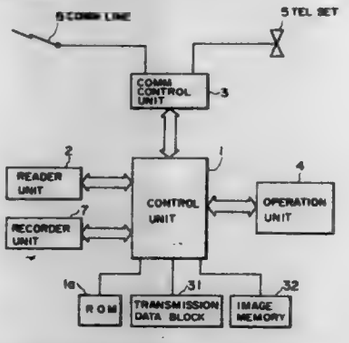
Motoaki Yoshino, Tokyo, and Makoto Mikuni, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 478,996, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 288,165, Aug. 10, 1994, abandoned, which is a continuation of Ser. No. 888,278, May 26, 1992, abandoned, which is a continuation of Ser. No. 663,198, Feb. 28, 1991, abandoned, which is a continuation of Ser. No. 331,173, Mar. 31, 1989, abandoned. This application Apr. 30, 1997, Ser. No. 841,338

Claims priority, application Japan, Apr. 5, 1988, 63-082331; Apr. 20, 1988, 63-095785

Int. Cl.[6] H04N 1/00

U.S. Cl. 340—825.52 **10 Claims**



1. A data communication apparatus, comprising:

input means for inputting data and associated destination information indicating a transmission destination of the associated input data;

first memory means for storing first data input by said input means as reserved data;

second memory means for storing first management information for transmitting the reserved data, said management information including the first destination information associated with the first data;

transmitting means for transmitting data; and

control means for, when said input means inputs additional data and associated additional destination information, where the first destination information and the additional destination information are independently defined, (1) comparing the additional destination information with the management information stored in said second memory means, and, when the first destination information and the additional destination information are the same, (2) storing additional management information into said second memory for transmitting the reserved data and the additional data consecutively and causing said transmitting means to transmit the reserved data and the additional data in accordance with the first management information and the additional management information stored in said second memory means,

wherein when the first destination information and the additional destination information are not same, said control means stores new management information into said second memory means for independently transmitting the additional data.

5,798,711

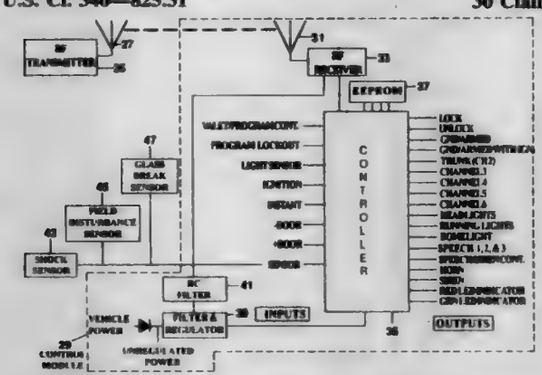
HIGH THROUGHPUT EMBEDDED CODE HOPPING SYSTEM WITH BYPASS MODE

Darrell E. Issa; Jerry W. Birchfield, both of Vista, Calif., and Charles Chen, Taipei, Taiwan, assignors to Directed Electronics, Inc., Vista, Calif.

Continuation-in-part of Ser. No. 425,597, Apr. 25, 1995, Ser. No. 396,115, Feb. 28, 1995, Ser. No. 396,020, Feb. 28, 1995, abandoned, and Ser. No. 112,940, Aug. 30, 1993, Pat. No. 5,432,670, which is a continuation-in-part of Ser. No. 886,871, May 22, 1992, abandoned, said Ser. No. 425,597 is a continuation-in-part of Ser. No. 945,667, Sep. 16, 1992, Pat. No. 5,534,845. This application Jun. 2, 1995, Ser. No. 460,106

Int. Cl.[6] G06F *7/04*

U.S. Cl. 340—825.31 **30 Claims**



1. A system for monitoring and controlling an area comprising:

a) a controller for controlling system operational functions;

b) at least one remote control transmitter for transmitting at least one system command to said controller in a code word having at least one fixed position word and at least one hopping word therein;

c) said fixed position word having an identification code for control of said controller, said identification code programmed in said controller, and a channel code for issuing high and low security commands to said controller;

d) a hopping algorithm for modifying said hopping code of said transmitter n-times in response to n-times activation of said transmitter and for modifying said hopping word m-times within said controller upon receipt of said code word times from said transmitter; and,

e) a bypass mode for bypassing said code hopping algorithm and for controlling said system functions in response to said controller receiving said low security command.

5,798,712

METHOD AND DEVICE FOR SUPPLYING INFORMATION, AN ALERT OR ALARM FOR AN AIRCRAFT IN PROXIMITY TO THE GROUND

Laurent Coquin, Toulouse, France, assignor to Aerospatiale Societe Nationale Industrielle, Montmorency, France

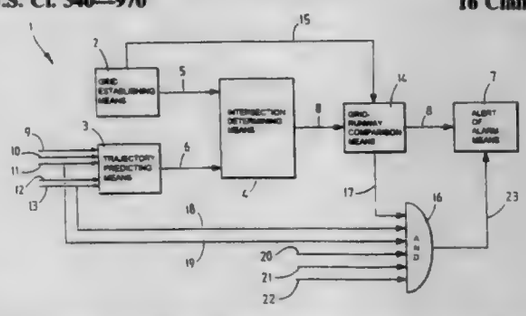
PCT No. PCT/FR95/01545, § 371 Date Jul. 30, 1996, § 102(e) Date Jul. 30, 1996, PCT Pub. No. WO96/18935, PCT Pub. Date Jun. 20, 1996

PCT Filed Nov. 23, 1995, Ser. No. 682,711

Claims priority, application France, Dec. 15, 1994, 94 15113

Int. Cl.[6] G08B *23/00*

U.S. Cl. 340—970 **16 Claims**



1. A method for supplying information, an alert or an alarm for an aircraft manoeuvering above terrain with known relief, when a trajectory of the aircraft is capable of intercepting the relief of said terrain, the method comprising:

(a) establishing for said terrain a grid of geographic coordinates comprising a plurality of meshes, each of the plurality of meshes having associated therewith a defined portion of the relief;

(b) predicting the trajectory of the aircraft over a predetermined time interval;

(c) determining whether an intersection exists between said trajectory and the portion of the relief associated with at least one of said meshes;

(d) triggering the alert or alarm in accordance with a result of step (c);

(e) performing a comparison between (i) the meshes of the grid having portions of the relief which are determined in step (c) to have intersections with said predicted trajectory and (ii) the meshes containing portions of a runway for the aircraft to determine whether any of the meshes having the portions of the relief which are determined in step (c) to have intersections with the predicted trajectory also contains a portion of the runway, so that, if said comparison determines that none of the meshes having the portions of the relief also contains a portion of the runway, the alert or alarm remains capable of being activated, whereas the alert or alarm is inhibited if said comparison determines that at least one of the meshes having the portions of the relief also contains a portion of the runway and the following conditions are simultaneously fulfilled:

a ground speed of the aircraft is less than or equal to a predetermined threshold ground speed;

an altitude of the aircraft above the ground is less than or equal to a predetermined threshold altitude;

the aircraft is at least substantially in an axis of the runway; and

an aerodynamic configuration of the aircraft corresponds to a landing phase of the aircraft.

5,798,713

PROCESS FOR REPRESENTING FLIGHT GUIDANCE INFORMATION

Harro Von Viebahn, Jugenheim; Christian Below, and Heribert Kling, both of Frankfurt am Main, all of Germany, assignors to VDO Luftfahrtgerate Werk GmbH, Frankfurt, Germany

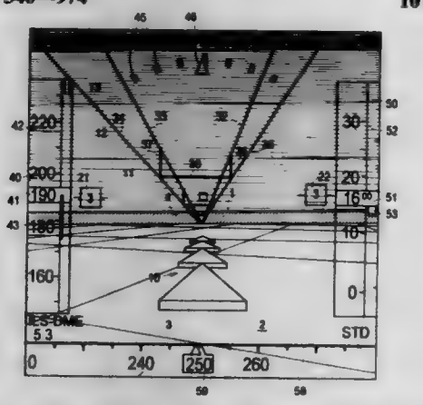
PCT No. PCT/DE94/00490, § 371 Date Aug. 18, 1995, § 102(e) Date Aug. 18, 1995, PCT Pub. No. WO94/25828, PCT Pub. Date Nov. 10, 1994

PCT Filed May 3, 1994, Ser. No. 507,265

Claims priority, application Germany, May 5, 1993, 43 14 811.5

Int. Cl.[6] G01C *21/00*

U.S. Cl. 340—974 10 Claims



1. In a method of representing flight guidance information of an aircraft, wherein a spatial representation of the airspace, comprising at least one horizon and the precalculated flight path of the aircraft, is produced with the aid of an image reproduction device, the improvement wherein the area above the horizon is subdivided into strips of different hue which run parallel to the horizon, and wherein a predetermined set range of pitch angles corresponds to each strip.

5,798,714

ARRANGEMENT FOR PREVENTING A MOTOR VEHICLE FROM PASSING A SPECIFIC PLACE UNAUTHORIZED

Leif Nyfelt, Skövde, Sweden, assignor to Scarinus Development AB, Skovde, Sweden

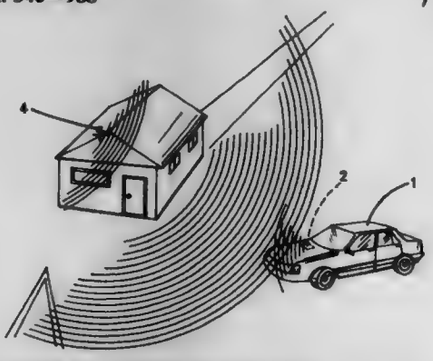
PCT No. PCT/SE95/00297, § 371 Date Sep. 24, 1996, § 102(e) Date Sep. 24, 1996, PCT Pub. No. WO95/25650, PCT Pub. Date Sep. 28, 1995

PCT Filed Mar. 22, 1995, Ser. No. 702,465

Claims priority, application Sweden, Mar. 24, 1994, 9400998

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—988 7 Claims



1. A system for preventing unauthorized passage of a motor vehicle past a specific location, said system comprising:

a stationary transmitter mounted at the specific location for transmitting a first radio signal;

a receiver mounted in the vehicle for receiving the first radio signal;

check means mounted in the vehicle for checking whether the vehicle is authorized to pass the specific location and for activating at least one circuit in the vehicle to render the vehicle undrivable selectively, said receiver activating said check means upon receipt of the first radio signal, the system further comprising a vehicle-mounted transmitter for transmitting a second radio signal, wherein said stationary transmitter is a transponder that transmits the first radio signal in response to the second radio signal when said vehicle-mounted transmitter is in a range of the transponder, the first radio signal being a modulated reflected signal relative to the second radio signal.

5,798,715

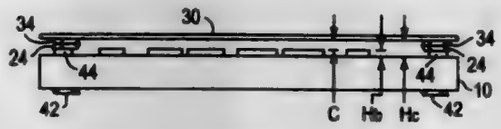
METHOD AND DEVICE FOR ACCESSING REMOTE CONTROL FUNCTIONS

Dorothy Luhr Saperstone, 18 Horizon Dr., Ithaca, N.Y. 14850-9770

Filed Jun. 28, 1996, Ser. No. 673,339

Int. Cl.[6] H03M *11/00*

U.S. Cl. 346—22 34 Claims



1. A device which is adapted for use in a remote control having a plurality of buttons for accessing remote control functions, said buttons disposed on a front surface having a predetermined shape, said device comprising:

a cover having a shape substantially corresponding to said shape of said front surface of said remote control which is adapted to prevent depression of a first set of said buttons and to permit depression of a second set of said buttons different than said first set when said cover is attached to said remote control; and

a fastener which removably attaches said cover to said remote control,

wherein said fastener is disposed between said front surface of said remote control and said cover and has a thickness corresponding to a height said buttons project from said front surface sufficient to prevent said cover from activating said buttons when cover is attached to said remote control.

5,798,716

METHOD AND APPARATUS FOR DETECTING KEY ACTUATIONS

Scott Burdell Davis, Buffalo Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 23, 1996, Ser. No. 701,945

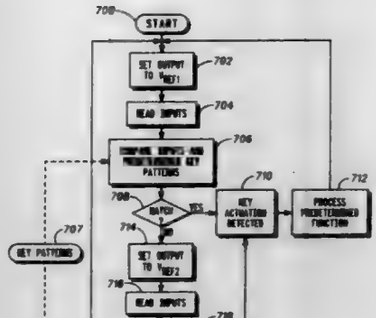
Int. Cl.[6] H03K *17/94*

U.S. Cl. 341—26 18 Claims

1. A method of detecting key actuations in an electronic device, the electronic device having at least two keys and a processor, the at least two keys including a first key and a second key, the processor including at least one input, the method comprising the steps of:

(a) biasing the at least one input at a first predetermined voltage during a first predetermined time period and at a second predetermined voltage during a second predetermined time period;

(b) detecting, in response to a coupling of the at least one input to the second predetermined voltage during the first predetermined time period, an actuation of the first key; and



(c) detecting, in response to a coupling of the at least one input to the first predetermined voltage during the second predetermined time period, an actuation of the second key.

5,798,717

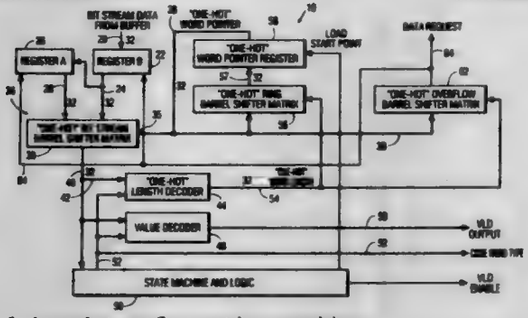
ONE-HOT OVERFLOW MATRIX WITH ENHANCED ARCHITECTURE AND ONE-HOT VARIABLE LENGTH DECODER INCORPORATING THE SAME

Michael Bakhmutsky, Spring Valley, and Viktor L. Gornstein, New York, both of N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 583,149, Dec. 28, 1995, Pat. No. 5,657,016. This application Jun. 28, 1996, Ser. No. 671,891

Int. Cl.[6] H03M *7/40*

U.S. Cl. 341—50 **19 Claims**



1. A one-hot overflow matrix, comprising:

a first one-hot input comprised of a plurality n of parallel bits;

a second one-hot input comprised of a plurality n of parallel bits;

a plurality n of output gates, each of said output gates including a first input, a second input, and an output;

a logic matrix comprised of a plurality n of rows and a plurality n of columns of matrix gates, each of said matrix gates having a data input, a control input, and an output;

a plurality n of buffer output lines, respective ith ones of said buffer output lines being commonly coupled to said output of each matrix gate of a corresponding ith row of said matrix gates;

a data output line commonly coupled to said output of each of said output gates;

wherein said data input of the first j ones of said matrix gates of each ith row of said matrix gates are each coupled to a reference potential, and said data input of the next k ones of said matrix gates of each ith row of said matrix gates are each coupled to the corresponding ith bit of said first one-hot input;

wherein said control input of each one of said matrix gates of each ith column of said matrix gates are coupled to the corresponding ith bit of said second one-hot input;

wherein said output of each of said matrix gates of each ith row of said matrix gates is coupled to a common ith one of said buffer output lines;

wherein said first input of each ith one of said output gates is coupled to the corresponding ith bit of said one-hot input, and said second input of each ith one of said output gates is coupled to the corresponding ith one of said buffer output lines; and,

wherein i=0 through(n−1); j=n−i; k=i, and, j+k=n.

5,798,718

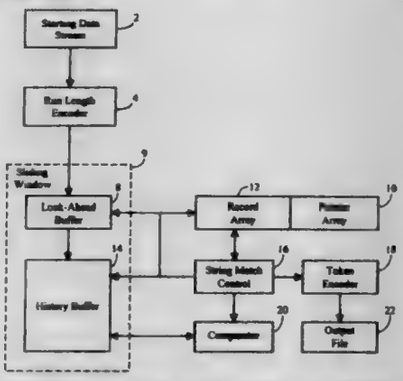
SLIDING WINDOW DATA COMPRESSION METHOD AND APPARATUS

Craig Eric Hadady, Lexington, Ky., assignor to Lexmark International, Inc., Lexington, Ky.

Filed May 12, 1997, Ser. No. 854,716

Int. Cl.[6] H03M *7/34*

U.S. Cl. 341—51 **2 Claims**



1. A method for compressing a data stream comprising:

a. reading a first portion of the data stream into a window, the window having a history buffer and a look-ahead buffer,

b. selecting an index taken from a fourth portion of the data stream in the look-ahead buffer,

c. selecting an entry in a pointer array based on the index, said pointer array including at least a portion of the entries containing the address of one of the entries in a record array,

d. selecting an initial entry in said record array based on the pointer array entry, the record array initial entry having a history buffer address and a record array address, said record array including at least a portion of the entries containing the address for others of the record array entries and one of the history buffer addresses,

e. selecting a third portion of the data stream starting at an address in the history buffer referenced by the history buffer address of the initial entry,

f. comparing the third portion of the data stream to a second portion of the data stream in the look-ahead buffer,

g. if the third portion of the data stream does not match the second portion of the data stream, then selecting a subsequent entry in the record array based on the record array address of the initial entry, the subsequent entry then being designated as the initial entry,

h. repeating steps e. through g. until either the third portion of the data stream matches the second portion of the data stream or no more entries are left in the record array,

i. if there are no more entries left in the record array, then writing the second portion of the data stream to the output file, and incrementing the first portion of the data stream read into the window by a predetermined amount, and

ii. if the third portion of the data stream matches the second portion of the data stream, then outputting to the output file the history buffer address of the third portion of the data stream, and a length value representing how many bytes of the third portion of the data stream and the second portion of the data stream matched, and incrementing the first

portion of the data stream read into the window by the number of bytes matched, and

i. repeating the method from step b. until all of the data stream has been read into the window.

5,798,719

PARALLEL HUFFMAN DECODER

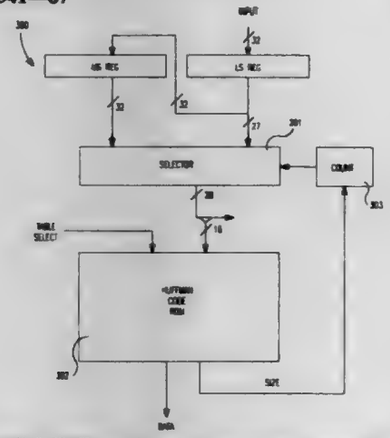
Adrian P. Wise; Kevin D. Dewar, both of Bristol, and Martin William Sotheran, Stinchcombe, all of United Kingdom, assignors to Discovision Associates, Irvine, Calif.

Division of Ser. No. 473,813, Jun. 7, 1995. This application Jun. 7, 1995, Ser. No. 476,814

Claims priority, application United Kingdom, Jul. 29, 1994, 9415413; Jun. 7, 1995, 9511569

Int. Cl.[6] H03M 7/40

U.S. Cl. 341—67 11 Claims



1. A parallel Huffman decoder, accepting a mixed data stream comprising Huffman coded variable length codes, and fixed length codes comprising:

a selector operative on said data stream:

a pair of input registers for receiving Huffman coded data, both of said registers directing input in parallel to said selector; and

a Huffman Code ROM for receiving input from said selector and a ROM table select input; said Huffman Code ROM providing decoded data output;

wherein in a first mode of operation variable length codes are provided by said selector to said Huffman Code ROM, and in a second mode of operation a signal representative of a length of fixed length codes is output from said selector without being provided to said Huffman Code ROM.

5,798,720

PARALLEL TO SERIAL DATA CONVERTER

Motoyasu Yano, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Apr. 29, 1997, Ser. No. 848,632

Claims priority, application Japan, May 14, 1996, 8-119166

Int. Cl.[6] H03M 9/00

U.S. Cl. 341—101 10 Claims

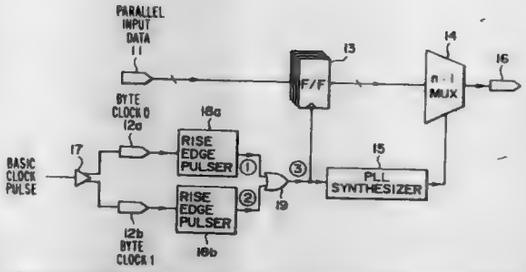
1. A parallel to serial data converter, comprising:

an input circuit for latching n-bit parallel data in response to a first control pulse signal, n being a positive integer;

a multiplexer for outputting the n-bit parallel data inputted to said input circuit serially one after another one bit in response to a second control pulse signal;

a first edge detection circuit for receiving an input clock pulse signal and detecting an edge of each pulse of the input clock pulse signal;

a second edge detection circuit for receiving an inverted pulse signal of the input clock pulse signal and detecting an edge of each pulse of the inverted pulse signal;



a logic circuit for generating a pulse signal in response to each of detection output pulse signals of said first and second edge detection circuits and outputting the pulse signal as the first control pulse signal to said input circuit; and

a pulse generation circuit for receiving the pulse signal of said logic circuit to produce a pulse signal and outputting the pulse signal as the second control pulse signal to said multiplexer.

5,798,721

METHOD AND APPARATUS FOR COMPRESSING TEXT DATA

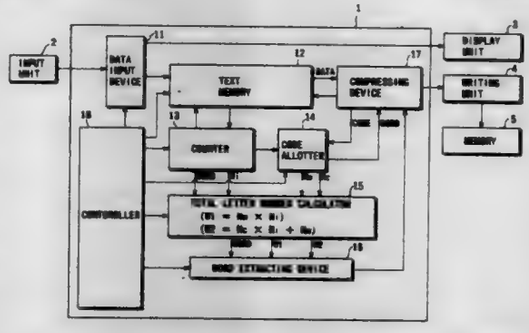
Tetsuya Shibata, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka-fu, Japan

Continuation of Ser. No. 400,903, Mar. 8, 1995, abandoned. This application Jun. 23, 1997, Ser. No. 880,571

Claims priority, application Japan, Mar. 14, 1994, 6-042380

Int. Cl.[6] H04N 1/028

U.S. Cl. 341—106 14 Claims



1. A method for compressing text data generated in advance using a code table having character codes defining characters and having noncharacter codes not defining characters, comprising the steps of:

processing all of the text data to generate a set of words occurring in the text data with a recurrence number assigned to each of the words indicating a number of times each of the words of the set of words occurs in the text data and with one of the noncharacter codes assigned to each of the words of the set of words, wherein each of the words of the set of words occurs only once in the set of words;

selectively extracting words from the set of words which are representable in the text data using the noncharacter codes in the text data in fewer bytes than using the character codes;

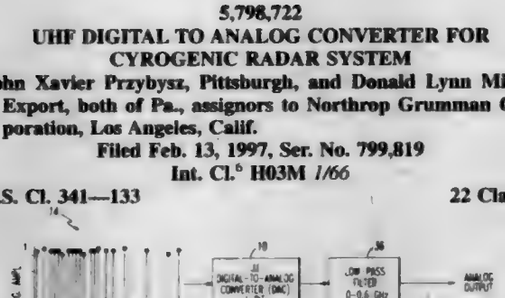
generating a dictionary for defining a correspondence between the selectively extracted words and the noncharacter codes assigned to the selectively extracted words; and

replacing the selectively extracted words in the text data with respectively assigned noncharacter codes to produce compressed text data.

5,798,722
UHF DIGITAL TO ANALOG CONVERTER FOR CYROGENIC RADAR SYSTEM

John Xavier Przybysz, Pittsburgh, and Donald Lynn Miller, Export, both of Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Feb. 13, 1997, Ser. No. 799,819
Int. Cl.[6] H03M 1/66
U.S. Cl. 341—133 22 Claims



1. Apparatus for generating a low phase-noise RF signal, comprising:

means for exciting a Josephson junction array with an excitation signal;

an array of series connected relatively low impedance Josephson junctions having an input end and an output end;

a relatively low impedance line of metallization located directly above and insulated from said array;

said input end of said array and one end of said line of metallization being commonly connected to said means for exciting the array at a first circuit node;

means coupled to and terminating the output end of the array at a second circuit node;

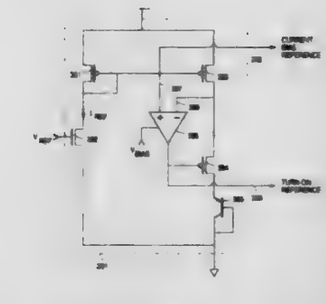
a relatively high impedance signal filter having a predetermined frequency characteristic for providing an output signal related in frequency to the excitation signal; and

an impedance matching transformer including primary and secondary windings, said primary winding being coupled between the other end of said line of metallization and said second circuit node and being responsive to a differential signal appearing across said array of Josephson junctions, said secondary winding being additionally coupled to the signal filter so as to match the impedance of the array to the impedance of the signal filter.

5,798,723
ACCURATE AND PRECISE CURRENT MATCHING FOR LOW VOLTAGE CMOS DIGITAL TO ANALOG CONVERTERS

Edison Fong, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 19, 1996, Ser. No. 684,171
Int. Cl.[6] H03M 1/66
U.S. Cl. 341—136 18 Claims



8. A MOS current-summing digital-to-analog converter circuit having first and second non-inverting and inverting binary weighted digital inputs and non-inverting and inverting analog output voltages, comprising:

a reference current transistor of a first conductivity type having a reference current source, a reference current gate, and a reference current drain;

a current mirror transistor of the first conductivity type having a current mirror source, a current mirror gate, and a current mirror drain;

an operational amplifier having a plus input, a minus input, and an operational amplifier output;

a feedback transistor of the first conductivity type having a feedback source, a feedback gate, and a feedback drain;

a first weighted-current slave transistor of the first conductivity type having a first channel W/L ratio having a first weighted-current slave source, a first weighted-current slave gate, and a first weighted-current slave drain;

a second weighted-current slave transistor of the first conductivity type having a second channel W/L ratio having a second weighted-current slave source, a second weighted-current slave gate, and a second weighted-current slave drain, wherein the second W/L ratio divided by the first W/L ratio is a radix factor not equal to one;

a first non-inverting differential transistor of the first conductivity type having a first non-inverting differential source, a first non-inverting differential gate, and a first non-inverting differential drain;

a first inverting differential transistor of the first conductivity type having a first inverting differential source, a first inverting differential gate, and a first inverting differential drain;

a second non-inverting differential transistor of the first conductivity type having a second non-inverting differential source, a second non-inverting differential gate, and a second non-inverting differential drain;

a second inverting differential transistor of the first conductivity type having a second inverting differential source, a second inverting differential gate, and a second inverting differential drain;

a first non-inverting control transistor of a second conductivity type having a first non-inverting control source, a first non-inverting control gate, and a first non-inverting control drain;

a first inverting control transistor of the second conductivity type having a first inverting control source, a first inverting control gate, and a first inverting control drain;

a second non-inverting control transistor of the second conductivity type having a second non-inverting control source, a second non-inverting control gate, and a second non-inverting control drain; and

a second inverting control transistor of the second conductivity type having a second inverting control source, a second inverting control gate, and a second inverting control drain;

wherein the first non-inverting control drain is coupled to the first non-inverting differential gate, wherein the first non-inverting control gate is coupled to the first non-inverting weighted binary digital input, and wherein the first non-inverting control source is coupled to the operational amplifier output;

wherein the first inverting control drain is coupled to the first inverting differential gate, wherein the first inverting control gate is coupled to the first inverting weighted binary digital input, and wherein the first inverting control source is coupled to the operational amplifier output;

wherein the second non-inverting control drain is coupled to the second non-inverting differential gate, wherein the second non-inverting control gate is coupled to the second non-

inverting weighted binary digital input, and wherein the second non-inverting control source is coupled to the operational amplifier output;

wherein the second inverting control drain is coupled to the second inverting differential gate, wherein the second inverting control gate is coupled to the second inverting weighted binary digital input, and wherein the second inverting control source is coupled to the operational amplifier output;

wherein the first and second non-inverting differential drains are coupled to the non-inverting analog output voltage;

wherein the first and second inverting differential drains are coupled to the inverting analog output voltage;

wherein the first non-inverting and inverting differential sources are coupled to the first weighted-current slave drain;

wherein the second non-inverting and inverting differential sources are coupled to the second weighted-current slave drain;

wherein the operational amplifier plus input is coupled to the first and second weighted-current slave gates, the current mirror gate, and the reference current gate and drain; and

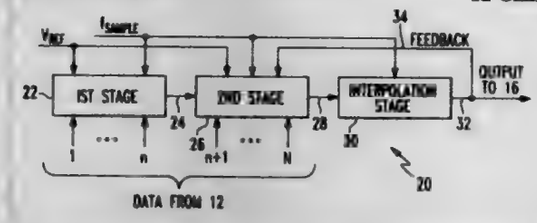
wherein the feedback gate is coupled to the operational amplifier output, and wherein the feedback source is coupled to the operational amplifier minus input and the current mirror drain.

5,798,724

INTERPOLATING DIGITAL TO ANALOG CONVERTER ARCHITECTURE FOR IMPROVED SPURIOUS SIGNAL SUPPRESSION

Brent Myers, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 14, 1996, Ser. No. 601,401
Int. Cl.[6] H03M *1/66*
U.S. Cl. 341—146 **12 Claims**



7. A digital to analog converter (DAC) for converting an N bit data signal received at an input rate to an analog signal in which spurious energy in the received data signal is reduced in the analog signal, the converter comprising:

a first conversion stage for converting n bits of an N bit data signal received at an input rate to a first output value;

a filter network comprising,

a second conversion stage for converting the remainder of the N bits in the data signal to a second output value, and for combining the first and second output values into a combined output value,

an interpolation stage for receiving the combined output value from said second conversion stage and for providing an interpolated output at an interpolation output rate which is a multiple of the input rate, and

a feedback circuit for feeding back the interpolated output from said interpolation stage to said second conversion stage,

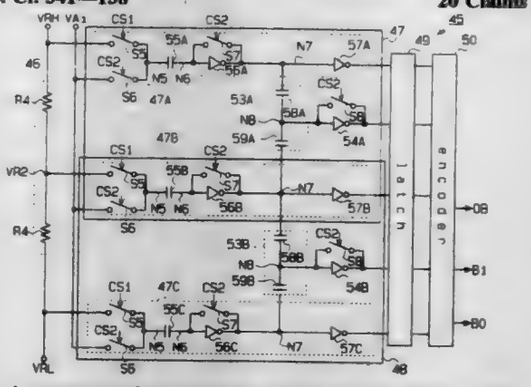
whereby the interpolated output is the analog signal with reduced spurious energy.

5,798,725

COMPARATOR FOR AN ANALOG TO DIGITAL CONVERTER

Kouji Okada, Kasugai, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Nov. 5, 1996, Ser. No. 743,853
Claims priority, application Japan, Dec. 28, 1995, 7-342888
Int. Cl.[6] H03M *1/12*
U.S. Cl. 341—158 **20 Claims**



1. A comparator for comparing an analog input voltage with a plurality of reference voltages and outputting a plurality of determination signals indicative of comparison results, said comparator comprising:

a first chopper type comparator for producing a first comparison voltage between said analog input voltage and a first reference voltage and outputting a first determination signal indicative of a comparison result based upon said first comparison voltage;

a second chopper type comparator for producing a second comparison voltage between said analog input voltage and a second reference voltage and outputting a second determination signal indicative of a comparison result based upon said second comparison voltage; and

a determination circuit, connected between said first and second chopper type comparators, for producing at least one intermediate comparison voltage having a voltage level between said first comparison voltage and said second comparison voltage, and outputting at least one additional determination signal based upon said intermediate comparison voltage.

5,798,726

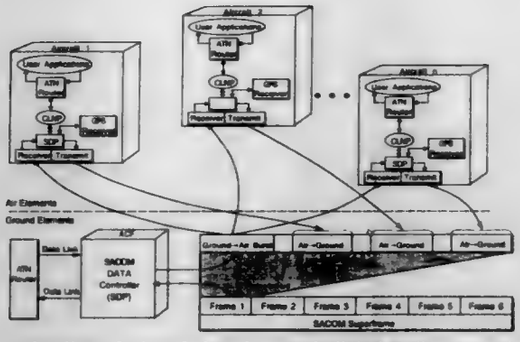
AIR TRAFFIC SURVEILLANCE AND COMMUNICATION SYSTEM

Leonard Schuchman, Potomac, Md.; Ronald Bruno, Arlington, Va.; John Kefallotis, McLean, Va.; Steve Greenberg, and Edward J. Zakrzewski, both of Reston, Va., assignors to Stanford Telecommunications, Inc., Reston, Va.

PCT No. PCT/US95/01187, § 371 Date Jan. 24, 1997, § 102(e) Date Jan. 24, 1997, PCT Pub. No. WO95/21388, PCT Pub. Date Aug. 10, 1995
PCT Filed Feb. 3, 1995, Ser. No. 682,546
Int. Cl.[6] G01S *13/93;13/74*
U.S. Cl. 342—37 **8 Claims**

1. Air traffic surveillance and communication system for air traffic controllers, comprising:

a plurality of around based first digital radio transceiver means, each first digital radio transceiver means being located in specific geographic sectors, respectively, and having a first frequency channel for supporting party-line digital voice, and a second frequency channel dedicated to supporting a digital data channel for down-linking dependent surveillance data and for both up-link and down-link data communications, said first and second frequency channels being paired such that each time a frequency change is commanded by the ground both the first and second frequency channels will be automatically tuned to a new air-ground frequency pair,



a plurality of aircraft based second digital radio transceiver means, one located in each aircraft, each second radio transceiver having corresponding first and second frequency channels, a navigational data source on each aircraft, said navigational data source including GPS receiver means for producing aircraft navigation data selected from aircraft latitude, longitude, altitude, speed, heading and glide, and means coupling said navigational data source to the respective aircraft transceiver for transmission on said second channel to at least one of said plurality of around based first radio transceiver means,

each said ground based first radio transceiver means having a communication controller for formatting up-link data and separating down-linked surveillance data and disseminating same to air traffic controllers in the sectors of said aircraft wherein each said digital radio transceiver means includes means for causing said digital radio transceiver to operate with a 10 kHz spacing.

5,798,727

OBSTACLE RECOGNITION SYSTEM FOR VEHICLE

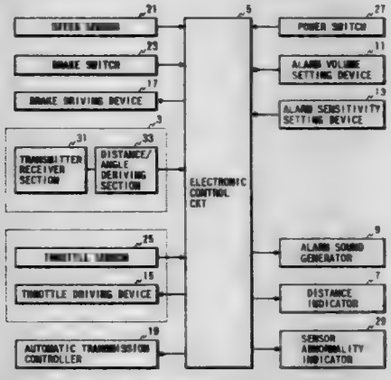
Noriaki Shirai, Oobu; Katsuhiko Hibino, Kariya, and Takao Nishimura, Nagoya, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Dec. 24, 1996, Ser. No. 777,967

Claims priority, application Japan, Dec. 25, 1995, 7-337335

Int. Cl.[6] G01S *13/96*

U.S. Cl. 342—70 **4 Claims**



1. An obstacle recognition system for a vehicle, comprising:

radar means for irradiating transmission wave over a given angle around the subject vehicle and, based on reflected wave of the transmission wave, detecting angles and distances of a reflecting object relative to the subject vehicle;

recognition means for recognizing an obstacle around the subject vehicle based on the angles and the distances detected by said radar means;

position estimating means for estimating a position of the obstacle to be recognized by said recognition means, based on a position of the obstacle previously recognized;

identity determining means for comparing the position of the obstacle estimated by said position estimating means and a position of the obstacle recognized by said recognition means so as to determine whether the obstacle currently recognized by said recognition means is identical with the obstacle previously recognized;

acceleration deriving means for deriving relative acceleration of the obstacle determined plural times by said identity determining means to be identical with the previously recognized obstacle; and

excluding means for, when the relative acceleration derived by said acceleration deriving means is outside a given range, excluding the corresponding obstacle from objects of subsequent position estimation performed by said position estimating means and subsequent identity determination performed by said identity determining means.

5,798,728

RADAR SIGNAL PROCESSING APPARATUS

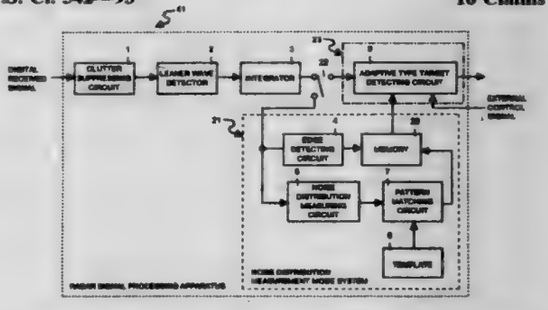
Chieko Tomishima, and Takahiko Sugimoto, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1996, Ser. No. 726,763

Claims priority, application Japan, Nov. 28, 1995, 7-308730

Int. Cl.[6] G01S *7/292;7/34*

U.S. Cl. 342—93 **16 Claims**



1. A radar signal processing apparatus for a searching or tracking radar comprising:

a clutter suppressing circuit for receiving an electric wave reflected by a target as a received signal and removing clutter which is an unnecessary signal;

a linear wave detector for receiving a received signal with clutter having been suppressed by said clutter suppressing circuit and detecting the amplitude;

an integrator for receiving an output from said linear wave detector and improving the S/N;

a noise distribution measurement system for receiving an S/N-improved received signal from said integrator, measuring a distribution of noise contained in the received signal to select one of a plurality of noise distribution patterns, and selecting a system suited to the noise distribution from a plurality of different CFAR (Constant False Alarm Rate) systems based upon the selected noise distribution pattern; and

an adaptive type target detecting circuit for switching various types of CFAR circuit systems according to the CFAR system selected by said noise distribution measurement system for the S/N-improved received signal from said integrator and automatically detecting a target.

5,798,729

RADAR APPARATUS

John Arthur Scholz, Hengelo, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

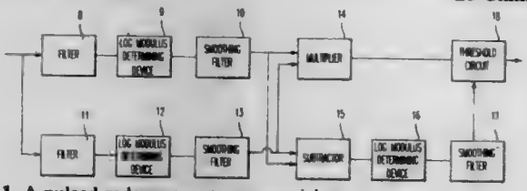
PCT No. PCT/EP95/02884, § 371 Date Feb. 10, 1997, § 102(e) Date Feb. 10, 1997, PCT Pub. No. WO96/05519, PCT Pub. Date Feb. 22, 1996

PCT Filed Jul. 20, 1995, Ser. No. 776,699

Claims priority, application Netherlands, Aug. 10, 1994, 9401297

Int. Cl.[6] G01S 13/53;7/292

U.S. Cl. 342—189 20 Claims



1. A pulsed radar apparatus, comprising:

a transmitter configured to generate and transmit transmitter pulses with a predetermined modulation so as to enable pulse compression upon reception of said transmitter pulses;

a receiver configured to receive pulses, including said transmitter pulses and other pulses that have not been modulated with said predetermined modulation, and output received pulses that include received transmitter pulses and received other pulses;

a blanking circuit configured to blank the received other pulses; and

a correlator configured to compress said received transmitter pulses, wherein

said blanking circuit includes means for suppressing said received other pulses before being applied to said correlator.

5,798,730

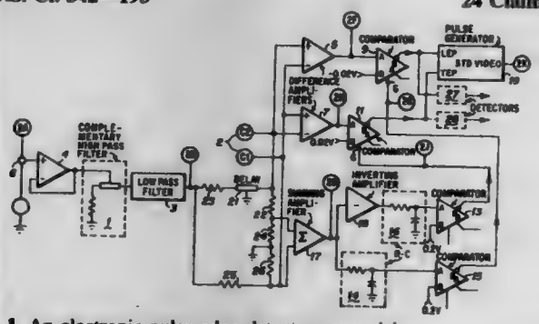
PULSE EDGE DETECTOR WITH WIDE DYNAMIC RANGE

Louis Armando Sanchez, Morgan Hill, Calif., assignor to Litton Systems, Inc., San Jose, Calif.

Filed Jul. 9, 1997, Ser. No. 891,859

Int. Cl.[6] G01S 7/28

U.S. Cl. 342—195 24 Claims



1. An electronic pulse edge detector, comprising:

buffer means for inputting electronic pulses, said pulses having a leading edge and a trailing edge;

complementary high pass filter means for receiving electronic pulses from said buffer means and outputting a low frequency filtered pulse;

low pass filter means for receiving said low frequency filtered pulse and further filtering said pulse of high frequencies to output a first signal having a positive Gaussian like waveform, associated with said leading edge, followed an interval thereafter by a negative Gaussian like waveform, associated with said trailing edge;

branch circuit means containing an input, a first branch, and a second branch; said first branch including a time delay means for delaying output from said first branch relative to output from said second branch for a predetermined short time interval less than the duration of either of said positive and negative Gaussian like waveforms;

said branch circuit means for receiving said first signal and producing a delayed copy of said first signal at an output of said first branch and reproducing said first signal at an output of said second branch;

first difference amplifier means having a positive input, a negative input and an output for producing at said output a signal equal to the difference between voltage applied to said negative input and that applied to said positive input;

said first difference amplifier means for subtracting said first signal from the delayed copy of said first signal to generate a difference signal comprising a single cycle AC signal having an initial half cycle of one polarity, associated with said leading edge, followed an interval thereafter by another single cycle AC signal, associated with said trailing edge, having an initial half cycle of a second polarity;

second difference amplifier means having a positive input, a negative input and an output for producing at said output a signal equal to the difference between voltage applied to said negative input and that applied to said positive input;

said second difference amplifier means for subtracting said delayed copy of the third signal from said signal to generate a second difference signal comprising a single cycle AC signal, associated with said leading edge, having an initial half cycle of said second polarity followed an interval thereafter by another single cycle AC signal, associated with said trailing edge, having an initial half cycle of said first polarity;

first comparator means, having first and second inputs, a gate input and an output, said comparator means providing a comparison of a voltage applied to said first input with any voltage applied to a second input and providing a high output voltage during any period when the latter voltage is greater than the former voltage, unless inhibited by an inhibit voltage applied to said gate input, and during other periods providing a low output voltage;

second comparator means, having first and second inputs, a gate input and an output, said second comparator means providing a comparison of a voltage applied to said first input with any voltage applied to a second input and providing a high output voltage during any period when the latter voltage is greater than the former voltage, unless inhibited by an inhibit voltage at said gate input, and otherwise providing a low voltage output;

bias means for biasing said second input of said first comparator means and said second input of said second comparator means at essentially zero volts;

said first comparator means for receiving said output of said first difference amplifier means at said first input and said bias voltage at said second input for commencing generation of a High output when the former is less in voltage than the latter and continuing said High output, during absence of an inhibit voltage at said respective gate, until said first difference amplifier output attains essentially zero volts, and thereupon reverting to a low voltage output, whereby said first comparator means detects completion of said initial half cycle of said AC signal and generates an output pulse having a trailing edge that marks termination of said initial half cycle of AC;

said second comparator means for receiving said output of said second difference amplifier means at said first input and said bias voltage at said second input for commencing generation of a High output when the former is less in voltage than the latter and continuing said High output, during absence of an inhibit voltage at said respective gate, until said second difference amplifier output attains essentially zero volts, and thereupon reverting to a low voltage output, whereby said second comparator means detects the termination of said initial half cycle of AC and generates an output pulse having a trailing edge that marks termination of said initial half cycle of AC;

summing amplifier means having first and second inputs for producing an output voltage representing the sum of the voltages applied at each of said first and second inputs;

said summing amplifier means for adding together said first signal from said first branch output with said delayed copy of said first signal from said second branch output and providing a sum signal at an output, said sum signal comprising a positive Gaussian waveform of said first polarity followed an interval thereafter by a negative Gaussian waveform of said second polarity to define first and second time windows;

third comparator means, having an sense input, a bias input and an output for producing an inhibit voltage output only when the voltage at said sense input is less than the voltage at said bias input;

said third comparator means having said sense input connected to the output of said summing circuit means to receive said positive and negative Gaussian sum waveforms, and having said output coupled to said gate of said first comparator means, whereby said third comparator means terminates said inhibit voltage only during said positive Gaussian sum waveform;

inverting amplifier means coupled to the output of said summing circuit means for inverting the polarity of said summing circuit output, whereby said positive Gaussian sum signal is converted to a negative Gaussian sum signal and said negative Gaussian sum signal is converted to a positive Gaussian sum signal;

fourth comparator means having an sense input, a bias input and an output for producing an inhibit voltage output only when the voltage at said sense input is less than the voltage at said bias input; and

said fourth comparator means having said sense input coupled to the output of said inverting amplifier means to receive said inverted positive and negative Gaussian sum signals and having said output coupled to said gate of said second comparator means, whereby said fourth comparator means terminates said inhibit voltage only during said inverted negative Gaussian sum waveform.

5,798,731

METHOD FOR LOCATING MOVING OBJECTS

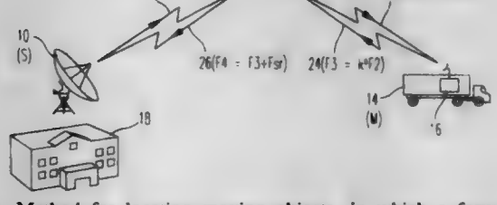
Guy Lesthievent, Portet/Garonne, France, assignor to Centre Nationnl d'Etudes Spatiales, Paris Cedex, France

Filed Feb. 28, 1996, Ser. No. 608,052

Claims priority, application France, Mar. 22, 1995, 95 03335

Int. Cl.[6] H04B *7/185;* **G01S** *5/02*

U.S. Cl. 342—357 **4 Claims**



1. Method for locating moving objects, in which a forward-backward radio link is established between a ground station and a moving object to be located equipped with a terminal, through an artificial satellite, and the moving object is located on the basis of compared characteristics of the radio signals of the forward-backward link, said method being characterized in that it comprises the following operations:

A) in the forward link:

from the ground station (**10**) is transmitted, at a time (t_1) counted as from a reference time (t_0) individual to the station, an outward signal (**20**) constituted by a carrier having a given frequency (F_1) modulated by at least one sinusoidal tone signal, each tone having a given frequency (f_i) and a phase, the instantaneous phases of all the tones being zero at the reference time (t_0) individual to the station,

the outward signal (**20**) is received in the satellite (**12**) and an outward signal (**22**) is retransmitted with a certain time delay linked with the transit time (t_{sa}) in the satellite (**12**),

the outward signal (**22**) retransmitted by the satellite (**12**) is received in the terminal (**16**) of the moving object (**14**) to be located and measurement takes place of the phase (mt_i) of the tone or tones received at a particular time (t_2),

B) in the backward link:

formation takes place of a return signal in the terminal (**16**) of the moving object (**14**) by modulating a carrier having a certain frequency (F_3) by the information corresponding to the results of the phase measurement of the tone or tones (mt_i) and a spectrum spreading operation takes place on said carrier modulated by a spreading code linked with the particular time (t_3) displaced from the measurement time (t_2) by a given quantity (δt),

from the terminal (**16**) of the moving object (**14**) is transmitted a spread spectrum return signal (**24**) at said particular time (t_3),

said return signal (**24**) is received in the satellite (**12**) and a return signal (**26**) is retransmitted with a certain time delay linked with the transit time (t_{sr}) in the satellite,

in said station (**10**) is received the return signal (**26**) retransmitted by the satellite (**12**) and the spectrum of the signal received is despread and then said signal is demodulated to restore the information relative to the phase difference measurement (mt_i),

the reception time (t_4) of these measurements (mt_i) is dated by intercorrelation between the spreading code received and an identical expected code,

on the basis of the phase measurements (mt_i) of the reception time of the measurements (t_4), the displacement between the measurement time and the transmission time by the terminal, transit times in the satellite (δt, t_{sr}, t_{sa}), the station-satellite distance (D_{1r}) at the reception time (t_4), the station-satellite distance (D_{1a}) at the transmission time (t_1), the sum of the distances of the outward and return paths ($D_{2a}+D_{2r}$) between the satellite and the moving object is deduced, which locates the moving object.

5,798,732

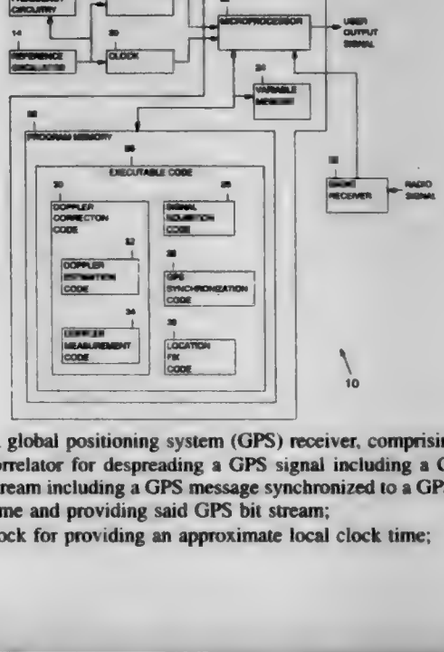
GPS RECEIVER HAVING A FAST TIME TO FIRST FIX

Ralph F. Eschenbach, Woodside, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Sep. 19, 1996, Ser. No. 716,112

Int. Cl.[6] H04L *27/30;* **H04B** *7/185*

U.S. Cl. 342—357 **16 Claims**



1. A global positioning system (GPS) receiver, comprising:

a correlator for despreading a GPS signal including a GPS bit stream including a GPS message synchronized to a GPS clock time and providing said GPS bit stream;

a clock for providing an approximate local clock time;

a processor including a variable memory for storing an expected GPS message and a program memory including an executable code for receiving said GPS bit stream and executing said executable code; and

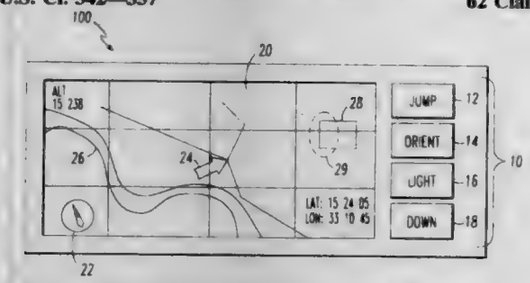
a GPS synchronization code for inclusion in said executable code for generating a replica bit stream including said expected GPS message having a timing based upon said local clock time and for aligning said local clock time to said GPS time for providing a GPS-based clock time by adjusting said local clock time to synchronize said replica bit stream to said GPS bit stream.

5,798,733

INTERACTIVE POSITION GUIDANCE APPARATUS AND METHOD FOR GUIDING A USER TO REACH A PREDETERMINED TARGET POSITION

Jeffrey Noel Ethridge, Greenbelt, Md., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jan. 21, 1997, Ser. No. 784,639
Int. Cl.[6] G01S *5/02*; H04B *7/185*
U.S. Cl. 342—357 **62 Claims**



12. A position guidance method, comprising the steps of:

prestoring target position information and destination prediction information;

receiving input position information;

determining a target position based upon the prestored target position information;

determining a current position based upon the received input position information;

determining a predicted destination position based upon the received input position information and the prestored destination prediction information; and

displaying the determined target position, current position, and predicted destination position to a user to thereby enable the user to thereafter minimize any target and predicted destination position difference.

5,798,734

ANTENNA APPARATUS, METHOD OF MANUFACTURING SAME AND METHOD OF DESIGNING SAME

Masataka Ohtsuka; Yoji Isota; Makoto Matsunaga; Yoshihiko Konishi, and Shintaro Nakahara, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

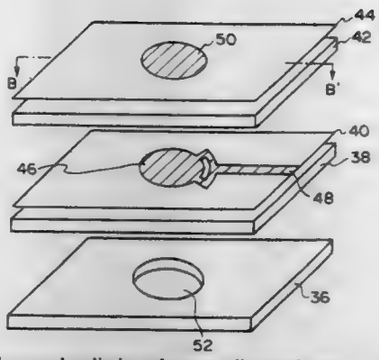
Filed Sep. 6, 1996, Ser. No. 708,225
Claims priority, application Japan, Oct. 6, 1995, 7-260474
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS **15 Claims**

1. An antenna apparatus comprising:

a conductive layer having front and back surfaces;

a first dielectric layer having front and back surfaces and being arranged so that the back surface thereof confronts said front surface of said conductive layer, said first dielectric layer having a thickness less than the wavelength of a signal to be radiated by said antenna apparatus;

a second dielectric layer having front and back surfaces and being arranged so that the back surface thereof confronts the front surface of said first dielectric layer;



first and second radiation elements disposed on top of said front surface of said first and second dielectric layers, respectively, in such a manner that respective centers of said first and second radiation elements vertically coincide with each other by way of said second dielectric layer; and

a feeding line disposed on top of said front surface of said first dielectric layer for use in feeding signals to be radiated to said first radiation element; wherein

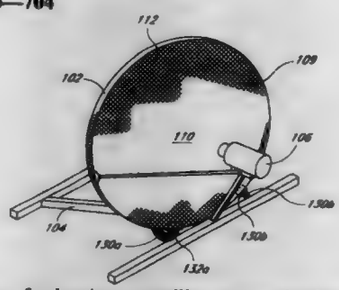
said conductive layer includes a recess positioned and formed in said front surface thereof in such a manner that said recess is superposed over said first radiation elements by way of said first dielectric layer when viewed from below in a vertical direction.

5,798,735

HOT AIR DE-ICING OF SATELLITE ANTENNA WITH COVER

William B. Walton, Jr., 5607 Ave. Juan Bautista, Riverside, Calif. 92509

Filed Sep. 19, 1995, Ser. No. 530,588
Int. Cl.[6] H01Q *1/02*
U.S. Cl. 343—704 **13 Claims**



1. A system for heating a satellite antenna having an outer lip and a front reflecting surface comprising:

a single layered cover having an opening which has a perimeter selected so that the opening is mounted on said outer lip of said antenna with the cover positioned over said front reflecting surface of said satellite antenna so as to define an enclosed unobstructed space between said front reflecting surface of said antenna and said cover, whereby said cover reduces accumulations of snow and water on said front reflecting surface of said satellite antenna while permitting satellite signals to pass therethrough and wherein said cover further includes at least one opening to permit heat to be provided to said enclosed unobstructed space; and

a heating system which circulates heated air into said enclosed unobstructed space between said front surface of said antenna and said cover so as to heat said front reflecting surface of said antenna and so as to maintain said cover at a temperature sufficient to reduce accumulations of snow and ice on said cover wherein the heating system includes a heat source, a blower and an inlet tube which is coupled between said blower and said enclosed unobstructed space via said at least

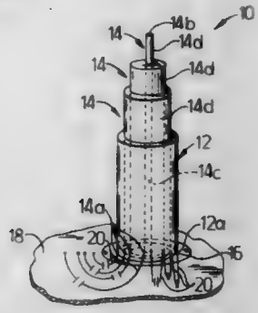
one opening in said cover so that heated air is blown from said heat source through said inlet tube into said enclosed unobstructed space.

5,798,736

ANTENNA SYSTEM HAVING A PLURALITY OF FUNDAMENTAL RESONANCES

Edward A. Hall, St. Louis, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Mar. 28, 1995, Ser. No. 412,070
Int. Cl.[6] H01Q 9/40
U.S. Cl. 343—791 10 Claims



1. An antenna adapted to resonate in a plurality of frequency bands without physically reconfiguring the antenna, wherein the antenna is adapted to resonate in a lower frequency band and at least one upper frequency band, the antenna comprising:

an outer conductor electrically conducted to a feed network, said outer conductor having a longitudinally extending tubular portion defining an internal cavity therein; and

a plurality of interior conductors that are each directly connected and interconnected at their respective first ends to a portion of said outer conductor, wherein said plurality of interconnected interior conductors are nested to thereby define an outermost conductor and a plurality of inner conductors, and wherein each inner conductor has a second end which extends longitudinally beyond an adjacent interior conductor which is positioned in an at least partially surrounding relationship thereto such that each inner conductor defines an extended conductor portion which extends longitudinally beyond the at least partially surrounding adjacent interior conductor;

wherein the extended conductor portion of at least one of said interior conductors has a predetermined electrical length equal to an odd multiple of a quarter wavelength of a signal having a frequency in each upper frequency band of the antenna such that the extended conductor portion of at least one of said interior conductors is electrically decoupled from the antenna for signals having frequencies within each of the upper frequency bands.

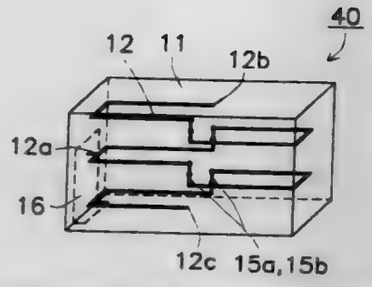
5,798,737

CHIP ANTENNA

Seiji Kanaba, Otsu; Kenji Asakura, Shiga; Tsuyoshi Suesada, Omihachiman; Teruhisa Tsuru, Kameoka, and Harufumi Mandai, Takatsuki, all of Japan, assignors to Murata Mfg. Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 708,400, Sep. 4, 1996, abandoned. This application Nov. 17, 1997, Ser. No. 971,836
Claims priority, application Japan, Sep. 5, 1995, 7-228128
Int. Cl.[6] H01Q 1/24; 1/36
U.S. Cl. 343—895 19 Claims

1. A chip antenna comprising a substrate comprising at least one of a dielectric material and a magnetic material, at least one conductor formed inside the substrate, and at least one feeding-terminal provided on the surface of said substrate for applying a voltage to said conductor, the at least one conductor being a single continuous conductor arranged spirally and having two free ends, a part of said continuous conductor connecting with said feeding terminal such that said two free ends are located inside the substrate.

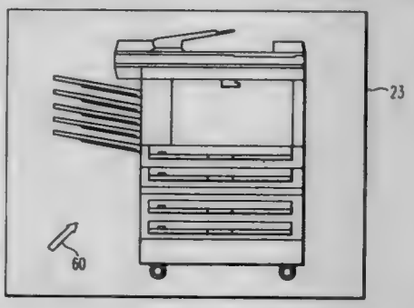


5,798,738

PRINTING MANAGER SYSTEM FOR A COPIER IN A NETWORK

Daisuke Yamada, Kawaguchi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 25, 1996, Ser. No. 622,247
Claims priority, application Japan, Mar. 25, 1995, 7-091748
Int. Cl.[6] G09G 5/00; G03G 15/00
U.S. Cl. 345—2 16 Claims



1. A print manager system for a copier in a network, comprising:

at least one copier, including an operation panel for displaying images for operating the at least one copier, means for storing display data for displaying on the operation panel, and means for transferring the display data; and

at least one terminal connected to the at least one copier, including means for receiving the display data from the transferring means of the at least one copier, and a display device for displaying same images as displayed on the operation panel of the at least one copier according to the display data transferred from the at least one copier.

5,798,739

VIRTUAL IMAGE DISPLAY DEVICE

Michael A. Teitel, Belmont, Calif., assignor to VPL Research Inc., Redwood City, Calif.

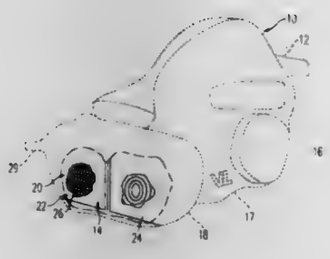
Continuation of Ser. No. 141,204, Oct. 6, 1993, abandoned, which is a continuation of Ser. No. 725,032, Jul. 3, 1991, abandoned. This application Dec. 8, 1994, Ser. No. 351,741
Int. Cl.[6] G09G 5/00; G02B 3/08
U.S. Cl. 345—8 9 Claims

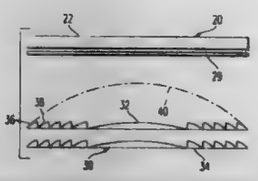
1. A head-coupled display device for use in presenting electronically generated wide angle visual images to a viewer, comprising:

a headpiece to be worn by viewer;

an image display screen mounted in the headpiece for presenting electronically generated images; and

a fresnel lens for focusing said electronically images from the screen as virtual images, said lens having a set of concentric converging rings whose surface curvatures are designed to





correct for spherical aberration at an infinite conjugate and a near conjugate, the near conjugate corresponding to a position of the viewer's eye, the concentric converging rings of the fresnel lens being on a side of the fresnel lens facing the image display screen,

wherein the fresnel lens is interchangeable with fresnel lenses having different effective lens curvatures.

5,798,740

LIQUID CRYSTAL DISPLAY IN WHICH DATA VALUES ARE ADJUSTED FOR CROSS-TALK USING OTHER DATA VALUES IN THE SAME COLUMN

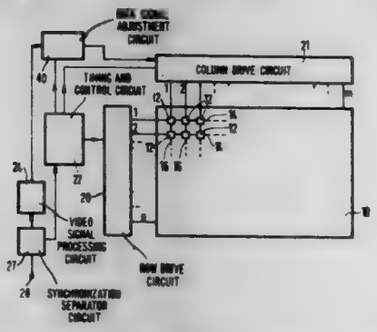
Stefanos Bitzakidis, Redhill, and Andrew M. Francis, Reigate, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1995, Ser. No. 559,779

Claims priority, application United Kingdom, Nov. 24, 1994, 9423705; Oct. 4, 1995, 9507414

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—92 **16 Claims**



1. An active matrix display device having a display panel comprising an array of picture elements each comprising a liquid crystal display element and a switching device connected to the display element, and sets of row and column address conductors connected to the picture elements,

the active matrix display device comprising a drive circuit for applying data signals to the column address conductors and for repetitively scanning the row address conductors to select each row of picture elements in sequence to drive the display elements of a selected row in accordance with the data signals applied to the associated column address conductors,

the drive circuit including a data signal adjustment circuit for compensating for the effects of vertical cross-talk in the display panel due to capacitive coupling between each display element and the column address conductor associated with said each display element, said data signal adjustment circuit having an input to which input data signals are applied,

said data signal adjustment circuit adjusting the input data signal for any particular picture element by adding an individually determined cross-talk compensation value to the input data signal for said any particular picture element, the individually determined cross-talk compensation value being derived from values of the input data signals for at least some of the other picture elements connected to the same column address conductor as said any particular picture element and addressed after said any particular picture element is addressed within a present frame or before said any particular picture element is addressed in a next frame, and

the data signal adjustment circuit having an output from which the adjusted data signals are supplied to the column address conductors for driving the picture elements.

5,798,741

POWER SOURCE FOR DRIVING LIQUID CRYSTAL

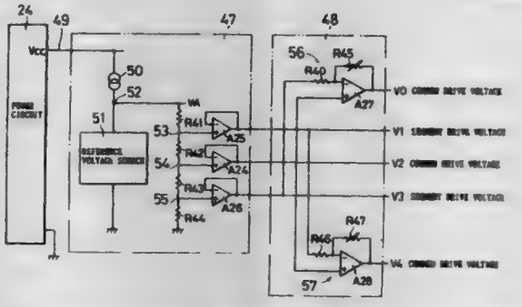
Noriyuki Kajihara, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1995, Ser. No. 466,991

Claims priority, application Japan, Dec. 28, 1994, 6-329152

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—94 **32 Claims**



12. A liquid crystal driving power source for a matrix type liquid crystal display in which a plurality of common electrodes and a plurality of segment electrodes are arranged in a way to cross each other through a liquid crystal, the liquid crystal driving power source comprising:

a common voltage source for generating common voltages to be applied to the plurality of common electrodes, the common voltage source generating a first common voltage **V0** and a second common voltage **V4** above and under a central common voltage **V2**, respectively; and

a segment voltage source for generating segment voltages to be applied to the plurality of segment electrodes, the segment voltage source to which the central common voltage **V2** is given and which generates a first segment voltage **V1** and a second segment voltage **V3** above and under the central common voltage **V2**, respectively, which do no exceed the first and second common voltages **V0**, **V4**, wherein said segment voltage source includes

a current source capable of supplying a predetermined constant current,

a resistor to one terminal of which the central common voltage **V2** is supplied, and to the other terminal of which the current source is connected, the other terminal through which the first segment voltage **V1** is output, and

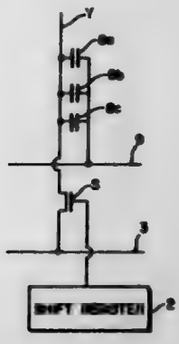
a differential amplifier wherein the central common voltage **V2** is supplied, and the first segment voltage **V1** is inverted to generate the second segment voltage **V3**.

5,798,742

ACTIVE MATRIX PANEL AND METHOD FOR FABRICATING THE SAME

Masahide Watatani, Tenri; Toshihiro Yamashita, Nara, and Takayuki Shimada, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1994, Ser. No. 358,012
Claims priority, application Japan, Dec. 20, 1993, 5-319902; Apr. 20, 1994, 6-081887
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—98 28 Claims



1. An active matrix panel comprising:
a liquid crystal section having a plurality of pixels arranged in a matrix;
a plurality of source lines for applying video signals to the plurality of pixels;
a source driver for sequentially applying the video signals to the plurality of source lines; and
a sample hold capacitance for holding the video signals applied to the source line,
wherein the sample hold capacitance has a pair of electrodes and at least one of the pair of electrodes is in a shape of a comb having a predetermined number of branch parts.

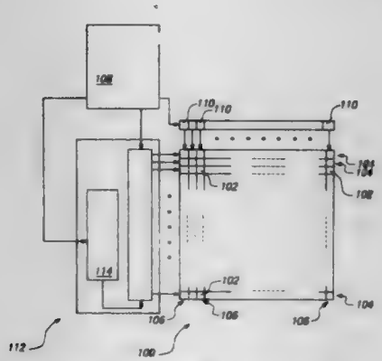
5,798,743

CLEAR-BEHIND MATRIX ADDRESSING FOR DISPLAY SYSTEMS

David M. Bloom, Portola Valley, Calif., assignor to Silicon Light Machines, Sunnyvale, Calif.

Filed Jun. 7, 1995, Ser. No. 482,192
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—90 11 Claims





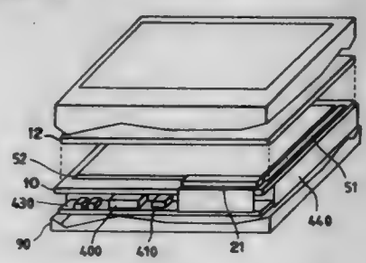
1. A method of providing data bits to a display comprising an array of pixels arranged in a plurality of rows each having a like number of pixels for forming a grayscale image, the method comprising the steps of:
a. providing a plurality of weighted data bits to each pixel within a frame-time;
b. subdividing the frame-time into a plurality of subframes such that one of the weighted data bits is provided to each pixel during one of the subframes and further wherein each of the pixels is controlled by an appropriate one of the weighted data bits during an entire duration of a first portion of the subframes and during a partial duration of a second portion of the subframes;
c. providing a turn-off signal at an end of each subframe;
d. inhibiting the turn-off signal for two consecutively asserted bits; and
e. disabling the step of inhibiting for the second portion of the subframes.

5,798,744

LIQUID CRYSTAL DISPLAY APPARATUS

Takeshi Tanaka; Yoshiharu Nagae, both of Hitachi, and Nobutake Konishi, Hitachioota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 507,990
Claims priority, application Japan, Jul. 29, 1994, 6-177941
Int. Cl.[6] G09G 3/36
U.S. Cl. 345—92 22 Claims



1. A liquid crystal display apparatus, comprising:
a pair of substrates, at least one of which is transparent;
a liquid crystal layer formed by enclosing a liquid crystal composition between said pair of substrates;
a display region having a plurality of first semiconductor elements which are arranged in a matrix on one substrate of said pair of substrates;
peripheral circuits having a plurality of second semiconductor elements for driving said plurality of first semiconductor elements, arranged at a periphery of said display region, said peripheral circuits are formed on said one substrate of said pair of substrates and at least a part of said peripheral circuit are arranged in a peripheral circuits region which is held between said pair of substrates; and
at least one driver circuit which is an integrated circuit for driving said peripheral circuits is formed on said one substrate of said pair of substrates in a driver integrated circuit region which is not held between said pair of substrates.

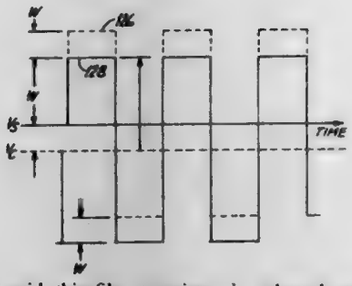
5,798,745

LCD PANEL HAVING TAILORED PUSHDOWN VOLTAGES

Martin J. Steffensmeier, Cedar Rapids, Iowa, assignor to Rockwell International, Costa Mesa, Calif.

Filed Sep. 30, 1996, Ser. No. 723,404
Int. Cl.[6] G09G 3/18
U.S. Cl. 345—92 5 Claims

1. A display element in a liquid-crystal display, the display element comprising:
(a) a liquid-crystal having a plurality of display element colors; and
(b) a thin-film transistor switch operatively connected to said liquid-crystal for providing a driving voltage thereto in response to a display element activating input wherein the



size of said thin-film transistor is selected such that the provided driving voltage is a version of the activating input signal offset by a predetermined pushdown voltage and is the same value for each of the display element colors.

5,798,746

LIQUID CRYSTAL DISPLAY DEVICE

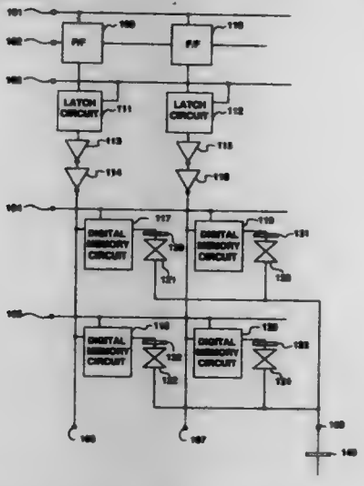
Jun Koyama, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Dec. 23, 1994, Ser. No. 362,881

Claims priority, application Japan, Dec. 27, 1993, 5-354091; Dec. 27, 1993, 5-354092

Int. Cl.[6] G09G *3/36*; G02F *1/13*

U.S. Cl. 345—98 **29 Claims**



1. A liquid crystal display device comprising:

first and second substrates each having an insulating surface;

at least one pixel electrode arranged on the first substrate at a matrix form;

an opposite electrode arranged on the second substrate;

a liquid crystal disposed between the first and second substrates; and

at least one digital memory circuit which is constructed by thin film transistors, wherein the digital memory circuit is connected with the pixel electrode and stores a binary information;

wherein a voltage is directly applied to said pixel electrode through said digital memory circuit based on said binary information,

wherein said liquid crystal display device includes a time gradation display device.

5,798,747

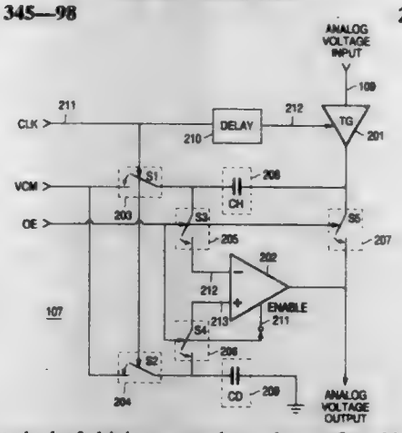
METHODS AND APPARATUSES FOR HIGH-SPEED VIDEO SAMPLE & HOLD AMPLIFICATION FOR ANALOG FLAT PANEL DISPLAY

Farhood Moraveji, San Jose, Calif., assignor to National Semiconductors Corporation, Santa Clara, Calif.

Filed Nov. 17, 1995, Ser. No. 560,022

Int. Cl.[6] G09G *3/36*

U.S. Cl. 345—98 **26 Claims**



1. A method of driving an analog column of a video display from an analog line input using an operational amplifier having an op amp output and positive and negative differential inputs, a hold capacitor having positive and negative terminals, and a differential capacitor having positive and negative terminals, the method comprising the steps of:

(a) disabling the operational amplifier by reducing its current consumption to zero;

(b) disconnecting the op amp output from the hold capacitor positive terminal;

(c) connecting the hold capacitor negative terminal and the differential capacitor negative terminal to a common mode reference voltage;

(d) sampling an analog line input voltage onto the hold capacitor positive terminal;

(e) disconnecting the hold capacitor negative terminal and the differential capacitor negative terminal from the common mode reference voltage;

(f) connecting the op amp output to the hold capacitor positive terminal; and

(g) enabling the operational amplifier, by turning on its current supply, to drive the analog column.

5,798,748

FORCE AND TORQUE CONVERTER WITH IMPROVED DIGITAL OPTICAL SENSING CIRCUITRY

John Hilton, Bedford; Stephan Roundtree, Dunstable, and Hal Avery, Needham, all of Mass., assignors to Spacetec IMC Corporation, Lowell, Mass.

Filed Jun. 7, 1995, Ser. No. 481,650

Int. Cl.[6] G06G *5/00*

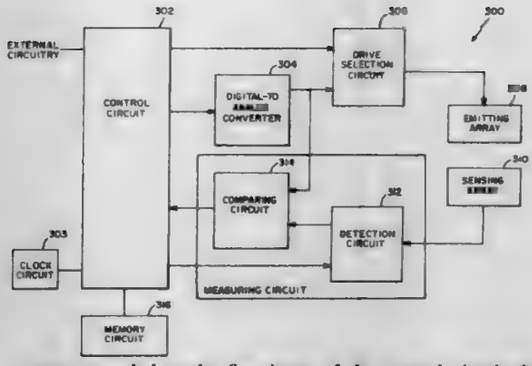
U.S. Cl. 345—156 **21 Claims**

1. A device for providing a detection signal in response to a drive signal for driving a plurality of first sensor components, the device comprising:

a control circuit having a first output that provides a digital control signal, a first input for receiving a comparison signal, and a second output that provides the detection signal according to the comparison signal;

a digital-to-analog converter having an input coupled to the first output of the control circuit, and an output that provides the drive signal in response to the digital control signal; and

a measuring circuit having a first input coupled to the output of the digital-to-analog converter, a second input that receives a result signal from a plurality of second sensor components co-acting with the plurality of first sensor components, and an



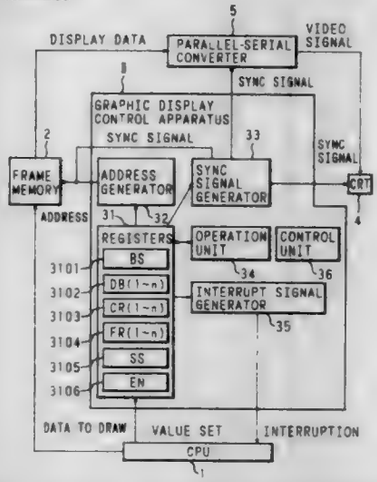
output coupled to the first input of the control circuit that provides the comparison signal, wherein the digital control signal provided by the control circuit has a first drive value during a first time interval to drive the plurality of first sensor components, and a plurality of comparison values during a second time interval to measure a result value of the result signal.

5,798,749

GRAPHIC DISPLAY CONTROL APPARATUS

Isao Minematsu; Koji Hirano, and Hiroki Takita, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1995, Ser. No. 539,213
Claims priority, application Japan, May 11, 1995, 7-113294
Int. Cl.[6] G09G *5/34*
U.S. Cl. 345—123 **28 Claims**



1. A graphic display control apparatus for sequentially scrolling display contents of a screen by sequentially shifting read-out areas to read display information of one screen from a frame memory whose capacity allows a CPU to write larger display information than one screen therein and transferring display information at each read-out area to a display unit, the graphic control apparatus comprising:

an address storing means for storing a reading address specifying the read-out area at the starting time of scroll;

a scroll-amount storing means for storing the amount of one scroll;

a scroll-times storing means for storing the number of scrolls to be executed;

an operation means for updating the reading address stored in said address storing means by a value corresponding to the amount of one scroll;

an address generating means for generating an address of the frame memory from which display information is to be read out according to the reading address stored in said address storing means; and

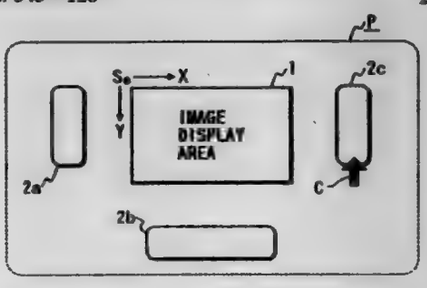
a counting means for counting the number of executed scrolls, wherein the display contents of the screen are scrolled horizontally, vertically or diagonally in accordance with the amount of scrolling.

5,798,750

IMAGE DISPLAY APPARATUS

Kazuchika Ozaki, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, and Nikon Systems, Inc., Yokohama, both of Japan

Continuation of Ser. No. 532,268, Sep. 22, 1995, abandoned.
This application Jun. 6, 1997, Ser. No. 870,599
Claims priority, application Japan, Sep. 28, 1994, 6-233581
Int. Cl.[6] G09G *5/34*
U.S. Cl. 345—126 **2 Claims**



1. An image display apparatus comprising:

a memory for storing electrically converted image information therein;

a monitor having an image display area for displaying an image based on said image information and at least three display orientation designating areas for designating display orientation of the image;

a detector for detecting the designated orientation;

an orientation converting device for converting said image information to conform with an orientation in which the image is rotated, about an axis perpendicular to said image display area, by a predetermined amount in a direction associated with the orientation detected by said detector, and for causing the image to be displayed on said image display area based on the converted image information,

wherein said three display orientation designating areas are located respectively on a left side, a right side, and a lower side of said image display area, at respective positions each associated with a different rotational orientation of the image about said axis, for designating the associated orientation.

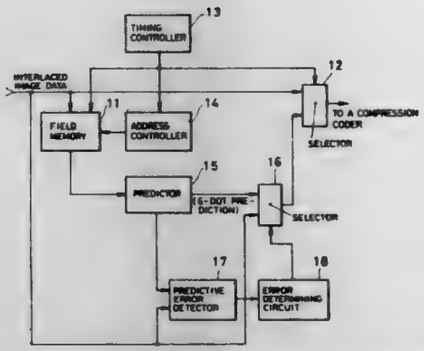
5,798,751

IMAGE PROCESSING APPARATUS

Jun Kanda, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 15, 1995, Ser. No. 573,425
Claims priority, application Japan, Dec. 20, 1994, 6-316984
Int. Cl.[6] G09G *5/00;* **H04N** *7/12*
U.S. Cl. 345—138 **15 Claims**

1. An image processing apparatus for processing image data including a train of pixel data of a first field of an image and a train



of pixel data of a second field, obtained by interlace scanning, said apparatus comprising:

prediction means for predicting pixel data of a next field on the basis of said pixel data of one of said first and second fields to produce predictive pixel data;

error detection means for issuing an error signal having a level corresponding to a difference between said predictive pixel data and said pixel data of the other one of said first and second fields; and

selection means for performing selection control in such a way as to selectively output said pixel data of said other field when said level of said error signal is equal to or lower than a predetermined level and selectively output said predictive pixel data when said level of said error signal is higher than said predetermined level.

5,798,752

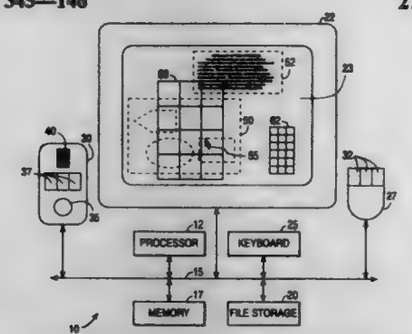
USER INTERFACE HAVING SIMULTANEOUSLY MOVABLE TOOLS AND CURSOR

William A. S. Buxton, Toronto, Canada, and Eric A. Bier, Mountain View, Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 95,591, Jul. 21, 1993, abandoned. This application Feb. 27, 1995, Ser. No. 398,420

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—146 **27 Claims**



1. In a method of operating a computer system where a program displays data and a user interacts with the data through the use of a plurality of displayed tools and a displayed cursor, the user activating a particular tool by moving a tool-defining region associated with the particular tool toward the cursor and generating a cursor event with the tools and the cursor being simultaneously and independently positionable in response to separate sets of input signals.

5,798,753

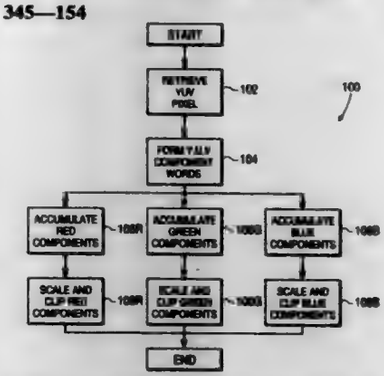
COLOR FORMAT CONVERSION IN A PARALLEL PROCESSOR

Chang-Guo Zhou, Cupertino, and Daniel S. Rice, Oakland, both of Calif., assignors to Sun Microsytems, Inc., Palo Alto, Calif.

Filed Mar. 3, 1995, Ser. No. 398,111

Int. Cl.[6] G06T *1/20*; G06F *15/00*

U.S. Cl. 345—154 **42 Claims**



1. A method for rendering a pixel of a color image using a computer system which includes, a signal receiver, a memory, and a processing unit which in turn includes a plurality of processing sub-units, the method comprising:

(A) receiving through the receiver a luminance signal;

(B) receiving through the receiver a chrominance signal;

(C) generating a luminance component word comprising first and second color components of the luminance signal and storing the luminance component word in the memory;

(D) generating a chrominance component word comprising first and second color components of the chrominance signal and storing the chrominance component word in the memory;

(E) generating a color component word having a first color component and a second color component, the step of generating a color component word comprising the following steps performed substantially simultaneously using first and second ones, respectively, of the processing sub-units:

(i) storing as the first color component of the color component word the sum of the first color components of the luminance and chrominance component words;

(ii) storing as the second color component of the color component word the sum of the second color components of the luminance and chrominance component words; and

(F) producing first and second color component signals representative of the first and second color component portions of the color component word.

5,798,754

GRIP CAP FOR COMPUTER CONTROL STICK

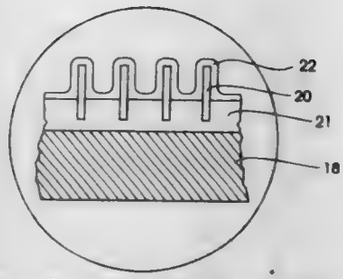
Edwin Joseph Selker, Palo Alto, Calif.; Kazunori Seki, Machida, Japan; Michio Suzuki, Yokohama, Japan, and Kenshin Yonemochi, Kamakura, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1994, Ser. No. 315,651

Int. Cl.[6] G06F *3/033*

U.S. Cl. 345—161 **6 Claims**

1. A resilient hollow grip cap for removable mounting on the tip of a computer control device, the cap having a plurality of fibers



adhered to the surface of the cap and extending outwardly away from the cap where the fibers are covered with a protective coating.

5,798,755

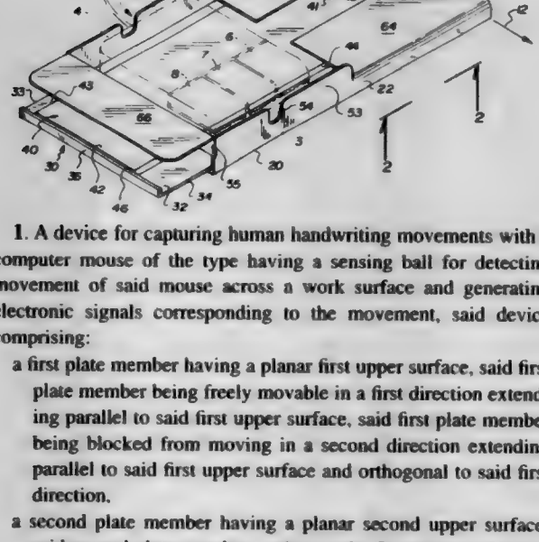
COMPUTER MOUSE HANDWRITING TRANSFER DEVICE

Lawrence D. Holgate, 10714 Desoto Rd., Riverview, Fla. 33569

Filed Nov. 6, 1996, Ser. No. 744,943

Int. Cl.[6] G09G 5/08

U.S. Cl. 345—163 **9 Claims**



1. A device for capturing human handwriting movements with a computer mouse of the type having a sensing ball for detecting movement of said mouse across a work surface and generating electronic signals corresponding to the movement, said device comprising:

a first plate member having a planar first upper surface, said first plate member being freely movable in a first direction extending parallel to said first upper surface, said first plate member being blocked from moving in a second direction extending parallel to said first upper surface and orthogonal to said first direction,

a second plate member having a planar second upper surface, said second plate member resting on the first upper surface of said first plate member and being moveable independently of said first plate member in said first direction and being movable with respect to said first plate member in said second direction, and

restricting means for restricting movement in said first and second directions of a computer mouse having its sensing ball in contact with the second upper surface of said second plate member for rolling movement therewith,

wherein said second plate member has a recess in the second upper surface thereof for receiving an end of a hand-grippable tool such that handwriting movements imparted to said hand-grippable tool by a hand are transferred to said second plate member, said second plate member being freely movable in said first and second directions relative to said computer mouse such that movements of a said hand-grippable tool inserted in said recess are transferred to the sensing ball of said computer mouse.

5,798,756

COORDINATE DETECTION DEVICE CAPABLE OF OBVIATING THE NEED OF FORMING CLOSED LOOP IN ELECTRODES THEREOF

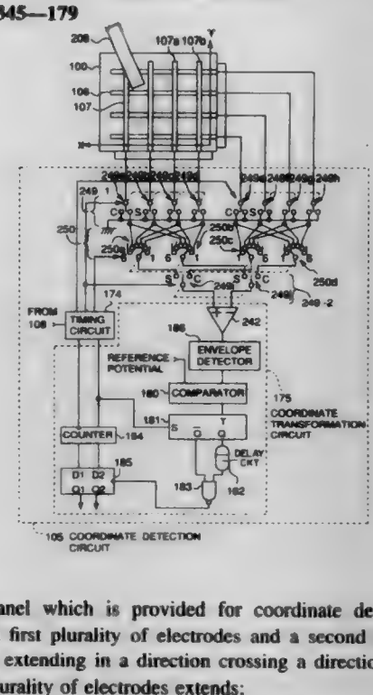
Yasuhiro Yoshida; Kengo Takahama, both of Nara, and Takao Tagawa, Kashihara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 2, 1995, Ser. No. 460,251

Claims priority, application Japan, Dec. 26, 1994, 6-322126

Int. Cl.[6] G09G 5/00

U.S. Cl. 345—179 **15 Claims**



1. A panel which is provided for coordinate detection and includes a first plurality of electrodes and a second plurality of electrodes extending in a direction crossing a direction in which the first plurality of electrodes extends;

a coordinate pointing device which includes an alternating current oscillator and an electrode and outputs from a tip end portion of the electrode an alternating current electric field generated by the alternating current oscillator;

a differential amplifier;

switching means for sequentially changing connection of the first and second plurality of electrodes of the panel so as to sequentially select the electrodes and electrically connect each selected electrode to the differential amplifier;

coordinate detection means for detecting a signal supplied from the coordinate pointing device to the first and second plurality of electrodes by shifting selected electrodes in accordance with a signal from said differential amplifier and detecting coordinates based on a timing at which the first and second plurality of electrodes are selected and a timing of a portion of said signal output from the differential amplifier;

the coordinate pointing device comprises:

a battery storing section for storing therein a secondary battery which as a power source for the alternating current oscillator and a charging terminal to be electrically connected to the secondary battery when the secondary battery is stored in the battery storing section; and,

a casing to which the panel is mounted is provided with a storing portion for storing the coordinate pointing device and the battery storing section, and a power supply terminal which can supply an electric power to the charging terminal while being electrically connected to a charging terminal of the coordinate pointing device when the coordinate pointing device is stored in the storing portion.

5,798,757

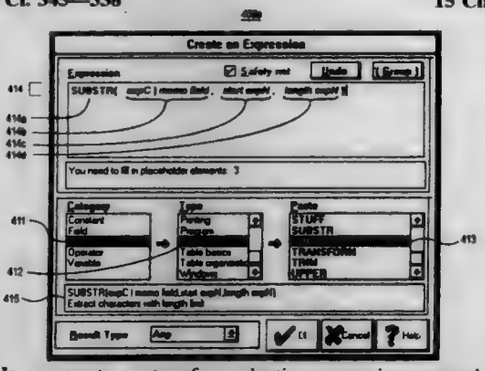
METHODS AND INTERFACE FOR BUILDING COMMAND EXPRESSIONS IN A COMPUTER SYSTEM

Kenneth Wayne Smith, Aptos, Calif., assignor to Borland International, Inc., Scotts Valley, Calif.

Continuation of Ser. No. 167,713, Dec. 15, 1993, Pat. No. 5,485,618. This application Nov. 13, 1995, Ser. No. 557,661

Int. Cl.[6] G06F *17/00*

U.S. Cl. 345—338 **15 Claims**



1. In a computer system for evaluating expressions entered by a user, the expressions comprising a plurality of tokens which evaluate to a result, said plurality of tokens comprising at least one operator token specifying what type of operation is to occur upon evaluation of the expression and at least one operand token specifying a data member which said at least one operator token is to operate on, a method for assisting the user with correctly creating an expression, the method comprising:

(a) storing a set of rules specifying valid relationships between adjacent tokens, said set of rules including rules specifying valid relationships between adjacent operator and operand tokens;

(b) receiving user input for placing at least one token in said expression being created;

(c) determining validity of said expression being created by applying said rules to adjacent ones of said at least one token; and

(d) if said expression being created is determined not to be valid in step (c), automatically modifying said expression so that validity of said expression being created is maintained.

5,798,758

GESTURE-BASED DATA PROCESSING METHOD AND APPARATUS

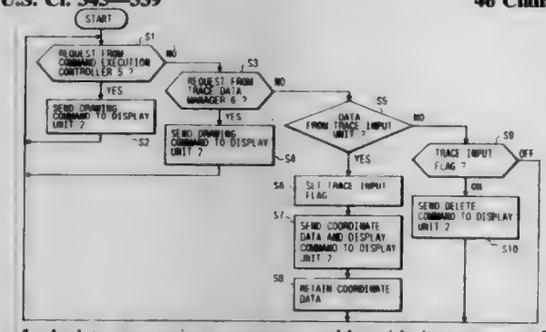
Takashi Harada, Yamato, and Ryoji Fukuda, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1996, Ser. No. 630,750

Claims priority, application Japan, Apr. 14, 1995, 7-113855

Int. Cl.[6] G06K *9/00*; **G06F** *3/00*

U.S. Cl. 345—339 **46 Claims**



1. A data processing apparatus usable with input means for inputting a trace and with recognizing means for recognizing the trace input by the input means as a gesture and converting the gesture into a corresponding command, said apparatus comprising:

retaining means for retaining a trace of the gesture input from the input means and a command corresponding to the trace;

display means for displaying a plurality of gestures corresponding to traces of gestures retained by said retaining means;

selection means for selecting a gesture from the plurality of gestures displayed by said display means;

designation means for designating an operand object; and

execution means for executing a command corresponding to the gesture selected by said selection means for the operand object designated by said designation means.

5,798,759

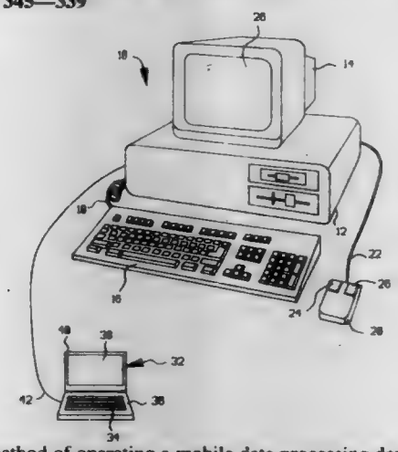
METHOD AND APPARATUS FOR MOBILE DEVICE SCREEN REFORMATTING

Scott S. Dahl, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1996, Ser. No. 775,652

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—339 **16 Claims**



1. A method of operating a mobile data processing device with a relatively small display screen to facilitate utilization of an application which includes a plurality of screens which have been written for use in a data processing system having a relatively large display screen, comprising the method steps of:

loading said application into said mobile data processing device;

displaying at least a portion of a particular one of said plurality of screens of said application on said relatively small display screen of said mobile data processing device;

entering a training mode of operation;

during said training mode of operation, monitoring and recording operator selection of items from said particular one of said plurality of screens of said application;

generating and recording a display table of said operator selection of items from said particular one of said plurality of screens of said application; and

utilizing said display table thereafter to automatically generate a substitute screen for said particular one of said plurality of screens of said application which relocates said operator selection of items to render them visible on said relatively small display screen of said mobile data processing device.

5,798,760

RADIAL GRAPHICAL MENUING SYSTEM WITH CONCENTRIC REGION MENUING

Mark Vayda, 1515 Great Falls St. #334, and Nancy Weyl, 1330 Mercer La., both of McLean, Va. 22101

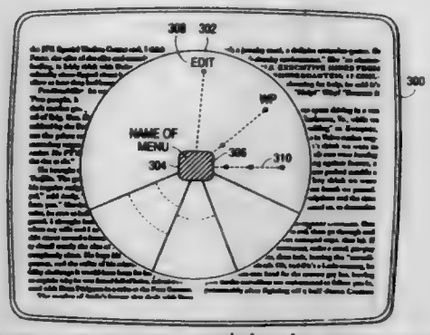
Filed Jun. 7, 1995, Ser. No. 479,388

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—352 **25 Claims**

1. A computer system comprising:

a processor means;



a program memory means, coupled to the processor means, for storing programs executed by the processor;

a display means, coupled to the processor means, for displaying images under control of the programs executed by the processor means;

the programs stored in the program memory including at least one menu driven program for creating a graphical display on the display means;

a menu generating means, cooperating with the at least one menu driven program, for displaying a menu on the display means; and

the menu comprising:

a focus position; and

a plurality of concentrically arranged regions around the focus position, each region having at least one command heading displayed therein.

5,798,761

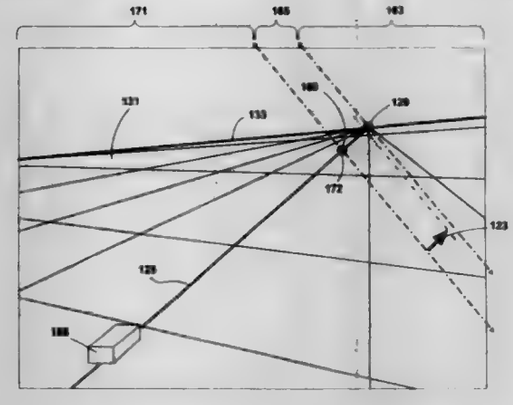
ROBUST MAPPING OF 2D CURSOR MOTION ONTO 3D LINES AND PLANES

Paul M. Isaacs, San Francisco, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Jan. 26, 1996, Ser. No. 592,632

Int. Cl.[6] G06T *13/00*

U.S. Cl. 345—419 **22 Claims**



1. A method of mapping a moving 2D cursor onto a guiding entity in a virtual 3D space displayed on a 2D surface, comprising:

determining if the guiding entity has a characteristic that may yield a discontinuity in motion along the guiding entity when the moving cursor is mapped onto the guiding entity; and

mapping the cursor onto the guiding entity based on a result of the determining.

5,798,762

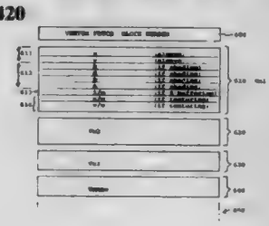
CONTROLLING A REAL-TIME RENDERING ENGINE USING A LIST-BASED CONTROL MECHANISM

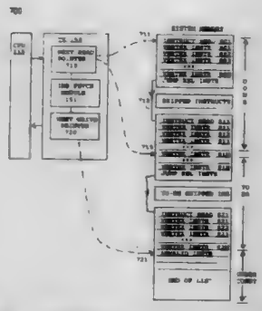
Adrian Sfarti; Nicholas Robert Baker, both of Sunnyvale; Robert William Laker, Fremont, and Adam Craig Malamy, Palo Alto, all of Calif., assignors to Cagent Technologies, Inc., Redwood City, Calif.

Filed May 10, 1995, Ser. No. 438,860

Int. Cl.[6] G06T *15/00*

U.S. Cl. 345—420 **10 Claims**





1. A method for controlling a real-time rendering engine comprising the steps of:

defining in a first region of system memory, a block header comprising

an instructions count field for storing the number of instructions within a block;

an instruction identification field for defining the format of the corresponding instructions;

a hardware version number field for identifying the supported hardware version level; and

enable/bypass fields for programmably enabling or bypassing rendering functions;

where the block header is to be processed before the corresponding instructions; and

defining in a second region of said memory, flow-control instructions.

5,798,763

OBJECT REFERENCED MEMORY SEGMENTATION

Michael Kerry Larson, Austin, and Daniel P. Wilde, Cedar Park, both of Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

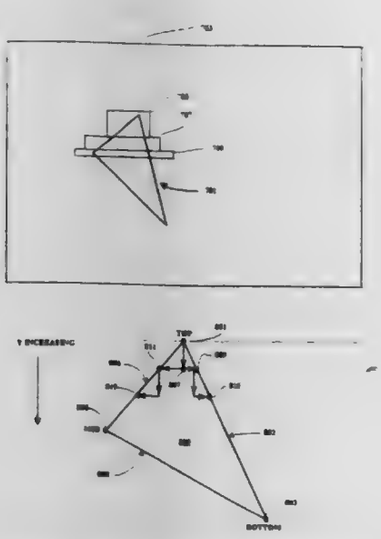
Filed Jun. 27, 1996, Ser. No. 671,138

Int. Cl.[6] G06T *11/00*

U.S. Cl. 345—423 **18 Claims**

1. A method for processing information representative of an object capable of being displayed on a display device, said method comprising:

determining a first memory segment configuration to store information related to at least a portion of said object, said first memory segment configuration being dependent upon shape properties of said object, said first memory segment configuration being determined such that said first memory segment when overlaid upon said object, includes at least a first portion of said object, said first portion of said object including points defining a full extent of said object along a first axis, said first portion of said object being limited only along a second axis by a predetermined memory segment size;



drawing said first memory segment configuration to a corresponding memory; and

storing said information into said first memory segment of said corresponding memory.

5,798,764

METHOD FOR DETERMINING THE INTERSECTIONS OF DELAUNAY PARTITIONED TETRAHEDRA WITH THE BOUNDARY OF A BODY TO BE ANALYZED

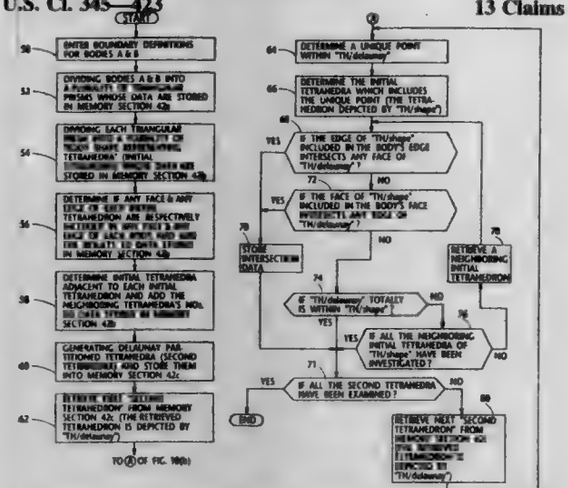
Yutaka Akiyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 453,711, May 30, 1995, abandoned. This application Oct. 14, 1997, Ser. No. 949,949

Claims priority, application Japan, May 27, 1994, 6-115268

Int. Cl.[6] G06T *17/20*

U.S. Cl. 345—423 **13 Claims**



1. A method of making a device simulator by storing an executable device simulating application program in a computer system, and executing the stored executable device simulating application program to impart device simulating functionality to the computer system by controlling the operation of the computer system with a central processing unit (CPU), thus changing a state of the CPU by analyzing data representing a body exhibiting physical structure having physical and/or electrical characteristics and having a boundary including edges and faces by determining an intersection of said boundary with each of Delaunay partitioned tetrahedra of said body, said method comprising the steps of:

(a) producing a plurality of first tetrahedra of said body by dividing said body into a plurality of triangular prisms and then dividing each triangular prism into a plurality of tetrahedra;

(b) finding any face of each first tetrahedron, which is a face segment of said body, and finding any edge of each first tetrahedron which is an edge segment of said body;

(c) producing a plurality of second tetrahedra of said body based on said first tetrahedra, each second tetrahedron of the second tetrahedra being Delaunay partitioned;

(d) cyclically implementing following steps (e) to (i) to investigate in sequence all of said second tetrahedra;

(e) finding a unique point of said body within said each second tetrahedron;

(f) finding, among said first tetrahedra, a third tetrahedron of said body which includes said unique point therewithin;

(g) determining if any edge of said third tetrahedron, which is an edge segment of said body, intersects any face of said each second tetrahedron;

(h) determining if any face of said third tetrahedron, which is a face segment of said body, intersects any edge of said each second tetrahedron;

(i) obtaining intersection information for said body if an outcome of a determination at one of steps (g) and (h) is affirmative;

(j) finding a plurality of groups of said first tetrahedra of said body neighboring to each other after step (b);

(k) implementing steps (e) to (i) with respect to each of said groups of said first tetrahedra of said body;

(l) determining the physical and/or electrical characteristics from the obtained intersection information; and

(m) using the physical and/or electrical characteristics in device simulation.

5,798,765

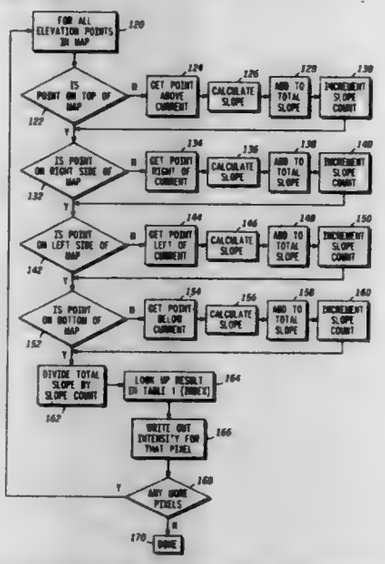
THREE DIMENSIONAL LIGHT INTENSITY DISPLAY MAP

Bruce Alan Barclay, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 590,240, Jan. 23, 1996, abandoned, which is a continuation of Ser. No. 210,483, Mar. 21, 1994, abandoned. This application Aug. 8, 1997, Ser. No. 907,773

Int. Cl.[6] G06T *15/50*

U.S. Cl. 345—426 **4 Claims**



1. A display method for displaying digitized data representing a three dimensional topological with slope intensity map, said display method comprising the steps of:

providing a map of topological features described by three dimensional information for a plurality of points on the slope intensity map;

grouping a maximum number of line segments from a select point to adjacent points on the slope intensity map;

determining a resultant slope for the maximum number of line segments;

dividing a sum of slopes by the slope count to produce the resultant slope;

determining a pixel intensity from a table which relates slope to the pixel intensity;

displaying on a rastor display the pixel with the pixel intensity exponentially related to the resultant slope;

said step of grouping includes the step of determining whether the selected point is on a top edge of the slope intensity map;

if the selected point is not on a top edge of the map, said step of determining a resultant slope includes the steps of:

obtaining the elevation data for a first point above the selected point;

calculating the slope of a line segment between the selected point and the first point;

adding the calculated slope between the first point and the selected point to the resultant slope produce the sum of slopes;

incrementing the slope count;

said step of grouping includes the step of determining whether the selected point is on a right edge of the slope intensity map;

if the selected point is not on the right edge of the map, said step of determining a resultant slope includes the steps of:

obtaining elevation data for a second point to the right of the selected point;

calculating the slope of a line segment from the second point to the selected point;

adding the calculated slope between the second point and the selected point to the resultant slope produce the sum of slopes;

incrementing the slope count;

said step of grouping includes the step of determining whether the selected point is on a left edge of the slope intensity map;

if the selected point is not on a left edge of the map, said step of determining a resultant slope includes the steps of:

obtaining elevation data for a third point of the map to the left of the selected point;

calculating the slope of a line segment between the selected point and the third point;

adding the calculated slope between the third point and the selected point to the resultant slope produce the sum of slopes;

incrementing the slope count;

said step of grouping includes the step of determining whether the selected point is on a bottom edge of the slope intensity map;

if the selected point is not on a bottom edge of the map, said step of determining a resultant slope includes the steps of:

obtaining elevation data for a fourth point of the map below the selected point;

calculating the slope of a line segment between the selected point and the fourth point;

adding the calculated slope between the fourth point and the selected point to the resultant slope produce the sum of slopes; and

incrementing the slope count.

5,798,766

DRAWING SYSTEM

Naoki Hayashi, and Kazuo Shibuta, both of Ashigarakami-gun, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 15, 1996, Ser. No. 730,761

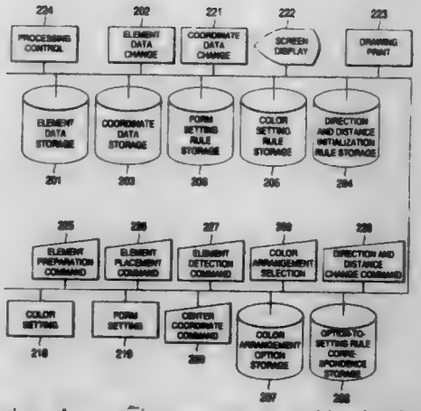
Claims priority, application Japan, Oct. 20, 1995, 7-272152; Mar. 15, 1996, 8-086015

Int. Cl.[6] G06T *11/40*

U.S. Cl. 345—431 **15 Claims**

1. A drawing system for preparing a drawing having at least one drawing element placed on a two-dimensional plane, said system comprising:

means for storing information concerning a plurality of color arrangement rules for determining colors to be assigned to



drawing elements in response to positional relationships among the drawing elements on the two-dimensional plane;

means for displaying color arrangement patterns responsive to the color arrangement rules;

means for specifying a color arrangement rule for the drawing to be prepared;

means for referencing said storage means based on the specified color arrangement rule and determining colors of drawing elements contained in the drawing to be prepared; and

means for generating image information representing the prepared drawing colored in response to the colors determined for the drawing elements of the drawing.

5,798,767

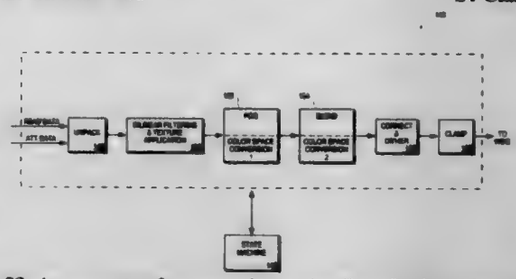
METHOD AND APPARATUS FOR PERFORMING COLOR SPACE CONVERSION USING BLEND LOGIC

Glenn C. Poole, Fremont, and Thomas J. Repa, San Carlos, both of Calif., assignors to Rendition, Inc., Mountain View, Calif.

Filed Mar. 15, 1996, Ser. No. 616,881

Int. Cl.[6] G06T *3/00*

U.S. Cl. 345—431 **24 Claims**



23. An apparatus for processing a plurality of color values, the apparatus comprising:

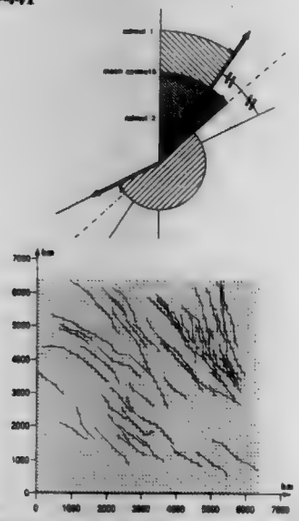
a first circuit coupled to input a control signal and coupled to input a first source color value when the control signal has a first state and a second source color value when the control signal has a second state, the first circuit generating a modified source color value based on the first source color value when the control signal has the first state, the first circuit performing a first stage of converting the second source color value from a first color space to a second color space when the control signal has the second state; and

a second circuit coupled to input the modified source color value, a destination color value, and the control signal, the second circuit outputting a blended color value based on the modified source color value and the destination color value when the control signal has the first state, the second circuit performing a second stage of converting the second source color value from the first color space to the second color space when the control signal has the second state.

5,798,768
METHOD FOR MAPPING BY INTERPOLATION A NETWORK OF LINES, NOTABLY THE CONFIGURATION OF GEOLOGIC FAULTS

Marie-Christine Cacas, Nanterre, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Oct. 18, 1995, Ser. No. 544,487
Claims priority, application France, Oct. 18, 1994, 94 12515
Int. Cl.[6] G06T *5/00*
U.S. Cl. 345—441 **25 Claims**



1. A method of representing a configuration of a network of curves or lineaments of objects in a zone of an environment or of a field of vector physical quantities in the zone, by interpolation from known data relative to a position and an orientation of the objects or to values of the quantities, in a plurality of points or locations of the environment, in which a locating pattern of meshes is superimposed on the zone being studied, comprising:

a) assigning, to the meshes which are crossed by at least one of the curves or lineaments, an orientation direction depending on that of the curve or lineament, so as to obtain a first discrete distribution of oriented meshes;

b) determining, according to an iterative process, directions to be assigned respectively to other meshes by comparing directions assigned to the oriented meshes, by selecting for each mesh to be oriented an intermediate direction between an angular interval at most equal to 90° formed by directions of the oriented meshes; and

c) in response to the determining of the directions producing at least a two-dimensional representation of the curves or lineaments.

5,798,769
METHOD AND APPARATUS FOR MAINTAINING LINKS BETWEEN GRAPHIC OBJECTS IN A FREE-FORM GRAPHICS DISPLAY SYSTEM

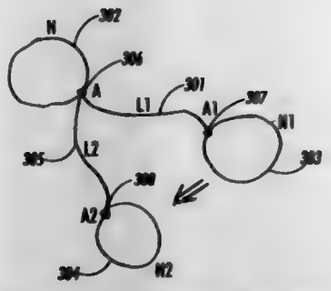
Patrick Chiu, Menlo Park; Thomas P. Moran, Palo Alto, and William J. vanMelle, Los Altos, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 15, 1996, Ser. No. 698,741
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—442 **16 Claims**

1. A method for curve transformation of an arbitrarily shaped link responsive to moving a node in a node-link diagram, said node-link diagram having a first node linked to a second node via a link, said link attached to said first node at a first attachment point and to said second node at a second attachment point, said method comprising the steps of:

a) storing link shape information, said link shape information including link segment information;

b) detecting that said second node has been moved;



c) identifying a third attachment point for said second node at the destination of said moved second node, said third attachment point at the same location on said second node as said second attachment point;

d) generating link displacement data for said link based on said stored link shape information;

e) transforming each segment of said link whereby said link is curve transformed, said transforming of each segment accomplished by performing the substeps of:

e1) determining an arclength for said segment;

e2) determining transformation factors based on the length of said segment and said arclength for said segment;

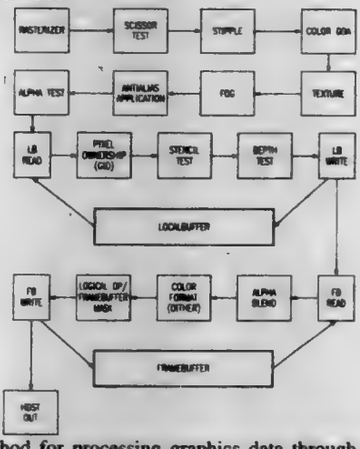
e3) determining a transformed segment location and length based on said transformation factors, link displacement data and the original segment endpoint location; and

e4) displaying said transformed segment between said transformed segment endpoint location and a previous transformed segment endpoint.

5,798,770
GRAPHICS RENDERING SYSTEM WITH RECONFIGURABLE PIPELINE SEQUENCE

David Robert Baldwin, Weybridge, United Kingdom, assignor to 3DLabs Inc. Ltd., Hamilton, Bermuda

Continuation-in-part of Ser. No. 410,345, Mar. 24, 1995. This application May 1, 1996, Ser. No. 640,620
Int. Cl.[6] G06T *1/20*
U.S. Cl. 345—506 **26 Claims**



1. A method for processing graphics data through a data path comprising the steps of:

(a) receiving a routing command from a data bus input;

(b) stalling further input from said data bus input until previous data has exited said data path;

(c) resuming said input from said data bus input;

(d) if said routing command has a first value, then

performing a first set of graphics processes on said data, and then

performing a second set of graphics processes on said data;

(e) if said routing command has a second value, then

performing said second set of graphics processes on said data, and then

performing said first set of graphics processes on said data, wherein some portion of said data is selectively eliminated by said first or second sets of graphics process according to the results of said processes;

wherein steps (d) and (e) are repeated until a new routing command is received;

wherein said first set of graphics processes requires a longer processing time than said second set of graphics processes.

5,798,771

IMAGE RECORDING METHOD AND APPARATUS

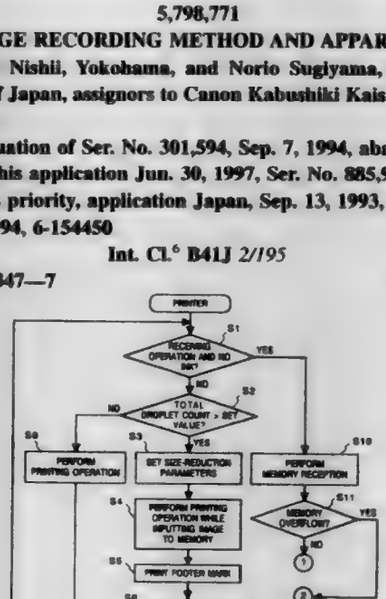
Teruyuki Nishii, Yokohama, and Norio Sugiyama, Fujisawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 301,594, Sep. 7, 1994, abandoned. This application Jun. 30, 1997, Ser. No. 885,960

Claims priority, application Japan, Sep. 13, 1993, 5-226873; Jul. 6, 1994, 6-154450

Int. Cl.[6] B41J *2/195*

U.S. Cl. 347—7 **33 Claims**



1. An image recording apparatus comprising:

reservoir means for storing ink;

recording means for recording an image on a recording medium by jetting droplets of ink supplied from said reservoir means;

first sensing means for sensing a remaining amount of ink stored in said reservoir means without jetting the ink droplets;

second sensing means for sensing the remaining amount of ink stored in said reservoir means by determining a condition of the image recorded by said recording means, thereby obtaining a sensing result;

control means for controlling said second sensing means to sense the remaining amount of ink stored in said reservoir means after said first sensing means senses that the remaining amount of ink stored in said reservoir means is a predetermined amount; and

output means for outputting information conforming to the sensing result obtained by said second sensing means,

wherein said control means does not activate said second sensing means until said first sensing means senses that the remaining amount of ink stored in said reservoir means is the predetermined amount.

5,798,772

DRIVING METHOD INK JET HEAD

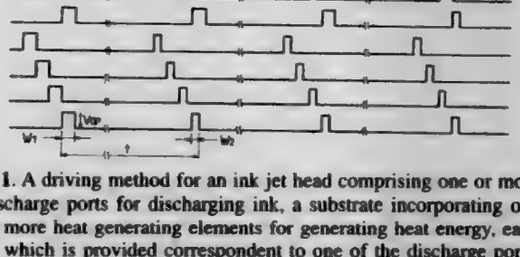
Masayoshi Tachihara, Chofu, and Yasuyuki Tamura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 97,623, Jul. 27, 1993, abandoned, which is a continuation of Ser. No. 715,769, Jun. 14, 1991, abandoned. This application May 19, 1997, Ser. No. 848,722

Claims priority, application Japan, Jun. 15, 1990, 2-157256

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—11 **51 Claims**



1. A driving method for an ink jet head comprising one or more discharge ports for discharging ink, a substrate incorporating one or more heat generating elements for generating heat energy, each of which is provided correspondent to one of the discharge ports, and a support plate or casing on which the substrate is mounted, said method comprising the step of:

when recording an image with the ink jet head in which heat energy for discharging the ink in accordance with an image signal is generated in the heat generating elements, setting a level of a drive signal applied to at least one of the heat generating elements for driving the one or more heat generating elements of the ink jet head so as to control $(E_{max}-E)/(V_{max}-V)$ to be always substantially constant whenever $E \neq E_{max}$, providing that thermal energy generated in the substrate is E_{max} when the ink jet head discharges the ink with a maximum volume of V_{max}, an ink discharge volume in accordance with the drive signal is V, and the heat energy generated in the substrate at this time is E.

5,798,773

RECORDING APPARATUS AND METHOD FOR CORRECTION OF DISCHARGE FAILURE AND DENSITY UNEVENNESS

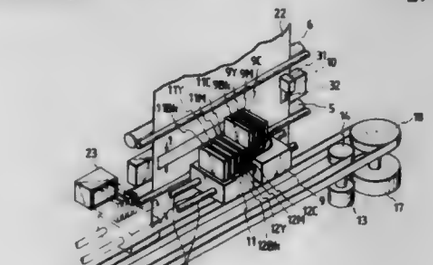
Akira Hiramatsu, Yokohama; Kiyoharu Tanaka, Tokyo, and Yasuyuki Takanaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 180,477, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 832,996, Feb. 10, 1992, abandoned. This application Jun. 17, 1997, Ser. No. 877,310

Claims priority, application Japan, Feb. 20, 1991, 3-026172

Int. Cl.[6] B41J *2/05;2/165*

U.S. Cl. 347—19 **27 Claims**



1. A recording apparatus for recording an image by scanning a recording head relative to a recording medium of a particular type,

with the recording head having a recording state and a non-recording state, a substantially entire area of the recording medium being a recording area to be recorded according to an image signal, the recording medium having no predetermined margin area, said apparatus comprising:

pattern recording means for controlling recording of a predetermined pattern with said recording head at a predetermined timing, said pattern recording means recording the predetermined pattern on a pattern recording medium different from the recording medium, said pattern recording means recording the predetermined pattern at a recording position different from that at which the recording medium is recorded, the recording medium having a recording surface rougher than a recording surface of the pattern recording medium;

reader means for reading the predetermined pattern recorded using said pattern recording means;

restoring means for performing a discharge restoring operation of said recording head;

means for enabling a second recording head different from said recording head to record an image to be recorded by said recording head;

discrimination means for discriminating a recording state of said recording head, based on the predetermined pattern read by said reader means; and

control means for driving said enabling means to enable said second recording head to record the image to be recorded by said recording head, in a case that after said discriminating means discriminates the recording state as being poor and thereafter the discharge restoring operation performed by said restoring means and a pattern recording operation by said pattern recording means have been executed a predetermined number of times, said discriminating means has discriminated the recording state as being still poor.

5,798,774

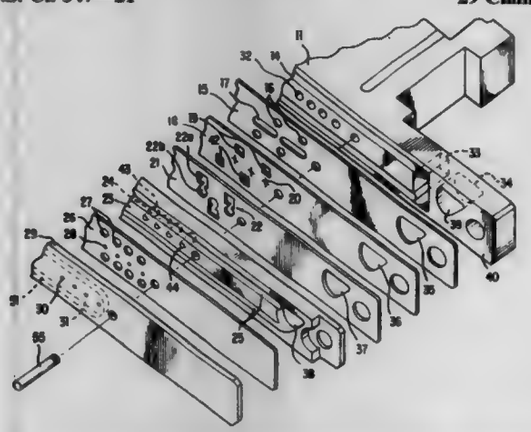
GAS ASSISTED INK JET APPARATUS AND METHOD

Akihiro Okada, Agoura; Joseph A. Lahut, Thousand Oaks, and David O. Ward, Westlake Village, all of Calif., assignors to Dataproducts Corporation, Simi Valley, Calif.

Filed Feb. 28, 1996, Ser. No. 608,551

Int. Cl.[6] B41J *2/015*

U.S. Cl. 347—21 **29 Claims**



1. A gas assisted liquid jet apparatus operable with a compressed air source, the liquid jet apparatus comprising:

a transducer housing enclosing a plurality of transducer members and at least one passage for containment of liquid;

a plurality of diaphragm members associated with the transducer members;

wherein each transducer member dispose within the transducer housing is in pressure communication with a transducer member respective diaphragm member for selectively exerting a pressure on the diaphragm member;

a chamber housing enclosing a plurality of chambers associated with the plurality of diaphragm members, wherein the plurality of chambers are in fluid communication with the passage; each chamber has a base and an outlet, wherein said base is coupled to the transducer housing through the diaphragm member so when the pressure is selectively exerted by the transducer member, the pressure is transferred to the chamber by the diaphragm member causing selective ejection of liquid droplets through the outlet;

an air chamber located adjacent to the outlet of each of the chambers which is in air flow communication with the compressed air source; and

a plurality of orifices associated with the chambers in alignment with the outlets and coupled to the air chamber to allow an air flow through the orifices with the ejection of liquid droplets.

5,798,775

INK JET RECORDING APPARATUS

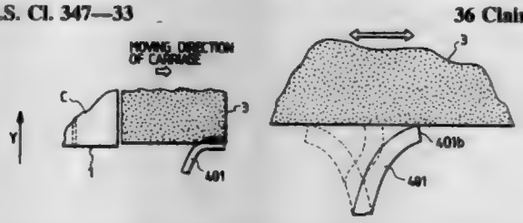
Kazuyoshi Takahashi; Kazuaki Masuda, both of Kawasaki; Yoshiaki Takayanagi; Akio Suzuki, both of Yokohama; Mitsuru Kurata, Kawasaki; Tsutomu Abe, Isehara; Seiichiro Karita, Yokohama; Hiroshi Tajika, Yokohama; Noribumi Koitabashi, Yokohama; Haruo Uchida, Yokohama; Kentaro Yano, Yokohama; Hitoshi Sugimoto, Yokohama, and Miyuki Matsubara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 818,587, Jan. 9, 1992, abandoned. This application Dec. 13, 1996, Ser. No. 766,890

Claims priority, application Japan, Jan. 11, 1991, 3-2238; Jan. 11, 1991, 3-2240; Jan. 19, 1991, 3-4743; Jan. 19, 1991, 3-4745; Jan. 19, 1991, 3-4746; Jan. 19, 1991, 3-4747

Int. Cl.[6] B41J *2/165*

U.S. Cl. 347—33 **36 Claims**



1. An ink jet recording apparatus for use with a recording head unit having a discharge port face having a discharge port for discharging ink, said apparatus comprising:

a cleaning member for cleaning said ink discharge port face;

an absorbing member for cleaning said cleaning member while being in contact therewith, said absorbing member being integral with said recording head unit; and

means for setting a first cleaning mode of cleaning said discharge port face with said cleaning member and a second cleaning mode of cleaning said cleaning member with said absorbing member,

wherein in the second cleaning mode said cleaning member is at a position so that a contact area between said cleaning member and said absorbing member is larger than a contact area between said cleaning member and said discharge port face in the first cleaning mode.

5,798,776

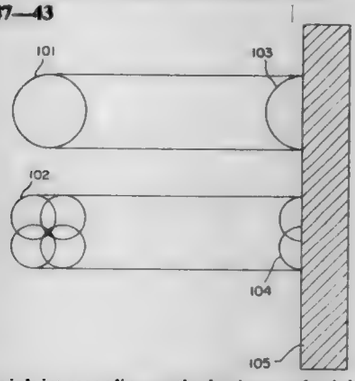
COLOR INK JET RECORDING METHOD

Yaeko Uchiyama; Hiroko Hayashi, and Masaaki Itano, all of Nagano-ken, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 381,487, Jan. 31, 1995, abandoned, which is a continuation-in-part of Ser. No. 307,051, Sep. 16, 1994, abandoned. This application Jun. 4, 1997, Ser. No. 869,412

Int. Cl.[6] B41J 2/21; G01D 11/00

U.S. Cl. 347—43 15 Claims



1. A color ink jet recording method using a color ink and a black ink, comprising the steps of printing black dots with black ink droplets in a unit area, printing color dots with color ink droplets in a unit area, providing two or more black ink droplets per unit area with respect to a same size unit area which is formed by one color ink droplet, and wherein the color ink has a surface tension of less than 40 dyn/cm at 20° C. and the black ink has a surface tension of not less than 40 dyn/cm.

5,798,777

INK JET PRINTER HAVING A CAPPING MECHANISM

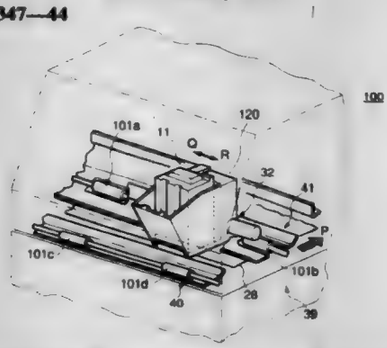
Kotaro Yoshimura; Shigemi Togashi, and Osamu Watanabe, all of Tokyo, Japan, assignors to Oki Data Corporation, Tokyo, Japan

Filed Sep. 18, 1996, Ser. No. 718,115

Claims priority, application Japan, Sep. 19, 1995, 7-239617

Int. Cl.[6] B41J 2/165

U.S. Cl. 347—44 4 Claims



1. An ink jet printer adapted for using an ink cassette, the ink cassette having a print head, a cap movable between a cap-opening position and a cap-closing position in which the cap covers the print head, and a first biasing means that exerts a first biasing force for biasing the cap to the cap-closing position, the ink jet printer comprising:

a carriage unit, the ink cassette being receivable therein; and

a second biasing means mounted to said carriage unit for biasing the cap to the cap-opening position when the ink cassette has been received in said carriage unit, said second biasing means exerting a second biasing force greater than, and acting in a direction opposite to, the first biasing force.

5,798,778

INK JET HEAD HAVING AN INK DISCHARGING OUTLET FACE AND INK JET APPARATUS PROVIDED WITH SAID INK JET HEAD

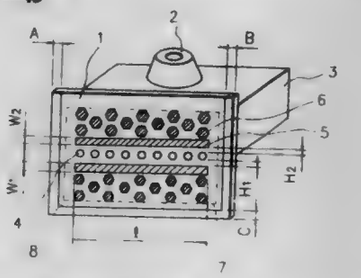
Makiko Kimura, Sagamihara; Hiroshi Sugitani, Machida; Sadayuki Sugama, Tsukuba, and Hiroyuki Ishinaga, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 790,586, Jan. 29, 1997, abandoned, which is a continuation of Ser. No. 244,744, Jun. 13, 1994, abandoned. This application Sep. 16, 1997, Ser. No. 931,365

Claims priority, application Japan, Oct. 19, 1992, 4-280725; Oct. 19, 1992, 4-280726

Int. Cl.[6] B41J 2/135;2/16

U.S. Cl. 347—45 12 Claims



1. An ink jet head, comprising:

a plurality of discharging outlets disposed in an arrangement direction;

a plurality of ink pathways, each said ink pathway communicating with an associated said discharging outlet, each of said ink pathways having an energy generating element for generating energy for discharging an ink from said discharging outlet; and

a discharging outlet face having

a discharging outlet surface, said discharging outlets being arranged in said discharging outlet surface,

a water-repellent discharging outlet peripheral region circumscribing said discharging outlets, and having a first side and a second side, and

a discontinuous hydrophilic region containing a number of portions each having a hydrophilic nature relative to said discharging outlet peripheral region and which portions are spacedly distributed in said discontinuous hydrophilic region, said discontinuous hydrophilic region being positioned on at least one said side of said discharging outlet peripheral region, said discontinuous hydrophilic region being separated by a predetermined distance from said discharging outlet peripheral region.

5,798,779

ULTRASONIC PRINTING APPARATUS AND METHOD IN WHICH THE PHASES OF THE ULTRASONIC OSCILLATORS ARE CONTROLLED TO PREVENT UNWANTED PHASE CANCELLATIONS

Hirofumi Nakayasu; Yoshihiko Kaiju; Kotaro Kameya; Takaki Shimura; Atsuo Iida, all of Kawasaki, and Toshifumi Tanida, Inagi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

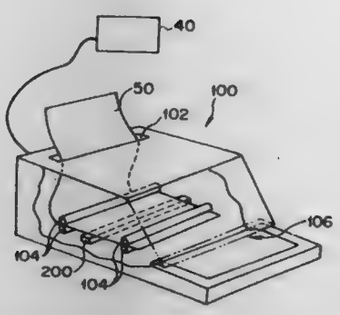
Filed Nov. 14, 1995, Ser. No. 557,833

Claims priority, application Japan, Mar. 16, 1995, 7-057818

Int. Cl.[6] B41J 2/04

U.S. Cl. 347—46 72 Claims

1. An ultrasonic printing method of a phased array type wherein some or all of a plurality of ultrasonic oscillators for emitting ultrasonic waves to be irradiated as converging ultrasonic waves upon ink to discharge the ink in the proximity of a converging point of the converging ultrasonic waves as an ink drop to stick to a recording medium to form a dot on the recording medium in order to perform recording on the recording medium are selectively driven, in order to discharge the ink, in two or more phases



different from each other so that the ultrasonic waves emitted from the selected ultrasonic oscillators are converged to a predetermined point, comprising the steps of:

selectively driving some or all of said ultrasonic oscillators such that a difference in phase at the predetermined point between a reference ultrasonic wave from one of the selected ultrasonic oscillators and another ultrasonic wave from any other one of the selected ultrasonic oscillators is equal to or less than one one-fourth of a wavelength of the ultrasonic waves in a transmission medium for the ultrasonic waves from the selected ultrasonic oscillators to the predetermined point.

5,798,780

RECORDING ELEMENT DRIVING UNIT HAVING EXTRA DRIVING ELEMENT TO FACILITATE ASSEMBLY AND APPARATUS USING SAME

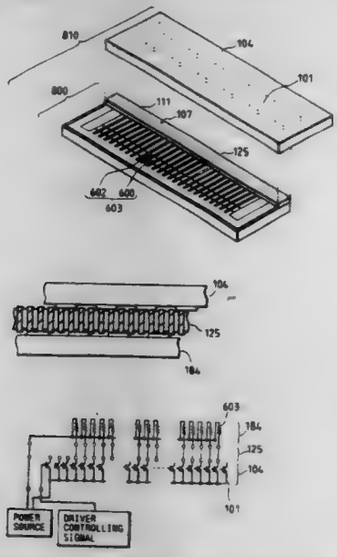
Yutaka Koizumi, Tokyo, and Yasutomo Watanabe, Machida, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 114,250, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 687,079, Apr. 18, 1991, abandoned, which is a continuation of Ser. No. 373,998, Jun. 30, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 451,209

Claims priority, application Japan, Jul. 3, 1988, 63-165386; Jul. 6, 1988, 63-168194; Jul. 11, 1988, 63-172294; Jul. 11, 1988, 63-172295; Jul. 22, 1988, 63-182879; Jan. 9, 1989, 1-002273

Int. Cl.[6] **B41J** *2/05;* **H01R** *9/09*

U.S. Cl. 347—50 **24 Claims**



1. A recording element driving unit comprising:

an electrical connecting member having a support member of an electrically insulating material and a plurality of electroconductive members arranged on said support member, each said electroconductive member having one end exposed on one surface of said support member and another end exposed on another surface of said support member;

a recording element substrate having thereon a plurality of recording elements connected to one exposed end of at least one said electroconductive member; and

a driving element substrate having thereon a plurality of driving elements, each said driving element having connecting portions and said plurality of driving elements being larger in number than a number of driving elements electrically connected to said plurality of recording elements and fewer in number than said plurality of electroconductive members, said driving element connecting portions being disposed at a pitch larger than a pitch at which said plurality of electroconductive members are arranged, wherein each said driving element connecting portion is connected to the other exposed end of at least one said electroconductive member.

5,798,781

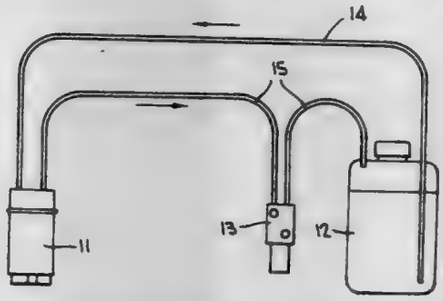
PRINTER

Niels B. Pedersen, 2131 St. Clair St., Racine, Wis. 53402; Steen B. Mikkelsen, 2200 S. Britton Rd., Kansasville, Wis. 53139, and Eva M. Wallström, EnPro Aps Lerso Parkalle 42, DK-2100 Copenhagen, Denmark

Filed May 2, 1995, Ser. No. 433,541

Int. Cl.[6] **B41J** *2/18*

U.S. Cl. 347—89 **4 Claims**



1. An ink-jet printing system consisting of:

(a) a reciprocating print carriage which moves in a generally horizontal plane over a print receiving medium;

(b) a disposable ink-jet cartridge removably mountable in said print carriage, said cartridge containing a print head and an ink supply container;

(c) an ink reservoir, external of said print carriage, for supplying liquid ink continuously to said cartridge;

(d) tubing for continuously transporting said ink from said reservoir to said cartridge and to return unused ink from said cartridge to said reservoir, said tubing being enclosed in a flexible housing;

(e) a pump for continuously forcing said ink to circulate from said reservoir to said cartridge and to return it to said reservoir during the entire operation of said system; and

(f) an ink consisting of an aqueous dispersion of pigment.

5,798,782

PRINTING OR WRITING DEVICE FOR CONTROLLED APPLICATION OF CHARGE CARRIERS TO A SUBSTRATE

Anton Rodi, Leimen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

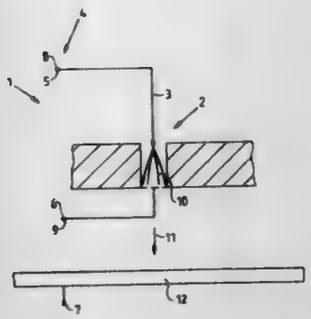
Filed Apr. 17, 1995, Ser. No. 422,454

Claims priority, application Germany, Apr. 15, 1994, 44 13 237.9

Int. Cl.[6] **B41J** *2/415*

U.S. Cl. 347—123 **17 Claims**

1. Marking device for controlled application of charge carriers to a substrate, comprising:



a charge carrier source for generating the charge carriers,

a voltage source having a first pole and a second pole connected to said charge carrier source and forming therewith a current circuit wherein a control device is located,

said voltage source having a third pole for generating a predeterminable electrical potential on the substrate, so that the charge carriers are applicable thereat by corresponding triggering of said control device, said third pole having a potential of >+40 V, and

said control device being assigned to at least one of said first and said second poles and being located at approximately 0-volt potential.

5,798,783

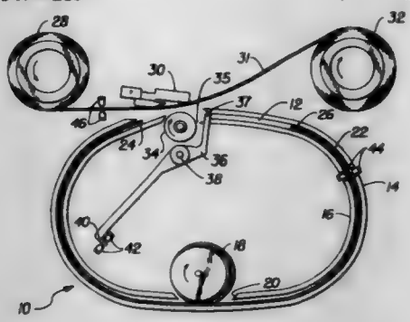
THERMAL PRINTER WITH SENSOR FOR LEADING EDGE OF RECEIVER SHEET

Daniel Charles Maslanka, and Terrence Lee Fisher, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1996, Ser. No. 641,127

Int. Cl.[6] B41J *33/52*

U.S. Cl. 347—215 **5 Claims**



1. A thermal printer for printing onto a receiver sheet having a leading edge and a trailing edge, the printer comprising:

an elongated rotatable platen;

an elongated thermal print head positioned parallel to the platen;

a pathway for receiving a receiver sheet in a printing direction from the platen, the platen being positioned for rotation in the printing direction with at least a portion of the platen in the pathway to engage a receiver sheet or a dye donor web;

a supply roll of dye donor web positioned upstream of the print head;

means for moving the print head into the pathway opposite the portion of the platen to press the print head into engagement with the dye donor web, the dye donor web into engagement with the receiver sheet, and the receiver sheet into engagement with the platen;

means for rotating the platen in the printing direction to move either the dye donor web or both the dye donor web and the receiver sheet between the print head and the platen;

means for sensing when the leading edge of the receiver sheet has reached a predetermined location downstream of the print head and for producing a signal;

means, responsive to the signal, for activating the print head to cause dye transfer between the dye donor web and the receiver sheet; and

means for moving the receiver sheet in the pathway for successive thermal transfers of different dyes from the dye donor web.

5,798,784

LASER DRAWING APPARATUS FEATURING A BEAM SEPARATOR SUPPORTED BY AN ADJUSTING MEANS SWINGABLE ABOUT A ROTATING SHAFT

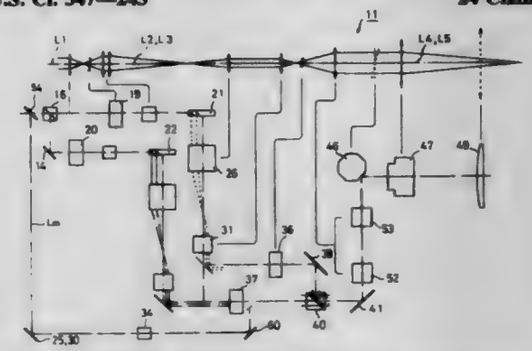
Jun Nonaka; Shuichi Shimizu; Satoru Kobayashi, and Takashi Iizuka, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 279,746, Jul. 22, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 664,847

Claims priority, application Japan, Jul. 22, 1993, 5-181724

Int. Cl.[6] B41J *2/47;* **G01D** *15/14;* **G02B** *26/00;27/00*

U.S. Cl. 347—243 **24 Claims**



1. A laser drawing apparatus comprising:

a first beam splitting means for splitting laser light emitted from a laser source into a plurality of beams;

a second beam splitting means comprising a plurality of sequential optical elements with adjacent oblique optical surfaces for partly reflecting and partly transmitting through said second beam splitting means said beams split by said first beam splitting means to split said beam split by said first beam splitting means into a plurality of groups of drawing beams;

optical modulators providing separate ON/OFF drawing data to said respective split drawing beams transmit through said second splitting means;

a beam combining means for combining said split drawing beams provided with the ON/OFF drawing data;

a drawing surface; and

a beam scanning means for scanning said drawing surface with said combined drawing beams to form an image on said drawing surface.

5,798,785

TERMINAL FOR SUGGESTING PROGRAMS OFFERED ON A TELEVISION PROGRAM DELIVERY SYSTEM

John S. Hendricks, Potomac; Alfred E. Bonner, Bethesda, both of Md., and Richard E. Wunderlich, Alpharetta, Ga., assignors to Discovery Communications, Inc., Bethesda, Md.

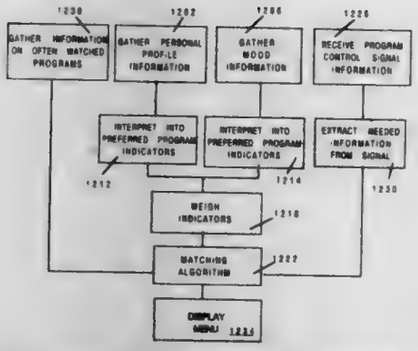
Continuation-in-part of Ser. No. 991,074, Dec. 9, 1992. This application Dec. 2, 1993, Ser. No. 160,281

Int. Cl.[6] H04N *7/16*

U.S. Cl. 348—1 **56 Claims**

1. A set top terminal used by subscribers of a television program delivery system for suggesting programs to subscribers using program control information containing program description data, and subscriber specific data, the set top terminal comprising:

a means for gathering the subscriber specific data to be used in selecting programs;



a means, connected to the gathering means, for storing the subscriber specific data;

means for receiving the program control information containing the program description data;

program selection means, operably connected to the storing means and the receiving means, for selecting one or more programs using a subscriber's programming preferences and the program control information, comprising:

a processor, wherein the subscriber programming preferences are generated from the subscriber specific data; and

means, operably connected to the program selection means, for suggesting the selected programs to the subscriber.

5,798,786

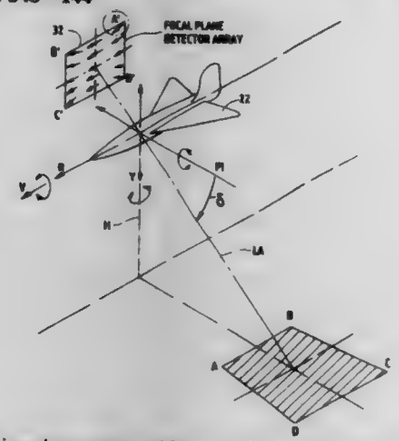
ELECTRO-OPTICAL IMAGING DETECTOR ARRAY FOR A MOVING VEHICLE WHICH INCLUDES TWO AXIS IMAGE MOTION COMPENSATION AND TRANSFERS PIXELS IN ROW DIRECTIONS AND COLUMN DIRECTIONS

Andre G. Lareau, Bloomingdale; Brian James, Buffalo Grove; William R. Pfister, Schaumburg; Kenneth J. Jerkatis, Barrington; Stephen R. Beran, Mount Prospect, and Russell A. Bennett, McHenry, all of Ill., assignors to Recon/Optical, Inc., Barrington, Ill.

Filed May 7, 1996, Ser. No. 646,509

Int. Cl.[6] H04N *7/18;9/47;5/228*

U.S. Cl. 348—144 **28 Claims**



1. An imaging system with two axis image motion compensation, said imaging system for installation aboard a vehicle capable of linear forward motion with respect to a scene external of said vehicle, said scene to be imaged by said systems, comprising:

an array of pixel elements arranged in rows and columns, said rows defining a row direction and said columns defining a column direction;

said pixel elements storing pixel information representing an image of said scene, said image having a motion with respect to said array of pixel elements, during exposure of the array to the scene, in an arbitrary combination of the row direction and the column direction, due to said linear forward motion of said imaging system and vehicle with respect to said scene as well as rotation of said imaging system and vehicle with respect to said scene;

a computer system, responsive to information from a vehicle navigation system as to said linear forward motion and rotation of said imaging system and vehicle with respect to said scene, for resolving said image motion into two orthogonal components, one component in said row direction and the other component in said column direction, said computer system further comprising a means for determining in advance of or during the exposure of said array to said scene the magnitude and direction of said image motion in said row and column directions with respect to said array of pixel elements; and

means responsive to said computer system for transferring said pixel information in said array in said row direction and in said column direction during exposure of said array to a scene in substantial synchronism with said motion of said image in said row direction and in said column direction, the transferring of pixel information in said row direction and in said column direction in substantial synchronism with said motion of said image in said row direction and in said column direction enabling resolution of an image generated by said array to be preserved, said transferring of pixel information compensating for both said linear forward motion and rotation of said imaging system and vehicle with respect to said scene.

5,798,787

METHOD AND APPARATUS FOR DETECTING AN APPROACHING OBJECT WITHIN A MONITORING ZONE

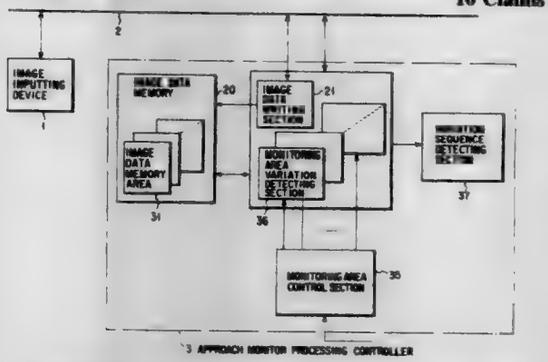
Hideaki Yamaguchi, and Akira Kasano, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 8, 1996, Ser. No. 689,348

Claims priority, application Japan, Aug. 11, 1995, 7-205969

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—152 **16 Claims**



1. A method for detecting approaching of a target object into a monitoring zone in which the target object is scheduled to enter, comprising the steps of:

continuously taking a picture of the monitoring zone to provide continuous moving picture data of the monitoring zone;

initially setting a plurality of monitoring areas along a track of the target object in an image of the monitoring zone and extracting image data from the monitoring areas from the moving picture data;

processing the image data of the monitoring areas for each monitoring area and detecting an image variation of each monitoring area; and

deciding that of the target object is approaching into the monitoring zone in accordance with a detection sequence of monitoring areas where an image variation is detected.

5,798,788

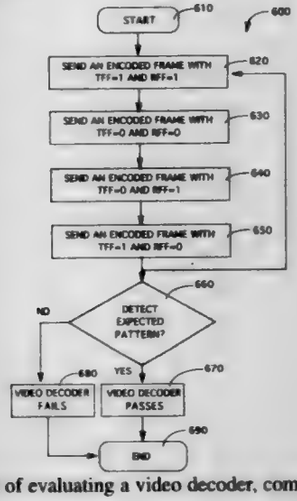
METHOD AND APPARATUS FOR EVALUATING FIELD DISPLAY FUNCTIONALITY OF A VIDEO DECODER

Paul Harquail Meehan; Michael Anthony Isnardi, both of Plainsboro, and Charles Benjamin Dieterich, Kingston, all of N.J., assignors to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Feb. 1, 1996, Ser. No. 595,147

Int. Cl.[6] H04N *17/00*

U.S. Cl. 348—180 22 Claims



1. A method of evaluating a video decoder, comprising the steps of:

(a) sending an encoded video bitstream having a display parameter to the video decoder;

(b) decoding said encoded video bitstream by the video decoder; and

(c) observing a visual sign corresponding to said encoded video bitstream in accordance with said display parameter to evaluate a field display functionality of the video decoder.

5,798,789

RECORDING METHOD AND APPARATUS WITH PREHEATING USING INVERTED IMAGE DATA

Takeshi Ono, Yokohama; Takehiro Yoshida, Tokyo; Makoto Kobayashi, Tama; Tomoyuki Takeda, Yokohama; Satoshi Wada, Kawasaki; Minoru Yokoyama; Takashi Awai, both of Yokohama; Yasushi Ishida, Tokyo; Akihiro Tomoda, and Masakatsu Yamada, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 999,546, Dec. 31, 1992, abandoned, which is a continuation of Ser. No. 560,195, Jul. 31, 1990, abandoned. This application Oct. 12, 1994, Ser. No. 321,599

Claims priority, application Japan, Jul. 31, 1989, 1-196782; Jul. 27, 1990, 2-198010

Int. Cl.[6] B41J *2/38;2/36;2/365*

U.S. Cl. 347—186 2 Claims

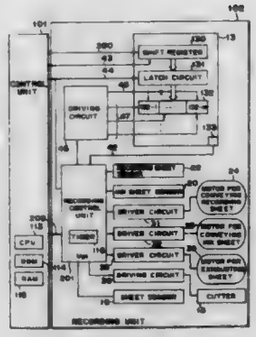
1. An image communication apparatus for recording an image transmitted from another device on a recording medium by using a thermal head provided with a plurality of recording elements and having a recording width corresponding to one line of said image, said apparatus comprising:

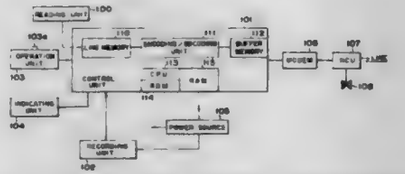
receiving means for receiving a run-length coding data in accordance with an image transferred from the other device;

reading-out means for reading out a manuscript image;

decoding means for decoding the run-length coding data received by said receiving means;

driving means for recording an image at every line on a recording medium by driving the recording elements of said thermal head in accordance with data decoded by said decoding means in a facsimile mode and by driving the recording elements of said thermal head in accordance with data read out by the reading-out means in a copy mode;





preheat means for preheating by driving the recording elements of said thermal head by said driving means in accordance with inverted data of a previous line before recording a present line; and

producing means for producing the inverted data for said preheating,

wherein said producing means produces inverted data from raw data read out by said reading-out means in the copy mode, and produces inverted data by decoding data obtained by inverting an uppermost bit of said run-length coding data by said decoding means in the facsimile mode, and

an amount of energy applied to said recording elements when preheating is smaller than an amount of energy applied to said recording elements when recording.

5,798,790

DISPLAY APPARATUS WITH GAMMA MEASUREMENT

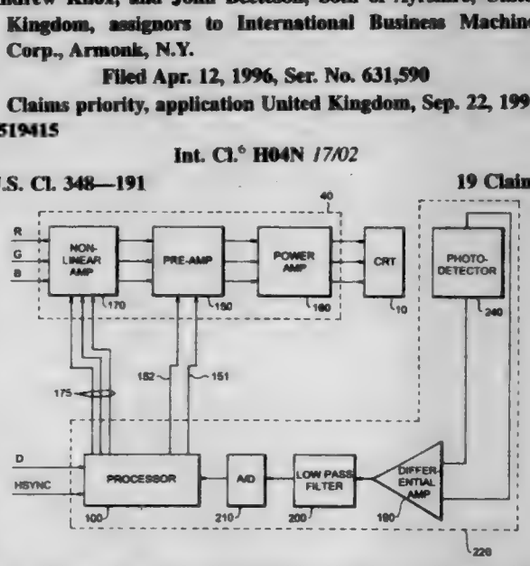
Andrew Knox, and John Beeteson, both of Ayrshire, United Kingdom, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 12, 1996, Ser. No. 631,590

Claims priority, application United Kingdom, Sep. 22, 1995, 9519415

Int. Cl.[6] H04N *17/02*

U.S. Cl. 348—191 19 Claims



1. Display apparatus comprising a display screen and drive means for generating an image on the display screen in response to

a video signal input from an external video source, wherein the drive means comprises gamma measurement means having a test signal generator for generating a test signal to produce a test image on the display screen; output detection means for generating a sense signal as a function of the test image produced on the display screen; and

communication means for sending test values of the test signal and sense values of the sense signal to the video source via a VESA DDC data link.

5,798,791

MULTIEYE IMAGING APPARATUS

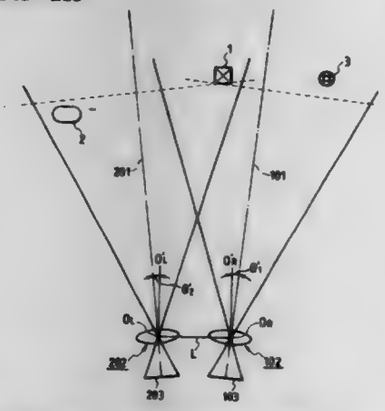
Tatsushi Katayama, Tokyo; Shigeyuki Suda, and Hideaki Mitsutake, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 179,921, Jan. 12, 1994, abandoned. This application Nov. 18, 1996, Ser. No. 751,242

Claims priority, application Japan, Jan. 14, 1993, 5-005242

Int. Cl.[6] H04N *5/225*

U.S. Cl. 348—218 9 Claims



8. A multieye imaging apparatus comprising:

a plurality of image pickup systems, wherein a base image picked up by one of said plurality of pick-up image systems and a reference image picked up by the other one thereof are overlapped;

image pickup condition detecting means for detecting an image pickup condition as to at least one of said plurality of image pickup systems;

focusing means for performing focusing for said base image based on an image in a focus area of said base image to set a focusing area of said reference image corresponding to a focusing area of said base image based on said image pickup condition to perform focusing for said reference image based on an image in said focusing area of said set reference image;

correlation processing means for detecting an overlapped image between said base image and said reference image by correlation calculation wherein an image including said focusing area for said base image and an image including a focusing area for said reference image are used, after focusing for each of said base image and said reference image is completed; and

combine processing means for producing a combined image by combining a remaining area of said reference image obtained by excluding said overlapped image from said reference image based on a detection signal from said correlation processing means with said base image.

5,798,792

IMAGE PICKUP APPARATUS WITH HORIZONTAL LINE INTERPOLATION FUNCTION

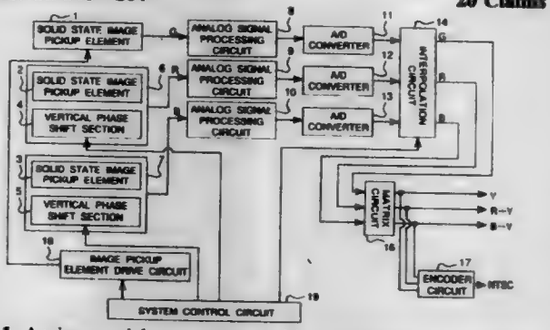
Hiroya Kusaka, Kawanishi; Takashi Sakaguchi, Yamatotakada, and Masaaki Nakayama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 211,151, Mar. 22, 1994. This application Mar. 1, 1996, Ser. No. 609,845

Claims priority, application Japan, Jul. 22, 1992, 4-195095; Jul. 22, 1992, 4-195096; Jul. 22, 1992, 4-195097; Jul. 22, 1992, 4-195099; Feb. 2, 1993, 5-015171; WIPO, Jul. 19, 1993, PCT/JP93/01002

Int. Cl.[6] H04N *9/09*

U.S. Cl. 348—264 20 Claims



1. An image pickup apparatus with a horizontal line interpolation function comprising:

a plurality of solid state image pickup elements for obtaining different three chrominance signals including chrominance signal C1, chrominance signal C2, and chrominance signal C3;

a first vertical phase shift section for shifting the vertical phase of the chrominance signal C2 by a specified pitch p1 with respect to the chrominance signal C1;

second vertical phase shift section for shifting the vertical phase of the chrominance signal C3 by a specified pitch p2;

a frame calculation circuit for obtaining a pseudo frame signal from the chrominance signal C1 and the chrominance signals C2 and C3 phase-shifted in a vertical direction; and

a frame still image circuit for obtaining a frame still image from output signals of said frame calculation circuit.

5,798,793

AUTOMATIC FOCUSING DEVICE CAPABLE OF DETECTING PANNING

Taeko Tanaka, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 460,571, Jun. 2, 1995, abandoned, which is a continuation of Ser. No. 86,832, Jul. 7, 1993, abandoned. This application May 27, 1997, Ser. No. 863,376

Claims priority, application Japan, Jul. 10, 1992, 4-183994

Int. Cl.[6] G03B *13/00;* H04N *5/232;5/238*

U.S. Cl. 348—347 30 Claims

1. An automatic focusing device for controlling the drive of a focusing lens, said automatic focusing device comprising:

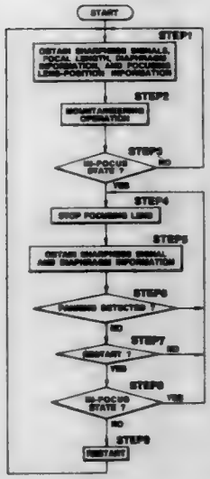
image pickup means for outputting an image signal by performing a photoelectric conversion of an image of an object;

extraction means for extracting, from the image signal, a predetermined focus signal relating to a state of focus of the image of an object;

a diaphragm for controlling the amount of light incident upon said image pickup means;

detecting means for detecting a change in said diaphragm; and

control means for prohibiting the driving of the focusing lens in response to a predetermined change in a level of the focus



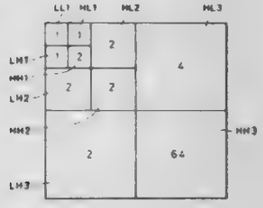
signal simultaneously with a predetermined change in an aperture value of said diaphragm.

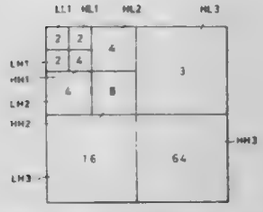
5,798,794

WAVELET TRANSFORM SUBBAND CODING WITH FREQUENCY-DEPENDENT QUANTIZATION STEP SIZE

Tsutomu Takahashi, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 579,908
Claims priority, application Japan, Dec. 28, 1994, 6-328709
Int. Cl.[6] H04N *7/30*
U.S. Cl. 348—398 **2 Claims**





1. A subband coding method for dividing a luminance signal in a digital video signal having an interlaced structure into a plurality of frequency bands in vertical and horizontal directions in a spatial frequency region by executing two-dimensional multilayer wavelet transform on each processing unit (field) of said digital video signal, and quantizing said frequency bands,

wherein an LH band consisting of high frequency components in the vertical direction and low frequency components in the horizontal direction in the layer consisting of the highest frequency bands, an HL band consisting of low frequency components in the vertical direction and high frequency components in the horizontal direction, an HH band consisting of high frequency components in the horizontal and vertical directions, of the divided frequency bands of said luminance signal, have quantization step size (Q_STEP_SIZE) set in a relationship of

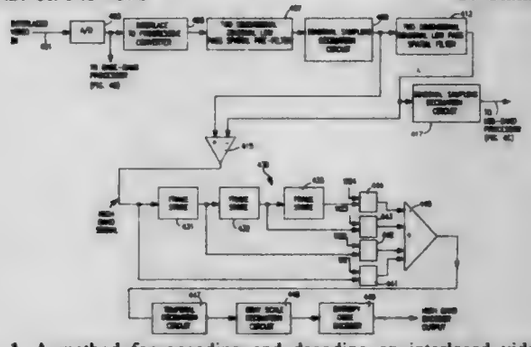
Q_STEP_SIZE(LH)<Q_STEP_SIZE(HL)<Q_STEP_SIZE(HH).

5,798,795

METHOD AND APPARATUS FOR ENCODING AND DECODING VIDEO SIGNALS

William E. Glenn; Robert L. Dhein, both of Ft. Lauderdale; Fouad Guediri, Boca Raton; Pedro Monteiro, Boca Raton, and Adalberto Moreno, Boca Raton, all of Fla., assignors to Florida Atlantic University, Boca Raton, Fla.

Filed Mar. 1, 1996, Ser. No. 609,605
Int. Cl.[6] H04N *7/30;7/32*
U.S. Cl. 348—398 **10 Claims**



1. A method for encoding and decoding an interlaced video signal, comprising the steps of:

encoding said interlaced video signal, said encoding including: separating said interlaced video signal into frequency bands to obtain a high frequency band and at least one low frequency band; spatially and temporally decimating said at least one low frequency band, said spatial decimation comprising diagonal decimation and said temporal decimation comprising omitting every other field of said at least one low frequency band; scan converting said high frequency band to obtain a progressively scanned signal, and spatially and temporally decimating said high frequency band progressively scanned signal; and

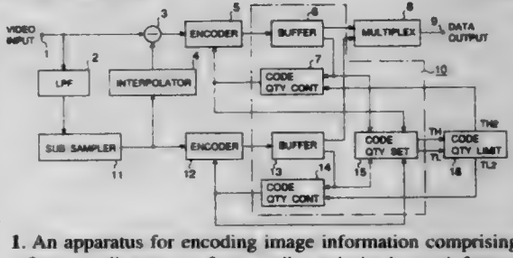
decoding the encoded signals, said decoding including: temporally interpolating said at least one low frequency band; spatially post-filtering said high frequency band; and combining said bands.

5,798,796

CODING PRIORITY AND NON-PRIORITY IMAGE DATA TO BE LESS THAN A PREDETERMINED QUANTITY

Kenji Sugiyama, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation of Ser. No. 249,735, May 26, 1994, abandoned.
This application Nov. 13, 1996, Ser. No. 747,772
Claims priority, application Japan, May 26, 1993, 5-145425
Int. Cl.[6] H04N *7/24*
U.S. Cl. 348—405 **6 Claims**



1. An apparatus for encoding image information comprising:

a first encoding means for encoding priority image information, the image being reproducible only with the priority image information,

second encoding means for encoding non-priority image information except the priority image information;

first control means for controlling a quantity of generated codes so that a sum of quantities of the encoded priority image information and the non-priority image information is smaller than a predetermined quantity; and

second control means for controlling the quantity of generated codes so that the quantity of the encoded priority image information is variable and smaller than another predetermined quantity within a predetermined ratio to the sum of quantities.

5,798,797

Patent Not Issued For This Number

5,798,798

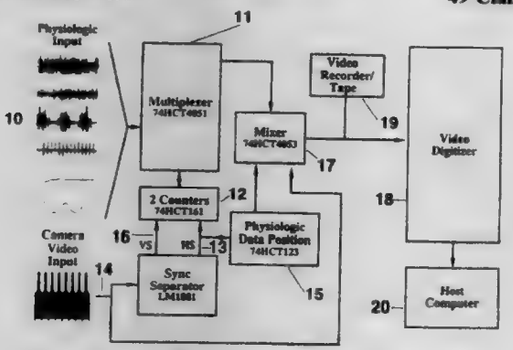
SIMULTANEOUSLY ACQUIRING VIDEO IMAGES AND ANALOG SIGNALS

David M. Rector, and Ronald M. Harper, both of Los Angeles, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 234,300, Apr. 28, 1994, Pat. No. 5,517,251. This application Feb. 26, 1996, Ser. No. 607,236

Int. Cl.[6] H04N *7/087*

U.S. Cl. 348—476 **49 Claims**



1. A system for processing multiple signals comprising:

means for receiving a video signal representative of a camera image, the video signal being represented as multiple horizontal lines in a video frame,

means for receiving an analog signal, the analog signal being representative of an analog input,

means for digitally double buffering the analog signal, the means for buffering including means to effect repetition of the analog signal within a single video image frame, and

means for outputting the mixed analog and video signals.

5,798,799

CONTROLLER FOR PROVIDING TIMING SIGNALS FOR VIDEO DATA

Norman James Jordan, Anstead, and John Michael Archbold, Hampton, both of Australia, assignors to Australian Research and Design Corporation Pty Ltd, Milton, Australia

PCT No. PCT/AU95/00448, § 371 Date Feb. 25, 1997, § 102(e) Date Feb. 25, 1997, PCT Pub. No. WO96/03836, PCT Pub. Date Feb. 8, 1996

PCT Filed Jul. 25, 1995, Ser. No. 646,377

Claims priority, application Australia, Jul. 25, 1994, PM7004

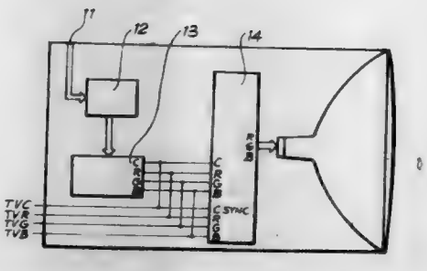
Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—552 **30 Claims**

1. A controller for synchronising video signals for display on a TV screen comprising:

a horizontal input storage means for receiving a horizontal synchronising signal of a first sequence for computer generated image data;

a vertical input storage means for receiving a vertical synchronising signal of a second sequence for computer generated image data;



a first processor means for generating a horizontal synchronizing signals of a third sequence and vertical synchronising signals of a fourth sequence;

and a second processing means for combining the horizontal synchronising signal of the first sequence and the horizontal synchronising signal of the third sequence to generate a horizontal synchronising signal of a fifth sequence and for combining the vertical synchronising signal of the second sequence with the vertical synchronizing signal of the fourth sequence to generate a vertical synchronising signal of a sixth sequence;

wherein the horizontal synchronising signal of the fifth sequence and the vertical synchronising signal of the sixth sequence generated by the second processor means are arranged to provide timing sequences for image data generated by a computer whereby the image data can be displayed on a TV screen.

5,798,800

APPARATUS FOR CONTROLLING A SWITCHER AND A SPECIAL EFFECTS DEVICE

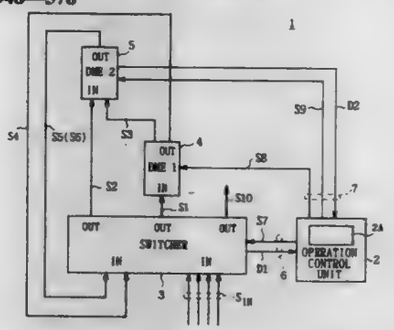
Ryuji Nonaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 402,527, Mar. 10, 1995, abandoned. This application Apr. 1, 1997, Ser. No. 834,690

Claims priority, application Japan, Mar. 19, 1994, 6-074036

Int. Cl.[6] H04N *9/74*

U.S. Cl. 348—578 **6 Claims**



1. A video signal editing apparatus comprising:

switcher means for receiving a plurality of input video signals and for outputting at least one of the received video signals in accordance with a first control signal;

special effects means for receiving an output video signal from said switcher means and for performing special effects processing on said output video signal in accordance with a second control signal; and

control means having a plurality of keys representing a plurality of functions such that a desired one or ones of said functions are selected by an operator by activating the corresponding key or keys in which one of said keys represents a snapshot function for said switcher means and said special effects means such that an operator may initiate said snapshot function for said switcher means and said special effects means by activating the snapshot function key, display means for displaying information corresponding to the functions represented by said keys and to the function or functions selected by said operator, and means for generating said first and second control signals based on the selected function or

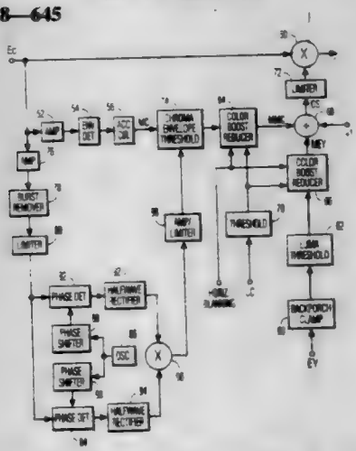
functions and for supplying said first control signal to said switcher means and said second control signal to said special effects means so as to control the same, in which the generating and supplying means includes means for storing information and for retrieving the stored information so as to form control signals and automatically supplying the control signals to said switcher means and said special effects means such that, during said snapshot function, information pertaining to a respective setting of said switcher means and said special effects means is stored and subsequently retrieved so as to form first and second snapshot control signals which are automatically supplied to said switcher means and said special effects means so as to initiate a subsequent setting of said switcher means and said special effects means, respectively.

5,798,801

ARRANGEMENT FOR PROVIDING VIVID COLOR IN A TELEVISION SIGNAL

Kenneth R. Skinner, Ossining, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1996, Ser. No. 646,665
Int. Cl.[6] H04N *9/64*
U.S. Cl. 348—645 **20 Claims**



1. An arrangement for increasing saturation of colors in a color television signal while maintaining fleshtone colors at a same level, said arrangement comprising:

means for detecting color signals in a color television signal;

means for discerning fleshtone color signals in said detected color signals;

means for measuring signal levels of said detected color signals other than said discerned fleshtone color signals; and

means for increasing the signal levels of said detected color signals other than said discerned fleshtone color signals in dependence on at least one of said measured signal levels.

5,798,802

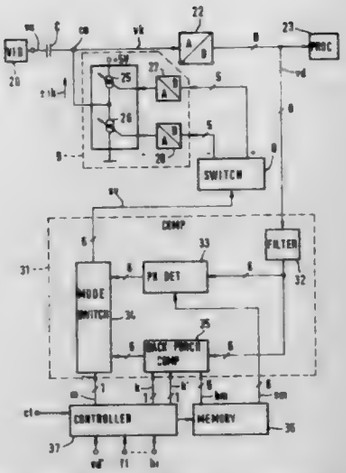
VIDEO SIGNAL CLAMPING CIRCUIT

Herbert Elmis, Denzlingen; Heinrich Koehne, Voerstetten; Herbert Alrutz, Freiburg, and Hermann Zibold, Kenzingen, all of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Germany

Filed Jan. 30, 1997, Ser. No. 791,362
Claims priority, application Germany, Jan. 31, 1996, 196 03 316.0; European Pat. Off., Oct. 22, 1996, 96116936
Int. Cl.[6] H04N *5/18*
U.S. Cl. 348—689 **20 Claims**

1. A video signal clamping circuit for adapting the DC level of a composite video signal to the processing range of a digital video signal processing device, said video signal clamping circuit comprising:

an isolating capacitor in the video signal path;



a controlled current source which is connected to a capacitor terminal to be clamped and supplies the capacitor terminal with a clamping current which is adjustable in magnitude and sign; and

a clamping level comparator circuit for adjusting the clamping current in accordance with the DC level of the composite video signal;

wherein, in a first mode, which corresponds to one of a non-standard composite video signal and a composite video signal that is not yet in a steady clamping state, the clamping current is dependent on a setpoint/actual-value comparison between a first reference value and a first comparison value, and in a second mode, which corresponds to one of a standard composite video signal and a composite video signal that is in a steady clamping state, the clamping current is dependent on a setpoint/actual-value comparison between a second reference value and a second comparison value; and

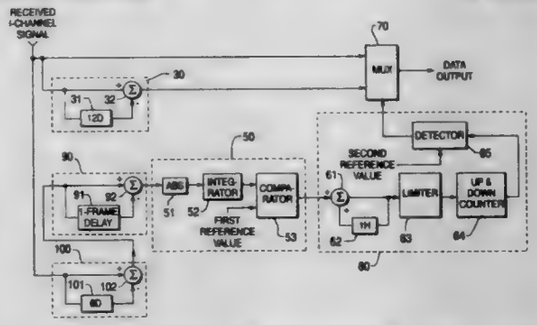
a controller for determining the respective mode from the composite video signal.

5,798,803

NTSC INTERFERENCE DETECTORS USING COMB FILTERS THAT SUPPRESS HDTV PILOT CARRIER FOR NTSC EXTRACTION

Allen LeRoy Limberg, Vienna, Va., assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 2, 1996, Ser. No. 724,800
Int. Cl.[6] H04N *5/38*
U.S. Cl. 348—726 **18 Claims**



1. An NTSC interference detector incorporated within a digital high-definition television receiver including a demodulator for extracting a received I-channel baseband signal susceptible of being accompanied at times by respective co-channel interfering NTSC signal components, said NTSC interference detector comprising:

an NTSC extracting filter for supplying an NTSC extracting filter response that separates accompanying co-channel inter-

fering NTSC signal component from said received I-channel baseband signal including a direct bias component thereof, said NTSC extracting filter including

a comb filter, said comb filter including

a delay circuit for supplying in response to said received I-channel baseband signal differentially delayed signals with a prescribed amount of differential delay, said comb filter further including

a subtractor for differentially combining said differentially delayed signals to generate the response of said comb filter;

a comparing portion for periodically integrating said NTSC extracting filter response and deciding whether said co-channel interfering NTSC signal component separated from said received I-channel baseband signal is above a first reference value or not; and

a control signal generator for accumulating the signal supplied from said comparing portion for each integration period, deciding the presence or absence of said co-channel interfering NTSC signal components according to a second reference value, and supplying a control signal according to the presence or absence of said co-channel interfering NTSC signal component in said received I-channel baseband signal.

5,798,804

IMAGE DECODER FOR DECODING VARIABLE-LENGTH IMAGE DATA USING FRAME SYNCHRONIZING SIGNAL AND METHOD OF DECODING THE IMAGE DATA

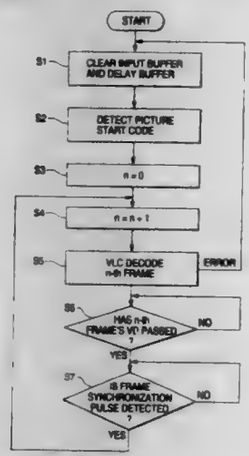
Hiromi Okitsu, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Feb. 5, 1996, Ser. No. 596,503

Claims priority, application Japan, Feb. 9, 1995, HEI 7-044928

Int. Cl.[6] H04N *7/64;7/26*

U.S. Cl. 348—845.3 **15 Claims**



1. An image decoder comprising:

a decoding device for decoding a variable-length frame input bit stream including image data, said decoding device determining timing of display of image data decoded in accordance with a predetermined frame synchronizing pulse signal after the passage of a delay time set for said input bit stream for each frame;

an input buffer component disposed in input side of said decoding device for adjusting the timing of supplying said input bit stream to said decoding device; and

a delay buffer component disposed between said decoding device and said input buffer component for storing an input bit stream which corresponds in time to at least one frame.

5,798,805

PROJECTION TYPE DISPLAY APPARATUS

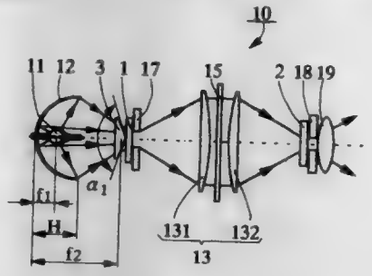
Yoshiharu Ooi, and Tsuneo Wakabayashi, both of Yokohama, Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

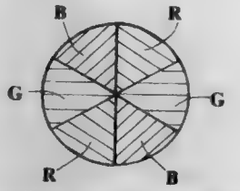
Filed Dec. 20, 1995, Ser. No. 580,087

Claims priority, application Japan, Jan. 30, 1995, 7-013085

Int. Cl.[6] G02F *1/1335;1/137*

U.S. Cl. 349—10 **21 Claims**





1. A projection type display apparatus comprising a light source, a display element, a mirror, and a projection means, characterized in that:

an image forming element is disposed in a light path at a light incident side of the display element and/or a light path at a light emission side of the display element;

a first filter having a spectroscopic function is disposed in the light path at the light incident side of the display element;

a second filter having a spectroscopic function is disposed in the light path at the light emission side of the display element;

the first and second filters are arranged in a conjugated positional relation with respect to the image forming element disposed in a light path between the first and second filters;

the light source is located in the vicinity of a first focal point of the mirror and the first filter is located in the vicinity of a second focal point of the mirror;

a plurality of regions S_x (X=1 to n, n≧2) are formed in the light passing plane of the first filter so that at least one of the regions allows only light having a specified wavelength range to pass through;

the image forming element is a condenser lens by which diffusion light which has passed through the first filter is converged to the display element, and a conjugated image of the first filter is formed at or around the position of a pupil of the projection means; and

a plurality of regions S_y (Y=1 to n, n≧2) are formed in a light passing plane of the second filter so that at least one of the regions allows only light having a specified wavelength range which has passed through the display element, to pass through.

5,798,806

SPATIAL LIGHT MODULATOR AND PROJECTOR

Hiroshi Tsutsui, Yawata; Kazunori Komori, Sanda; Kazuhiro Nishiyama, Hirakata; Yasunori Kuratomi, Suita; Akio Takimoto; Koji Akiyama, both of Neyagawa, and Shinichi Mizuguchi, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

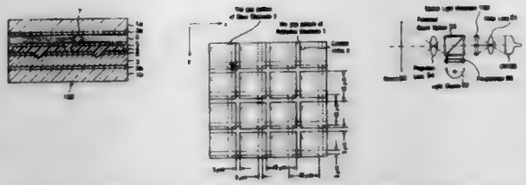
Filed Apr. 10, 1997, Ser. No. 843,611

Claims priority, application Japan, Apr. 11, 1996, 8-089223

Int. Cl.[6] G02F *1/135;1/1333*

U.S. Cl. 349—29 **13 Claims**

1. A spatial light modulator (SLM) comprising:



a readout side glass substrate comprising a readout side transparent electrode,

a light modulation layer for modulating incident light according to an applied voltage,

a reflective electrode comprising plural electrode elements for applying a voltage to the light modulation layer, and reflecting the light passed by the readout side glass substrate, readout side transparent electrode, and light modulation layer,

a light blocking layer having plural holes,

a drive electrode comprising plural electrode elements electrically connected through the holes in the light blocking layer to the corresponding electrode element of the reflective electrode, and

voltage applying means for applying a voltage corresponding to a brightness of each pixel in an input image to each of the electrode element of the drive electrode.

5,798,307

IMAGE MODULATION PROCESS AND DEVICE FOR GENERATING OPTICAL EFFECTS

Horst Prehn, Glockenstrasse 4, D-35305 Gruenberg 1, Germany

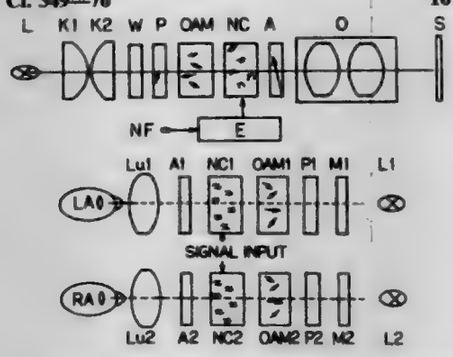
PCT No. PCT/EP94/00245, § 371 Date Oct. 19, 1995, § 102(e) Date Oct. 19, 1995, PCT Pub. No. WO94/18598, PCT Pub. Date Aug. 18, 1994

PCT Filed Jan. 28, 1994, Ser. No. 507,335

Claims priority, application Germany, Feb. 3, 1993, 43 02 945.0

Int. Cl.[6] G02F *1/1347;1/133*

U.S. Cl. 349—76 **16 Claims**



1. A method of producing modulating images comprising the steps of:

producing an optical beam from a light source;

polarizing said optical beam to produce a polarized optical beam;

applying said polarized optical beam to an optically active matrix, said optically active matrix being a structural order of optical modulating elements which are configured to optically rotationally disperse said polarized light beam to produce a basic image beam in which the rotational displacement of the polarized light forming said basic image beam is a function of the wavelength of the light;

applying said basic image beam to an optically anisotropic element that is birefringent so as to variably optically rotate said basic image beam, wherein the degree of optical rotation performed by said optically anisotropic element is a function of an external stimulus applied thereto so that said optically anisotropic element produces a modulated beam as a function of the external stimulus; and

applying said modulated beam to a polarization analyzer to produce an output beam that contains a modulating image.

5,798,808

LIQUID CRYSTAL DISPLAY DEVICE HAVING A CHOLESTERIC ORDER WITH A PITCH OF HELIX LESS THAN 0.25 MICRONS AND A RETARDATION FOIL

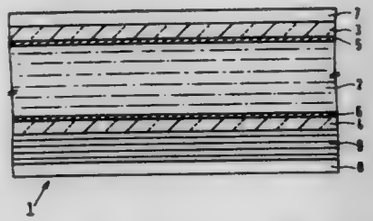
Johannes A. M. M. Van Haaren; Dirk J. Broer, and Frans Leenhouts, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 516,805, Aug. 18, 1995, abandoned. This application Jan. 29, 1997, Ser. No. 791,087

Claims priority, application European Pat. Off., Aug. 23, 1994, 94202401

Int. Cl.[6] G02F *1/13*

U.S. Cl. 349—96 **15 Claims**



1. A liquid crystal display device comprising a liquid crystal display cell with a liquid crystal material which is present between two substrates provided with electrodes, and polarizers and at least an optically anisotropic layer of a polymer material between the polarizers, said material having a cholesteric ordering with a helix pattern, characterized in that the pitch of the helix is smaller than 0.25 μm.

5,798,809

LIQUID CRYSTAL DISPLAY PANEL

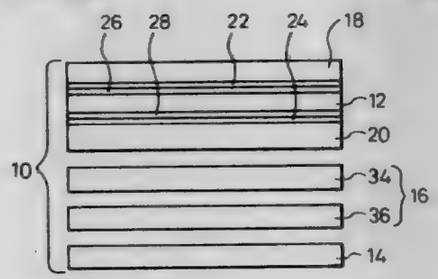
Kimiaki Nakamura, and Yoshio Koike, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 30, 1996, Ser. No. 774,755

Claims priority, application Japan, Aug. 16, 1996, 8-216384

Int. Cl.[6] G02F *1/1335;* C09K *19/60*

U.S. Cl. 349—119 **19 Claims**



1. A liquid crystal display panel comprising:

a pair of spaced apart substrates;

a liquid crystal layer arranged in the substrates and having dichroic dye contained therein;

a reflecting plate; and

a polarized light rotating member having a plurality of superimposed linear phase plates, said polarized light rotating member being arranged between the liquid crystal layer and the reflecting plate for rotating a vibrating plane of an incident polarized light to reduce a dispersion of states of polarization of light regarding wavelength.

5,798,810

METHOD FOR TREATING AN ALIGNING FILM FOR A LIQUID CRYSTAL DISPLAY ELEMENT AND A METHOD FOR PREPARING A LIQUID CRYSTAL DISPLAY ELEMENT

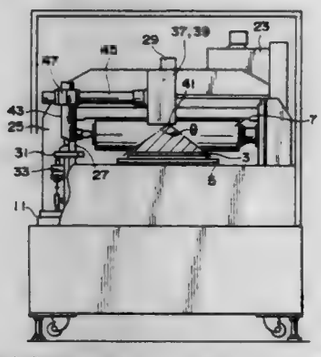
Satoshi Tanioka; Shizuo Murata, both of Ichiharashi; Makoto Kono, Chinoshi, and Masayuki Hirano, Hamamatsushi, all of Japan, assignors to Chisso Corporation, Osaka; Iinuma Gauge Mfg. Co., Ltd., Naganoken, and Hamamatsu Photonics K.K., Shizuokaken, all of Japan

Continuation of Ser. No. 429,102, Apr. 26, 1995, Pat. No. 5,625,475. This application Oct. 28, 1996, Ser. No. 738,492

Claims priority, application Japan, Apr. 28, 1994, 6-91783; Aug. 4, 1994, 6-183579; Aug. 5, 1994, 6-204631

Int. Cl.[6] G02F *1/1337*

U.S. Cl. 349—123 **13 Claims**



1. A method for preparing a liquid crystal display element comprising:

arranging a transparent electrode on each of a pair of transparent substrates;

forming an aligning film consisting of an organic high molecular weight compound on said transparent electrodes;

rubbing said aligning film;

assembling said substrates to face each other with a spacer disposed therebetween;

placing a liquid crystal material between said substrates; and

irradiating said aligning film with soft X-rays passing through a gas.

5,798,811

PICTURE DISPLAY DEVICE WITH PARTIALLY CLEAR CONTACT AREAS

Hendrik C. M. Hermens; Lucas A. G. Jacobs; Henrikus C. M. P. Driessen; Cornelis H. T. Van Der Horst, all of Heerlen, and Hubertus E. A. Schäfer, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

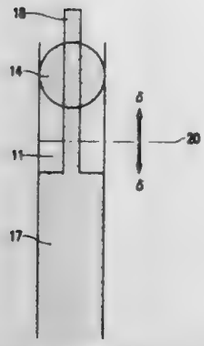
Filed Dec. 21, 1994, Ser. No. 361,088

Claims priority, application European Pat. Off., Dec. 21, 1993, 93203716

Int. Cl.[6] G02F *1/1345*

U.S. Cl. 349—152 **9 Claims**

1. A picture display device comprising two supporting plates which enclose an electro-optical layer, a first supporting plate being provided with a plurality of at least substantially transparent picture electrodes and the facing supporting plate comprising at least one counterelectrode, the first supporting plate also being provided with a semiconductor driving device and a first set of at least substantially transparent conductor tracks leading from the picture electrodes to the semiconductor driving device, each track of the first set of tracks terminating in a contact face which is connected to the semiconductor driving device, the first supporting plate also being provided with a plurality of external connections and a second set of transparent conductor tracks leading from these connections to the semiconductor driving device, each track of the second set of tracks terminating in a contact face which is connected to the semiconductor driving device, characterized in that a metallic top coating is provided on at least a part of the second set of conductor tracks, which coating is provided on only a portion of the contact face associated with the track, leaving the remaining portion of the contact face free of the coating.



5,798,812

ACTIVE MATRIX SUBSTRATE AND DISPLAY DEVICE USING THE SAME WITH EXTENDING PROTRUSIONS BETWEEN GATE AND SOURCE LINE TERMINALS

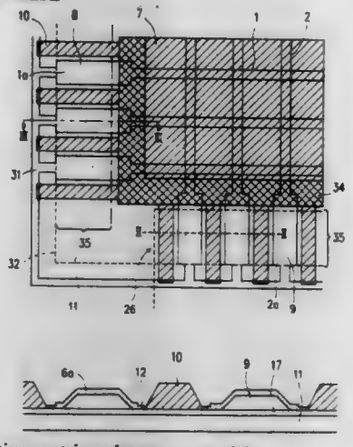
Hirohiko Nishiki, Tenri; Takayuki Shimada, Yamatokoriyama, and Mikio Katayama, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 26, 1996, Ser. No. 723,956

Claims priority, application Japan, Sep. 28, 1995, 7-251385

Int. Cl.[6] G02F *1/1345; 1/136*

U.S. Cl. 349—152 **14 Claims**



14. An active matrix substrate comprising:

a substrate including an inorganic insulating film formed thereon;

a plurality of switching elements and a plurality of pixel electrodes formed in a matrix on the inorganic insulating film;

scanning lines for supplying a scanning signal and for controlling the plurality of switching elements;

signal lines for supplying a data signal to the plurality of switching elements formed so as to cross each other;

outwardly extending terminals connected to either each scanning line or each signal line and having elongated side edges and widths greater than the widths of the scanning lines and the signal lines, the terminals being connectable to external terminals; and

a composite interlayer structure comprising an organic insulating film covering the scanning lines, the signal lines and the switching elements and an inner portion of all the terminals, and additionally having elongated outwardly extending protrusions located adjacent each of the side edges of the terminals.

5,798,813

LIQUID CRYSTAL CELL AND METHOD FOR PRODUCING THE SAME IN WHICH A LIQUID CRYSTAL INLET PORT OPENING WIDTH IS LARGER THAN AN EFFECTIVE DISPLAY AREA WIDTH

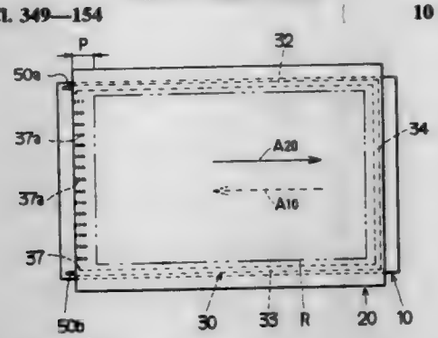
Nobuhiko Ohashi, Kariya; Takeshi Kohama, Okazaki, and Tetsuya Sano, Obu, all of Japan, assignors to Ipics Corporation, Japan

Filed Sep. 20, 1996, Ser. No. 716,993

Claims priority, application Japan, Sep. 21, 1995, 7-243401; Jul. 2, 1996, 8-172554

Int. Cl.[6] G02F 1/1339

U.S. Cl. 349—154 10 Claims



1. A liquid crystal cell comprising:

a first electrode substrate;

a second electrode substrate overlapped on said first electrode substrate;

liquid crystal filled into a space between said first and second electrode substrates;

a seal member formed between said first and second electrode substrates with a liquid crystal inlet port for defining said space, and

a dam seal member disposed in said liquid crystal inlet port; wherein,

an opening width of said liquid crystal inlet port is larger than a width of an effective display area of said liquid crystal cell so that the liquid crystal is filled with a uniform flow into said space between said first and second electrode substrates;

a gap between said first and second electrode substrates in an area between said liquid crystal inlet port and said effective display area is larger than a gap between said first and second electrode substrates in said effective display area; and

said dam seal member includes plural dam seals formed dispersively in said liquid crystal inlet port so that said liquid crystal is filled into said space through said liquid crystal inlet port without leaving any filling marks thereof.

5,798,814

METHOD OF DRIVING A FERROELECTRIC LIQUID CRYSTAL OPTICAL DEVICE

Toshimitsu Konuma, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

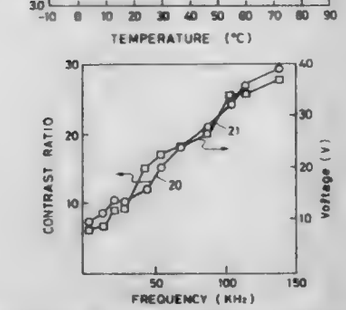
Continuation of Ser. No. 308,969, Sep. 20, 1994, abandoned, which is a continuation of Ser. No. 87,551, Jul. 8, 1993, abandoned, which is a continuation of Ser. No. 749,677, Aug. 26, 1991, abandoned. This application Aug. 14, 1996, Ser. No. 698,221

Claims priority, application Japan, Aug. 28, 1990, 2-226103; Aug. 28, 1990, 2-226104

Int. Cl.[6] G02F 1/141

U.S. Cl. 349—172 3 Claims

1. A method of driving a liquid crystal device having at least a smectic liquid crystal layer provided between a pair of substrates, said method comprising the step of applying to said smectic liquid crystal layer an alternating electric field, wherein the frequency of said alternating electric field is increased in response to an increase in temperature of said liquid crystal layer in order that said smectic liquid crystal layer has a negative dielectric anisotropy with an absolute value not lower than 0.2 to orient said smectic liquid crystal layer perpendicularly to said substrates in order to prevent orientation defects from being generated in said smectic liquid crystal layer wherein said frequency is not less than 30 KHz , and the coefficient of viscosity of the liquid crystal is between 1000–4950 cps.



5,798,815

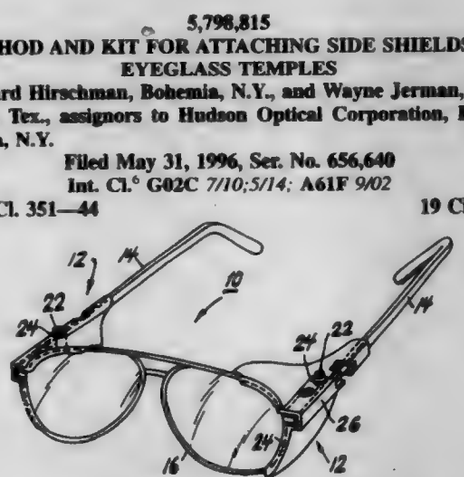
METHOD AND KIT FOR ATTACHING SIDE SHIELDS TO EYEGLASS TEMPLES

Richard Hirschman, Bohemia, N.Y., and Wayne Jerman, Dallas, Tex., assignors to Hudson Optical Corporation, Bohemia, N.Y.

Filed May 31, 1996, Ser. No. 656,640

Int. Cl.[6] G02C 7/10;5/14; A61F 9/02

U.S. Cl. 351—44 19 Claims



1. A method of attaching a side shield to a temple of an eyeglass frame of the type which has a member with a threaded bore formed therein coupled to said temple, said method comprising the steps of:

(a) placing said temple in a channel forming part of said side shield; and thereafter

(b) attaching said temple to said channel with a screw which is inserted into said threaded bore.

5,798,816

MULTISPHERIC CONTACT LENS

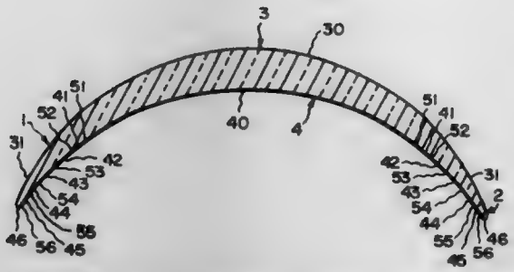
Richard R. Martin, Westford, and Michael Vayntraub, North Andover, both of Mass., assignors to Polymer Technology Corporation, Wilmington, Mass.

Continuation of Ser. No. 335,627, Nov. 8, 1994, abandoned. This application Jan. 27, 1997, Ser. No. 789,475

Int. Cl.[6] G02C 7/04

U.S. Cl. 351—160 R 5 Claims

1. A contact lens comprising a posterior surface, an anterior surface and an edge, wherein:



the posterior surface comprises: a central, concave spherical optical zone having a diameter of about 6.0 to 10.0 mm; a first concave spherical curve peripheral to said central concave optical zone; a first fillet convex spherical curve connecting the central zone and the first peripheral curve; a second concave spherical curve peripheral to said first peripheral curve; a second fillet spherical convex curve connecting the first and second peripheral curves; a third concave spherical curve peripheral to said second peripheral curve; and a third fillet spherical convex curve connecting the second and third peripheral curves, wherein each junction of a fillet convex curve with a concave spherical curve is tangential; and

the anterior surface comprises one or more convex spherical curves.

5,798,817

BIFOCAL CONTACT LENSES

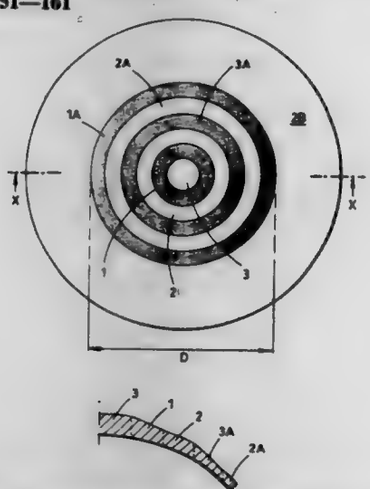
John Trevor De Carle, Tilford, United Kingdom, assignor to Aspect Vision Care Ltd., Southampton, United Kingdom

Filed Nov. 28, 1995, Ser. No. 563,454

Claims priority, application United Kingdom, Nov. 30, 1994, 9424174

Int. Cl.[6] G02C 7/04

U.S. Cl. 351—161 **4 Claims**



1. A bifocal contact lens having a front surface and a rear surface and which comprises a plurality of substantially concentric viewing zones of alternate distance vision and near vision powers, wherein the distance vision zones each having a substantially spherical lenticular surface and the near vision zones each have a lenticular surface which is at least partially aspherical, and wherein the lenticular surfaces of the near vision zones have a continuously changing curvature in the region of junctions with an adjacent distance vision zone such that said junctions exhibit a smooth transition between near vision and distance vision zones.

5,798,818

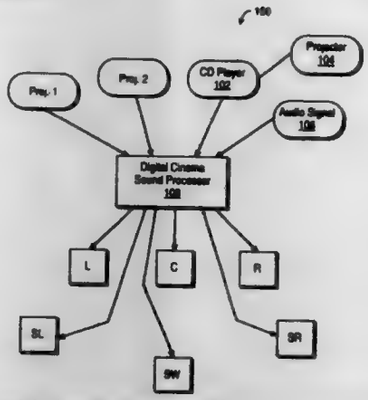
CONFIGURABLE CINEMA SOUND SYSTEM

Ara J. Derderian, Alta Loma; Daniel J. Minear, Westminster; Paul M. Embree, Irvine, and James S. Mercs, Huntington Beach, all of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Pictures Entertainment, Culver City, Calif.

Continuation of Ser. No. 544,353, Oct. 17, 1995, abandoned. This application Sep. 30, 1997, Ser. No. 940,747

Int. Cl.[6] G03B 31/04

U.S. Cl. 352—31 **26 Claims**



1. A method for reproducing sound from an audiovisual production having a sound portion, wherein the audiovisual production is played back using a playback device located in a theater, wherein the method utilizes a digital cinema sound system including a digital processor coupled to a memory, the playback device and a plurality of speakers, the method comprising the following steps:

creating a program definition including at least one parameter specifying a sound distribution among the plurality of speakers during the playback of the sound portion of the audiovisual production, wherein the specified sound distribution creates a characteristic sound quality of the sound portion of the audiovisual production;

storing the program definition in the memory of the digital cinema sound system; and

using the processor to play back the sound portion of the audiovisual production according to the sound distribution specified by at least one parameter of the program definition, whereby the played back sound has the characteristic sound quality.

5,798,819

PROJECTION-DISPLAY APPARATUS AND METHOD PROVIDING IMPROVED BRIGHTNESS OF PROJECTED COLOR IMAGE

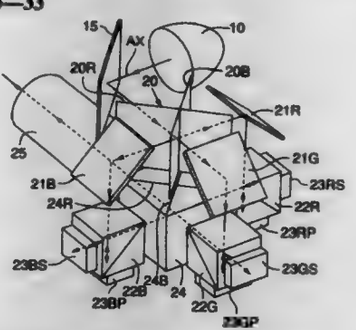
Tetsuo Hattori, Yokohama, and Yoshiro Oikawa, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 11, 1996, Ser. No. 763,331

Claims priority, application Japan, Dec. 12, 1995, 7-346367

Int. Cl.[6] G03B 21/14

U.S. Cl. 353—33 **16 Claims**



15. A projection-display apparatus, comprising:

(a) a light source operable to produce an illumination light flux comprising plural primary colors;

(b) a color separator operable to receive the illumination light flux and separate the illumination light flux into separate primary-color illumination light fluxes;

(c) first and second reflective spatial light modulators for each primary-color illumination light flux separated by the color separator, the first reflective spatial light modulator being operable to receive the respective primary-color illumination light flux and produce therefrom a first reflected polarized light flux modulated according to a desired image to be projected, and the second reflective spatial light modulator being operable to receive the respective primary-color illumination light flux and produce therefrom a second reflected polarized light flux modulated according to the image to be projected;

(d) a polarizing beam splitter for each primary color, each polarizing beam splitter being situated to (i) separate s-polarized light from p-polarized light in the primary-color illumination light flux from the color separator, (ii) direct the s-polarized light to the respective first spatial light modulator and direct the p-polarized light to the respective second spatial light modulator, and (iii) integrate the first and second reflected polarized light fluxes from the respective first and second spatial light modulators;

(e) a color integrator comprising a cross-dichroic prism operable to integrate the integrated modulated light fluxes from the polarizing beam splitters and produce a light output; and

(f) a projection optical system operable to project the light output and produce the color image on a surface for viewing.

5,798,820

METHOD FOR PRODUCING COPIES FROM PHOTOGRAPHIC ORIGINALS

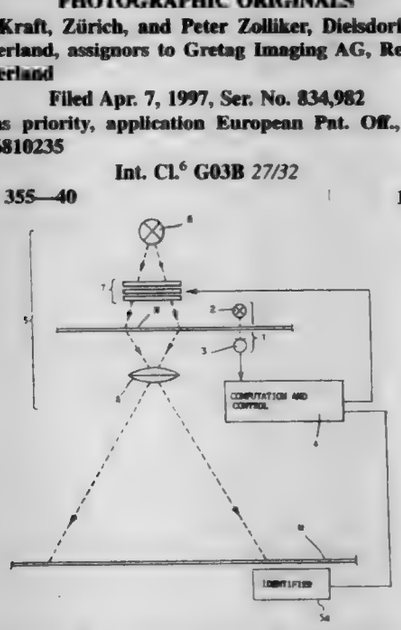
Walter Kraft, Zürich, and Peter Zolliker, Dielsdorf, both of Switzerland, assignors to Gretag Imaging AG, Regensdorf, Switzerland

Filed Apr. 7, 1997, Ser. No. 834,982

Claims priority, application European Pat. Off., Apr. 16, 1996, 96810235

Int. Cl.[6] G03B *27/32*

U.S. Cl. 355—40 **15 Claims**



1. A method for producing copies of photographic originals comprising the steps of:

scanning an original regionally to obtain measurement data;

determining in a test step whether the original is worth copying using specified criteria defined by variable parameters, the scanned original being assigned to at least one of at least three categories of originals, said at least three categories including a first category of originals that are unequivocally worth copying, a second category of originals that are unequivocally not worth copying, and a third category of originals that are neither unequivocally worth copying nor unequivocally not worth copying;

copying any originals assigned to the first category and originals assigned to the third category onto photographic copy material; and

identifying copies of those originals assigned to the third category as such.

5,798,821

COPYING OF FILM UNDER DIFFERENT CONDITIONS

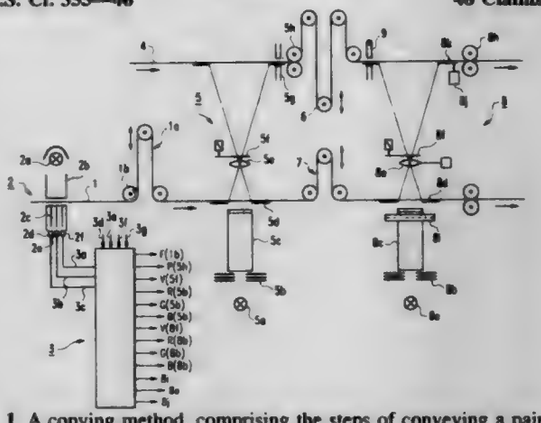
Wolfgang Zahn, Müchen, and Werner von Stein, Hamburg, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Jun. 3, 1997, Ser. No. 870,125

Claims priority, application Germany, Jul. 23, 1996, 196 29 721.4

Int. Cl.[6] G03B *27/52*

U.S. Cl. 355—46 **48 Claims**



1. A copying method, comprising the steps of conveying a pair of masters along a path extending through a pair of copying stations, one of said stations including a first source of radiant energy directed at said path, and the other of said stations including a second source of radiant energy directed at said path; assigning one of said masters to said one station for copying and the other of said masters to said other station for copying based on a difference in at least one characteristic of said masters; copying said one master in said one station using said first source, said one master being passed through said other station without being copied; and copying said other master in said other station using said second source, said other master being passed through said one station without being copied.

5,798,822

EXPOSURE APPARATUS

Seiji Miyazaki; Hiroshi Shirasu, both of Yokohama; Kazuaki Saiki, Tokyo, and Tsuyoshi Narabe, Ohmiya, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 544,649, Oct. 18, 1995, abandoned.

This application Oct. 15, 1997, Ser. No. 950,964

Claims priority, application Japan, Oct. 21, 1994, 6-282872

Int. Cl.[6] G03G *27/42*; **G01B** *11/00*

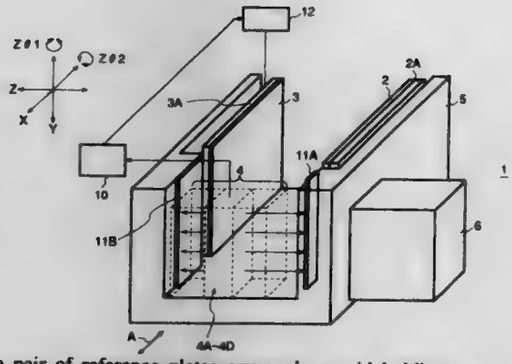
U.S. Cl. 355—53 **19 Claims**

1. An exposure apparatus comprising:

a projecting optical system;

a holding stage which holds a mask and a photosensitive substrate such that said mask and said photosensitive substrate are opposed to each other with said projecting optical system between, an image of said mask being projected onto said photosensitive substrate by said projecting optical system; a position detecting device which detects a positional relationship between said mask and said photosensitive substrate in an optical axis direction of said projecting optical system;

a driving device which drives said mask and/or said photosensitive substrate in the optical axis direction and relatively positions said mask and said photosensitive substrate to meet a predetermined positional relationship;



a pair of reference plates arranged on said holding stage and opposed each other along the optical axis direction; and

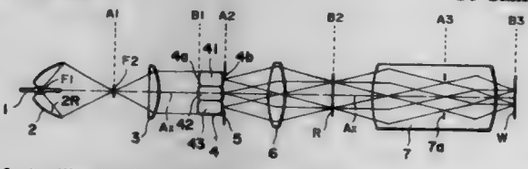
a control device which causes said position detecting device to detect a positional relationship of said reference plates, in the optical axis direction, and which corrects said position detecting device based on the detected positional relationship of said reference plates.

5,798,823

ILLUMINATION OPTICAL APPARATUS AND PROJECTION EXPOSURE APPARATUS USING IT

Yuji Kudo, Kawasaki, Japan, assignor to Nikon Corporation, Japan

Filed Nov. 15, 1995, Ser. No. 559,398
Claims priority, application Japan, Nov. 21, 1994, 6-286217
Int. Cl.[6] G03B *27/42;27/54*
U.S. Cl. 355—67 **30 Claims**



1. An illumination optical apparatus for uniformly illuminating an illuminated surface, comprising:

a light source;

a collector mirror having a reflecting surface of a rotationally symmetric shape, said collector mirror reflecting and collecting light from said light source by the reflecting surface to form a light source image;

a collector optical system for collecting light from the light source image formed by said collector mirror;

an optical integrator for splitting the light from said collector optical system to form a plurality of secondary light sources, an entrance surface of said optical integrator being located at a position defocused from a position where an image of the reflecting surface of said collector mirror is formed by said collector optical system, to a side of said light source; and

a condenser optical system for condensing light from the secondary light sources formed by said optical integrator to illuminate said illuminated surface in a superimposed manner.

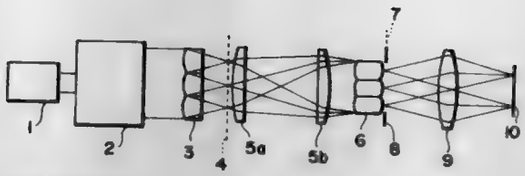
5,798,824

ILLUMINANCE DISTRIBUTION EXPOSURE APPARATUS CORRECTING

Yuji Kudo, Kawasaki, Japan, assignor to Nikon Corporation, Japan

Filed Dec. 21, 1995, Ser. No. 576,667
Claims priority, application Japan, Dec. 26, 1994, 6-337344
Int. Cl.[6] G03B *27/42;27/54*
U.S. Cl. 355—67 **40 Claims**

1. An illumination optical apparatus for evenly illuminating an illuminated surface, comprising:



a light source;

a multi-light-source forming optical system for forming a plurality of light source images, based on a light beam from said light source;

a deflecting device disposed between said light source and said multi-light-source forming optical system, said deflecting device, in order to correct the illuminance distribution on said illuminated surface, changing density of light beam on said illuminated surface to adjust an angle of the light beam passing through said multi-light-source forming optical system, keeping a shape of plural-light-source images formed by said multi-light-source forming optical system to be substantially constant; and

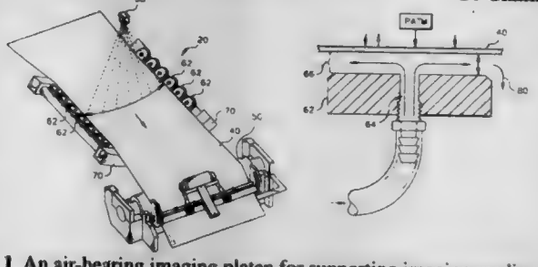
a condenser optical system for condensing a light beam from said multi-light-source forming optical system to illuminate a surface of an object in a superimposed manner.

5,798,825

AIR BEARING IMAGING PLATEN

Douglass L. Blanding, Rochester, and John J. Meyers, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 31, 1997, Ser. No. 792,561
Int. Cl.[6] G03B *27/60;* **B41J** *2/47*
U.S. Cl. 355—73 **14 Claims**



1. An air-bearing imaging platen for supporting imaging medium comprising:

an array of disks, wherein each of said disks has at least one air exit hole and said disks collectively comprise a surface of said platen; and

a pneumatic system which provides air to each of said disks, wherein said air exits said disk through said hole and flows across a surface of said disk in a radial direction from said hole.

5,798,826

OPTICAL DISPLACEMENT SENSOR

Eiji Yamamoto, Ome, and Masataka Ito, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

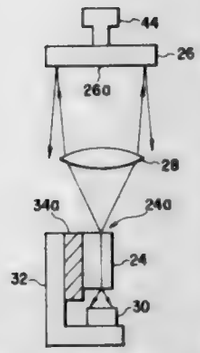
Filed Mar. 20, 1997, Ser. No. 821,773
Claims priority, application Japan, Mar. 28, 1996, 8-074189
Int. Cl.[6] G01C *3/08;* **G01B** *11/02*
U.S. Cl. 356—4.09 **8 Claims**

1. An optical displacement sensor comprising:

a semiconductor laser;

external reflection means forming a compound cavity in combination with the semiconductor laser;

optical output detecting means for detecting an optical output from the semiconductor laser, which changes in accordance with the phase of return light reflected by the external reflec-



tion means, when an optical distance between the semiconductor laser and the external reflection means changes at a change rate;

optical distance modulation means for changing the optical distance at predetermined periods by an amount of modulation of the optical distance at a rate higher than the change rate; and

a detection circuit system for detecting the amount and direction of change of the optical distance based on an optical output from the optical output detecting means detected in synchronism with a timing of modulating the optical distance by the optical distance modulation means.

5,798,827

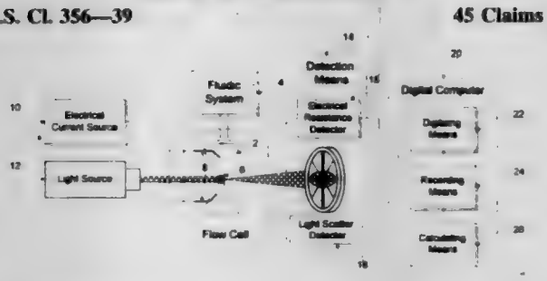
APPARATUS AND METHOD FOR DETERMINATION OF INDIVIDUAL RED BLOOD CELL SHAPE

Robert S. Frank, Pembroke Pines; James L. Wyatt, Plantation; Weiyan Gong; Carlos M. Rodriguez, both of Miami, all of Fla., and Robert C. Leif, San Diego, Calif., assignors to Coulter International Corp., Miami, Fla.

Filed Nov. 26, 1996, Ser. No. 753,585

Int. Cl.[6] G01N *21/47;33/49*

U.S. Cl. 356—39 **45 Claims**



1. An apparatus for determining an individual red blood cell shape in a fluid sample, said apparatus comprising:

a) means for forming a stream of individual red blood cells in a fluid, b) means for flowing said stream of individual red blood cells through an aperture, c) means for illuminating said cell red blood cell with a beam of light while said cell flows through said aperture, which causes said light to be scattered, d) means for measuring intensity of said light scattered by said cell at a minimum of two different azimuthal angular regions, said light scatter at said annular regions being independent of the index of refraction of said cell and independent of cell volume, e) means for deriving a corresponding signal for each angular region, said signal having an amplitude representative of said intensity of light scattered in said angular region, and f) means for determining a shape of said red blood cell from said corresponding signal for each angular region.

5,798,828

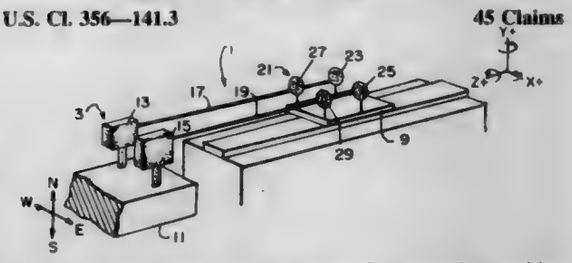
LASER ALIGNED FIVE-AXIS POSITION MEASUREMENT DEVICE

Bruce L. Thomas; Henry M. Bass; Lloyd K. Loftus, and Russell J. Churchill, all of Radford, Va., assignors to American Research Corporation of Virginbia, Radford, Va.

Filed Mar. 13, 1996, Ser. No. 614,888

Int. Cl.[6] H04B *10/00;* **B23B** *39/08*

U.S. Cl. 356—141.3 **45 Claims**



1. A position measurement apparatus for measuring position deviations in five axes when a moveable platform traverses a workpiece comprising an emitter unit mounted on the platform for generating source beams in directions generally parallel to a line of travel of the platform, a sensor unit positioned on the workpiece and aligned with the emitter unit for sensing the source beams and for providing position alignment data and a processing unit connected to the sensor unit for converting the position alignment data to displacements in five axes.

5,798,829

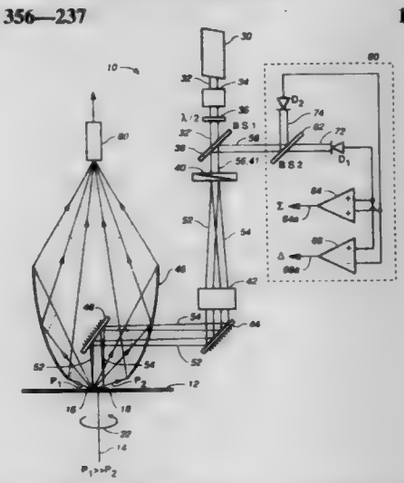
SINGLE LASER BRIGHT FIELD AND DARK FIELD SYSTEM FOR DETECTING ANOMALIES OF A SAMPLE

Mehdi Vaez-Iravani, Santa Clara, Calif., assignor to Kla-Tencor Corporation, Milpitas, Calif.

Filed Mar. 5, 1996, Ser. No. 611,109

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—237 **16 Claims**



1. A system for detecting anomalies of a sample, comprising:

means for transmitting to said sample two substantially parallel optical incident beams, said beams being initially coherent but of different polarizations, so that portions of the beams are reflected or transmitted by the sample;

at least one dark field detector detecting intensity of light scattered by the sample from the two incident beams; and

a bright field detector detecting any phase shift between the reflected or transmitted portions of the two incident beams.

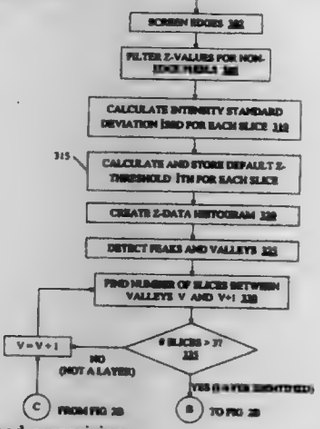
5,798,830
METHOD OF ESTABLISHING THRESHOLDS FOR IMAGE COMPARISON

Lakshman Srinivasan, San Jose, Calif., assignor to Ultrapointe Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 497,162, Jun. 30, 1995, abandoned, which is a continuation-in-part of Ser. No. 80,014, Jun. 17, 1993, Pat. No. 5,479,252. This application Nov. 27, 1996, Ser. No. 757,491

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—237 **20 Claims**



1. A method comprising:

representing a three-dimensional surface, using a Cartesian coordinate system having x, y, and z axes, as a plurality of points on the surface, wherein each point is represented as a pixel having an intensity value, a unique x-y coordinate, and a z coordinate specified by a z value;

collecting a first group of the pixels having similar z values, the first group representing a first layer of the surface;

collecting a second group of the pixels, each pixel of the second group having a z value similar to the z values of other pixels of the second group and dissimilar to the z values of the pixels of the first group, the second group representing a second layer of the surface;

determining a first error threshold for the intensity values of the first group of pixels; and

determining a second error threshold for the intensity values of the second group of pixels.

5,798,831
DEFECT INSPECTING APPARATUS AND DEFECT INSPECTING METHOD

Tsuneyuki Hagiwara, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 780,130, Dec. 26, 1996, abandoned, which is a continuation of Ser. No. 666,645, Jun. 18, 1996, abandoned, which is a continuation of Ser. No. 527,386, Sep. 13, 1995, abandoned, which is a continuation of Ser. No. 405,401, Mar. 15, 1995, abandoned, which is a continuation of Ser. No. 117,900, Sep. 8, 1993, abandoned, which is a continuation-in-part of Ser. No. 95,912, Jul. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 45,793, Apr. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 990,292, Dec. 14, 1992, abandoned. This application Aug. 4, 1997, Ser. No. 904,890

Claims priority, application Japan, Dec. 19, 1991, 3-336701; Dec. 24, 1991, 3-355524; Jan. 16, 1992, 4-12366; Apr. 18, 1992, 4-098357; Apr. 20, 1992, 4-099765; Jul. 27, 1992, 4-219783; Sep. 9, 1992, 4-265553; Apr. 16, 1993, 5-089768; Apr. 16, 1993, 5-089769

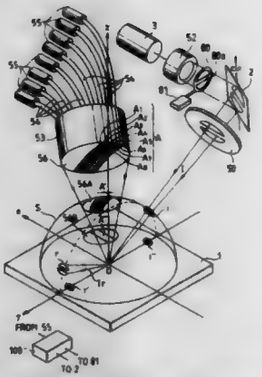
Int. Cl.[6] G02B *27/42*

U.S. Cl. 356—237 **32 Claims**

1. A foreign particle detecting apparatus comprising:

(a) a light source for radiating light onto a substrate on which a pattern is formed;

(b) a focusing system focusing the light radiated by said light source onto said substrate with an angular aperture;



(c) a moving device for relatively moving the focused light and said substrate;

(d) an input optical system for inputting light from said substrate;

(e) a light-intercepting device for intercepting at least the center area of the focused light and dividing the focused light into two focused lights;

(f) a detecting device including an array of light-receiving elements for receiving light from said substrate and independently outputting photoelectric signals according to the quantity of light received, said focused lights incident on said pattern producing discrete diffracted light components having a periodic distribution in a first direction, n light receiving elements of said array being arranged in order along a direction of arrangement determined by said first direction, each of said n light receiving elements having a light-receiving surface disposed on a Fourier transform plane in said input optical system for said pattern, a minimum width defined between the light-receiving surfaces of light-receiving elements located at respective ends of said array being substantially equal to or slightly larger than a maximum width defined between two Fourier spectra formed on said Fourier transform plane by the light corresponding with one of the said two focused lights from said substrate along said direction of arrangement and the light corresponding with another of said two focused lights from said substrate along said direction of arrangement, and a maximum width defined between the light-receiving surfaces of adjacent light receiving elements of said n light receiving elements being substantially equal to or slightly smaller than a minimum width defined between the two Fourier spectra formed on said Fourier transform plane by the light corresponding with one of the said two focused lights from said substrate along said direction of arrangement and the light corresponding with another of said two focused lights from said substrate along said direction of arrangement; and

(g) a discrimination system for discriminating whether a foreign particle is present on said substrate by whether the quantity of light received by each of said light receiving elements is equal to or greater than a predetermined threshold.

5,798,832
PROCESS AND DEVICE FOR DETERMINING ELEMENT COMPOSITIONS AND CONCENTRATIONS

Klaus D. Hnilica, Rodenbach, and Klaus Schneider, Mannheim, both of Germany, assignors to NIS Ingenieurgesselschaft MBH, Hanau, Germany

PCT No. PCT/EP95/01625, § 371 Date Feb. 24, 1997, § 102(e) Date Feb. 24, 1997, PCT Pub. No. WO95/30140, PCT Pub. Date Nov. 9, 1995

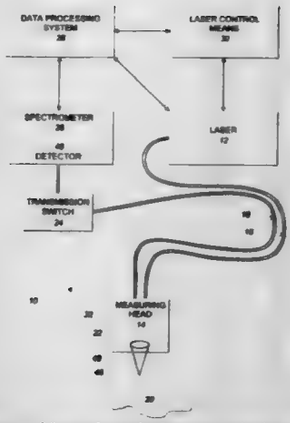
PCT Filed Apr. 28, 1995, Ser. No. 737,443

Claims priority, application Germany, May 2, 1994, 44 15 381.3

Int. Cl.[6] G01N *21/63*

U.S. Cl. 356—316 **10 Claims**

1. A process for determining element compositions and concentrations of material samples, in particular for determining the concentration or the presence of precious metals in unsorted metal



scrap, by means of laser-based plasma emission spectroscopy, said process comprising the following steps:

a) transforming a portion of the material sample (**20**) to be analyzed to a plasma-like state (**46**) by means of a pulsed high-energy laser (**12**) focused on the material sample (**20**), the plasma emitting radiation characteristic of the material sample;

b) performing spectral analysis of the radiation emitted by the plasma (**46**) using a spectrometer (**26**);

c) measuring the total emission spectrum (**44**) of the plasma (**46**) changing per laser pulse in one or more spectral ranges typical of the element, using a detector (**40**);

wherein the composition and concentration of the material samples are calculated in a further procedural step d) based on the entire spectrum (**44**) of measured emissions, said calculation being effected by integrating several individual measurements or spectra (**42**), the pulse to pulse variations of the individual spectra (**42**) being integrated during plasma formation, the individual measurements being integrated in the detector (**40**);

step a) being performed by positioning a measuring head (**14**) on the material sample (**20**);

the measuring head (**14**) comprising a casing (**32**) inside of which there is provided radiation optics (**22**) at a defined constant distance from an exit opening (**38**) of the casing (**32**), the focal point of the laser beam being in the plane of the exit opening;

the casing (**32**) including at least one movable spacer (**34**), said spacer (**34**)—in a first position thereof—partially projecting from the side of casing (**32**) which faces the sample (**20**) to be measured and—in a second position thereof—being completely inside the casing (**32**), said spacer (**34**)—in its second position—releasing a trigger means (**38**) for the laser source (**12**).

5,798,833

ROTATION SPEED MEASURING MACHINE FOR FLYING GLOBE

Masahide Onuki, Miki; Satoru Kinuhata, Kobe; Yuichi Takeuchi, Toyota; Yoshiaki Miyamoto, Kobe, and Tetsuo Yamaguchi, Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jun. 18, 1996, Ser. No. 665,691

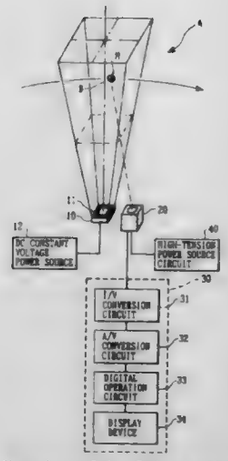
Claims priority, application Japan, Jun. 19, 1995, 7-175501

Int. Cl.[6] **A63B** *57/00*

U.S. Cl. 356—256 **8 Claims**

1. A rotation speed measuring machine for a flying golf ball with a mark on a surface thereof, said mark having a light reflectance rate different from that on the surface other than the mark, comprising:

a light projecting device for projecting light in a measurement conducting area along an expected flying route of the flying golf ball after the golf ball has been hit from a ball hitting position, said measurement conducting area having a length



along a flying direction of the flying golf ball at least equal to a range in which the flying golf ball rotates at least twice during flying;

a light receiving device for receiving a reflection light ejected from the light projecting device and reflected by the flying golf ball flying in the measurement conducting area, said light receiving device outputting a signal according to fluctuation of an amount of the reflection light; and

rotation speed detecting means electrically connected to the light receiving device for detecting rotational speed of the flying golf ball based on an output signal from the light receiving device.

5,798,834

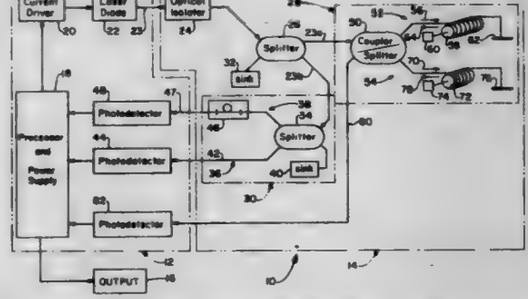
INTERFEROMETRIC FIBER OPTIC METHOD AND APPARATUS FOR OBTAINING ABSOLUTE STATIC MEASUREMENT USING AN OPTICAL FREQUENCY-TIME PROFILE

John T. Brooker, Mogadore, Ohio, assignor to Loral Defense Systems, Akron, Ohio

Filed Apr. 10, 1996, Ser. No. 630,401

Int. Cl.[6] **G01B** *9/02*

U.S. Cl. 356—345 **26 Claims**



1. A method for obtaining an absolute static measurement value of a physical influence, comprising the steps of:

generating an interferometer input signal having an optical frequency-time profile that is a series of linear ramps of equal slopes having alternating low and high starting points;

directing said interferometer input signal into an interferometer having at least one sensing element responsive to a physical influence, said physical influence modifying said sensing element and producing an optical phase shift that generates an interferometer output signal;

detecting said interferometer output signal; and

correlating said interferometer output signal to an absolute static measurement value of said physical influence.

5,798,835

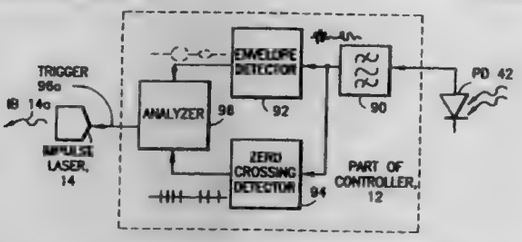
LASER ULTRASONICS-BASED MATERIAL ANALYSIS SYSTEM AND METHOD UTILIZING OPTIMUM TRIGGERING TIME

Petros Amestis Kotidis, Framingham; James Frederick Cunningham, Lincoln; Paul Fred Gozewski, Haverhill; Daniel Edward Klimek, Lexington, and Jaime A. Woodroffe, North Reading, all of Mass., assignors to Textron Systems Corporation, Wilmington, Mass.

Division of Ser. No. 482,782, Jun. 7, 1995, Pat. No. 5,604,592, which is a division of Ser. No. 308,372, Sep. 19, 1994, abandoned. This application Feb. 14, 1997, Ser. No. 800,834

Int. Cl.[6] G01B 9/02; G01N 21/00

U.S. Cl. 356—358 7 Claims



1. A system for determining a characteristic of a target, comprising:

means, responsive to a triggering signal, for launching an elastic wave within the target;

interferometer means for detecting a displacement of a surface of the target in response to said launched elastic wave;

means for determining a time varying characteristic of said elastic wave within the target from said detected displacement;

means for correlating said determined time varying characteristic with a property of interest of the target; and

means, responsive to an interference pattern generated by said interferometer means, for specifying a time at which to generate said triggering signal.

5,798,836

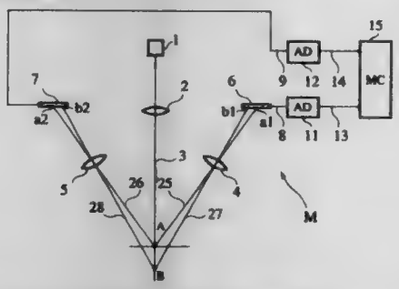
OPTICAL DISTANCE MEASURING APPARATUS AND METHOD THEREFOR

Yoshiyuki Shimokawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 15, 1996, Ser. No. 751,021

Int. Cl.[6] G01B 11/02

U.S. Cl. 356—375 7 Claims



1. A distance measuring apparatus comprising:

a light source for transmitting a plurality of parallel line beams on an X axis to irradiate an object;

a first linear light sensor arranged in a direction Z perpendicular to said line beams for receiving a plurality of images which are formed by said plurality of line beams on said object and for producing a distribution P(Z) of electric signals generated in accordance with a distribution of said images; and

distance calculating means for producing convolutions R(k) by using a predetermined function Q(k−Z) and said distribution P(Z), where said function Q(k−Z) is a predetermined ideal distribution of said distribution P(Z) when said object is placed at a predetermined position, approximating said convolutions R(k) with one of a quadratic and spline curve, determining a 'k' value which gives a peak value of said approximated curve, and calculating a distance to said object by using said 'k' value as a displacement from said predetermined position of said object.

5,798,837

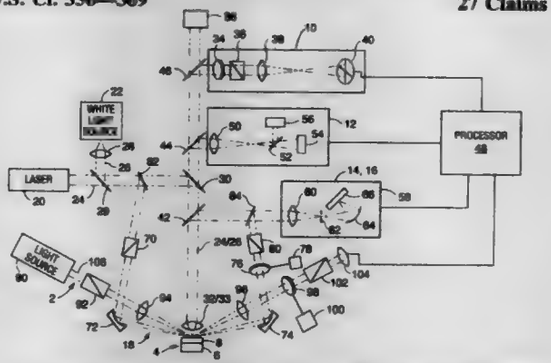
THIN FILM OPTICAL MEASUREMENT SYSTEM AND METHOD WITH CALIBRATING ELLIPSOMETER

David E. Aspnes, Apex, N.C.; Jon Opsal, Livermore, and Jeffrey T. Fanton, Los Altos, both of Calif., assignors to Therma-Wave, Inc., Fremont, Calif.

Filed Jul. 11, 1997, Ser. No. 890,697

Int. Cl.[6] G01J 4/00

U.S. Cl. 356—369 27 Claims



1. A reference ellipsometer for calibrating non-contact optical measurement devices using a reference sample that has at least a partially known composition, comprising:

a light generator that generates a quasi-monochromatic beam of light having a known wavelength and a known polarization for interacting with the reference sample, the beam directed at a non-normal angle of incidence relative to the reference sample to interact with the reference sample;

an analyzer that creates interference between S and P polarized components in the light beam after the light beam has interacted with reference sample; and

a detector that measures the intensity of the light after the beam has passed through the analyzer; and

a processor that determines the polarization state of the light beam entering the analyzer, from the intensity measured by the detector, wherein the processor determines an optical property of the reference sample based upon the determined polarization state, the known wavelength of light from the light generator and the at least partially known composition of the reference sample;

wherein the processor operates at least one other non-contact optical measurement device that measures an optical parameter of the reference sample, and the processor calibrates the other optical measurement device by comparing the measured optical parameter from the other non-contact optical measurement device to the determined optical property from the reference ellipsometer.

5,798,838

PROJECTION EXPOSURE APPARATUS HAVING FUNCTION OF DETECTING INTENSITY DISTRIBUTION OF SPATIAL IMAGE, AND METHOD OF DETECTING THE SAME

Tetsuo Taniguchi, Yokohama; Toshihiko Tsuji, Inba-gun, and Tadashi Nagayama, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

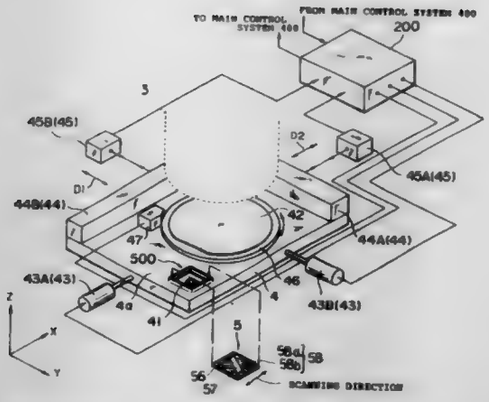
Filed Sep. 13, 1996, Ser. No. 713,719

Claims priority, application Japan, Feb. 28, 1996, 8-067220; Feb. 28, 1996, 8-067224

Int. Cl.[6] H01L 21/30; G01B 11/00

U.S. Cl. 356—401 26 Claims

1. A projection exposure apparatus comprising:



an illumination optical system for illuminating a mask on which a predetermined mask pattern is formed with exposure light having a predetermined wavelength;

a stage allowing a photosensitive substrate to be held on a main surface thereof;

a projection optical system for projecting an image of said mask pattern onto said photosensitive substrate;

a knife-edge member having a transmission area for transmitting the exposure light passing through said projection optical system, a light-shielding area for preventing transmission of the exposure light, and a knife-edge defined as a boundary line between said transmission area and said light shielding area, said knife-edge member being disposed such that a light incidence surface of said knife-edge member is leveled with the reference plane substantially including an exposure surface of said photosensitive substrate when said photosensitive substrate is placed on the main surface of said stage;

a light receiving device for receiving light of a spatial image of said mask pattern formed on the light incidence surface of said knife-edge member through said projection optical system;

a drive mechanism for changing a relative position between the spatial image of said mask pattern formed through said projection optical system and the knife-edge of said knife-edge member while leveling the light incidence surface of said knife-edge member with the reference plane; and

a detection mechanism for detecting a light-intensity distribution of the spatial image of said mask pattern on the basis of a relative position between the spatial image of said mask pattern and the knife-edge of said knife-edge member and an output from said light receiving device that receives light passing through said knife-edge member.

5,798,839

METHOD FOR DETERMINING THE COLOR STIMULUS SPECIFICATION OF TRANSLUCENT OBJECTS AND AN APPARATUS FOR PERFORMING THE METHOD

Markus Berner, Niederhalsi, Switzerland, and Carlo Gobbetti, Verona, Italy, assignors to MHT Optic Research AG, Niederhasli, Switzerland

Filed Dec. 2, 1996, Ser. No. 758,919

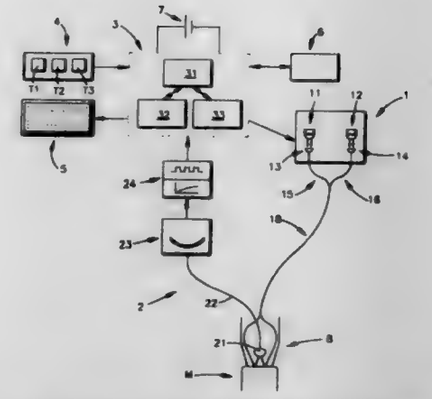
Claims priority, application Switzerland, Dec. 1, 1995, 3405/95

Int. Cl.[6] G01N *21/27;21/49*

U.S. Cl. 356—402 **22 Claims**

1. A method for determining the color stimulus specification of translucent objects, in which the surface of the object under test is partially illuminated and the light reflected by a selected portion of the surface of the object under test is measured and arithmetically evaluated, the method comprising the steps of:

(i) in a first measurement, illuminating a first portion of said surface of the object under test, said first portion having a first area, and measuring the light reflected by a second portion of said surface of the object under test, said second portion having a second area, thus obtaining a first set of measurement values;



(ii) in a second measurement, illuminating a third portion of said surface of the object under test, said third portion having a third area, and measuring the light reflected by a fourth portion of said surface of the object under test, said fourth portion having a fourth area, thus obtaining a second set of measurement values;

(iii) providing a set of reference measurement values obtained from the measurement of a reference object and calculating first and second sets of compensated measurement values, said first and second sets of compensated measurement values being functions of said first and second sets of measurement values and said reference measurement values;

(iv) calculating an intermediate reflection value as a function of said first and second sets of compensated measurement values and a correction value which corresponds to the light loss caused by the translucency of the object under test; and

(v) calculating a final reflection value as a function of said intermediate reflection value and the known reflection values of said reference object to obtain from said final reflection value the color stimulus specification of said object under test;

said first area of said first portion and said third area of said third portion being equal in size, and said fourth area of said forth portion having a size which is different from the size of said second area of said second portion.

5,798,840

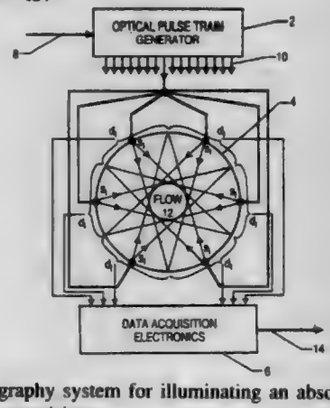
FAST OPTICAL ABSORPTION TOMOGRAPHY APPARATUS AND METHOD

Edward Joseph Beiting, Manhattan Beach, Calif., assignor to The Aerospace Corporation, El Segundo, Calif.

Continuation of Ser. No. 926,793, Aug. 5, 1992. This application Jun. 13, 1994, Ser. No. 259,287

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—437 **10 Claims**



1. A tomography system for illuminating an absorbing subject, said system comprising

pulse means for generating a series of N pulses of light,

N fiber optic means for respectively communicating said N pulses, said N fiber optic means respectively comprising N optic inputs respectively receiving said N pulses, said N fiber

optic means respectively comprising N splitters for respectively splitting said N optic inputs M times and for connecting each of said N fiber optic inputs to a respective set of M optic outputs of respective N sets of M optic outputs totaling N×M optic outputs angularly circumferentially disposed around said subject in a circle, each of said N sets of M optic outputs are angularly circumferentially offset from each other around said circle, said N fiber optic means for respectively communicating said N pulses from said N optic inputs to said N sets of M optic outputs, each said N optic inputs sequentially respectively communicates one of said N pulses each of which is respectively simultaneously communicated to one of said N sets of said M optic outputs providing a total of N×M pulses, and

N×M fan beam generator means each one of which is disposed at a respective end of said N×M optic outputs for respectively receiving said N×M pulses of light and for respectively projecting N×M fan beam pulses illuminating said subject disposed within said circle, said subject absorbing N×M absorbed portions respectively of said N×M fan beam pulses and passing N×M residual portions respectively of said N×M fan beam pulses, N is greater than 1 and M is greater than 1.

5,798,841

BOOK PAGE DOCUMENT IMAGE READING APPARATUS HAVING A PAGE TURNING MECHANISM

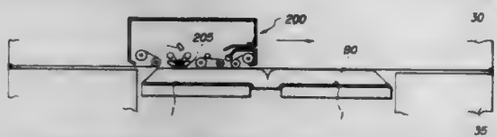
Hiroshi Takahashi, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 27, 1995, Ser. No. 565,296

Claims priority, application Japan, Nov. 28, 1994, 6-293549

Int. Cl.[6] H04N *1/04;1/40;1/393;* **G03G** *21/00*

U.S. Cl. 358—296 **16 Claims**



1. A book page document image reading apparatus comprising:

a reading means for reading an image of a spread of book pages;

an image size changing means for changing a size of an image read by said reading means;

a storage means for storing the read image data after size change by said image size changing means;

an output means for outputting the read image data from said storage means;

a page turning means for turning pages of a spread of book pages;

a computing means for computing a range for storage of the image data in said storage means when the image size is changed;

a page size detecting means for detecting a page size of the book page document; and

a comparing means for comparing the page size detected by said page size detecting means to a range for storage of image data computed by said computing means when the image size is changed.

5,798,842

IMAGE PROCESSING APPARATUS FOR SUBJECTING A COLOR IMAGE TO DESIRED GRADATION PROCESSING

Yoshirou Yamazaki, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Filed Oct. 18, 1996, Ser. No. 734,448

Claims priority, application Japan, Oct. 19, 1995, 7-271445

Int. Cl.[6] H04N *1/23;1/40;1/46;* **G03B** *27/32*

U.S. Cl. 358—302 **5 Claims**

1. An image processing apparatus for a color image reproducing system which photoelectrically reads out a color image, converts the read-out color image into digital image data, stores the digital

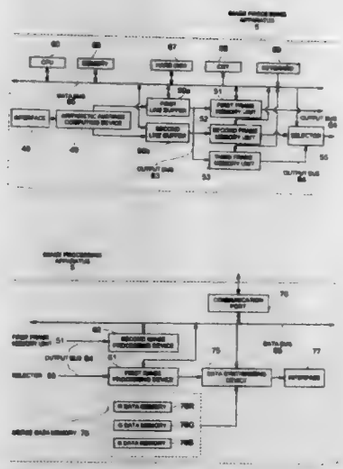


image data in an image data memory, carries out image processing on the stored image data and reproduces the color image, the image processing apparatus comprising:

K histogram calculating device for calculating a histogram of a density of the color image, after conversion to a monochrome image;

first reference density level calculating device for calculating a first reference density level, corresponding to a density of white regions of the color image;

second reference density level calculating device for calculating a second reference density level, corresponding to the density of white regions of the color image and being relatively higher than the first reference density level;

third reference density level calculating means for calculating a third reference density level corresponding to the density of black regions of the color image;

fourth reference density level calculating device for calculating, based on the second reference density level and the third reference density level, a fourth reference density level corresponding to an intermediate density of the color image;

density level conversion value calculating device for calculating, based on the histogram calculated by the K histogram calculating device, the ratio of image data having a density level corresponding to the density of black regions of the color image to all image data of the color image and for calculating, based on the calculated ratio and the third reference density level, a third reference density level conversion value and a fourth reference density level conversion value; and

gradation conversion executing device for converting a gradation of the color image, based on the third and fourth reference density level conversion values calculated by the density level conversion value calculating means and predefined first reference density level and second reference density level conversion values.

5,798,843

IMAGE PROCESSING SYSTEM WITH A BUFFER MEMORY

Susumu Yamamoto; Toshio Nakada; Toshifumi Nakamura, and Gen Okabe, all of Saitama, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

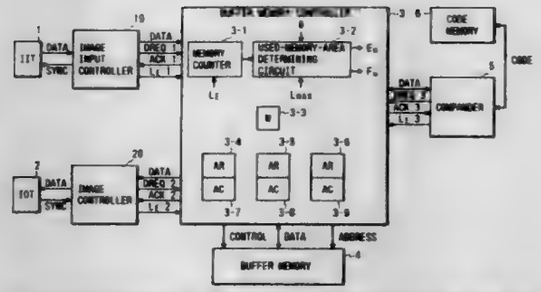
Division of Ser. No. 345,369, Nov. 18, 1994, which is a continuation of Ser. No. 901,577, Jun. 19, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 466,709

Claims priority, application Japan, Jun. 22, 1991, 3-177515; Jun. 22, 1991, 3-177517; Jun. 22, 1991, 3-177518; Jul. 18, 1991, 3-203912; Jul. 20, 1991, 3-204712

Int. Cl.[6] H04N *1/00;* **B41B** *15/00*

U.S. Cl. 358—404 **6 Claims**

1. A buffer memory control circuit comprising:



a companding unit for reversibly compressing input data stored in a buffer memory into compressed data for storage in a compressed data memory;

a buffer memory control unit for controlling an operation for writing data into the buffer memory and an operation for reading data from the buffer memory, said buffer memory control unit controlling the data reading and writing operations consecutively and asynchronously, a memory capacity of the buffer memory being determined to ensure continuous and complete reading operations and writing operations for data which is compressed at a predetermined compression ratio by the commanding unit the buffer memory control unit comprising

detecting means for detecting memory areas from an empty state to a full state in the buffer memory;

first comparing means for comparing a result of detection by said detecting means with 0, when the detect result is 0, said first comparing means producing an empty signal; and

second comparing means for comparing the detection result with a maximum memory area that can be accommodated by said buffer memory, when the detection result is equal to the maximum memory area, said comparing means producing a full signal,

wherein the memory capacity of said buffer memory is determined depending on a memory capacity of the compressed data memory, a lowest compression rate when said commanding unit compresses the input data, and a ratio of a transfer rate of transferring input data to the buffer memory to that of transferring data from said companding unit to the buffer memory.

5,798,844

DUPLICATOR HAVING FUNCTION CONCERNING SPECIFIC MARK PUT ON RECORDING SHEET AND IMAGE FORMING APPARATUS HAVING FUNCTION OF PROCESSING CONFIDENTIAL DOCUMENTS

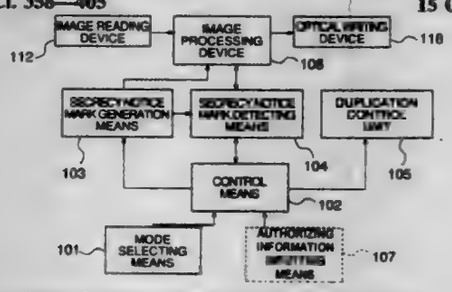
Yukio Sakano, Fuchu; Yasuhiro Tabata, Kawasaki, and Nobufumi Nomura, Chiba, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1994, Ser. No. 275,746

Claims priority, application Japan, Jul. 23, 1993, 5-182787; Jul. 23, 1993, 5-182788; Jul. 23, 1993, 5-182789; Oct. 7, 1993, 5-251900; Feb. 1, 1994, 6-010552

Int. Cl.[6] H04N *1/00;1/32*

U.S. Cl. 358—405 **15 Claims**



1. An image forming apparatus for duplicating an image, comprising:

mode selecting means for selecting a confidential document duplicating mode;

secrecy notice mark adding means for adding a secrecy notice mark in a read-in image in said confidential document duplicating mode;

secrecy notice mark detecting means for checking whether said secrecy notice mark is present in a read-in image;

control means for preventing a read-in image from being duplicated and from being stored in memory if said secrecy notice mark detecting means has detected said secrecy notice mark; and

authorizing information inputting means for inputting authorizing information from outside, which information lifts the prevention of said read-in image from being duplicated, said prevention having come into effect by said control means,

wherein said secrecy notice mark adding means adds said authorizing information to said read-in image.

5,798,845

METHOD FOR REGISTERING AND SELECTIVELY TRANSMITTING A MULTI-TERMINAL IDENTIFICATION OF A FACSIMILE SYSTEM

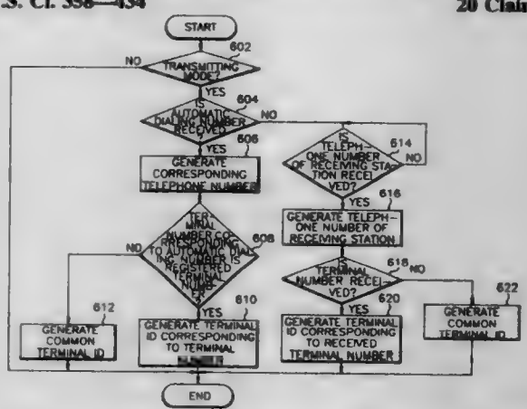
Nam-Dae Baek, and Chan-Kook Yoon, both of Daegu, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 30, 1995, Ser. No. 497,430

Claims priority, application Rep. of Korea, Jun. 30, 1994, 15543/1994

Int. Cl.[6] H04N *1/00;1/32;1/40;* **H04M** *11/00*

U.S. Cl. 358—434 **20 Claims**



3. A method for registering and selectively transmitting a multi-terminal identification in a transmitting facsimile system having a memory comprising a multi-terminal identification registration table and an automatic dialing data registration table, said method comprising the steps of:

setting said transmitting facsimile system in a common terminal identification registration mode upon receipt of a common terminal registration mode key pressed by a user;

registering first key data representing a common terminal identification in said multi-terminal identification registration table after said transmitting facsimile system has been set in said common terminal identification registration mode;

setting said transmitting facsimile system in a multi-terminal identification registration mode upon receipt of a multi-terminal registration mode key pressed by the user;

registering second key data representing a terminal number in said multi-terminal identification registration table after said transmitting facsimile system has been set in said multi-terminal identification registration mode;

registering third key data representing a user's unique terminal identification in said multi-terminal identification registration table corresponding to said terminal number after said terminal number has been registered in said multi-terminal identification registration table; and

registering fourth key data representing a facsimile number of a receiving facsimile system with an assigned automatic dialing number in said automatic dialing data registration table corresponding to said terminal number registered in said multi-terminal identification registration table;

said transmitting facsimile system enabling printing of said user's unique terminal identification on each discrete sheet of a printable medium reflecting a document at the receiving facsimile system when the user, during document transmission, selects said assigned automatic dialing number that corresponds to said terminal number registered in said multi-terminal identification registration table for establishing communication between said transmitting facsimile system and said receiving facsimile system, and alternatively enabling printing of said common terminal identification on each discrete sheet of said printable medium reflecting said document at the receiving facsimile system when the user, prior to document transmission, directly dials one of the facsimile number of the receiving facsimile system and the assigned automatic dialing number that does not correspond to said terminal number registered in said multi-terminal identification registration table for establishing communication between said transmitting facsimile system and said receiving facsimile system.

5,798,846

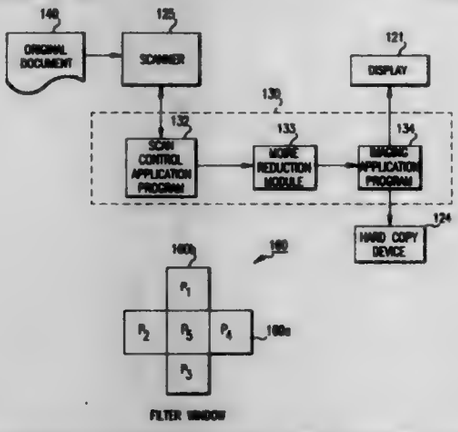
APPARATUS AND METHOD FOR SELECTIVELY PROCESSING A SCANNED IMAGE

Daniel R. Tretter, Mountain View, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 28, 1996, Ser. No. 654,492

Int. Cl.[6] G06K *9/40;* **H04N** *1/40*

U.S. Cl. 358—456 **20 Claims**



1. A method of processing a scanned image having a scanned halftone image and a scanned text image, comprising the steps of:

(A) providing a filter window for a modified median filter that allows the modified median filter to pass through image pixels of the scanned text image substantially unchanged while reducing moire pattern in the scanned halftone image, wherein the filter window is a cross-shaped window that has a horizontal pixel window and a vertical pixel window intersecting the horizontal pixel window;

(B) using the modified median filter to receive image pixels of both the scanned halftone image and the scanned text image and to process the image pixels of the scanned image such that moire pattern in the scanned halftone image is minimized while the resolution of the scanned text image is retained.

5,798,847

METHOD OF AND APPARATUS FOR CORRECTING THE OUTPUT SIGNALS OF AN ARRAY OF PHOTODETECTOR ELEMENTS

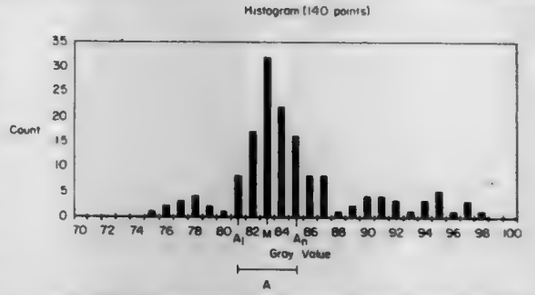
Wilhelmus Joseph Aerts, Ja Venlo, Netherlands, assignor to Oce-Nederland B.V., MA Venlo, Netherlands

Filed May 24, 1996, Ser. No. 653,347

Claims priority, application European Pat. Off., May 24, 1995, 95201376

Int. Cl.[6] H04N *1/38;1/40;9/64;1/04*

U.S. Cl. 358—464 **36 Claims**



1. A method of correcting the output signal from one of a plurality of photodetecting elements, comprising the steps of:

scanning a reference surface to provide a plurality of light intensity signals of said photodetecting element corresponding to a set of scanning positions of said photodetecting element relative to said reference surface;

calculating an individual correction value for said photodetecting element by evaluating a histogram of said plurality of light intensity signals of the photodetecting element; and

correcting the output data from the photodetecting element on the basis of said individual correction value.

5,798,848

FACSIMILE SYSTEM HAVING A FACSIMILE MACHINE AND AN EXTERNAL DATA PROCESSING DEVICE

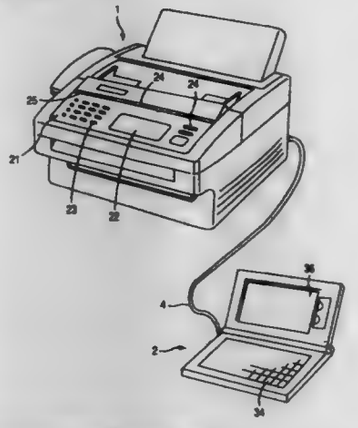
Tetsuya Ouchi, Tajimi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 15, 1996, Ser. No. 616,307

Claims priority, application Japan, Mar. 20, 1995, 7-061344

Int. Cl.[6] H04M *11/00*

U.S. Cl. 358—468 **34 Claims**



1. A facsimile system comprising:

a facsimile machine including a data memory which stores at least one set of operation control data needed to control at least one operation of said facsimile machine; and

an external data processing device which is connectable to said facsimile machine and which is operable to change said operation control data and send the changed operation control data to said facsimile machine,

wherein said facsimile machine comprises a first transmitter which transmits said operation control data stored in said data memory, to said data processing device, and

wherein said data processing device comprises a receiver which receives said operation control data transmitted from said facsimile machine, a display which displays an image corresponding to the received operation control data, an input device which is operable for inputting data to change said received operation control data, judging means for judging whether said input device has been operated for said received operation control data, and a second transmitter which transmits the changed operation data to said facsimile machine so that said changed operation control data are stored in said data memory of the facsimile machine, when said judging means judges that said input device has been operated, and does not transmit said operation control data to said facsimile machine when said judging means judges that said input device has not been operated.

5,798,849

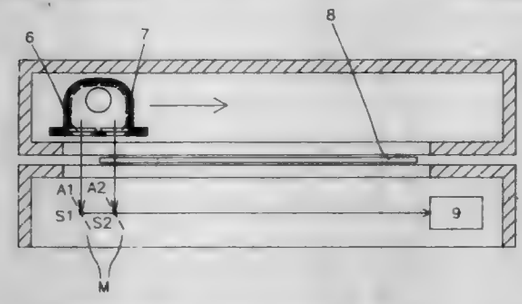
MULTILEVEL LIGHT SOURCE DEVICE

Jem-Tsair Tsai, Hsinchu, Taiwan, assignor to Mustek Systems Inc., Hsinchu, Taiwan

Filed Nov. 5, 1996, Ser. No. 744,215

Int. Cl.[6] H04N *1/04;1/00*

U.S. Cl. 358—475 **39 Claims**



1. A multilevel light source device, comprising:

a light source for generating an initial light signal; and

a web medium having a plurality of separate light-transmittable zones for receiving said initial light signal and generating a multilevel light signal adapted to be sent to a light-signal processing unit in response to said initial light signal, wherein each of said light-transmittable zones disperses a specific ratio of light for all frequencies so as to control an intensity of said initial light signal penetrating therethrough.

5,798,850

METHOD OF AND APPARATUS FOR DUPLICATING HOLOGRAM AND DUPLICATE HOLOGRAM

Toshiharu Ishikawa; Kenji Ueda; Satoru Hamada, and Hiroyuki Nishimura, all of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 297,053, Aug. 29, 1994, abandoned. This application Nov. 12, 1996, Ser. No. 747,746

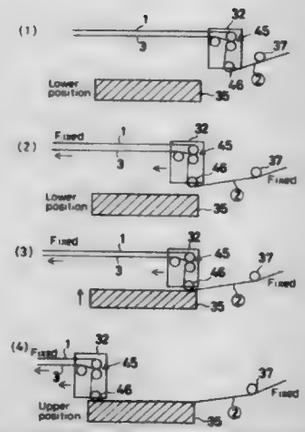
Claims priority, application Japan, Aug. 27, 1993, 5-212954; Jun. 10, 1994, 6-129004; Jun. 10, 1994, 6-129005; Jul. 22, 1994, 6-171261

Int. Cl.[6] G03H *1/20;1/00;1/04*

U.S. Cl. 359—12 **31 Claims**

1. A hologram duplicating method, wherein a photosensitive material film is brought into close contact with a hologram original plate and light is applied to said film, said method comprising the steps of:

preparing a photosensitive material film comprising a photosensitive material and two base films, wherein one base film is attached to each side of said photosensitive material;



peeling the base film from one side of the photosensitive material, exposing a surface of said photosensitive material, while supplying the photosensitive material film;

continuously laminating the photosensitive material film on a surface of said hologram original plate, such that upon initial contact between said photosensitive film and said original plate, said hologram original plate becomes laminated with said photosensitive material film a portion at a times, with the exposed photosensitive material surface facing the hologram original plate while pressing the photosensitive material film onto said original plate with a roller of a predetermined diameter from a side opposite to the exposed side to prevent air bubbles from being formed between said original plate and said film;

applying light to the film and plate;

continuously delaminating the photosensitive material film from the hologram original plate by peeling off the film from said original plate at a substantially even rate, with the photosensitive material film being braced against said original plate with a roller of a predetermined diameter on an upper surface of said photosensitive film to prevent a crease from forming on the film due to an uneven peel rate;

continuously laminating a protective film on the exposed photosensitive material surface of the delaminated photosensitive material film a portion at a time; and

taking up the photosensitive material film.

5,798,851

APPARATUS FOR CORRECTING SCANNING POSITION IN OPTICAL SCANNER

Satoru Tachihara; Ryota Ogawa, and Katsuhiro Yoshino, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 608,310, Feb. 28, 1996, abandoned, which is a continuation of Ser. No. 294,997, Aug. 24, 1994, abandoned. This application Apr. 22, 1997, Ser. No. 838,015

Claims priority, application Japan, Aug. 25, 1993, 5-210417

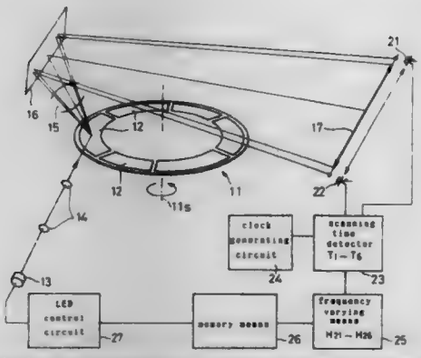
Int. Cl.[6] G02B *5/32;26/08*

U.S. Cl. 359—18 **26 Claims**

1. An optical scanner, comprising;

a light source which emits light to be modulated so as to be turned ON and OFF in accordance with drawing data formed as a predetermined number of drawing dots with respect to a predetermined drawing length;

a hologram deflector made of a rotatable planar hologram disc which is provided on a peripheral surface thereof with a plurality of a hologram facets through which light emitted from said light source passes, said hologram deflector being rotated to scan an image surface with a light emitted from said light source;



an optical detector that detects a light that passes through at least a first reference point, for a commencement of a scanning, and a second reference point, for a completion of said scanning, in a scanning direction;

a scanning time detector that detects a scanning time period that said light, deflected by each said hologram facet of said hologram disc, takes to travel from said first reference point to said second reference point;

frequency varying means for varying a modulation frequency of said light source for each said hologram facet in accordance with a unique scanning time period for each said hologram facet detected by said scanning time detector so that said predetermined number of drawing dots are contained within said drawing length scanned by each said hologram facet; and

intermittent detecting and adjusting means for intermittently detecting said scanning time period and adjusting said modulation frequency for each said hologram facet in response to said intermittent detecting of said scanning time period.

5,798,852

ALL-OPTICAL DEVICE FOR REGENERATING AN OPTICAL SIGNAL MODULATED IN AN RZ FORMAT

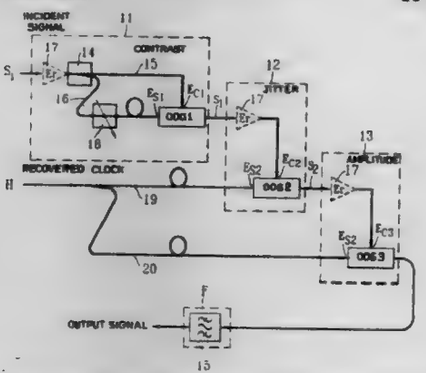
Laurent Billes; Jean-Claude Simon, both of Louannec, and Ivan Valiente, Caouennec, all of France, assignors to France Telecom, Paris, France

Filed Jun. 12, 1996, Ser. No. 662,347

Claims priority, application France, Jun. 13, 1995, 95 06976

Int. Cl.[6] H04B *10/00*

U.S. Cl. 359—158 **10 Claims**



1. An all-optical device for regenerating an optical signal modulated in an RZ format, the device including an opto-optical gate whose control input receives an optical signal corresponding to the signal to be regenerated and whose source input receives an optical clock signal synchronized on the signal to be regenerated, the device including at least one second opto-optical gate whose control input receives the signal output by the first opto-optical gate and whose source input receives the optical clock signal, the first gate being a resynchronization gate, while the second gate is an amplitude regeneration gate.

5,798,853

OPTICAL COMMUNICATION SYSTEM COMPENSATING FOR CHROMATIC DISPERSION AND PHASE CONJUGATE LIGHT GENERATOR FOR USE THEREWITH

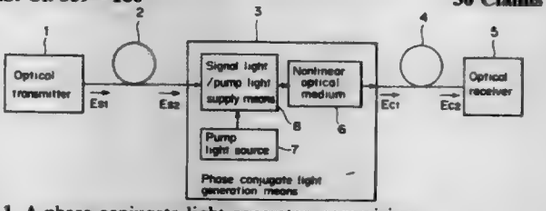
Shigeki Watanabe, Kawasaki, Japan, assignor to Fujitsu, Ltd., Kawasaki, Japan

Continuation of Ser. No. 638,535, Apr. 26, 1996, abandoned, which is a continuation of Ser. No. 468,183, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 135,626, Oct. 14, 1993, abandoned. This application Dec. 16, 1996, Ser. No. 766,052

Claims priority, application Japan, Oct. 16, 1992, 4-278662; Apr. 30, 1993, 5-104120; Sep. 7, 1993, 5-221856

Int. Cl.[6] H04B *10/00; H01S 3/10; G02F 1/29*

U.S. Cl. 359—160 **50 Claims**



1. A phase conjugate light generator, comprising:

an optical fiber providing a zero-dispersion at a first wavelength, the optical fiber having first and second ends;

a signal supply for supplying to the first end of the optical fiber an optical signal having an original phase; and

a light source for outputting to the first end of the optical fiber a pumping light having a wavelength substantially equal to the first wavelength such that the phase of light travelling in the optical fiber is changed from the original phase and a phase conjugate light having a phase which is a conjugate of the original phase is emitted from the second end of the optical fiber.

5,798,854

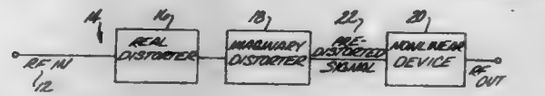
IN-LINE PREDISTORTER FOR LINEARIZATION OF ELECTRONIC AND OPTICAL SIGNALS

Henry A. Blauvelt, San Marino, and Martin Regehr, Pasadena, both of Calif., assignors to Ortel Corporation, Alhambra, Calif.

Continuation of Ser. No. 481,073, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 245,878, May 19, 1994, abandoned. This application Nov. 27, 1996, Ser. No. 757,485

Int. Cl.[6] H04B *10/18*

U.S. Cl. 359—161 **60 Claims**



1. A predistortion circuit comprising:

an input and an output for a signal having fundamental frequencies;

real means connected between the input and the output for generating primarily a real component of intermodulation products of the fundamental frequencies;

imaginary means in line with the real means for generating primarily an imaginary component of intermodulation products of the fundamental frequencies;

means for adjusting the real and/or imaginary means for producing a vector sum of the real and imaginary components having an amplitude equal and opposite to the distortion of a nonlinear device; and

a nonlinear device in line with the real and imaginary means having inherent distortion with a vector sum substantially opposite to the vector sum of the real and imaginary components.

5,798,855

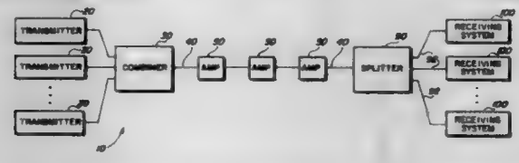
OPTICAL MONITORING CHANNEL FOR WAVELENGTH DIVISION MULTIPLEXED OPTICAL COMMUNICATION SYSTEM

Stephen B. Alexander, Millersville; Steve W. Chaddick, and David R. Huber, both of Annapolis, all of Md., assignors to Ciena Corporation, Linthicum, Md.

Continuation of Ser. No. 457,292, Jun. 1, 1995, Pat. No. 5,532,864. This application Jun. 28, 1996, Ser. No. 672,275

Int. Cl.[6] H04B *10/02*

U.S. Cl. 359—177 **2 Claims**



1. A wavelength division multiplexed optical communication system comprising:

a plurality of optical transmitters for creating a plurality of optical transmission signals, each transmission signal having a unique wavelength within the gain band of an optical amplifier;

a plurality of optical receiving systems, each optical receiving system having a wavelength-selecting member for selecting one of the transmission signal wavelengths;

an optical waveguide;

an optical combiner optically communicating with the optical waveguide and with each of the plurality of optical transmitters for combining the plurality of optical transmission signals to create a wavelength division multiplexed optical signal output to the optical waveguide;

an optical splitter optically communicating with the optical waveguide and with the plurality of optical receiving systems, the optical splitter outputting a portion of the multiplexed optical signal to each of the receiving systems;

at least one optical amplifier optically communicating with the optical waveguide for simultaneously amplifying each of the transmission signals of the multiplexed optical signal;

an optical monitoring channel transmitter optically communicating with the optical waveguide for transmitting an information-bearing optical monitoring channel having a wavelength approximately 1600 nm or greater such that the optical monitoring channel is not substantially attenuated by an unpumped optical amplifier.

5,798,856

OPTICAL PULSE GENERATOR

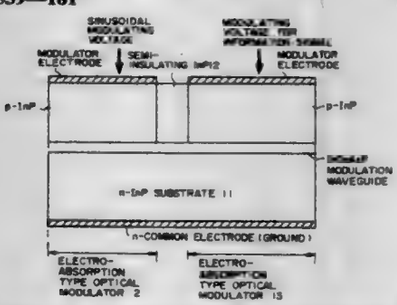
Masatoshi Suzuki, Kawashima; Hideaki Tanaka, Koganei, and Yuichi Matsushima, Tokorozawa, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 7,550, Jan. 22, 1993, Pat. No. 5,394,260. This application Nov. 16, 1994, Ser. No. 341,261

Claims priority, application Japan, Feb. 3, 1992, 4-046390; Apr. 23, 1992, 4-129353

Int. Cl.[6] H04B *10/04*

U.S. Cl. 359—181 **5 Claims**



1. An integrated optical modulator for optical pulse generator comprising:

semiconductor substrate;

a first optical modulator for modulating an intensity of an input light, and

a second optical modulator for modulating the intensity of the output light from said first optical modulator,

said first optical modulator and said second optical modulator being integrated on said semiconductor substrate as a unitary structure, in which said first optical modulator and said second optical modulator have a common modulation waveguide layer and are electrically isolated from each other by a layer of semi-insulating material.

5,798,857

AUXILIARY-SIGNAL TRANSMISSION SYSTEM

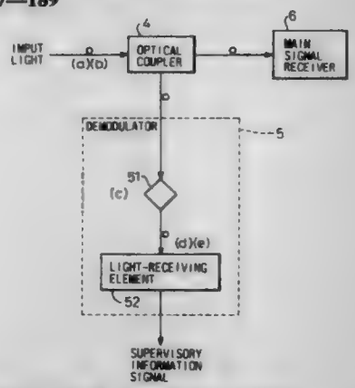
Yuji Tamura; Hiroyuki Itou; Tsukasa Takahashi, all of Sapporo; Michikazu Shima, Kawasaki; Yumiko Kawasaki, Kawasaki, and Kazuo Yamane, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 388,357, Feb. 14, 1995, Pat. No. 5,625,481. This application Jan. 22, 1997, Ser. No. 786,692

Claims priority, application Japan, Jun. 21, 1994, 6-138479

Int. Cl.[6] H04B *10/06*

U.S. Cl. 357—189 **8 Claims**



1. An optical receiving apparatus comprising:

an optical branching device for separating an optical signal, containing a main optical signal and spontaneously emitted light generated in an optical amplifier, said spontaneously emitted light being modulated with an auxiliary signal, into a first optical signal containing said main optical signal and a second optical signal containing said modulated spontaneously emitted light; and

demodulating means for performing demodulation to recover said auxiliary signal from said spontaneously emitted light in said second optical signal.

5,798,858

METHOD AND APPARATUS FOR REDUCING ADVERSE EFFECTS OF OPTICAL BEAT INTERFERENCE IN OPTICAL COMMUNICATION SYSTEMS

George E. Bodeep, Lawrenceville, Ga.; Thomas Edward Darcie, Middletown, N.J.; Xiaolin Lu, Matawan, N.J., and Sheryl Leigh Woodward, Holmdel, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 1, 1996, Ser. No. 595,110

Int. Cl.[6] H04B *10/06*

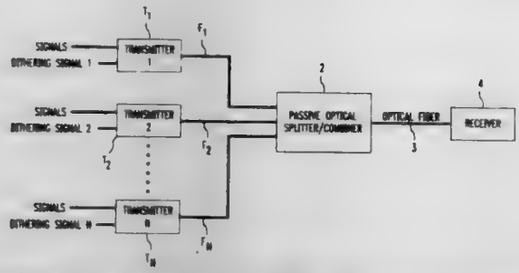
U.S. Cl. 359—191 **24 Claims**

12. A system for transmitting lightwave signals within a signal band comprising:

a laser for generating the lightwave signals;

means connected to the laser for directing and carrying the lightwave signals; and

means for modulating a frequency of light emitted by the laser to generate a dithering tone and for avoiding adverse effects of optical beat interference.



wherein cross products of the dithering tone and the lightwave signals generated by the laser fall outside all signal bands of the laser.

5,798,859

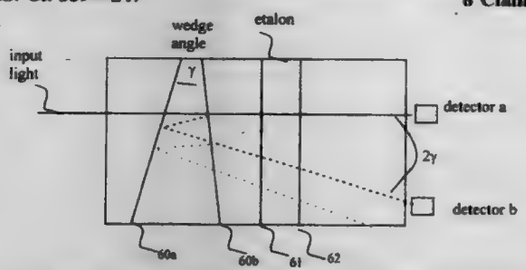
METHOD AND DEVICE FOR WAVELENGTH LOCKING

Paul Colbourne, Nepean; Joseph Ip, Kanata, and Neil Teitelbaum, Ottawa, all of Canada, assignors to JDS Fitel Inc., Nepean, Canada

Filed Jun. 20, 1996, Ser. No. 666,229

Int. Cl.[6] G02F *1/03*; G02B *27/14*; G01B *9/02*; H01S *3/13*

U.S. Cl. 359—247 **8 Claims**



5. A device for indicating a change in an optical wavelength comprising:

an input portion for inputting an input optical beam;

a wedged portion having an end face that is partially transmissive and partially reflective;

a Fabry Perot etalon adjacent from the wedged portion and disposed to receive two optical beams from the wedged portion, the two optical beams being two portions of the input optical beam;

detector means adjacent the etalon for simultaneously detecting an intensity of the two optical beams; and,

comparator means for comparing the intensity of the two optical beans after they have passed through the etalon, wherein the wedged portion is for splitting the input optical beam into the two optical beams and for directing the in toward the etalon so that they propagate in a non-parallel manner through the etalon.

5,798,860

IRIDIUM OXIDE FILM FOR ELECTROCHROMIC DEVICE

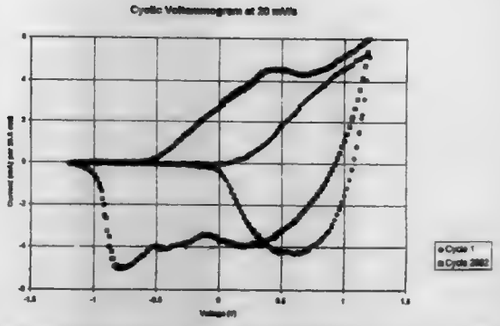
Phillip C. Yu, Pittsburgh; David L. Backfisch, Monroeville, both of Pa.; Nada A. O'Brien, and Bryant P. Hichwa, both of Santa Rosa, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 14, 1997, Ser. No. 782,992

Int. Cl.[6] G02F *1/153*

U.S. Cl. 359—273 **17 Claims**

12. An electrochromically active iridium oxide film comprising iridium, oxygen and nitrogen, the ratio of atomic oxygen to iridium



being from 3.2:1 to 3.4:1, and the amount of nitrogen present in the film being from about 11 to 13 atomic percent.

5,798,861

INFORMATION PRESENTATION DEVICE USING A SHEET OF ROLLED MATERIAL

Guy Doat, 18 rue Remont, 78000 Versailles, France

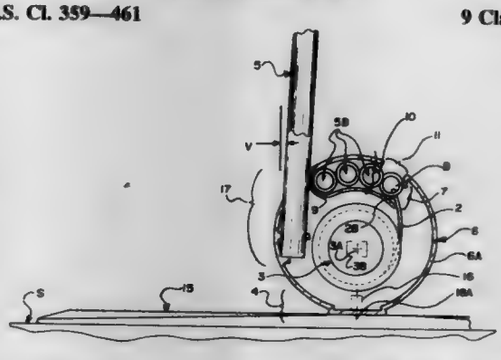
PCT No. PCT/FR96/00727, § 371 Date Dec. 24, 1996, § 102(e) Date Dec. 24, 1996, PCT Pub. No. WO96/36958, PCT Pub. Date Nov. 21, 1996

PCT Filed May 14, 1996, Ser. No. 750,807

Claims priority, application France, May 17, 1995, 95 06074

Int. Cl.[6] G03B *21/56*

U.S. Cl. 359—461 **9 Claims**



1. An information presentation device (1) comprising a sheet (2) of material rolled onto a drum (3) mounted at least indirectly on a base (4), and a demountable pole (5) intended to be raised up from this base (4) for holding the sheet (2) taut between the drum (3) and a suspension point (5A) on the pole (5) at a distance from the base (4),

the drum (3) being contained in a case (6), and on the one hand guided in rotation around a longitudinal axis (3A) relative to the base (4), and on the other hand, elastically stressed by a means (3B) for, elastically rolling said drum in a predetermined direction of rotation, so as to maintain the sheet (2) in traction so that said sheet can be rolled inside the case (6) through a longitudinal slot (7) in said case, said sheet being capable of passing through said longitudinal slot when being unrolled and when being rolled

wherein said sheet comprises a lower edge which is secured at least indirectly to the drum (3), and an upper edge, along which extends a slender rigid member which, being particularly rectilinear and having a predetermined cross-section, is intended to be connected to the pole (5) at right angles at said suspension point, so as to allow the sheet (2) to be held taut between said suspension point (5A) and the drum (3),

wherein the pole (5) is so constructed and arranged to be disassemblable such that said pole, when disassembled, comprises at least one element (SB) which has a length L equal to

a fraction of a height H of said pole (5) in an assembled construction,

said device further comprising:

said case (6) having means for housing said at least one element (5B) of the pole (5),

said housing means (9) having an opening (10) for loading and unloading said at least one pole element, which opening (10) has a profile substantially greater than a cross-section of said at least one pole element, so as to allow said at least one pole element to pass through said opening, and

wherein said housing means (9) is disposed relative to the case (6) in such a way that said opening (10) adjoins the longitudinal slot (7) for the passage of the sheet (2) and such that the slender rigid member (8) connected to and extending along the upper edge of said sheet (2), when said sheet is in a rolled position, at least partially closes the opening (10) of the housing means, to thereby prevent the removal of the at least one pole element, when said at least one pole element is disposed in said housing means.

5,798,862

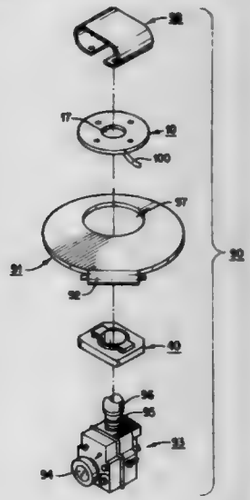
VIEWING DEVICE ADAPTOR AND INSERT FOR A VEHICLE

Edward A. Antesberger, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 26, 1995, Ser. No. 427,934

Int. Cl.[6] G20B *7/00;7/182;5/08;* **B60J** *7/043*

U.S. Cl. 359—503 **3 Claims**



1. An assembly that allows a drivers thermal viewer to be releasably mounted therethrough a non-circular opening in a vehicle hatch cover, including:

a viewer adaptor releasably and rotatively coupled about a collar bearing surface of the drivers thermal viewer;

a hatch insert releasably coupled within the non-circular opening of the hatch cover, the hatch insert also including a non-circular opening for releasably coupling the viewer adaptor therewithin, so that when the viewer adaptor is coupled about the collar bearing surface, and releasably coupled within the hatch insert that has been releasably coupled within the hatch cover opening, there results in allowing a substantially unobstructed field of view, with the drivers thermal viewer within the vehicle rotatable from inside the vehicle.

5,798,863

IMAGE STABILIZED OPTICAL SYSTEM

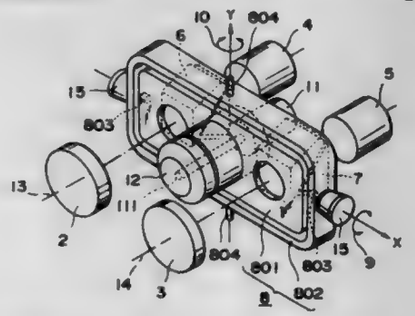
Tetsuo Udagawa; Haruo Kakizawa; Kouichi Nagata, and Kazuto Tanaka, all of Saitama-ken, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama-Ken, Japan

Filed May 2, 1995, Ser. No. 433,529

Claims priority, application Japan, May 10, 1994, 6-096525

Int. Cl.[6] G02B *27/64*

U.S. Cl. 359—557 **20 Claims**



1. An image stabilized optical system comprising:

a casing;

an objective system and an eyepiece system attached to said casing;

a first shaft;

a gimbal connected to said casing via said first shaft, said gimbal being capable of oscillating in both tilting and panning directions;

an erect prism arranged between said objective system and said eyepiece system, and attached to said gimbal;

a motor attached to said gimbal;

an inertial rotor supported by a rotating rod of said motor; and

a damper attached to said gimbal, said damper comprising a viscoelastic member, having a first end attached to said gimbal and a second, free end not connected to said casing or to said first shaft.

5,798,864

PROJECTION TYPE IMAGE DISPLAY APPARATUS

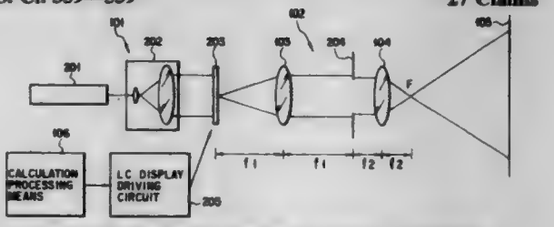
Nobutoshi Sekiguchi, Hidaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1995, Ser. No. 389,590

Claims priority, application Japan, Mar. 24, 1994, 6-053747

Int. Cl.[6] G02B *27/46;* **G03H** *1/08*

U.S. Cl. 359—559 **27 Claims**



1. A projection type image display apparatus comprising:

a diffraction image display unit for performing at least one of operations of producing and displaying a Fraunhofer diffraction image of an original image; and

an image projecting unit for converting said Fraunhofer diffraction image to the original image and projecting the original image obtained by conversion on a screen;

wherein said diffraction image display unit comprises:

a calculation processing unit for non-recursively and synthetically calculating amplitude information and phase information of said Fraunhofer diffraction image of the original image; and

an image display unit for performing at least one of said operations of producing and displaying said Fraunhofer

diffraction image in accordance with the amplitude information and phase information calculated by said calculation processing unit;

said calculation processing unit comprising a synthetic data calculating unit for obtaining synthetic data on a display face of said image display unit and a complex conjugate calculating unit for finding a complex conjugate of an output from said synthetic data calculating unit, in a case where spherical waves are projected from points of an image to be projected on said screen on the display face of said image display unit.

5,798,865

BEAM SPLITTER

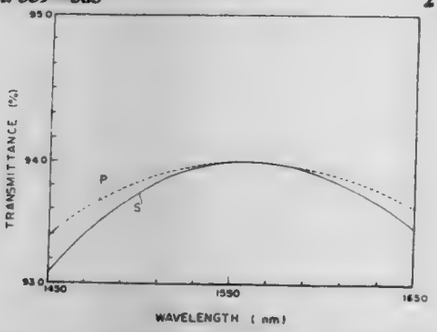
Hiroaki Matsuda, Sapporo; Hideki Noda, and Nobuhiro Fukushima, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 556,771, Nov. 2, 1995, Pat. No. 5,661,602. This application Mar. 31, 1997, Ser. No. 831,341

Claims priority, application Japan, Mar. 16, 1995, 7-057154

Int. Cl.[6] G02B *1/10*

U.S. Cl. 359—583 **2 Claims**



1. A beam splitter formed by laminating a plurality of optical films on a substrate, wherein:

said substrate comprises a glass substrate having a refractive index of 1.51±0.10; and

said optical films comprise:

a first layer formed on said glass substrate, said first layer having a refractive index of 1.44±0.10 and an optical film thickness of 0.05–0.15;

a second layer formed on said first layer, said second layer having a refractive index of 1.68±0.10 and an optical film thickness of 0.01–0.10;

a third layer formed on said second layer, said third layer having a refractive index of 1.44±0.10 and an optical film thickness of 0.50–0.60;

a fourth layer formed on said third layer, said fourth layer having a refractive index of 2.23±0.10 and an optical film thickness of 0.25–0.35; and

a fifth layer formed on said fourth layer, said fifth layer having a refractive index of 1.44±0.10 and an optical film thickness of 0.25–0.35.

5,798,866

PICTURE DISPLAY DEVICE WITH TWO MICROLENS ARRAYS

Adrianus J. S. M. De Vaan, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

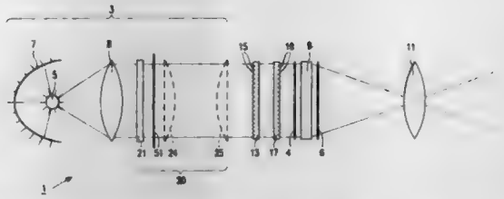
Filed Dec. 12, 1996, Ser. No. 764,836

Claims priority, application European Pat. Off., Dec. 22, 1995, 95203612

Int. Cl.[6] G02B *27/10*

U.S. Cl. 359—621 **14 Claims**

1. A picture display device comprising an illumination system provided with a light source for generating a light beam, and a picture display panel having a matrix of pixels for modulating said



light beam in conformity with picture information to be displayed, a first microlens array having a plurality of first lenses and a pitch Δw_1 being present between the illumination system and the picture display panel, and a second microlens array having a plurality of second lenses and a pitch Δw_2 being present between the first microlens array and the picture display panel, while the focal planes of said microlens arrays coincide and $\Delta w_1=\Delta w_2=\Delta w$ applies to the pitches, wherein the first lenses have dimensions which are substantially equal to the dimensions of the second lenses, and the illumination system comprises means for supplying a plurality of non-parallel sub-beams which are incident on the first microlens array at different, discrete angles so that each lense in said first microlens array directs a plurality of sub-beams to a plurality of lenses in said second microlens array.

5,798,867

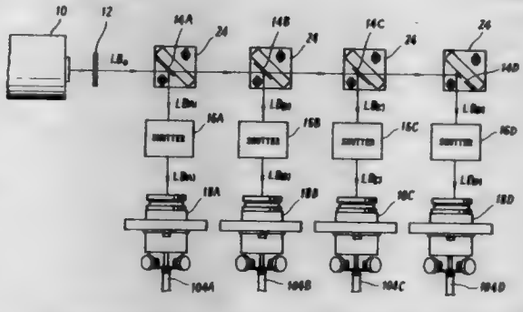
LASER BEAM-SPLITTING APPARATUS

Takahiro Uchida, and Shin-ichi Nakayama, both of Chiba-ken, Japan, assignors to Miyachi Technos Corporation, Noda, Japan

Filed Feb. 4, 1997, Ser. No. 796,391

Int. Cl.[6] G02B *27/14;7/02*

U.S. Cl. 359—629 **9 Claims**



1. A laser beam-splitting apparatus for producing a plurality of split laser beams from a primary laser beam, said apparatus comprising:

one or a plurality of partial reflection and transmission mirrors, each of said mirrors having a reflectance and transmittance to the wave length of said primary laser beam continuously varying in one-dimensional or two-dimensional directions on the mirror surface and each of said mirrors being disposed on the optical axis of the laser beam, wherein the laser beams reflected or transmitted from said reflection and transmission mirrors are output as the split laser beams, respectively;

mirror support means for supporting said partial reflection and transmission mirrors across said optical axis of said laser beam;

adjusting means for adjusting a position of each said partial reflection and transmission mirrors so as to obtain a desired reflectance and transmittance; and

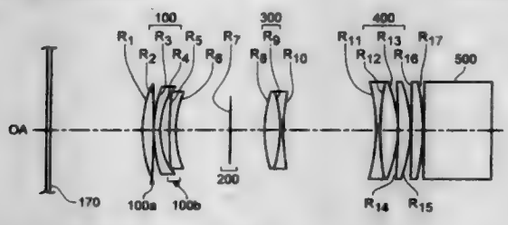
fixing means for fixing said mirror support means at the position at which the desired reflectance and transmittance are obtained.

5,798,868

PROJECTION LENS

Seung Gyu Lee, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Continuation of Ser. No. 432,710, May 2, 1995, abandoned.
This application Sep. 29, 1997, Ser. No. 937,585
Claims priority, application Rep. of Korea, May 2, 1994, 9651/1994
Int. Cl.[6] G02B 9/00
U.S. Cl. 359—649 12 Claims



1. A projection lens, comprising:

a first lens group including a positive meniscus lens, a negative meniscus lens, and a negative meniscus lens, which are formed in order from a screen;

a light amount control member formed on an optical axis and behind said first lens group for controlling an amount of light being transmitted from said first lens group;

a second lens group including a biconvex lens and a biconcave lens and formed on said optical axis and behind said light amount control member;

a third lens group formed on said optical axis and behind the light amount control member and including a plurality of lenses; and

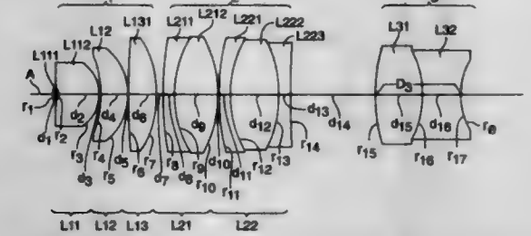
a block formed on the optical axis and behind said third lens group for adjusting a focal distance.

5,798,869

IMMERSION-TYPE MICROSCOPE OBJECTIVE LENS

Katsuya Watanabe, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 28, 1996, Ser. No. 736,145
Claims priority, application Japan, Nov. 14, 1995, 7-321160
Int. Cl.[6] G02B 21/02
U.S. Cl. 359—658 9 Claims



1. An immersion-type microscope objective lens, comprising, in order from the object side:

(a) a first lens group having a positive refractive power, a second lens group having a positive refractive power, and a third lens group having a negative refractive power;

(b) the first lens group comprising a planoconvex lens element as the most objectwise lens element in the first lens group, the planoconvex lens element having a refractive index n_1 and a convex surface having a curvature radius r_2; a negative meniscus lens element having a refractive index n_2, a concave surface having a curvature radius r_2 cemented to the planoconvex lens element, and a convex surface oriented imagewise and having a curvature radius r_3; and a positive meniscus lens element having a concave surface oriented objectwise;

(c) the second lens group comprising a cemented lens component including a negative lens element that is the most objectwise lens element in the second lens group, the negative lens element having a focal length f_{2n};

(d) the third lens group comprising a cemented lens component having a negative refractive power and a meniscus configuration with a concave surface oriented imagewise and an overall axial thickness D_3, the cemented lens component including a positive lens element having a refractive index n_{3p} cemented to a negative lens element having a refractive index n_{3n} and having a concave surface with curvature radius r_c that is the most imagewise surface of the objective lens;

(e) the objective lens having an overall focal length f and satisfying the Conditional Expressions:

$$n_2-n_1 \geqq 0.2$$

$$4.5 \leqq r_3/r_2 \leqq 5.7$$

$$5 \leqq -f_{2n}/f \leqq 12$$

$$1 \leqq D_3/f \leqq 3$$

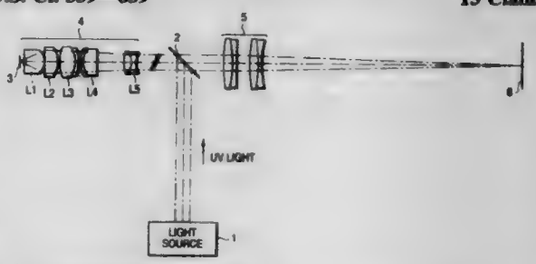
$$10 \leqq r_c/[(n_{3p}-n_3)f] \leqq 40.$$

5,798,870

MICROSCOPE OBJECTIVE LENS AND MICROSCOPE

Masayuki Mizusawa, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 22, 1996, Ser. No. 684,810
Claims priority, application Japan, Jul. 21, 1995, 7-207603
Int. Cl.[6] G02B 21/02;21/00
U.S. Cl. 359—659 13 Claims



4. A microscope comprising:

a light source for generating light with which a sample is irradiated;

an objective lens for transforming the light from said sample to parallel light; and

an imaging lens for forming, on an image surface, an image of the parallel light from said objective lens;

wherein said objective lens comprises, successively from an object side, a negative meniscus lens component having a concave surface directed onto the object side; a positive meniscus lens component having a concave surface directed onto the object side; a first cemented positive lens component; a second cemented positive lens component; and a negative meniscus cemented lens component having a concave surface directed onto an image side, and

wherein, assuming that focal length of said negative meniscus lens component is f1, focal length of the whole lens system is f, and focal length of said negative meniscus cemented lens component is f5, the following conditions:

$$-11<f1/f<-3$$

and

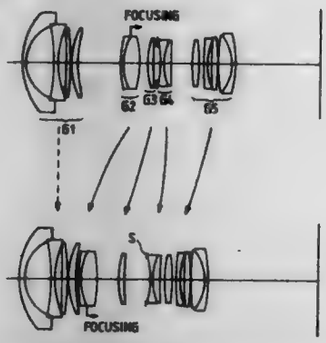
$$-12<f5/f<-7,$$

are satisfied.

5,798,871
ZOOM LENS

Atsushi Shibayama, Tokyo; Masatoshi Suzuki, Ohtawara, and Takanori Fujita, Kuroiso, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Division of Ser. No. 613,254, Mar. 8, 1996, Pat. No. 5,668,668. This application Oct. 25, 1996, Ser. No. 736,674
Claims priority, application Japan, Mar. 8, 1995, 7-048339; Mar. 8, 1995, 7-048340; Mar. 8, 1995, 7-048341; Feb. 7, 1996, 8-020930
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—684 **33 Claims**

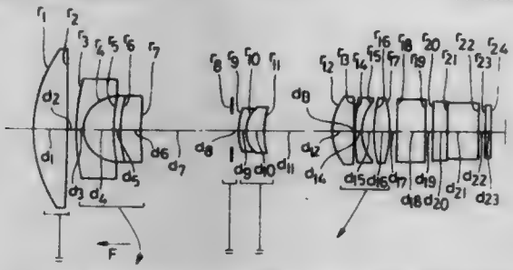


1. A zoom lens consisting, in the order from the object side, of a first lens group of a negative refractive power, a second lens group of a positive refractive power, and a third lens group of a positive refractive power, wherein, in the zooming operation from the wide angle end to the telephoto end, said first lens group remains fixed while said second and third lens groups move toward the object side, the distance between said second and third lens groups varies, and the imaging magnification of the second lens group does not become equal to −1 at any focal length state from the wide angle end to the telephoto end, wherein the focusing operation from a long object distance to a short object distance is executed by a movement of said second lens group toward the image plane.

5,798,872
ZOOM LENS SYSTEM

Tsutomu Uzawa, Hidaka, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1996, Ser. No. 701,883
Claims priority, application Japan, Aug. 24, 1995, 7-237849
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—686 **44 Claims**



1. A zoom lens system comprising, in order from the object side: a first lens unit having a positive refractive power; a second lens unit having a negative refractive power; a third lens unit (having a positive or negative refractive power); and a fourth lens unit having a positive refractive power, wherein a magnification of said zoom lens system is changed by moving said second lens unit along an optical axis and moving said fourth lens unit monotonously toward the object side along the optical axis from its location at a wide position to another location at a tele position, and wherein said zoom lens system satisfies the following conditions (1) and (2):

$$0<f_4/f_1<0.45 \quad (1)$$

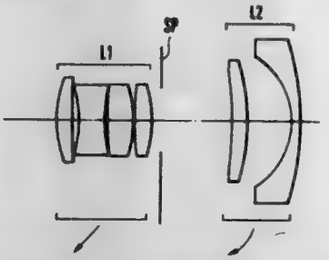
$$-1.6<\beta_{4T}<-0.5 \quad (2)$$

wherein the reference symbol f_1 represents a focal length of said first lens unit, the reference symbol f_4 designates a focal length of the fourth lens unit and the reference symbol β_{4T} denotes a magnification of the fourth lens unit at the tele position.

5,798,873
SMALL-SIZED ZOOM LENS

Koji Hoshi, and Takeshi Nishimura, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 344,637, Nov. 18, 1994, abandoned. This application Sep. 2, 1997, Ser. No. 921,522
Claims priority, application Japan, Nov. 25, 1993, 5-318969
Int. Cl.[6] G02B *15/14;3/02*
U.S. Cl. 359—692 **12 Claims**



1. A small-sized zoom lens comprising, from front to rear, a first lens unit of positive refractive power and a second lens unit of negative refractive power, zooming being performed by varying a separation between said first and second lens units, wherein said first lens unit comprises, in order from the object side to the image side, a bi-concave negative lens and at least two positive lenses, said second lens unit has a first lens and a second lens of negative refractive power having a concave surface facing an object side, and said second lens unit has at least one aspheric surface, and wherein letting focal lengths of said first and second lens units be denoted by f1 and f2, respectively, a shortest focal length of said zoom lens by fw, a refractive index and an Abbe number of a material of said first lens by N2F and v2F, respectively, a refractive index of a material of said second lens by N2R, and focal lengths of said first and second lenses by f2F and f2R, respectively, the following conditions are satisfied:

$$0.4<f1/fw<0.9$$

$$0.444<|f2/fw|<0.671$$

$$1.055<N2F-(v2F/200)<1.505$$

$$-0.142<f2R/f2F<0.078$$

$$N2R<1.65.$$

5,798,874
IMAGING LENS

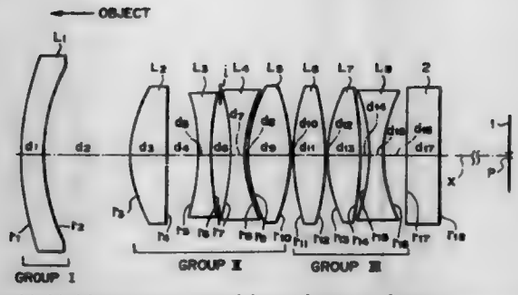
Chikara Yamamoto, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Division of Ser. No. 653,692, May 23, 1996, Pat. No. 5,699,202. This application Jul. 8, 1997, Ser. No. 889,894
Claims priority, application Japan, Jul. 14, 1995, 7-201630
Int. Cl.[6] G02B *9/62;9/12*
U.S. Cl. 359—761 **3 Claims**

1. An imaging lens comprising a first lens group, a second lens group, and a third lens group arranged successively from an object side;

said first lens group being negative as a whole;

said second lens group comprising, successively from the object side, a positive first lens, a negative second lens, a negative third lens, and a positive fourth lens;



said third lens group comprising at least two lenses;

wherein said imaging lens is configured such that difference in dispersion between materials constituting said lenses is smaller than 0.0055 and that the following conditional expressions are satisfied:

$-6<F/F1<0.0$

$0.0<F/F2<1.4$

$-0.6<F/F3<1.5$

$0.8<F/fa<2.0$

$0.0<|F/fb|<1.5$

$1.4<|F/fc|<3.0$

$1.0<F/fd<2.5$

wherein:

F: focal length as a whole;

F1: focal length of the first lens group;

F2: focal length of the second lens group;

F3: focal length of the third lens group;

fa: focal length of the positive lens on the object side in the second lens group;

fb: focal length of the negative lens on the object side in the second lens group;

fc: focal length of the negative lens on an image side in the second lens group; and

fd: focal length of the positive lens on the image side in the second lens group.

5,798,875

APPARATUS FOR DITHERING

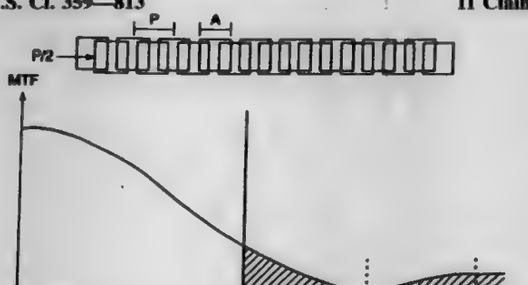
Jean Fortin, Ste-Foy, and Paul Chevrette, Quebec, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Nov. 30, 1995, Ser. No. 566,441

Claims priority, application Canada, Mar. 13, 1995, 2144482

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—813 **11 Claims**



1. A dithering system comprising:

a stationary frame;

a movable lens mounted within the stationary frame;

two thin members disposed such that their longitudinal axes are orthogonal to one another, the members being either in a rest position or operable in one of a longitudinally rigid mode and a laterally flexible mode, said members for normally securing and holding the lens within the stationary frame in a fixed position in the rest position, in the presence of a force upon one of the members, one of said members being operable in the longitudinally rigid mode while the other member is operable in the laterally flexible mode of operation so as to guide and force the lens to move along one of the orthogonal axes; and,

means for applying the force.

5,798,876

LENS BARREL WITH PERIPHERAL PARTS OF FIRST AND SECOND LENSES IN CONTACT

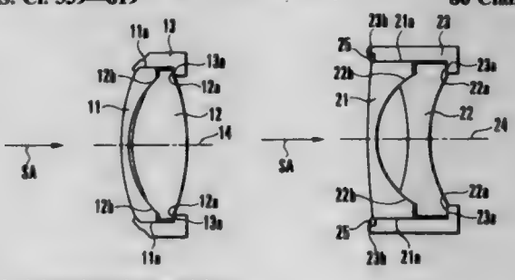
Masatoshi Nagano, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1996, Ser. No. 597,269

Claims priority, application Japan, Feb. 9, 1995, 7-044748; Mar. 29, 1995, 7-096096

Int. Cl.[6] G02B *07/02*

U.S. Cl. 359—819 **80 Claims**



1. A lens barrel comprising:

a first lens; and

a second lens,

wherein respective peripheral parts of said first and second lenses are in contact with each other, and respective central parts of said first and second lenses are distant from each other, and

wherein one of the peripheral parts of said first and second lenses has a concave curved surface and the other has a convex curved surface, and the concave and convex curved surfaces substantially have the same curvature.

5,798,877

OPTICAL SYSTEM FOR IMPROVING THE SYMMETRY OF THE BEAM EMITTED FROM A BROAD AREA LASER DIODE

John Lawrence Nightingale, Portola Valley; John Anderson Trail, Menlo Park, and John Kelly Johnson, Sunnyvale, all of Calif., assignors to Coherent, Inc., Santa Clara, Calif.

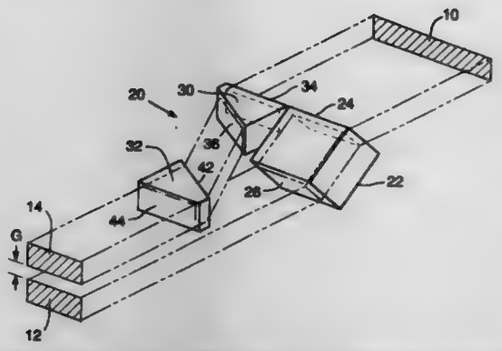
Continuation of Ser. No. 450,817, May 25, 1995, Pat. No. 5,636,069, which is a division of Ser. No. 273,899, Jul. 12, 1994, Pat. No. 5,557,475. This application Dec. 18, 1996, Ser. No. 769,202

Int. Cl.[6] G02B *5/04;7/18;27/10;27/12*

U.S. Cl. 359—831 **8 Claims**

1. An optical system for modifying a light beam having a width and a height wherein the width is greater than the height comprising:

first optical means aligned with and intercepting one half of the width of the beam, said first optical means functioning to displace said one half of the width of the beam in a direction parallel to the height axis so that the propagation axis thereof is parallel to but downwardly displaced from the original propagation axis of the beam; and



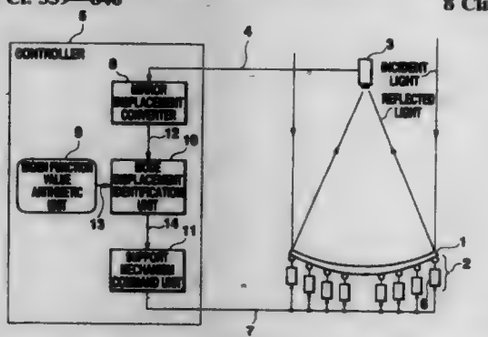
second optical means aligned with and intercepting the other half of the width of the beam, said second optical means for bending the other half of the width of the beam from a position next to said one half to a position over and on top of said one half and thereafter redirecting the other half of the beam in a manner such that both halves of the beam travel along parallel propagation axes in a stacked configuration with the stacked configuration having a width about half of the width of the original light beam and a height about twice the height of the original light beam thereby improving the brightness symmetry of the beam.

5,798,878

SHAPE CONTROL APPARATUS FOR REFLECTING MIRRORS

Kouki Asari; Hiromichi Mori, and Eiichi Sakai, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1996, Ser. No. 747,492
Claims priority, application Japan, Apr. 18, 1996, 8-096778
Int. Cl.[6] G02B *5/08;7/182;7/188;7/192*
U.S. Cl. 359—846 **8 Claims**



1. A shape control apparatus for a reflecting mirror, comprising:

a reflecting mirror support mechanism having an actuator capable of controlling the shape of a reflecting mirror,

a wavefront detector for detecting wavefront distortion in reflected light rays from the mirror and for outputting wavefront distortion data, and

a controller for inputting said wavefront distortion data and for controlling the actuator of said reflecting mirror support mechanism,

wherein said controller calculates, from said wavefront distortion data, a required mirror displacement which is necessary to correct for said wavefront distortion, for a plurality of points on the mirror,

calculates a linear combination of eigenfunction values up to a prescribed mode of vibration in accordance with the mirror's shape and constraints, using a best fit approximation function with said required mirror displacement,

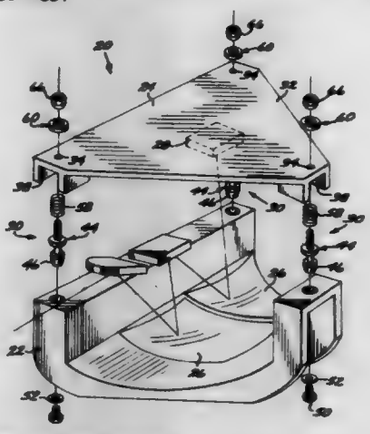
and controls the actuator of said reflecting mirror support mechanism using said calculated eigenfunction values so that the actual mirror displacement at said plurality of points becomes equal to the calculated best fit approximation of said required mirror displacement.

5,798,879

STRESS-FREE, ADJUSTABLE OPTICAL SUPPORT

Paul R. Salvio, 30822 Rue de la Pierre, Palos Verdes Peninsula, Calif. 90274

Filed Jun. 7, 1995, Ser. No. 478,147
Int. Cl.[6] G02B *5/08;7/182;* **H01J** *3/14*
U.S. Cl. 359—857 **11 Claims**



1. An apparatus, comprising:

a first structure;

a second structure having an exterior surface and exactly three second structure bores therethrough extending perpendicular to the exterior surface, each second structure bore having a second structure bore shoulder facing toward the first structure; and

means for supporting the first structure from the second structure, the means for supporting comprising exactly three supports, each support including

a post attached to the first structure, the post having a post shoulder facing the second structure and a threaded end extending through the second structure bore with a clearance between the post and the second structure bore;

a coil spring overlying the post and captured between the second structure bore shoulder and the post shoulder;

a spherical washer overlying the post, the spherical washer having a flat surface contacting the exterior surface of the second structure, and a spherical surface oppositely disposed to the flat surface; and

a spherical nut threaded onto the threaded end of the post with a spherical region of the spherical nut facing and contacting the spherical surface of the spherical washer.

5,798,880

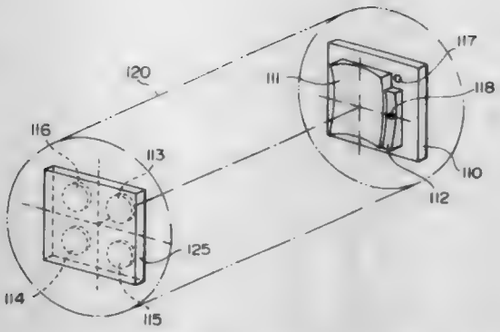
REFLECTED LIGHT RECEIVING METHOD

Kazushige Yamamoto, Koganei, Japan, assignor to Tokyo Gas Co., Ltd., Tokyo, Japan

Division of Ser. No. 349,878, Dec. 6, 1994, Pat. No. 5,604,643, which is a continuation-in-part of Ser. No. 216,481, Mar. 22, 1994, abandoned. This application Sep. 19, 1996, Ser. No. 716,477
Int. Cl.[6] G02B *5/10;17/00*
U.S. Cl. 359—857 **4 Claims**

1. A reflected light receiving method in a multiple path optical matrix system, including:

causing a light beam from a light source to pass through an inlet window formed at a corner portion of one longitudinal end of a housing provided in a cell and causing the light beam to be incident on a first objective mirror of four pieces of objective mirrors having equal radii of curvature to one another and



mechanically mounted on a holder arranged at the other longitudinal end of the housing to be freely rotated about vertical and horizontal axes with respect to an image matrix,

reflecting the light beam by the first objective mirror and causing the light beam to be incident on a first spot of a lowermost line in a column on one end side of the image matrix formed on a main field mirror having the same radius of curvature as that of the objective mirrors and arranged on one longitudinal end of the housing such that a center of curvature matches a center of symmetry of the four pieces of objective mirrors along a longitudinal axis of the housing,

directing the light beam reflected from the first spot on the main field mirror to a second objective mirror placed at a diagonal position with respect to the first objective mirror,

directing the light beam reflected from the second objective mirror to the main field mirror, then reflecting the light beam thereby to the first objective mirror, alternately repeating a reflection between the first objective mirror and the main field mirror and a reflection between the second objective mirror and the main field mirror a plurality of times, and causing the light beam to reach the column vertically focused on one side of the image matrix which includes the first spot,

causing the reflected light beam present on the spot at one side to be incident, through the first objective mirror, an auxiliary field mirror arranged adjacent to the main field mirror on the inlet window side, and having the same curvature as that of the objective mirrors and a center of curvature matching a point of symmetry between the first and third objective mirrors,

subsequently reflecting the light beam by the auxiliary field mirror to the third objective mirror arranged at a position parallel to the second objective mirror and perpendicular to the first objective mirror,

causing the light beam from the third objective mirror to be incident on the main field mirror again and then reflecting the light beam thereby to a fourth objective mirror placed at a diagonal position with respect to the third objective mirror,

directing the light beam reflected by the fourth objective mirror to the main field mirror, then reflecting the light beam thereby to the third objective mirror, and alternately repeating a reflection between the third objective mirror and the main field mirror and a reflection between the fourth objective mirror and the main field mirror a plurality of times,

alternately repeating the reflections between the first and second objective mirrors and the main field mirror a plurality of times again,

alternately repeating the reflections between the third and fourth objective mirrors and the main field mirror a plurality of times again, and

causing the light beam finally passing through the housing to emerge from the housing through an outlet window formed on one longitudinal side of and one end of the housing,

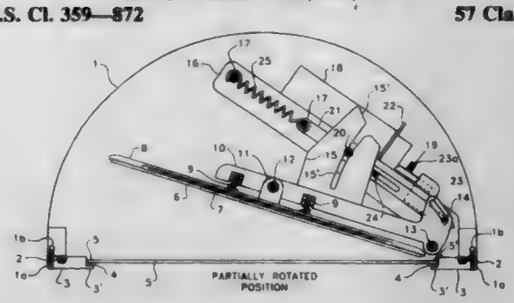
wherein the finally passing light beam is a reflected light beam toward a spot corresponding to a maximum even-numbered coming and going reflection in the image matrix, the reflected light beam toward the spot corresponding to the even-numbered coming and going reflection is a light beam finally reflected through the third objective mirror, and the finally reflected light beam is caused to emerge from the housing through the outlet window formed at a cross point of the other end side of the image matrix including spots focused on the auxiliary field mirror and the center line thereof.

5,798,881

DUAL STATE MIRROR ASSEMBLY

Niel Mazurek, 973 Thrush La., Huntingdon Valley, Pa. 19006, and Theodore J. Zammit, 1301 Seneca Run, Ambler, Pa. 19002

Filed Nov. 14, 1995, Ser. No. 557,456
Int. Cl.[6] G02B *7/182;5/08;27/00*
U.S. Cl. 359—872 **57 Claims**



1. A dual state mirror assembly comprising:

a housing having an open front;

a first substrate mounted to the open front of the housing and forming an enclosure with the housing, wherein the first substrate has a surface coated with material for reflecting a portion of light incident on the surface and transmitting a remaining portion of light incident on the surface; and

a second substrate including a reflective front surface and mounted within the enclosure, for movement between a first position in which the front surface of the second substrate is in direct contact with the first substrate, to produce a bright reflected image, and a second position in which the second substrate forms an angle with the first substrate, to produce a dimmed reflected image; and

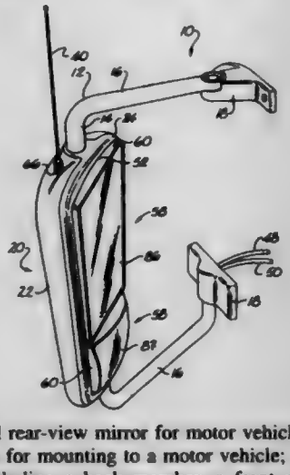
means for moving the second substrate between the first position and the second position.

5,798,882

REAR-VIEW MIRROR ASSEMBLY WITH INTERNAL ANTENNA MOUNT

Heinrich Lang, Seenheimer Strasse Lola, D-91465 Egersheim, Germany, assignor to Sabine Lang, Chapin, S.C., and Heinrich Lang, Ergersheim, Germany

Filed Mar. 22, 1996, Ser. No. 620,872
Int. Cl.[6] G02B *7/182;* **B60R** *1/06;* **H01Q** *1/10;1/32*
U.S. Cl. 359—872 **25 Claims**



1. An external rear-view mirror for motor vehicles, comprising:

a support arm for mounting to a motor vehicle;

a housing including a back member, a front member and an interior volume defined therebetween, said support arm including a vertical portion extending completely through said interior volume of said housing in a longitudinal direction, said front member defining an opening therethrough;

at least one support plate removably attached directly to said vertical portion of said support arm, said support plate having

a front side and a back side, said front member of said housing being removably attached to said support plate, and said back member of said housing being removably attached to said front member of said housing;

an adjustable mirror assembly mounted to said front side of said support plate so as to be variably positionable relative thereto;

an antenna mounting bracket integral with and extending from said back side of said support plate through said opening in said front member of said housing into said interior volume of said housing, said antenna mounting bracket configured for receipt of an antenna which extends out of said housing, wherein the entire weight of said antenna and said antenna mounting bracket is supported by said support plate which is in turn attached directly to said support arm.

5,798,883

METHOD FOR SERVO DEFECT MANAGEMENT OF A MAGNETIC DISK IN HARD DISK DRIVE

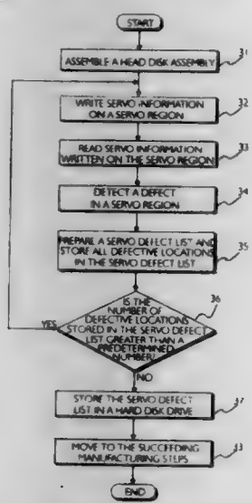
Hack-Bin Kim, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Apr. 5, 1996, Ser. No. 628,333

Claims priority, application Rep. of Korea, May 12, 1995, 1995 11765

Int. Cl.[6] G11B *27/36*

U.S. Cl. 360—31 **10 Claims**



1. A method for recording servo information on a plurality of tracks of a disk using a head which is capable of writing data and servo information on respective servo region and data region of each track and reading data and servo information from the servo region and data region of each track, said method comprising the steps of:

writing servo information on respective servo regions of successive ones of the plurality of tracks;

reading out the servo information written on the respective servo regions of successive ones of the plurality of tracks;

detecting for defects in the respective servo regions of successive ones of the plurality of tracks;

compiling all defective servo regions in a servo defect list;

determining whether the number of defective servo regions compiled in the servo defect list is not less than a predetermined number;

re-writing the servo information on respective servo regions of successive ones of the plurality of tracks for subsequent defect detection, when the number of defective servo regions compiled in the servo defect list is not less than said predetermined number; and

storing the servo defect list on a predesignated location of the disk, when the number of defective servo regions compiled in the servo defect list is less than said predetermined number.

5,798,884

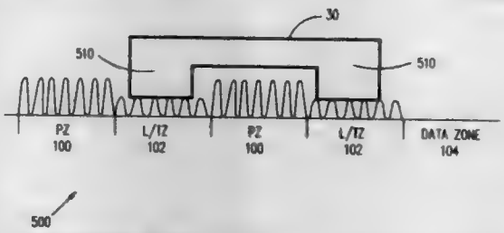
MULTIPLE ZONE DATA STORAGE SYSTEM AND METHOD

Donald Ray Gillis; David H. Jen, both of San Jose, and Mike Suk, Milpitas, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1995, Ser. No. 571,666

Int. Cl.[6] G11B *21/02*

U.S. Cl. 360—75 **9 Claims**



1. A data storage system comprising:

a data storage medium having first, second and third zones, the first zone having a rough texture surface, the second zone having an intermediate texture surface with the first and second zones being radially interleaved and the third zone having a smoothest texture surface;

a transducer assembly positioned proximate the data storage medium;

a movement device for moving the data storage medium relative to the transducer assembly; and

a positioning device for selectively positioning the transducer assembly proximate the first, second and third zones.

5,798,885

HEAD POSITIONING CONTROL FOR DISK APPARATUS USING PEAK DETECTION, POLARITY DETECTION AND SECTOR MARK DETECTION

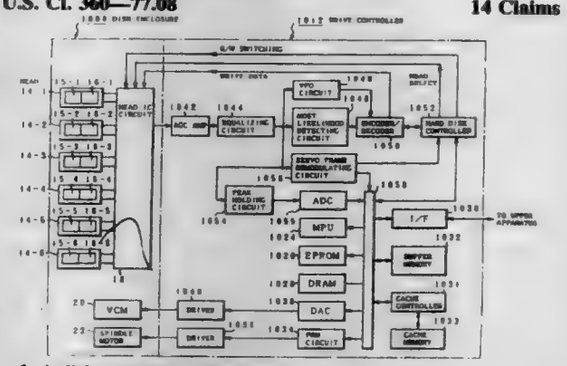
Masaru Saiki; Tsutomu Sasaki; Hirokazu Ishizaki; Eiji Okamura; Tatsuya Gofuku, all of Kawasaki; Norihiko Suzuki, Higashine; Koichi Tohkairin, Higashine; Hirofumi Suzuki, Higashine; Kenji Endo, Higashine; Chihiro Ono, Higashine; Kazuhide Ohba, Higashine; Atsushi Satoh, Higashine; Eisaku Takahashi, Higashine; Takashi Tokairin, Higashine; Isao Suda, Higashine, and Takahiro Ono, Higashine, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 5, 1995, Ser. No. 435,132

Claims priority, application Japan, Jun. 6, 1994, 6-123743; Jun. 7, 1994, 6-125123; Jun. 10, 1994, 6-128617

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—77.08 **14 Claims**



1. A disk apparatus comprising:

a disk medium in which sector areas each having a servo area and a data area are provided on a same cylinder, and a sector mark indicative of the servo area, a code indicative of a cylinder address, and a predetermined servo pattern to detect a head position are magnetically recorded in said servo area;

a disk control section for detecting the head position on the basis of a read signal of said servo pattern by a head portion and for

positioning said head portion to an arbitrary cylinder, thereby performing reading and writing operations;

a peak detecting section for detecting a peak of a read signal of said sector mark read by said head portion, thereby detecting a time interval between successive peaks;

a polarity detecting section for detecting a polarity of the read signal of said sector mark read by said head portion, thereby generating a polarity signal;

a synchronizing section for synchronizing a peak detection pulse of said peak detecting section and a polarity signal of said polarity detecting section with a reference clock signal, and

a sector mark detecting section for detecting said sector mark on the basis of said peak detection pulse of said peak detecting section and the polarity signal of said polarity detecting section and so notifying said disk control section,

said sector mark detecting section including:

a peak comparing section for comparing a peak sequence as a time series of said peak detection pulse for a reading period of time of said sector mark with a peak reference sequence based on a magnetic recording of said sector mark, and generating a peak coincidence signal when both of them coincide;

a polarity comparing section for comparing a polarity sequence as a time series of said polarity signal for the reading period of time of said sector mark with a polarity reference sequence based on the magnetic recording pattern of said sector mark, and generating a polarity coincidence signal when both of them coincide; and

a gate section for generating a detection signal of said sector mark when both of said peak coincidence signal of said peak comparing section and said polarity coincidence signal of said polarity comparing section are obtained,

wherein when either the read sequence signal which coincides with the magnetic recording of the sector mark or the read signal of the magnetic recording of said sector mark is dropped out, said sector mark detecting section generates a detection signal of the sector mark on the basis of either one of the coincidence signals of said gate section.

5,798,886

MAGNETIC DISK CHUCKING MECHANISM HAVING A NOTCHED ARM FOR CLAMPING A ROLLER

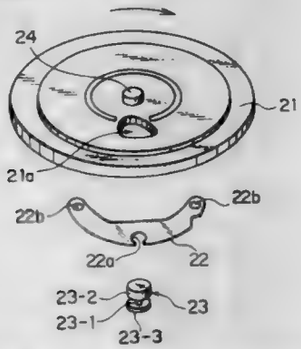
Hisateru Komatsu; Takashi Watanabe, and Osamu Kojima, all of Tendo, Japan, assignors to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 720,244

Claims priority, application Japan, Sep. 27, 1995, 7-249740

Int. Cl.[6] G11B *17/028*

U.S. Cl. 360—99.05 **4 Claims**



1. A magnetic disk chucking mechanism comprising:

a disk table having an aperture formed at a position apart from a center of said disk table; and

a roller held by an arm and protruding from an upper surface of said disk table through said aperture;

said arm hating elasticity and being directly fixed to said disk table at least at one position apart from said roller;

said roller being held by said arm to be movable within said aperture;

said roller having a roller portion, a shift portion formed under said roller portion, and a washer formed at a top end of said shaft portion;

said shaft portion having a diameter considerably smaller than diameters of said roller portion and said washer;

said arm being provided with a notch formed at a position where said roller is to be held; and

said notch having a diameter greater than a diameter of said shaft portion and smaller than the diameters of said roller portion and said washer so that said roller is held in said notch to be freely moveable within said notch.

5,798,887

APPARATUS FOR ABSORBING STATOR VIBRATIONS IN COMPUTER STORAGE APPARATUS

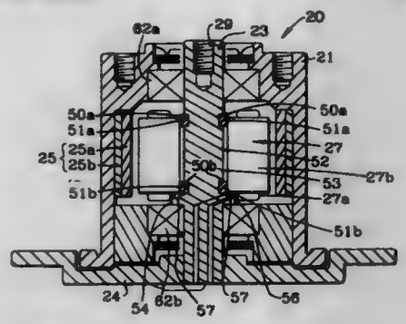
Mitsuaki Yoshida, Yokohama, and Hisashi Kaneko, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 25, 1995, Ser. No. 506,554

Claims priority, application Japan, Sep. 30, 1994, 6-237598

Int. Cl.[6] G11B *17/04;17/08;17/02*

U.S. Cl. 360—99.08 **30 Claims**



1. A rotary disk storage apparatus comprising:

a housing;

at least one storage disk provided within said housing;

a motor having a stator and a rotor to drive said storage disk;

a stator supporting member connecting said stator to said housing;

a pair of damping rings interposed between the stator and the stator supporting member, and having outer surfaces projecting from a surface of the stator supporting member, said pair of damping rings cooperatively defining a gap with said stator and said stator supporting member; and

a vibration absorbing member substantially filling the gap.

5,798,888

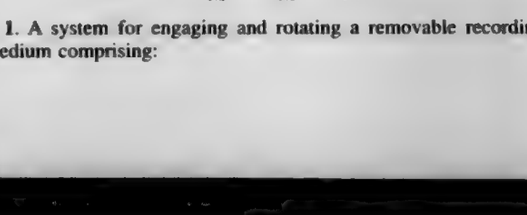
DISK HUB FOR A REMOVABLE CARTRIDGE AND SPINDLE MOTOR FOR USING SAME

James D. Fahey, Farmington; Michael C. McGrath, Pleasanton, and David A. Taylor, Pleasanton, all of Calif., assignors to Iomega Corporation, Roy, Utah

Filed Apr. 9, 1997, Ser. No. 833,781

Int. Cl.[6] G11B *17/02*

U.S. Cl. 360—99.08 **18 Claims**



1. A system for engaging and rotating a removable recording medium comprising:

a spindle motor having at least one bearing; and,

a disk hub disposed proximate a center of the removable recording medium and securely coupled thereto, said disk hub having a center hollow, said center hollow having an inside diameter larger than an outside diameter of the at least one bearing, said spindle motor detachably engagable with said center hollow.

5,798,889

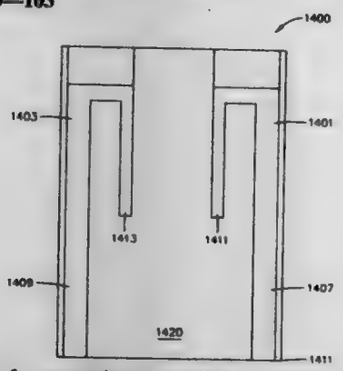
NEGATIVE PRESSURE AIR BEARING

Lee Kevin Dorius, San Jose; John M. Harker, Palo Alto, and Laurence Scott Samuelson, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 967,359, Oct. 28, 1992, Pat. No. 5,438,467. This application May 1, 1995, Ser. No. 431,935

Int. Cl.[6] G11B *21/21*

U.S. Cl. 360—103 **18 Claims**



1. A slider for supporting a transducer in relation to a moving data storage medium, comprising:

a slider structure with a leading edge, a trailing edge, and first and second side edges;

a bottom surface bounded by said leading, trailing and side edges;

a first U-shaped rail on and projecting outwardly from said bottom surface, said first U-shaped rail including:

a cross rail substantially parallel with said leading edge and extending across less than one-half a width of said bottom surface;

the cross rail having a taper-flat which includes a taper portion and a flat portion;

the taper portion of the cross rail and the leading edge of the slider being parallel with respect to one another and the taper portion tapering in height from the flat portion toward the leading edge of the slider;

a first side rail substantially perpendicular to and adjoining said cross rail, said first side rail substantially adjacent and parallel to the first side edge and extending from said cross rail towards said trailing edge;

a second side rail, substantially parallel to said first side rail and offset from said first side rail toward the center of said bottom surface;

the second side rail being shorter than the first side rail; and

a second U-shaped rail projecting outwardly from said bottom surface, said second U-shaped rail including:

a cross rail substantially parallel with said leading edge and extending across less than one-half a width of said bottom surface;

the cross rail having a taper-flat which includes a taper portion and a flat portion;

the taper portion of the cross rail and the leading edge of the slider being parallel with respect to one another and the taper portion tapering in height from the flat portion toward the leading edge of the slider; and

a first side rail substantially perpendicular to and adjoining said cross rail, said first side rail substantially adjacent and parallel to the second side edge and extending from said cross rail towards said trailing edge;

a second side rail, substantially parallel to said first side rail and offset from said first side rail toward the center of said bottom surface; and

the second side rail being shorter than the first side rail, whereby, upon moving said data storage medium adjacent the slider, the rails of the first and second U-shaped rails produce positive pressures and areas within the U-shaped rails produce negative pressures which are dependent upon the shortness of said second side rails.

5,798,890

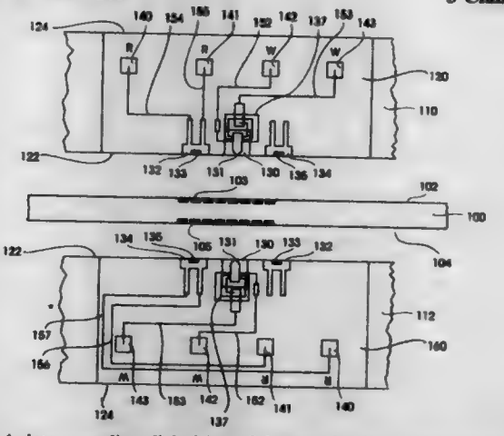
DISK DRIVE WITH IDENTICAL THREE-ELEMENT, SIDE-BY-SIDE HEADS ON OPPOSITE DISK SURFACES

Robert Edward Fontana, Jr., San Jose; Steven Robert Hetzler, Sunnyvale; Hugo Alberto Emilio Santini, and Mason Lamar Williams, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1997, Ser. No. 811,490

Int. Cl.[6] G11B *5/60;21/21*

U.S. Cl. 360—103 **3 Claims**



1. A data recording disk drive of the type having a disk with top and bottom data surfaces, and top and bottom transducer carriers maintained near their associated disk data surfaces for reading and writing on the data surfaces, the disk drive comprising:

at least one data disk having top and bottom data surfaces;

a motor connected to the disk for rotating the disk;

a top carrier maintained near the top surface of the disk for supporting read and write transducers, the top carrier having a back side, a disk side, and a trailing end, the trailing end having an edge near the disk side and an opposite edge near the back side, the trailing end of the top carrier having formed on it a pattern of components comprising (a) a first transducer having a sensing end oriented toward the disk side edge; (b) second and third transducers having sensing ends oriented toward the disk side edge, the second and third transducers being spaced on opposite sides of the first transducer and being read transducers if the first transducer is a write transducer and write transducers if the first transducer is a read transducer; (c) four terminal pads near the back side edge for electrical connection to the transducers; and (d) first and second electrical conductors interconnecting the first transducer with the first and second terminal pads;

a bottom carrier maintained near the bottom surface of the disk for supporting read and write transducers, the bottom carrier having a back side, a disk side, and a trailing end, the trailing end having an edge near the disk side and an opposite edge near the back side, the trailing end of the bottom carrier having formed on it a pattern of components identical to said pattern of components formed on the trailing end of the top carrier;

third and fourth electrical conductors located on the trailing end of the top carrier and interconnecting the second transducer

on the top carrier with the third and fourth terminal pads on the trailing end of the top carrier;

fifth and sixth electrical conductors located on the trailing end of the bottom carrier and interconnecting the third transducer on the bottom carrier with the third and fourth terminal pads on the trailing end of the bottom carrier; and

an actuator connected to the top and bottom carriers for simultaneously moving the top carrier across the top surface of the disk and the bottom carrier across the bottom surface of the disk so the transducers may access data on their associated data surfaces.

5,798,891

ROTARY HEAD DRUM FOR A VCR HAVING RING SHAPED AND CIRCULAR MAGNETS

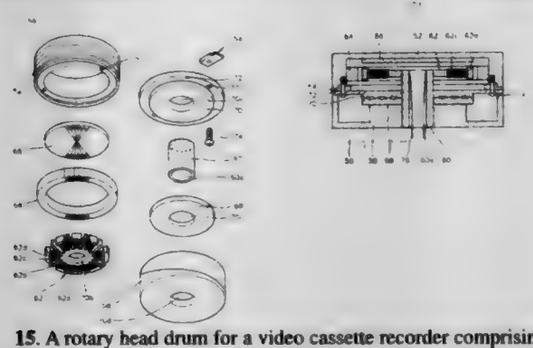
Sang-Jin Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd, Rep. of Korea

Filed Jul. 26, 1996, Ser. No. 690,394

Claims priority, application Rep. of Korea, Jul. 28, 1995, 1995 22640; Jul. 28, 1995, 1995 22641

Int. Cl.[6] G11B *5/52*

U.S. Cl. 360—107 **16 Claims**



15. A rotary head drum for a video cassette recorder comprising:

a cylindrical lower drum;

an upper drum installed on said lower drum and rotatably supported by said lower drum;

at least two video heads provided at an outer lower portion of said upper drum for recording or playing a video signal from a magnetic tape;

a lower rotary transformer formed in an upper portion of said lower drum;

an upper rotary transformer positioned on said lower rotary transformer for transmitting an applied signal from said video head to said lower rotary transformer;

a circular supporting plate integrally formed on said upper rotary transformer, said circular supporting plate being provided with a screw hole at an outer periphery portion thereof;

a stator positioned on said circular supporting plate, said stator being transformed into an electromagnet according to an application of current and comprising a ring-shaped base having a predetermined radius, a plurality of partitions for separating a periphery portion of said base at a regular interval, and a coil winding plate protrusively formed between said partitions for winding a coil;

a ring-shaped magnet integrally formed in said upper drum, said ring-shaped magnet being formed by magnetizing N-pole and S-pole alternately at a regular interval; and

a circular magnet formed above said stator and in said upper drum, said circular magnet being formed by magnetizing N-pole and S-pole alternately at a regular interval,

wherein said ring-shaped magnet and said circular magnet are installed so that opposite polarities of said ring-shaped magnet and said circular magnet face each other vertically on the same line, and

wherein fixing boss inserting holes are formed at center portions of said coil magnet plate, said stator, said circular supporting plate, said upper rotary transformer, said lower rotary transformer and said lower drum, and a fixing boss having an electric wire inserting hole at a center thereof is inserted into said fixing boss inserting holes.

5,798,892

MAGNETIC TAPE APPARATUS HAVING MEANS FOR ALIGNING MAGNETIC TAPE TO MAGNETIC HEAD AND METHOD THEREOF

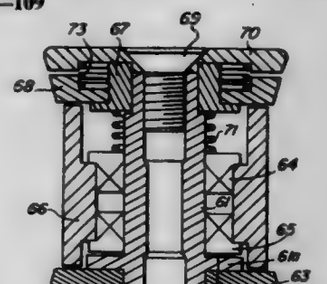
Masayoshi Kobayashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 12, 1996, Ser. No. 695,416

Claims priority, application Japan, Aug. 22, 1995, 7-213123

Int. Cl.[6] G11B *5/56;15/60*

U.S. Cl. 360—109 **18 Claims**



1. A magnetic tape apparatus for reading data out or writing data in a magnetic tape by running the magnetic tape, comprising:

a roller guide having a shaft, an upper flange, a lower flange, and a cylindrical roller, the shaft being fixed to a base such that the shaft is perpendicular to a front surface of the base, the cylindrical roller being concentrically rotatable with a bearing around the shaft on which the magnetic tape is running between the upper and lower flanges, the lower flange being located at a lower end of the cylindrical roller, and the upper flange being located at an upper end of the cylindrical roller such that a lower edge of the magnetic tape is constantly pressed to an upper surface of the lower flange;

a magnetic head assembly having a pair of magnetic gaps parallel to each other along which a pair of magnetic heads are formed side by side for reading and for writing, respectively, the magnetic head assembly being disposed on the base such that the magnetic gaps are perpendicular to the magnetic tape and that each of the magnetic heads coincide with a corresponding track of the magnetic tape in a vertical position when the magnetic tape is running in a direction perpendicular to the magnetic gaps; and

a means for aligning the magnetic tape to the magnetic heads in a vertical position on a reference level parallel to a track of the magnetic tape wherein the reference level is set on the upper surface of the lower flange and that is laterally extended to the magnetic head assembly to adjust a vertical position of the magnetic head thereon.

5,798,893

HEAD DRUM ASSEMBLY FOR USE IN A VIDEO CASSETTE RECORDER

Yeo-Uk Joe, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

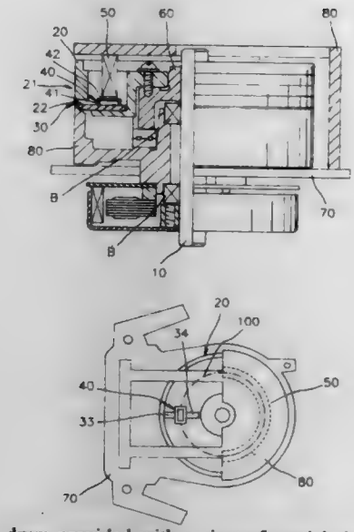
Filed Nov. 27, 1996, Ser. No. 757,708

Claims priority, application Rep. of Korea, Nov. 28, 1995, 1995 44376

Int. Cl.[6] G11B *5/53;5/588*

U.S. Cl. 360—109 **2 Claims**

1. A head drum assembly for use in a video cassette recorder, the head drum assembly comprising:



a rotary drum provided with a circumferential side wall and at least one opening provided thereon, the rotary drum being held rotatable by a bracket;

at least one head provided with a head chip and a head base to which the head chip is attached, the head base being disposed on an inner bottom surface of the rotary drum, the head chip coming in contact with a magnetic tape partially wrapped around the rotary drum through the opening;

means for guiding the head base in a direction that is substantially parallel to the axis of the rotary drum; and

an electromagnet for moving the head in the direction parallel to the axis of the rotary drum while the head chip is in contact with the magnetic tape, the electromagnet being held stationary by a holder secured to the bracket, wherein the head base has an extension portion and a balance weight portion protruding therefrom in opposite directions, and the head chip is attached to the extension portion, and the guiding means includes a guide member having a pair of cut-out portions at opposite sides and a stopper inwardly extending, the guide member being secured on the inner bottom surface in such a way that the extension portion and the balance weight portion pass through the cut-out portions, respectively, and an elastic member is disposed between the stopper and the head base, the elastic member pressuring the head base against the rotary drum to prevent the head from dithering while the electromagnet is not energized.

5,798,894

ROTARY HEAD TYPE MAGNETIC RECORDING REPRODUCING APPARATUS

Hiroaki Takeuchi, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 464,078, Jun. 5, 1995, Pat. No. 5,694,273. This application Feb. 10, 1997, Ser. No. 798,215

Claims priority, application Japan, Nov. 16, 1994, 6-282202

Int. Cl.[6] G11B *5/56;21/24*

U.S. Cl. 360—109 **4 Claims**

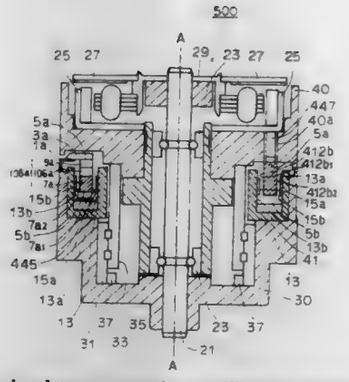
1. A rotary head type magnetic recording reproducing apparatus, comprising:

a fixed drum having an axis;

a rotor including a rotary drum supported rotatable about said axis on said fixed drum; and

first and second plate springs each having a movable portion and a fixed portion, with said fixed portion supported on said rotor such that said movable portion is displacable in a direction along said axis; wherein

said first and second plate springs oppose to each other with a prescribed distance therebetween;



said rotary head type magnetic recording reproducing apparatus further comprising:

a magnetic head fixedly attached on said movable portion of said first plate spring;

a movable member gripped between said movable portion of said first plate spring and said movable portion of said second plate spring;

driving means for displacing said movable portions of said first and second plate springs in a direction along said axis;

a plate spring pressing member supported on said rotor so as to apply pressure to an intermediate portion of said first and second plate spring in a direction along said axis; and

a head height adjusting member gripped between said intermediate portion of said first plate spring and said intermediate portion of said second plate spring.

5,798,895

MAGNETIC READING HEAD HAVING A MAGNETORESISTANT ELEMENT AND IMPROVED POLARIZATION MEANS

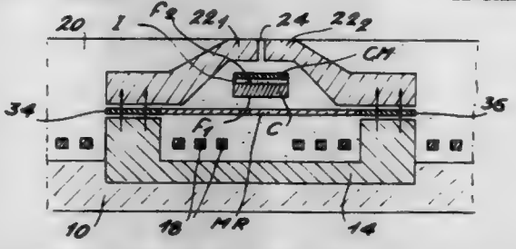
Line Vieux-Rochaz, Sassenage; Jean-Marc Fedeli, Beaucroissant; Philippe Pougnet, Vaureal, and Michel Poirier, Pontoise, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 394,806, Feb. 27, 1995, abandoned. This application Jan. 29, 1997, Ser. No. 792,707

Claims priority, application France, Feb. 28, 1994, 94 02258

Int. Cl.[6] G11B *5/127*

U.S. Cl. 360—113 **12 Claims**



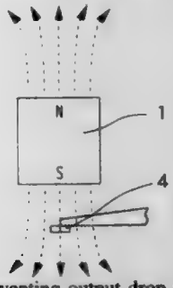
1. Thin film, horizontal, magnetic reading head comprising a magnetic circuit with at least two upper pole pieces separated by a magnetic read head gap of insulation and a lower pole piece insulated from the upper pole piece, a magnetoresistant element at least partly closing the magnetic circuit and means for polarizing the magnetoresistant element including a conductor through which flows an electric current, said conductor having the face turned towards the magnetoresistant element and another face opposite to said element, the polarization means also including a supplementary magnetic layer placed on the polarization conductor on the face opposite to the magnetoresistant element to channel magnetic field lines of said conductor therethrough and reduce magnetic leaks to the upper pole pieces.

5,798,896

APPARATUS FOR DETECTING A MAGNETIC FIELD USING A GIANT MAGNETORESISTANCE EFFECT MULTILAYER AND METHOD FOR PREVENTING AN OUTPUT REDUCTION OF THE MULTILAYER

Satoru Araki; Osamu Shinoura; Yuuichi Sato, and Yuuji Honda, all of Chiba, Japan, assignors to TDK Corporation, Tokyo, Japan

Division of Ser. No. 198,584, Feb. 18, 1994, Pat. No. 5,657,190. This application May 6, 1997, Ser. No. 851,959
Claims priority, application Japan, Mar. 2, 1993, 5-41495
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **2 Claims**



1. A method for preventing output drop with time of a magnetoresistive multilayer film comprising the steps of:

providing a magnetic field separately from a magnetoresistive multilayer film which comprises multiple magnetic layers built therein such that antiparallel magnetization of the magnetic layers are induced by external magnetization,

using said magnetoresistive multilayer film when not within a proximity of said magnetic field,

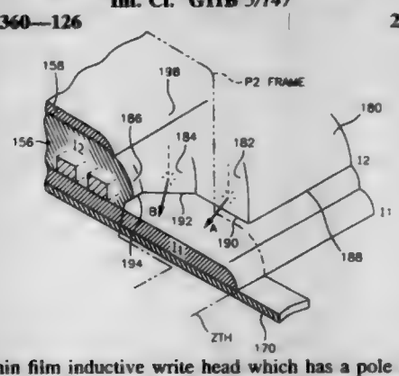
applying said magnetic field to said magnetoresistive multilayer film in a non-use period sufficient to prevent output drop of said magnetoresistive multilayer film.

5,798,897

INDUCTIVE WRITE HEAD WITH INSULATION STACK CONFIGURED FOR ELIMINATING REFLECTIVE NOTCHING

Thomas Young Chang, and Edward Hinpong Lee, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1996, Ser. No. 734,158
Int. Cl.[6] G11B *5/147*
U.S. Cl. 360—126 **25 Claims**



1. A thin film inductive write head which has a pole tip region between an air bearing surface (ABS) and a flare point, a yoke region between the flare point and a back gap and a zero throat height (ZTH) between the ABS and the flare point, the head having a second pole piece which has a yoke in the yoke region and a second pole tip in the pole tip region, and a step in the fabrication of the yoke and second pole tip including patterning a photoresist layer with light directed through a mask to expose the photoresist layer with a pattern of the yoke and a pattern of the second pole tip, the head comprising:

an insulation stack which includes a plurality of insulation layers;

one of the insulation layers having a front edge between the ABS and the flare point for defining the ZTH;

another one of the insulation layers having a plurality of sloping surfaces which are reflective to said light directed through said mask;

each sloping surface terminating at a respective front edge, the front edges collectively forming a non-linear front edge; and

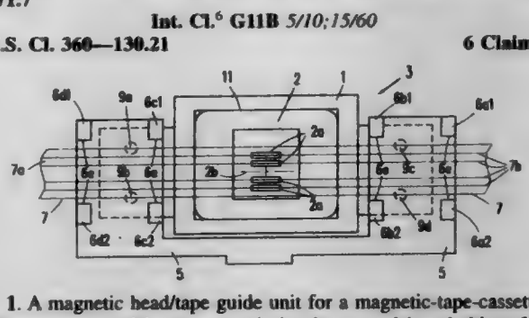
the sloping surfaces being oriented so that said light reflected by the sloping surfaces of said another one of the insulation layers is directed into areas of the photoresist layer away from the pattern of the second pole tip.

5,798,898

MAGNETIC HEAD WITH A TAPE-GUIDE DEVICE

Norbert Kunze, Ehringshausen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1996, Ser. No. 646,827
Claims priority, application Germany, May 26, 1995, 195 19 371.7
Int. Cl.[6] G11B *5/10;15/60*
U.S. Cl. 360—130.21 **6 Claims**



1. A magnetic head/tape guide unit for a magnetic-tape-cassette apparatus, comprising a magnetic head mounted in a holder of a first plastic frame, the first plastic frame comprising at least two mounting limbs which project freely away from the magnetic head, and a second plastic frame aligned in a given manner relative to the magnetic head and secured to the mounting limbs of the first plastic frame, the second plastic frame supporting a tape-guide device for a magnetic tape, the tape-guide device comprises a first and a second tape guide arranged at both sides of the magnetic head in direct proximity thereof, the first and the second tape guides being fork-shaped and having projecting guide limbs which bound a transport path of the magnetic tape, the tape guide device also comprising a third and a fourth tape guide arranged one on either side of the magnetic head and at a larger distance than the respective first and second tape guides adjacent said magnetic head, the third and the fourth tape guide each being fork-shaped and having projecting guide limbs which bound the transport path of the magnetic tape,

characterized in that the second plastic frame has been secured to the mounting limbs of the first plastic frame between the first and the third tape guides and between the second and the fourth tape guides.

5,798,899

TAPE CARTRIDGE WITH AN UPPER CASE WALL COVER PLATE

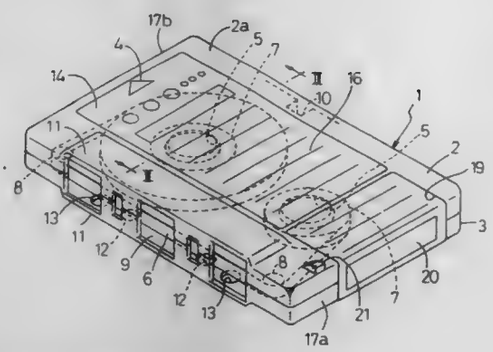
Kazuaki Urano, Mishima-gun; Yoshimi Maehara, Kyoto; Hiroshi Ohkubo, and Takashi Miyamoto, both of Tokyo, all of Japan, assignors to Hitachi Maxwell, Ltd., Osaka-fu, and TAEC Corporation, Tokyo-to, both of Japan

Continuation of Ser. No. 208,904, Mar. 11, 1994, abandoned, which is a continuation of Ser. No. 908,787, Jul. 6, 1992, abandoned, which is a continuation of Ser. No. 599,797, Oct. 19, 1990, abandoned. This application Mar. 1, 1995, Ser. No. 396,581
Claims priority, application Japan, Oct. 20, 1989, 1-274043
Int. Cl.[6] G11B *23/02*
U.S. Cl. 360—132 **13 Claims**

1. A tape cartridge, comprising:

an upper wall;

a lower wall;



first and second side walls;

said upper and lower walls each having:

a pair of through holes corresponding in a manner for receiving driving shafts of a recording/playback device into which the tape cartridge is to be inserted;

wherein said upper wall, lower wall, and first and second side walls form a housing case such that the shafts of the recording/playback device can pass through the pair of through holes in the lower wall and extend partially into the pair of through holes in the upper wall;

a covering plate, fixed only to said upper wall, for covering up said pair of through holes in said upper wall so as to visually deter misleading of said housing case in said recording/playback device;

wherein said upper wall also has a shallow depression, having a depth corresponding to a thickness of said covering plate over substantially an entire outside surface of said upper wall, for receiving said covering plate; and

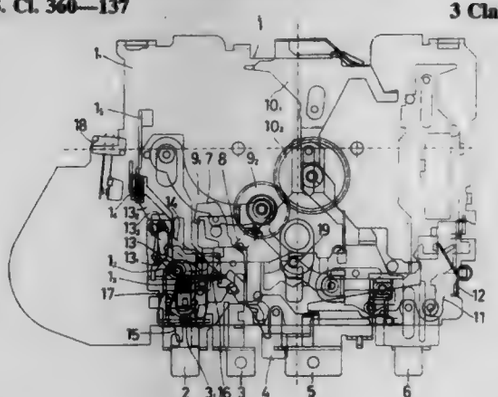
an asymmetrically-shaped projection on said outside surface of said upper wall, having no complementarily-shaped projection on said lower wall, for preventing loading of said housing case into said recording/playback device in a first direction parallel to said upper and lower walls, and for permitting loading in a second direction opposite to said first direction.

5,798,900

PAUSE MECHANISM FOR CASSETTE TAPE RECORDER

Takaichi Shimbo, Tokyo, Japan, assignor to MEC Co., Ltd., Tokyo, Japan

Filed Jan. 2, 1997, Ser. No. 778,188
Int. Cl.[6] G11B *5/02*
U.S. Cl. 360—137 **3 Claims**



1. A pause mechanism for a cassette tape recorder having a drive mechanism, said drive mechanism operable in a plurality of modes of operation including a record switch, a playback switch, a fast forward switch, a rewind switch, and a pause switch, comprising:

a power switch which selectively connects said drive mechanism to a power supply;

a first lever having a first position in which said first lever opens said power switch, and a second position in which said first lever closes said power switch;

a second lever, engaging said first lever, which moves said first lever between said first and second positions responsive to a change in state of at least said playback switch;

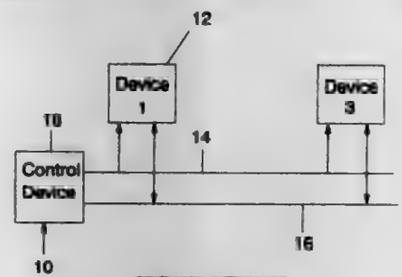
said pause switch having a cam groove which engages said first lever such that depression of said pause switch moves said first lever to said first position to open said power switch and disconnect said drive mechanism from said power supply.

5,798,901

INTERRUPT SYSTEM

Robert C. Signaigo, Lemont, Ill., assignor to Rockwell International Corporation, Costa Mesa, Calif.

Continuation of Ser. No. 517,936, Aug. 22, 1995, abandoned. This application May 12, 1997, Ser. No. 854,865
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—64 **4 Claims**



1. An interrupt system, comprising:

a plurality of electrical devices, each electrically operatively coupled to a first line and a second line in a parallel arrangement;

means for issuing an interrupt signal on the first line such that each electrical device receives the interrupt signal;

each electrical device configured to determine whether the interrupt signal received on the first line is intended for itself and respond thereto during an interrupt acknowledgment cycle, by asserting a common interrupt acknowledgement signal on the second line, if the interrupt signal was intended for itself;

a plurality of discrete time frames each having a predetermined length and located at a predetermined position within the interrupt acknowledgment cycle, each time frame corresponding to one electrical device of the plurality of electrical devices;

each electrical device asserting the common interrupt acknowledgment signal on the second line only during its time frame if the interrupt signal was intended for itself, said assertion of the common interrupt acknowledgment signal indicating that the interrupt acknowledgment cycle is being serviced such that removal of any one of the electrical devices does not prevent remaining electrical devices from receiving the interrupt signal and asserting the common interrupt acknowledgment signal if the interrupt signal was intended for itself.

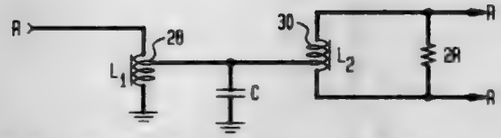
5,798,902

LINEARITY SIGNAL COUPLER

James R. Blodgett, Derry, N.H.; Bruce R. Bouchard, Andover; Michael W. Goodwin, North Andover, both of Mass., and Robert B. Ward, Auburn, N.H., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 11, 1996, Ser. No. 729,478
Int. Cl.[6] H01F *13/00*
U.S. Cl. 361—149 **2 Claims**

1. A new method for using a demagnetized ferrite core in a splitter/combiner network for a broadband CATV information net-



work, the splitter/combiner network having a ferrite core transformer, the method comprising the step of:

utilizing the demagnetized ferrite core as the core of the transformer to improve the linearity of the splitter/combiner network.

5,798,903

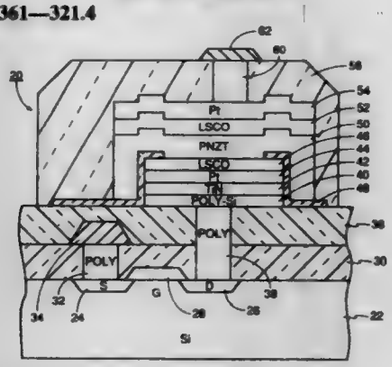
ELECTRODE STRUCTURE FOR FERROELECTRIC CAPACITOR INTEGRATED ON SILICON

Anil M. Dhote, College Park, and Ramamoorthy Ramesh, Burtonsville, both of Md., assignors to Bell Communications Research, Inc., Morristown, N.J., and University of Maryland, College Park, Md.

Filed Dec. 26, 1995, Ser. No. 578,499

Int. Cl.[6] H01G *4/06*

U.S. Cl. 361—321.4 **3 Claims**



1. A ferroelectric capacitor, comprising:

a substrate;

a lower electrode formed on said substrate and including a conductive metal-oxide layer, said lower electrode forming a mesa over said substrate;

an insulating layer comprising a perovskite material overlying an outer peripheral portion of a top of said mesa, overlying the sides of said mesa, and overlying a portion of an upper surface of said substrate surrounding said mesa, an aperture through said insulating layer being formed in a center of said top of said mesa;

a ferroelectric layer formed over a portion of said electrode exposed in said aperture of said insulating layer and over portions of said insulating layer on said top of said mesa, on said sides of said mesa, and on at least part of said insulating layer overlying said portion of said upper surface of said substrate; and

an upper electrode formed over said ferroelectric layer.

5,798,904

HIGH POWER ELECTROSTATIC CHUCK CONTACT

Francois Guyot, Milpitas, Calif., assignor to Lam Research Corporation, Fremont, Calif.

Filed Jun. 28, 1996, Ser. No. 671,678

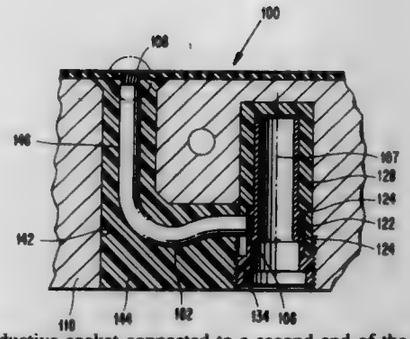
Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **23 Claims**

1. An electrostatic chuck for a vacuum processing chamber comprising:

an electrode for clamping an article to the electrostatic chuck;

a wire having a first end connected to the electrode; and



a conductive socket connected to a second end of the wire, the conductive socket adapted to receive power through a removable electrical contacting member.

5,798,905

SOLID ELECTROLYTE CAPACITOR

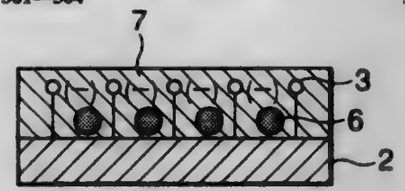
Toshihiko Nishiyama, Toyama; Isamu Uchida, Miyagi, and Koji Sakata, Toyama, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 15, 1997, Ser. No. 911,705

Claims priority, application Japan, Aug. 16, 1996, 8-216288

Int. Cl.[6] H01G *9/02*

U.S. Cl. 361—504 **3 Claims**



1. A solid electrolyte capacitor comprising:

an anode body made of a valve metal;

an oxide film formed on said anode body;

a first layer formed on said oxide film, said first layer containing an anionic substance and a compound having a hydrophobic group; and

a second layer of an electroconductive polymer layer formed on said first layer so as to act as a solid electrolyte layer.

5,798,906

CAPACITOR

Kazuo Ando; Tomokazu Shohoji; Naoya Watanabe, and Minoru Noguchi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1997, Ser. No. 892,897

Claims priority, application Japan, Jul. 17, 1996, 8-187129; Jul. 17, 1996, 8-187130; Jul. 31, 1996, 8-201439

Int. Cl.[6] H01G *4/228;* **H05K** *5/03;* **H01M** *2/00*

U.S. Cl. 361—520 **13 Claims**

1. A capacitor comprising:

a bottomed outer casing housing a capacitor element therein, said capacitor element including a plurality of current collectors with respective extension leads extending therefrom;

a lid closing said bottomed outer casing and having a pair of insertion holes defined therein; and

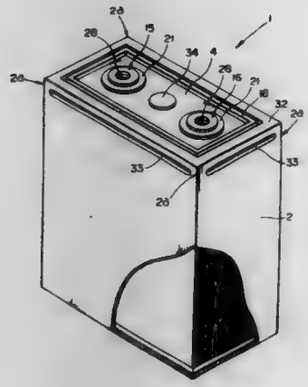
a pair of electrode terminals mounted on said lid and connected to said extension leads;

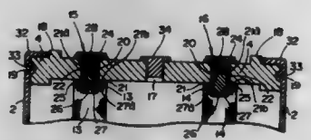
each of said electrode terminals comprising:

an insert inserted in one of said insertion holes with an insulator interposed between said insert and said lid;

a flange contiguous to an end of said insert and held against a surface of said lid through said insulator;

a joint projecting from said flange and connected to said extension leads; and





a staked member contiguous to an opposite end of said insert and crimped over an opposite surface of said lid with said insulator interposed between said staked member and said lid;

said flange having a plurality of dimples defined in a surface thereof facing said surface of the lid, said surface of the lid having a plurality of dimples defined therein;

said insulator having portions pressed into said dimples of said flange and said lid by said flange which is pressed against said surface of said lid by the staked member.

5,798,907

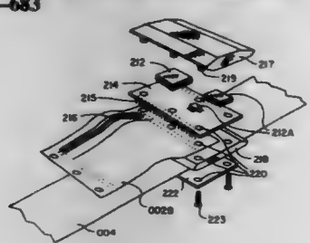
WEARABLE COMPUTING DEVICE WITH MODULE PROTRUSION PASSING INTO FLEXIBLE CIRCUITRY

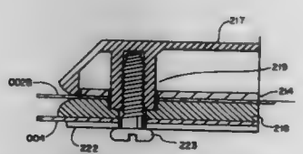
Craig M. Janik, Palo Alto, Calif., assignor to VIA, Inc., Northfield, Minn.

Continuation of Ser. No. 600,669, Feb. 13, 1996, Pat. No. 5,581,492, which is a continuation of Ser. No. 192,636, Feb. 7, 1994, Pat. No. 5,285,398, which is a continuation of Ser. No. 884,117, May 15, 1992, Pat. No. 4,491,651. This application Dec. 2, 1996, Ser. No. 759,846

Int. Cl.[6] G06F *1/16;* H05K *1/02*

U.S. Cl. 361—683 **19 Claims**





14. A wearable computing device, comprising:

at least one computing-device component module; and

flexible circuitry operably connected to the at least one computing-device component module;

wherein the at least one computing-device component module comprises:

a top module portion;

a bottom module portion; and

at least one protrusion for holding the top module portion in substantially fixed relationship with the bottom module portion, the at least one protrusion passing into the flexible circuitry.

5,798,908

ELECTRONIC ASSEMBLY WITH A HEAT SINK, IN PARTICULAR FOR THE HIGH VOLTAGE TRANSFORMER FOR THE DISCHARGE LAMP OF A MOTOR VEHICLE HEADLIGHT

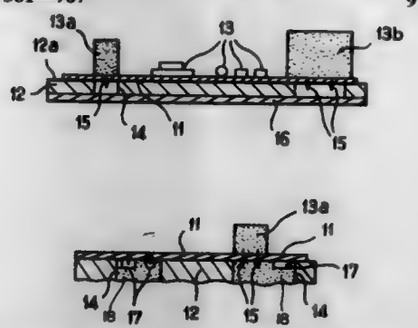
Erick Herzberger, Gagny; Jean-Marc Nicolai, Courbevoie; Bruno Cassese, Creteil, and Patrick Wacheux, Villejuif, all of France, assignors to Valeo Electronique, Creteil, France

Filed Dec. 11, 1996, Ser. No. 763,803

Claims priority, application France, Dec. 11, 1995, 95 14647

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—707 **9 Claims**



1. An electronic assembly comprising a heat sink and a double-sided printed circuit card assembled to said heat sink by hot pressing, said card carrying a plurality of surface-mounting components on its face remote from said heat sink, wherein said card also carries at least one through component, the heat sink having a void over the zone of the printed circuit card that receives the through component, the ends of the pins of said component being bonded to said card inside said void.

5,798,909

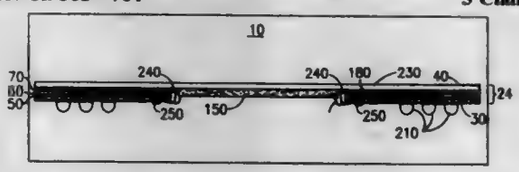
SINGLE-TIERED ORGANIC CHIP CARRIERS FOR WIRE BOND-TYPE CHIPS

Ashwinkumar Chinuprasad Bhatt, Endicott; Subahu Dhirubhai Desai, Vestal; Thomas Patrick Duffy, Endicott, and Jeffrey Alan Knight, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 15, 1995, Ser. No. 390,344

Int. Cl.[6] H05K *1/18;7/20;* H01L *23/488*

U.S. Cl. 361—764 **5 Claims**



1. A chip carrier substrate which includes a first surface, a second surface opposed to said first surface, at least first and second layers of organic material each having a thickness of from about 2 mils to about 20 mils, said first layer, immediately adjacent said first surface, bearing a first layer of electrical circuitry, including contact pads, with a second layer of electrically conductive material being sandwiched between said first and second layers of organic material, said second layer of electrically conductive material being other than a layer of fan-out circuitry, said chip carrier substrate also including a layer of metallic material having a

thickness of from about 4 mils to about 20 mils which is immediately adjacent said second surface;

a single-tiered cavity having a depth extending from said first surface toward said second surface, said depth extending at least to said layer of metallic material;

a semiconductor chip, positioned face-up within said cavity and contacting said layer of metallic material, including chip contact pads and wire bonds extending from said chip contact pads to contact pads of said first layer of electrical circuitry; and

a region of electrically conductive material which is in electrical contact with said second layer of electrically conductive material, at least partially encircles the side wall of said cavity and extends to and onto said first surface, a wire bond also extending from said chip to a portion of said region on said first surface.

5,798,910

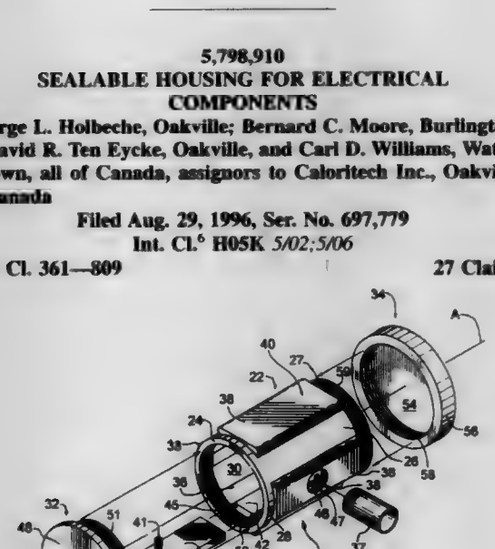
SEALABLE HOUSING FOR ELECTRICAL COMPONENTS

George L. Holbeche, Oakville; Bernard C. Moore, Burlington; David R. Ten Eycke, Oakville, and Carl D. Williams, Watertown, all of Canada, assignors to Caloritech Inc., Oakville, Canada

Filed Aug. 29, 1996, Ser. No. 697,779

Int. Cl.[6] H05K *5/02;5/06*

U.S. Cl. 361—809 **27 Claims**



1. A sealable housing for electrical components comprising:

an extruded main body cut from a raw extrusion and having a first end and a second end, said extruded main body defining a longitudinal axis, and having an outer wall and a substantially cylindrical bore;

two end caps, each of said end caps being removably sealably attached to a respective one of said first and second ends of said extruded main body;

said end caps, together with the substantially cylindrical bore of said extruded main body, defining an electrical component chamber; and,

a means for mounting the electrical components within the electrical component chamber.

5,798,911

AUTOMATIC LIGHT SYSTEM FOR MOTOR VEHICLES OF ALL KINDS AND A METHOD FOR CONTROLLING A LIGHT SYSTEM

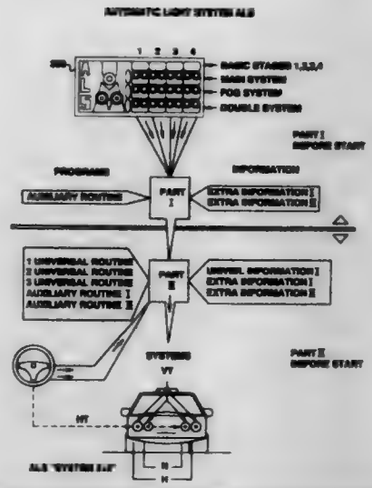
Ante Josić , Vrhovac 12/A, loooo Zagreb, Croatia, assignor to Ante Josic, Croatia

Filed Aug. 30, 1995, Ser. No. 521,541

Claims priority, application Germany, Sep. 2, 1994, 44 31 332.2

Int. Cl.[6] B60Q *1/06*

U.S. Cl. 362—66 **10 Claims**



1. Light system for controlling a beam range of a motor vehicle and comprising

an automatic multifunctional system constructed from programs and information,

the multifunctional system distinguishing between four basic stages for road conditions,

the multifunctional system distinguishing in each of the four basic stages three stages of visibility conditions, thus giving twelve stages,

in dependence upon a particular stage, on the basis of the programs and entered and current information, the multifunctional system controlling instantaneous beam range in such a manner that it always lies between a minimum and a maximum beam range, the formulae

minimum beam range=minimum stopping distance

maximum beam range=maximum stopping distance being fulfilled,

in each basic stage the multifunctional system controlling light intensity in dependence upon the basic range in such a manner that an area in front of the vehicle is illuminated in optimum manner,

so that all vehicles equipped with the automatic multifunctional system at any time during vehicle travel have a beam range and a light intensity which is adapted in optimum manner to the vehicle characteristics, the road conditions and the visibility conditions.

5,798,912

UNDERHOOD LAMP ASSEMBLY WITH GRAVITY-ACTUATED SWITCH

William M. Brown, Brighton, and Ranjit D. Wickremasinghe, Dearborn Heights, both of Mich., assignors to Micro Craft, Inc., Novi, Mich.

Continuation of Ser. No. 396,965, Mar. 1, 1995, abandoned, which is a division of Ser. No. 262,963, Jun. 21, 1994, Pat. No. 5,477,428. This application Sep. 17, 1996, Ser. No. 714,824

Int. Cl.[6] B60Q *3/06*

U.S. Cl. 362—80 **9 Claims**

1. An apparatus, comprising:

a vehicle compartment;

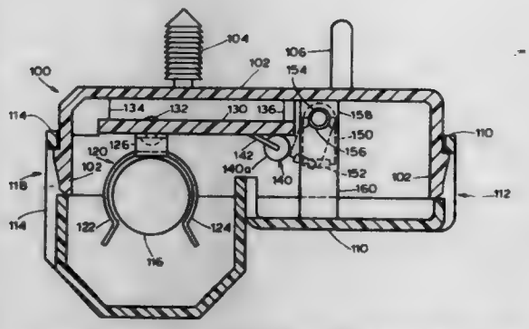
a hinged cover associated with said vehicle compartment;

means for mounting said hinged cover for movement between a closed position in which said hinged cover covers said vehicle compartment and an open position in which said hinged cover is angularly displaced from said closed position;

a housing mounted to the underside of said hinged cover;

a lamp associated with said housing for illuminating said vehicle compartment;

a switch assembly associated with said housing and operatively coupled to said lamp, said switch assembly comprising a first switch member and a second switch member, said first switch member being movable so that said first switch member may



occupy a first position in which said first switch member is relatively far from said second switch member when said hinged cover is in said closed position and so that said first switch member may occupy a second position in which said first switch member is relatively close to said second switch member when said cover is in said open position;

an electrical circuit for causing, when said first switch member is in said second position, an electrical current to pass through said lamp, but not through said switch assembly, to cause said lamp to illuminate said vehicle compartment; and

stop means for preventing said first switch member from moving past a predetermined stop position while allowing said first switch member to freely move between said stop position and said first position, said stop means ensuring that electrical current passes through said lamp to illuminate said vehicle compartment when said first switch member is in said stop position.

5,798,913

POWER-SUPPLY AND COMMUNICATION

Jan Tiesinga; Peter S. Viet, both of Drachten; Johannes A. T. Driessen, Hoogeveen, and Paul A. C. Beijer, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

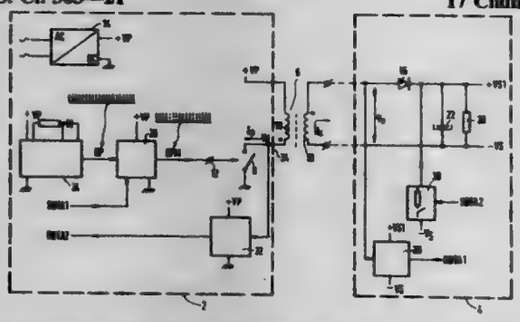
PCT No. PCT/IB96/00090, § 371 Date Oct. 16, 1996, § 102(e) Date Oct. 16, 1996, PCT Pub. No. WO96/25786, PCT Pub. Date Aug. 22, 1996

PCT Filed Feb. 6, 1996, Ser. No. 727,613

Claims priority, application European Pat. Off., Feb. 16, 1995, 95200371; Nov. 29, 1995, 95203285

Int. Cl.[6] H02M *3/335*

U.S. Cl. 363—21 **17 Claims**



15. A handle for a vacuum cleaner, the handle comprising an electrical unit for receiving an alternating voltage (V_e), wherein the alternating voltage (V_e) includes periodical waveforms suppressed in response to an input data signal (SDTA1), and the electrical unit comprises means for detecting fluctuations in the alternating voltage (V_e) to supply an output data signal (RDTA1) which is a regenerated input data signal (SDTA1), and means for actively modulating the alternating voltage (V_e) in response to a second data signal (SDTA2) thereby to supply a further output signal for a further electrical unit which is external to the electrical unit.

5,798,914

POWER FACTOR OF A RECTIFIED POWER SUPPLY

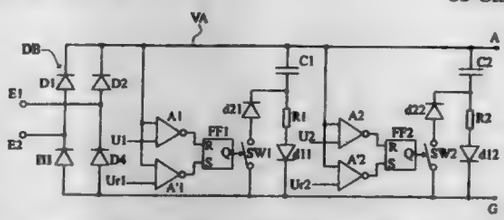
Luc Wuidart, Pourrieres, and Alain Bailly, Simiane, both of France, assignors to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed May 1, 1996, Ser. No. 641,618

Claims priority, application France, May 9, 1995, 95 05686; Oct. 16, 1995, 95 12309

Int. Cl.[6] H02M *1/14*

U.S. Cl. 363—44 **33 Claims**



1. A device for reducing harmonics sent back onto a mains network by a rectified power supply, the device including:

a rectifying bridge having first and second output terminals,

a plurality of capacitors having respectively progressively increasing values and respectively progressively increasing charge time constants, and first associated successively increasing reference voltages, each capacitor having a first terminal connected to the first output terminal of the rectifying bridge and a second terminal,

wherein each capacitor is connected to a first charge path including a resistor, connected between the second terminal of said respective capacitor and the second output terminal, and a switchable discharge path, connected to the second terminal of said respective capacitor including control means to switch on the switchable discharge path only after a rectified supply voltage has transited through a predetermined maximum voltage.

5,798,915

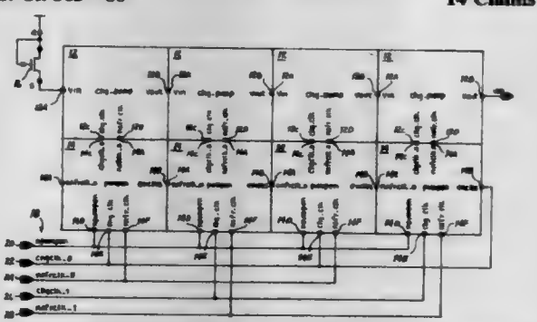
PROGRESSIVE START-UP CHARGE PUMP AND METHOD THEREFOR

Joseph A. Thomsen, Gilbert, Ariz., assignor to Microchip Technology Incorporated, Chandler, Ariz.

Filed Jul. 10, 1997, Ser. No. 891,343

Int. Cl.[6] H02M *3/18*; G05F *3/02*

U.S. Cl. 363—60 **14 Claims**



1. A progressive start-up charge pump comprising, in combination:

a plurality of charge pump stage means for generating a desired output voltage for said progressive start-up charge pump wherein each of said plurality of charge pump stage means is implemented using p-channel devices, each of said plurality of charge pump stage means has a voltage input node and a voltage output node such that each of said plurality of charge pump stage means are coupled to a successive charge pump stage means in a cascade mode; and

enabling means coupled to each of said plurality of charge pump stage means for individually starting each of said plurality of charge pump stage means one charge pump stage means at a time starting with a last charge pump stage means and successively turning on a directly previous charge pump stage means till said first of said plurality of charge pump stage means is started and for ensuring that said voltage output node is at a greater potential than said voltage input node for each of said plurality of charge pump stage means.

5,798,916

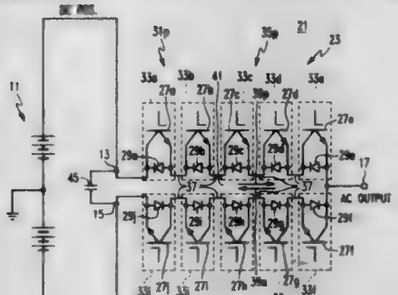
HIGH POWER INVERTER POLE EMPLOYING SERIES CONNECTED DEVICES CONFIGURED FOR REDUCED STRAY LOOP INDUCTANCE

Eric John Stacey, Pittsburgh, and George Studley Bettencourt, Murrysville, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 20, 1997, Ser. No. 822,372

Int. Cl.[6] H02H *7/122;* **H02M** *3/24;7/515;1/06*

U.S. Cl. 363—135 **28 Claims**



1. Switching pole for a high power electronic voltage sourced inverter connected between an ac bus forming an ac terminal and a dc-source having a positive dc bus and a negative dc bus positioned to form closely spaced positive and negative dc terminals, said switching pole comprising:

a positive switching valve comprising a first set of switching units and a first set of connecting conductors connecting said first set of switching units in series to form a positive electrical path between said positive dc terminal and said ac terminal;

a negative switching valve comprising a second set of switching units and a second set of connecting conductors connecting said second set of switching units in series to form a negative electrical path between said negative dc terminal and said ac terminal;

mounting means mounting said positive switching valve and said negative switching valve so that said positive electrical path and said negative electrical path form a loop having a minimum loop area, wherein said first and second set of connecting conductors in said positive switching valve and said negative switching valve each comprise broad, flat conductors having an aspect ratio of width to spacing between facing connecting conductors in said loop of at least about 1:1; and

limiter means limiting electrical parameters of said positive and negative electrical paths connected to said positive and negative switching valves.

5,798,917

CONTROL PROCESS FOR CLOSED-CIRCUIT DRY-METHOD GRINDER

Vincent Werbrouck, Thorembais-Saint-Trond, Belgium, assignor to Slegten Societe Anonyme, Louvain-la-Neuve, Belgium

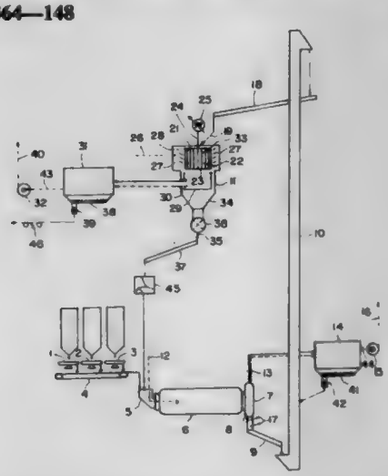
PCT No. PCT/EP94/00552, § 371 Date Dec. 7, 1995, § 102(e) Date Dec. 7, 1995, PCT Pub. No. WO94/20217, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 25, 1994, Ser. No. 530,281

Claims priority, application European Pat. Off., Mar. 3, 1993, 93870040

Int. Cl.[6] G05B *13/02;* **B02C** *4/32*

U.S. Cl. 364—148 **8 Claims**



1. Control system for a closed-circuit and dry process grinding installation that essentially comprises a batching device for the feeding of raw materials, a grinder, an adjustable-speed dynamic separator, means for bringing to the separator the matter coming from the grinder which is termed feeding of the separator, means for returning to the grinder the insufficiently ground matter coming from the separator which is termed oversize from the separator, means for conveying the finished product, a flowmeter for the oversize from the separator, and means for measuring a datum dependent on the feeding of the separator, the latter being either the feed of the separator itself or the power of the elevator or the flow rate of the finished product or the flow rate of the raw material;

said control system being activated by:

a setting value (a) for the flow rate of oversize from the separator,

an auto-adjustable setting value (b) for the datum dependent on the feeding of the separator,

a reference value (c) for the speed of the separator,

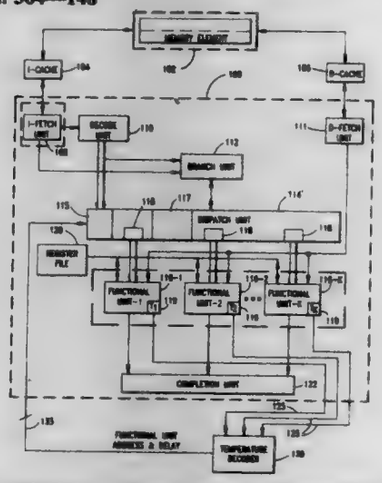
and in that a multivariable regulator simultaneously controls the actual value of the flow rate of oversize from the separator and the actual value of the datum depending on the feeding of the separator and keeps them constant with reference to the setting values (a) and (b) by acting on the speed of the separator and a quantity of raw material fed into a mill, the actual speed of the separator being constantly compared with the reference value (c) in such a way that, should the actual speed deviate from the speed of reference (c) for a period of time exceeding a set value, a auto-adjustable setting value (b) is automatically modified by the calculator to reach a new setting value (b) that will enable the speed of the separator to be equal again to the reference value (c), the result of the calculation being transferred to the regulator that modifies the setting value (b) accordingly while keeping the setting value (a) unchanged.

5,798,918

PERFORMANCE-TEMPERATURE OPTIMIZATION BY MODULATING THE SWITCHING FACTOR OF A CIRCUIT

Christos John Georgiou, White Plains; Edward Scott Kirkpatrick, Croton-on-Hudson, and Thor Arne Larsen, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 29, 1996, Ser. No. 639,396
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—148 **33 Claims**



1. A method for varying a switching factor (S) of a clocked circuit operating at a frequency (f) and including one or more functional units adapted for performing one or more functions, said method comprising the steps of:

generating a temperature signal which is a function of a temperature associated with the circuit;

comparing the temperature signal with a predetermined temperature threshold signal; and

varying the switching factor of a functional unit by varying processing of one of instructions and data on the functional unit, wherein the functional unit dissipates power at a fraction (1/S) of circuit clock cycles, responsive to said step of comparing.

5,798,919

SYSTEM FOR AND METHOD OF EQUIVALENT CIRCUIT REFERENCE TYPE CONTROL

Kazutsugu Suita, Toyota; Yoji Yamada, Nagoya; Nuio Tsuchida, Nagoya, and Koji Imai, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, and Toyota School Foundation, both of Japan

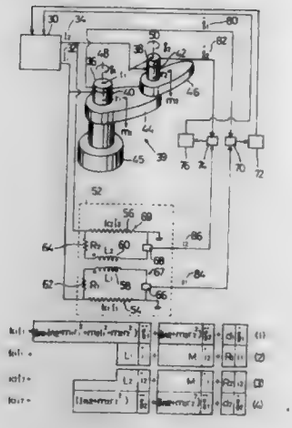
Filed Mar. 5, 1996, Ser. No. 610,861
Claims priority, application Japan, Mar. 9, 1995, 7-049945
Int. Cl.[6] G05B *13/04;17/02;23/02*
U.S. Cl. 364—150 **3 Claims**

3. A system for control of a two-axial robot having a base, a first arm mounted on and rotatable relative to the base, a second arm mounted on the free end of and rotatable relative to the first arm, a first motor for rotating the first arm, and a second motor for rotating the second arm, the system comprising:

a first closed loop (**67**) including a resistor (**54**) having a grounded terminal, a current proportional to the current (I_1) in the first motor being passed through the resistor (**54**), and a series connection of a resistor (**62**) and a coil (**58**), the series connection being connected between the opposite terminals of the resistor (**54**),

a second closed loop (**69**) including a resistor (**56**) having a grounded terminal, a current proportional to the current (I_2) in the second motor being passed through the resistor (**56**), and a series connection of a resistor (**64**) and a coil (**60**), the series connection being connected between the opposite terminals of the resistor (**56**);

a first current detector (**66**) for detecting the current in the first closed loop (**67**);



a second current detector (**68**) for detecting the current in the second closed loop (**69**);

a first tachometer generator (**36**) for outputting an analog value proportional to the speed of revolution of the first arm;

a second tachometer generator (**38**) for outputting an analog value proportional to the speed of revolution of the second arm;

a first comparator (**70**) for comparing the output of the first current detector (**66**) and the output of the first tachometer generator (**36**); and

a second comparator (**74**) for comparing the output of the second current detector (**68**) and the output of the second tachometer generator (**38**);

wherein the resistance R_1 of the resistor (**62**), the inductance L_1 of the coil (**58**), the resistance R_2 of the resistor (**64**), the inductance L_2 of the coil (**60**) and the mutual inductance M between the coils (**58**) and (**60**) are given as

$$R_1=d_1,$$

$$L_1=In_1+In_2+m_1r_1^2+m_2l_1^2+m_2r_2^2,$$

$$R_2=d_2,$$

$$L_2=In_2+m_2r_2^2, \text{ and}$$

$$M=In_2+m_2r_2^2,$$

where d_1 is a friction coefficient of the first arm, d_2 is a friction coefficient of the second arm, In_1 is the moment of inertia of the first arm, In_2 is the moment of inertia of the second arm, m_1 is the mass of the first arm, m_2 is the mass of the second arm, l_1 is the distance between the center of rotation of the first arm and the center of rotation of the second arm, r_1 is the distance between the center of rotation of the first arm and the centroid thereof, and r_2 is the distance between the center of rotation of the second arm and the centroid thereof.

5,798,920

STORAGE AND RETRIEVAL MACHINE CONTROL SYSTEM HAVING AN ENCODER AND AN OPTICAL DISTANCE METER

Wesley Crucius, Brookfield, and Randall M. Schneider, Pewaukee, both of Wis., assignors to HK Systems, Inc., New Berlin, Wis.

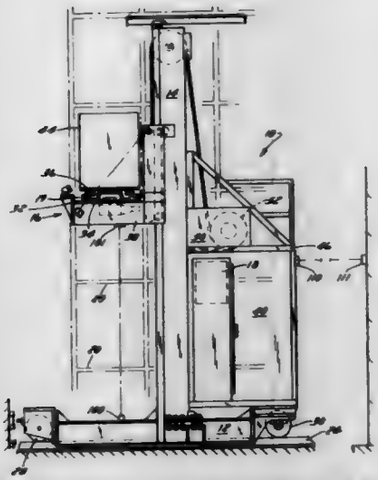
Filed Nov. 17, 1995, Ser. No. 560,434
Int. Cl.[6] G05B *19/18; B65G 1/00*
U.S. Cl. 364—167.01 **20 Claims**

1. A storage and retrieval machine comprising:

a base, said base being movable in a horizontal direction;

a carriage, said carriage being moveable in a vertical direction;

a control system, said control system controlling movement from a start point to an end point of a trajectory, said move-



ment being movement of one of said base and said carriage, said control system further including

a rotary distance meter, said rotary distance meter providing information used by said control system to repetitively determine the current position of said one of said base and said carriage along said trajectory as said one of said base and said carriage traverses said trajectory,

an optical distance meter, said optical distance meter providing information used by said control system to determine the absolute position of said one of said base and said carriage near said end point of said trajectory.

5,798,921

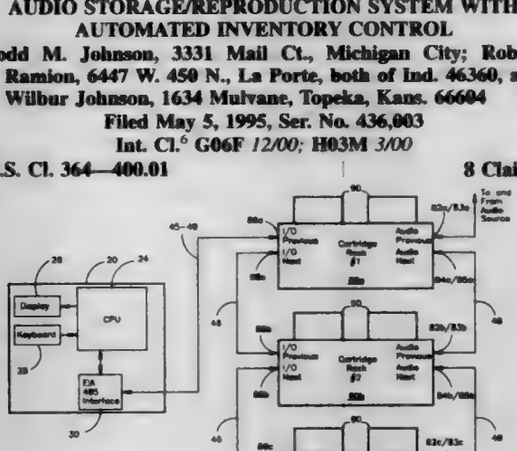
AUDIO STORAGE/REPRODUCTION SYSTEM WITH AUTOMATED INVENTORY CONTROL

Todd M. Johnson, 3331 Mail Ct., Michigan City; Robert Ramion, 6447 W. 450 N., La Porte, both of Ind. 46360, and Wilbur Johnson, 1634 Mulvane, Topeka, Kans. 66604

Filed May 5, 1995, Ser. No. 436,003

Int. Cl.[6] G06F *12/00;* **H03M** *3/00*

U.S. Cl. 364—400.01 **8 Claims**



3. An audio system for the selective storage and reproduction of digital signals from a plurality of remote locations, said system comprising:

an apparatus for storing and retrieving digital signals stored in a plurality of remote locations, said apparatus comprising a housing, a central processing unit, a means for interfacing with said plurality of remote locations, a means for user input, and a means for displaying information;

at least one digital signal storage medium receiver operatively connected to said apparatus for storing and retrieving signals, said storage medium receiver having a plurality of locations, each capable of receiving a self-contained digital signal storage medium, said audio system being expandable by operatively connecting a plurality of digital signal storage medium receivers in series, said at least one digital signal storage medium receiver including a microcontroller, a bus, a transceiver and a plurality of signal controllers; and

at least one self-contained digital signal storage medium selectively and removably inserted into one of said plurality of locations in said at least one digital signal storage medium receiver, said at least one self-contained digital signal storage medium including a first digital storage circuit and a second digital storage circuit, said first digital storage circuit storing digital audio signals and said second digital storage circuit storing a database of information;

wherein said database of information is accessed upon initiation of said audio system to provide for automated inventory control.

5,798,922

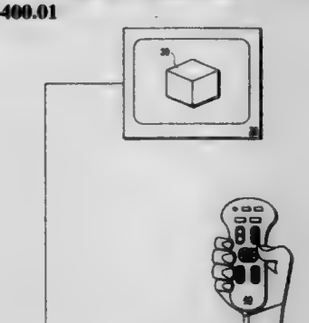
METHOD AND APPARATUS FOR ELECTRONICALLY EMBEDDING DIRECTIONAL CUES IN TWO CHANNELS OF SOUND FOR INTERACTIVE APPLICATIONS

Paul Nigel Wood, Glendale; Laura Mercs, Huntington Beach, and Paul Embree, Irvine, all of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Pictures Entertainment, Inc., Culver City, Calif.

Filed Jan. 24, 1997, Ser. No. 788,739

Int. Cl.[6] H04H *5/00*

U.S. Cl. 364—400.01 **40 Claims**



1. A method for reproducing from an input signal at least one sound having audible directional cues, a first copy of the input signal being a front signal and a second copy of the input signal being a rear signal, said method comprising the steps of:

associating a first copy of the front signal with a first channel and a second copy of the front signal with a second channel;

associating a first copy of a modified rear signal with a first channel and a second copy of the modified rear signal with a second channel; the modified rear signal generated by applying a modified head related transfer function to the rear signal of the input signal; and

selectively adjusting volume levels of the first and second copies of the modified rear signals and the first and second copies of the front signal to provide additional audible directional cues based upon perceived locations of origin of at least one sound.

5,798,923

OPTIMAL PROJECTION DESIGN AND ANALYSIS

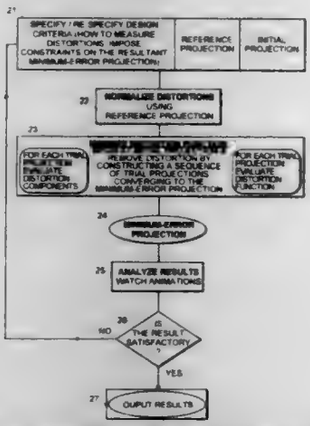
Peter Laskowski, Madison, Ala., assignor to Intergraph Corporation, Huntsville, Ala.

Filed Oct. 18, 1995, Ser. No. 544,812

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—420 **22 Claims**

1. A system, for deriving a cartographic projection having a minimum distortion with respect to selected components of distortion, comprising:



(a) parameter storage means for storing current values of parameters of a first function, having modifiable parameters describing a subject projection, the subject projection being for mapping earth coordinates into two-dimensional coordinates on the surface of a map;

(b) distortion calculation means for determining the numerical values of distortion of the subject projection with respect to selected components of distortion;

(c) weight storage means for storing weight established for each of the selected components of distortion of reference projections to be indicative of the relative levels of such components in the reference projection;

(d) normalizing means, in communication with the distortion calculation means, for normalizing the numerical values of the selected components of distortion determined by the distortion calculation means, using weights in the weight storage means;

(e) modifying means, for modifying at least one of the current parameters stored in the parameter storage means, in such a way as to reduce at least one selected component of distortion attributable to the subject projection determined by the distortion calculation means, so as to establish a new subject projection;

(f) performance function means, in communication with the normalization means, for determining a desired second function of the normalized values of the selected distortion components that is indicative of the distortion performance of the subject projection;

(g) evaluation means, for determining whether the value of the desired second function has been minimized to a desired extent; and

(h) output means for providing a map based on the current parameters of the subject projection.

5,798,924

PROCESS FOR PRODUCING ENDOPROSTHESES

Harald Eufinger, Goyer Busch 5, D-44803 Bochum; Lothar Heuser, Im Pastoratsbusch 49, D-44797 Bochum; Dieter Kruse, Königsberger Strasse 3, D-58455 Witten; Egbert Machtens, Bommerholzer Weg 31, D-5800 Wetter, and Hans Seifert, Oenekinger Weg 97, D-58509 Lüdenscheid, all of Germany

PCT No. PCT/EP94/04020, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO95/15131, PCT Pub. Date Jun. 8, 1995

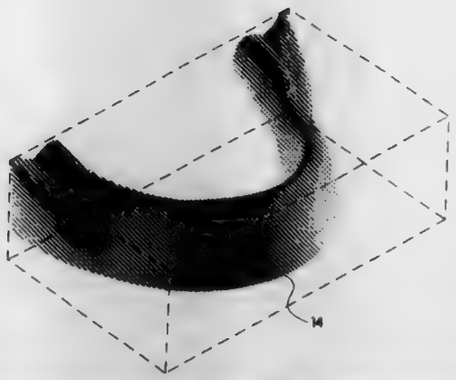
PCT Filed Dec. 2, 1994, Ser. No. 652,601

Claims priority, application Germany, Dec. 4, 1993, 43 41 367.6

Int. Cl.[6] G06F *19/00*; G06G *7/64*;*7/66*

U.S. Cl. 364—468.24 **3 Claims**

1. Process for producing endoprostheses, in particular individually constructed implants and augments for reconstructive head surgery, in which the data block of a three-dimensional actual model of the existing bone structure of a patient is acquired by means of computertomography,the actual model so acquired is subtracted in a computer from the data block of an existing or computertomographically acquired, three-dimensional reference model, and a computer-internal model for the endoprosthesis is formed based on the difference of the data blocks, said model being adapted on the video screen of the computer by interactive manipulation of the data to the special anatomical features of the patient, and the data block of such model being finally used for the computer-controlled manufacture of the endoprosthesis, comprising converting the data blocks of the actual model (**10**) and of the reference model (**14**) into the data of a CAD free-form surface geometry describing the limiting surfaces of the models by Spline and Bezier functions oriented to the points of support, and shown as superimposed imaging on the video screen of the computer; and that based on said imaging, part areas of the interface (**11**) of the actual model (**10**) are recessed by support-point displacement in the direction of the volume of the reference model (**14**).



5,798,925

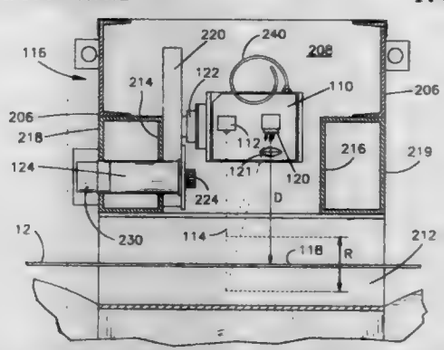
METHOD AND APPARATUS FOR MONITORING A MOVING STRIP

Alan D. Poling, Bay Village, Ohio, assignor to L-S Electro-Galvanizing Company, Cleveland, Ohio

Continuation of Ser. No. 442,499, May 16, 1995, abandoned. This application Aug. 11, 1997, Ser. No. 909,029

Int. Cl.[6] G06F *11/00*

U.S. Cl. 364—469.02 **14 Claims**



11. An apparatus for monitoring a steel strip plating process comprising:

(a) a drive system for moving a steel strip of material along a strip travel path;

(b) structure defining a strip shaping station and a strip plating station;

(c) a scan unit located between the strip shaping station and the strip plating station along the strip travel path and including a radiation source for directing a radiation beam toward a surface of the strip and a photodetector for monitoring radiation reflected back from the surface of the strip;

(d) a linear bearing that supports the scan unit on one side of the strip for back and forth movement along a linear travel path that spans a width of the strip;

(e) a motor coupled to the scan unit for moving the scan unit along the linear travel path on the one side of the strip such that the radiation source directs the radiation beam toward the strip from the one side of the strip and such that the photodetector monitors return radiation on the one side of the strip;

(f) a data gathering computer that stores a plurality of data values in a computer memory corresponding to co-ordinate locations at which the radiation from the radiation source strikes the surface of the steel strip as indicated by radiation detected by the photodetector;

(g) a computer display that provides a visual indication of the shape of the strip based on the stored data values; and

(h) a computer interface coupled to the motor and the scan unit for directing back and forth scanning of the scan unit across the strip and gathering data from the scan unit corresponding to the shape of the steel strip.

5,798,926

Patent Not Issued For This Number

5,798,927

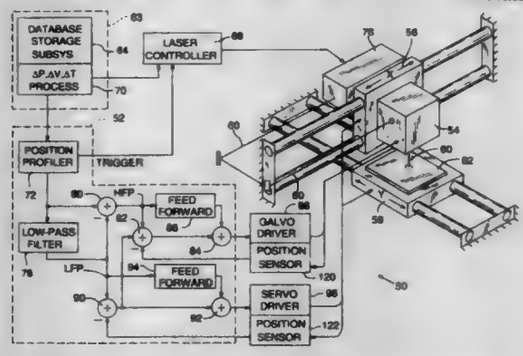
APPARATUS AND METHOD FOR COORDINATING THE MOVEMENTS OF STAGES IN A MULTI-STAGE MULTI-RATE POSITIONER SYSTEM

Donald R. Cutler, and Robert M. Pailthorp, both of Portland, Oreg., assignors to Electro Scientific Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 408,558, Mar. 20, 1995, abandoned. This application Jul. 3, 1997, Ser. No. 888,004

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.3 **34 Claims**



1. A tool positioning system that is implemented as part of a workpiece processing system in which the workpiece is an electronic device or an electronic device package, the tool positioning system positioning a tool relative to a set of target locations and describing a tool path on a workpiece in response to a set of positioning commands, comprising:

a first positioner stage effecting at a first positioning acceleration a controlled first range of relative movement between the tool and the workpiece;

a second positioner stage effecting at a second positioning acceleration a controlled second range of relative movement between the tool and the workpiece, the second controlled range of relative movement being greater than the first controlled range of relative movement, and the second positioning acceleration being less than the first positioning acceleration;

a signal processor deriving from the set of positioning commands a movement-controlling signal;

a filter receiving the movement-controlling signal to produce a lower bandwidth signal portion;

a signal processing operator that combines the movement-controlling signal and the lower bandwidth signal portion to produce a higher bandwidth signal portion:

a first positioner driver controlling the first range of relative movement of the first positioner stage in response to the higher bandwidth signal portion; and

a second positioner driver controlling the second range of relative movement of the second positioner stage in response to the lower bandwidth signal portion,

the first and second positioner drivers driving the respective first and second positioner stages so that they respond by operating within their controlled ranges of relative movement with at least partly uninterrupted concurrent motion in a coordinated fashion to produce accurate tool positioning along the tool path.

5,798,928

TOOL SPECIFYING METHOD AND APPARATUS FOR AN NC AUTOMATIC PROGRAMMING SYSTEM

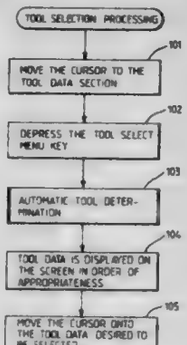
Tomomitsu Niwa, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1993, Ser. No. 6,957

Claims priority, application Japan, Jan. 28, 1992, 4-013263

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—474.22 **17 Claims**



1. A tool specifying method in an NC automatic programming system for specifying a tool by displaying tool data consisting of at least tool shapes for identifying tools, comprising the steps of:

1) setting and registering said tool data;

2) setting and registering tool criteria appropriate for a machining mode, said tool criteria being specified in a range by the most appropriate value and a predetermined value greater or smaller than said most appropriate value;

3) automatically arranging and displaying said tool data in accordance with said set criteria; and

4) selecting and specifying desired tool data from among said tool data displayed.

5,798,929

APPARATUS AND METHOD FOR PROCESSING THIN SHEET MATERIAL SUCH AS BANK NOTES

Gerhard Stenzel, Germering; Bodo Albert, München; Klaus Buchmann, München, and Alfred Schmidt, München, all of Germany, assignors to Giesecke & Devrient GmbH, Munich, Germany

Filed Jan. 17, 1996, Ser. No. 588,028

Claims priority, application Germany, Jan. 17, 1995, 195 01 244.5

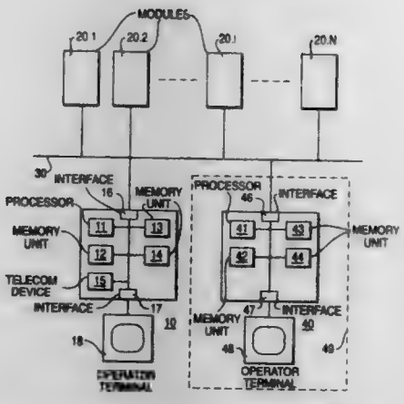
Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—478.01 **15 Claims**

1. An apparatus for processing thin sheet material, comprising:

modules for processing bank notes,

a control device for controlling the bank note processing operations,



at least one connect for data exchange among the modules themselves and between said modules and said control device, and

at least one safety device connected to said data exchange connect among said modules themselves and between said modules and said control device said at least one safety device having means for monitoring the functioning of said control device and said modules with reference to said data exchanged via said connections, wherein

each of said control device and said at least one safety device includes means for generating a log from said data exchanged via said connection.

5,798,930

METHOD FOR PROCESSING SHEETS IN MAIL PROCESSING SYSTEM; A MAIL PROCESSING SYSTEM FOR THE PRACTICE OF SUCH METHOD; AND A MAIL PROCESSING APPARATUS OF SUCH SYSTEM

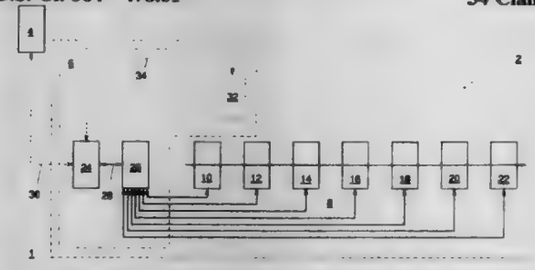
Rocus Johannes van Oosten, Groningen, Netherlands, assignor to Hadewe B.V., Drachten, Netherlands

Continuation of Ser. No. 255,939, Jun. 7, 1994, abandoned. This application May 3, 1996, Ser. No. 646,694

Claims priority, application Netherlands, Jun. 7, 1993, 9300979

Int. Cl.[6] **G06F** *17/00; 19/00*

U.S. Cl. 364—478.01 **34 Claims**



1. A method for processing sheets in a mail processing apparatus comprising a plurality of processing stations, including at least a printer and an inserter, and a control system controlling at least one processing station for printing at least one sheet and processing said at least one sheet to form at least one document to be mailed, the method comprising the steps of:

generating at least one document in the form of electronic digital signals utilizing a text unit not belonging to the mail processing apparatus, the at least one electronic digital document including electronic digital text and at least one electronic digital code also generated by the text unit, wherein said electronic digital code comprises information about the manner in which the control system is to control the processing stations;

supplying the electronic digital document to the control system in electronic digital signal form;

printing the text of the electronic digital document on the at least one sheet with the printer under the control of the control system;

recognizing the electronic digital code in electronic digital signal form directly from the electronic digital document with the control system; and

responsive to the electronic digital code recognized by the control system directly from the supplied electronic digital document, controlling at least one processing station other than the printer for processing the at least one printed sheet to obtain the at least one document to be mailed.

5,798,931

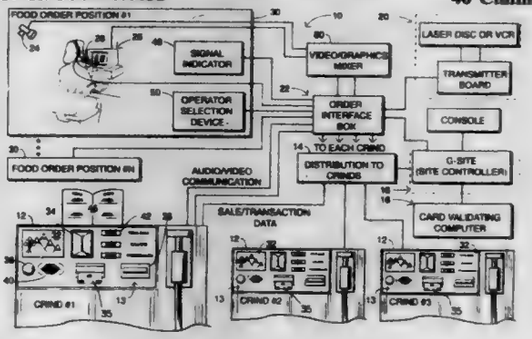
FUEL DISPENSER/OPERATOR INTERCOM SYSTEM

David L. Kaehler, Greensboro, N.C., assignor to Gilbarco Inc., Greensboro, N.C.

Filed Jun. 6, 1996, Ser. No. 659,304

Int. Cl.[6] **G06F** *17/00;* **G06G** *7/48*

U.S. Cl. 364—479.01 **40 Claims**



1. An apparatus for installation in a retail setting for selling fuel and other products ordered by a customer interacting with an operator, comprising:

a. at least two fuel positions for dispensing fuel, each said position having:

i. a video display for displaying information to the customer,

ii. a first microphone to capture the voice of the customer,

iii. a first speaker to reproduce the voice of the operator,

iv. a signaling device actuable to permit the customer to signal to the operator that the customer wishes to place an order for fast food items by interfacing with an operator,

v. a payment receiver for receiving payment from the customer, and

vi. a menu for displaying fast food items to customers,

vii. each said position configured to provide a complete fuel transaction at said position without operator intervention when fast food items are not ordered,

b. a fast food ordering apparatus located apart from said fueling positions at an operators' work station including:

i. an order-entry data terminal for receiving operator-keyed data about products ordered by a customer from any one of said positions of said fuel dispenser,

ii. a video control system including,

video switching circuitry having first and second inputs, said video control system further including a digital logic dependent output adapted for carrying the chosen signal to a selected position of said fuel dispenser,

an operator selection device having input adapted for outputting a selection signal to trigger which said fueling position will receive audio and video signals from said fast food ordering apparatus, and

logic circuitry connected to said video switching circuitry to ensure only one of said video displays, located at one said position, is served by the audio and visual signals of said fast food ordering apparatus at one time,

iii. a camera at said data terminal and connected to said video control system at said first input,

iv. a second microphone positioned to capture the voice of the operator during a transaction and connected to said video control system at said second input,

v. a second speaker connected to said first microphone in said fuel dispenser to reproduce the voice of the customer during a transaction, and

vi. an indicator at said operator's workstation adapted for receiving the signal from said signaling device at fueling position and for identifying from which fueling position the signal originates,

c. a fuel dispensing and payment receiving processing site controller linked to said fueling positions and to said fast food ordering apparatus to receive cost information, said fuel dispensing and payment receiving processing site controller adapted to receive cost information concerning the products ordered by the customer, including total sale cost information, to said fueling position for dislay on said video display so that the customer may pay for the products and fuel in the same transaction through said payment receiver; and

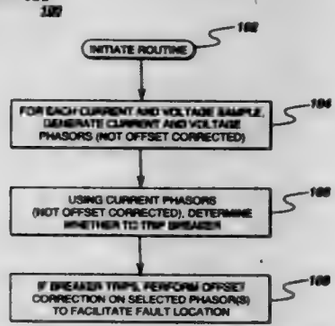
d. wherein each said fueling position is configured to provide audio and video of the operator to place a fast food item order when said signaling device is activated in addition to carrying out a fueling transaction.

5,798,932

METHODS AND APPARATUS FOR REMOVING ERROR DUE TO DECAYING OFFSETS FROM MEASURED POWER SYSTEM CURRENTS

William James Premerlani, Scotia, N.Y.; Mark Gerard Adamiak, Paoli, Pa.; Dingari Sreenivas, and Eyyunni Venugopal, both of Wayne, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed May 21, 1996, Ser. No. 651,178
Int. Cl.[6] G01R *31/08*; H02H *3/38*
U.S. Cl. 364—483 **2 Claims**



1. A method for eliminating error in at least one measured current value of a power system current due to a decaying offset, comprising the steps of:

generating at least one current phasor value from the at least one measured current value; and

upon occurrence of a predetermined condition, removing the decaying offset from the at least one generated current phasor value in accordance with a relationship:

$$PM_I = A \cdot P_I + B \cdot e^{\frac{-j2Mx}{N}} \cdot P_{I-M}$$

where

M_1=an interval, for k samples, used to approximate a mimic simulation,

PM_1=an offset corrected phasor value for interval M_1,

N=sampling rate, samples per cycle,

$$A = C + S,\ B = C - S,$$

-continued

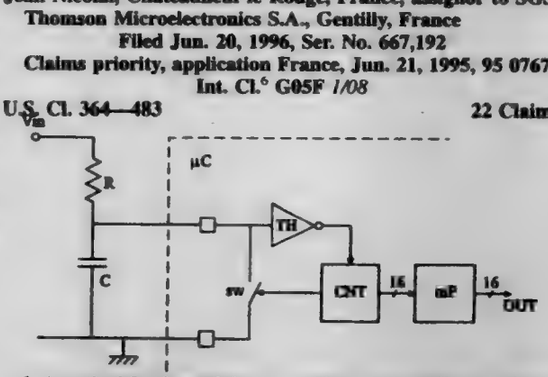
$$C = \frac{R}{2\cos\left(\frac{\pi M}{N}\right)},\ S = \frac{X}{2\sin\left(\frac{\pi M}{N}\right)}.$$

5,798,933

HIGH PRECISION RELATIVE DIGITAL VOLTAGE MEASUREMENT

Jean Nicolaï, Châteauneuf le Rouge, France, assignor to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Jun. 20, 1996, Ser. No. 667,192
Claims priority, application France, Jun. 21, 1995, 95 07674
Int. Cl.[6] G05F *1/08*
U.S. Cl. 364—483 **22 Claims**



1. A method for determining a quantity corresponding to a linear function of a voltage to be detected, including the following steps:

charging a capacitor with the voltage to be detected, with a determined time constant;

determining the duration at the end of which the voltage across the capacitor reaches a predetermined threshold; and

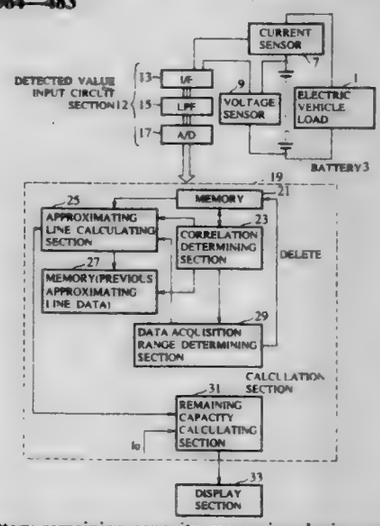
calculating the inverse of said duration, which corresponds to the quantity desired.

5,798,934

BATTERY REMAINING CAPACITY MEASURING DEVICE

Tsutomu Saigo, and Kenichi Shimoyama, both of Susono, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Oct. 28, 1996, Ser. No. 738,863
Claims priority, application Japan, Oct. 30, 1995, 7-281849
Int. Cl.[6] G01R *19/00*
U.S. Cl. 364—483 **8 Claims**



1. A battery remaining capacity measuring device, comprising:

storing means for storing therein the approximating line data;

current/voltage detecting means for detecting current flowing through a load and terminals voltage of a battery;

correlation determining means for calculating a correlation coefficient between a plurality of current values and a plurality of voltage values detected by said current/voltage detecting means at every predetermined time, and for determining whether or not said correlation coefficient is equal to or less than a predetermined value;

data acquisition range determining means for determining a data acquisition range adjacent to a previous approximating line stored in said storing means when said correlation coefficient is determined as equal to or less than said predetermined value, and for deleting data which are not included in said data acquisition range from the plurality of the voltage values and the plurality of the current values detected by said current/voltage detecting means;

approximating line calculating means for calculating a approximating line based on a plurality of voltage values and a plurality of current values determined by said data acquisition range determining means, and for storing the approximating line in said storing means; and

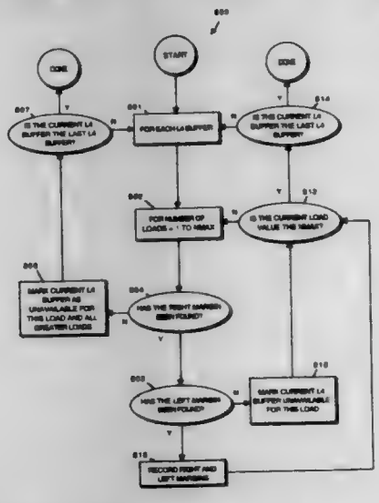
remaining capacity calculating means for calculating a remaining capacity of said battery based on the plurality of the voltages values and the plurality of the current values determined by said data acquisition range determining means.

5,798,935

METHOD AND APPARATUS FOR SIZING BUFFERS TO PROVIDE MINIMAL SKEW

Manjunath Doreswamy; Aleksandar Pance, both of Sunnyvale, and Yuan-Jung Lin, Santa Clara, all of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 673,041
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—488 **30 Claims**



1. A method of generating buffer data for use in selecting suitable buffer types for placement at given locations in a signal distribution network during the design of a microprocessor, the suitable buffer types being selected to minimize skew in the signal distribution network, the method comprising the following steps:

providing a collection of buffer types available for placement at given locations within a first stage of the signal distribution network;

providing a skew budget for signal propagation between the first stage and a next adjacent stage of said signal distribution network;

for said first stage of the signal distribution network, providing a range of incrementally varying values of at least one feature affecting skew, at least one of said incrementally varying values depending on at least one of said given locations within said first stage; and

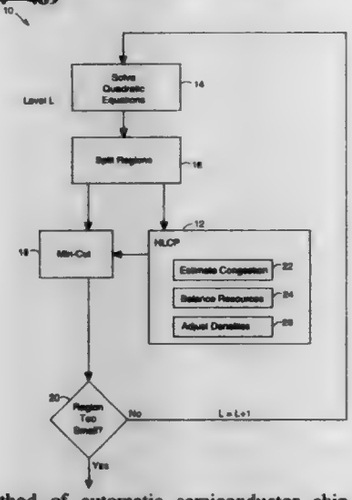
automatically selecting, for each of said incrementally varying values, one or more suitable buffer types from among the collection of buffer types, which suitable buffer types are selected to meet the skew budget.

5,798,936

CONGESTION-DRIVEN PLACEMENT METHOD AND COMPUTER-IMPLEMENTED INTEGRATED-CIRCUIT DESIGN TOOL

Chih-liang Eric Cheng, Milpitas, Calif., assignor to Avant! Corporation, Fremont, Calif.

Filed Jun. 21, 1996, Ser. No. 666,119
Int. Cl.[6] G06F *17/50;17/10*
U.S. Cl. 364—489 **12 Claims**



1. A method of automatic semiconductor chip design, the method comprising the steps of:

estimating the interconnect congestion that will occur in a next iteration of routing between placed cells in a chip design floorplan area to look-ahead;

balancing routing resources; and

adjusting macrocell densities to share the estimated interconnect congestion;

wherein, the estimating of the interconnect congestion progresses one region of a whole floorplan area at a time, and a cost estimation is calculated to represent a congestion severity for a set of cells in each region, and each of said set of cells are tentatively distributed uniformly within the region; and

wherein, corresponding x,y position coordinates of each said cell are used as a simulated placement at the next iterative level in a hierarchy to predict a consequential routing congestion.

5,798,937

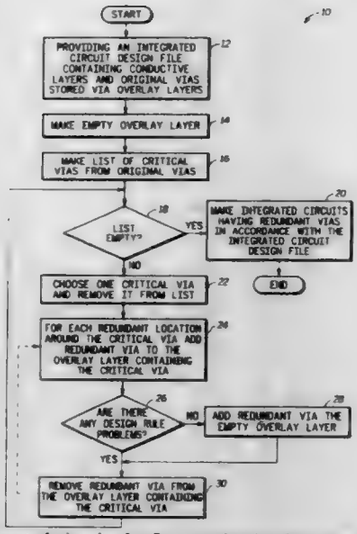
METHOD AND APPARATUS FOR FORMING REDUNDANT VIAS BETWEEN CONDUCTIVE LAYERS OF AN INTEGRATED CIRCUIT

Gabriel Bracha, Tel Aviv; Eytan Weissberger, Ramat Hasharon; Yehuda Volpert, Petah-tikva, and Ilan Algor, Ganei-tikva, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1995, Ser. No. 535,427
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—490 **39 Claims**

1. A method for creating a redundant via in an integrated circuit, the method comprising the steps of:

providing an integrated circuit file in a memory which described the integrated circuit, the integrated circuit file defining a two-dimensional layout of a first conductive layer and a two-dimensional layout of a second conductive layer across



the integrated circuit, the first conductive layer underlying the second conductive layer wherein an original via is coupled between the first conductive layer and the second conductive layer, the integrated circuit file being formed in accordance with predetermined design rules; and

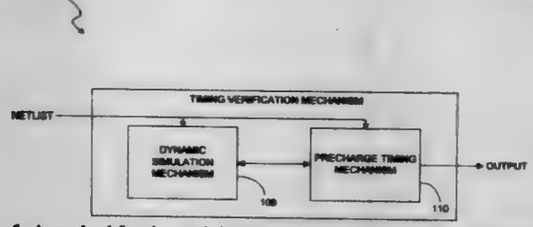
scanning locations in close proximity to the original via to find redundant locations where the redundant via is placed into at least one of the redundant locations to couple the first conductive layer to the second conductive layer in parallel to the original via so that at least two total vias are permanently coupled between the first conductive layer and the second conductive layer in the integrated circuit while the redundant via is in accordance with predetermined design rules wherein one of the redundant via or the original via can fail while the electrical connection between the first and second conductive segments will remain functional through use of a remaining functional via which is the other of either the redundant via or the original via.

5,798,938

SYSTEM AND METHOD FOR VERIFICATION OF A PRECHARGE CRITICAL PATH FOR A SYSTEM OF CASCADED DYNAMIC LOGIC GATES

Craig A. Heikes, Fort Collins, Colo., and Rodolfo G. Beraha, Los Altos, Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Jul. 2, 1996, Ser. No. 677,432
Int. Cl.[6] G06F *17/50*
U.S. Cl. 364—490 **23 Claims**



1. A method for determining a precharge critical path in a system of cascaded dynamic logic gates, wherein each said dynamic logic gate includes a lock resettable output, said method comprising the steps of:

providing said system of said cascaded dynamic logical gates;

discharging a storage node of each said logic gate in said system;

precharging each said storage node once said storage nodes have been discharged; and

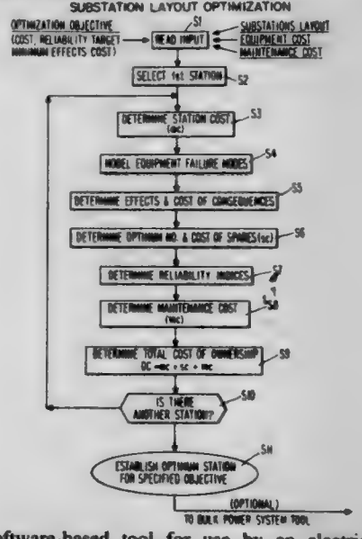
determining which one of said logic gates takes longest to precharge.

5,798,939

SYSTEM FOR OPTIMIZING POWER NETWORK DESIGN RELIABILITY

J. Rafael Ochoa, and Robert L. Hirt, both of Cary, N.C., assignors to ABB Power T&D Company, Inc., Raleigh, N.C.

Continuation of Ser. No. 414,574, Mar. 31, 1995, abandoned. This application Oct. 14, 1997, Ser. No. 950,333
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—493 **16 Claims**



15. A software-based tool for use by an electric utility in planning and operation of its power system, comprising:

(a) means for prioritizing system design alternatives based on economic cost, severity and probability of occurrence associated with a prescribed set of contingencies resulting in unavailability of electric power due to an outage of an element of the power system;

(b) means for developing an analytical model of the power system; and

(c) means for determining the effect on system reliability and cost of the following: system additions, design alternatives, maintenance practices, substation configurations, and spare parts policies.

5,798,940

IN SITU OXIDATION REDUCTION POTENTIAL MEASUREMENT OF SOILS AND GROUND WATER

Wes Bratton, R.R. 1, Box 120A, South Royalton, Vt. 05068, and Daniel James Rooney, Woodhaven Manor 7-D, White River Junction, Vt. 05001

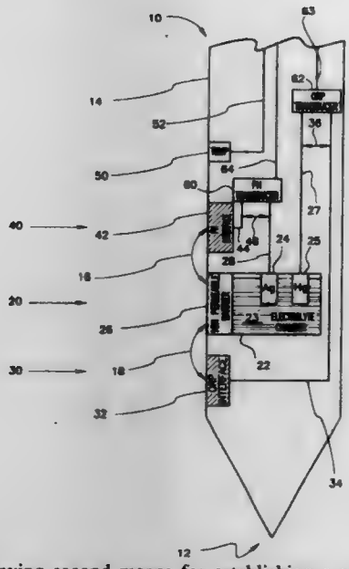
Filed Jul. 5, 1996, Ser. No. 677,362
Int. Cl.[6] G01V *3/34*
U.S. Cl. 364—498 **5 Claims**

1. A ground penetrating probe for determining in situ oxidation-reduction potential and pH characteristics of soils in a single pass, said probe comprising:

a cone penetrometer having a lateral wall and a pointed end;

a reference electrode having first means for establishing a first partial electrical circuit for generating a signal responsive to an electrical potential, said reference electrode disposed within said cone penetrometer and exposed upon said lateral wall of said cone penetrometer;

an oxidation-reduction potential electrode disposed within said cone penetrometer and exposed upon said lateral wall of said cone penetrometer, said oxidation-reduction potential elec-



trode having second means for establishing a second partial electrical circuit complementing said first partial electrical circuit to generate signals responsive to electron activity within the soil when said probe is inserted into soil exhibiting electron activity, and indicative of the level of electron activity, said first means and said second means comprising passive electrochemical apparatus for generating said signals in the absence of an external energy source,

a receptacle containing an electrolyte chamber containing electrolyte, said receptacle disposed within said cone penetrometer, and an ion permeable barrier located between said electrolyte and the exterior of said cone penetrometer and disposed to maintain electrolyte within said chamber and to prevent soil components from entering said chamber; and

a PH electrode disposed within said cone penetrometer and exposed upon said lateral wall of said cone penetrometer, said pH electrode having third means for establishing a third partial electrical circuit complementing said first partial electrical circuit to generate a signal responsive to hydrogen ion activity within the soil when said probe is inserted into soil exhibiting hydrogen ion activity, said first means and said second means combining to form an electrical circuit generating a first signal responsive to presence of oxidation-reduction potential, and said first means and said third means combining to form a second electrical circuit generating a second signal responsive to hydrogen ion activity, wherein oxidation-reduction potential and pH characteristics are determined in a single pass with said probe.

5,798,941

SURGE PREVENTION CONTROL SYSTEM FOR DYNAMIC COMPRESSORS

Larry D. McLeister, Fort Collins, Colo., assignor to Woodward Governor Company, Loveland, Colo.

Continuation of Ser. No. 582,083, Jan. 2, 1996, abandoned. This application Feb. 18, 1997, Ser. No. 802,781

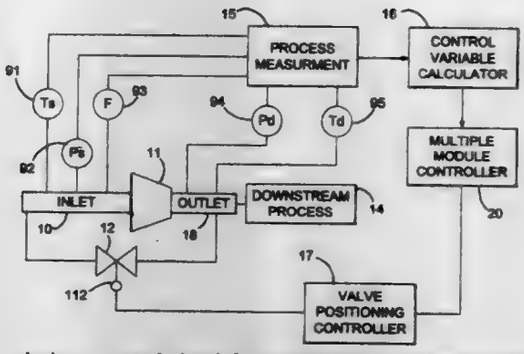
Int. Cl.[6] G05D *16/00*

U.S. Cl. 364—510 **27 Claims**

1. A control system for avoiding surge in a dynamic compressor, the compressor having a variable operating point definable on a compressor map which includes a stable region, a surge region, a surge line separating the two regions, and a surge control line in the stable region near but displaced from the surge line, the control system comprising in combination:

a selectively responsive anti-surge valve coupled to the compressor for controllably increasing compressor flow;

a multiple module controller for receiving a control variable indicative of the operating point of the compressor and producing a control signal for controlling the anti-surge valve; the multiple module controller including;



a PID control module responsive to the control variable for producing a first output signal exerting control action on the operating point of the compressor between the surge control line and the surge line;

a closed loop rate control module responsive to a signal indicative of the rate of approach of the operating point to the surge control line for producing a second output signal having a magnitude which exerts control action on the operating point of the compressor to limit the rate of approach; and,

an output signal selector for selectively coupling the first or second output signal as the control signal to the anti-surge valve.

5,798,942

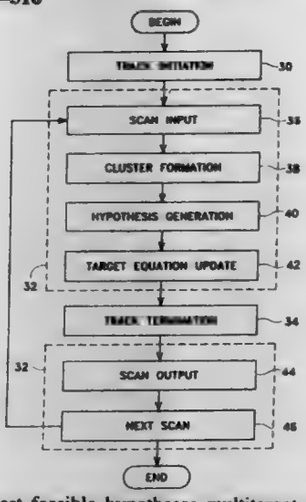
N-BEST FEASIBLE HYPOTHESES MULTITARGET TRACKING SYSTEM FOR SPACE-BASED EARLY WARNING SYSTEMS

Roy Danchick, Los Angeles; George E. Newnam, Fountain Valley, and Jack E. Brooks, Los Angeles, all of Calif., assignors to TRW Inc., Redundo Beach, Calif.

Filed Apr. 5, 1994, Ser. No. 224,024

Int. Cl.[6] G01S *13/00*

U.S. Cl. 364—516 **35 Claims**



24. An N-best feasible hypotheses multitarget tracking system for accurately tracking large numbers of closely spaced objects in a dense target environment in real time, comprising:

a first sensor for generating target line-of-sight (LOS) measurements during multiple scans of a target environment;

means for generating initial track state vectors and state error covariance matrices from an initial set of first sensor scan measurements and subsequent track state vectors and state error covariance matrices from subsequent sets of first sensor scan measurements, subsequent measurements being assigned

to previous track states and covariance matrices or new track states and covariance matrices;

means for partitioning the initial and subsequent first sensor scan measurements into clusters, each cluster being assigned a number of hypotheses for associating measurements to track states and covariance matrices;

means for propagating existing track states and covariance matrices associated with a first sensor scan to a successive first sensor scan to provide prediction of the location of the next measurement;

means for setting gates about the predicted location for the first sensor;

means for constructing a negative-log-likelihood matrix relating predicted to actual measurement locations for each hypothesis in each cluster for the first sensor;

means for generating directly, non-combinatorially and in real time N-best feasible hypotheses from the negative-log-likelihood matrix for the first sensor;

means for updating the track state vectors and covariance matrices after each subsequent first sensor scan with the associated subsequent measurements of the N-best hypotheses;

means for generating an initial estimate of a target's launch position, launch direction, launch time, and pitchover angle using assembled track data from the first sensor to determine the type of target;

means for comparing observed intensity measurements to intensity values based on database profiles to determine the type of target using data from the first sensor;

means for generating a target launch state vector and state error covariance matrix from the assembled track data from the first sensor;

a second sensor for generating target line-of-sight (LOS) measurements during multiple scans of a target environment;

means for generating initial track state vectors and state error covariance matrices from an initial set of second sensor scan measurements and subsequent track state vectors and state error covariance matrices from subsequent sets of second sensor scan measurements, subsequent measurements being assigned to previous track states and covariance matrices or new track states and covariance matrices;

means for partitioning the initial and subsequent second sensor scan measurements into clusters, each cluster being assigned a number of hypotheses for associating measurements to track states and covariance matrices;

means for propagating existing track states and covariance matrices associated with a second sensor scan to a successive second sensor scan to provide prediction of the location of the next measurement;

means for setting gates about the predicted location for the second sensor;

means for constructing a negative-log-likelihood matrix relating predicted to actual measurement locations for each hypothesis in each cluster for the second sensor;

means for generating directly, non-combinatorially and in real time N-best feasible hypotheses from the negative-log-likelihood matrix for the second sensor;

means for updating the track state vectors and covariance matrices after each subsequent second sensor scan with the associated subsequent measurements of the N-best hypotheses;

means for generating an initial estimate of a target's launch position, launch direction, launch time, and pitchover angle using assembled track data from the second sensor to determine the type of target;

means for comparing observed intensity measurements to intensity values based on database profiles to determine the type of target using data from the second sensor;

means for generating a target launch state vector and state error covariance matrix from the assembled track data from the second sensor; and

optimal target data association means for identifying which target launch locations are in a common field of view between the two sensors and comparing a number of the target launch states generated from the assembled track data from the two sensors using state-to-state association to produce a set of optimally matched pairs of target states and error covariance matrices and a set of unmatched target states and covariance matrices.

5,798,943

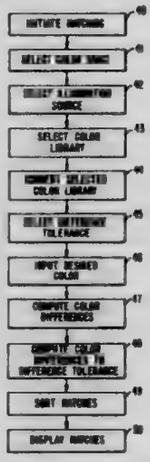
APPARATUS AND PROCESS FOR A DIGITAL SWATCHBOOK

Robert L. Cook, San Anselmo; Eric M. Herrmann, Larkspur; Nelson Offner, Kensington, all of Calif.; Edward M. Granger, Rochester, N.Y.; Akin Dirik, and Lawrence D. Baca, both of San Francisco, Calif., assignors to Light Source Computer Images, San Rafael, Calif.

Continuation of Ser. No. 408,005, Mar. 21, 1995, Pat. No. 5,680,327. This application Mar. 28, 1997, Ser. No. 826,031

Int. Cl.[6] **G01J** *3/46;3/52;* **G06F** *17/00*

U.S. Cl. 364—526 **24 Claims**



1. In an appropriately programmed digital computer, a method of matching colors comprising the steps of:

acquiring a digital representation of a target color;

choosing a color difference tolerance;

selecting a color library from a plurality of pre-set color libraries, wherein said selected color library contains a plurality of digital color representations;

computing a color difference between said target color and each color of said selected color library;

comparing said color difference for each color of said selected color library to said color difference tolerance; and

providing each color of said color library in which said color difference between said color and said target color is less than said color difference tolerance.

5,798,944

Patent Not Issued For This Number

5,798,945

APPARATUS FOR BUILDING ENVIRONMENTAL REPORTING AND CONTROL

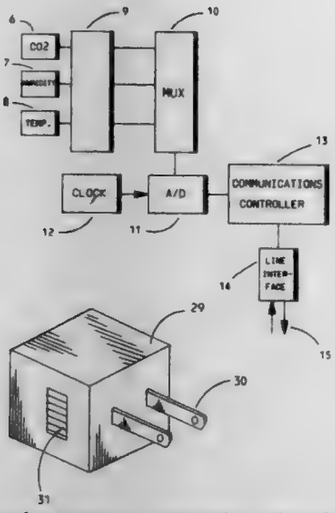
George Benda, Itasca, Ill., assignor to Chelsea Group Ltd., Itasca, Ill.

Continuation of Ser. No. 346,463, Nov. 29, 1994, abandoned, which is a continuation-in-part of Ser. No. 257,157, Jun. 9, 1994, Pat. No. 5,553,006. This application Dec. 3, 1996, Ser. No. 759,755

Int. Cl.[6] **G08B** *17/10*

U.S. Cl. 364—550 **18 Claims**

1. An apparatus for building gas concentration reporting comprising, in combination:



a gas sensor that reports a concentration value of a target gas;

an electrical circuit connected to said gas sensor, said circuit determining the concentration value from said gas sensor;

a powerline carrier transmitter connected to said electrical circuit;

an enclosure containing said gas sensor and said electrical circuit with a pair of protruding metal prongs, said prongs of the type that insert into standard building power receptacles, whereby, with said prongs inserted into a building power receptacle, electrical signals from said powerline carrier transmitter pass into said building power system reporting said concentration value.

5,798,946

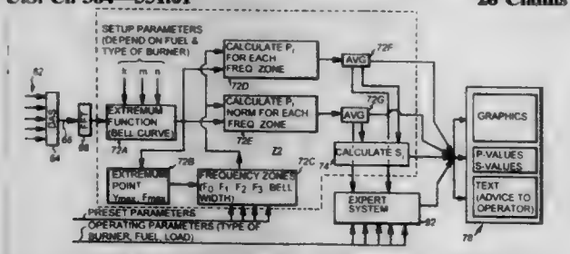
SIGNAL PROCESSING SYSTEM FOR COMBUSTION DIAGNOSTICS

Mark Khesin, North Andover, Mass., assignor to Forney Corporation, Carrollton, Tex.

Filed Dec. 27, 1995, Ser. No. 580,422

Int. Cl.[6] G08B 17/12; F23N 5/08

U.S. Cl. 364—551.01 **28 Claims**



1. A signal processing method for analyzing operation of a combustion burner, comprising the steps of:

a. responsive to a signal produced by a flame sensor monitoring a burner flame converting a fluctuational component of the signal into an extremum function with a floating spectrum point having a frequency coordinate which varies in the frequency domain with changes in combustion conditions;

b. calculating a current extremum value of the extremum function; and

c. calculating a value of at least one parameter of the extremum function, the at least one parameter being defined in relation to the current extremum value of the extremum function and being related to a combustion characteristic.

5,798,947

METHODS, APPARATUS AND COMPUTER PROGRAM PRODUCTS FOR SELF-CALIBRATING TWO-DIMENSIONAL METROLOGY STAGES

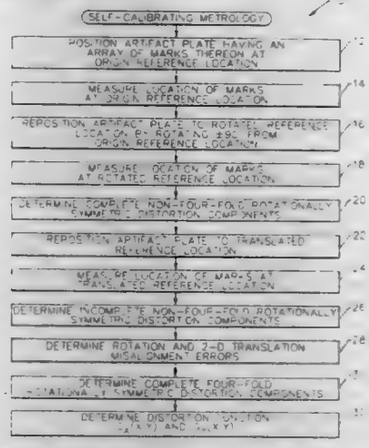
Jun Ye, Palo Alto, Calif.; Roger Fabian Wedgwood Pease, Arlington, Va., and Michael T. Takac, San Jose, Calif., assignors to The Board of Trustees of the Leland Stanford, Jr. University, Stanford, Calif., and International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 718,922, Sep. 25, 1996, abandoned.

This application Mar. 3, 1997, Ser. No. 810,537

Int. Cl.[6] G01B 7/00

U.S. Cl. 361—589 **47 Claims**



1. A method of calibrating a two-dimensional metrology stage by mapping each of a two-dimensional array of stage positions to a corresponding position in a Cartesian coordinate grid to determine distortion therebetween, comprising the steps of:

providing on the stage a rigid artifact plate having a two-dimensional array of marks thereon at spaced intervals which form an (x,y) grid;

measuring the location of each of the marks on the artifact plate while the artifact plate is maintained in an origin reference location on the stage;

rotating the artifact plate relative to the origin reference location to dispose the artifact plate in a rotated reference location;

measuring the location of each of the marks on the artifact plate while the artifact plate is maintained in the rotated reference location;

determining complete non-four-fold rotationally symmetric distortion between the two-dimensional array of stage positions and the Cartesian coordinate grid, from the measured locations of the marks in the origin and rotated reference locations;

translating the artifact plate at least one interval relative to the origin reference location to dispose the artifact plate in a translated reference location;

measuring the location of each of a plurality of the marks on the artifact plate while the artifact plate is maintained in the translated reference location;

determining incomplete non-four-fold rotationally symmetric distortion between the two-dimensional array of stage positions and the Cartesian coordinate grid, from the measured locations of the marks in the origin and translated reference locations;

determining a two-dimensional translation misalignment error and a rotation misalignment error from the complete non-four-fold rotationally symmetric distortion and the incomplete non-four-fold rotationally symmetric distortion; and

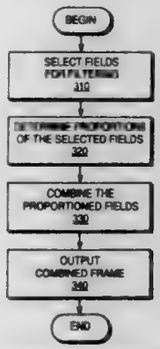
determining complete four-fold rotationally symmetric distortion between the two-dimensional array of stage positions and the Cartesian coordinate grid from the translation and rotation misalignment errors and the measured locations of the marks in the origin, rotated and translated reference locations.

5,798,948

METHOD AND APPARATUS FOR VIDEO FILTERING

Oleg Rashkovskiy, Sunnyvale, Calif., and Jeffrey N. Kidder, Hillsboro, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 20, 1995, Ser. No. 493,209
Int. Cl.[6] H04N *5/217;9/66*
U.S. Cl. 364—572 **23 Claims**



1. A method for generating luminance values for a combined frame representative of a plurality of video frames, the method comprising the steps of:

(a) identifying a set of fields corresponding to the plurality of video frames, wherein the set of fields includes an even field and an odd field for each frame of the plurality of video frames;

(b) combining values from each field of the set of fields to generate a luminance value for a single pixel of the combined frame;

(c) repeating the combining step (b) for each of a plurality of pixels of the combined frame; and

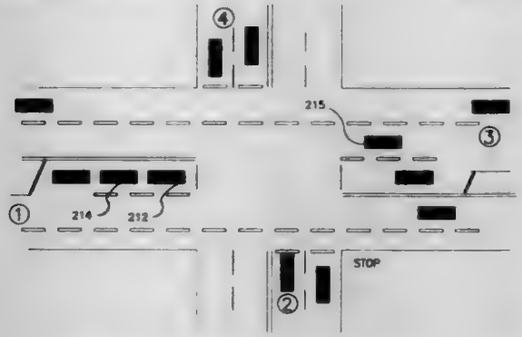
(d) outputting the combined fame as representative of the plurality of video frames.

5,798,949

TRAFFIC SAFETY PREDICTION MODEL

Alan Richard Kaub, 9924 Hawthorn Hill Ct., Manassas, Va. 22110

Continuation-in-part of Ser. No. 372,336, Jan. 13, 1995, abandoned. This application Aug. 9, 1996, Ser. No. 689,651
Int. Cl.[6] G06F *17/00*
U.S. Cl. 364—578 **22 Claims**



1. An apparatus for determining a level of safety for a roadway having a traffic flow and an opposition flow and at least one intersection, wherein each intersection includes a plurality of approaches, each approach having at least one lane, each lane having at least one traffic control device, and each traffic control device having at least one mode chosen from the group consisting of stop mode, caution mode, and go mode comprising:

data storage means for storing traffic flow information, opposition flow information, intersection and roadway data, and a conflict to accident ratio;

input means for entering information into said data storage means;

a processor including a first and a second mathematical component for processing said data to yield processed data;

output means for displaying said processed data; and

a data bus connecting said input means, said output means, said data storage means, and said processor;

wherein said first mathematic component calculates a total expected number of conflicts between the traffic flow and the opposition flow for each intersection along the roadway; and

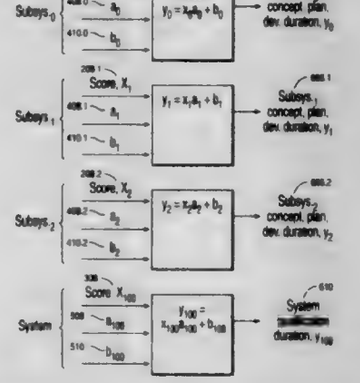
wherein said second mathematical component computes an expected number of accidents for each intersection along the roadway by dividing said number of conflicts by said conflict to accident ratio.

5,798,950

METHOD AND APPARATUS FOR ESTIMATING DURATIONS OF ACTIVITIES IN FORMING A CURRENT SYSTEM, BASED ON PAST DURATIONS OF ACTIVITIES IN FORMING PAST SYSTEMS

Joseph Michael Fitzgerald, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1996, Ser. No. 741,733
Int. Cl.[6] G06F *17/60*
U.S. Cl. 364—578 **21 Claims**



1. A computer aided method for estimating duration of activities in forming a current system, wherein data is stored in a memory and processed by the computer, the method comprising the steps of:

a) storing data, comprising: durations of first activities and scores for a number of previously formed, past systems, scores for the current system, and a model having a mathematical expression defining a relationship between duration of the first activities and such scores for the past systems, the mathematical expression including a factor, wherein the factor may be a coefficient in the expression;

b) processing the data to compute a value for the factor in response to the durations and scores for the past systems; and

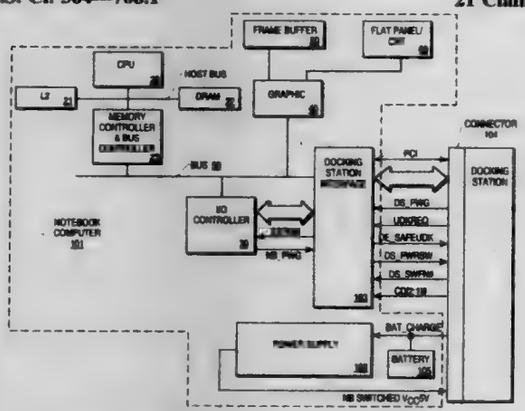
c) processing the data to compute an expected duration for first activities of the current system, wherein the first activities of the current system correspond to the first activities of the past systems, the expected duration being computed in response to the scores for the current system stored in step a), and the value for the factor computed in step b).

5,798,951

METHOD AND APPARATUS FOR AUTOMATIC UN-PRECONDITIONED INSERTION/REMOVAL CAPABILITY BETWEEN A NOTEBOOK COMPUTER AND A DOCKING STATION

Sung-Soo Cho, Sunnyvale; James P. Kardach, and Diane M. Bryant, both of San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 29, 1995, Ser. No. 580,933
Int. Cl.[6] G06F *1/16*
U.S. Cl. 364—708.1 **21 Claims**



1. A system comprising:

a portable computer;

a docking station;

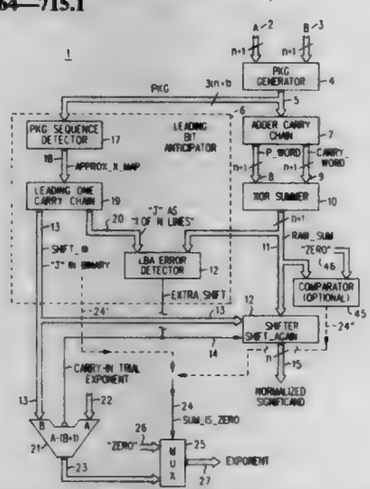
an interface coupled to the portable computer and the docking station, wherein the interface, responsive to un-preconditioned insertion or removal of the portable computer into or from the docking station respectively, generates events to allow software to configure the portable computer and the docking station without prior user intervention, including events to allow configuration of the portable computer and the docking station for insertion and removal while the portable computer is in an active state.

5,798,952

LEADING BIT ANTICIPATOR

Robert H. Miller, Jr., Loveland, Colo., and Rudolfo G. Beraha, Los Altos, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 29, 1996, Ser. No. 608,798
Int. Cl.[6] G06F *7/00;7/38;7/50*
U.S. Cl. 364—715.1 **7 Claims**



1. A method of anticipating the bit position of the leading significant bit of a 2's complement binary sum of two n-bit original operands, the method comprising the steps of:

(a) de-normalizing the two n-bit original operands into two (n+1)-bit representations;

(b) generating for each i_{th} bit position in the two (n+1)-bit representations an i_{th} symbol, each such symbol being one of a first, second or third symbol value, the first symbol value corresponding to the respective i_{th} bits of the two (n+1)-bit representations summing to zero, the second symbol value corresponding to a sum of one, and the third symbol value corresponding to a sum of two, the (n+1)-many symbols so generated forming an ordered sequence of symbols;

(c) grouping the (n+1)-many symbols into (n−1)-many ordered triples, each triple having two adjacent symbols in common with an adjacent triple in the ordering thereof;

(d) inspecting triples to produce a corresponding transition bit in a binary transition word of at least as many transition bits as there are triples, the transition bits being ordered to be in correspondence with the ordering of the triples, a production of a first transition value of the transition bit indicating that the partial summation segment of the bit locations of the de-normalized operands corresponding to the triple being inspected has two most significant bits that are, or would be with a carry in, of opposite bit values, and a production of a second transition value of the transition bit indicating otherwise;

(e) determining by inspection of the binary transition word the bit position therein, if any, of the most significant bit of the first transition value;

(f) expressing the bit position determined in step (e) as a number J, where J is how many bit positions from the most significant end of the binary transition word the determined bit position is;

(g) adding the two (n+1)-bit representations to form a raw sum; and

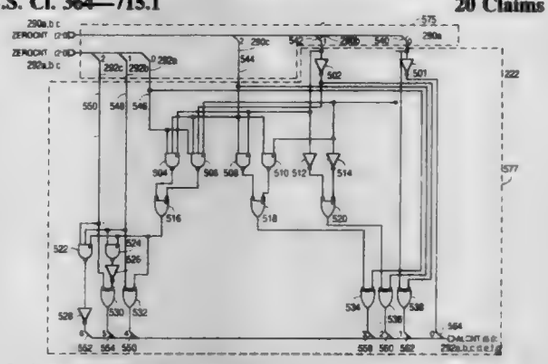
(h) normalizing the raw sum by an amount equal to J.

5,798,953

APPARATUS AND METHOD FOR DETERMINING A NUMBER OF DIGITS LEADING A PARTICULAR DIGIT

Leonel Lozano, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 295,347, Aug. 24, 1994, Pat. No. 5,574,670. This application Sep. 24, 1996, Ser. No. 718,710
Int. Cl.[6] G06F *7/00;15/00*
U.S. Cl. 364—715.1 **20 Claims**



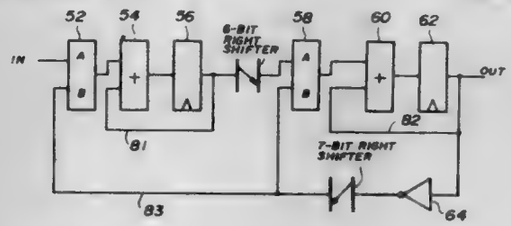
1. A computer system comprising:

a concatenator to receive first data representing a number of leading count digits in a most significant non-count group of M digits in a data input signal, the most significant non-count group being a most significant group of X groups of M digits in the data input signal having a non-count digit, to receive second data representing a number of most significant groups of the X groups of M digits preceding the most significant non-count group, and to concatenate the first and second data to indicate a number of leading count digits in the X groups of M digits, wherein X and M are non-negative integers.

5,798,954
DIGITAL FILTER DEVICE HAVING A BIT SHIFTER UNIT

Naomasa Ishibata, Kobe, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 11, 1996, Ser. No. 730,504
Claims priority, application Japan, Oct. 13, 1995, 7-265831
Int. Cl.[6] G06F 17/10
U.S. Cl. 364—724.17 12 Claims

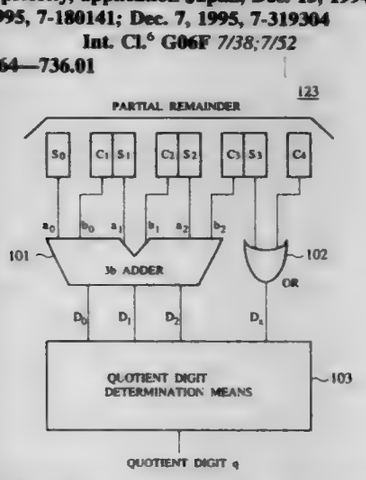


1. A digital filter device comprising:
an adder;
a delay connected to said adder;
at least one feedback line connected at one end to an output of said delay and at another end to an input of said adder;
a sign inverting unit generating a sign-inverted value of a digital signal at an input of the sign inverting unit; and
a bit shifter unit generating a result of an operation of multiplication on a number in the form of 2^{-n} where n is a non-negative integer and a value of a digital signal at an input of the bit shifter unit, said bit shifter unit generating an output signal indicating the result of the operation by right shifting of n bits in the digital signal and by truncating n least significant bits of the digital signal.

5,798,955
HIGH-SPEED DIVISION AND SQUARE ROOT CALCULATION UNIT

Gensoh Matsubara, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 13, 1995, Ser. No. 571,718
Claims priority, application Japan, Dec. 15, 1994, 6-312238; Jul. 17, 1995, 7-180141; Dec. 7, 1995, 7-319304
Int. Cl.[6] G06F 7/38;7/52
U.S. Cl. 364—736.01 16 Claims

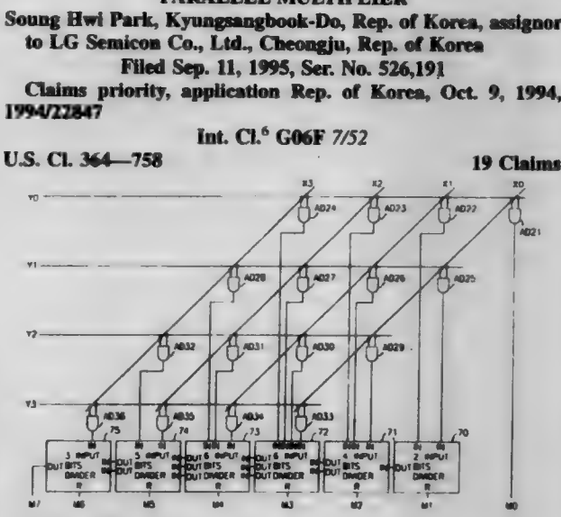


1. A calculation unit having at least a quotient selection logic, for calculating a division or square root according to an iteration algorithm with a partial remainder expressed with the sum of a sum digit and carry digit, the quotient selection logic comprising:
(a) an adder for adding higher three bits of the sum digit to higher three bits of the carry digit;
(b) OR means for providing the OR of the fourth bits of the sum and carry digits; and
(c) quotient digit determination means for determining a next quotient digit according to the outputs of said adder and OR means.

5,798,956
PARALLEL MULTIPLIER

Soung Hwi Park, Kyungsangbook-Do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Sep. 11, 1995, Ser. No. 526,191
Claims priority, application Rep. of Korea, Oct. 9, 1994, 1994/22847
Int. Cl.[6] G06F 7/52
U.S. Cl. 364—758 19 Claims

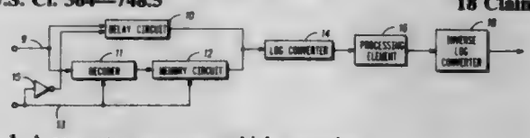


1. A parallel multiplier comprising:
N×M AND-gates each for ANDing a multiplier bit ranging from a least significant bit to a most significant bit with a multiplicand bit and outputting an intermediate value when multiplying "N" multiplicand bits and "M" multiplier bits, wherein said N×M AND-gates perform a partial multiplication and output a least significant bit of a result of said multiplication; and
a plurality of input-bits dividers, having 2-, 3-, and 4-input-bits dividers, wherein each of said plurality of input-bits dividers receives said intermediate value from at least one corresponding AND-gate of said N×M AND-gates and outputs a bit of said result between a least significant bit and a most significant bit of said result, wherein said each of said plurality of input-bits dividers outputs at least one quotient bit and exactly one remainder bit, wherein said plurality of remainder bits are said bits between said least significant bit and said most significant bit of said result.

5,798,957
LNS-BASED COMPUTER PROCESSOR AND METHOD OF USE THEREOF

ShaoWei Wei Pan, Lake Zurich, and Shay-Ping T. Wang, Long Grove, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 28, 1995, Ser. No. 583,141
Int. Cl.[6] G06F 7/38
U.S. Cl. 364—748.5 18 Claims



1. A computer processor, which comprises:
a decoder for decoding an input signal to generate a memory address;
a memory circuit for storing a plurality of special function signals, the memory circuit outputting a corresponding special function signal in response to the memory address;
a log converter for performing a logarithmic conversion on the corresponding special function signal to generate a log signal,

the log converter comprising a log memory for storing a plurality of log parameters and a plurality of second-order log parameters, the log memory providing as output ones of the log parameters and a second-order log parameter which correspond to the special function signal and log arithmetic means, operatively coupled to the log memory, for generating the log signal by performing arithmetic operations involving the special function signal, the ones of the log parameters, and the second-order log parameter, wherein the plurality of log parameters are calculated using a least squares method to estimate a logarithmic function over a domain of special function signals;

a processing element for generating a term signal by performing at least one arithmetic operation involving the log signal; and

an inverse-log converter for performing an inverse-logarithmic conversion on the term signal to generate an inverse-log signal.

5,798,958

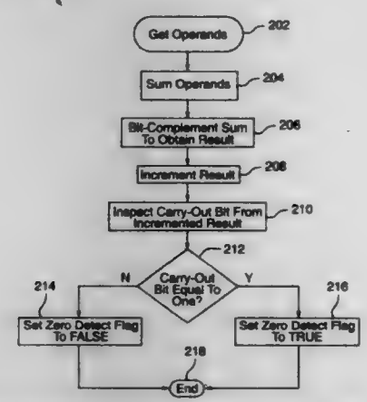
ZERO DETECT FOR BINARY SUM

Roney S. Wong, Sunnyvale, Calif., assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jun. 5, 1996, Ser. No. 658,454

Int. Cl.[6] G06F *7/50*

U.S. Cl. 364—768 **66 Claims**



1. A method of operating a circuit to determine whether a sum of operands is zero in a single instruction cycle, comprising:

providing a result representing a bit-complement of the sum; and

inspecting a carry-out bit generated by incrementing the result.

5,798,959

METHOD AND DEVICE FOR SOFT-DRIVING AN ARRAY OF LOGIC GATES AND SUPPRESSION OF SWITCHING DISTORTION

Andrea Mario Onetti, Pavia, and Sylvia Procurato, Ravenna, both of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Jul. 15, 1996, Ser. No. 680,393

Claims priority, application European Pat. Off., Jul. 14, 1995, 95830304; Jul. 14, 1995, 95830305

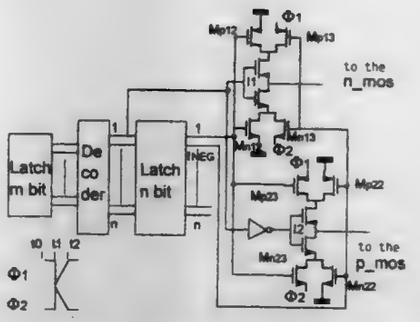
Int. Cl.[6] H03K *17/16*

U.S. Cl. 365—26 **7 Claims**

1. A circuit for driving in a gradual switching fashion a logic gate subject to undergo a transition from a logic state to another, comprising:

a latch for storing the logic state preexistent a current switching command;

at least one inverter, driven by the logic signal insistent on a respective input signal line, driving a control node of the logic gate;



means for coupling said control node of the logic gate to a generator of a negative or positive signal ramp depending on the direction of said transition; and

a passgate coupled in series to at least one of the two current terminals of said inverter for switching the inverter terminal from the respective common supply potential node to a node on which said ramp signal toward said common supply potential is produced, said passgate being controlled by the preexistent stored logic signal stored in said latch and by its inverse.

5,798,960

CURRENT MEMORY FOR SAMPLING ANALOG CURRENTS

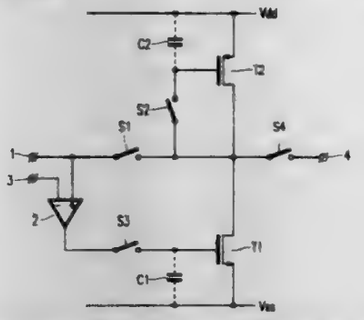
John B. Hughes, Hove, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1997, Ser. No. 884,975

Claims priority, application United Kingdom, Jul. 6, 1996, 9614271

Int. Cl.[6] G11C *27/00;27/02*

U.S. Cl. 365—45 **20 Claims**

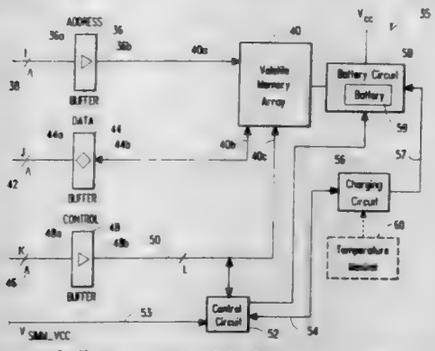


1. A current memory for storing sampled analogue currents, the memory comprising an input, a first, coarse, current memory cell which senses a current applied to the input in a first portion of a first period of a clock cycle and subsequently stores the sensed current, a second, fine, current memory cell which senses the difference between the input current and the current stored by the first current memory cell in a second portion of the first period of the clock cycle and subsequently stores the sensed current, and means for combining the currents stored in the first and second current memory cells and feeding them to an output of the current memory during a second period of the clock cycle or a subsequent clock cycle, wherein the first current memory cell comprises a first field effect transistor which is diode connected during the first portion of the first period of the clock cycle, characterised in that a differential voltage amplifier has a first non-inverting input connected to the input of the current memory, a second inverting input connected to a reference potential source, and an output connected to the gate electrode of the first field effect transistor via a switch which is closed during the first portion of the first period of the clock cycle.

5,798,961
NON-VOLATILE MEMORY MODULE

Christopher A. Heyden, Belmont; Jeffrey S. Kinne, Millis; Mitchell N. Rosich, Groton; Jeffrey A. Wilcox, Bourne, and Jeffrey L. Winkler, Princeton, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Aug. 23, 1994, Ser. No. 294,481
Int. Cl.[6] G11C 5/02
U.S. Cl. 365—52 **19 Claims**



1. A non-volatile memory module for use in a system having a predetermined system voltage comprising:

a mounting substrate having an input port and an output port;

a memory array including at least one volatile memory mounted on the mounting substrate, said volatile memory having a power input terminal for coupling power to said volatile memory in normal operation;

a rechargeable battery mounted on the mounting substrate, said rechargeable battery having first and second connections;

a switch circuit mounted on said mounting substrate and having an input terminal coupled to said rechargeable battery, an output terminal coupled to the power input terminal and a control terminal operative to cause said switch to assume one of a high impedance and a low impedance state in response to a control signal;

a charging circuit mounted on the mounting substrate, said charging circuit having a charging circuit output coupled to said first battery connection and a charging circuit input for coupling to said predetermined system voltage;

a system voltage monitoring circuit having a first port coupled to said input port of the mounting substrate and having an output port coupled to the control terminal of said switch circuit, wherein said system voltage monitoring circuit activates the control terminal of said switch in response to the predetermined system voltage reaching a predetermined threshold voltage;

a battery voltage monitor circuit disposed on said mounting substrate, said battery voltage monitor circuit having an input port coupled to said first battery connection and having an output port coupled to said output port of said mounting substrate, said battery voltage monitor circuit being operative to provide a warning signal at said output port when the voltage at said first battery connection drops below a predetermined value,

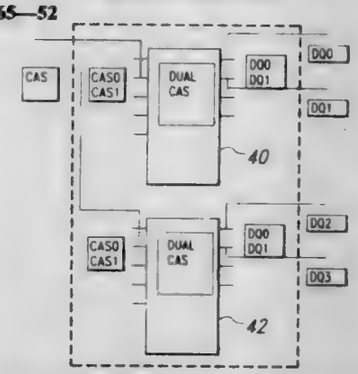
wherein said rechargeable battery includes one of a lithium cell and a nickel cadmium cell and said memory array includes one of a dynamic random access memory array and a pseudo-static random access memory array; and

a battery temperature monitor circuit disposed on said memory module and coupled to said charging circuit, said battery temperature monitor circuit being operative to produce an output voltage indicative of the ambient temperature, said battery temperature monitoring circuit having a voltage threshold and being operative to permit charging of said rechargeable battery only if the battery temperature monitoring circuit output voltage is below said voltage threshold.

5,798,962
MEMORY SCHEMES

Maurizio Di Zenzo, Roccapriora, and Romano Casalini, Rieti, both of Italy, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 26, 1996, Ser. No. 686,837
Int. Cl.[6] G11C 5/02
U.S. Cl. 365—52 **12 Claims**



1. A memory module having a predetermined functionality, comprising:

a plurality of data bit output contacts;

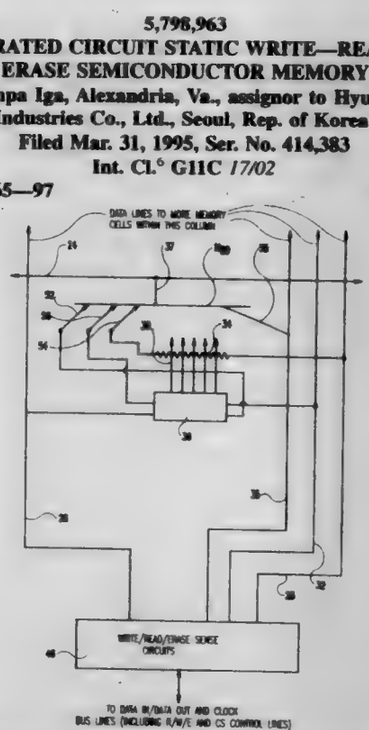
a plurality of defective, substandard and/or unconventional memory chips each having a plurality of data bit output pins that are connected to corresponding data bit output contacts of the plurality of data bit output contacts; and

wherein at least a first one of the plurality of data bit output pins on each of the plurality of memory chips is connected to a respective data bit output contact and at least a second one of the plurality of data bit output pins on each of the plurality of memory chips is not connected to a data bit output contact.

5,798,963
INTEGRATED CIRCUIT STATIC WRITE—READ AND ERASE SEMICONDUCTOR MEMORY

Adam Sempa Iga, Alexandria, Va., assignor to Hyundai Electronics Industries Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 31, 1995, Ser. No. 414,383
Int. Cl.[6] G11C 17/02
U.S. Cl. 365—97 **20 Claims**



1. An improved one transistor static write and read and erase memory cell for storing in data until erased, comprising:

(a) a switching transistor means for switching on said one transistor static write and read and erase memory cell;

(b) a row select line means whose first end is connected to a decoder circuit means and whose second end is connected to a base terminal of said switching transistor for applying thereon a predetermined amount of voltage so as to select said one transistor static write and read and erase memory cell;

(c) an electromagnetic or magnetic element for storing therein binary data in the form of electromagnetism or magnetism;

(d) a data write bit line means for applying thereon a predetermined data write voltage, said data write voltage causing a corresponding predetermined data write current to flow through said data write bit line means and into said electromagnetic or magnetic element means connected to said data write bit line in such a way that said data write current induces a predetermined amount of electromagnetism or magnetism in said electromagnetic or magnetic element means, said predetermined amount of electromagnetism or magnetism representing a specified number of bits of binary data of a specified binary type said specified type being either a one binary type data or a zero binary type data;

(e) a data erase bit line means for applying thereon a predetermined amount of data erase voltage, said data erase voltage causing a corresponding predetermined amount of data erase current to flow through said data erase bit line means and into said electromagnetic or magnetic element means connected to said data erase bit line means, whereby said data erase current flows through said electromagnetic or magnetic element means in a direction opposite to the direction of flow of said data write current so as to effect a process of demagnetization of said predetermined amount of electromagnetism or magnetism induced in said electromagnetic or magnetic element by said data write current;

(f) a data read bit line means on which a data read current is sent;

(g) a data reading element means of an appropriate material whose two terminals are connected to said data read bit line means said data reading element means having a property of varying the voltage across said two terminals when said data read current is made to flow through said two terminals of said data reading element means in the presence of an electromagnetic or magnetic field pointing in a specified direction, said electromagnetic or magnetic field being generated by said predetermined amount of electromagnetism or magnetism induced in said electromagnetic or magnetic element means by said data write current;

(h) an output voltage and output current bit line means connected to a collector terminal of said switching transistor means for channeling a collector current during the writing, reading and erasing cycles of said one transistor static write and read and erase memory cell and for providing an output voltage and a collector current connection to a column write and read and erase sense circuit.

5,798,964

FRAM, FRAM CARD, AND CARD SYSTEM USING THE SAME

Mitsuru Shimizu, Chiba-ken, and Sumio Tanaka, Tokyo, both of Japan, assignors to Toshiba Corporation, Tokyo, Japan

Filed Aug. 23, 1995, Ser. No. 518,440

Claims priority, application Japan, Aug. 29, 1994, 6-203957

Int. Cl.[6] G11C *11/22*

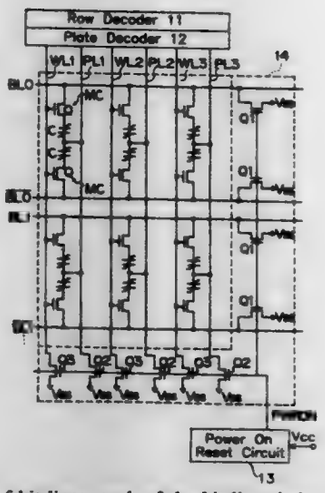
U.S. Cl. 365—145 **13 Claims**

1. A ferroelectric memory comprising:

a memory cell array having memory cells arranged in the form of a matrix having rows and columns, each memory cell including an information storage capacitor utilizing a ferroelectric material as an inter-plate insulation film and a MOS transistor for transferring electrical charges, the information storage capacitor and the MOS transistor being connected in series;

a plurality of word lines, each of the word lines being connected in common to gates of the MOS transistors of the memory cells belonging to one of the rows;

a plurality of plate lines, each of the plate lines being connected in common to plates of the information storage capacitors of the memory cells belonging to one of the rows;



a plurality of bit lines, each of the bit lines being connected in common to one end of the MOS transistors of the memory cells belonging to one of the columns;

a word line selection circuit for selecting at least one of said plurality of word lines according to an address signal;

a plate line selection circuit for selecting at least one of said plurality of plate lines according to said address signal the plate line selection circuit controlling the voltage of selected plate lines;

a power on reset circuit for generating a power on reset signal of a predetermined level, the power on reset signal being generated for a predetermined period of time in response to a power supply being turned on; and

an erroneous programming prevention circuit including a plurality of first switching transistors, each of the first switching transistors being connected between one of said bit lines and one or more first nodes at a first predetermined potential,

wherein said plurality of first switching transistors are controlled by said power on reset signal so that the first switching transistors are on for the predetermined period of time after the power supply is turned on so as to supply the first predetermined potential to the bit lines during the predetermined period of time.

5,798,965

DYNAMIC RANDOM ACCESS MEMORY HAVING NO CAPACITOR AND METHOD FOR FABRICATING THE SAME

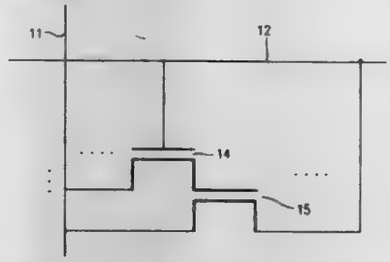
Young Kwon Jun, Seoul-si, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed Sep. 5, 1996, Ser. No. 708,743

Claims priority, application Rep. of Korea, Apr. 12, 1996, 11065/1996

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—150 **2 Claims**



1. A capacitor-less dynamic random access memory comprising:

a first transistor having a gate electrode and source and drain electrodes;

a second transistor having a gate electrode and source and drain electrodes, wherein the drain electrode of the first transistor is used as the gate electrode of the second transistor;

a word line commonly connected to the gate electrode of the first transistor and the drain electrode of the second transistor; and

a bit line commonly connected to the source electrode of the first transistor and the source electrode of the second transistor.

5,798,966

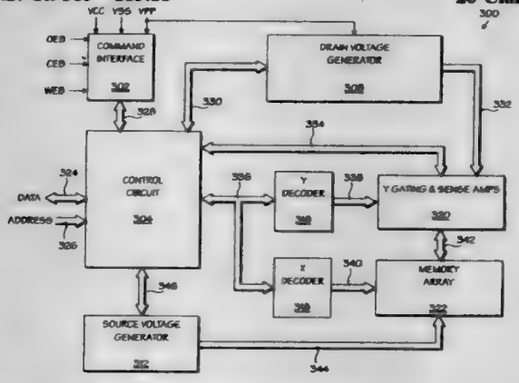
FLASH MEMORY VDS COMPENSATION TECHIQUES TO REDUCE PROGRAMMING VARIABILITY

Stephen N. Keeney, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 31, 1997, Ser. No. 828,873

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.18 **20 Claims**



1. A nonvolatile memory device comprising:

a memory array including a bit line, a source line, and a nonvolatile memory cell having a drain coupled to the bit line, a source coupled to the source line, a control gate, and a floating gate; and

a source voltage generator circuit coupled to the source line and generating a source line voltage when programming the nonvolatile memory cell, wherein the source voltage generator circuit varies the source line voltage based on a location of the nonvolatile memory cell in the memory array.

5,798,967

SENSING SCHEME FOR NON-VOLATILE MEMORIES

Vishal Sarin, Santa Clara; Vikram Kowshik, San Jose, and Andy Teng-Feng Yu, Palo Alto, all of Calif., assignors to Programmable Microelectronics Corporation, San Jose, Calif.

Filed Feb. 22, 1997, Ser. No. 801,414

Int. Cl.[6] G11C *16/06*

U.S. Cl. 365—185.21 **19 Claims**

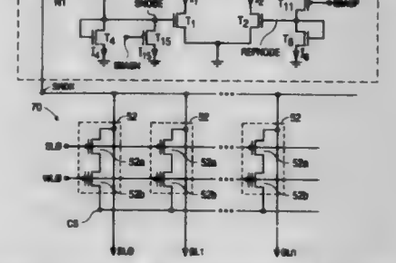
1. A sensing circuit for determining the binary state of a memory cell within a memory array, said sensing circuit comprising:

a differential stage having a first input terminal coupled to a sense node, a second input terminal coupled to receive a first reference voltage, and an output terminal;

coupling means connecting said sense node to a bit line associated with said memory cell;

a charging transistor having a source coupled to said bit line, a drain coupled to receive a supply voltage, and a gate coupled to receive a second reference voltage, said charging transistor charging said bit line to a bit line voltage during reading of said memory cell; and

a latch having an input terminal coupled to said output terminal of said differential stage and having an output terminal for



providing an output signal indicative of the binary state of said memory cell.

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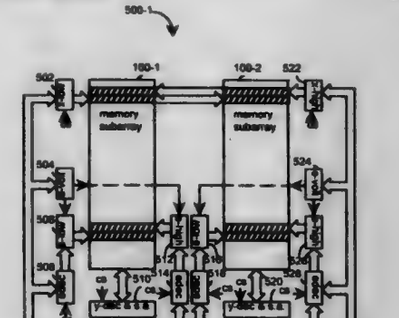
PLANE DECODE/VIRTUAL SECTOR ARCHITECTURE

Douglas J. Lee, San Jose; Sanjay Mehrotra, Milpitas; Mehrdad Mofidi, and Daniel C. Guterman, both of Fremont, all of Calif., assignors to SanDisk Corporation, Sunnyvale, Calif.

Filed Sep. 24, 1996, Ser. No. 719,179

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—185.29 **33 Claims**



17. A flash EEPROM structure formed on a semiconductor substrate, comprising:

a first array of EEPROM cells individually having a drain electrode, a source electrode, a control gate, and an erase gate, and organized in a first plurality of rows and a first plurality of columns;

a second array of EEPROM cells individually having a drain electrode, a source electrode, a control gate, and an erase gate, and organized in a second plurality of rows and a second plurality of columns;

a plurality of word lines extending in a first direction on said semiconductor substrate and individually connected to the control gates of EEPROM cells in corresponding rows of said first and second arrays of EEPROM cells;

a first plurality of erase lines extending in said first direction and individually connected to the erase gates of EEPROM cells for storing a sector of data in said first array of EEPROM cells;

a second plurality of erase lines extending in said second direction and individually connected to the erase gates of EEPROM cells for storing a sector of data in said second array of EEPROM cells;

means formed adjacent to a left side of said first array of EEPROM cells, for switchably connecting an erase voltage to selected erase lines of a first half of said first plurality of erase lines;

means formed adjacent to a right side of said first array of EEPROM cells, for switchably connecting an erase voltage to selected erase lines of a second half of said first plurality of erase lines;

means formed adjacent to a left side of said second array of EEPROM cells, for switchably connecting an erase voltage to selected erase lines of a first half of said second plurality of erase lines; and

means formed adjacent to a right side of said second array of EEPROM cells, for switchably connecting an erase voltage to selected erase lines of a second half of said second plurality of erase lines.

5,798,969

DATA OUTPUT BUFFER CONTROL CIRCUIT OF A SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE

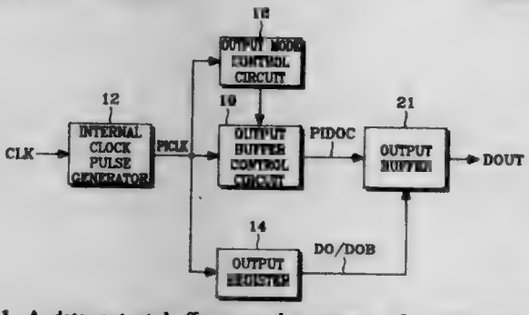
Hak-Soo Yoo, Seoul, and Jong-Hak Won, Suwon, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 20, 1996, Ser. No. 770,784

Claims priority, application Rep. of Korea, Dec. 22, 1995, 1995/54749

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—189.05 **8 Claims**



1. A data output buffer control apparatus of a synchronous semiconductor memory device for retrieving data from an inside of a chip in synchronism with a system clock pulse, the system clock pulse being externally applied and having an edge, the data output buffer control apparatus comprising:

an internal clock pulse generator for generating an internal clock pulse in response to the edge of the system clock pulse, the internal clock pulse having an edge;

an output register for transmitting a data output from the inside of the chip to a plurality of data output lines in synchronism with the edge of the system clock pulse;

an output mode control signal generator for generating a predetermined output mode control signal in synchronism with said system clock pulse;

an output buffer control means for gating said output mode control signal from the edge of said internal clock pulse to an edge of a subsequent internal clock pulse, thereby producing an output control signal; and

a data output means for driving the data output of said output register in response to the output control signal of said output buffer control means.

5,798,970

MEMORY DEVICE OUTPUT BUFFER

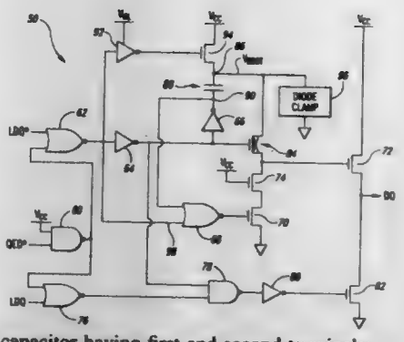
Adrian E. Ong, San Jose, Calif., assignor to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 595,370, Feb. 1, 1996, Pat. No. 5,602,783. This application Jan. 9, 1997, Ser. No. 781,198

Int. Cl.[6] G11C 11/40

U.S. Cl. 365—189.05 **27 Claims**

1. A control circuit adapted for use in an output buffer of a memory device, the control circuit comprising:



a boot capacitor having first and second terminals;

a charge circuit coupled to an input terminal of the control circuit and to the first terminal of the boot capacitor, the charge circuit coupling a charging current to or from the first terminal of the boot capacitor responsive to a first input voltage being applied to the input terminal;

a drive circuit coupled to the input terminal and the second terminal of the boot capacitor, the drive circuit driving the second terminal of the boot capacitor between a first voltage responsive to the first input voltage being applied to the input terminal and a second voltage responsive to a second input voltage being applied to the input terminal of the control circuit;

a first switch coupled between the first terminal of the boot capacitor and a control node, the first switch having a control terminal coupled to the input terminal of the control circuit, the first switch being non-conductive responsive to the first input voltage being applied to the input terminal of the control circuit and being conductive responsive to the second input voltage being applied to the input terminal of the output buffer; and

a second switch coupled between the control node and a reference voltage, the second switch having a control terminal coupled to the second terminal of the boot capacitor, the second switch being conductive responsive to the second terminal of the boot capacitor being at the first voltage and non-conductive responsive to the second terminal of the boot capacitor being at other than the first voltage.

5,798,971

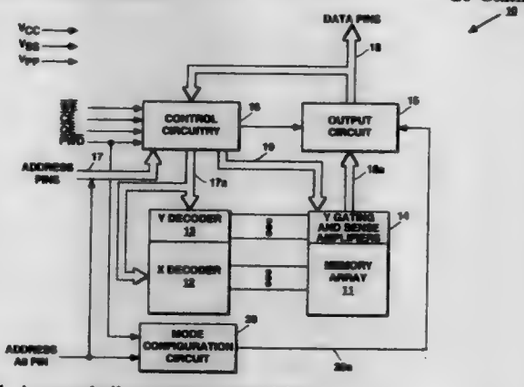
NONVOLATILE MEMORY WITH OUTPUT MODE CONFIGURATION

Robert E. Larsen, Shingle Springs, and Richard J. Durante, Folsom, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 394,397, Feb. 24, 1995, abandoned. This application Jan. 28, 1997, Ser. No. 790,234

Int. Cl.[6] G11C 7/00

U.S. Cl. 365—189.05 **20 Claims**



1. A nonvolatile memory, comprising:

(A) a memory array;

(B) a buffer circuit for applying data read from the memory array to external circuitry;

(C) a compensation circuit coupled to the buffer circuit form providing programmable output compensation to the buffer circuit when enabled, wherein the buffer circuit has (1) a first prespecified output speed when the compensation circuit is enabled and (2) a second prespecified output speed when the compensation circuit is disabled;

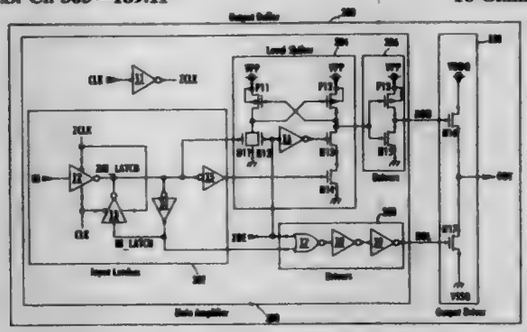
(D) a configuration circuit coupled to the compensation circuit for selectively enabling the compensation circuit such that the buffer circuit can be configured to selectively output at the first prespecified output speed or second prespecified output speed.

5,798,972

HIGH-SPEED MAIN AMPLIFIER WITH REDUCED ACCESS AND OUTPUT DISABLE TIME PERIODS

Tim Lao; Dennis Blankenship, both of Durham, and Rhonda Cassada, Hillsborough, all of N.C., assignors to Mitsubishi Semiconductor America, Inc., Durham, N.C.

Filed Dec. 19, 1996, Ser. No. 767,135
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—189.11 **16 Claims**



1. Apparatus for providing an output signal in response to data read out from a memory, comprising:

an input latch stage responsive to said data for producing a latched data signal,

a level shifter responsive to said latched data signal for providing a first driving signal,

a driving circuit responsive to said latched data signal for providing a second driving signal,

an output driver controlled by said first and second driving signals for producing said output signal, and

a control line connected to said level shifter for providing an output control signal to prevent said output driver from producing said output signal.

5,798,973

SEMICONDUCTOR MEMORY DEVICE HAVING REDUNDANT MEMORY CELLS

Satoshi Isa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 29, 1997, Ser. No. 865,164
Claims priority, application Japan, May 30, 1996, 8-137152
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—200 **8 Claims**

1. A semiconductor or memory device comprising:

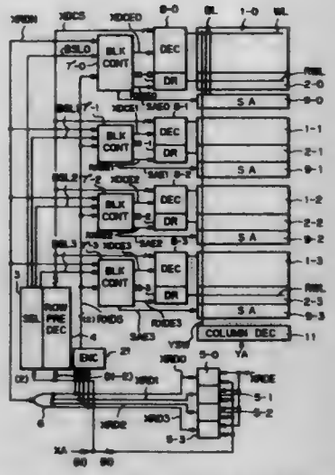
a plurality of memory cell blocks;

a plurality of redundant memory cell arrays each corresponding to one of said memory cell blocks;

first selecting means, connected to said memory cell blocks, for selecting memory cells from said memory cell blocks;

redundant selection signal generating means for generating redundant selection signals for said redundant memory cell arrays;

a redundant selection signal encoder, connected to said redundant signal generating means, for encoding said redundant selection signals into redundant encode signals;



second selecting means, connected to said redundant selection signal encoder, for decoding said redundant encode signals to select redundant memory cells from said redundant memory cell arrays; and

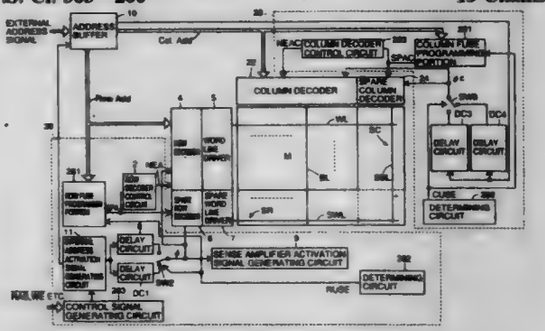
deactivating means, connected between said redundant selection signal generating means and said first selecting means, for deactivating said first selecting means when one of said redundant selection signals is generated.

5,798,974

SEMICONDUCTOR MEMORY DEVICE REALIZING HIGH SPEED ACCESS AND LOW POWER CONSUMPTION WITH REDUNDANT CIRCUIT

Tadato Yamagata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 721,075
Claims priority, application Japan, May 15, 1996, 8-119850
Int. Cl.[6] G11C 7/00;8/00
U.S. Cl. 365—200 **13 Claims**



1. A semiconductor memory device, comprising:

a plurality of memory cells storing data;

a redundant circuit used in place of a defective memory cell, if any, among said memory cells;

driver means for writing and reading data in said memory cells or said redundant circuit;

defective address storing means for comparing a previously stored defective address corresponding to said defective memory cell with an address represented by an input address signal to generate a comparison outcome signal; and

a cell state demonstrating means for showing whether said redundant circuit is to be used or not, wherein

said cell state demonstrating means deactivates said defective address storing means when the use of said redundant circuit is unnecessary.

5,798,975

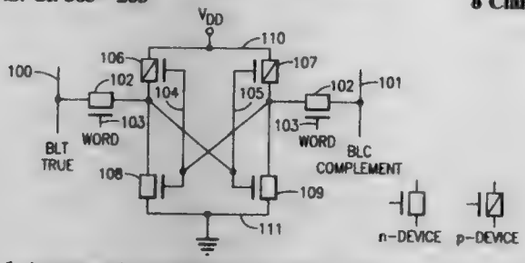
RESTORE FUNCTION FOR MEMORY CELLS USING NEGATIVE BITLINE-SELECTION

Stefan Büttner, Sindelfingen; Jürgen Pille, Stuttgart; Dieter Wendel, Schönaich, and Friedrich Wernicke, Holzgerlingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 10, 1997, Ser. No. 782,204

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—203 **8 Claims**



1. Apparatus for writing to and reading from an array of memory cells arranged in columns of memory cells, comprising,

a read/write restore circuit for each column of memory cells, having a sense amplifier and

a bitline pair for writing to and reading from any of the memory cells in said column, and bitswitch means which are conductive during a restore phase, and

precharge devices for bringing each said bitline pair to an initial potential (VDD) during a precharge phase, whereby all different bitline pairs belonging to one sense amplifier are connected together during a restore phase in which a charge is supplied by the precharge devices during a restore, and

equilibration means connecting the bitlines of at least two bitline pairs during said precharge phase and opening all bit switches during the precharge phase.

5,798,976

SEMICONDUCTOR MEMORY DEVICE WITH REDUCED CURRENT CONSUMPTION IN DATA HOLDING MODE

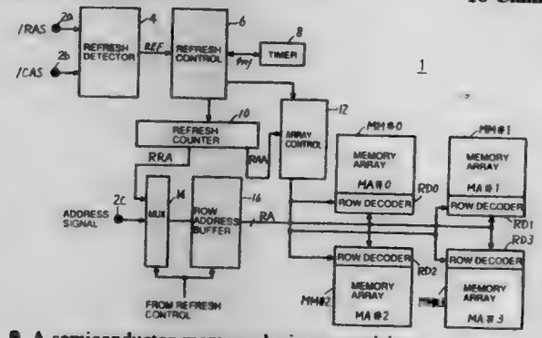
Kazutami Arimoto, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1996, Ser. No. 768,078

Claims priority, application Japan, Dec. 18, 1995, 7-328740

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **16 Claims**



9. A semiconductor memory device comprising:

a plurality of memory mats each having a plurality of memory cells arranged in a matrix form;

detecting means for detecting, in accordance with an externally applied signal, designation of a data holding mode different from a normal operation mode for performing data input and output;

mat changing means, responsive to detection of the data holding mode by said detecting means, for setting the number of selected memory mats among said plurality of memory mats to a value different from that of memory mats selected in said normal operation mode;

refresh address generation means, responsive to the detection of the data holding mode, for generating a refresh address designating memory cells to be refreshed;

a multiplexer, receiving said refresh address and an external address designating a memory cell to be accessed, for selectively passing said refresh address in response to the detection of the data holding mode;

an address buffer receiving and buffering an address signal from said multiplexer to generate an internal address signal; and

control means, responsive to said detection of said data holding mode for causing said address buffer to operate statically, and responsive to non-detection of said data holding mode for causing said address buffer to operate dynamically.

5,798,977

POWER LINE COUPLING PREVENTION CIRCUIT FOR SEMICONDUCTOR MEMORY DEVICE

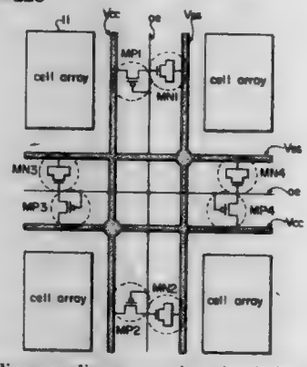
Jung Tae Kwon, Kyoungki-do, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichon, Rep. of Korea

Filed Oct. 31, 1996, Ser. No. 742,681

Claims priority, application Rep. of Korea, Nov. 1, 1995, 95-39163

Int. Cl.[6] G11C *7/02*

U.S. Cl. 365—226 **11 Claims**



1. A power line coupling prevention circuit for a semiconductor memory device which has a plurality of memory cell arrays and first and second voltage lines formed between adjacent ones of said memory cell arrays, the power line coupling prevention circuit comprising:

capacitive means formed between said first and second voltage lines; and

switching means connected to said capacitive means, for making said capacitive mans conductive;

wherein said switching means is operated in response to a data output buffer enable control signal.

5,798,978

SEMICONDUCTOR MEMORY DEVICE WITH MULTIBANK STRUCTURE

Jei-Hwan Yoo, Kyungki-do, and Moon-Hae Son, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 17, 1996, Ser. No. 710,429

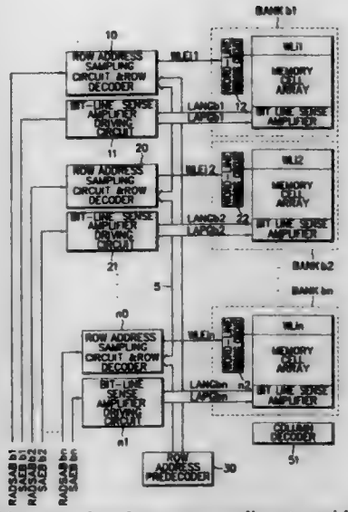
Claims priority, application Rep. of Korea, Sep. 18, 1995, 1995 30478

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **8 Claims**

1. An integrated circuit memory device comprising:

a plurality of memory banks wherein each of said memory banks includes a plurality of memory cells, a plurality of bit lines running along said memory cells, and a bit line sense amplifier connected to said bit lines which senses and amplifies data of said memory cells;



a row address predecoder corresponding to said plurality of memory banks, wherein said row address predecoder decodes row address signals in response to a system clock;

a row strobe buffer which generates control signals selecting respective memory banks responsive to said system clock, a row address strobe signal, and a bank selection address signal;

a plurality of row address sampling control circuits, each of which corresponds to a respective memory bank, wherein each respective row address sampling control circuit generates a row address sampling control signal in response to a respective control signal; and

a plurality of row latch circuits, each of which corresponds to a respective memory bank and a respective row address sampling control circuit, wherein a respective row latch circuit latches said decoded row address signals responsive to a respective row address sampling control signal generated by a respective row address sampling control circuit, and wherein said respective row latch circuit generates a word line enable signal in response to said respective row address sampling control signal and said latched decoded row address.

5,798,979

CLOCK-SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE AND ACCESS METHOD THEREOF

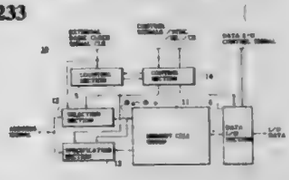
Haruki Toda, and Hitoshi Kuyama, both of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 457,165, Jun. 1, 1995, which is a continuation of Ser. No. 031,831, Mar. 16, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,050

Claims priority, application Japan, Mar. 19, 1992, 4-063844

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—233 **50 Claims**



1. A method of accessing a semiconductor memory device which includes

a memory cell array having a plurality of memory cells arranged in rows and columns;

specification means, to which address signals are input, for selecting at least some of said memory cells in said memory cell array as specified memory cells;

data input/output means for inputting data into the specified memory cells selected by said specification means, and for outputting data read out from the specified memory cells selected by said specification means;

control means for receiving a first control signal for inputting said address signals into said specification means and a second control signal for controlling outputting of data, read out from the memory cell array, from said data input/output means, and for controlling said specification means and said data input/output means;

delay means for generating delay signals; and

switching means for receiving the delay signals generated by said delay means, and for selecting one of said delay signals to control outputting of said data;

said method comprising:

a first step of asserting said first control signal;

a second step of, after asserting said first control signal, inputting said address signals into said specification means;

a third step of selecting said specified memory cells in said memory cell array using said specification means;

a fourth step of generating a plurality of said delay signals each having a delay time period equivalent to a different number of basic clock cycles of a basic clock signal using said delay means;

a fifth step of receiving said plurality of said delay signals generated using said delay means in said fourth step and selecting a delay signal equivalent to a number of basic clock cycles N of said basic clock signal, N being a positive integer $\geqq 2$, using said switching means;

a sixth step of asserting said second control signal; and

a seventh step of outputting data stored in said specified memory cells from said data input/output means in synchronism with said basic clock signal N basic clock cycles after said second control signal is asserted and said basic clock signal transitions.

5,798,980

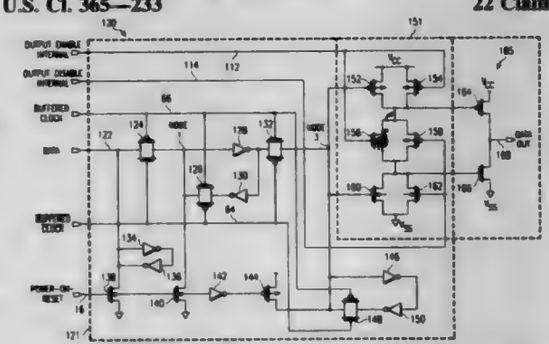
PIPELINED CHIP ENABLE CONTROL CIRCUITRY AND METHODOLOGY

David Charles McClure, Carrollton, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 588,730, Jan. 19, 1996, Pat. No. 5,701,275. This application Jun. 19, 1997, Ser. No. 878,612

Int. Cl.[6] G11K *8/00*

U.S. Cl. 365—233 **22 Claims**



1. A method for pipelined chip enable control of a synchronous memory device, comprising the steps of:

during a rising edge of an initial cycle of a clock signal, before which the synchronous memory device is in a deselect condition, registering the state of a chip enable signal of the synchronous memory device;

during a falling edge of the initial cycle of the clock signal, updating a chip enable output disable signal to a first logic state and maintaining a logic state of an internal tri-state control signal; and

during a rising edge of a subsequent cycle of the clock signal, clocking in the first logic state of the chip enable output disable signal to the internal tri-state control signal, thereby defining a select condition in which the synchronous memory device is selected and transitions from the deselect condition

to the select condition and a plurality of output pins of the synchronous memory device are enabled.

5,798,981

INTEGRITY ASSESSMENT OF GROUND ANCHORAGES

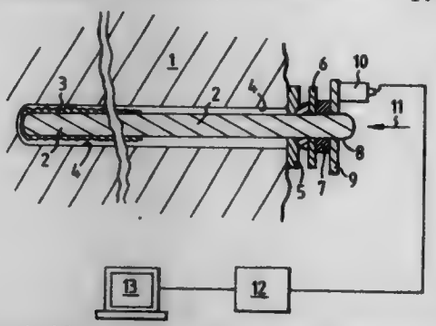
Gavin Stuart Littlejohn, York, England, and Albert Alexander Rodger, Aberdeen, Scotland, assignors to Aberdeen University, Scotland, and The University of Bradford, England

Filed Oct. 4, 1996, Ser. No. 725,887

Claims priority, application United Kingdom, Apr. 6, 1994, 9406745

Int. Cl.[6] G01N *29/04*; E02D *33/00*

U.S. Cl. 367—13 **14 Claims**



1. A method for monitoring the condition of a ground anchorage comprising a tendon arranged in a bore in a ground formation at a site, comprising the steps of

(a) securing an impulse plate to the head of the tendon;

(b) applying an impulse load of a predetermined value to said impulse plate;

(c) detecting the vibrational response signature of the ground anchorage to the impulse load;

(d) recording the detected vibrational response signature; and

(e) comparing the detected vibrational response signature with a ground anchorage reference vibrational response signature for the site, thereby to obtain an indication of the integrity of the ground anchorage.

5,798,982

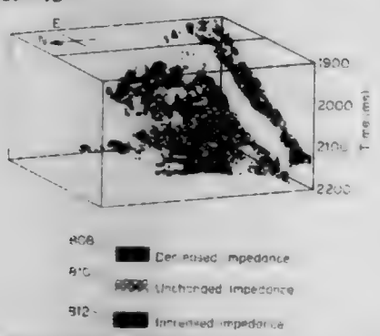
METHOD FOR INVERTING REFLECTION TRACE DATA FROM 3-D AND 4-D SEISMIC SURVEYS AND IDENTIFYING SUBSURFACE FLUID AND PATHWAYS IN AND AMONG HYDROCARBON RESERVOIRS BASED ON IMPEDANCE MODELS

Wei He, New Milford, N.J., and Roger N. Anderson, New York, N.Y., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Apr. 29, 1996, Ser. No. 641,069

Int. Cl.[6] G06F *19/00*; G01V *1/13*; *1/28*

U.S. Cl. 367—73 **27 Claims**



1. A method for constructing one or more impedance models of a subsurface volume comprising:

(a) obtaining one or more 3-D seismic image of the subsurface volume from observed seismic reflection trace data derived from seismic surveys;

(b) constructing an a priori impedance model of the subsurface volume based on estimated impedance trends within the subsurface volume, said a priori impedance model initially being substantially identical for each seismic image in recognition that basic lithologic structure remains substantially unchanged during the time interval between seismic surveys;

(c) creating a model of the seismic reflection trace data for the subsurface volume based on the a priori impedance model by combining the a priori impedance model with a seismic source function or wavelet which is time/depth dependent throughout the subsurface region being modeled;

(d) comparing the model and the observed seismic reflection trace data for each seismic image obtained and, if the model seismic reflection trace data and observed seismic reflection trace data vary by more than preselected tolerances, modifying the a priori impedance model corresponding to each seismic survey such that the variation between model and observed seismic reflection trace data will be decreased; and

(e) iteratively repeating steps (c) and (d) until the model seismic reflection trace data and observed seismic reflection trace data variations are less than the preselected tolerances.

5,798,983

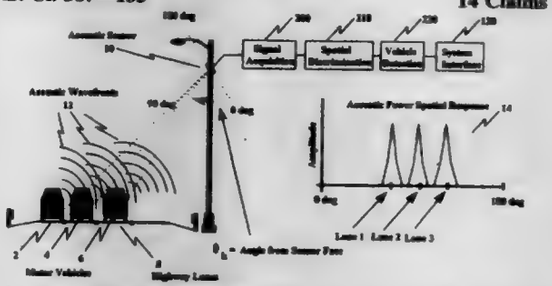
ACOUSTIC SENSOR SYSTEM FOR VEHICLE DETECTION AND MULTI-LANE HIGHWAY MONITORING

John Patrick Kuhn, 14710 Kogan Dr., Woodbridge, Va. 22193; Binh C Bui, 9113 Lake Braddock Dr., Burke, Va. 22015, and Gregory J Pieper, 295 Waycross Way, Arnold, Md. 21012

Filed May 22, 1997, Ser. No. 861,901

Int. Cl.[6] H04B *11/00*

U.S. Cl. 367—135 **14 Claims**



1. A motor vehicle detection system for providing automatic multiple lane position determination, multiple lane traffic monitoring, significant reduction of false detections due to out of lane sound sources, individual vehicle speed measurement, and individual vehicle type classification, said system comprising:

A. a plurality of electro-acoustic sensors arranged in an array according to a prescribed spacing for converting impinging acoustic signals from motor vehicles into individual electrical signals at the electro-acoustic sensor outputs;

B. means to coherently scale and combine said individual electrical signals at said electro-acoustic sensor output for creating a plurality of coherent stave signals;

C. means to perform signal frequency band discrimination, digital sampling, and Fourier transformation of said coherent stave signals for creating a plurality of frequency decomposed stave signals;

D. means responsive to said frequency decomposed stave signals to automatically and adaptively perform spatial discrimination for creating a plurality of directional signals, each representing a single acoustic signal or a collection of acoustic signals originating within each said active traveled lane;

E. means responsive to said coherent directional signals for creating a plurality of vehicle presence signals and for directly measuring individual vehicle speed and for determining individual vehicle type classification;

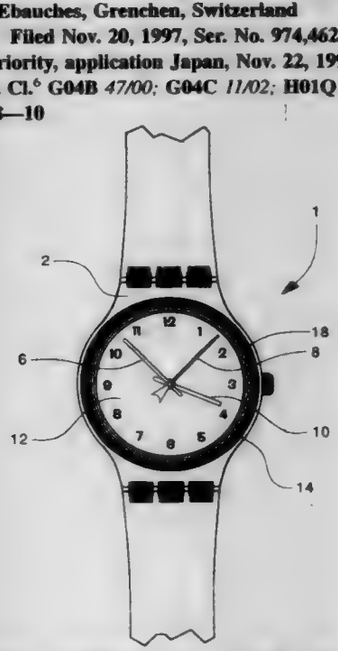
F. means responsive to said vehicle presence signals and responsive to said individual vehicle speed measurements and responsive to said individual vehicle type classification for creating a transportation system signal and information message interface.

5,798,984

TIMEPIECE INCLUDING A RECEIVING AND/OR TRANSMITTING ANTENNA FOR RADIO BROADCAST SIGNALS

Daniel Koch, Crémines, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Nov. 20, 1997, Ser. No. 974,462
Claims priority, application Japan, Nov. 22, 1996, 2890/96
Int. Cl.[6] G04B *47/00*; G04C *11/02*; H01Q *1/12*
U.S. Cl. 368—10 **11 Claims**



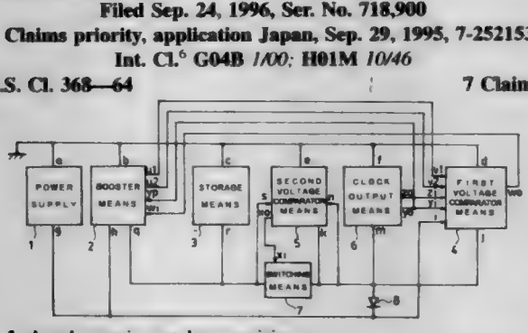
1. A timepiece including a case, a bezel and a transponder including a radio broadcast signal transmitting and/or receiving circuit and an antenna connected to said transmitting and/or receiving circuit, wherein said antenna and said transmitting and/or receiving circuit are both fixed to said bezel.

5,798,985

ELECTRONIC WATCH AND METHOD OF DRIVING THE SAME

Fumio Nakajima, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1996, Ser. No. 718,900
Claims priority, application Japan, Sep. 29, 1995, 7-252153
Int. Cl.[6] G04B *1/00*; H01M *10/46*
U.S. Cl. 368—64 **7 Claims**



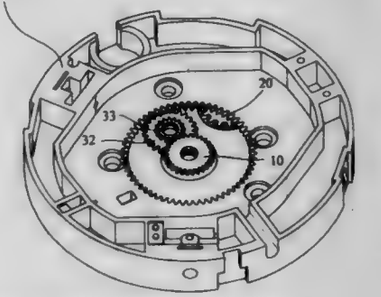
1. An electronic watch comprising:
a power supply for generating electric energy by using external energy;
a booster means comprising at least two booster circuits for sequentially repeating charging by said power supply, boosting a charge voltage and discharging said boosted charge voltage;
a storage means for storing therein the charge discharged by said booster means;
a clock output means connected to an output terminal of said storage means, and also connected to said power supply by way of a reverse-blocking means for preventing said stored voltage from reversely flowing to said power supply; and
a control means for outputting a control signal for switching between charging and discharging of each of said booster circuits constituting said booster means,
wherein said control means include a reference voltage generating circuit and a voltage comparator circuit, and wherein a reference voltage generated by the reference voltage generating circuit is compared with a voltage which is charged in a capacitor of a charging booster circuit of said booster means so as to output said control signal.

5,798,986

ALARM MECHANISM SYSTEM

Jaw-Horng Tzeng, Fengshan, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Oct. 28, 1996, Ser. No. 739,071
Int. Cl.[6] G04C *21/16*
U.S. Cl. 368—74 **4 Claims**



1. An alarm mechanism system, comprising:
an hour wheel;
a ring gear, concentrically surrounding said hour wheel, said hour wheel being rotatable against said ring gear;
a planet gear device, engaging with said hour wheel and said ring gear, said planet gear device sharing a common axis with said hour wheel and rotating around said common axis, as driven by said hour wheel, where the rotational velocity of said planet gear device is ½ of the rotational velocity of said hour wheel;
an alarm device, contacting said planet gear device at the moment, when said planet gear device reaches a predefined angular position, thus triggering an alarm; and
an adjustment device, adjusting said predefined angular position and thereby adjusting the time at which said alarm device triggers said alarm;
wherein said planet gear device completes a full turn in 24 hours, such that said alarm is triggered once within 24 hours.

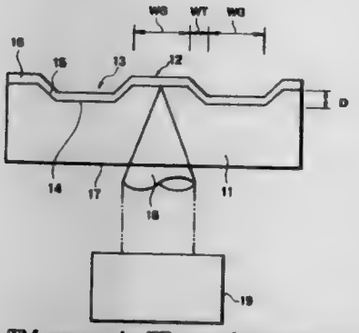
5,798,987

LOW NOISE MAGNETO-OPTICAL DISK DRIVE

Masatsugu Ogawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 15, 1997, Ser. No. 839,596
Claims priority, application Japan, Apr. 15, 1996, 8-092081
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 **25 Claims**

1. A magneto-optical disk drive comprising: an optical head for irradiating a laser beam having a first wavelength and including at



least one of a TM wave and a TE wave for recording/reproducing; and a magneto-optical disk irradiated by said laser beam, said magneto-optical disk having a substrate for defining thereon alternately a land area and a groove area along the radial direction of said disk, said groove area having a bottom and a pair of slope walls, a magneto-optical film overlying said substrate, each of said slope walls having a width which is equal to or larger than approximately ¼ of said first wavelength.

5,798,988

OPTICAL PICKUP UNIT CAPABLE OF READING SIGNALS RECORDED ON DIFFERENT TYPES OF OPTICAL DISKS

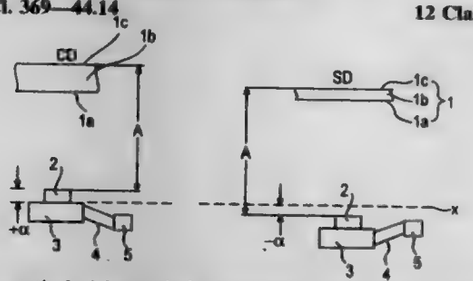
Masayuki Koyama, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 2, 1996, Ser. No. 758,849

Claims priority, application Japan, Dec. 1, 1995, 7-338060

Int. Cl.[6] G11B *7/08*

U.S. Cl. 369—44.14 **12 Claims**



1. An optical pickup unit for irradiating a light beam to a first recording medium having a first disk surface, a first information recording surface, and a first distance between the first disk surface and the first information recording surface, and to a second recording medium having a second disk surface, a second information recording surface and a second distance different than the first distance between the second disk surface and the second information recording surface, to read recorded information based on reflected light of the light beam from the information recording surface upon which the light beam is being impinged, the optical pickup unit comprising:

a beam generator for generating the light beam;

an objective lens;

a lens holder for holding the objective lens;

a supporting member for supporting the lens holder;

an error signal generator for generating a focus error signal based on the reflected light of the light beam from the recording surface upon which the light beam is being impinged; and

a focus control for actuating and controlling the objective lens such that the light beam is converged on the information recording surface based on the error signal, the supporting member supporting the lens holder such that a dead-load suspension position of the lens holder dead-load is positioned at a position where an absolute value of an offset component of the error signal obtained in controlling the focus for the first recording medium is equal to an absolute value of an offset component of the error signal obtained in controlling the focus for the second recording medium.

5,798,989

OPTICAL PICKUP DEVICE FOR REPRODUCING INFORMATION RECORDED ON A RECORDING MEDIUM

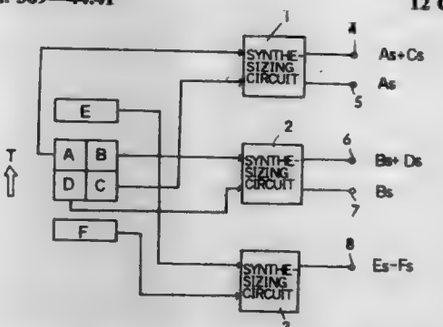
Kenzo Shodo, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Apr. 7, 1997, Ser. No. 833,422

Claims priority, application Japan, Apr. 8, 1996, 8-085170

Int. Cl.[6] G11B *7/13*

U.S. Cl. 369—44.41 **12 Claims**



1. An optical pickup device whose focus is controlled by an astigmatism method, comprising:

a first, a second, a third, and a fourth photoelectric conversion device, the first and fourth, and the second and third photoelectric conversion devices being disposed next to each other along a direction of a track of a recording medium, the first and second, and the third and fourth photoelectric conversion devices being disposed next to each other along a direction perpendicular to the direction of the track;

a fifth and a sixth photoelectric conversion device disposed on both sides of a unit composed of the first, second, third, and fourth photoelectric conversion devices along the direction of the track;

a first synthesizing circuit for adding together outputs from the first and third photoelectric conversion devices;

a second synthesizing circuit for adding together outputs from the second and fourth photoelectric conversion devices;

a third synthesizing circuit for obtaining a difference between outputs from the fifth and sixth photoelectric conversion devices; and

a first, a second, and a third output terminal connected to the first, second, and third synthesizing circuit, respectively.

5,798,990

TRANSFERRING INFORMATION VIA THE LEAD-IN AREA OF AN INFORMATION CARRIER

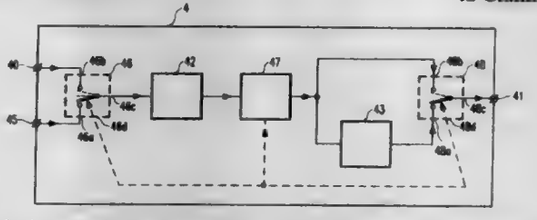
Gerardus C. P. Lokhoff, and Constant P. M. J. Baggen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 16, 1996, Ser. No. 716,688

Claims priority, application European Pat. Off., Sep. 15, 1995, 95202502.1

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **42 Claims**



1. A method of recording in a track on an optical information carrier a first channel signal representing a main information signal, a second channel signal representing a cue information signal and a third channel signal representing a sub information signal, said main information signal comprising at least one pro-

gramme item and said cue information signal comprising for said at least one programme item an indication of its location in said track, the recording method comprising the steps of

receiving the main information signal, the cue information signal and the sub information signal,

encoding the main information signal, resulting in said first channel signal,

encoding the cue information signal, resulting in said second channel signal,

encoding the sub information signal by generating sub information packs comprising data from said sub information signal plus data for error detection and correction thereof, resulting in said third channel signal,

writing the first channel signal in a main information area of said track on the information carrier,

writing the second channel signal and the third channel signal in a lead-in area of said track preceding the main information area,

characterized in that said sub information packs are generated in substantially non-interleaved form and included in that form in said third channel signal.

5,798,991

DATA PROCESSING METHOD AND DATA PROCESSING APPARATUS

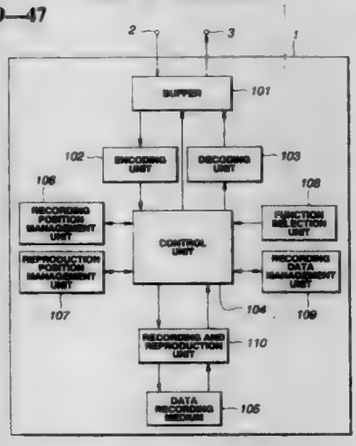
Naoya Haneda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 614,338, Mar. 12, 1996. This application Sep. 18, 1997, Ser. No. 932,477

Claims priority, application Japan, Mar. 15, 1995, 7-056108

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—47 **12 Claims**



1. A data recording and reproducing apparatus comprising:

an input terminal and an output terminal;

a coding means for coding input data supplied to the input terminal and outputting coded data blocks;

a data recording medium for recording the coded data blocks;

a recording and reproducing means for recording the coded data blocks on the data recording medium and reproducing the coded data blocks from the data recording medium;

a recording position management means for managing recording position data indicating positions at which the coded data blocks are recorded on the data recording medium by the recording and reproducing means;

a decoding means for decoding the coded data blocks reproduced from the data recording medium by the recording and reproducing means;

a buffer memory connected to the input terminal and the output terminal for temporarily storing the input data before outputting it in predetermined amounts to the coding means and for temporarily storing decoded data output by the decoding means before outputting it to the output terminal;

a reproduction position management means for managing reproduction position management data indicating positions at which the input data is held in the buffer memory and positions at which the decoded data is held in the buffer memory;

a function selection means for selecting a processing to be executed, data which is held in the buffer memory, and coded data blocks recorded on the data recording medium;

a recording data management means for managing a correspondence between either or both of the data and coded data blocks selected by the function selection means, on the one hand, and either or both of the recording position data and the reproduction position data, on the other hand, and

a controller responsive to the function selection means for controlling the coding means, the recording and reproducing means, the recording position management means, the decoding means, the buffer memory, the reproduction position management means, and the recording data management means.

5,798,992

LASER DIODE MONITORING APPARATUS FOR DETERMINING THE DECAY OF LASER DIODE

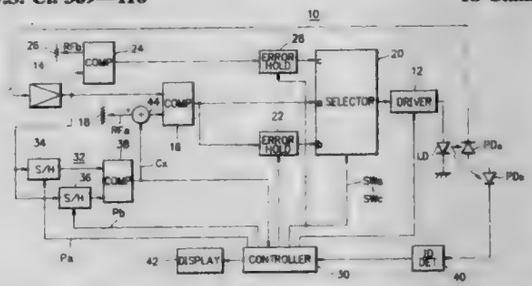
Shinji Kaneko; Seiji Ohura; Yoshizo Mihara, and Yukio Sato, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 8, 1996, Ser. No. 727,047

Claims priority, application Japan, Oct. 11, 1995, 7-262947

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—116 **18 Claims**



6. A laser diode decay determination device for determining whether to replace a laser diode based upon a deterioration of light emitting performance of said laser diode used to perform at least one of record, reproduce and erase information signals on a magneto-optical recording disk having an automatic laser power control (ALPC) area for controlling a light output of the laser diode to follow a predetermined value, said device comprising:

driving means for driving said laser diode during a time period corresponding to the ALPC area of said magneto-optical recording disk in accordance with a pulse signal;

light reception means for receiving the light output of said laser diode produced in accordance with the pulse signal;

comparison means for comparing an output of said light reception means with a reference value relevant to at least one of a recording mode, erasing mode and reproducing mode thereby to produce a signal for setting the light output of said laser diode depending on an operation mode;

sampling-holding means for sampling and holding an output of said comparison means;

selection means for selecting an output of said sampling-holding means depending on the operation mode and delivering the output of said sampling-holding means to said driving means;

decay determination means for determining the deterioration of the light emitting performance of said laser diode and determining whether to replace said laser diode based on the detection of a variation of a level of the light output of said laser diode, with the light output thereof being set to a value relevant to at least one of the recording mode and erasing mode; and

means for controlling said sampling-holding means and said selection means depending on the operation mode.

5,798,993

SYSTEM AND METHOD FOR SIMULTANEOUSLY VERIFYING OPTICAL DATA WRITING AND OPTICAL DATA WRITING MEDIUM FOR USE THEREIN

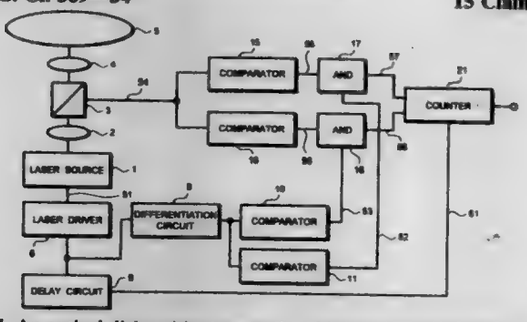
Shuichi Ohkubo; Mitsuya Okada, and Masaki Itou, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed May 22, 1996, Ser. No. 651,301

Claims priority, application Japan, May 29, 1995, 7-130215; Sep. 6, 1995, 7-229321

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—54 **15 Claims**



1. An optical disk writing system in which predetermined data is written on an optical data writing medium and the written data is verified, said system comprising:

a light spot irradiation means for forming a single light spot on said optical data writing medium, said single light spot being used for writing, reading and verifying operations;

a return light dose measurement means for measuring a dose of return light of said light spot from said optical data writing medium; and

an irradiation light timing detection means for detecting a rise and a fall timing of the light irradiated on said optical data writing medium,

said written data being verified by measuring the return light dose at said rise and fall timings of said light irradiated on said optical data writing medium.

5,798,994

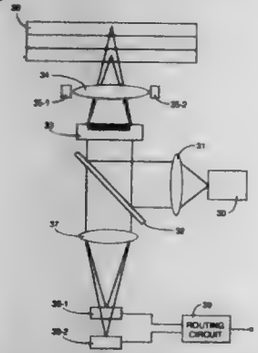
MULTI-LAYERED OPTICAL DISK READING METHOD USING LIQUID CRYSTAL DIFFRACTION DEVICE

Yasuo Kamatani, 2-12-2 Yokoyama, Sagamihara-shi, Kanagawa 229, Japan

Filed Jan. 16, 1996, Ser. No. 586,185

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—58 **4 Claims**



1. An optical disk reading method comprising the steps of:

loading a multi-layered optical disk which consists of M data layers, wherein M is an integer greater than 1;

receiving an operation signal to access an Nth data layer of the multi-layered optical disk, wherein N is an integer greater than 1 and not greater than the integer M;

referring to stored data in a central processing unit for an operation code signal to modulate a liquid crystal diffraction device to focus a laser beam onto the Nth data layer;

modulating the liquid crystal diffraction device to focus the laser beam onto the Nth data layer by sending the operation code signal to a focusing servo circuit which drives the liquid crystal diffraction device; and

operating a routing circuit to transmit a readout signal from a detector to a decoding circuit.

5,798,995

INFORMATION RECORDING MEDIUM AND APPARATUS AND METHOD FOR RECORDING AND REPRODUCING INFORMATION

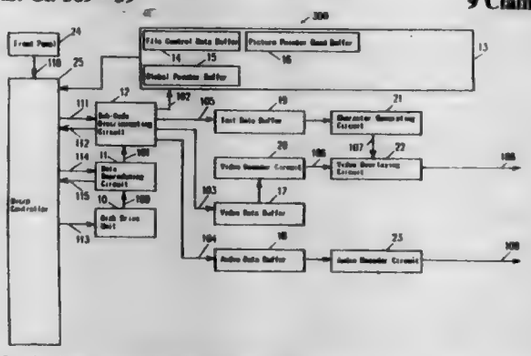
Yoshihisa Fukushima; Masahiro Inagaki, both of Osaka; Yasushi Azumatani, Takatsuki, and Hiroshi Hamasaka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 692,812, Jul. 30, 1992, Pat. No. 5,642,338, which is a division of Ser. No. 319,680, Oct. 7, 1994, Pat. No. 5,596,564. This application Feb. 14, 1997, Ser. No. 800,848

Claims priority, application Japan, Oct. 8, 1993, 5-252854

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—59 **9 Claims**



1. A data recording/reproducing apparatus by using a data recording medium for recording and reproducing each unit with a fixed length of a data, the apparatus comprising:

video data generating means for generating a compressed picture data by variable-bitrate-compressing an externally input video signal in units of a picture;

audio data generating means for generating an audio data from an externally input audio signal;

interleaving means for generating GOP data by interleaving the compressed picture data and the audio data on the basis of each unit with the fixed length, the interleaving being performed in units of a picture group (GOP) including a predetermined number of pictures, and generating a chapter data including a plurality of the GOP data;

means for generating a plurality of first pointers, each first pointer being provided in a one-to-one correspondence to each of the audio data included in the chapter data so as to store location data of the corresponding audio data, and for generating a first pointer data by allocating the plurality of the first pointers in a predetermined order;

first pointer data storing means for temporarily storing the first pointer data;

means for generating a plurality of second pointers, each second pointer being provided in a one-to-one correspondence to each of the first pointer data so as to store location data of the corresponding first pointer data, and for generating a second pointer data by allocating the plurality of the second pointers in a predetermined order;

second pointer data storing means for temporarily storing the second pointers;

means for generating an AV file by alternately allocating the first pointer data and the chapter data and positioning the second pointer data at a predetermined location; and

means for recording the AV file on the data recording medium.

5,798,996

METHOD AND APPARATUS FOR RECORDING DIGITAL DATA BY CONTROLLING THE LOCATION OF THE EDGE OF RECORDING PITS THROUGH MODULATION OF A LASER

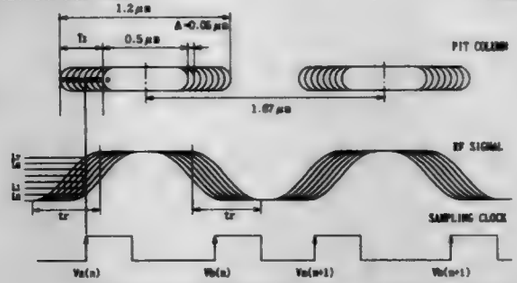
Masayuki Arai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 21, 1995, Ser. No. 492,783

Claims priority, application Japan, Jun. 24, 1994, 6-166264; Sep. 29, 1994, 6-259530

Int. Cl.[6] G11B *5/09*

U.S. Cl. 369—59 **9 Claims**



1. A method for recording digital data, comprising the steps of:

generating a recording basic clock synchronized with a reference clock pit previously recorded on a phase-change optical recording medium, and having the same frequency as a basic clock of user data that is to be recorded;

dividing the user data to be recorded into a predetermined unit, shifting the timing of an edge of the recording basic clock by an amount corresponding to the predetermined unit of user data and thus generating a modulation signal;

generating a recording signal for controlling laser beam irradiation, the recording signal being synchronized with the modulation signal; and

recording the user data on the phase-change optical recording medium by irradiating laser beam modulated in accordance with the recording signal to the phase-change optical recording medium so as to form a recording pit, wherein a location of an edge of the recording pit is determined by the modulation of the laser beam.

5,798,997

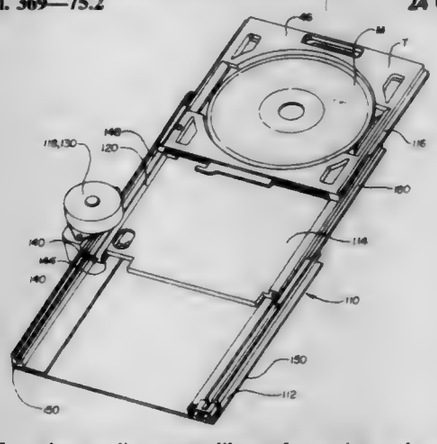
IMPORT/EXPORT ELEMENT FOR DATA STORAGE LIBRARY

Eric A. Ware, Plymouth, and Robert G. Hart, Minnetonka, both of Minn., assignors to International Data Engineering, Inc., Eden Prairie, Minn.

Filed Nov. 5, 1996, Ser. No. 744,107

Int. Cl.[6] G11B *17/04;33/02*

U.S. Cl. 369—75.2 **24 Claims**



10. In a data media storage library for storing and accessing storage media of the type having a media transport element servicing an import/export element, a media storage element and a data transfer element, the data transfer element being longer than the media storage element and the import/export element and the import/export element, media storage element and data transfer element being in substantial alignment for servicing by the media transport element, an improved import/export element for inserting data media into the data media storage library and removing data media from the data media storage library, the improved import/export element comprising:

(a) an import/export element base in substantial alignment with the media storage element and data transfer element for servicing by the media transport element;

(b) an import/export element intermediate slider slidingly engaged with the import/export element base and moving in and out of the import/export element base;

(c) an import/export media drawer holding the media and slidingly engaged with the intermediate slider and moving in and out of the import/export element base and extending outside the data media storage library;

(d) drive means attached to the import/export element base for moving the intermediate slider into and out of the import/export element base; and

(e) coupling means for transmitting the motion of the intermediate slider to the media drawer such that during motion of the intermediate slider the media drawer moves about twice as far as the intermediate slider

wherein the coupling means further comprises a drive belt, a first idler pulley attached to one end of the intermediate slider, a second idler pulley attached to the opposite end of the intermediate slider, the drive belt engaging the first idler pulley and second idler pulley and the drive belt having a loop on either side of the intermediate slider, one loop of the drive belt being fastened to the import/export element base, the second loop of the drive belt being fastened to the media drawer, whereby motion of the intermediate slider imparts twice as much motion to the media drawer through the drive belt,

whereby the combined length of the intermediate slider and the media drawer is sufficient to move the media drawer from the import/export element base to outside the data media storage library.

5,798,998

OPTICAL DISC REPRODUCING DEVICE

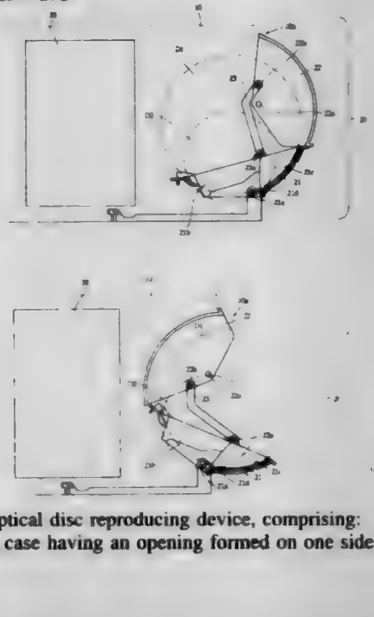
Yoshimitsu Fukushima; Shigeharu Furusawa, and Satoru Anada, all of Saitama-ken, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 5, 1997, Ser. No. 795,775

Claims priority, application Japan, Feb. 6, 1996, 8-044265

Int. Cl.[6] G11B *33/02;17/08*

U.S. Cl. 369—178 **7 Claims**



1. An optical disc reproducing device, comprising:

a frame case having an opening formed on one side thereof;

a disc reproducing section disposed within the frame case;

a disc receiving section capable of receiving and holding a plurality of discs, said disc receiving section being mainly provided within the frame case adjacent to the opening thereof;

a carrier means for picking up a selected disc from the disc receiving section and moving the selected disc to the disc reproducing section;

wherein the disc receiving section includes a disc holder and a disc cover, the disc holder is provided adjacent to a lower portion of the opening of the frame case in a manner such that the disc holder is pivotable with respect to the frame case, while the disc cover is provided adjacent to an upper portion of the opening of the frame case in a manner such that the disc cover is also pivotable with respect to the frame case,

wherein the disc holder and the disc cover are connected through a link mechanism, such that a turning of the disc cover in one direction causes a turning of the disc holder in an opposite direction whereby the pivotal motion of the disc cover in said one direction and the corresponding pivotal motion of the disc holder in said opposite direction allows access to a plurality of discs by a user from the outside of the frame case and wherein the pivotal motion of the disc cover in said opposite direction and the corresponding pivotal motion of the disc holder in said one direction, allows access to the plurality of discs inside the frame case by the carrier means.

5,798,999

DAMPED TURNTABLE/DISK ARCULATELY POSITIONABLE RELATIVE TO A HEAD

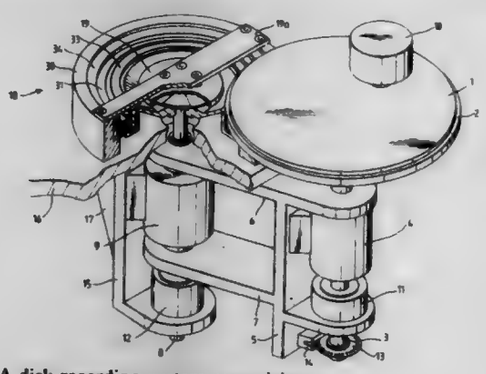
Alexander Numa Labinsky, deceased, late of Monmouth, M. A. Reynolds, representative; Gerald Alfred John Reynolds, Monmouth, and Jonathan Halliday, Gwent, all of Great Britain, assignors to Nimbus Communications International Limited, Gwent, United Kingdom

Continuation of Ser. No. 256,013, Jun. 20, 1994, abandoned. This application Sep. 27, 1996, Ser. No. 718,694

Claims priority, application United Kingdom, Dec. 23, 1991, 9127573; Dec. 23, 1991, 9127574

Int. Cl.[6] G11B *25/04;19/20;17/34*

U.S. Cl. 369—266 **7 Claims**



1. A disk recording system comprising:

a recording head;

a turntable for rotatably supporting a disk adjacent said recording head, said turntable being rotatable about a first axis;

a support for supporting one of said turntable and said recording head so as to enable relative movement between said first axis and said recording head, said support including a rotary air bearing, and said rotary air bearing defining a direction for said relative movement; and

rotary movement damping means for damping said relative movement;

said damping means comprising a container including a fixed damping element including at least one fixed vane and a moving damping element, including at least one moving vane, disposed in closely spaced relation to said at least one fixed vane so as to define a gap therebetween, and a viscous fluid filling said gap.

5,799,000

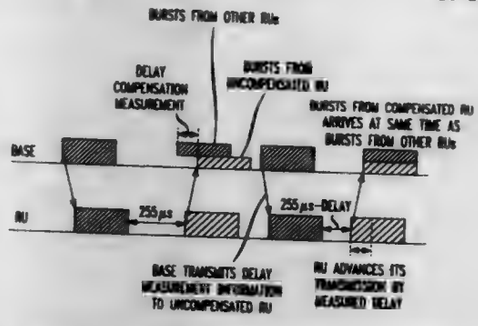
DELAY COMPENSATION

Elliott Hoole, Redmond, Wash., assignor to AT&T Wireless Services, Inc., Middletown, N.J.

Filed Feb. 6, 1997, Ser. No. 796,491

Int. Cl.[6] H04J *13/02*

U.S. Cl. 370—210 **16 Claims**



1. A highly bandwidth-efficient communications method, comprising:

receiving at a base station during a first time period a first spread signal from a first remote unit,

said first spread signal having a first common access channel data signal spread over a first plurality of discrete tones in accordance with a first spreading code assigned to said first remote unit;

receiving at the base station during a second time period a second spread signal from said second remote unit,

said second spread signal having a second common access channel data signal spread over a second plurality of discrete tones in accordance with a second spreading code assigned to said second remote unit,

said second time period occurring at a different time than said first time period, said second time period occurring at a time expected by said base station;

adaptively despreading said first spread signal received at said base station by using a first despreading code that is based on the characteristics of said received signal;

calculating a delay at said base station,

said delay being the time difference between the start of said second time period and said first time period,

said delay having a magnitude and a direction; and

transmitting from said base station to said first remote unit a signal that includes said magnitude and said direction of said delay.

5,799,001

COMPOSITE NETWORK PROTECTIVE/RECOVERING DEVICE FOR SYNCHRONOUS DIGITAL HIERARCHY DXC

Dong Choon Lee; Jae Guen Kim; Ho Geon Kim, and Ho Jae Lee, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunication Research Institute, Daejeon, and Korea Telecommunications Authority, Seoul, both of Rep. of Korea

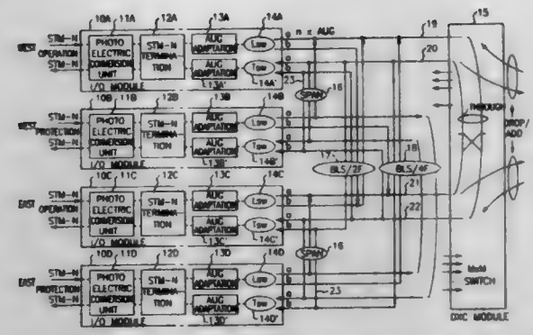
Filed Dec. 26, 1995, Ser. No. 578,418

Claims priority, application Rep. of Korea, Dec. 23, 1994, 1994 36957

Int. Cl.[6] H04L *12/437*

U.S. Cl. 370—220 **2 Claims**

1. Composite network protective/recovering device, comprising:



first to fourth input/output (I/O) modules, wherein the first and third I/O modules are operational modules and the second and fourth I/O modules are protective modules;

a first span connection group connected between said first I/O operational module and said second I/O protective module, and a second span connection group between said third I/O operational module and said fourth I/O protective module, respectively to perform span switching;

a first bidirectional line switching ring connected between said first I/O operational module and said third I/O operational module to form a bidirectional ring having two lines in each direction;

a second bidirectional line switching ring connected to said first to fourth I/O modules to form transmitting/receiving operational lines including two lines in each direction and protective lines including two lines in each direction; and

cross-connection (DXC) module for cross-connecting signals transferred through said I/O modules and for classifying signals to be added or dropped.

5,799,002

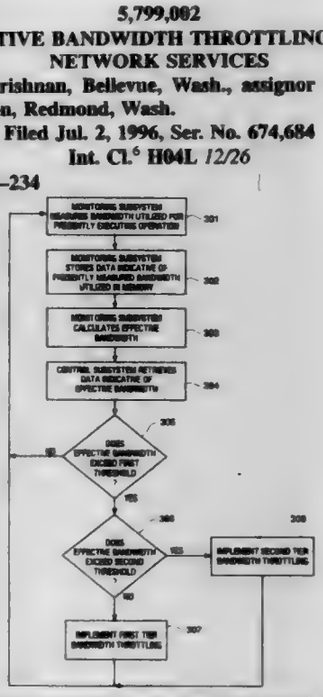
ADAPTIVE BANDWIDTH THROTTLING FOR NETWORK SERVICES

Murali R. Krishnan, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jul. 2, 1996, Ser. No. 674,684

Int. Cl.[6] H04L *12/26*

U.S. Cl. 370—234 **18 Claims**



1. A bandwidth throttling apparatus operational in a computer system which is connected to a network having at least one network server active in said computer system wherein each of said at least one network server provides a plurality of classes of service, and wherein said at least one network server transmits servers transmitting) data via a data transmission connection from said computer system to said network at a predetermined fixed data transmission bandwidth to clients connected to said network, said bandwidth throttling apparatus comprising:

means for determining a presently used bandwidth for each of said at least one network server by way of a data transmission rate measurement during execution of an operation for each of said at least one network server that includes:

means for storing data indicative of said data transmission rate measurement of said operation for n last most recently executed operations for each of said at least one network server, wherein n is a positive integer greater than 2; and

means for generating data indicative of an effective presently used bandwidth for each of said at least one network server wherein said effective presently used bandwidth includes an average of said data transmission rate measurement over said n last most recently executed operations;

means, responsive to said effective presently used bandwidth for one of said at least one network server that exceeds a first threshold, for effecting provision of said plurality of classes of service provided by said one of said at least one network server in a first manner; and

means, responsive to said effective presently used bandwidth for said one of said at least one network server that exceeds a second threshold that is greater than said first threshold, for effecting provision of said plurality of classes of service provided by said one of at least one network server in a second manner that differs from said first manner.

5,799,003

OAM CELL TRANSMISSION METHOD AND SYSTEM

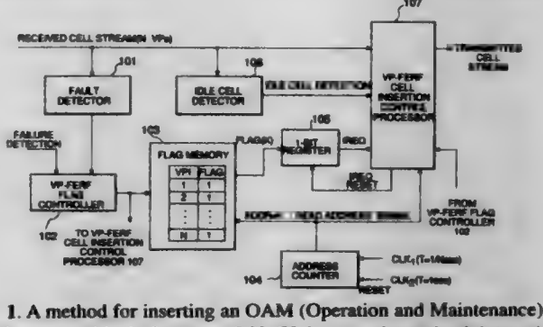
Shigeo Fujimaki, Tokyo, and Ryouichi Osada, Miyagi, both of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jun. 28, 1996, Ser. No. 673,361

Claims priority, application Japan, Jun. 30, 1995, 7-165124

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—244 **20 Claims**



1. A method for inserting an OAM (Operation and Maintenance) information block for one of N (N is a predetermined integer) paths into an information block stream at a rate of one OAM information block per a predetermined time period in each of the N paths, the method comprising the steps of:

a) preparing N subperiods which are allocated to the N paths, respectively, the N subperiods being obtained by dividing the predetermined time period by N;

b) sequentially selecting a single subperiod from the N subperiods;

c) checking the information block stream for an idle information block within the single subperiod selected;

d) checking whether the OAM information block for a single path of the N paths corresponding to the single subperiod selected is requested to be inserted into the information block stream within the single subperiod selected; and

e) inserting the OAM information block into, a, time period of a first idle information block which is first detected within the single subperiod selected when the OAM information block is requested to be inserted into the information block stream.

5,799,004

METHOD FOR ELIMINATING MULTIPLE-ACCESS INTERFERENCE AND A MOBILE STATION

Ilkka Keskitalo, Jääli; Arto Kiema, Oulu; Jari Savusalo, Oulu, and Petri Jolma, Oulu, all of Finland, assignors to Nokia Telecommunications, Espoo, Finland

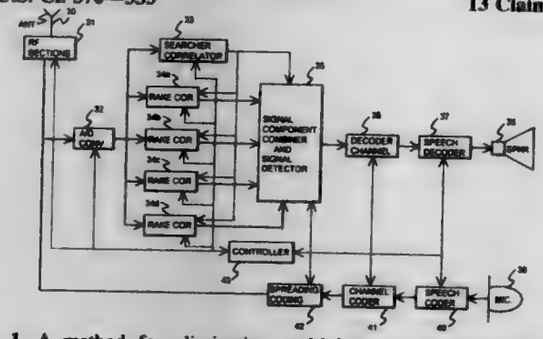
PCT No. PCT/FI94/00478, § 371 Date Jul. 2, 1996, § 102(e) Date Jul. 2, 1996, PCT Pub. No. WO95/11259, PCT Pub. Date May 4, 1995

PCT Filed Oct. 21, 1994, Ser. No. 637,659

Claims priority, application Finland, Oct. 27, 1993, 934759

Int. Cl.[6] H04J *13/02*

U.S. Cl. 370—335 **13 Claims**



1. A method for eliminating multiple-access interference in CDMA cellular radio system having a plurality of cells each comprising at least one base station arranged for communicating by CDMA with mobile stations present in a geographic area covered by the respective cell, comprising the steps of:

at least one said base station of one said cell, being a presently dedicated base station relative to at least a respective one of said mobile stations and being bordered by at least another, neighboring said cell having a respective neighboring base station, informing said mobile station of at least one CDMA spreading code used in said one cell and at least one CDMA spreading code used in at least one said neighboring cell;

said one base station and at least one said neighboring base station respectively transmitting components of a desired signal and a signal to be measured, on respective channels, using respective CDMA spreading codes;

said mobile station measuring the code phase and power level of a respective channel of each of said one cell and said at least one neighboring cell, using respective CDMA spreading codes as made known to said mobile station by said practicing of said informing step; and

said mobile station detecting, from signal components thereby received, said desired signal, by eliminating interference from said signal components as received by said mobile station, based on said measuring.

5,799,005

SYSTEM AND METHOD FOR DETERMINING RECEIVED PILOT POWER AND PATH LOSS IN A CDMA COMMUNICATION SYSTEM

Samir S. Soliman, San Diego, Calif., assignor to Qualcomm Incorporated, San Diego, Calif.

Filed Apr. 30, 1996, Ser. No. 641,303

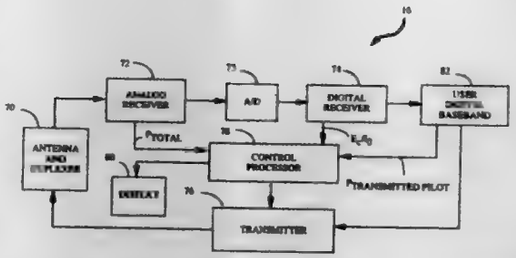
Int. Cl.[6] H04B *7/216*

U.S. Cl. 370—335 **27 Claims**

1. A communication device having a power measurement circuit for determining the power of a first received spread-spectrum signal having a predetermined bandwidth, said communication device comprising:

a first receiver circuit for measuring total received signal power in said predetermined bandwidth;

a second receiver circuit, coupled to said first receiver circuit, for measuring a ratio of signal energy of said first received spread-spectrum signal to a total received power spectral density in said predetermined bandwidth; and



a processor, coupled to said first receiver circuit and said second receiver circuit, for calculating power of said first received spread-spectrum signal in response to said measured total received signal power and said measured ratio of signal power.

5,799,006

DISC TABLE FOR DISC RECORDING/REPRODUCING APPARATUS AND METHOD FOR PRODUCING SAME

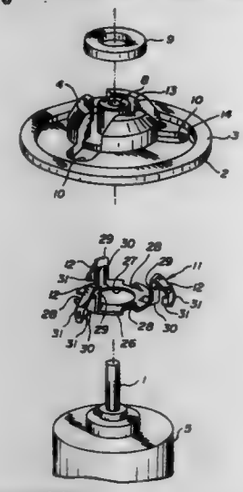
Hiroshi Mukawa, Tokyo, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 391,461, Feb. 21, 1995, Pat. No. 5,633,856, which is a continuation of Ser. No. 5,159, Jan. 15, 1993, abandoned. This application Oct. 16, 1996, Ser. No. 730,935

Claims priority, application Japan, Jan. 24, 1992, 4-032932; May 26, 1992, 4-157300; Sep. 30, 1992, 4-285218

Int. Cl.[6] G11B *17/028;25/04*

U.S. Cl. 369—270 **5 Claims**



1. A disc table comprising:

a fitting member having a distal end for fitting into a circular center aperture in a disc;

a table section integrally formed with a proximal end of said fitting member, said table section having a support surface for supporting the disc thereon;

a magnet mounted at said distal end of said fitting member for attracting and holding the disc on the support surface of said table section by attracting a magnetic member which is integral with the disc and provided at a center region of the disc in a manner which closes the circular center aperture; and

centering means including a disc-shaped base section secured to the proximal end of said fitting member and plural centering segments which are integrally formed with the base section and formed at spaced intervals about said base section, said centering segments thrusting an inner rim of the center aperture of the disc for aligning the center of the disc with the center of said fitting member, said centering segments having an elasticity which is set so that said centering segments are resiliently biased inwardly under the force applied against said centering segments by the inner rim of the center aperture of the disc when the disc is moved solely under the influence

of the force of attraction between said magnet and said magnetic member provided at the center region of the disc;

said fitting member having a tapered portion at the distal end, a columnar-shaped main portion having an outside diameter smaller than the center aperture of the disc, and a disc capturing taper section which slidingly contacts the inner rim of the center aperture in the disc for guiding the disc towards a position wherein the disc is centered about the center of said fitting member;

said centering means comprising an elongate resilient metallic member, each of said centering segments having:

a thin essentially uniform cross-section tongue shape,

a proximal end integrally formed with said base section, and

a distal free end projected from the outer periphery of the proximal side of said fitting member so as to be abutted against the inner rim of the center aperture of the disc so as to be resiliently biased towards said base section.

5,799,007

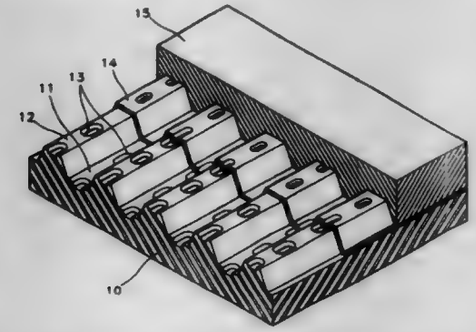
HIGH DENSITY COMPACT DISC

Yong-jae Lee, Uiwang; Byeong-ho Park, Seoul, and Kyo-bang Chung, Anyang, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 30, 1996, Ser. No. 689,022

Int. Cl.[6] G11B *3/70*

U.S. Cl. 369—275.4 **3 Claims**



3. A high density compact disc comprising a recording surface readable by a light source, the recording surface being arranged with a plurality of tracks, wherein each of said plurality of tracks further comprises a plurality of alternating grooves and lands along said track, and wherein said grooves and lands contain pits corresponding to information recorded on the disc, wherein the vertical spacing between a top surface of a groove and a bottom of a pit formed in a land is within the range of

$$\frac{\lambda}{7\eta} \text{ through } \frac{\lambda}{6\eta}$$

where λ is the wavelength of light used to read information recorded on the disc and η indicates the refractive index of a disc substrate.

5,799,008

CASING HAVING MULTIPLE PRINTED LAYERS WHICH PROVIDE A PROTECTED DECORATIVE AREA AND UNPROTECTED AREA ON WHICH WRITING CAN BE FORMED

Kenichi Kano, and Kokichi Sugawara, both of Miyagi, Japan, assignors to Sony Corporation, Japan

Filed Feb. 23, 1994, Ser. No. 200,707

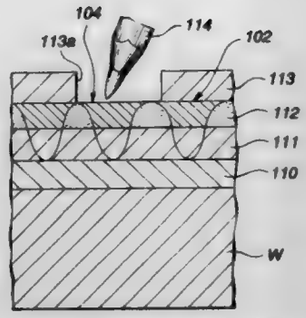
Claims priority, application Japan, Feb. 26, 1993, 05-094826

Int. Cl.[6] G11B *23/02*

U.S. Cl. 369—291 **2 Claims**

1. A container casing for a recording media having a main casing member having the recording media housed therein, comprising:

a highly adhesive layer formed on an outer surface of said main casing member;



an ink receptive layer provided on said adhesive layer;

a colored layer printed on said ink receptive layer;

a protective layer printed on said colored layer for protecting the colored layer; and

means defining an opening in said protective layer for exposing a part of said colored layer and defining an area of said colored layer which is unprotected and on which writing can be formed.

5,799,009

DISK CARTRIDGE WITH AN INCLINED GROOVE

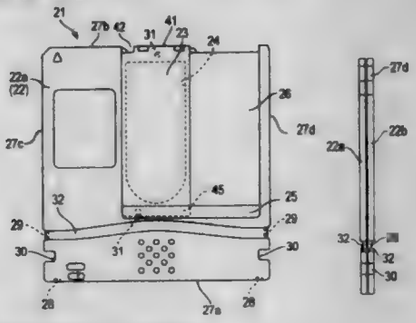
Yuji Takahashi; Ichiro Kawamura; Toshiaki Kashihara, and Yoshio Hata, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 530,430, Sep. 19, 1995. This application Oct. 8, 1996, Ser. No. 727,731

Claims priority, application Japan, Sep. 20, 1994, 6-224369

Int. Cl.[6] G11B *23/03*

U.S. Cl. 369—291 **1 Claim**



1. A disk cartridge comprising,

a flat case for accommodating a disk,

wherein said case is made of a resin, and

wherein said case includes:

a face side and a back side;

a right side and a left side;

a front end and a rear end on a peripheral side of the case;

a shutter folded in the shape of a U,

wherein a center folded portion of said U-shaped shutter covers a part of the front end, one leg portion covers a portion of the face side, and another leg portion covers a portion of the back side,

wherein the face side and the back side has a thin portion corresponding to a sliding region of said shutter, and

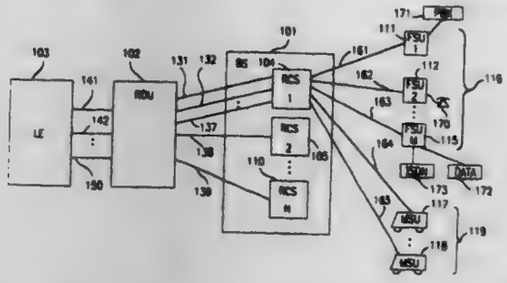
wherein said shutter is slidable in a lateral direction over the sliding region of the case toward and away from the right side;

a groove extending from the left side to the right side on the face side and the back side located between the rear end and the sliding region for improving the flowability of molten resin used to form the case wherein each of said grooves has an inclination in one direction from one sidewall of the respective groove to the other sidewall of the respective groove for allowing detection of the correct orientation of the disk cartridge.

5,799,010
CODE DIVISION MULTIPLE ACCESS (CDMA) COMMUNICATION SYSTEM

Gary Lomp, Centerpot; John Kowalski, Hempstead; Fatih Ozluturk, Port Washington; Avi Silverberg, Commack; Robert Regis, Huntington; Michael Luddy, Sea Cliff, all of N.Y.; Alexander Marra, Hoboken, N.J., and Alexander Jacques, Mineola, N.Y., assignors to Interdigital Technology Corporation, Wilmington, Del.

Filed Jun. 27, 1996, Ser. No. 669,775
Int. Cl.[6] H04J *13/02*; **H04B** *7/216*
U.S. Cl. 370—335 **9 Claims**



1. A multiple access, spread-spectrum communication system for processing a plurality of telecommunication information signals received simultaneously for simultaneous transmission over a radio frequency (RF) channel as a code-division-multiplexed (CDM) signal, the system comprising:

means for receiving a call request signal corresponding to a telecommunication line information signal, and a user identification signal identifying a user to which the call request and information signal are addressed;

a plurality of modem processing means, one of the plurality of modem processing means providing a global pilot code signal, and each of the modem processing means providing a respective message code signal and combining one of the plurality of information signals with the respective message code signal to provide a spread-spectrum processed message signal, the plurality of message code signals of the plurality of modem processing means being synchronized to the global pilot code signal;

assignment means responsive to a channel assignment signal for coupling the information signals received on the telecommunication lines to respective indicated ones of the plurality of modem means;

a system channel controller, coupled to a remote call-processing means and responsive to the user identification signal, for providing the channel assignment signal; and

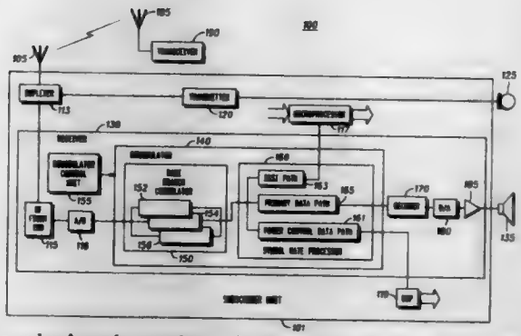
an RF transmitter means, connected to each of the plurality of modem processing means, for combining the plurality of spread-spectrum processed message signals with the global pilot code signal to generate a CDM signal; for modulating a carrier signal with the CDM signal and for transmitting the modulated carrier signal through an RF communication channel.

5,799,011
CDMA POWER CONTROL CHANNEL ESTIMATION USING DYNAMIC COEFFICIENT SCALING

Christopher Peter LaRosa, Lake Zurich; Michael John Carney, Mundelein; Christopher John Becker, Palatine, and Fuyun Ling, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 624,329, Mar. 29, 1996, Pat. No. 5,737,327. This application Feb. 28, 1997, Ser. No. 808,331
Int. Cl.[6] H04J *13/04*; **H04Q** *7/20*
U.S. Cl. 370—335 **17 Claims**

1. A demodulator comprising:



a rake branch correlator, for determining a pilot correlation signal and a data correlation signal;

a received signal strength indicator (RSSI) path, coupled to the rake branch correlator, for determining an RSSI value signal from the pilot correlation signal;

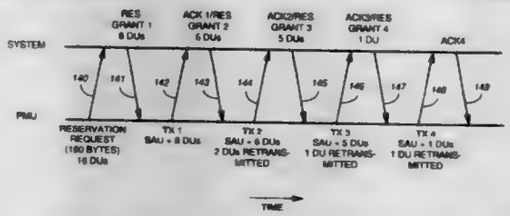
a primary data path, coupled to the rake branch correlator, for determining a primary data signal from the pilot correlation signal and the data correlation signal; and

a power control data path, coupled to the rake branch correlator, for determining a power control data signal from the pilot correlation signal and the data correlation signal.

5,799,012
SYSTEM CONTROLLED ASYMMETRICAL AUTOMATIC REPEAT REQUEST PROTOCOL METHOD

Douglas I. Ayerst, Delray Beach, Fla.; Malik J. Khan, Elgin, Ill., and Michael J. Rudowicz, Delray Beach, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 5, 1996, Ser. No. 583,364
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—336 **9 Claims**



1. A system controlled asymmetrical automatic repeat request protocol method in a two-way wireless communication system, the two-way wireless communication system having a controller coupled to at least one transmitter and to at least one receiver for communication of a message from at least one selective call transceiver, the message having a length and the message divided into a plurality of packets, each packet transmitted during a time slot, comprising the steps of:

receiving a reservation request signal from the at least one selective call transceiver, the reservation request signal including a measure of the length of the message; and

in response to the measure of the length of the message, the controller determining a total number of data units into which to divide the message for subsequent transmission by the at least one selective call transceiver, each data unit comprising at least one packet, the data unit being the smallest parcel of scheduled transmitted data that is acknowledgeable by the system.

5,799,013

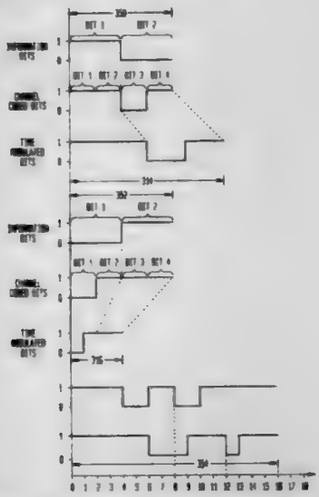
METHODS AND DEVICES FOR ENHANCING COMMUNICATIONS THAT USE SPREAD SPECTRUM TECHNOLOGY BY USING VARIABLE POWER TECHNIQUES

Nambirajan Seshadri, and Carl-Erik Wilhelm Sundberg, both of Chatham, N.J., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation of Ser. No. 235,577, Apr. 29, 1994, abandoned. This application Mar. 11, 1997, Ser. No. 815,284

Int. Cl.[6] H04N *7/167*

U.S. Cl. 370—342 **20 Claims**



1. A method of processing a sequential signal comprising the steps of:

receiving the sequential signal having a first time portion and a second time portion, said first time portion being more significant than said second time portion;

power modulating said sequential signal to generate a power modulated signal having a first power modulated time portion and a second power modulated time portion, wherein the average power of said first power modulated time portion is increased relative to the average power of said second power modulated time portion; and

spreading the sequential signal to generate a spread spectrum signal.

5,799,014

ATM CELL SWITCHING SYSTEM

Takahiko Kozaki, Koganei; Junichirou Yanagi, Kodaira; Kiyoshi Aiki, Hachioji; Yutaka Ito; Kaoru Aoki, both of Yokohama, and Shinobu Gohara, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

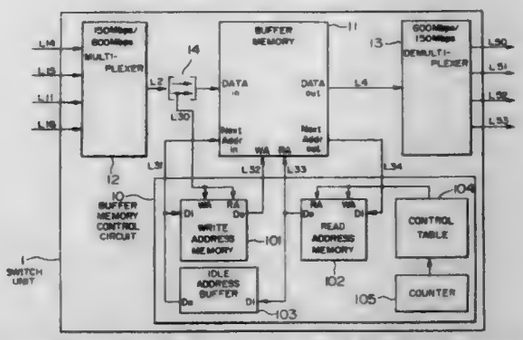
Continuation of Ser. No. 845,668, Mar. 4, 1992, Pat. No. 5,365,519, which is a continuation-in-part of Ser. No. 482,090, Feb. 20, 1990, Pat. No. 5,124,977, which is a continuation-in-part of Ser. No. 218,217, Jul. 13, 1988, Pat. No. Re. 34,305, said Ser. No. 845,668 is a continuation-in-part of Ser. No. 745,466, Aug. 14, 1991, Pat. No. 5,280,475. This application Sep. 16, 1994, Ser. No. 306,978

Claims priority, application Japan, Jul. 15, 1987, 62-174603; Oct. 9, 1987, 62-253661; Nov. 11, 1987, 62-283249; Apr. 27, 1988, 63-102512; Feb. 22, 1989, 1-041230; Aug. 17, 1990, 2-215705

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—358 **20 Claims**

1. A switching system comprising a switch unit including a plurality of switch unit input ports and switch unit output ports having a first transmission rate, a plurality of input lines for supplying input cell streams to said switch unit input ports, a plurality of output lines for transmitting output cell streams derived



from said switch unit output ports, and at least one conversion means interposed between at least one of the switch unit output ports and at least one of the output lines having a second transmission rate different from the first transmission rate and for converting at least one output cell stream received from said at least one switch unit output port having the first transmission rate to at least one cell stream having the second transmission rate by multiplexing or demultiplexing the received output cell stream,

said switch unit comprises:

a buffer memory for temporarily storing a plurality of input cells inputted through said switch unit input ports, and

buffer memory control means for accessing said buffer memory;

said buffer memory control means comprises:

idle address buffer means for storing idle addresses to be used as new pointer addresses,

extracting means for extracting routing information from each of input cells inputted from said switch unit input ports,

write control means, connected to said extracting means and said idle address buffer means, for writing each of said input cells inputted from said switch unit input ports into said buffer memory forming a pair including the input cell and a pointer address taken out from said idle address buffer means in such a manner that a group of cells having the same routing information are chained one after another in said buffer memory by writing a next input cell at a memory location designated by the pointer address paired with a preceding input cell belonging to a cell group specified by the routing information extracted from the next input cell,

output control means for storing identifiers of the output lines in correlation with said switch unit output ports and for selectively outputting said identifiers one after another in accordance with the switch unit output port to which a cell read out from said buffer memory is read out, and

read control means for reading out from said buffer memory a pair of cell and pointer address belonging to a cell group specified by the output line identifier outputted from the output control means.

5,799,015

RECIRCULATION ROUTES IN SWITCHING NETWORKS USED WITH SCALABLE COHERENT INTERFACES

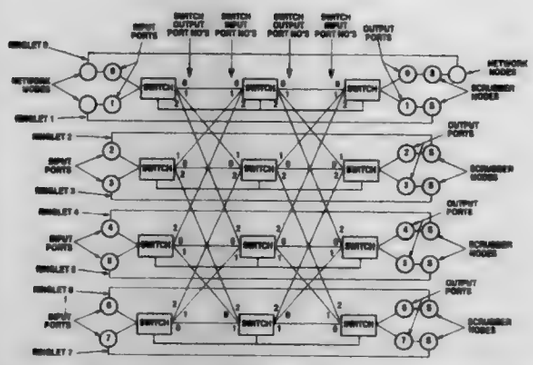
Donald Bruce Bennett, and Steven Allen Murphy, both of Apple Valley, Minn., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed May 13, 1996, Ser. No. 649,917

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—388 **4 Claims**

1. A system for routing packets comprising a plurality of data bits and target identity code bits through a packet routing switching network having a plurality of switches each of which is assigned to one of a plurality of rows of said switches and to one of a plurality of stages of said switches, each row of which includes an input stage of switches and an output stage of switches, wherein said network comprises a plurality of input ports that are coupled to the switches of said input stage and a plurality of output ports equal in number to said plurality of input ports that are coupled to the switches of said output stage, and said packets are transmitted from



source nodes through said switching network to target nodes that are designated by said target identity code bits comprising,

a plurality of operational rings each of which are used to link output ports of switches of said output stages to input ports of switches of said input stage wherein each operational ring is identified by ring identity code bits associated with said input stage switches of said operational rings, and has at least one node therein which is capable of performing a function with said data, wherein the number of said switches in a row is equal in number to the number of stages of said switching network, and the number of said operational rings is less than the total number of either said input ports and or the number of said output ports, and

a plurality of recirculation rings each of which is used to link output ports of switches of said output stage to input ports of switches of said input stage, wherein said recirculation rings have no functional nodes therein, and each output port of said switches of said output stage is coupled to either an operational ring or to a recirculation ring and said packets are transmitted from source nodes through said operational rings, and in the event any of said packets are misrouted, then said packets are transmitted through said recirculation rings or through said operating rings that do not contain said designated target nodes until said packets reach their respective designated target nodes.

5,799,016

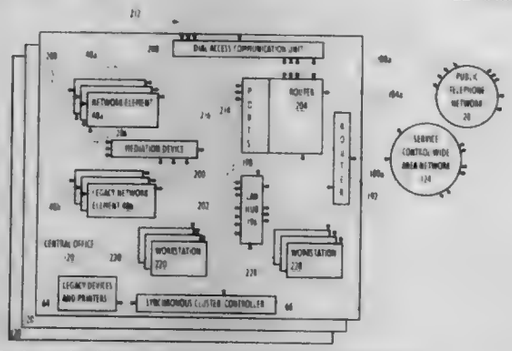
NETWORK ADDRESSING SCHEME ENCODING COMMUNICATION CHANNEL INFORMATION

Arthur E. Onweller, Evergreen, Colo., assignor to U S West, Inc., Englewood, Colo.

Filed Jan. 11, 1996, Ser. No. 584,876

Int. Cl.[6] H04L *12/46*

U.S. Cl. 370—401 **22 Claims**



1. A method for managing a network, comprising:

identifying a plurality of pre-existing process interfaces, each of said pre-existing process interfaces being connected to said network;

performing for each pre-existing process interface the following steps (A1) through (A2):

(A1) identifying a corresponding set of characteristics related to the pre-existing process interface wherein a network communication with the pre-existing process interface utilizes a corresponding communication channel having each of said characteristics of said corresponding related set;

(A2) assigning to the pre-existing process interface a corresponding network address for addressing the pre-existing process interface, wherein said corresponding network address comprises an encoded identification of each characteristic of said corresponding related set of characteristics;

decoding a previously identified one of said corresponding network addresses for one of said pre-existing process interfaces to identify one or more of said characteristics in said corresponding related set of characteristics.

5,799,017

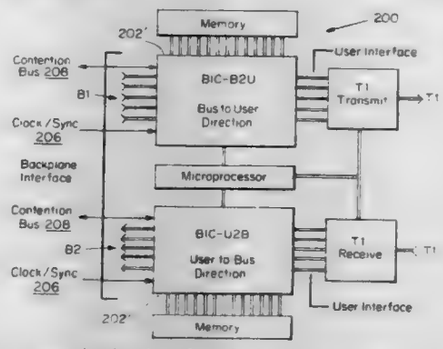
SCALABLE MULTIMEDIA NETWORK

Dev Vrat Gupta, Flemington; Yu-Ren Brian Chen, Somerville, both of N.J.; Craig A. Sharper, Los Altos, Calif., and Alan E. Stone, Morristown, N.J., assignors to Cisco Technology, Inc., San Jose, Calif.

Division of Ser. No. 269,370, Jun. 30, 1994, Pat. No. 5,555,244, which is a continuation-in-part of Ser. No. 243,059, May 19, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 639,633

Int. Cl.[6] H04L *12/28*

U.S. Cl. 370—419 **15 Claims**



1. A communication interface device for providing an interface between a communication bus and a user of a communication service comprising:

a. a memory interface for storing digital information to and from the communication bus and user;

b. a backplane interface for receiving and transmitting digital information in the form of cells of N bits in length, to and from the bus; said cells forming packets of different bit lengths;

c. a user interface for providing digital information to and from a user upon demand in any order designated by the user;

d. a processor interface for controlling the internal operation of the device and for allowing a processor to transmit and receive packets to and from the bus; and

e. an arbitrator responsive to a request bit received from among the set of said backplane interface, said user interface and said processor interface, such that one from said set is allowed to access said memory interface.

5,799,018

METHOD AND SYSTEM FOR PRIVATE COMMUNICATION WITH EFFICIENT USE OF BUS TYPE TRANSMISSION PATH

Tomoyuki Kanekiyo; Haruhiko Kojima, and Hiroyuki Nishi, all of Kanagawaken, Japan, assignors to Nippon Telegraph and Telephone Corp., Tokyo, Japan

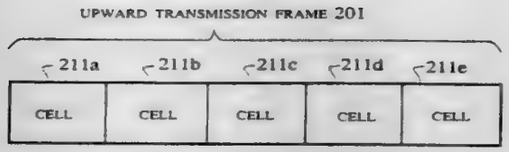
Filed May 19, 1995, Ser. No. 445,180

Claims priority, application Japan, May 19, 1994, 6-105114

Int. Cl.[6] H04J *3/16*

U.S. Cl. 370—451 **10 Claims**

1. A private communication system comprising:



a plurality of communication terminal devices for carrying out communications;

a system main device for exchanging communications from the communication terminal devices;

bus type upward and downward digital transmission paths, connecting the system main device and each of the communication terminal devices, for transmitting data in forms of upward and downward transmission frames formed by a plurality of cells in fixed length;

wherein the system main device includes:

means for determining an allocation of idle cells in each upward transmission frame to a communication from each communication terminal device according to a communication request made by said each communication terminal device;

means for transmitting a notification for the allocation determined by the determining means to said each communication terminal device by using an idle cell among the cells in each downward transmission frame, such that said each communication terminal device recognizes allocated cells on the upward digital transmission path available for the communication from said each communication terminal device according to the notification transmitted through the downward digital transmission path; and

the determining means also determines a preliminary allocation of idle cells in each upward transmission frame to each communication terminal device which is currently non-communicating, and the transmitting means also transmits a notification for the preliminary allocation determined by the determining means to said each communication terminal device which is currently non-communicating by using an idle cell among the cells in each downward transmission frame, such that said each communication terminal device which is currently non-communicating recognizes preliminarily allocated cells on the upward digital transmission path available for making the communication request from said each communication terminal device according to the notification transmitted through the downward digital transmission path.

5,799,019
CIRCUIT FOR CONVERTING FRAME DATA

Young-Goo Kim, Kyounggi-do, and Sung-Dong Kim, Taegu, both of Rep. of Korea, assignors to Hyundai Electronics Ind. Co., Ltd., Rep. of Korea

Filed Jun. 14, 1996, Ser. No. 664,001

Claims priority, application Rep. of Korea, Jun. 28, 1995, 17960 1995; Jun. 28, 1995, 17961 1995

Int. Cl.[6] H04J *3/16;3/22*

U.S. Cl. 370—465 **10 Claims**

1. A circuit for converting frame data, comprising:

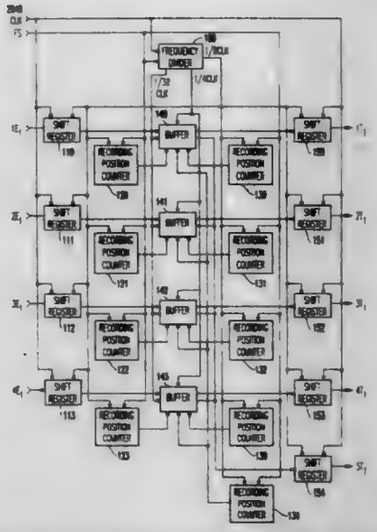
a frequency divider for frequency-dividing clock signals 2048CLK into clock signals ¼CLK, ⅛CLK and 1/32CLK;

four serial/parallel shift registers for converting serially inputted four 32-channel frame data of E1 repeater line of the CEPT method to parallel data, and for outputting the converted frame data by 8-bit one channel at a time;

four recording position counters for counting the clock signals ⅛CLK to set recording positions;

five reading position counters for counting the clock signals ⅛CLK to designate reading positions;

four buffers for sequentially storing output signals of said serial/parallel shift registers to recording positions designated by said recording position counters, for outputting the frame data by 24 channels at a time in accordance with output signals of said reading position counters, and for outputting the data of



the remaining 6 channels in accordance with output signals of the last one of said reading position counters;

four parallel/serial shift registers for converting the 24-channel data of said buffers to serial data; and

another parallel/serial shift register for converting the remaining 6-channel output data of said buffers into serial data.

5,799,020
DISTRIBUTED CYCLE RESET PROTOCOL FOR SHARING SINGLE MEDIUM

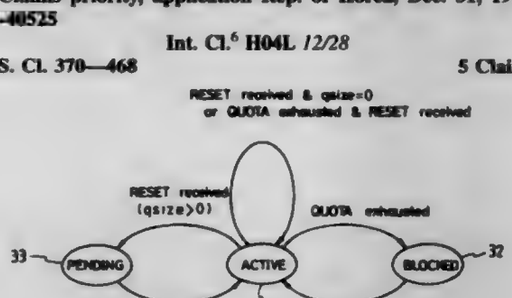
Hong Bum Jeon, Seoul, Rep. of Korea, assignor to Korea Telecommunication Authority, Seoul, Rep. of Korea

Filed Dec. 28, 1995, Ser. No. 579,210

Claims priority, application Rep. of Korea, Dec. 31, 1994, 94-40525

Int. Cl.[6] H04L *12/28*

U.S. Cl. 370—468 **5 Claims**



1. Apparatus, comprising a system and distributed cycle rest protocol mechanism used in the system, said system including a plurality of nodes sharing a single medium for transmitting and receiving cells during a cell transmission cycle, said cells having multiple priorities including a higher order priority and a lower order priority, said system allocating cell quotas to each of said nodes for cells of said higher order priority and of said lower order priority, said plurality of nodes including a quota-exhausted node, a lower order node and a higher order node, said quota-exhausted node having said cell quota for said cells of lower order priority of zero when a higher order priority reset signal has not yet been generated, said lower order node having not yet generated a lower order priority reset signal for transmitting to said quota-exhausted node, said higher order node having not yet received said higher order reset signal generated by said quota-exhausted node, said system still further including distributed medium connection control means for controlling said quota-exhausted node so that a non-zero allocation is reallocated to said cell quota for said cells of lower order priority for a new cell transmission cycle when said lower order priority reset signal is received by said quota-

exhausted node after said higher order priority reset signal is generated by said quota-exhausted node.

5,799,021

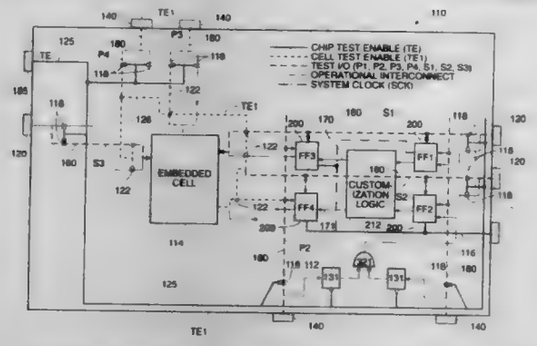
METHOD FOR DIRECT ACCESS TEST OF EMBEDDED CELLS AND CUSTOMIZATION LOGIC

Tushar R. Gheewala, San Jose, Calif., assignor to Duet Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 726,726, Oct. 7, 1996, abandoned, which is a continuation of Ser. No. 330,888, Oct. 28, 1994, abandoned. This application Mar. 20, 1997, Ser. No. 822,383

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.1 **10 Claims**



1. In an integrated circuit having a grid pattern of addressable rows and columns of grid lines and having both customization logic elements and predesigned embedded cells said predesigned embedded cells having test points at least at their inputs and outputs, said test points being specified within a contained cell region and having associated therewith a predesigned cell test protocol differing from a customized test protocol for said customization logic elements, a method for testing the integrated circuit comprising the steps of:

a) applying control signals to deselect an operation mode and to select a test enable mode, wherein, in said test enable mode, first multiplexing means provide connections between selected grid lines in said integrated circuit and signal pads at edges of said integrated circuit and provide connections to selected locations which are adjacent test pads and test points within said integrated circuit;

b1) selecting a first test submode corresponding to said customized test protocol;

b2) providing state suspendable latch means between a selected one of said grid lines and selected ones of said test points;

in said first test submode,

c) applying probe signals via first selected grid lines in said integrated circuit, said first selected grid lines being operative as probe lines and coupled through said first multiplexing means to said test points to address at least one of said test points in said customization logic;

d) in accordance with said customized test protocol, selectively applying first excitation signals to said customization logic and detecting output signals from said customization logic elements via second selected grid lines, said second selected grid lines being operative as sense lines; and

e) selecting a second test submode corresponding to said predesigned cell test protocol;

in said second test submode,

(f) in accordance with said predesigned cell test protocol, selectively applying a test enable signal as a probe signal to activate all test points of input and output terminals of each selected predesigned embedded cell and thereafter applying second excitation signals to test terminals of said predesigned embedded cells via selected ones of said first and second selected grid lines, wherein at least one type of said first and second selected grid lines normally limited to carrying a unidirectional address signal as a probe line in said first test submode is configured for carrying bidirectional data signals as a sense line; and

g) receiving output signals from said embedded cells in response to said second excitation signals via said one type of selected ones of said first and second selected grid lines.

5,799,022

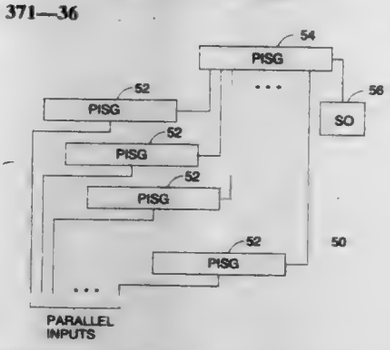
FAULTY MODULE LOCATION IN A FAULT TOLERANT COMPUTER SYSTEM

Emrys John Williams, Milton Keynes, United Kingdom, assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 1, 1996, Ser. No. 675,264

Int. Cl.[6] G06F *11/60*

U.S. Cl. 371—36 **38 Claims**



1. A subsystem for a fault tolerant computer system comprising a plurality of identical said subsystems operable in lockstep, said subsystem comprising:

at least one module having an input and an output;

a signature generator having parallel inputs and at least one output, said signature generator input being connected to receive signals from said input and/or output of each module and said signature generator generating, at its output(s), a compressed signature which is a function of the signals received its inputs; and

a logic analyzer connected to receive and store signals from said input and/or output of each module.

5,799,023

MESSAGE RECEIVER

Noriko Tanaka; Hiroshi Uranaka, both of Tokyo; Akio Uesugi, Yokohama, and Takashi Hamada, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 22, 1996, Ser. No. 620,646

Claims priority, application Japan, Jul. 19, 1995, 7-183104; Jul. 31, 1995, 7-195140

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—5.1 **4 Claims**

1. A message receiving apparatus comprising:

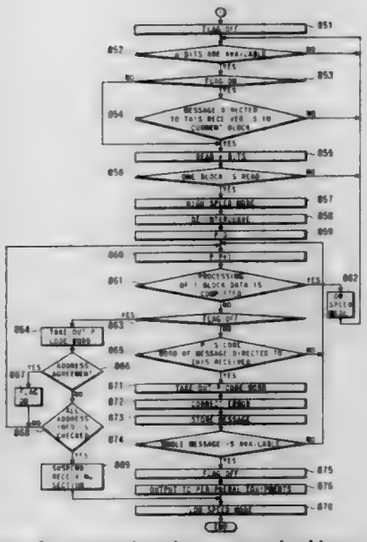
first means for demodulating a radio paging signal into a baseband signal;

second means for decoding the baseband signal into corresponding data;

third means for recovering address information from the data generated by the second means;

fourth means for recovering message information from the data generated by the second means;

fifth means for subjecting the recovered message information to an error correction process; and



sixth means for preventing the recovered address information from being subjected to the error correction process;

seventh means for deciding whether or not the address information recovered by the third means is substantially equal to predetermined address information; and

eighth means for deactivating the first means during a given time interval in cases where the seventh means decides that the address information recovered by the third means is not substantially equal to the predetermined address information.

5,799,024

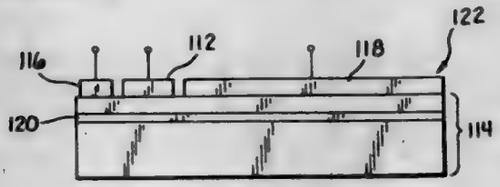
GENERATION OF HIGH POWER OPTICAL PULSES USING FLARED MODE-LOCKED SEMICONDUCTOR LASERS AND OPTICAL AMPLIFIERS

John E. Bowers, Santa Barbara; Alan Mar, Arcadia, both of Calif.; Roger J. Helkey, Webster, Mass., and Judy Karin, Goleta, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 337,985, Nov. 14, 1994. This application Dec. 19, 1996, Ser. No. 772,129

Int. Cl.[6] H01S *3/113*

U.S. Cl. 372—11 **13 Claims**



1. An improvement in a laser comprising:

a reflecting means for reflecting light pulses from one end of said laser;

a saturable absorber having temporally dependent passive saturable gain, said absorber being spaced apart from said reflecting means by a predetermined distance to shape optical pulses in said laser and phase lock said optical pulses in said laser by means of said time-dependent passive saturable gain, said predetermined distance being such that a light pulse reflected from said reflecting means reaches said saturable absorber at a time when said passive saturable gain increased.

5,799,025

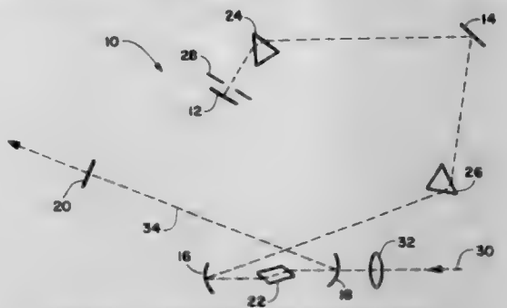
SELF STARTING, SELF MODE-LOCKED LASERS

Ming Lai, Carlsbad, and Shui T. Lai, Encinitas, both of Calif., assignors to Novatic Laser Systems, Inc., Carlsbad, Calif.

Continuation of Ser. No. 439,960, May 12, 1995, abandoned. This application Mar. 27, 1997, Ser. No. 826,281

Int. Cl.[6] H01S *3/098*

U.S. Cl. 372—18 **15 Claims**



1. A self starting, self mode-locked laser comprising:

a saturable gain medium for generating a gain saturation lens;

an optical Kerr medium for generating a positive optical Kerr lens;

an optical resonant cavity housing said saturable gain medium and said optical Kerr medium; and

a laser beam having a frequency that when directed through said gain medium and said Kerr lens produces a positive gain saturation lens with maximum gain related index change and automatically initiating a self mode-locked pulsed laser beam exiting from said Kerr lens, said self mode-locked laser beam being initiated only by said gain saturation lens and maintained only by said positive optical Kerr lens.

5,799,026

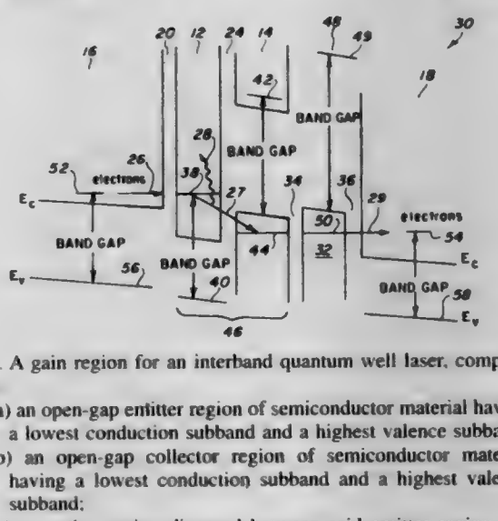
INTERBAND QUANTUM WELL CASCADE LASER, WITH A BLOCKING QUANTUM WELL FOR IMPROVED QUANTUM EFFICIENCY

Jerry Meyer, Catonsville; Igor Vurgaftman, Pikesville, both of Md., and Ruan Q. Yang, Houston, Tex., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 1, 1996, Ser. No. 743,433

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 **26 Claims**



1. A gain region for an interband quantum well laser, comprising:

(a) an open-gap emitter region of semiconductor material having a lowest conduction subband and a highest valence subband;

(b) an open-gap collector region of semiconductor material having a lowest conduction subband and a highest valence subband;

(c) an active region disposed between said emitter region and said collector region, said active region selected from the group consisting of:

(i) a type-II heterojunction region, said type-II heterojunction region comprising:

(A) an open-gap first quantum well region of semiconductor material, having a lowest conduction subband and a highest valence subband, wherein under a bias voltage the minimum energy of said lowest conduction subband of said first quantum well region is lower than the minimum energy of said lowest conduction subband of said emitter region; and

(B) an open-gap second quantum well region of semiconductor material, disposed between said first quantum well region and said collector region, having a lowest conduction subband and a highest valence subband, wherein under said bias voltage said maximum energy of said highest valence subband of said second quantum well region is lower than the minimum energy of said lowest conduction subband of said first quantum well region and is higher than the maximum energy of said highest valence subband of said first quantum well region; and

(ii) a type-I quantum well region, said type-I quantum well region comprising:

(A) an open-gap quantum well region of semiconductor material, having a lowest conduction subband and a highest valence subband, wherein under a bias voltage, the minimum energy of said lowest conduction subband of said type-I region being lower than the minimum energy of said lowest conduction subband of said emitter region; and

(d) an open-gap blocking quantum well region of semiconductor material for preventing tunnelling or scattering leakage of electrons in conduction subbands of said active region to conduction subbands in said collector region, disposed between said active region and said collector region, having a lowest conduction subband and a highest valence subband, wherein under said bias voltage, the maximum energy of said highest valence subband of said blocking quantum well region being lower than the minimum energy of said lowest conduction subband of either said first quantum well region in the case where said active region is said type-II heterojunction region, or said type-I region in the case where said active region is said type-I region, and the minimum energy of said lowest conduction subband of said blocking quantum well region being higher than the minimum energy of said lowest conduction subband of either said first quantum well region in the case where said active region is said type-II heterojunction region, or said type-I region in the case where said active region is said type-I region, and said maximum energy of said highest valence subband of said blocking quantum well being higher than the minimum energy of said lowest conduction subband of said collector region;

further comprising a second barrier region of semiconductor material, disposed between said active region and said blocking quantum well region, said second tunnel barrier region adapted for confining said hole wave function to said active region, thereby increasing said overlap between said electron wave function and said hole wave function in said active region, and further adapted for blocking electrons in said active region from tunnelling or scattering into said collector region; and

further comprising a third barrier region of semiconductor material, disposed between said blocking quantum well region and said collector region, said third tunnel barrier region adapted for blocking electrons in said active region from tunnelling or scattering into said collector region and for reducing internal absorption losses due to interband transitions between said valence subbands in said blocking quantum well region and said conduction subbands in said collector region.

5,799,027

STEPPED SUBSTRATE SEMICONDUCTOR LASER FOR EMITTING LIGHT AT SLANT PORTION

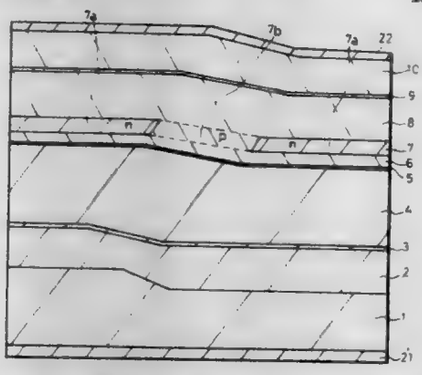
Chikashi Anayama; Takehiro Fukushima, both of Kawasaki, and Akira Furuya, Soja, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 339,213, Nov. 10, 1994, Pat. No. 5,684,818. This application Mar. 19, 1997, Ser. No. 821,567

Claims priority, application Japan, Dec. 28, 1993, 5-337541; Dec. 28, 1993, 5-337542; Mar. 18, 1994, 6-048871

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—46 **13 Claims**



1. A method of manufacturing a semiconductor laser comprising the steps of:

preparing a stepped substrate of group III-V compound semiconductor having two flat surfaces exposing a plane (**100**) or a plane (n**11**)A (n being a real number, 7<n) and a slant surface exposing a plane (m**11**)A (m being a real number, 2≦m<4) and interconnecting the two flat surfaces; and

forming a buffer layer to a thickness of 1 μm or more on said stepped substrate by metal organic vapor phase epitaxy (MOVPE), said buffer layer having two flat surfaces exposing a plane (**100**) or a plane (n**11**)A and a slant surface exposing a plane near a plane (**411**)A.

5,799,028

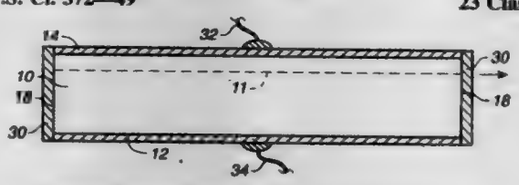
PASSIVATION AND PROTECTION OF A SEMICONDUCTOR SURFACE

Randall S. Geels, San Jose; Julian S. Osinski, Palo Alto; David F. Welch, Menlo Park, and Donald R. Scifres, San Jose, all of Calif., assignors to SDL, Inc., San Jose, Calif.

Filed Jul. 18, 1996, Ser. No. 683,495

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—49 **23 Claims**



1. An optical semiconductor device comprising:

a plurality of Group III–V semiconductor layers formed on a Group III–V substrate having opposite major surfaces and having at least one end facet for light emission;

metal contacts formed on said opposite major surfaces;

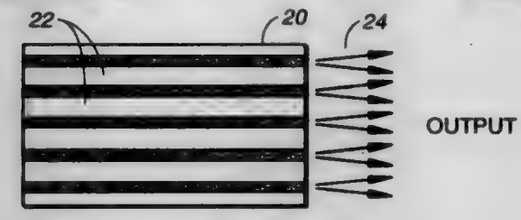
a coating formed on said one end facet, said coating comprising a first passivating layer with a sulfur or selenium medium and a second protection layer comprising a Group III–V compound transparent to said light emission, said second protection layer deposited at a temperature that prevents degradation of said metal contacts.

5,799,029

LASER SYSTEM WITH REDUCED POWER FLUCTUATIONS FOR EMPLOYMENT IN APPLICATIONS REQUIRING CONTINUOUS STABLE LIGHT INTENSITY DELIVERY

David M. Rossi, San Francisco, and Harrison L. Ransom, Jr., Foster City, both of Calif., assignors to SDL, Inc., San Jose, Calif.

Filed May 14, 1996, Ser. No. 648,469
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—50 12 Claims



1. A laser system comprising:

a monolithic semiconductor laser source having a plurality of spatially disposed lasers forming spaced emitters providing a plurality of output beams;

a lens system to receive said output beams and reduce their beam divergence;

means for transmitting the outputs of the lasers from the lens system into a collective output for delivery to an application requiring stable light intensity;

optical noise generated in said transmitting means or generated in said application fed back into said transmitting means and providing feedback into different of said spatially disposed lasers effective in varying the intensity and brightness of individual of said spatially disposed emitter outputs;

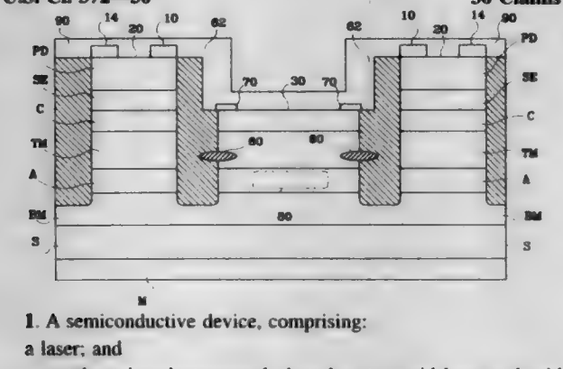
the improvement comprising laser emitters that individually maintain single transverse mode operation so that their collective output does not vary in intensity or brightness at said application in spite of said fed back optical noise.

5,799,030

SEMICONDUCTOR DEVICE WITH A LASER AND A PHOTODETECTOR IN A COMMON CONTAINER

Mary K. Brenner, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 26, 1996, Ser. No. 687,701
Int. Cl.[6] H01S 3/19
U.S. Cl. 372—50 30 Claims



1. A semiconductive device, comprising:

a laser; and

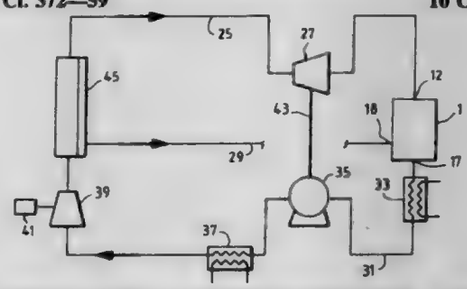
a metal-semiconductor-metal photodetector, said laser and said photodetector formed on a common substrate and disposed in a common structure.

5,799,031

DEVICE FOR FEEDING A GAS-MIXTURE LASER APPARATUS, AND LASER APPARATUS EQUIPPED WITH SUCH A DEVICE

Bruno Marie, Elancourt; Daniel Guerin, Chelles; Christian Larquet, Guyancourt, and Antoine Willemot, Sceaux, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris Cedex, France

Filed Jan. 26, 1996, Ser. No. 592,509
Claims priority, application France, Feb. 10, 1995, 95 01546
Int. Cl.[6] H01S 3/22;3/223
U.S. Cl. 372—59 10 Claims



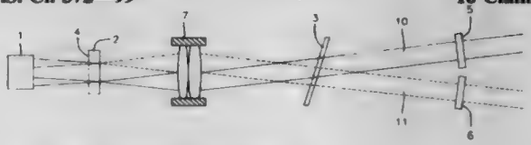
1. Device for feeding a gas-mixture laser apparatus, of the type comprising a first duct used to convey a first gas to the apparatus, a second duct used to convey to the apparatus a second gas intended to be mixed with the first gas, a third duct used to recycle the mixture of the two gases leaving the apparatus, and a permeator, the inlet of which is connected to the third duct, the permeate outlet of which is connected to the second duct and the discharge outlet of which is connected to the first duct, characterized in that an expansion turbine is mounted in the first duct, in that a suction compressor is mounted in the third duct, and in that the mechanical energy developed by the turbine is used to drive the suction compressor.

5,799,032

LASER RESONATOR FOR AT LEAST TWO LASER MODES FROM AN OPTICALLY PUMPED LASER MEDIUM

Göran Hansson, Linköping, Sweden, assignor to Forsvarets Forskningsanstalt, Stockholm, Sweden

PCT No. PCT/SE95/00833, § 371 Date Jan. 3, 1997, § 102(e) Date Jan. 3, 1997, PCT Pub. No. WO96/01511, PCT Pub. Date Jan. 18, 1996
PCT Filed Jul. 6, 1995, Ser. No. 765,204
Claims priority, application Sweden, Jul. 6, 1994, 9402386
Int. Cl.[6] H01S 3/086
U.S. Cl. 372—99 16 Claims



16. A laser resonator comprising:

a laser medium emitting two laser modes in parallel that are reflected between a highly-reflective mirror and output mirrors;

an optically refractive element receiving the parallel laser modes and outputting the laser modes at different angles; and,

a Fabry-Pérot etalon located between said highly-reflective mirror and said output mirrors, said etalon positioned to receive the laser modes at different angles and to introduce a stable frequency difference between the modes.

5,799,033
METHOD FO ERROR PROTECTED TRANSMISSION, METHOD OF ERROR PROTECTED RECEPTION OF DATA AND TRANSMISSION SYSTEM FOR TRANSMISSION OF DATA

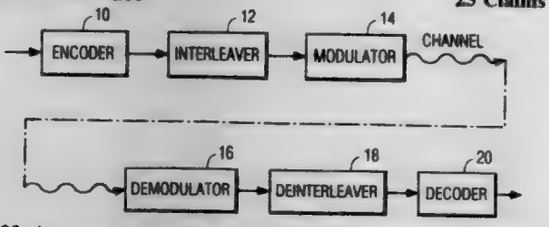
Constant P.M.J. Baggen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 1, 1996, Ser. No. 595,093

Claims priority, application European Pat. Off., Feb. 1, 1995, 95200242; Mar. 3, 1995, 95200520; Mar. 9, 1995, 95200580; Mar. 16, 1995, 95200642

Int. Cl.[6] H04L *27/30*; **H03M** *7/00*

U.S. Cl. 375—200 **25 Claims**



23. A transmitting apparatus for pseudo random interleaving of digital data comprising:

an encoder for encoding the digital data into a logic sequence of dataitems in an error correction code,

means for generating a signal comprising a number of simultaneously active, modulated frequency channels,

means coupled to an output of the encoder for directing successive data items to respective different frequency channels as a pseudo random function,

a modulator coupled to an output of said generating means for modulating each frequency channel dependent upon respective ones of the data-items, and

a transmitter for transmitting the signal as a plurality of data items transmitted simultaneously in a plurality of said frequency channels.

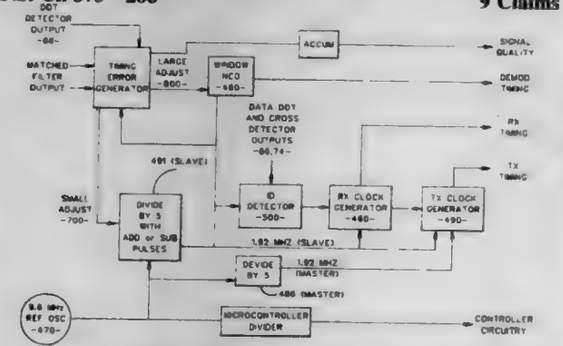
5,799,034
FREQUENCY ACQUISITION METHOD FOR DIRECT SEQUENCE SPREAD SPECTRUM SYSTEMS

John S. Walley, Lake Forest, and Quang D. Vo, San Dimas, both of Calif., assignors to Rockwell International Corporation, Newport Beach, Calif.

Filed Dec. 6, 1995, Ser. No. 568,058

Int. Cl.[6] H04B *15/00*; **H04K** *1/00*; **H04L** *27/30*

U.S. Cl. 375—206 **9 Claims**



1. In a direct sequence spread spectrum communications system having a master device and a slave device wherein the master device establishes a communications link with the slave device, a frequency acquisition device comprising:

acquisition frame message comprising an ID word transmitted by the master device and received by the slave device;

dot product demodulation means for determining the dot product of the received acquisition frame message;

cross product demodulation means for determining the cross product of the received acquisition frame message;

receive clock generating means for generating receive timing control in the slave device;

ID word detect means for detecting when the ID word has been demodulated by the dot product demodulation means and outputting a dot product detect signal and for detecting when the ID word has been demodulated by the cross product demodulation means and outputting a cross product detect signal;

frame timing adjust means for adjusting the timing of the receive clock generating means to coincide with a time interval of the ID word when the ID detect means outputs a dot product detect signal; and

means for outputting a frequency error estimate based on the values of the dot product and cross product detect signals and updating an automatic frequency control circuit.

5,799,035
DIGITAL CIRCUIT FOR DIFFERENTIAL RECEIVER FOR DIRECT SEQUENCE SPREAD SPECTRUM SIGNALS

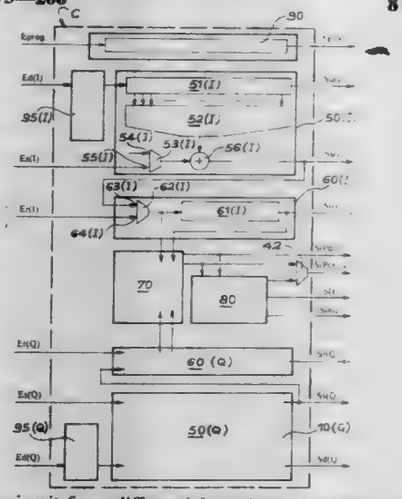
Didier Lattard, Rencurel; Jean René Lequepeys, Fontaine; Bernard Piaget, Venon, and Norbert Daniele, Montbonnot, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 12, 1996, Ser. No. 747,262

Claims priority, application France, Dec. 4, 1995, 95 14322

Int. Cl.[6] H04K *1/00*

U.S. Cl. 375—206 **8 Claims**



1. Digital circuit for a differential receiver of a direct sequence spread spectrum signal, said signal corresponding to a transmission of a carrier which has been modulated by binary symbols carrying an information, said symbols having been multiplied by a pseudo-random sequence, said circuit being characterized in that it comprises:

a) a first digital processing channel receiving a first part (I) of the signal received, said first part being the part which is in phase with the carrier, said first channel incorporating:

i) first digital means (**50(I)**) able to fulfil a first filtering function corresponding to a pseudorandom sequence used on transmission,

ii) first digital means (**60(I)**) able to fulfil a first delay function,

b) a second digital processing channel receiving a second part (Q) of the signal received, said second part being the part which is in phase quadrature with the carrier, said second channel incorporating:

i) second digital means (**50(Q)**) able to fulfil a second filtering function corresponding to said pseudorandom sequence,

ii) second digital means (**60(Q)**) able to fulfil a delay function,

c) a multiplication circuit (**70**) having:

two first inputs, one connected to the output of the first digital filtering means (**50(I)**) receiving a first filtering signal (I_k) and

the other connected to the output of the first means able to fulfil the delay function (61(I)) and receiving a first filtered-delayed signal (I_{k-1}),

two second inputs, one connected to the output of the second digital filtering means (50(Q)) and receiving a second filtered signal (Q_k) and the other connected to the output of the second means able to fulfil the delay function (61(Q)) and receiving a second filtered-delayed signal,

means for calculating the two direct products between filtered signals and filtered-delayed signals of the first and second channels (I_kI_{k-1}), (Q_kQ_{k-1}) and the two crossed products between the filtered signal of one channel and the filtered-delayed signal of the other channel (Q_kI_{k-1}), (I_kQ_{k-1})

means for calculating the sum of the direct products ($I_kI_{k-1}+Q_kQ_{k-1}$) and the difference of the crossed products ($Q_kI_{k-1}-I_kQ_{k-1}$),

d) an integration and clock regeneration circuit (80) receiving said sum of the direct products and said difference of the crossed products.

5,799,036

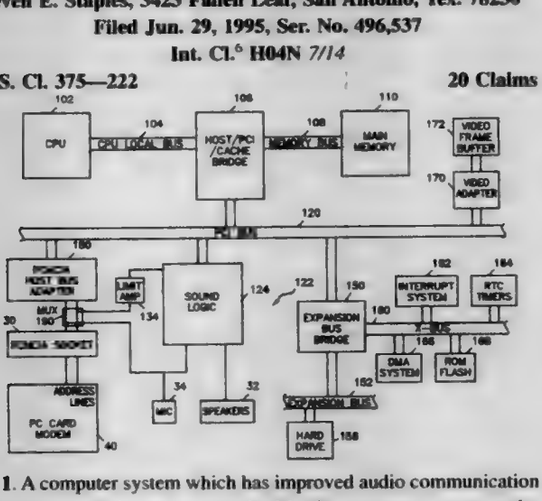
COMPUTER SYSTEM WHICH PROVIDES ANALOG AUDIO COMMUNICATION BETWEEN A PC CARD AND THE COMPUTER'S SOUND SYSTEM

Leven E. Staples, 3423 Fallen Leaf, San Antonio, Tex. 78230

Filed Jun. 29, 1995, Ser. No. 496,537

Int. Cl.[6] H04N *7/14*

U.S. Cl. 375—222 **20 Claims**



1. A computer system which has improved audio communication between a sound system comprised in the computer system and a removable PC Card coupled to the computer system, comprising:

a sound system;

a bus;

a PC Card bus adapter coupled to said bus;

a PC Card socket coupled to said PC Card bus adapter, wherein said PC Card socket is for receiving one or more PC Cards, wherein said PC Card socket includes a plurality of pins;

a multiplexer coupled to one or more of said pins in said PC Card socket, wherein said multiplexer is also coupled to said PC Card bus adapter and said sound system, wherein said multiplexer selects either a first path between said one or more pins and said PC Card bus adapter or a second path between said one or more pins and said sound system;

a PC Card for insertion in said PC Card socket, wherein when said PC Card is inserted into said PC Card socket, said multiplexer can select said second path between said one or more pins and said sound system to provide analog audio communication between said PC Card and said sound system.

5,799,037

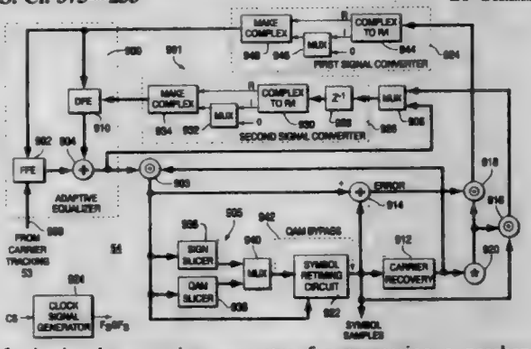
RECEIVER CAPABLE OF DEMODULATING MULTIPLE DIGITAL MODULATION FORMATS

Christopher H. Strolle, Montgomery, Pa., and Steven T. Jaffe, Monmouth, N.J., assignors to David Sarnoff Research Center Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 602,943, Feb. 16, 1996. This application Sep. 27, 1996, Ser. No. 721,663

Int. Cl.[6] H03H *7/30;* **H04L** *27/14*

U.S. Cl. 375—233 **20 Claims**



1. A signal processing apparatus for processing a passband signal to produce an equalized signal, said signal processing apparatus comprising:

a passband adaptive equalizer, containing a passband feed forward equalizer (FFE) and a passband decision feedback equalizer (DFE), for processing said passband signal to produce said equalized signal;

an equalizer control circuit, coupled to said passband adaptive equalizer, for initializing and updating parameters of said passband adaptive equalizer;

a derotator, coupled to said passband adaptive equalizer and said equalizer control circuit, for derotating the equalized signal to form a baseband signal; and

a quantizer, coupled to said derotator and said equalizer control circuit, for quantizing said baseband signal to produce quantized symbols;

said feed forward equalizer being coupled to said equalizer control circuit and having an output terminal coupled to a signal combiner;

said decision feedback equalizer being coupled to said equalizer control circuit and having an output terminal connected to said signal combiner, where an output signal of said signal combiner is the equalized signal; and

said equalizer control circuit causing said decision feedback equalizer to operate in one of a decision feedback mode and a infinite impulse response (IIR) mode.

5,799,038

METHOD FOR MEASURING MODULATION PARAMETERS OF DIGITAL QUADRATURE-MODULATED SIGNAL

Kenji Nowara, Okegawa, and Juichi Nakada, Kumagaya, both of Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Apr. 25, 1997, Ser. No. 847,597

Claims priority, application Japan, Apr. 30, 1996, 8-109323; May 10, 1996, 8-116169; May 17, 1996, 8-123295; Jul. 8, 1996, 8-177605

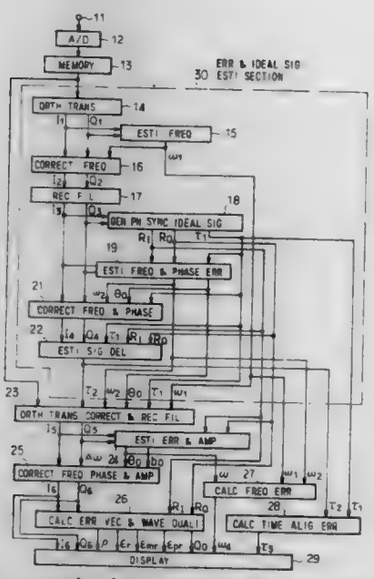
Int. Cl.[6] H04B *3/46*

U.S. Cl. 375—224 **19 Claims**

1. A modulation parameter measuring method for a digital quadrature-modulated signal, comprising:

a first step of obtaining a first complex base band signal by orthogonal transformation of part of a digital sequence of an input digital quadrature-modulated signal stored in a memory;

a second step of estimating a frequency error (hereinafter referred to as a first frequency error), an initial phase error (hereinafter referred to as a first initial phase error) and a timing error (hereinafter referred to as a first timing error) of



said first complex base band signal and an ideal reference signal synchronized with a symbol of said first complex base band signal;

a third step of obtaining a second complex base band signal by orthogonal transformation of a digital sequence of the entire input digital quadrature-modulated signal necessary for measurement stored in said memory in such a manner as to correct said first frequency error, said first initial phase error and said first timing error;

a fourth step of estimating, from said second complex base band signal and said ideal reference signal, a frequency error (hereinafter referred to as a second frequency error) and an initial-phase error (hereinafter referred to as second initial phase error) of said second complex base band signal;

a fifth step of correcting said second frequency error and said second initial phase error of said second complex base band signal to obtain a third complex base band signal; and

a sixth step of estimating a modulation parameter of said input digital quadrature-modulated signal from said third complex base band signal and said ideal reference signal.

5,799,039

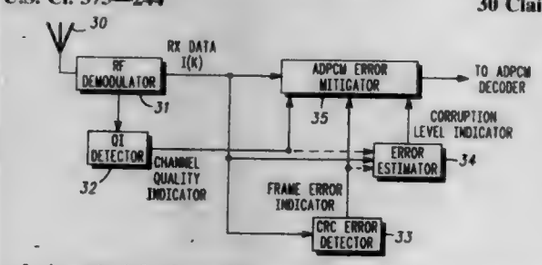
METHOD AND APPARATUS FOR ERROR MITIGATING A RECEIVED COMMUNICATION SIGNAL

Kevin Michael Laird, Haltom City, Tex.; Sybren D. Smith, Indialantic, Fla.; Paul D. Marko, Pembroke Pines, Fla., and Craig P. Wadin, Sunrise, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 308,185, Sep. 19, 1994, Pat. No. 5,687,189. This application May 25, 1995, Ser. No. 450,454

Int. Cl.[6] **H04B** *14/06*

U.S. Cl. 375—244 **30 Claims**



1. A method for improving quality of a received coded voice signal comprising:

(a) determining an error indication of whether error is present in the signal;

(b) determining from the signal a corruption level indicator; and

(c) error mitigating the signal, when the error indication is indicative of error in the signal, by one of plural predetermined levels of mitigation based on the corruption level indicator.

5,799,040

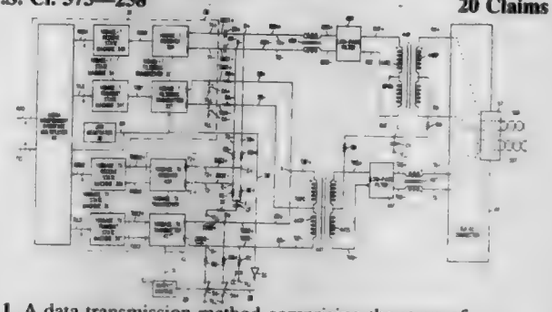
METHOD FOR TRANSMITTING AND/OR RECEIVING DATA AT DIFFERENT DATA TRANSFER RATES ESPECIALLY IN APPLICATIONS SUCH AS DUAL-RATE ETHERNET LOCAL-AREA NETWORKS

Hung-Wah Anthony Lau, Los Altos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 260,150, Jun. 15, 1994, Pat. No. 5,541,957. This application Jun. 3, 1996, Ser. No. 657,257

Int. Cl.[6] **H04B** *3/00*

U.S. Cl. 375—258 **20 Claims**



1. A data transmission method comprising the steps of:

low-pass filtering digital data to produce first outgoing data;

differentially transmitting the first outgoing data to and through an isolation transformer in a specified direction at a first data transfer rate;

differentially transmitting second outgoing data to and through the transformer in the specified direction at a second data transfer rate different from the first data rate; and

coupling the so-transmitted first and second outgoing data from the transformer to a communication cable during different time intervals.

5,799,041

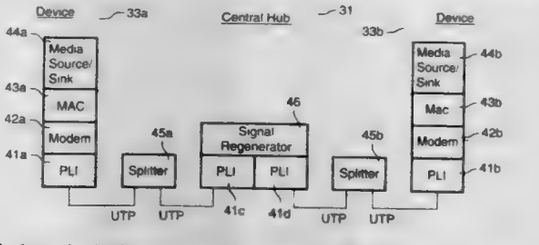
NETWORK FOR MULTIMEDIA ASYNCHRONOUS TRANSFER MODE DIGITAL SIGNAL TRANSMISSION AND COMPONENTS THEREOF

Lech A. Szkopek, Port Moody, and Douglas A. Kind, Surrey, both of Canada, assignors to Xinex Networks Inc., New West Minster, B.C., Canada

Filed Feb. 5, 1996, Ser. No. 596,836

Int. Cl.[6] **H04L** *23/02;12/16;* **H04N** *7/10;* **H04H** *1/02*

U.S. Cl. 375—259 **74 Claims**



1. A method of transmitting multimedia digital signals originating from and being received by a plurality of signal nodes, said method having a plurality of transceiver stations, comprising a first plurality of sending stations and a second plurality of receiving stations connected via twisted pair wiring, said method comprising:

a) feeding input digital signals selected from a group consisting of voice, fax, video and data from said signal nodes;

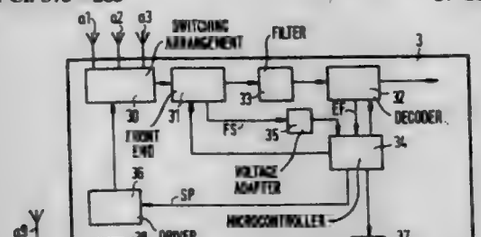
b) controlling allocation of bandwidth to said input digital signals as between said sending stations;
c) providing a source data stream in binary format derived from said allocated input digital signals;
d) converting said source data stream into a digital symbol stream capable of being transmitted over said wiring;
e) driving and filtering said digital symbol stream over said wiring;
f) splitting said filtered digital symbol stream into a plurality of replicated digital symbol streams;
g) amplifying and selecting each of said plurality of replicated digital symbol streams to provide an amplified and selected digital symbol stream;
h) converting said amplified and selected digital symbol stream into a sink data stream in binary format;
i) identifying and selecting desired digital signals of said sink data stream for said plurality of said receiving stations; and
j) delivering said identified and selected digital signals to said signal nodes.

5,799,042

WIRELESS DIGITAL COMMUNICATION SYSTEM, A RADIO APPARATUS, A DIGITAL SPEAKER, AND A DIGITAL SPEAKER CONTROLLING APPARATUS

Qun Xiao, Kessel-lo, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1995, Ser. No. 543,669
Claims priority, application European Pat. Off., Oct. 17, 1994, 94203015
Int. Cl.[6] H04B *7/08*; H04L *1/06*
U.S. Cl. 375—285 **17 Claims**



1. A wireless digital communication system comprising a radio apparatus having at least two antennas and a single receiver front-end, the single receiver front-end being coupled to the antennas via an antenna selection switching arrangement, and having a diversity controlling arrangement for diversity controlling the antenna switching arrangement on the basis of at least one measured reception parameter, wherein said radio apparatus further comprises an error correction decoder coupled to the receiver front-end, and further wherein the diversity controlling arrangement is arranged for carrying out a search for a better antenna or antenna combination substantially within an error correction capability of the error correction decoder.

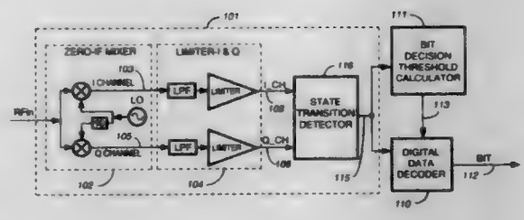
5,799,043

METHOD AND APPARATUS FOR DECODING A TWO-LEVEL RADIO SIGNAL

Chun-Ye Susan Chang, Boca Raton; James Rodney Webster, Boynton Beach, and Clinton C. Powell, II, Lake Worth, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 2, 1997, Ser. No. 867,498
Int. Cl.[6] H04L *25/34*
U.S. Cl. 375—286 **12 Claims**

1. A method for decoding digital data in a 2-level radio signal having a plurality of symbols, comprising the steps of:
converting the 2-level radio signal to a sequence of state transitions representative of the plurality of symbols;
for each symbol in the plurality of symbols,



counting the sequence of state transitions during a symbol period, and
comparing the sequence of state transitions counted to a predetermined threshold, thereby generating a comparison result;
calculating a bit decision threshold level based on an average of the comparison result for each symbol in the plurality of symbols; and
for each symbol in a plurality of subsequent symbols, comparing the bit decision threshold level to the sequence of state transitions counted during a symbol period to decode a digital logic level therefrom.

5,799,044

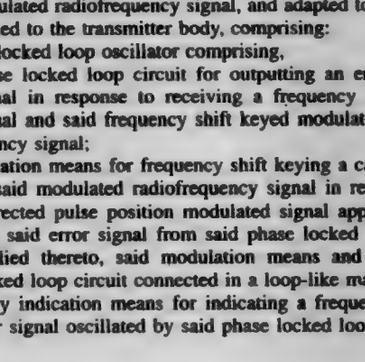
Patent Not Issued For This Number

5,799,045

PLL-MODE RADIOFREQUENCY MODULE

Susumu Sakuma, and Masahiro Tanaka, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Dec. 22, 1995, Ser. No. 576,906
Claims priority, application Japan, Dec. 22, 1994, 6-335419
Int. Cl.[6] H03C *3/00*
U.S. Cl. 375—303 **2 Claims**



1. A phased locked loop mode radiofrequency module adapted to feed a transmitter body of a transmitter with a frequency shift keyed modulated radiofrequency signal, and adapted to be detachably mounted to the transmitter body, comprising:
a phase locked loop oscillator comprising,
a phase locked loop circuit for outputting an error voltage signal in response to receiving a frequency information signal and said frequency shift keyed modulated radiofrequency signal;
modulation means for frequency shift keying a carrier signal as said modulated radiofrequency signal in response to a corrected pulse position modulated signal applied thereto and said error signal from said phase locked loop circuit applied thereto, said modulation means and said phase locked loop circuit connected in a loop-like manner;
frequency indication means for indicating a frequency of said carrier signal oscillated by said phase locked loop oscillator; and

processing means for receiving said indication of a frequency from said frequency indication means, providing said frequency information signal to said phase locked loop circuit and for providing said corrected pulse position modulation signal to said modulation means, said corrected pulse position modulation signal being formed from an uncorrected pulse position modulation signal received by said processing means from said transmitter body,

said corrected pulse position modulated signal having a duty cycle of about 50%.

5,799,046

DIGITAL DATA SIGNAL REPRODUCING APPARATUS

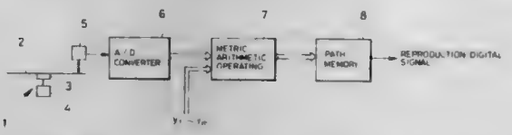
Hideki Hayashi, Tsurugashima, Japan, assignor to Pioneer Electric Corporation, Tokyo, Japan

Filed Jan. 23, 1996, Ser. No. 590,304

Claims priority, application Japan, Jan. 23, 1995, 7-007877; Dec. 15, 1995, 7-327562

Int. Cl.[6] H03D 1/00

U.S. Cl. 375—341 **8 Claims**



1. A reading and reproducing apparatus for producing reproduction digital data series corresponding to the original digital data signal recorded on a recording medium while using a Viterbi decoding method, comprising:

a reading device for reading said original digital data signal from said recording medium, thereby producing a read signal;

an A/D converter for sampling said read signal every unit digit time duration, thereby forming reproduction sample values;

square error detecting means for obtaining square errors between said reproduction sample values and a plurality of predetermined predicted sample values; and

pattern selecting means for so selecting a data pattern as said reproduction digital data that an accumulated addition value of the square errors obtained by said square error detecting means becomes minimum, wherein

when assuming that a code series pattern which said original digital data signal can take is represented by ak=[a(k), a(k+1), . . . , a(k+n)] (both of k and n denote natural numbers) and said predicted values are expressed by y(ak) in correspondence to ak, the following equation stands:

$$y(ak) = \sum_{i=0}^{n} h(i)a(k+n-i)$$

where, said h(i) denotes tap coefficients of a digital filter which are obtained by performing the discrete inverse Fourier transformation on frequency characteristics of a recording and reproducing system constructed by said recording medium and said reading device.

5,799,047

CARRIER SYNCHRONIZATION UNIT AND SYNCHRONIZATION METHOD

Vasic Dobrica, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 12, 1996, Ser. No. 713,187

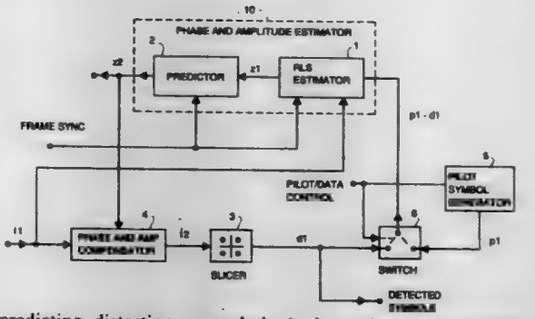
Claims priority, application Japan, Sep. 25, 1995, 7-246196

Int. Cl.[6] H04B 1/10

U.S. Cl. 375—350 **12 Claims**

11. A carrier synchronization method comprising the steps of:

estimating phase and amplitude distortion due to fading based on RLS algorithm;



predicting distortion n symbols (n is an integer) operatively cohering to the RLS estimated phase and amplitude distortion;

compensating distortion in a received signal due to fading based on the RLS estimated phase and amplitude distortion;

coherently detecting symbols in the compensated received signal.

5,799,048

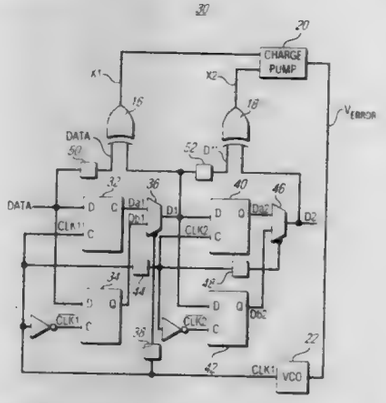
PHASE DETECTOR FOR CLOCK SYNCHRONIZATION AND RECOVERY

Ramin Farjad-Rad, Stanford, and Robert J. Drost, Palo Alto, both of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Apr. 17, 1996, Ser. No. 633,986

Int. Cl.[6] H04L 7/02

U.S. Cl. 375—360 **18 Claims**



1. A method of aligning a data signal with a clock signal, said method comprising the steps of:

receiving a string of data bits of a first frequency at an input node;

successively latching N of said string of data bits using N first latches;

recovering said string of data bits as a first string of recovered data bits by multiplexing the outputs of said N first latches;

generating a control signal indicative of the phase delay between said string of data bits and said first string of recovered data bits;

generating a reference signal indicative of a predetermined phase delay;

comparing said control signal to said reference signal to produce an error signal; and

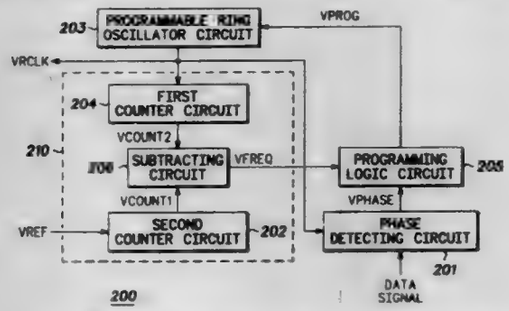
adjusting said clock signal in response to said error signal so as to be in alignment with said string of data bits.

5,799,049

PHASE-INDEPENDENT CLOCK CIRCUIT AND METHOD

Duncan A. McFarland, Tempe, and Darrin R. Benzer, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1996, Ser. No. 626,593
Int. Cl.[6] H03D *13/00*
U.S. Cl. 375—362 15 Claims



1. A programmable clock circuit having an output for producing a clock signal at a frequency of a reference signal wherein a phase of the clock signal is variable in relation to a phase of the reference signal, comprising:

a frequency comparing circuit having a first input responsive to the clock signal, a second input responsive to the reference signal, and an output for producing a frequency programming signal, wherein the frequency programming signal corresponds to a frequency difference between the clock and reference signals;

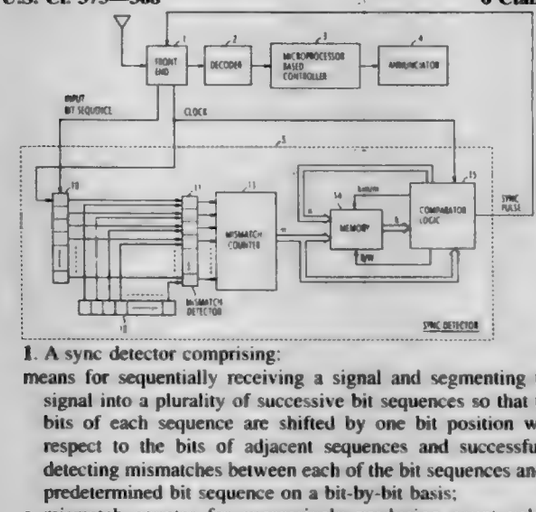
a programmable ring oscillator circuit having an output coupled to the output of the programmable clock circuit and an input responsive to the frequency programming signal, wherein the frequency of the clock signal is adjusted in response to the frequency programming signal such that the frequency of the clock signal is equal to the frequency of the reference signal.

5,799,050

SYNC DETECTION CIRCUIT AND METHOD USING VARIABLE REFERENCE FOR COMPARISON WITH MISMATCH COUNT

Kazuo Morita, Shizuoka, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 23, 1997, Ser. No. 842,204
Claims priority, application Japan, Apr. 26, 1996, 8-106858
Int. Cl.[6] H04L *7/00*
U.S. Cl. 375—368 6 Claims



1. A sync detector comprising:

means for sequentially receiving a signal and segmenting the signal into a plurality of successive bit sequences so that the bits of each sequence are shifted by one bit position with respect to the bits of adjacent sequences and successfully detecting mismatches between each of the bit sequences and a predetermined bit sequence on a bit-by-bit basis;

a mismatch counter for successively producing count values each indicating a number of the detected mismatches; and

logic means for making a first comparison between a reference value and an output of said mismatch counter, determining that a sync code is detected when the mismatch counter output is equal to or smaller than the reference value, making a second comparison between successively produced outputs of said mismatch counter, determining that a further sync code is detected when the later of the successively produced mismatch counter outputs is equal to or smaller than the earlier mismatch counter output, and repeating said first comparison when said later mismatch counter output becomes equal to zero;

said logic means first including:

a memory connected to the mismatch counter, said memory initially storing said reference value which is smaller than a maximum number of bits of said predetermined bit sequence; and

comparator means for performing a comparison of the output of the mismatch counter with the content of the memory and for producing an output signal indicating that said sync code is detected when the mismatch counter output becomes equal to or smaller than the memory content, and updating said memory with the mismatch counter output when the mismatch counter outpout becomes smaller than the memory content and updating said memory with said reference value when the mismatch counter output becomes equal to zero;

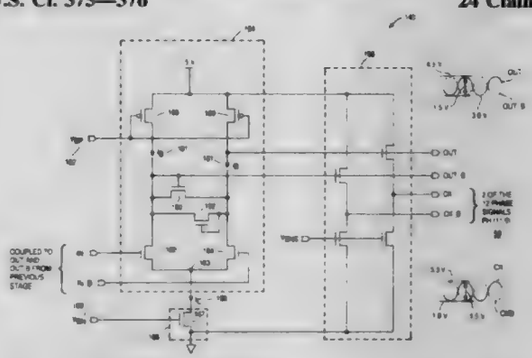
wherein said comparator means performs said comparison after waiting for a predetermined interval when the mismatch counter output is greater than the memory content.

5,799,051

DELAY STAGE CIRCUITRY FOR A RING OSCILLATOR

Wingyu Leung, Cupertino, and Mark Alan Horowitz, Mountain View, both of Calif., assignors to Rambus, Inc., Mountain View, Calif.

Continuation of Ser. No. 347,844, Dec. 1, 1994, Pat. No. 5,596,610, which is a continuation of Ser. No. 161,769, Dec. 2, 1993, abandoned, which is a division of Ser. No. 890,034, May 28, 1992, abandoned. This application Sep. 12, 1996, Ser. No. 711,908
Int. Cl.[6] H03D *3/24*
U.S. Cl. 375—376 24 Claims



21. A ring oscillator comprising:

a plurality of ring coupled delay stages, each delay stage comprising:

a differential amplifier providing a differential output signal;

a self-biased voltage clamping circuit coupled to limit a peak-to-peak voltage swing of the differential output signal; and

a current source coupled to the differential amplifier, the current source varying a bias current through the current source in accordance with a delay bias voltage.

5,799,052

PROCESS FOR THE PRODUCTION OF A SCREEN PLATE FOR A FUEL ASSEMBLY FOOT AND CORRESPONDING FUEL ASSEMBLY

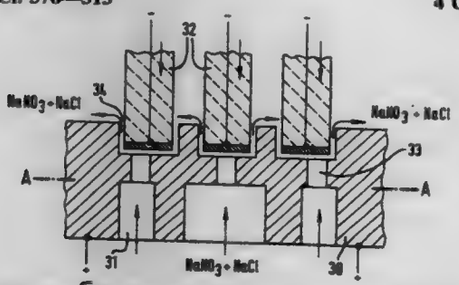
Bernd Beuerlein, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jun. 2, 1995, Ser. No. 459,278

Claims priority, application Germany, Dec. 2, 1992, 42 40 537.8

Int. Cl.[6] G21C *19/00*

U.S. Cl. 376—313 **4 Claims**



1. In a process for the production of a screen plate for a foot of a fuel assembly, the improvement which comprises:

matching a cross section of the plate to a cross section of the foot; and

electrochemically working apertures into the screen plate, with the apertures being matched to dimensions of foreign bodies to be retained, and with at least some of the apertures having cross sections with corners at least in a partial region between a lower surface and an upper surface of the plate.

5,799,053

HIGH-SPEED PREDECODING ADDRESS COUNTER CIRCUIT

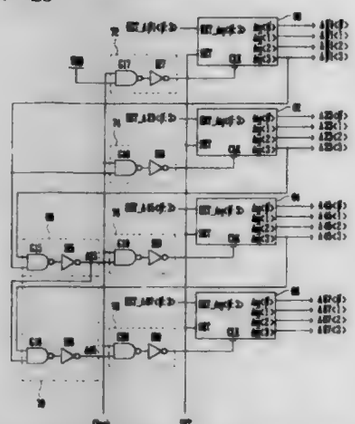
Kee Woo Park, Ichon-shi, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Ichon-shi, Rep. of Korea

Filed Dec. 27, 1996, Ser. No. 777,197

Claims priority, application Rep. of Korea, Dec. 31, 1995, 95 72394

Int. Cl.[6] H03K *21/02*

U.S. Cl. 377—26 **6 Claims**



1. A high-speed predecoding address counter circuit comprising:

at least three tetrad counters connected in series, each for inputting an external 4-bit address decoding signal in response to a set signal and cyclically shifting a logic signal with a specific logic value at its four output terminals in response to a clock signal;

first clock switching means responsive to a logical value of a most significant bit of an output signal from a lowest-order one of said at least three tetrad counters, for transferring said clock signal to a higher-order one of said at least three tetrad counters;

at least one logic means for detecting whether both most significant bits of output signals from at least two lower-order ones of said at least three tetrad counters have said specific logic value; and

at least one second clock switching means connected between said at least one logic means and at least one of said at least three tetrad counters other than said at least two lower-order tetrad counters, for switching said clock signal to said at least one tetrad counter in response to an output signal from said at least one logic means.

5,799,054

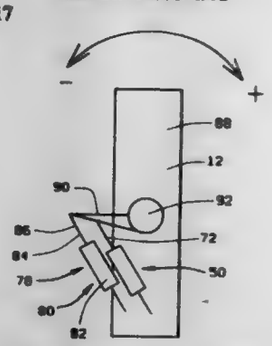
METHODS AND APPARATUS FOR STABILIZING A GANTRY IN A COMPUTED TOMOGRAPHY SYSTEM

Russell Wayne Hum, Waukesha; Thomas Robert Murray, Delafied, and Shawn Patrick Faessler, Waukesha, all of Wis.; assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 31, 1996, Ser. No. 777,417

Int. Cl.[6] A61B *6/02*

U.S. Cl. 378—17 **20 Claims**



1. A hydraulic brake assembly for a gantry of a computed tomography system, said brake assembly comprising:

a hydraulic cylinder comprising a chamber;

a piston comprising a head and an arm extending from said piston head, said piston head positioned in said hydraulic cylinder chamber so that said piston arm extends substantially coaxially with said hydraulic cylinder, said piston arm configured to couple to the gantry and serve as a brake to stabilize the gantry at a desired tilt angle;

a first reservoir configured to retain a hydraulic fluid; and

a fluid line coupling said reservoir to said hydraulic cylinder for facilitating hydraulic fluid flow between said chamber and said first reservoir.

5,799,055

APPARATUS AND METHOD FOR PLANNING A STEREOTACTIC SURGICAL PROCEDURE USING COORDINATED FLUOROSCOPY

Michael A. Peshkin, Skokie, and Julio J. Santos-Munné , Evanston, both of Ill., assignors to Northwestern University, Evanston, Ill.

Continuation-in-part of Ser. No. 648,313, May 15, 1996, abandoned. This application May 17, 1996, Ser. No. 649,798

Int. Cl.[6] A61B *6/02*

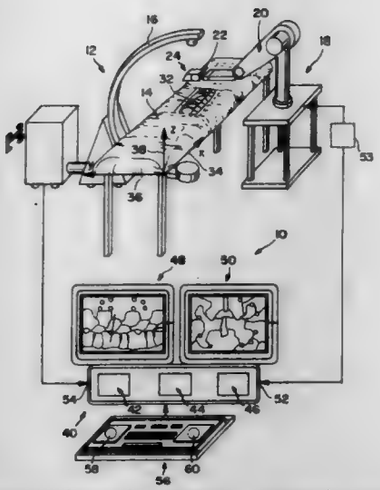
U.S. Cl. 378—42 **32 Claims**

1. A method for planning a stereotactic surgical procedure using a fluoroscope for generating images of the body, the method comprising the steps of:

placing adjacent to the body a registration artifact including a plurality of fiducials at known positions relative to a known coordinate frame of the artifact;

displaying on a computer monitor an image taken of the patient's body and the registration artifact;

receiving an input to identify two-dimensional coordinates of the fiducials of the registration artifact displayed on the image; and



registering the image by creating a geometric model having parameters, said model projecting three-dimensional coordinates into image points, and numerically optimizing the parameters of the geometric model such that the projections of the known three-dimensional coordinates of the fiducials best fit the identified two-dimensional coordinates in the image.

29. An apparatus for planning a stereotactic surgical procedure using a fluoroscope for generating images of the body, the apparatus comprising:

means for placing adjacent to the body a registration artifact including a plurality of fiducials;

means for displaying an image taken of the body and the fiducials;

means for identifying two-dimensional coordinates of the fiducials in an image;

means for registering an image with respect to said fiducial artifact;

means for receiving inputs to select and adjust a virtual guidewire or targetpoint, while the projections of said guidewire or targetpoint are displayed superimposed upon the image; and

means for producing an output to adjust the coordinates of a tool guide.

5,799,056

OPTICAL ELEMENT OF MULTILAYERED THIN FILM FOR X-RAYS AND NEUTRONS

George Gutman, Birmingham, Mich., assignor to Ovonic Synthetic Materials Company, Inc., Troy, Mich.

Division of Ser. No. 487,936, Jun. 7, 1995, Pat. No. 5,646,976, which is a continuation-in-part of Ser. No. 283,610, Aug. 1, 1994, abandoned. This application Nov. 22, 1996, Ser. No. 755,294

Int. Cl.[6] G21K *1/06*

U.S. Cl. 378—84 **19 Claims**

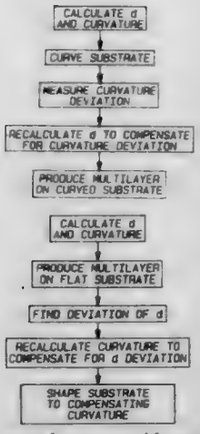
1. An optical element which can diffract x-rays of a desired wavelength, said optical element comprising:

a substrate having an optimum curvature and an actual curvature, said actual curvature having deviations from said optimum curvature,

a plurality of layer sets, one of said layer sets including a layer of relatively high atomic number and a layer of relatively low atomic number,

said layer sets diffracting x-rays to form a diffracted beam of known shape in a desired manner,

one of said layer sets having an optimum thickness and a manufactured thickness at certain points on said substrate, said manufactured thicknesses having differences from said optimum thicknesses, and



wherein said differences between said manufactured thicknesses and said optimum thicknesses of said layer set enhance the diffraction efficiency of said layer set and compensate for said deviation between said actual curvature and said optimum curvature of said substrate for x-rays of the desired wavelength.

5,799,057

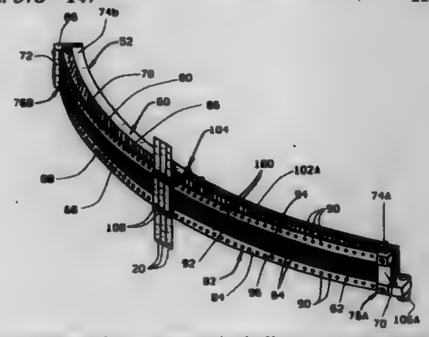
COLLIMATOR AND DETECTOR FOR COMPUTED TOMOGRAPHY SYSTEMS

David M. Hoffman, New Berlin; Michael Thomas Mruzek, East Troy, and August O. Englert, Waukesha, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 26, 1996, Ser. No. 773,083

Int. Cl.[6] G21K *1/00*

U.S. Cl. 378—147 **11 Claims**



1. A collimator for a system including an x-ray source and a detector array mounted on a gantry, said collimator comprising:

a housing; and

a grid connected to said housing, said grid comprising a plurality of blades and a plurality of attenuating wires, each of said blades being radially spaced from and extending substantially parallel to an adjacent one of said blades, said wires extending substantially perpendicular to said blades.

5,799,058

X-RAY MACHINE CONE LOCATOR ATTACHED TO RADIOGRAPHIC FILM HOLDER

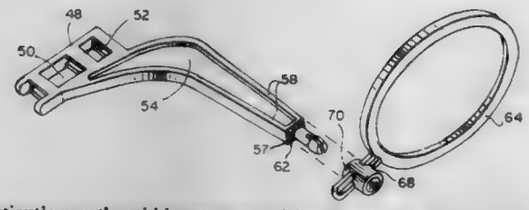
Timothy G. Willis, 310 Evergreen, Yreka, Calif. 96097, and Timothy J. Landis, 8559 Washington Blvd., Roseville, Calif. 95678

Continuation of Ser. No. 563,992, Nov. 29, 1995, Pat. No. 5,625,666. This application Mar. 25, 1997, Ser. No. 823,496

Int. Cl.[6] A61B *6/14*

U.S. Cl. 378—168 **12 Claims**

1. A locator for the nose cone of a dental x-ray machine for use with a radiographic film holder having a handle extending out of a



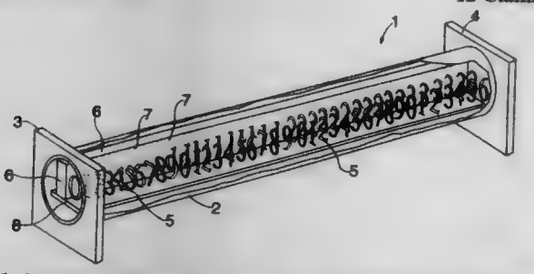
patient's mouth, said locator comprising a socket shaped to receive a proximal end of said handle, an arm extending laterally of said socket and having a distal end, a ring attached to said distal end of said arm, said ring being shaped to receive and align the cone to direct x-rays emitted from said cone toward a film held in the holder.

5,799,059

PHANTOM AND METHOD FOR ACCURACY AND REPEATABILITY TESTING OF POSITIONAL MECHANISMS OF COMPUTER ASSISTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING SYSTEMS

James H. Stembridge, 250 Springtree Dr., Apartment C-2, Columbia, S.C. 29223, and Chisum Man, 2441 E. 72nd St., Brooklyn, N.Y. 11234

Filed Jul. 30, 1996, Ser. No. 688,509
Int. Cl.[6] G01D *18/00*
U.S. Cl. 378—207 **12 Claims**



1. A method of testing the accuracy and repeatability of the scan position mechanism of an imaging system, said scan position mechanism driving a support means normally used to support a human subject for imaging, the method comprising the steps of:

a) placing a phantom on said support means, said phantom including a slice locator bar having a flat surface aligned with the direction of movement of said support means, said flat surface having drilled locator holes therein in a uniform repeating pattern consisting of a series of center holes of one depth and adjacent grade marker holes at a depth less than the center holes, said center and grade marker holes being uniformly spaced, and a plurality of numerals marking said center holes;

b) taking a scan by said imaging system through said phantom and producing an initial image consisting of a plurality of lines corresponding to said center and grade marker holes, a long line corresponding to a center hole and a shorter line corresponding to a grade marker hole and a numeral identifying a line corresponding to a center hole;

c) moving said support means a predetermined finite distance by said scan position mechanism from the initial position of said support member and taking another scan through said phantom by said imaging system, producing an image consisting of a plurality of lines corresponding to said holes and a numeral corresponding to a center line on said image, the position of said lines and numeral in said image being an accurate indication of the distance actually moved by said support means; and

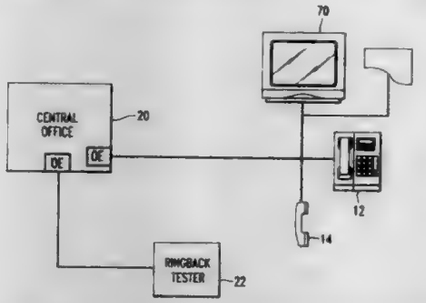
d) comparing the selected finite distance with the reading of the image indicating the distance actually moved, any disparity representing an inaccuracy in the drive system for said support means.

5,799,060

MULTI-PORT CALLER ID-BASED TELEPHONE RINGBACK TEST DEVICE

Michael Kennedy, Ventura, Calif., and Joseph A. Potts, Jr., Marlton, N.J., assignors to Harris Corporation, Melbourne, Fla.

Filed May 16, 1996, Ser. No. 648,738
Int. Cl.[6] H04M *1/24;3/08;1/56;15/06*
U.S. Cl. 379—29 **37 Claims**



27. A test unit installable in a communication network and being controllably accessible by way of a communication device that is coupled to a communication circuit of said communication network, said test unit comprising:

a first communication port for interfacing first communication channel signals with said communication network and a second communication port for interfacing second communication channel signals with said communication network; and

a communication transceiver coupled to said first and second communication ports and being operative to transmit and receive communication signals over said communication network, said communication transceiver including a call supervision computer, which is programmed to cause said communication transceiver to interface communication signals which are effective to test the operation of said communication circuit by way of either or both of said first and second communication ports, and wherein

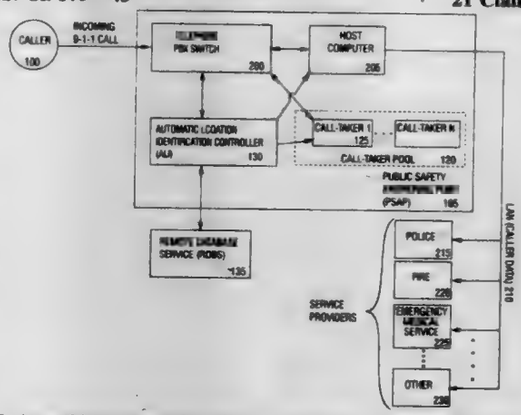
said first and second communication ports have respectively associated telephone numbers.

5,799,061

COMPUTER INTEGRATED TELEPHONY SYSTEM FOR THE PROCESSING OF 9-1-1 CALLS FOR SERVICE

John R. Melcher, Houston, Tex.; Richard A. Maw, Bolton, Mass., and David L. Pickett, Houston, Tex., assignors to Greater Harris County 9-1-1 Emergency Network, Houston, Tex.

Continuation of Ser. No. 234,469, Apr. 26, 1994, abandoned. This application Jun. 4, 1996, Ser. No. 659,121
Int. Cl.[6] H04M *11/00*
U.S. Cl. 379—45 **21 Claims**



1. A machine-executed method, executed at a call-taker location, of processing a 9-1-1 call, said 9-1-1 call being (1)initiated at a telephone by a caller from a caller location, (2) transmitted from

said telephone to a relay site and (3) relayed to said call-taker location via a public switched telephone network (PSTN), said method comprising the steps of:

(a) receiving over said PSTN an electronic signal identifying said relay site;

(b) interrogating one or more computer databases to extract a map associated with said relay site;

(c) graphically displaying said map on a video display at said call-taker location;

(d) receiving from a call-taker operator an indication of said caller location relative to said map as communicated to the call-taker operator by the caller

(e) computing location information for said caller location based on said received indication of said caller location relative to said map; and

(f) transmitting to one or more public safety service providers said location information.

5,799,062

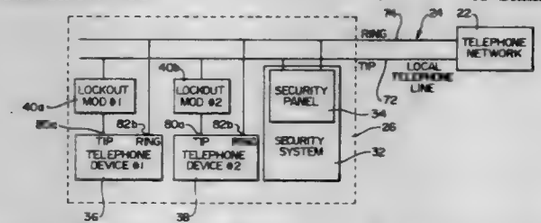
SYSTEMS AND METHODS FOR INTEGRATING TELEPHONE AND SECURITY DEVICES

Sal Lazzara, Bellingham, and Donald C. Sorenson, Lynden, both of Wash., assignors to Allsop, Inc., Bellingham, Wash.

Filed Mar. 7, 1997, Ser. No. 813,912

Int. Cl.[6] H04M *11/04*

U.S. Cl. 379—51 **41 Claims**



1. A lockout circuit for allowing a security system to access a telephone line connected to at least one telephone device, comprising:

first and second circuit nodes connected in series with each telephone device such that a terminal voltage is present across the first and second circuit nodes; and

voltage offset means for creating an offset voltage between the first and second nodes, where the offset voltage has a first predetermined voltage level; and

latch means in series with the voltage offset means for allowing current to flow between the first and second circuit nodes only if current begins flowing through the latch means when the terminal voltage is above a second predetermined voltage level.

5,799,063

COMMUNICATION SYSTEM AND METHOD OF PROVIDING ACCESS TO PRE-RECORDED AUDIO MESSAGES VIA THE INTERNET

Leonard Krane, Los Angeles, Calif., assignor to Talk Web Inc., Los Angeles, Calif.

Filed Aug. 15, 1996, Ser. No. 689,868

Int. Cl.[6] H04M *1/66*

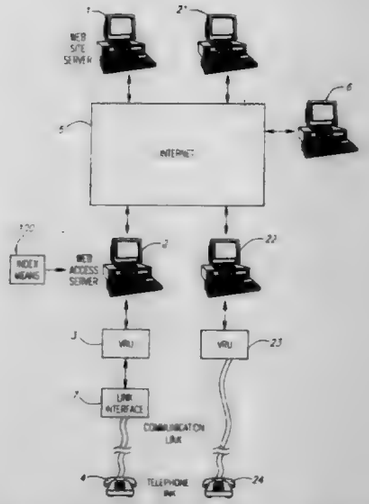
U.S. Cl. 379—67 **37 Claims**

1. A communication system comprising:

a Web site server containing a page with a pre-recorded audio message;

a Web access server with communication means for accessing the Web site server via the Internet and for retrieving the pre-recorded audio message from the page in response to a valid access request;

a voice response unit in communication with the Web access server;



interface means for communicating between a telephone link and the voice response unit to generate an access request and for transmitting the pre-recorded audio message to the telephone link; and

index means for comparing the access request received via the telephone link with an index of the page, wherein the index means generates the valid access request if the access request matches the index.

5,799,064

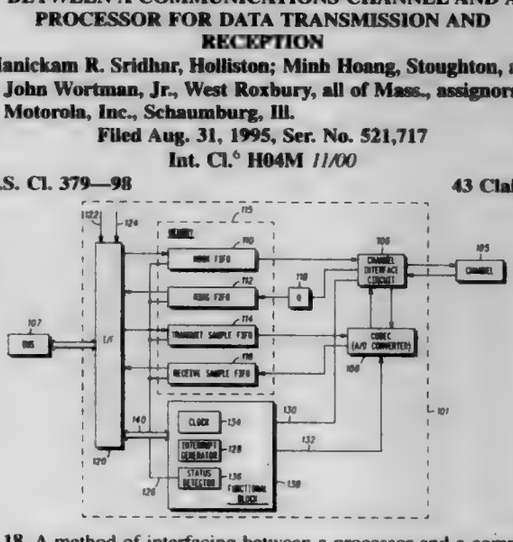
APPARATUS AND METHOD FOR INTERFACING BETWEEN A COMMUNICATIONS CHANNEL AND A PROCESSOR FOR DATA TRANSMISSION AND RECEPTION

Manickam R. Sridhar, Holliston; Minh Hoang, Stoughton, and John Wortman, Jr., West Roxbury, all of Mass., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1995, Ser. No. 521,717

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—98 **43 Claims**



18. A method of interfacing between a processor and a communications channel for data reception, the processor operable in data terminal equipment having a communications application program, capable of performing modem functions of training, equalization, encoding, and decoding, the communications application program being responsive to interrupt signals, the method comprising the steps of:

(a) receiving a data signal from the communications channel to form a received data signal;

(b) periodically sampling the received data signal at a first determinate frequency to form a sequence of received sampled data;

(c) storing the sequence of received sampled data in a memory;

(d) generating an interrupt signal to the processor to indicate the presence of received sampled data in the memory; and

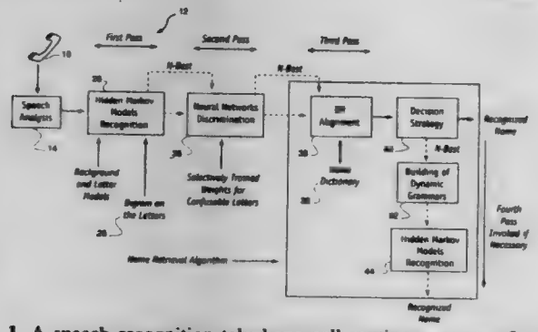
(e) periodically transferring at a second indeterminate frequency the received sampled data from the memory to the processor so that the communications application program executing thereon may process the received sampled data according to modem functions of the communications application program.

5,799,065

CALL ROUTING DEVICE EMPLOYING CONTINUOUS SPEECH

Jean-Claude Junqua, and Michael Galler, both of Santa Barbara, Calif., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 6, 1996, Ser. No. 642,766
Int. Cl.[6] H04M *1/30;3/42*
U.S. Cl. 379—88 **10 Claims**



1. A speech recognition telephone call routing apparatus for a telephone switching network of the type that connects an incoming caller to a selected one of a plurality of extensions associated with a plurality of respective names, comprising:

an input/output port having at least one audio channel for connecting to said switching network to support voiced communication with an incoming caller, and at least one control channel for connecting to said switching network to supply switching instructions to said network;

a speech processor coupled to said audio channel for prompting an incoming caller to spell the name of an intended call recipient, said speech processor including a speech recognizer for analyzing a voiced spelled name provided by said incoming caller in response to said prompt and for selecting a name candidate corresponding to the spelled name; and

switching logic coupled to said speech recognizer and to said control channel for issuing switching instructions to said switching network to cause said switching network to connect the incoming caller to a selected one of said plurality of extensions corresponding to said selected name candidate,

wherein said speech processor comprises a multipass speech recognition processor including a first pass employing Hidden Markov Models for representing letters used in the representation of spelled names and a second pass employing dynamic programming comparison with a database of spelled names.

5,799,066

AUTOMATED MESSAGE SYSTEM FOR A CALLING PARTY

Michael Julian Joyce, Victoria, Australia; Ping-Wen Ong, Middletown, N.J.; Abbas Ourmazd, Berlin, Germany, and Colin Alan Warwick, Holmdel, N.J., assignors to AT&T Corp., Middletown, N.J.

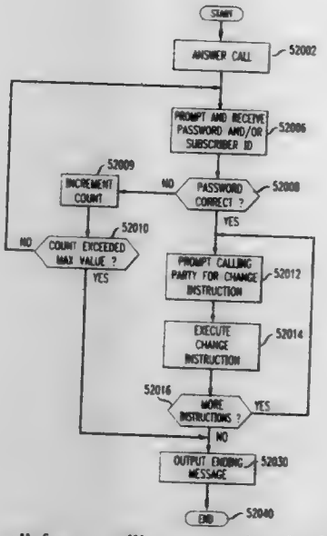
Filed Aug. 9, 1996, Ser. No. 694,578
Int. Cl.[6] A04M *1/64*
U.S. Cl. 379—88 **13 Claims**

1. An automated message system, comprising:

a telephone network;

a first telephone station and a second telephone station; and

an automated message unit coupled to the first and second telephone stations through the telephone network, wherein



during a call from a calling party using the first telephone station to a called party using the second telephone station, the automated message unit sends a message to the second telephone station in response to a control signal received from the calling party,

wherein, the automated message unit comprises:

a network interface coupled to the telephone network;

a memory device;

a controller coupled to the network interface and the memory device, wherein the controller receives the control signal from the calling party through the network interface, retrieves the message from the memory device based on the control signal and sends the message to the second telephone station through the network interface, and

wherein, the controller receives a call from the calling party to the automated message unit, the calling party entering an instruction to the controller for storing at least one message in a database in the memory device; and

wherein, said automated message unit further comprises a voice coder/voice decoder device, the instruction being entered by speaking an audio command, the voice coder/voice decoder device converting the audio command into text and sending the text to the controller.

5,799,067

SMART PHONE INTEGRATION WITH COMPUTER SYSTEMS

Dan Kikinis, Saratoga; Pascal Dornier, Sunnyvale, and William J. Seiler, Scotts Valley, all of Calif., assignors to Elonex I.P. Holdings Ltd., London, England

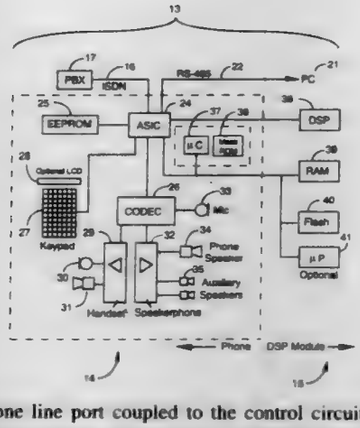
Division of Ser. No. 365,348, Dec. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 195,123, Feb. 10, 1994, Pat. No. 5,633,920, which is a continuation-in-part of Ser. No. 159,078, Nov. 29, 1993, Pat. No. 5,539,616, which is a continuation-in-part of Ser. No. 97,946, Jul. 26, 1993, Pat. No. 5,278,730, which is a continuation-in-part of Ser. No. 905,480, Jun. 29, 1992, abandoned. This application Jun. 12, 1997, Ser. No. 873,857
Int. Cl.[6] H04M *11/00;1/00;* **H01J** *1/00*
U.S. Cl. 379—93.06 **35 Claims**

1. A digital telephone comprising:

control circuitry for managing operations of the digital telephone;

a microphone-speaker unit connected to the control circuitry for audio input and output, including a coder/decoder (CODEC) for conversions between analog and digital data forms;

a user input interface connected to the control circuitry for dialing and function selection;



a telephone line port coupled to the control circuitry, for connecting the digital telephone to a telephone line;

a serial communication port coupled to the control circuitry for providing communication with external digital equipment;

at least one docking bay coupled to the control circuitry for docking functional modules; and

a functional module adapted to dock in at least one docking bay;

wherein the functional module includes a digital signal processor (DSP) adapted to process digital audio data which becomes coupled to the control circuitry by docking in the at least one docking bay.

5,799,068

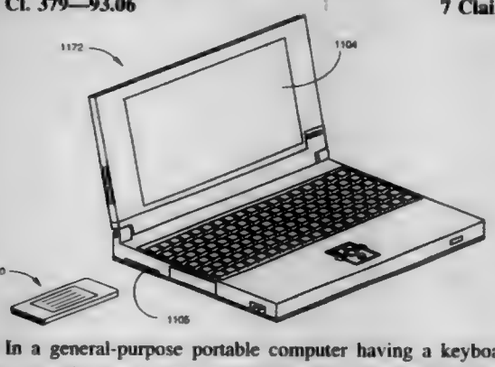
SMART PHONE INTEGRATION WITH COMPUTER SYSTEMS

Dan Kikinis, Saratoga; Pascal Dornier, Sunnyvale, and William J. Seiler, Scotts Valley, all of Calif., assignors to Elonex I.P. Holdings Ltd., London, United Kingdom

Continuation of Ser. No. 365,348, Dec. 28, 1994, abandoned. This application Nov. 26, 1997, Ser. No. 979,439

Int. Cl.[6] H04M *11/00; 1/00;* **G06F** *13/00*

U.S. Cl. 379—93.06 **7 Claims**



6. In a general-purpose portable computer having a keyboard input, a speaker, and a PC Card slot with a standard PC Card interface, the computer adapted to function with a PC Card; a method for adapting the general purpose computer to operate as a speakerphone, comprising steps of:

providing a PC Card compatible with the PC Card slot, wherein the PC Card comprises telephone circuitry including a DSP chip and a microphone, with the PC card providing digital audio data to the computer via the standard PC Card interface;

loading to the computer control code adapted for operating the computer as a speakerphone in conjunction with the PC Card; and

docking the PC Card in the PC Card slot, providing thereby a capability for the computer to operate as a speaker phone.

5,799,069

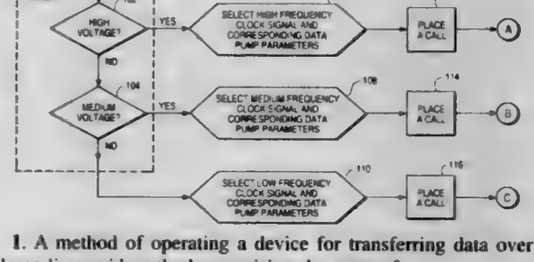
METHOD AND APPARATUS FOR DYNAMICALLY ADAPTING THE CLOCK RATE AND DATA TRANSFER RATE OF PHONE-LINE POWERED MODEMS.

Patrick E. Weston, Cameron Park, and Harry Laswell, Sacramento, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 314,656, Sep. 29, 1994, abandoned. This application Nov. 18, 1996, Ser. No. 751,245

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—93.33 **25 Claims**



1. A method of operating a device for transferring data over a phone line, said method comprising the steps of:

determining the amount of the power available from said phone line by comparing said amount of the power available to a predetermined set of power levels;

selecting a clock rate from a plurality of clock rates, at least one of said plurality of clock rates producing a data transfer rate in excess of 2400 bits-per-second, said selecting of said clock rate for said device based on the amount of power available from said phone line; and

setting said device to operate at said clock rate.

5,799,070

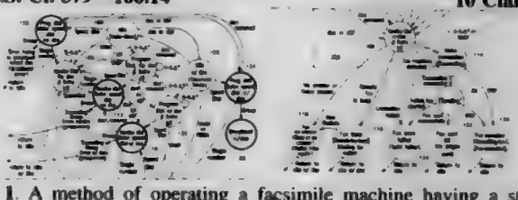
USER FRIENDLY INTERFACE FOR A FACSIMILE MACHINE INTEGRATING PROGRAMED DIALING AND MONITOR DIALING

Melissa L. Monty, Poway, and Yuen-Yee Joanna Pang, San Diego, both of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Mar. 4, 1997, Ser. No. 811,553

Int. Cl.[6] H04M *11/00;* **H04N** *1/00*

U.S. Cl. 379—100.14 **10 Claims**



1. A method of operating a facsimile machine having a start button, at least one speed dial button, and a dialer keypad comprising a plurality of symbolic buttons, wherein said method comprises:

determining when the start button has been pressed;

determining whether the speed dial button has been pressed;

determining whether each of the symbolic buttons has been pressed;

if the facsimile machine is not already off-hook when the user sequentially activates one or more symbolic buttons not including the speed dial button which collectively represent a manually input dialing sequence, appending that manually input sequence to a dialing queue

if the facsimile machine is not already off-hook when the user sequentially activates one or more buttons including the speed

dial button which collectively represent a preprogramed dialing sequence, appending that preprogramed sequence to the dialing queue;

if the facsimile machine is not already off-hook when the user activates the start button, causing the facsimile machine to go off hook and to then generate a sequence of signals corresponding to any numbers already in the dialing queue;

if the facsimile machine is already off-hook when the user inputs a symbolic button representing a single symbol of a manually input dialing sequence, generating a signal corresponding to that manually input symbol;

if the facsimile machine is already off-hook when the user has finished sequentially activating one or more buttons including the speed dial button which collectively represent a preprogramed dialing sequence, generating a sequence of one or more signals corresponding to that preprogramed sequence;

whereby

programed dialing sequences may be chained with manually input dialing sequences,

the operation of the machine will be transparent to a user used to transmitting a facsimile in a programed mode wherein the number of the receiving machine is input before the machine goes off-hook, and

the operation of the machine will also be transparent to a user used to transmitting a facsimile in a monitor mode wherein the number of the receiving machine is dialed interactively after the machine goes off-hook.

5,799,071

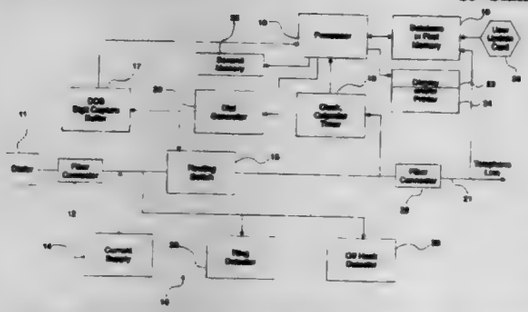
TELECOMMUNICATIONS COST-MINIMIZING SYSTEM

Sanjar Azar, 15 Bluehill Dr., Westwood, Mass. 02090, and Babak Azar, P.O. Box 224, Midland Park, N.J. 07432

Filed Oct. 5, 1992, Ser. No. 956,705

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—113 **15 Claims**



1. A telecommunications cost-minimizing system having means for receiving a telephone number from at least one of a plurality of users at a point of origin, said system having means for storing carrier rates for a plurality of telecommunications carriers and corresponding access codes for each of said plurality of telecommunications carriers, comprising:

a) dialing means for capturing a telephone number dialed at the point of origin;

b) a processor operatively connected to said dialing means for processing said captured telephone number, said processor having a telephone number generating program, said processor comprising:

i) first memory for storing the access codes of a plurality of telecommunications carriers providing service between said point of origin and a destination corresponding to said dialed telephone number;

ii) access means operatively connected to said first memory means for accessing access codes of said plurality of telecommunications carriers; and

iii) comparing means operatively connected to said first memory for determining least costly rates of said plurality of telecommunications carriers providing service between said point of origin and said destination;

c) telephone number generating means operatively connected to said processor for appending an access code to said captured telephone number, said appended access code corresponding to a least costly telecommunications carrier;

d) routing means operatively connected to said telephone number generating means for routing said telephone number with appended access code to a telecommunications line or system with both in-band and out-of-band signalling methods; and

e) means operatively connected to said routing means for detecting an incoming call, wherein a dialed number can be interrupted during operator input dialing of the number to answer an incoming call.

5,799,072

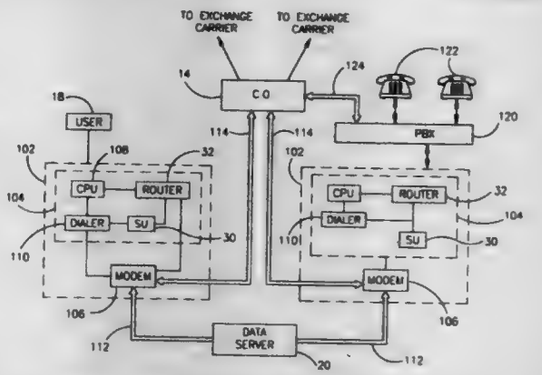
TELECOMMUNICATIONS CALL MANAGEMENT SYSTEM

Isaac Vulcan, and Gideon Barak, both of Raanana, Israel, assignors to CallManage, Raanana, Israel

Continuation-in-part of Ser. No. 505,024, Jul. 21, 1995, Pat. No. 5,764,741. This application Mar. 4, 1996, Ser. No. 610,617

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—114 **28 Claims**



1. A call management system for determining an optimum route for a telephone call made by a subscriber, said telephone call routed through one of N local exchange carriers coupled to said system via K telephone lines, each local exchange carrier coupled to one of M long distance carriers, the system comprising:

a tariff data server for managing a database containing tariff related information on local and long distance carriers, local exchange, telephone exchange location related data and subscribers;

a first communication link coupling said tariff data server to a local client computer;

said local client computer for maintaining a client database containing tariff information relevant to the location of said subscriber, optional calling plans subscribed to or optional calling plans accessible from the location of said subscriber, said local client computer for determining said optimum route;

at least one line unit coupled to a telephone set, said N local exchange carriers and said local client computer, said at least one line unit for intercepting digits dialed by said subscriber, monitoring one of said K telephone lines, receiving a dialing string from said local client computer corresponding to said optimum route and transmitting said dialing string onto said one of said K telephone lines; and

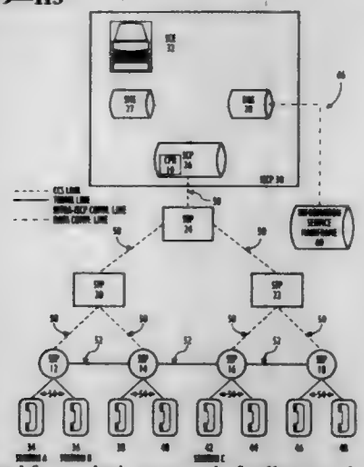
a second communication link coupling said local client computer to said at least one line unit.

5,799,073

APPARATUS AND METHOD FOR RECORDING CALL RELATED DATA

Harold C. Fleischer, III; Michael W. Boeckman; S. James Merin; Donald Austin, and Brenda Thompson, all of St. Louis, Mo., assignors to Southwestern Bell Technology Resources, Inc., Austin, Tex.

Filed Jun. 7, 1995, Ser. No. 473,919
Int. Cl.[6] H04M *15/04*
U.S. Cl. 379—113 45 Claims



1. A method for producing a record of calls to a subscriber in an advanced intelligent network, said advanced intelligent network comprising a two-way communication network interconnecting a plurality of service switching points in a plurality of dispersed network locations, said service switching points selectively establishing a communication connection between at least two of said network locations in response to a call request from a calling party, and a service control point comprising a called party call processing record including service logic to initiate recording of incoming call data in response to the call request from the calling party to establish communication with said subscriber, said method comprising:

collecting and recording call data at said service control point in response to said call request from said calling party to establish communication with said subscriber, said call data comprising a calling party number of said calling party and a terminating number of said subscriber;

accumulating and storing said call data according to a plurality of selectable report formats, said plurality of selectable report formats being enabled by service enabling data and including a total number of calls based on a demographic code representing demographic data associated with said calling party; and

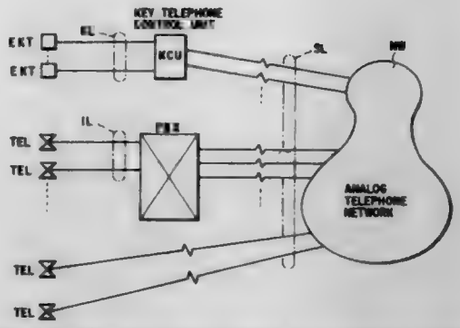
thereafter, periodically producing a caller data service report based on said call data accumulated and stored according to said demographic code and said plurality of selectable report formats.

5,799,074

COMMUNICATION TERMINAL HAVING FUNCTION FOR DISPLAYING ORIGINATOR IDENTIFICATION DATA

Hiroshi Mano; Takashi Watanabe, and Terunori Suwa, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 368,600, Jan. 4, 1995, abandoned.
This application Apr. 10, 1997, Ser. No. 834,870
Claims priority, application Japan, Jan. 7, 1994, 6-000512
Int. Cl.[6] H04M *1/56;1/00;3/00*
U.S. Cl. 379—142 14 Claims



1. A communication terminal connected via a subscriber line to a network having a function for transmitting a plurality of ringing signals to the communication terminal at regular intervals with an originator identification signal inserted in an interval between a k-th (k: a predetermined integer) ringing signal and a (k+1)-th ringing signal, comprising:

ringing signal detection means for detecting the ringing signals transmitted from the network;

originator detection means for detecting the originator identification signal transmitted from the network; and

control means, connected to the ringing signal detection means and the originator detection means, for notifying a user of the communication terminal of originator identification data corresponding to the originator identification signal detected by the originator detection means, and starting to notify the user of an incoming call in response to detection by the ringing signal detection means of the ringing signals, beginning with the (k+1)-th ringing signal, on and after starting of the notification of the originator identification data, the control means notifying the user of the communication terminal that the originator identification signal is being received during a time period from the detection of a first ringing signal by the ringing signal detection means to the detection of the originator identification signal by the originator detection means.

5,799,075

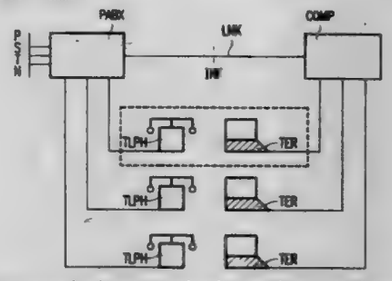
Patent Not Issued For This Number

5,799,076

TELECOMMUNICATION SYSTEM FOR PROVIDING STATUS INFORMATION OF CONNECTED PARTIES HAVING ASSOCIATED PARTY PROCESSSES

Richard J. Sitters, Hilversum, and Cornelis A. M. Oerlemans, Maarssen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 573,741, Dec. 18, 1995, abandoned.
This application Sep. 18, 1997, Ser. No. 932,519
Claims priority, application European Pat. Off., Dec. 19, 1994, 94203672
Int. Cl.[6] H04M *3/22*
U.S. Cl. 379—229 8 Claims



1. An integrated telecommunication exchange and data processing apparatus, comprising:

control means in a telecommunication exchange for establishing and controlling a communication link between any first and second parties connected to the telecommunication exchange.

said parties being devices between which the telecommunication exchange creates the communication link, the first and second parties using first and second signaling protocols respectively which may be different from each other;

the control means generating first and second party processes corresponding to the first and second parties respectively, the first and second party processes being software processes for converting signal messages in the first and second signaling protocols respectively into signal messages in a generic signaling protocol and for converting signal messages in the generic signaling protocol into signal messages in the first and second signaling protocols respectively;

the control means monitoring signal messages in the generic protocol as the monitored signal messages pass between the first and second party processes and in response thereto generating status information indicative of the status of at least one of the first and second parties;

a data processing means for receiving the status information and for generating a manipulation instruction in response thereto in accordance with an application program running on the data processing means; and

the control means receiving the manipulation instruction from the data processing means, converting the manipulation instruction into a signal message in the generic signaling protocol and sending the signal message converted from the manipulation instruction to one of the first and second parties to manipulate the communication link.

5,799,077

METHOD OF AND APPARATUS FOR AUTOMATIC DIALING

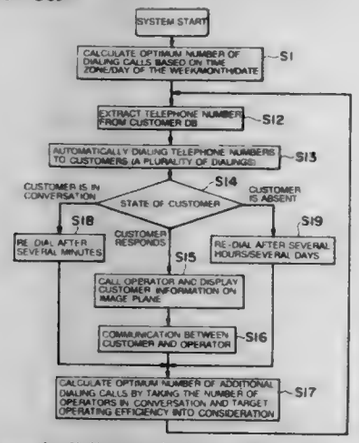
Satoru Yoshii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 13, 1995, Ser. No. 387,079

Claims priority, application Japan, Jul. 28, 1994, 6-177250

Int. Cl.[6] H04M *3/00;11/00;3/42;1/00*

U.S. Cl. 379—309 **23 Claims**



1. An automatic dialing method comprising the steps of:

a) determining a quantity of dialing calls based on a quantity of serviceable operators;

b) extracting destination telephone numbers in a quantity equal to the quantity of dialing calls, from a destination data base;

c) automatically dialing the extracted telephone numbers;

d) calling a telephone set of a serviceable operator and connecting the telephone set of the operator to a line of a responding destination corresponding to one of the automatically dialed extracted telephone numbers;

e) calculating a quantity of additional destinations to be extracted based on a quantity of additional serviceable operators and a quantity of unresponding destinations, and discriminating the reason of each unresponding destination according to whether each destination was in conversation or did not make a response due to absence;

f) extracting additional destination telephone numbers in a quantity equal to the calculated quantity of additional destinations, from the destination data base; and

g) automatically dialing the extracted additional telephone numbers and the telephone numbers of the unresponding destinations and repeating step d) after step g).

5,799,078

ECHO CANCELLER

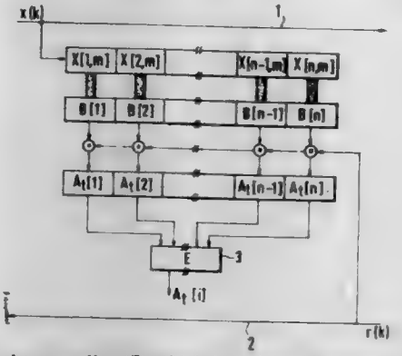
Michael Maurer, Waiblingen, Germany, assignor to Alcatel Alsthom Compagnie Generale d'Electricite, Paris, France

Filed Nov. 13, 1996, Ser. No. 748,340

Claims priority, application Germany, Nov. 23, 1995, 195 43 666.0

Int. Cl.[6] H04M *9/00*

U.S. Cl. 379—410 **4 Claims**



1. An echo canceller (5) which is switched between a transmit line (1) and a receive line (2) in a communications system, whose transmission function is determined by a digital filter, characterized in that a block formed of a defined number of sampling values from transmitted signals is correlated with a received echo signal derived therefrom and a result of the correlation is compared to a defined threshold value, and if the result of the correlation exceeds the defined threshold value, the transmission function is updated.

5,799,079

OPENING AND CLOSING MECHANISM FOR ELECTRONIC DEVICE

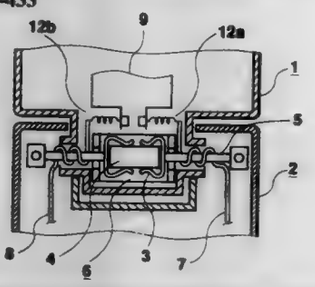
Tsutomu Inoue, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 23, 1996, Ser. No. 734,844

Claims priority, application Japan, Nov. 30, 1995, 7-312568

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—433 **7 Claims**



1. An opening and closing mechanism for an electronic device, comprising:

a main body and a sub-body respectively including electric circuits;

a hinge unit for joining together one end of each of the main body and the sub-body, cam means, including a shaft, for setting opening and closing angles of said sub-body with respect to said main body, and an angle-regulating means for maintaining said cam means at a set angle;

a distribution cable for providing electrical connection between the electric circuit of the main body and the electric circuit of the sub-body, said distribution cable having an intermediate portion wound around said shaft; and

a conductive, stretchable cable connected between said distribution cable and at least one of said electric circuits.

5,799,080

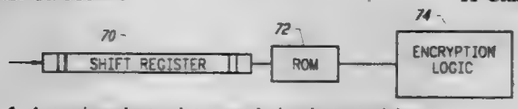
SEMICONDUCTOR CHIP HAVING IDENTIFICATION/ENCRYPTION CODE

Gobi R. Padmanabhan, Sunnyvale; Joseph M. Zelayeta, Saratoga; Visvamohan Yegnashankaran, Redwood City; James W. Hively, Sunnyvale, and John P. Daane, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 13, 1995, Ser. No. 502,300

Int. Cl.[6] H04L 9/00

U.S. Cl. 380—4 **11 Claims**



1. A semiconductor integrated circuit comprising

a semiconductor body having active and passive elements formed therein including a plurality of contacts on peripheral portions of said body, and

a code mechanism provided in a portion of said body and accessible through at least one of said contacts said code mechanism including an array of elements which can individually be altered in electrical conductance to define a code,

a first shift register into which a code can be loaded through said array of elements, and

a second shift register having an input for receiving a code from a source external to said integrated circuit, a comparator, a means connecting an output of said first shift register and an output of said second shift register to said comparator, said comparator controlling operation of said integrated circuit in response to comparing said output of said first shift register and said output of said second shift register.

5,799,081

ILLEGAL VIEW/COPY PROTECTION METHOD AND APPARATUS FOR DIGITAL BROADCASTING SYSTEM

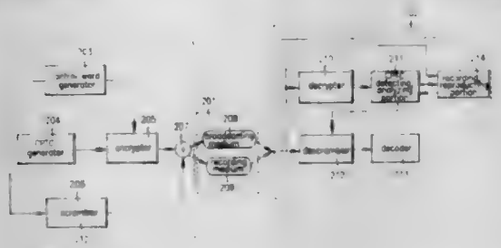
Yung Gil Kim, and Tae Joon Park, both of Seoul, Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Oct. 27, 1995, Ser. No. 549,421

Claims priority, application Rep. of Korea, Sep. 18, 1995, 30444/1995

Int. Cl.[6] H04L 9/00

U.S. Cl. 380—5 **31 Claims**



1. An illegal view/copy protection method for a digital broadcasting system comprising:

an audio/video signal transmission step for multiplexing and transmitting an audio/video bit stream scrambled in control words and information where the control words and Copy Protection Transmission Code (CPTC) information for illegal view/copy protection are encrypted; and

an audio/video reception step for decrypting the transmitted bit stream to analyze the CPTC information and control words, deciding whether recording is allowed or not to be recorded on digital signal storing media, and using the control words, performing descrambling and decoding to output audio/video signals to a monitor.

5,799,082

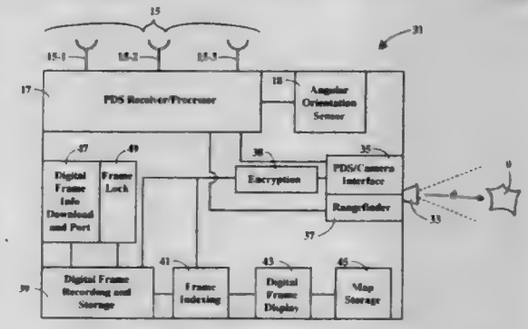
SECURE AUTHENTICATION OF IMAGES

Michael D. Murphy, Sunnyvale; James M. Janky, Los Altos, and John F. Schipper, Palo Alto, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Nov. 7, 1995, Ser. No. 554,820

Int. Cl.[6] H04L 9/00; H04K 1/00

U.S. Cl. 380—7 **19 Claims**



1. Apparatus for capturing and authenticating an image, the apparatus comprising:

a digital image camera, having a lens that forms a digitally expressed image of a selected view;

digital image recording and storage means for receiving the digitally expressed image from the camera and for storing this digitally expressed image as an array of pixel values, with each pixel value corresponding to a pixel in an array of pixels; and

position determination means for determining position information, which includes at least one of the location of the camera, the angular orientation of the camera and the time at which the camera forms a digitally expressed image and for storing this position information as part of the digitally expressed image in the digital image recording and storage means, where the position information is stored as part of the digitally expressed image as an overlay on, or modification of, digital values representing pixel values for the digitally expressed image.

5,799,083

EVENT VERIFICATION SYSTEM

Harlan Jay Brothers, 103 Island View Ter., Branford, Conn. 06405, and Chris Hind Genly, 2137 17th Ave., Forest Grove, Oreg. 97116

. Filed Aug. 26, 1996, Ser. No. 702,815

Int. Cl.[6] H04L 9/00

U.S. Cl. 380—20 **19 Claims**

1. An event verification system comprises:

an input for the reception of information;

an encryption algorithm to encrypt the information;

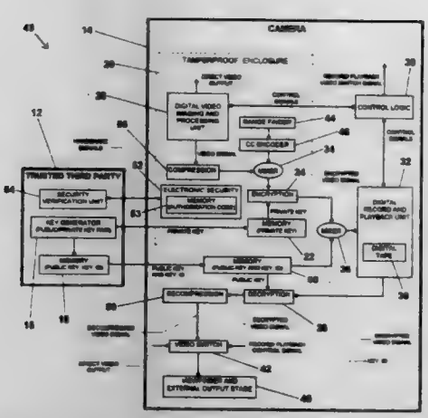
an electronic recorder to record the encrypted information;

a decryption algorithm to decrypt recorded information;

at least one programmable memory to store at least one cryptographic key for use with the encryption and decryption algorithms;

a tamperproof enclosure to protect the input and at least one programmable memory from access or alteration; and

a trusted agent to generate at least one cryptographic key to be used in conjunction with the encryption and decryption algo



rithms, the trusted agent programming any generated cryptographic key into at least one programmable memory for use with the encryption and decryption algorithms and, upon request, verifying the authenticity of the recorded information by decrypting the recorded information using at least one cryptographic key.

5,799,084

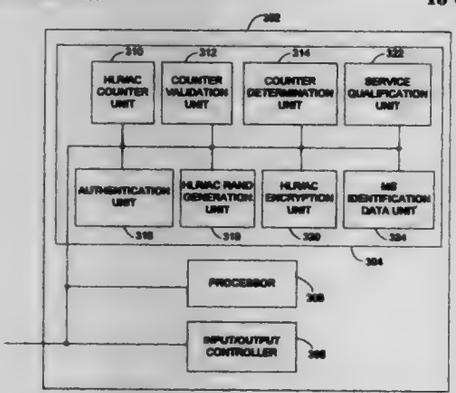
SYSTEM AND METHOD FOR AUTHENTICATING CELLULAR TELEPHONIC COMMUNICATION

Michael D. Gallagher, San Jose; Kirk D. Carlson, Santa Clara; Stuart S. Jeffery; Ming J. Lee, both of Los Altos; Vilnis G. Grencions, and Randall A. Snyder, both of Santa Clara, all of Calif., assignors to Synacom Technology, Inc., San Jose, Calif.

Filed May 6, 1996, Ser. No. 642,215

Int. Cl.[6] H04L *9/00;9/32*

U.S. Cl. 380—23 **16 Claims**



12. A system for authenticating a first transmission signal, the system comprising:

a transmitting unit, for transmitting an authentication signal, said transmitting unit including:

a counter unit, for storing a first count signal, a value of said first count signal is modified for every transmission of said transmitting unit;

a random signal generator for generating a first signal representing a combination of a first random signal having a random value and a first count signal;

an encrypted signal generator, coupled to said random signal generator, for generating a first encrypted signal in response to a first key signal and said first signal in the transmitting unit;

an authentication signal generator, coupled to said encrypted signal generator, for generating a first feature signal, said first feature signal including an identification signal identifying said first feature signal as an authentication signal, said first encrypted signal, and said first signal;

an authentication unit, disposed to receive said first feature signal, for authenticating said first feature signal, including:

a second encrypted signal generator, for generating a second encrypted signal in response to a second key signal and said first signal; and

an authentication unit, coupled to said second encrypted signal generator, for identifying said first feature signal as authentic if a value of said first count signal is within a first predetermined value of a value of said second count signal and said first encrypted signal is equal to said second encrypted signal.

5,799,085

METHOD OF EFFECTING MUTUAL AUTHENTICATION

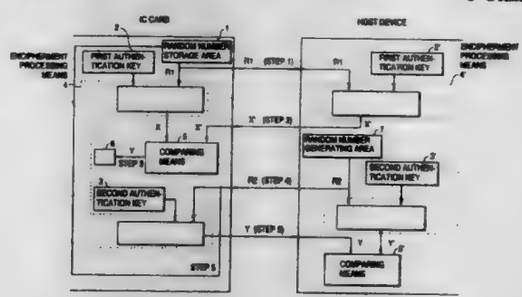
Yoshihiro Shona, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1996, Ser. No. 688,924

Claims priority, application Japan, Nov. 2, 1995, 7-285496

Int. Cl.[6] H04L *9/00;9/32*

U.S. Cl. 380—23 **6 Claims**



5. A method of effecting mutual authentication between an apparatus, which comprises an integrated circuit, and a host device, said method comprising:

performing a first authenticating process comprising:

encoding a first random number, which is stored in a storage area of the apparatus, in the apparatus to thereby obtain first data;

encoding the first random number in the host device to thereby obtain second data; and

comparing the first data and the second data in the apparatus;

performing a second authenticating process comprising:

generating a second random number in the host device;

encoding the second random number in the host device to thereby obtain third data;

encoding the second random number in the apparatus to thereby obtain fourth data; and

comparing the third data and the fourth data in the host device;

wherein the mutual authentication is determined based upon the comparisons performed in said first and second authenticating processes, and wherein the second random number, generated by the host device in said second authenticating process, is subjected to processing to obtain a third random number and the third random number is stored as the first random number in the storage area of the apparatus, for use in a subsequent mutual authentication, in response to a result of the comparison performed in said first authenticating process.

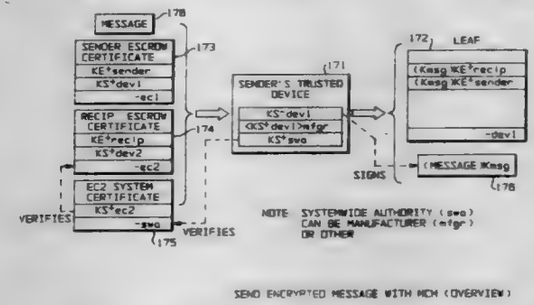
5,799,086
ENHANCED CRYPTOGRAPHIC SYSTEM AND METHOD WITH KEY ESCROW FEATURE

Frank Wells Sudia, New York, N.Y., assignor to CertCo LLC, New York, N.Y.

Division of Ser. No. 272,203, Jul. 8, 1994, abandoned, which is a continuation-in-part of Ser. No. 181,859, Jan. 13, 1994, abandoned. This application Feb. 19, 1997, Ser. No. 803,176

Int. Cl.[6] H04L *9/32*

U.S. Cl. 380—23 **12 Claims**



SEND ENCRYPTED MESSAGE WITH MCH (OVERVIEW)

1. A method of authorizing a trusted device to conduct an electronic transaction between a first user and a second party, and providing assurance that said trusted device will engage in said electronic transaction in accordance with predetermined rules which cannot be changed by said user, said method comprising:

electronically transmitting from said trusted device to a third party a request for authorization to engage in said electronic transaction, said request including the identity of said trusted device;

determining, by said third party, that said trusted device should be authorized to engage in said transaction at least in part in accordance with a determination that said trusted device will operate only in accordance with said rules;

electronically transmitting from said third party to said trusted device authorization to engage in said electronic transaction, said authorization including certification that said third party provided said authorization;

electronically transmitting from said trusted device to said second party said certification as assurance that said trusted device is authorized to engage in said electronic transaction and will do so only in accordance with said rules;

electronically transmitting transaction data from said trusted device to said second party in accordance with said rules.

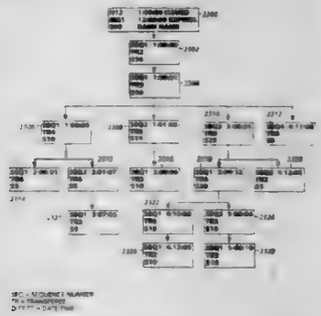
5,799,087
ELECTRONIC-MONETARY SYSTEM

Sholom S. Rosen, New York, N.Y., assignor to Citibank, N.A., New York, N.Y.

Continuation-in-part of Ser. No. 234,461, Apr. 28, 1994, Pat. No. 5,557,518. This application Apr. 21, 1995, Ser. No. 427,287

Int. Cl.[6] H04L *9/32*; G07F *19/00*

U.S. Cl. 380—24 **18 Claims**



1. A system for transferring electronic notes between electronic modules comprising:

electronic modules each having a processor, a memory, and the capability to create a cryptographically secure channel and transfer and receive electronic notes via said cryptographically secure channel, and where each electronic module stores said electronic notes in its respective said memory;

wherein each stored electronic note comprises:

a body group of data fields including data indicative of a monetary value associated with said electronic note;

a transfer group of data fields including a list of transfer records, where each transfer record is generated by a transferor electronic module and includes a sequence number that distinguishes a transferred electronic note from one or more other transferred electronic notes transferred from a common said transferor electronic module and generated from a common electronic note.

5,799,088
NON-DETERMINISTIC PUBLIC KEY ENCRYPTON SYSTEM

William Michael Raike, 66 Simpson Road, Swanson, Auckland, New Zealand

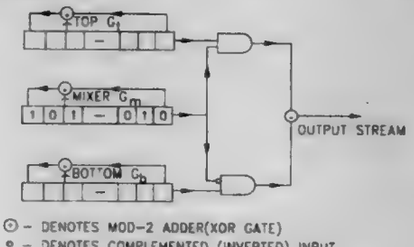
PCT No. PCT/NZ94/00136, § 371 Date Sep. 23, 1996, § 102(e) Date Sep. 23, 1996, PCT Pub. No. WO95/15633, PCT Pub. Date Jun. 8, 1995

PCT Filed Dec. 1, 1994, Ser. No. 656,185

Claims priority, application New Zealand, Dec. 1, 1993, 250337; Dec. 16, 1993, 250475; Jun. 9, 1994, 260712

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—30 **19 Claims**



1. A public-key encryption system wherein a message sender encrypts a plaintext message P using a publicly known key unique to a message receiver and the message receiver decrypts the encrypted message using a secret private key from which the public key has been derived, characterised in that:

(1) a private key (D) is selected which comprises a plurality of binary numbers $D_{1\ to\ n}$;

(2) a public key (E) is computed by exponentiation (as hereinbefore defined) using the private key by, for each of the said numbers $D_{1\ to\ n}$, calculating the state of a pseudo-random binary number generator from a given and known initial state after a number of clock pulses or state transitions equal to the corresponding number given by the private key $D_{1\ to\ n}$ and providing each of the calculated binary states $E_{1\ to\ n}$ as a component of the public key E;

(3) the message sender

(a) generates a random initialisation key (R) comprising a set of binary numbers $R_{1\ to\ n}$ and computes by exponentiation an open key Q by, for each of the numbers $R_{1\ to\ n}$, calculating the state of a pseudo-random binary number generator from a given and known initial state after a number of clock pulses or state transitions equal to the corresponding number given by the random initialisation key $R_{1\ to\ n}$ and providing each of the calculated binary states $O_{1\ to\ n}$ as a component of the open key Q.

(b) exponentiates the components of the public key E by the components of the random initialisation key R to produce generator initialisation states $K_{1\ to\ n}$ by, for each of the said numbers $E_{1\ to\ n}$ and $R_{1\ to\ n}$, calculating the state of a pseudo-random binary number generator that would result from applying the process defined in step (2) a number of times equal to the corresponding binary number R_1.

(c) loads a set (n) of pseudo-random binary number generators, the outputs of which are combined to form a first mixture generator, with initial values $K_{1\ to\ n}$,

(d) clocks the first mixture generator to obtain a keystream serial output,

(e) combines said keystream output with the binary plaintext message P to produce an encrypted bit stream ciphertext C,

(f) adds the ciphertext C to the open key Q to produce a message stream,

(g) transmits the message to the message receiver;

(4) the message receiver

(a) extracts the open key Q from the message stream,

(b) exponentiates the open key Q by the private key D to derive generator initialisation states $K_{1\ to\ n}$ by, for each of the said numbers $Q_{1\ to\ n}$ and $D_{1\ to\ n}$, calculating the state of a pseudo-random binary number generator that would result from applying the process defined in step (3)(a) a number of times equal to the corresponding binary number $D_{1\ to\ n}$,

(c) loads a second set (n) of pseudo-random binary number generators, the outputs of which are combined to form a mixture generator, with the generator initialisation states $K_{1\ to\ n}$,

(d) clocks the mixture generator to obtain a keystream serial output and combines this output with the received encrypted bit stream to produce the sender's plaintext message.

5,799,089

SYSTEM AND APPARATUS FOR BLOCKWISE ENCRYPTION/DECRYPTION OF DATA

Gideon Jacobus Kühn, Pretoria, South Africa; Donald Watts Davies, Middlesex, Great Britain, and Simon Paul Ashley Rix, Transvaal, South Africa, assignors to Irdeto B.V., Netherlands

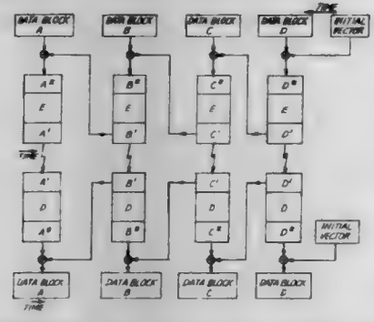
PCT No. PCT/NL94/00245, § 371 Date Apr. 12, 1996, § 102(e) Date Apr. 12, 1996, PCT Pub. No. WO95/10906, PCT Pub. Date Apr. 20, 1995

PCT Filed Oct. 7, 1994, Ser. No. 624,541

Claims priority, application Netherlands, Oct. 14, 1993, 9301784

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—37 **12 Claims**



1. A system for encrypting and decrypting digital data, wherein the data is divided into packets of N blocks (X(1) . . . X(N)) of 2^m bits, said system comprising:

an encryption device having encryption means for performing a XOR operation (+) and then an encryption operation by means of an encryption algorithm (E) on each block of a packet, wherein encrypted blocks (Y(1) . . . Y(N)) are obtained according to

$$Y(1)=E\ [X(N)+IV]$$

$$Y(i)=E\ [X(N-i+1)+Y(i-1)]\ \text{for } i>1 \text{ and } i\leqq N,$$

where IV is an initial vector, and wherein said encryption means reverses the sequence of the blocks (X(1) . . . X(N)) before carrying out the encryption and XOR operations, and wherein said encryption device includes means for reversing the encrypted blocks (Y(1) . . . Y(N)) before transferring the encrypted blocks (Y(1) . . . Y(N)); and

a decryption device having means for performing a decryption algorithm (D) and then the XOR operation on each encrypted block (Y(1) . . . Y(N)), wherein the original blocks (X(1) . . . X(N)) are obtained according to

$$X(i)=D\ [Y(N-i+1)]+Y(N-1)\ \text{for } i=1, 2 \ldots, N-1$$

$$X(N)=D\ [Y(1)]+IV.$$

5,799,090

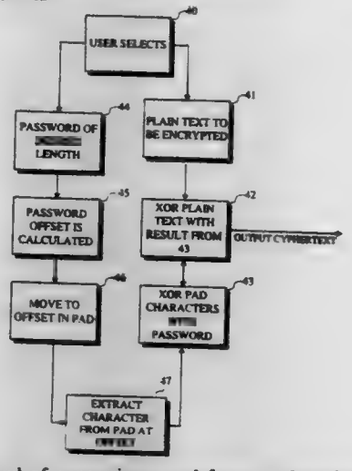
PAD ENCRYPTION METHOD AND SOFTWARE

Joseph C. Angert, 5308 Reber Place, St. Louis, Mo. 63139

Filed Sep. 25, 1995, Ser. No. 533,314

Int. Cl.[6] H04L *9/18;9/00*

U.S. Cl. 380—43 **16 Claims**



1. A method of generating a pad from a selected file stored in computer memory, comprising:

extracting a first value from a selected file stored in a computer memory,

generating a pseudo random number,

logically combining the first value with the pseudo random number to generate a first random character of a pad, and

successively repeating the prior steps to produce next random characters of a pad.

5,799,091

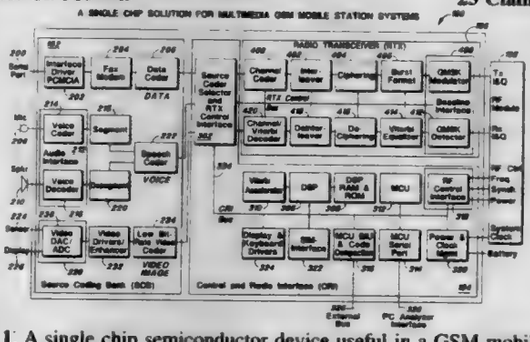
SINGLE CHIP SOLUTION FOR MULTIMEDIA GSM MOBILE STATION SYSTEMS

Johan Lodenius, Sunnyvale, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed May 24, 1996, Ser. No. 653,675

Int. Cl.[6] H04K *1/00*

U.S. Cl. 380—49 **25 Claims**



1. A single chip semiconductor device useful in a GSM mobile station system which includes an RF module for transmitting and receiving radio signals, the semiconductor device comprising:

a source coding bank ("SCB") having a data port interface in electrical communication with a data codec, an audio interface in electrical communication with a speech codec, and a video interface having digital-to-analog and analog-to-digital converters in electrical communication with a video codec;

a control-radio interface ("CRI") having a source codec selector in electrical communication with the data codec, the speech codec and the video codec;

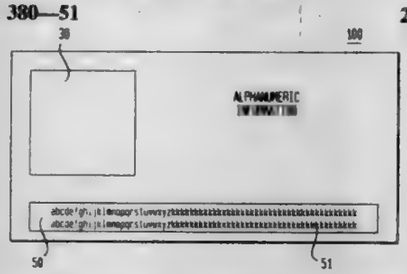
a radio transceiver ("RTX") in electrical communication with the CRI via an RTX control interface, the RTX having a baseband interface coupled to the RF module.

5,799,092

SELF-VERIFYING IDENTIFICATION CARD

David M. Kristol, Summit, and Lawrence P. O'Gorman, Madison, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Feb. 28, 1995, Ser. No. 395,547
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—51 **25 Claims**



1. An identification card for identifying an individual comprising:

a card substrate;

an image area disposed on said card substrate, said image area containing a plurality of image points that produce a visible image of a characteristic that is unique to said individual, wherein each of said image points within said image has an optical value; and

an image signature derived from optical values for predetermined reference points on said image, wherein optical values for each of said reference points are obtained by averaging optical values of image points proximate each of said reference points;

wherein said image is optically scannable from said card substrate and said image signature is readable from said card substrate for comparison to one another.

5,799,093

PROCESS AND APPARATUS FOR REMOTE SYSTEM INSPECTION OF A VALUE DISPENSING MECHANISM SUCH AS A POSTAGE METER

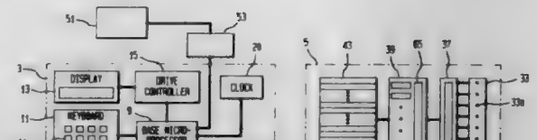
Dale A. French, Clinton, and Kathryn V. Lawton, Branford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 23, 1996, Ser. No. 701,947
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—51 **8 Claims**

1. A remote inspection system comprising:

a value dispensing device including means for printing an indication of value, means for accounting for value dispensed, and means for querying and receiving operational data from both the printing means and the accounting means and for creating a message based on the operational data which message has a first portion identifying the data and a second encrypted signature portion which is created based on at least some of the operational data;

a data center remotely located from the value dispensing device; and



means for establishing communication between the data center and the value dispensing device permitting the value dispensing device to send the message to the data center;

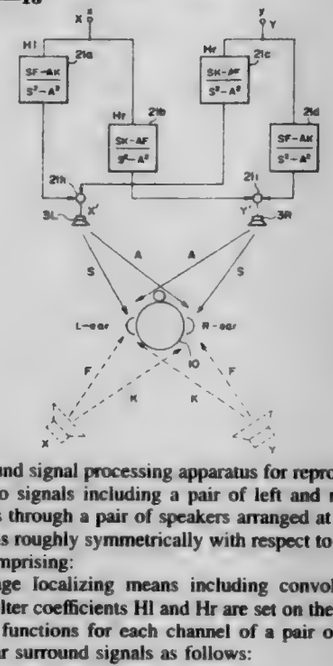
wherein the data center includes means for extracting the operational data from the message, means for extracting the at least some of the operational data from the message to create the second encrypted signature portion based on the at least some of the information thereby validating authenticity of the message, and means for storing the operational data.

5,799,094

SURROUND SIGNAL PROCESSING APPARATUS AND VIDEO AND AUDIO SIGNAL REPRODUCING APPARATUS

Tomohiro Mouri, Musashino, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 26, 1996, Ser. No. 592,728
Claims priority, application Japan, Jan. 26, 1995, 7-030140
Int. Cl.[6] H04R 5/00
U.S. Cl. 381—18 **8 Claims**



1. A surround signal processing apparatus for reproducing multichannel audio signals including a pair of left and right rear surround signals through a pair of speakers arranged at front left and right positions roughly symmetrically with respect to a listener, the apparatus comprising:

sound image localizing means including convolvers each of whose filter coefficients Hl and Hr are set on the basis of head transfer functions for each channel of a pair of the left and right rear surround signals as follows:

$$Hl=(SF-AK)/(S^2-A^2)$$

$$Hr=(SK-AF)/(S^2-A^2)$$

where S denotes a transfer function from each of a pair of the speakers to each listener's ear existing on the same side of each speaker; A denotes a transfer function from each of a pair of the speakers to each listener's ear existing on the opposite side of each speaker; F denotes a transfer function

from a position at which each sound image is required to be localized to each listener's ear existing on the same side of each speaker; and K denotes a transfer function from a position at which each sound image is required to be localized to each listener's ear existing on the opposite side of each speaker, said sound image localizing means adding an output of the filter whose filter coefficient is set to Hl for one channel to an output of the other-channel filter whose filter coefficient is set to Hr for the other channel, and further outputting a pair of the added outputs as a pair of filtered rear left and right surround signals; and

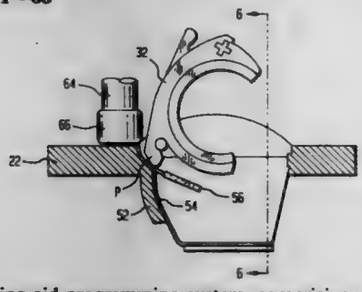
adding means for adding a pair of the left and right rear surround signals passed through said sound image localizing means to a pair of front left and right stereo-phonic signals, so that the sound images can be localized at a pair of rear left and right positions roughly symmetrically with respect to the listener, respectively.

5,799,095

BESIDE-THE-DOOR PROGRAMMING SYSTEM FOR PROGRAMMING HEARING AIDS

William L. Hanright, Greenpond, N.J., assignor to Siemens Hearing Instruments, Inc., Piscataway, N.J.

Filed Apr. 30, 1996, Ser. No. 640,372
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—68 **11 Claims**



1. A hearing aid programming system, comprising:

a hearing aid housing;

a faceplate attached to the housing and having an opening for receiving a battery door;

a programmable hearing aid circuit contained inside the housing;

a plurality of programming terminals electrically connected to the circuit and located inside the housing;

the battery door located within the opening and being hingedly connected to the faceplate so as to be movable between open and closed positions, the door having four edges, one edge of the door being spaced apart from the faceplate so as to define a narrow slot bounded by said one edge and the faceplate, said slot being adjacent said programming terminals;

a multi-electrode programming strip dimensioned to fit into the slot, the strip having a plurality of electrodes dimensioned to mate with the terminals,

the door, strip and terminals being dimensioned to cooperate in a manner that when the strip has been fully inserted into the housing through the slot with the electrodes facing the terminals and the door is in the closed position, the electrodes are pressed against the terminals and make electrical contact therewith.

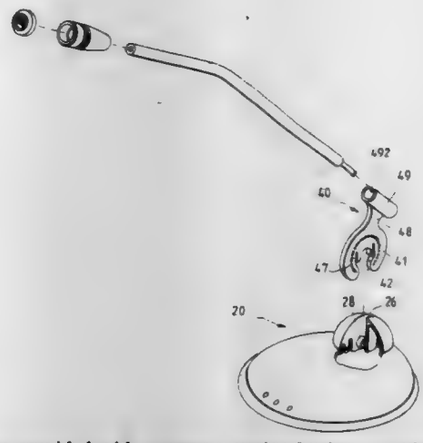
5,799,096

DESKTOP MICROPHONE SEAT

Lu-Lee Liao, No. 5, Shi-An South Lane, Shi-Tung District, Taichung City, Taiwan

Filed Nov. 26, 1996, Ser. No. 756,797
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—169 **13 Claims**

1. A desktop microphone seat comprising:



a base provided with a support portion having a receiving slot, said base further provided with a column received in said receiving slot such that said column is positioned and spaced by a predetermined distance from each of two first flexible locating portions engaged in said receiving slot; and

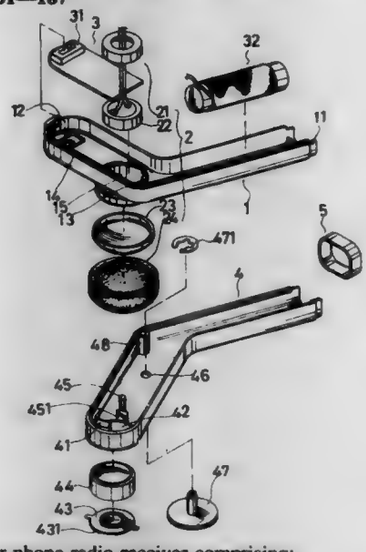
a pivoting member having a plate body capable of being fitted into said receiving slot of said base, said plate body provided with an arcuate recess dimensioned to receive rotatably therein said column, said plate body further provided with a receiving seat for holding a microphone, and with a plurality of second locating portions engageable with said two first flexible locating portions of said base when said pivoting member is rotated on said column serving as a pivot.

5,799,097

EARPHONE RADIO RECEIVER

Jung-Chao Lo, Yung Kang, Taiwan, assignor to Jui Chu Enterprise Co., Ltd., Tainan Hsien, Taiwan

Filed Nov. 24, 1997, Ser. No. 977,393
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—187 **1 Claim**



1. An ear-phone radio receiver comprising:

a first half housing nearly L-shaped having an upper open side and an open rear side, an engage means fixed on an inner side of a front end, a rod standing on a bottom near a bent corner, a switch hole in the bottom near the front end, and an annular ear-phone base fixed in the bottom;

an ear-phone consisting of a speaker disposed in said ear-phone base of said first half housing, and a position cap closed on an upper side of said ear-phone base;

a second half housing of the same shape as that of said first half housing, having a round hole in a bottom near a front end, a position hook fixed on an inner surface of the front end, a lid covering on said position hole, a vertical position rod standing on the bottom near said round hole, and a hole in an intermediate portion of the bottom for a tuning disc to pass through and a vertical engage sleeve standing on the bottom near a bent corner to fit with said rod of said first half housing;

a fix cap of a proper size closing up open rear ends of both said first half housing and said second half housing after both said half housings are combined together; and, a circuit board having a necessary radio receiving set arranged on its surface, combined with said ear-phone, said second half housing together with said tuning disk combined with said first half housing, with said position hook of said second half housing engaging said engage means of said first half housing with said engage sleeve of said second half housing engaging said rod of said first half housing, with said position rod of said second half housing pressing securely said circuit board, said fix cap closed on the rear ends of said first half housing and said second half housing after both said half housings are combined together, said battery placed through said hole of said second half housing into a space formed by both said half housings, said lid of said second half housing closed on said hole and securing said battery in its place, said ear-phone able to be inserted in an ear of a person, said circuit board having a power switch adapted for operation to turn on and off the receiver, and said tuning disc rotated to tune in a radio frequency.

5,799,098

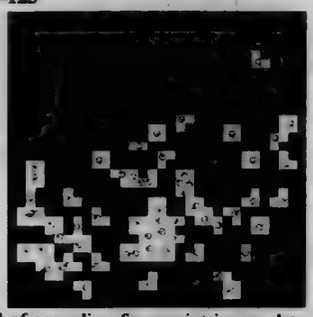
FINGERPRINT IDENTIFICATION SYSTEM

James R. Ort, Kenmore; Douglas L. Lange, Snyder; Frederick W. Kiefer, Williamsville, and Raymond J. Dennison, West Seneca, all of N.Y., assignors to Calspan Corporation, Buffalo, N.Y.

Division of Ser. No. 326,757, Oct. 20, 1994, Pat. No. 5,659,626. This application Apr. 3, 1997, Ser. No. 835,053

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—125 **4 Claims**



1. A method of recording fingerprint image data useful in comparing one fingerprint to another comprising the steps of recording

the location and angle of minutiae along with a quality measure of each minutiae,

the location of cores and deltas, along with a quality value of each core and delta,

core and delta average local image quality at each core and delta and in proximity thereto,

an image state map defining high quality image areas with and without minutiae and areas of either low image quality or minutiae having a quality value below a predetermined value,

an overall fingerprint image quality value,

a fingerprint Ridge Frequency Map,

a fingerprint Ridge Angle Map,

the dominant mode ridge frequency of the overall fingerprint image obtained from a smoothed fingerprint Ridge Frequency Map, and

a feature area count obtained from said image state map.

5,799,099

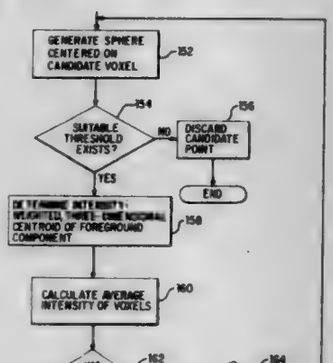
AUTOMATIC TECHNIQUE FOR LOCALIZING EXTERNALLY ATTACHED FIDUCIAL MARKERS IN VOLUME IMAGES OF THE HEAD

Matthew Y. Wang; Calvin R. Maurer, Jr., and J. Michael Fitzpatrick, all of Nashville, Tenn., assignors to George S. Allen, Nashville, Tenn.

Division of Ser. No. 196,725, Feb. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 164,933, Dec. 10, 1993, abandoned, and Ser. No. 17,167, Feb. 12, 1993, abandoned, and Ser. No. 162,986, Dec. 8, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,456

Int. Cl.[6] G06K *9/00;9/36*

U.S. Cl. 382—131 **6 Claims**



1. A method for automatically localizing a predetermined number M of fiducial markers in at least one image volume, comprising steps of:

searching the at least one image volume for candidate markers, said markers including a number of three-dimensional connected voxels having similar intensities and being within a predetermined size range;

representing each of said candidate markers by a candidate voxel containing the centroid of the candidate marker; and

examining a three-dimensional region in the at least one image volume around each of the candidate voxels and determining which of said candidate markers represented by said candidate voxels most likely correspond to said fiducial markers in said at least one image volume, and including for each of said candidate voxels:

determining whether a size and shape of a set of foreground voxels connected to said candidate voxel is similar to a foreground component of a fiducial marker;

discarding the candidate voxel if the size and shape are not determined to be similar;

determining a centroid of the set of foreground voxels;

repeating said determining steps until a same centroid has been determined twice in succession;

discarding the candidate voxel if the determining steps are implemented a predetermined number of times; and

if a same centroid has been determined twice in succession, recording said same centroid as a final centroid and recording a corresponding intensity of said final centroid.

5,799,100

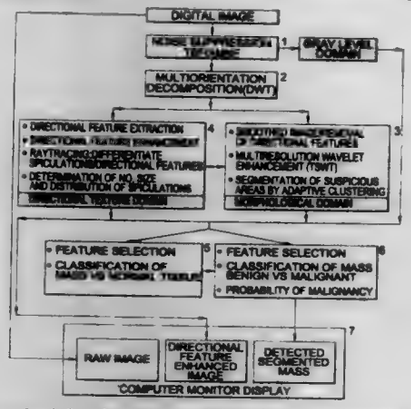
COMPUTER-ASSISTED METHOD AND APPARATUS FOR ANALYSIS OF X-RAY IMAGES USING WAVELET TRANSFORMS

Laurence P. Clarke, Temple Terrace; Wei Qian, Wesley Chapel, and Lihua Li, Tampa, all of Fla., assignors to University of South Florida, Tampa, Fla.

Filed Jun. 3, 1996, Ser. No. 659,061

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—132 **65 Claims**



1. A method for detecting and imaging a suspicious mass in a digital x-ray image, the method comprising the steps of:

decomposing the image using a directional wavelet transform;

smoothing the decomposed image by removing directional features from the decomposed image;

selectively enhancing a suspicious area in the smoothed image;

segmenting the suspicious area in the smoothed image;

detecting a suspicious mass in the suspicious area;

discriminating and extracting out from the directional features a spiculation emanating from the suspicious mass; and

combining the spiculation with the suspicious area to produce a segmented image of the suspicious mass.

5,799,101

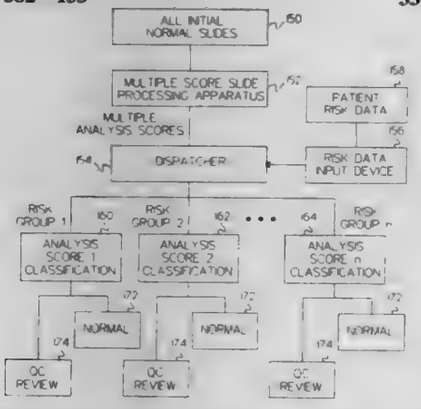
METHOD AND APPARATUS FOR HIGHLY EFFICIENT COMPUTER AIDED SCREENING

Shih-Jong J. Lee, Bellevue; Seho Oh, Mukilteo; Stanley F. Patten, Issaquah; Alan C. Nelson, Redmond, and Larry A. Nelson, Bellevue, all of Wash., assignors to NeoPath, Inc., Redmond, Wash.

Continuation of Ser. No. 315,719, Sep. 30, 1994, abandoned. This application Jul. 21, 1997, Ser. No. 897,392

Int. Cl.[6] G06K *9/00*; **G01N** *33/48*

U.S. Cl. 382—133 **33 Claims**



1. A biological specimen classification apparatus for classification of a biological specimen from a patient, using previously known patient risk data, said apparatus comprising:

(a) means for acquiring at least one image of said biological specimen having at least one image output;

(b) means for extracting at least one slide feature from said at least one image having at least one slide feature output;

(c) means for generating a plurality of analysis scores connected to said at least one slide feature output having a plurality of analysis score outputs;

(d) means for entering the patient risk data; and

(e) means, coupled to the entering means, for dispatching each of the plurality of analysis scores to a selected one of a plurality of analysis score classifiers, wherein the dispatching means selects the selected one of the plurality of analysis score classifiers according to said patient risk data, wherein said means for dispatching is also connected to said plurality of analysis score outputs, and said means for dispatching has a plurality of dispatched outputs, wherein each one of said plurality of analysis score classifiers has an input connected to one of said plurality of dispatched outputs and wherein each one of said plurality of analysis score classifiers has a specimen classification output.

5,799,102

BANK NOTE SCANNER UTILIZING OLFACTORY CHARACTERISTICS FOR AUTHENTICATION

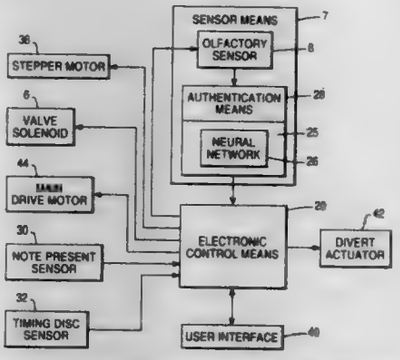
Liem Hak Leong, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Filed Feb. 20, 1996, Ser. No. 602,528

Claims priority, application United Kingdom, Aug. 31, 1995, 9517796

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—135 **9 Claims**



1. A bank note scanner for determining the authenticity of a bank note being tested, the bank note scanner comprising:

sensor means for sensing an olfactory characteristic of a substance associated with the bank note being tested; and

authentication means for comparing the olfactory characteristic of the substance associated with the bank note being tested and an olfactory characteristic of a security pigment which has been used to print an authentic bank note during production of the authentic bank note to determine the authenticity of the bank note being tested.

5,799,103

AUTOMATIC CHARACTERIZATION OF MECHANICAL AND/OR GEOMETRIC PROPERTIES OF STAPLE FIBER SAMPLES AND SUITABLE APPARATUS THEREFOR

August Schneider, Grossaitingen; Jochen Bader, Schwabmünchen, and Franz Xaver Leimer, Wehringen, all of Germany, assignors to Hoechst Aktiengesellschaft, Germany

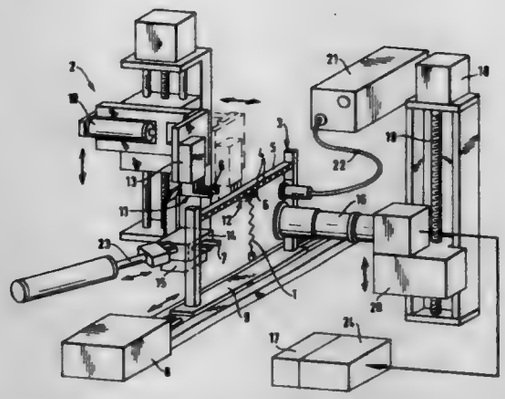
Filed Dec. 15, 1994, Ser. No. 355,855

Claims priority, application Germany, Dec. 17, 1993, 43 43 157.7

Int. Cl.[6] G06K *9/00*; **G01L** *5/04*

U.S. Cl. 382—141 **34 Claims**

1. A method for the automatic characterization of mechanical and/or geometric properties of staple fiber samples, comprising the following measures:



a) presenting staple fiber samples (**1**) in a magazine (**3**) which contains a plurality of clamps (**4**) for attaching in each case the upper end of a staple fiber sample (**1**), said clamps (**4**) being mounted on a clamp strip (**5**) and being movable by a predetermined distance with the clamp strip (**5**),

b) connecting the filled magazine (**3**) to an apparatus (**2**) for characterizing mechanical and/or geometric properties of the staple fiber samples (**1**), said apparatus comprising at least one upper clamping jaw (**6**) and optionally a lower clamping jaw (**7**) for attaching the staple fiber sample (**1**) to be characterized, said upper clamping jaw (**6**) being movable and said magazine (**3**) being releasably connected to the apparatus (**2**) in such a way that the clamps (**4**) of the magazine (**3**) can be moved past in the vicinity of the upper clamping jaw (**6**) of the apparatus (**2**),

c) moving the clamps (**4**), loaded with staple fiber samples (**1**) of the magazine (**3**) by a predetermined distance by means of a transporter (**8**),

d) positioning a clamp (**4**) of the magazine (**3**) into the vicinity of the upper clamping jaw (**6**) of the apparatus (**2**) by means of an adjuster (**9**),

e) moving the upper clamping jaw (**6**) of the apparatus (**2**) from a measuring position (**11**) into a transfer position (**12**) by means of a transporter (**10**), the upper clamping jaw (**6**) being present in the open position,

f) closing the upper clamping jaw (**6**) of the apparatus (**2**) after attainment of the transfer position (**12**) by means of an opening and closing device (**13**) with transfer of the staple fiber sample (**1**) from the clamp (**4**) of magazine (**3**),

g) moving the upper clamping jaw (**6**) of the apparatus (**2**) together with the staple fiber sample (**1**) from the transfer position (**12**) into the measuring position (**11**) by means of the transporter (**10**),

h) performing the characterization of the mechanical and/or geometric properties of the staple fiber samples (**1**) with the apparatus (**2**), and

i) opening the upper clamping jaw (**6**) of the apparatus (**2**) after the characterization by means of the opening and closing device (**13**) and removing the staple fiber sample (**1**) from the apparatus (**2**).

5,799,104

MASK DEFECT REPAIR SYSTEM AND METHOD

Hiroko Nakamura; Kazuyoshi Sugihara, and Haruki Komano, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

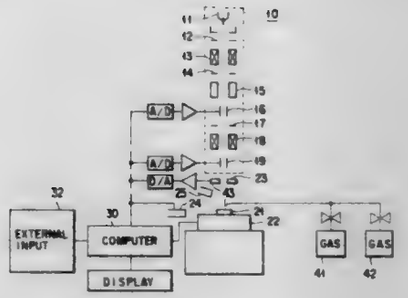
Filed Aug. 22, 1996, Ser. No. 670,315

Claims priority, application Japan, Aug. 22, 1995, 7-213595; Aug. 19, 1996, 8-217282

Int. Cl.[6] G06K *9/00*; **G03F** *9/00*

U.S. Cl. 382—144 **13 Claims**

1. A mask defect repair system which repairs, by irradiating a particle beam, a defect on a mask made of a transparent substrate and a mask material formed on said substrate, comprising:



imaging beam irradiation means for two-dimensionally scanning and irradiating the particle beam for imaging on a surface of said mask;

detection means for detecting a first intensity distribution of secondary particles emitted from said surface of said mask by irradiation of the particle beam for imaging;

image processing means for performing image processing of at least part of the first intensity distribution of the secondary particles to prepare a second intensity distribution;

image display means for displaying the first and the second intensity distribution as an image composed of a plurality of pixels;

external input means for setting, on the image, a desired region to be processed with the particle beam;

irradiation region determination means for determining, on said desired region to be processed, a particle beam irradiation region on the basis of the second intensity distribution;

repair beam irradiation means for irradiating the particle beam for a defect repair on said particle beam irradiation region; and

gas supply means for supplying one of an etching gas and a deposition gas to said surface of said mask.

5,799,105

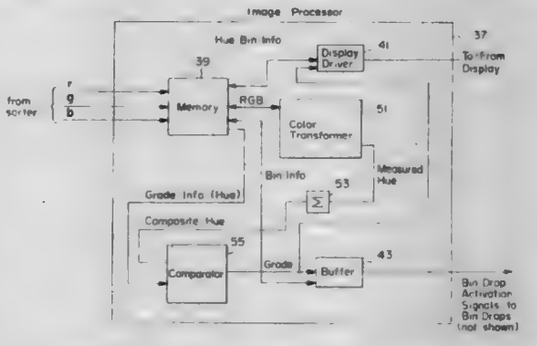
METHOD FOR CALIBRATING A COLOR SORTING APPARATUS

Yang Tao, Woodstock, Va., assignor to Agri-Tech, Inc., Woodstock, Va.

Division of Ser. No. 293,431, Aug. 19, 1994, Pat. No. 5,533,628, which is a continuation-in-part of Ser. No. 846,236, Mar. 6, 1992, Pat. No. 5,339,963. This application May 11, 1995, Ser. No. 439,102

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—167 **2 Claims**



1. A method of calibrating a plurality of cameras to produce substantially uniform measures of color of imaged objects, the method comprising the steps of:

imaging a color standard reference of a same color with each camera and producing color signals from each camera;

in a processor, transforming said color signals produced by each said camera in response to said color standard reference into a single hue value, such that said hue value is the same for each said camera imaging said color standard reference said hue value being selectable to define said calibration in a color space,

wherein said processor performs a further transformation to provide a stable hue value under predetermined circumstances,

wherein said hue value is a function of an angle defined by a predetermined relationship of red, green and blue signals from an imaging device,

wherein said further transformation shifts an axis according to angles of each position in a plane, such that said hue value is determined from a position in a line defined by said angle, said position being substantially insensitive to errors to thereby generate a stable hue value,

wherein said further transformation produces a hue value, h', defined as:

$$h' = \left[\left(\tan^{-1} \frac{V_2}{V_1 + \chi} \right) * \left(\frac{Q_1 - \alpha}{Q_1} \right) + \alpha \right] * \frac{255}{360}$$

where

$$\chi = \chi_0 - \frac{Q - Q_0}{(Q_1 - Q_0)\gamma_0}$$

Q=the angle of the position on the UV or $[V_\alpha V_1]$ V_2V_1 plane

Q_0=constant $0 \leqq \pi$

Q_1=constant $0 \leqq \pi$

γ_0=constant $-255 \leqq \gamma_0 \leqq 255$

χ_0=constant $-255 \leqq \chi_0 \leqq 255$

α=offset $-\pi \leqq \alpha \leqq \pi$.

5,799,106

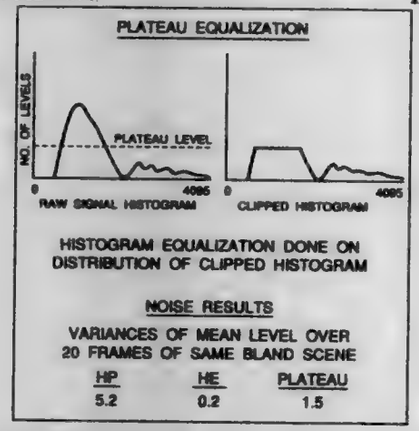
NOISE IMMUNE AUTOMATED CONTRAST CONTROL FOR INFRARED CAMERAS

Jonathan M. Mooney, Winchester; Jerry Silverman, Newton, and Steven DiSalvo, Chelmsford, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 728,907, Jul. 9, 1991, Pat. No. 5,249,241. This application Aug. 27, 1993, Ser. No. 113,872

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—172 **11 Claims**



1. An IR signal processing system which provides automatic contrast control of IR data signals to produce adjusted optimized display signals which have adjusted contrast and are immune to flicker noise, said IR signal processing system comprising:

a means for producing said IR data signals;

a means for adjusting contrast of said IR data signals to output said adjusted display signals with plateau equalization in levels of intensity thereby, said adjusting means being electrically connected with said producing means to receive said IR data signals therefrom, said adjusting means being capable of selectively identifying peaks in the IR data signals and clipping off said peaks to produce thereby an enhanced contrast in said adjusted display signals; and

a means for displaying said adjusted display signals, said displaying means being electrically connected with said adjusted means to receive said adjusted display signals therefrom.

5,799,107

CONTROL SYSTEM FOR PEN-INPUT TYPE COMPUTER

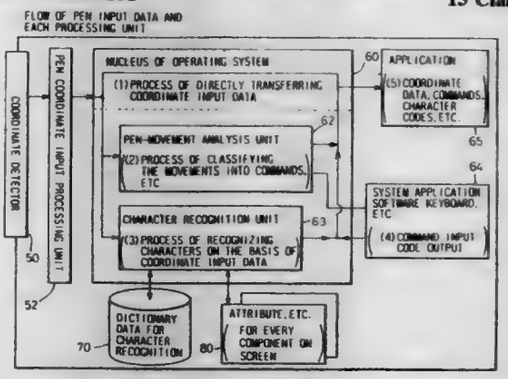
Kunio Fukuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 251,269, May 31, 1994, abandoned. This application Oct. 15, 1997, Ser. No. 950,675

Claims priority, application Japan, May 31, 1993, 5-128603

Int. Cl.[6] G06K *9/00*; G09G *5/22*

U.S. Cl. 382—181 **15 Claims**



1. A control system for a pen-input type computer, which allows hand-written characters to be input by moving at least one input pen on a screen, and which allows said hand-written characters to be displayed on said screen;

wherein said control system comprises a designation means for designating character kinds and character codes for each of a plurality of fields constituting said screen, that are registered in advance, as an input field attribute of said pen-input type computer which is characteristic of each of said fields and which can be input to each of said fields;

wherein a combination of recognition candidates necessary for recognizing the thus input hand-written characters and the thus registered character kinds and character codes as said input field attribute can be additionally registered;

wherein said input field attribute can be customized on the basis of said combination;

wherein said designation means is constituted by a central processing unit of said pen-input type computer;

wherein said designation means is adapted to designate whether said input field attribute that is to be registered for a recognition process of said hand-written characters is a complete list, or is to be preferentially processed;

wherein, in the case in which said input field attribute is a complete list, the number of said recognition candidates is limited so as to improve the speed of said recognition process; and

wherein, in the case in which said input field attribute is to be preferentially processed, characters having a low degree of appearance are deleted from a registration list of said input field attribute, so as to curtail the size of a memory region necessary for registering said input field attribute, and also to improve the speed of said recognition process by reducing the number of said recognition candidates with the selection of

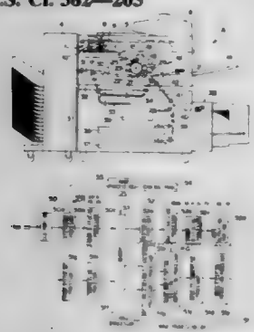
recognition candidates having higher priority among all the recognition candidates.

5,799,108

IMAGE DECORATIVE PROCESSING APPARATUS

Toshihiro Okahashi, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 19, 1995, Ser. No. 545,061
Claims priority, application Japan, Oct. 20, 1994, 6-254985
Int. Cl.[6] G06F *15/72*
U.S. Cl. 382—205 **12 Claims**



1. An image processing apparatus comprising:

a mode-setup means for designating an image processing mode, wherein said mode-setup means sets up any one of image processing modes including shadowing, hollowing and half-toning modes or a combined image processing mode of the three;

a determining means for determining target pixel or pixels to be compared to an observed pixel, in accordance with an image processing mode designated;

a comparing means for comparing the density between said observed pixel and said target pixel or pixels;

a converting means for converting the density of said target pixel or pixels based on the result of the comparison;

a matrix-setup means for designating an arbitrary observed pixel and setting up a matrix of pixels containing said observed pixel at a center thereof and candidate pixels for target pixels around said observed pixel;

a means for selecting a target pixel or pixels from said candidate pixels around said observed pixel, in accordance with a setup mode;

a means for repeatedly operating each means of image processing over the whole image information to generate image information; and

a means for forming an image by making logical operations between said image information generated by the image processing and information on the original image.

5,799,109

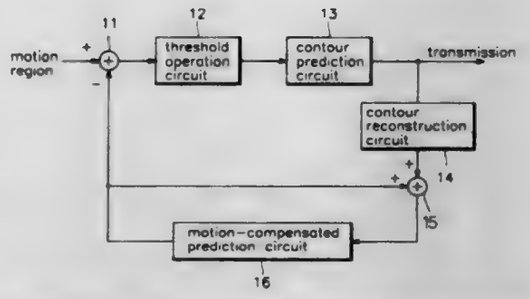
OBJECT-BY SHAPE INFORMATION COMPRESSION APPARATUS AND METHOD AND CODING METHOD BETWEEN MOTION PICTURE COMPENSATION FRAMES

Jae-Won Chung, Seoul; Jin-Hak Lee, Kyonggi-Do; Joo-Hee Moon, and Jae-Kyoon Kim, both of Seoul, all of Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Kyonggi-Do, Rep. of Korea

Filed Jun. 7, 1995, Ser. No. 478,558
Claims priority, application Rep. of Korea, Dec. 29, 1994, 94-38898; Dec. 29, 1994, 94-38899; Dec. 29, 1994, 94-38901
Int. Cl.[6] G06K *9/00*
U.S. Cl. 382—243 **25 Claims**

1. An object-by shape information compression apparatus comprising:

motion compensation prediction means provided for motion-compensation-predicting shape information of a current frame using the shape information of a previous frame and motion information of a current frame;



subtraction means for computing a predicted error region by subtracting the shape information predicted by the motion compensation prediction means from a current motion region;

threshold operation means for performing a threshold operation on the isolated predicted error region obtained by the subtraction means for transmitting visually perceptible information;

contour prediction means for compression-coding shape information by predicting a contour in the predicted error region obtained from the threshold operation means;

contour reconstruction means for reconstructing an isolated predicted error region from the contour coded by the prediction means; and

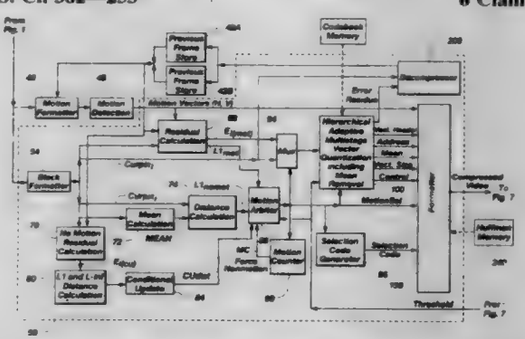
addition means for adding an isolated predicted error region obtained by the contour reconstruction means and the shape information of a motion-compensated and -predicted current frame.

5,799,110

HIERARCHICAL ADAPTIVE MULTISTAGE VECTOR QUANTIZATION

Paul D. Israelsen, North Logan, and Chien-Min Huang, Logan, both of Utah, assignors to Utah State University Foundation, North Logan, Utah

Filed Nov. 9, 1995, Ser. No. 555,434
Int. Cl.[6] G06K *9/36*
U.S. Cl. 382—253 **6 Claims**



1. An hierarchical adaptive multistage vector quantizer to supply compressed video signals to a transmission line, said hierarchical adaptive multistage vector quantizer comprising:

means for receiving a vector I having a particular magnitude reflective of a portion of a video signal;

mean removal means for performing mean removal on vector I to provide a mean removed vector I_M;

an vector quantizer having "N" stages in which N equals 3 or more, the first stage performing vector quantization (VQ) and inverse vector quantization (YQ^{-1}) of the vector I_M to obtain a residual vector E_1, the (N−1)th second stage performing VQ and inverse vector quantization (VQ^{-1}) of the residual

vector E_1 to obtain a residual vector E_{N-1} and the Nth stage performing vector quantization (VQ) and inverse vector quantization (VQ^{-1}) of the residual vector EN_{N-1} to obtain residual vector E_N;

comparison means for comparing each vector(I_M, E_1, E_{N-1}, . . . E_N) to a threshold when each such vector is generated; and

vector reduction means connected to be operative when residual vector E_N is greater than said threshold for selecting a subsection of vector I for processing by the vector quantizer and for processing the comparison means until a residual vector (r_s), is equal to or less than said threshold; and

means to generate and transmit to a transmission line an address representing said residual vector r_s when said residual vector (r_s) is equal to or less than said threshold.

5,799,111

APPARATUS AND METHODS FOR SMOOTHING IMAGES

Rami Guissin, Vitkin, Israel, assignor to D.V.P. Technologies, Ltd., Bitkin, Israel

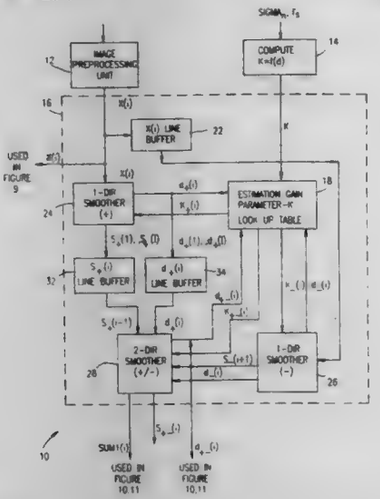
PCT No. PCT/US93/12072, § 371 Date Sep. 6, 1995, § 102(e) Date Sep. 6, 1995, PCT Pub. No. WO94/14138, PCT Pub. Date Jun. 23, 1994

Continuation-in-part of Ser. No. 896,682, Jun. 10, 1992, Pat. No. 5,442,462. This PCT application Dec. 10, 1993, Ser. No. 454,239

Claims priority, application Israel, Dec. 13, 1992, 104076

Int. Cl.[6] G06K *9/44*; **G06T** *5/00*; **H04N** *1/409*

U.S. Cl. 382—254 **20 Claims**



1. A method for acuity-preserving image smoothing comprising:

proceeding along at least a portion of a first dimension of received image pixels in a first direction and computing a first sequence of estimated pixel values from the received image pixels defined along the first direction;

proceeding along at least a portion of the first dimension of received image pixels in a second direction and computing a second sequence of estimated pixel values from the received image pixels defined along the second direction; and

for each individual pixel along the first dimension, computing an improved estimated pixel value for the individual pixel based on a data dependent combination of at least estimated pixel values in the first and second sequences,

wherein at least one of the computing steps takes into account image derived information other than the pixel value of the

5,799,112

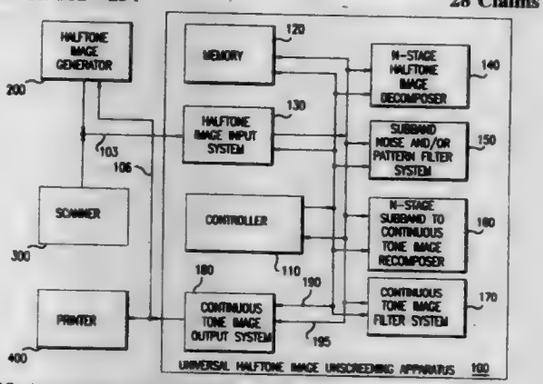
METHOD AND APPARATUS FOR WAVELET-BASED UNIVERSAL HALFTONE IMAGE UNSCREENING

Ricardo L. de Queiroz, Fairport; Jiebo Luo, Rochester, and Zhigang Fan, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1996, Ser. No. 708,014

Int. Cl.[6] G06T *5/00*; **H04N** *1/405*

U.S. Cl. 382—254 **28 Claims**



18. An apparatus for converting a halftone image into a continuous tone image, comprising:

decomposing means for decomposing the halftone image into a plurality of subband images;

means for selectively removing at least one of noise and patterns from the plurality of subband images; and

recomposing means for recomposing the plurality of subband images into the continuous tone image.

5,799,113

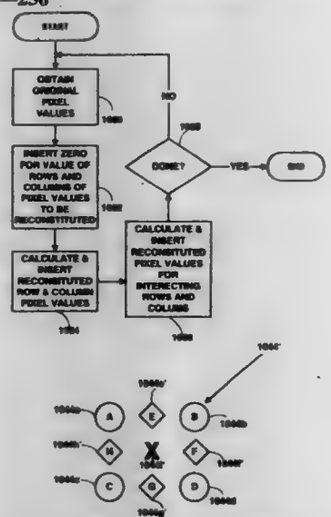
METHOD FOR EXPANDING CONTRACTED VIDEO IMAGES

Ming-Chieh Lee, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jan. 19, 1996, Ser. No. 588,951

Int. Cl.[6] G06K *9/40*

U.S. Cl. 382—256 **25 Claims**



1. A method of expanding a contracted image from a contracted set of original pixels to an expanded set of pixels representing an approximation of an original image, comprising:

identifying locations for a plurality of reconstituted pixel locations within the contracted set of original pixels;

for each of a plurality of said identified locations, applying non-linear median filtering to a subset of the contracted set of original pixels therearound to determine a reconstituted pixel

value for said identified location, said subset including each original pixel within a predetermined distance of said identified location; and

assigning the first reconstituted pixel values to said identified locations;

wherein each original pixel in the expanded set of pixels that is within said predetermined distance of an identified location is used in determining a reconstituted pixel value for said location, and wherein the expanded set of pixels includes reconstituted pixels produced by the foregoing method, and original pixels not processed by the foregoing method.

5,799,114

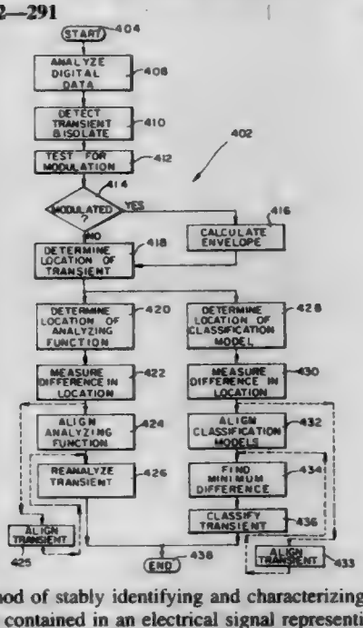
SYSTEM AND METHOD FOR STABLE ANALYSIS OF SAMPLED TRANSIENTS ARBITRARILY ALIGNED WITH THEIR SAMPLE POINTS

Martin Joseph Dowling, Norristown, Pa., assignor to Liberty Technologies, Inc., Conshohocken, Pa.

Continuation-in-part of Ser. No. 58,113, May 5, 1993, Pat. No. 5,517,585. This application Feb. 28, 1996, Ser. No. 608,381

Int. Cl.[6] G06K *9/36;9/00*

U.S. Cl. 382—291 **31 Claims**



1. A method of stably identifying and characterizing a transient data pattern contained in an electrical signal representing a physical event, a sampled representation of the electrical signal comprising a first data set having a plurality of sample points, wherein alignment of the sample points with the transient data pattern is arbitrary, the method comprising the steps of:

(a) detecting and isolating the transient data pattern in the first data set;

(b) determining a location of the detected and isolated transient data pattern in the first data set;

(c) measuring a difference between the location of the detected and isolated transient data pattern and a predetermined location of a predefined mathematical operator at a point of optimal alignment, the predefined mathematical operator including preselected parameters;

(d) adjusting the preselected parameters of the predefined mathematical operator in accordance with the measured location difference such that the adjusted mathematical operator is now aligned with the detected and isolated transient data pattern at the point of optimal alignment;

(e) analyzing the first data set using the aligned mathematical operator; and

(f) characterizing the detected and isolated transient data pattern to identify the physical event causing the transient data pattern.

5,799,115

IMAGE FILING APPARATUS AND METHOD

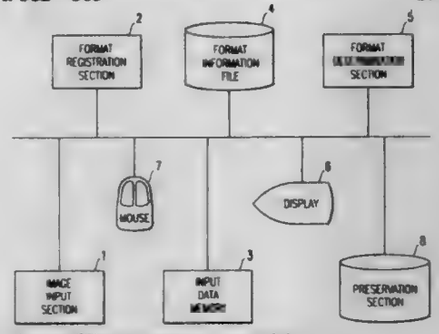
Mieko Asano; Hiroaki Kubota, and Shigeyoshi Shimotsuji, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 11, 1996, Ser. No. 612,801

Claims priority, application Japan, Mar. 16, 1995, 7-057633

Int. Cl.[6] G06K *9/54*

U.S. Cl. 382—305 **17 Claims**



1. An image filing apparatus, comprising:

image input means for inputting image data of a new form, wherein said new form includes an input format which includes a plurality of input frames;

format registration means for previously registering a plurality of sample formats from a plurality of sample forms in a Hash table corresponding to a size of the sample format, wherein each of said plurality of sample formats includes a plurality of sample frames and wherein a center point of each said plurality of sample frames is written in the Hash table;

format discrimination means for extracting a center point of each of said plurality of input frames, for writing the center point of each of said plurality of input frames in the Hash table, for counting the number of center points of each of said plurality of input frames corresponding to said center points of each of said plurality of sample frames of each of said plurality of sample formats, and for selecting the sample format having the largest number of center points corresponding to said center points of said input format; and

preservation means for storing the image data of the new form by using the selected sample format.

5,799,116

ELECTROMAGNETIC WAVE-TO-OPTICAL SIGNAL CONVERTING AND MODULATING DEVICE AND A COMMUNICATION SYSTEM USING THE SAME

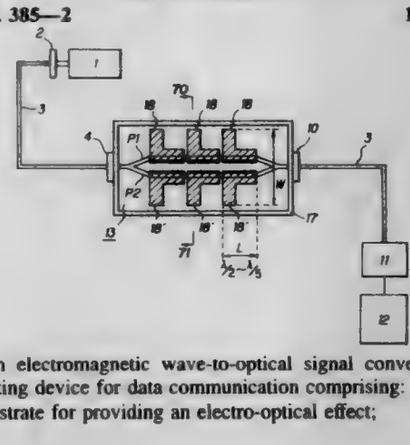
Takehiro Yamamoto, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 29, 1996, Ser. No. 688,286

Claims priority, application Japan, Aug. 8, 1995, 7-201989

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—2 **19 Claims**



1. An electromagnetic wave-to-optical signal converting and modulating device for data communication comprising:

a substrate for providing an electro-optical effect;

at least a pair of optical waveguide paths which are formed on said substrate and arranged in parallel to each other and are joined at their ends;

electrodes which are formed along said optical waveguide paths for providing an antenna function for detecting electric field signals around a external to the device;

a light supplying means for supplying light to said optical waveguide paths; and

a light signal receiving means for detecting light outputted from said optical waveguide paths and processing it,

wherein the light which is passing through said waveguide paths and the device is directly modulated with an electric field signal carrying information located in a space external to the device.

5,799,117

INTEGRATED OPTICAL STRUCTURAL ELEMENT, AND METHOD OF PRODUCING THE SAME

Hans Kragl, Ober-Ramstadt, and Engelbert Strake, Ober-Ramstdt, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

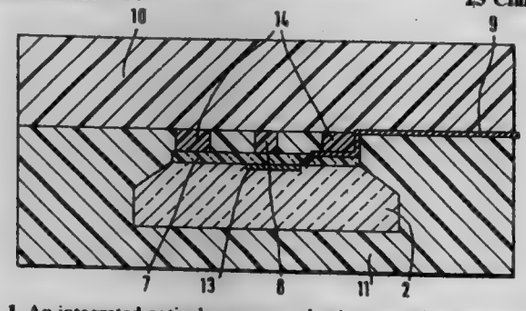
PCT No. PCT/DE95/00056, § 371 Date Sep. 6, 1996, § 102(e) Date Sep. 6, 1996, PCT Pub. No. WO95/19581, PCT Pub. Date Jul. 20, 1995

PCT Filed Jan. 18, 1995, Ser. No. 663,209

Claims priority, application Germany, Jan. 18, 1994, 44 01 219.5

Int. Cl.[6] G02B *6/10*

U.S. Cl. 385—14 **25 Claims**



1. An integrated optical component having an optical component (2) coupled to a waveguide (8), wherein the optical component (2) and the waveguide (8) are embedded in a moldable material, characterized in that a buffer layer (7) for improving coupling is disposed between an active zone (13) of the optical component (2) and the waveguide (8), and the integrated optical component has a fiber guiding groove connected with the waveguide (8).

5,799,118

INTEGRATED OPTICAL MULTIPLEXER-AND-DEMULTIPLEXER

Masahiro Ogusu, Tokyo, and Shigeru Ohshima, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 19, 1996, Ser. No. 684,212

Claims priority, application Japan, Jul. 28, 1995, 7-193454

Int. Cl.[6] G02B *6/12*

U.S. Cl. 385—14 **12 Claims**

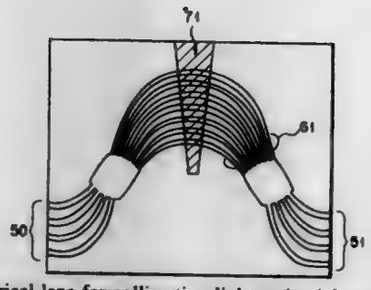
1. An integrated optical multiplexer-and-demultiplexer for use in wavelength multiplex optical communication, comprising:

an arrayed waveguide;

a lens secured to one end of said arrayed waveguide;

a diffraction grating opposing said lens;

an optical delay portion between said lens and said diffraction grating, which imparts an optical band-pass characteristic and which is made of one of air and a light-transmitting medium composed of substances exhibiting a minimum temperature coefficient to an optical length; and



a cylindrical lens for collimating light emitted from said lens.

5,799,119

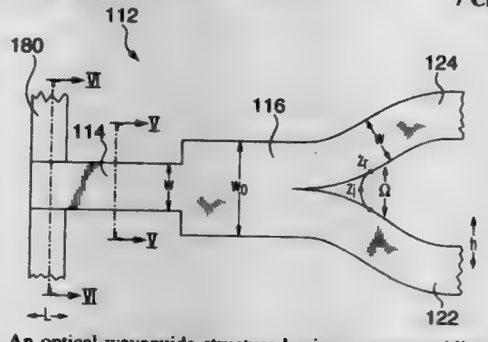
COUPLING OF STRONGLY AND WEAKLY GUIDING WAVEGUIDES FOR COMPACT INTEGRATED MACH ZEHNDER MODULATORS

Claude Rolland, Ottawa, and Jun Yu, Stittsville, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 3, 1996, Ser. No. 675,757

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—28 **7 Claims**



1. An optical waveguide structure having a strong guiding section and a weakly guiding section coupled by an intermediate section, the intermediate section having a tapered structure to provide gradually changing mode confinement between the weakly guiding section and strongly guiding section and improve coupling efficiency between the weakly and strongly guiding sections.

5,799,120

WAVEGUIDE TYPE WAVELENGTH MULTIPLEXING/DEMULTIPLEXING MODULE

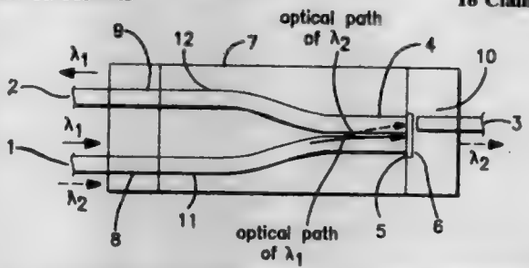
Kazuhiko Kurata, and Naoki Kimura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 3, 1996, Ser. No. 759,748

Claims priority, application Japan, Dec. 4, 1995, 7-315385

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—45 **18 Claims**



1. A waveguide type wavelength multiplexing/demultiplexing module comprising:

a common waveguide for conducting first signal light having a first wavelength and second signal light having a second wavelength;

common light input/output means coupled to said common waveguide;

a substrate containing a wavelength multiplexing/demultiplexing unit for multiplexing/demultiplexing said first signal light and said second signal light;

a first waveguide for conducting said first signal light;

first light input/output means optically coupled to said first waveguide; and

second light input/output means for inputting/outputting said second signal light; wherein:

said light multiplexing/demultiplexing unit includes a directional coupling type wavelength multiplexing/demultiplexing device constituted by two sets of waveguides connected to said first waveguide and said common waveguide respectively;

said directional coupling type light synthesizing/separating device is comprised of:

a first edge surface perpendicular to a waveguide for constituting a directional coupling unit at a position equal to a half of a complete coupling length with respect to said first signal light in said directional coupling unit; and

wavelength selecting means arranged at said first edge surface, for reflecting said first signal light and for passing therethrough said second signal light; and

said second light input/output means is comprised of coupling means for optically being coupled to said second signal light at said first edge surface.

5,799,121

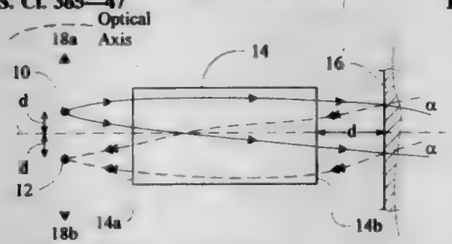
MULTI-PORT OPTICAL DEVICE

Gary S. Duck, Nepean, and Yihao Cheng, Kanata, both of Canada, assignors to JDS Fitel Inc., Nepean, Canada

Filed Feb. 14, 1997, Ser. No. 800,061

Int. Cl.[6] G02B *6/26;6/32*

U.S. Cl. 385—47 **18 Claims**



1. An optical device comprising:

a GRIN lens having a first end face and a second end face;

an input port disposed at a first location adjacent to and spaced from the first end face;

an output port disposed at a second location, adjacent to and spaced from the first end face;

an at least partially reflective surface disposed at a third location adjacent to and spaced from the second end face of the GRIN lens, wherein the optical distance between the input port and the first end face of the GRIN lens is substantially the same as the optical distance from the second end face of the GRIN lens and the at least partially reflective surface.

5,799,122

MULTIFIBER OPTICAL CONNECTOR

Myung-Yung Jeong; Sang-Ho Park; Oh-Gone Chun; Seung-Ho Ahn; Tae-Goo Choy, all of Daejeon, and Hak-Seok Kim, Kyungsangbuk-Do, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, and Korea Telecommunication Authority, Seoul, both of Rep. of Korea

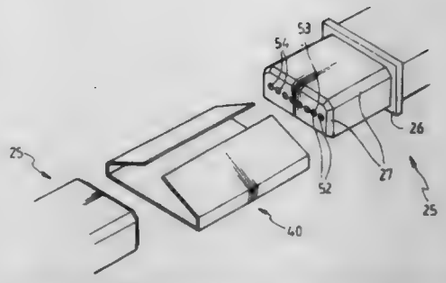
Filed Nov. 19, 1996, Ser. No. 746,978

Claims priority, application Rep. of Korea, Aug. 27, 1996, 96-35750

Int. Cl.[6] G02B *6/38*

U.S. Cl. 385—59 **8 Claims**

1. In a multifiber optical connector for connecting an optical cable and at least one optical transmitter, the improvement comprising:



an adaptor including openings, a pass-through hole and engaging holes;

a plug, which engages the openings including a through hole, into which optical fibers are inserted, formed in a central portion of the plug, an engaging portion having an engaging jaw portion for connecting the plug to the adapter and formed at one end of the plug, a plug housing for receiving a body of the plug;

a ferrule, which is disposed in one end of the plug, having a plurality of holes into which a core of the optical fibers are inserted to provide protection and alignment;

an optical fiber alignment device, inserted into the pass through hole for surrounding an outer portion of the ferrule disposed at one end of the plug inserted into the adapter and for applying forces to the ferrule to align the optical fibers inserted into the ferrule; and

an optical cable protector surrounding an outer portion of the optical cable connected to the plug for protecting against breakage of the optical cable.

5,799,123

DISPERSION COMPENSATING FIBER

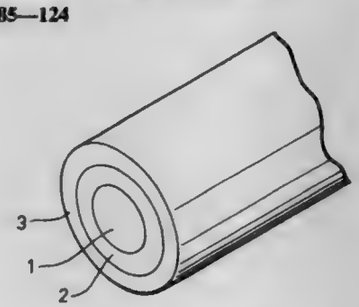
Akira Oyobe, Yokohama, and Atsushi Umeda, Ichihara, both of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1996, Ser. No. 732,609

Claims priority, application Japan, Oct. 20, 1995, 7-272443

Int. Cl.[6] G02B *6/02*

U.S. Cl. 385—124 **5 Claims**



1. A dispersion compensating fiber comprising.

a center core in which a first dopant is doped substantially uniformly,

an outer core provided at an outer periphery of said center core, said first dopant being doped in said outer core so as to decrease gradually toward an outer periphery of said outer core, and

a clad provided at the outer periphery of said outer core, said clad being doped with a second dopant,

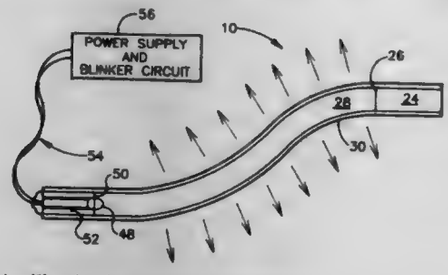
wherein said outer core is also doped with said second dopant so that a viscosity on at least the outer periphery of said outer core is substantially equal to a viscosity of said clad.

5,799,124

ILLUMINATING SYSTEM AND METHOD FOR SPECIALIZED AND DECORATIVE LIGHTING USING LIQUID LIGHT GUIDES

Carl J. Zorn; Brian J. Kross, both of Yorktown; Stanislaw Majewski, Grafton, and Randolph F. Wojcik, Yorktown, all of Va., assignors to Southeastern Univ. Research Assn., Inc., Newport News, Va.

Filed May 15, 1996, Ser. No. 647,677
Int. Cl.[6] G02B 6/02; F21V 7/04
U.S. Cl. 385—125 15 Claims



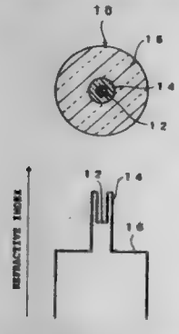
1. An illumination system comprising:
a flexible plastic tube sheath having a first end, a second end, and an inside surface with a first index of refraction and being transparent or translucent over at least a portion of said sheath;
a transparent liquid core filling said sheath having a second index of refraction which is greater than said first index of refraction;
a first electrically activated light source in direct contact with said liquid core;
a first seal for sealing said first electrically activated light source in said first end of said sheath in a liquid tight seal;
a second light source at said second end of said sheath;
a second seal for sealing said second end of said sheath in a liquid tight seal; and
a light extraction device for causing light to be emitted from said sheath at said transparent or translucent portion thereof.

5,799,125

RARE EARTH DOPED OPTICAL FIBER

Shinya Inagaki, Kawasaki, and Takeshi Sumiya, Sapporo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 14, 1997, Ser. No. 801,807
Claims priority, application Japan, Sep. 3, 1996, 8-233473
Int. Cl.[6] G02B 6/22
U.S. Cl. 385—127 4 Claims



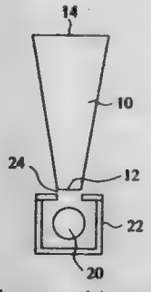
1. A rare earth doped optical fiber comprising:
a first core doped with a rare earth element, said first core having a relative index difference ranging from about 0.76% to about 1.5%;
a second core surrounding said first core, said second core having a relative index difference of about 1.8% or more; and
a clad surrounding said second core.

5,799,126

LIGHT GUIDE DEVICE, LIGHT SOURCE DEVICE, AND LIQUID CRYSTAL DISPLAY DEVICE

Shinpei Nagatani; Fumiaki Yamada, and Motohiko Fukuhara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 265,678, Jun. 24, 1994. This application Apr. 21, 1995, Ser. No. 426,742
Claims priority, application Japan, Aug. 3, 1993, 5-192585
Int. Cl.[6] G02B 6/00
U.S. Cl. 385—146 54 Claims



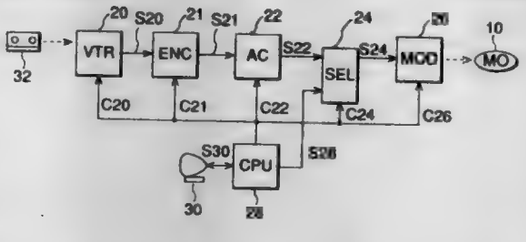
1. A light guide device comprising a pole-shaped transparent cylindrical body having an incident end surface receiving light from a light source, and an exit end surface at which the light exits in light rays, said exit end surface having a larger area than said incident end surface, at least one of the incident end surface and exit end being polygonal.

5,799,127

VIDEO DATA RECORDING APPARATUS AND VIDEO DATA REPRODUCING APPARATUS

Yasumasa Kodama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 5, 1996, Ser. No. 611,185
Claims priority, application Japan, Mar. 6, 1995, 7-045591
Int. Cl.[6] H04N 5/91; 5/917; 7/10
U.S. Cl. 386—46 10 Claims



2

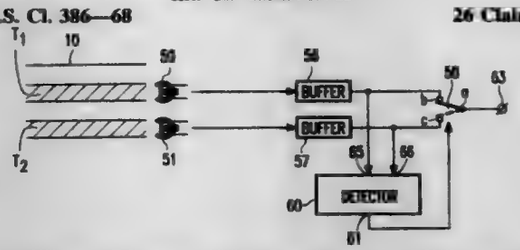
1. A video data recording apparatus comprising:
an input means for inputting a number of channels, said number of channels indicating a plurality of channels on which a plurality of series of digital video data are transmitted, said plurality of series of digital video data being identical to an original series of data and having a predetermined time difference:
a division means for dividing said digital video data into the same number of blocks of data as the number of said plurality of transmission channels and dividing said blocks of data into a predetermined number of sub-blocks of data;
an arrangement conversion means for converting the arrangement of said sub-blocks of data divided by the division means into another arrangement of sub-blocks of data in accordance with a predetermined sequence; and
a recording means for recording the converted arrangement of said sub-blocks of data from the arrangement conversion means and data indicating the number of channels to a recording medium.

5,799,128

STORAGE AND RETRIEVAL OF A DATA REDUCED DIGITAL VIDEO SIGNAL IN/FROM A MEMORY AND RECORDING AND REPRODUCTION OF A DATA REDUCED DIGITAL VIDEO SIGNAL ON A LONGITUDINAL RECORD CARRIER

Gijsbert J. Van Den Enden, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 12, 1995, Ser. No. 527,245
Claims priority, application European Pat. Off., Sep. 13, 1994, 94202627; Jun. 23, 1995, 95201714
Int. Cl.[6] H04N 5/783
U.S. Cl. 386—68 26 Claims



1. Method of recording a data reduced digital video signal in tracks on a longitudinal record carrier, the recording method comprises the steps:

receiving the data reduced digital video signal; and

writing the data reduced digital video signal in said tracks, the data reduced digital video signal comprising first signal blocks having data reduced video information obtained from video information of a picture that has been subjected to an intra-picture encoding step, and comprising second signal blocks having data reduced video information obtained from video information of a picture that has been subjected to an inter-picture encoding step,

characterized in that, the recording method further comprises the steps:

recording the data reduced video signal in tracks running in the longitudinal direction of the record carrier;

generating additional information having a relation to the sequence of the signal blocks in the data reduced video signal and supplying said additional information to at least a number of said first and second signal blocks;

supplying first signal blocks to first writing means for writing in at least one first track;

supplying second signal blocks to second writing means for writing in at least one second track; and

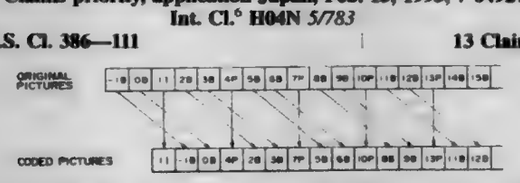
supplying second signal blocks to said first writing means for writing in said at least one first track, or supplying first signal blocks to said second writing means for writing in said at least one second track, so as to make the bit-rate of the signals written in said at least one first track and said at least one second track substantially constant.

5,799,129

METHOD AND APPARATUS FOR REPRODUCING CODED DATA IN WHICH THE CODED DATA IS DECODED IN REVERSE ORDER OF DISPLAY

Akihiro Muto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 13, 1996, Ser. No. 600,687
Claims priority, application Japan, Feb. 15, 1995, 7-049279
Int. Cl.[6] H04N 5/783
U.S. Cl. 386—111 13 Claims



1. A method of reproducing coded data from a recording medium, wherein said coded data is comprised of a predetermined unit group of frames composed of intra-frame coded (I-picture) data, forward predictive coded (P-picture) data and bidirectionally predictive coded (B-picture) data, said method comprising the steps of:

selecting, for decoding in a reverse reproduction mode, a portion of said coded data from said unit group, including only a selected portion of said B-picture data of said unit group;

successively decoding from said selected portion of coded data, when in said reverse reproduction mode, I-picture and consecutive P-picture data, intermittently decoding remaining P-picture data, and intermittently decoding the selected B-picture data of said unit group; and

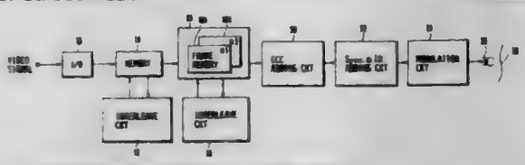
outputting the decoded data in said reverse reproduction mode in a reverse order of an original picture sequence absent non-selected B-picture data of said unit group.

5,799,130

VIDEO SIGNAL RECORDING APPARATUS

Hidenori Hoshi, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 208,483, Mar. 9, 1994, Pat. No. 5,629,811, which is a continuation of Ser. No. 90,247, Jul. 9, 1993, abandoned, which is a continuation of Ser. No. 956,599, Oct. 5, 1992, abandoned, which is a continuation of Ser. No. 427,327, Oct. 25, 1989, abandoned. This application Dec. 13, 1996, Ser. No. 766,517
Claims priority, application Japan, Oct. 31, 1988, 63-275254
Int. Cl.[6] H04N 5/926; 5/917
U.S. Cl. 386—124 9 Claims



1. A video processing device, comprising:

(a) transposing means for transposing input digital video data of successive pictures between first and second pictures which are successive in a unit of a data block composed of the data of a plurality of pixels which are two-dimensionally arranged in the picture;

(b) processing means for processing transposed video data output from said transposing means in a unit of a data group composed of a plurality of the data blocks which are equally dispersed in the picture; and

(c) recording means for recording processed video data output from said processing means on parallel tracks formed on a recording medium, a substantial half of the video data recorded on each track being the video data of the first picture and another substantial half of the video data recorded on each track being the video data of the second picture.

5,799,131

SPEECH CODING AND DECODING SYSTEM

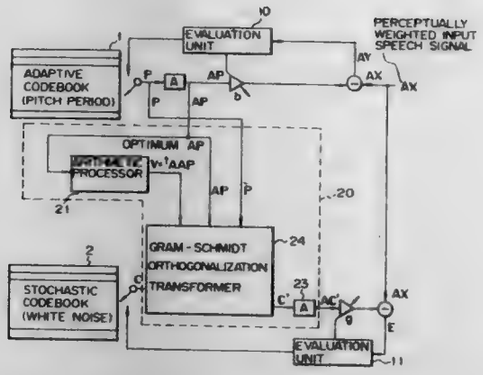
Tomohiko Taniguchi, Yokohama, Japan, and Mark Johnson, Cambridge, Mass., assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 574,782, Dec. 19, 1995, abandoned, which is a continuation of Ser. No. 357,777, Dec. 16, 1994, abandoned, which is a continuation of Ser. No. 180,499, Jan. 12, 1994, abandoned, which is a continuation of Ser. No. 716,865, Jun. 18, 1991, abandoned. This application Mar. 3, 1997, Ser. No. 811,451
Claims priority, application Japan, Jun. 18, 1990, 2-161041
Int. Cl.[6] G10L 9/16
U.S. Cl. 395—2.13 5 Claims

1. A speech coding and decoding system comprising:

an adaptive codebook storing therein a plurality of pitch prediction residual vectors;

a first evaluation unit, operatively connected to said adaptive codebook, to select from said adaptive codebook one of the pitch prediction residual vectors and a first gain corresponding thereto, to minimize a first power of a pitch prediction error



signal vector representing an error between the perceptually weighted input speech signal vector and a pitch prediction reproduced signal obtained by multiplying the first gain times a perceptually weighted pitch prediction residual vector formed by perceptually weighting the one of the pitch prediction residual vectors by a first perceptual weighting matrix;

arithmetic processing means for receiving the perceptually weighted input speech signal vector and for applying a perceptual weighting to the perceptually weighted input speech signal vector to calculate a perceptually weighted input speech signal vector;

a sparse-stochastic codebook storing therein thinned out code vectors representing white noise;

an orthogonalization transformer, operatively connected to said sparse-stochastic codebook and to receive the perceptually weighted pitch prediction residual vector, each of the thinned out code vectors and the perceptually weighted input speech signal vector from said arithmetic processing means, to perceptually weight and orthogonally transform the perceptually weighted pitch prediction residual vector into a resultant input speech signal vector and to find an autocorrelation value of an orthogonal vector orthogonal to the one of the pitch prediction residual vectors;

correlation means for finding a correlation value using the resultant input speech signal vector generated by said orthogonalization transformer and each of the thinned out code vectors; and

a second evaluation unit, operatively connected to said correlation means and to receive the perceptually weighted input speech signal, to select at least one of the thinned out code vectors and a second gain corresponding thereto, to minimize a second power of an error signal vector between the perceptually weighted input speech signal vector and the orthogonal vector, using the autocorrelation value and the correlation value to encode the perceptually weighted input speech signal vector as the one of the pitch prediction residual vectors, the code vector and the first and second gains corresponding thereto.

5,799,132

FUZZY LOGIC ELECTRONIC CONTROLLER AND ASSOCIATED METHOD FOR SETTING UP MEMORIES THEREOF

Gianguido Rizzotto, Civate; Rinaldo Poluzzi, and Andrea Pagni, both of Milan, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Feb. 24, 1993, Ser. No. 22,347

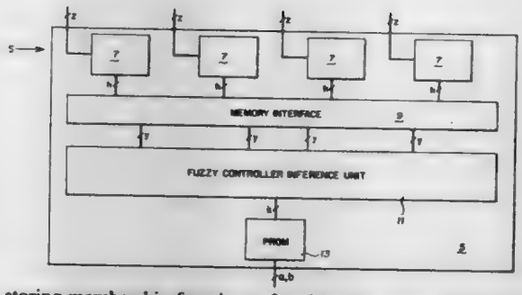
Claims priority, application European Pat. Off., Feb. 28, 1992, 92830095

Int. Cl.[6] G06G *7/00*

U.S. Cl. 395—3 **6 Claims**

1. A method of operating memories of a fuzzy logic electronic controller, comprising the steps of:

performing inference operations on membership functions of logic variables, said inference operations configured as IF-THEN rules, each rule including at least one front proposition and at least one rear implication;



storing membership functions of each logic variable of the front preposition of each rule in a respective storage module; and

storing membership functions of the rear implication of each rule in a single storage module, wherein the membership functions of the rear implication are stored as a plurality of memory words, each memory word including two discrete terms for calculating a center of gravity.

5,799,133

TRAINING PROCESS

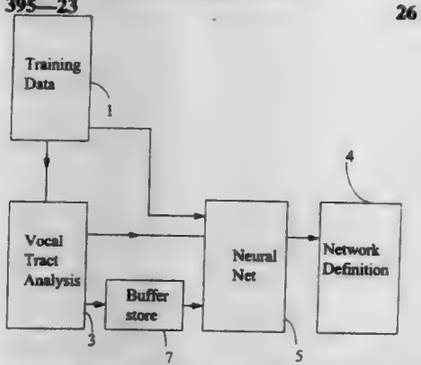
Michael P. Hollier, and Philip Gray, both of Ipswich, England, assignors to British Telecommunications public limited company, London, England

Filed Jun. 27, 1996, Ser. No. 671,931

Claims priority, application United Kingdom, Feb. 29, 1996, 9604315

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—23 **26 Claims**



1. A training apparatus for establishing a network definition function of a trainable processing apparatus for analysing a signal, the training apparatus comprising:

means for providing a training sequence, said training sequence comprising a first signal and a distorted version of the first signal;

analysis means for receiving the training sequence and generating a distortion perception measure indicating the extent to which the distortion would be perceptible to a human observer; and

means for applying the distortion perception measure to the trainable processing apparatus to determine the network function.

5,799,134

ONE DIMENSIONAL SYSTOLIC ARRAY ARCHITECTURE FOR NEURAL NETWORK

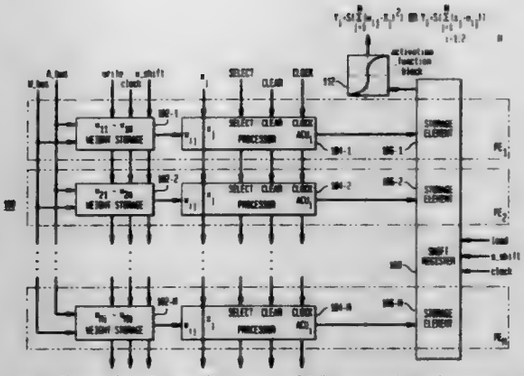
Tzi-Dar Chiueh, Taipei, and Hwai-Tsu Chang, Hsinchu, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation-in-part of Ser. No. 403,523, Mar. 13, 1995, abandoned. This application May 15, 1995, Ser. No. 441,128

Int. Cl.[6] G06F *15/18*

U.S. Cl. 395—24 **15 Claims**

1. A neural network circuit, comprising:



a one dimensional systolic array of M processing elements, the ith processing element, i=1,2, . . . ,M, comprising:

a weight storage circuit for storing synaptic weights w_{ij}, j=1,2, . . . ,N;

a processor for receiving a sequence of inputs x_j and for outputting an accumulated value:

$$g_i = \sum_j f(w_{ij}, x_j),$$

where $f(w_{ij}, x_j)$ equals $w_{ij}\,x_j$ if a weighted sum network is selected or equals $(w_{ij}-x_j)^2$ if a radial based network is selected, said processor comprising:

first and second multiplexers, each multiplexer receiving said select signal for determining whether said weighted sum or said radial based network is selected; and

a multiplier for multiplying the output from said first multiplexer with the output from said second multiplexer to generate said function $f(w_{ij}, x_j)$,

wherein said output of said first multiplexer being w_{ij} and the output of said second multiplexer being x_j when said select signal indicates a weighted sum network, and

wherein said output of said first multiplexer being $(w_{ij}-x_j)$ and the output of said second multiplexer being $(w_{ij}-x_j)$ when said select signal indicates a radial based network;

a storage element for storing g_i, said storage element being an ith storage element in a shift register comprising M storage elements; and

said one dimensional systolic array also comprising an activation function circuit for sequentially receiving said accumulated values g_i from said shift register and for outputting a sequence of values $Y_i=S(g_i)$, where S is an activation function.

5,799,135

ROBOT CONTROLLING METHOD AND APPARATUS USING LASER SENSOR

Fumikazu Terawaki, Yamanashi, Japan, assignor to Fanuc, Ltd., Minamitsuru-gun, Japan

Filed Jun. 22, 1995, Ser. No. 493,618

Claims priority, application Japan, Jun. 28, 1994, 6-167551

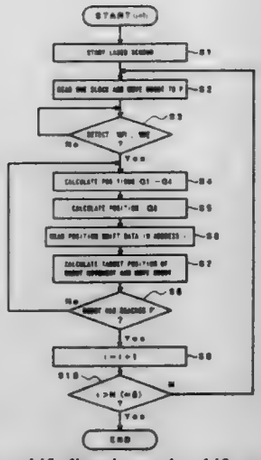
Int. Cl.° G06F *15/18*

U.S. Cl. 395—93 **11 Claims**

1. A method of controlling a robot by consecutively modifying a taught path designated by an operation program, using an output from a laser sensor which has a sensing area in the vicinity of and in a moving direction of a tool mounted on the robot, said method comprising the steps of:

(a) obtaining data representing a position of a workpiece by said laser sensor during a playback operation of the operation program to operate the robot;

(b) calculating a reference position for determining a target position for the robot movement based on said data obtained in said step (a);



(c) determining a shift direction and a shift amount with respect to said reference position in accordance with a position shift pattern designated by the operation program;

(d) calculating the target position by shifting said reference position in said shift direction determined in said step (c) and by said shift amount determined in said step (c); and

(e) modifying said taught path based on said target position determined in said step (d),

wherein said steps (a)–(e) are periodically executed.

5,799,136

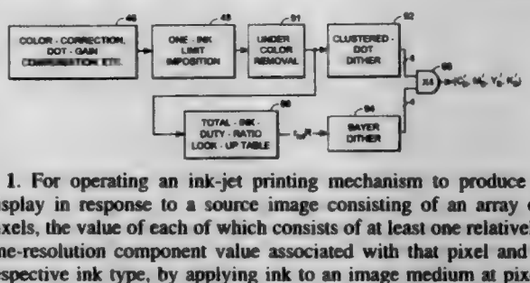
ON-LINE INK-DUTY REDUCTION

Chin-Hsin Li, San Jose; Andrei Pascovici, Mountain View; Joseph S. Shu, San Jose, and Dennis L. Chao, Mountain View, all of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 28, 1996, Ser. No. 652,651

Int. Cl.° G06F *15/00*

U.S. Cl. 395—109 **44 Claims**



1. For operating an ink-jet printing mechanism to produce a display in response to a source image consisting of an array of pixels, the value of each of which consists of at least one relatively fine-resolution component value associated with that pixel and a respective ink type, by applying ink to an image medium at pixel locations thereon associated with respective pixels in the source image, a method comprising the steps of, for each component value associated with a pixel:

A) performing a first half-toning operation on each component value associated with a pixel to generate a first half-tone output associated with that component value and indicating whether ink of the type associated with that component value is to be permitted to be deposited at the pixel location associated with the pixel with which that component value is associated;

B) performing a second half-toning operation on a duty-ratio value to produce a second half-tone output associated with the component value and indicating whether ink of the type associated with that component value is to be deposited at the pixel location with which that component value is associated; and

C) sending the printing mechanism instruction signals that specify applying ink of the type associated with that component value to the pixel location with which it is associated only if the first and second half-tone outputs associated with

that component value both indicate that ink of that type is to be permitted at that pixel location.

5,799,137

CLUSTERED DOT AND LINE MULTILEVEL HALFTONING FOR ELECTROGRAPHIC COLOR PRINTING

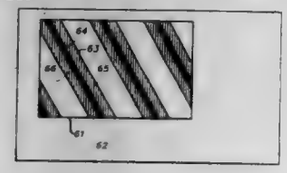
Dirk Broddin, Edegem, and Frank Deschuytere, Beveren, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

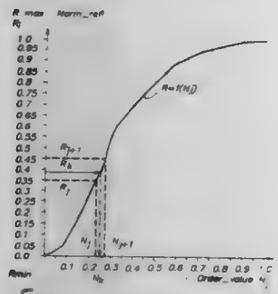
Division of Ser. No. 430,081, Apr. 27, 1995. This application Feb. 13, 1997, Ser. No. 801,600

Claims priority, application European Pat. Off., Apr. 27, 1994, 94201151.1

Int. Cl.[6] H04N *1/405*; **G06K** *15/02*

U.S. Cl. 395—109 **7 Claims**





1. A method to select a restricted set of L halftone cell types from an ordered set of halftone cell types comprising the following steps:

selecting a subset of halftone cell types Hj from said ordered set;

for each selected halftone cell type Hj from said subset, rendering a contiguous zone by repetitive rendering the same halftone cell Hj a plurality of times;

measuring the reflectance Rj integrated over said plurality of same halftone cells Hj;

dividing the range of measured reflectances Rj for all selected halftone cell types Hj from said subset in L−1 substantially equally sized reflectance intervals;

finding a halftone cell type Hk from the ordered set for each reflectance Rk using the measured reflectances Rj for the selected halftone cell types Hj;

defining the restricted set as being composed of the halftone cells Hk.

5,799,138

APPARATUS FOR INSTRUCTION-WORD-LINK COMPRESSION

Yukihiro Yoshida, Ikoma, Japan, assignor to B.E. Technology Co., Ltd., Osaka, Japan

Filed May 30, 1996, Ser. No. 655,758

Claims priority, application Japan, Jun. 1, 1995, 7-159853; Jan. 17, 1996, 8-024551

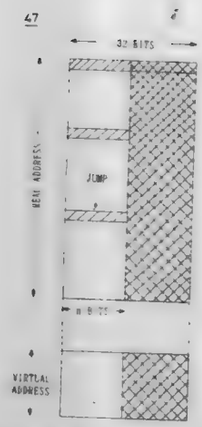
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—114 **15 Claims**

1. A digital data processing apparatus comprising:

a memory;

a code conversion section for assigning a virtual code for a duplicate code and converting said virtual code into a real code, said code conversion section having an address portion



and an instruction portion, wherein said memory issues an address to said code conversion section through a data transmission path;

a central processing unit for receiving an instruction from said instruction portion of said code conversion section;

a code inverse conversion section, having an instruction portion and an address portion, wherein said central processing unit accesses said instruction portion of said code inverse conversion section, and wherein said code inverse conversion section converts said instruction to an address which is outputted to said memory through said data transmission path.

5,799,139

IMAGE FORMATION PROCESSING SYSTEM

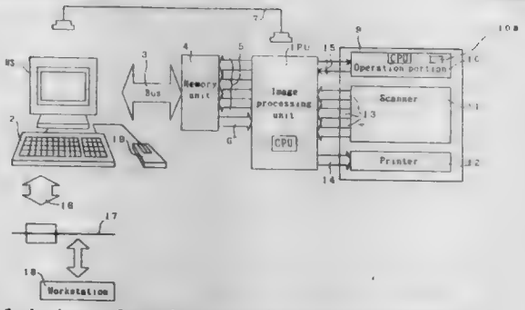
Haruo Yamamoto; Katsumi Amakawa; Shuji Hayashi; Masaya Fujimoto; Koichi Matsuo; Ryuichi Okumura, and Shinji Hayashi, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 237,791, May 4, 1994, abandoned. This application Apr. 10, 1997, Ser. No. 831,598

Claims priority, application Japan, May 12, 1993, 5-110331; May 13, 1993, 5-111489; May 14, 1993, 5-112005

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—114 **17 Claims**



1. An image formation processing system comprising:

an image forming unit;

an operation portion including a first central processing unit capable of controlling image formation by the image forming unit based on input data, the operation portion being provided in the image forming unit;

an image processing unit including a second central processing unit;

a system housing containing the image forming unit and the image processing unit; and

a workstation connected to the operation portion through the image processing unit, the workstation being physically remote from the system housing,

wherein data communication can be performed between the workstation and the image processing unit and between the image processing unit and the operation portion.

wherein image formation processing by the image forming unit can be controlled based on a command generated by operating the workstation,

wherein the data include copy condition data whereby the workstation provides copy condition data to the operation portion through the image processing unit,

wherein the workstation transmits a command to the image processing unit in accordance with a control operation performed by a user and wherein the image processing unit decodes the command, sets a condition of the operation portion in accordance with the command through a communication with the operation portion and notifies the workstation of a result thereof, and

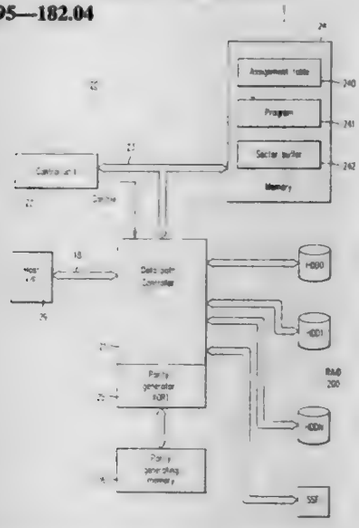
wherein the operation portion produces image forming unit controlling data of a same format as a format of data generated when a key on the operation portion is locally operated, in accordance with a condition setting request command generated at the workstation.

5,799,140

DISK ARRAY SYSTEM AND METHOD FOR STORING DATA

Hideoto Niijima, Tokyo-to; Nobuyuki Matsuo, Kusatsu, and Mayumi Shimada, Tokyo-to, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 426,329, Apr. 21, 1995, Pat. No. 5,650,969.
This application Mar. 10, 1997, Ser. No. 815,266
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.04 **3 Claims**



1. A solid state disk storage device comprising:

an external semiconductor storage device which is configured with semiconductor flash memory for which data stored therein can be erased as a block unit consisting of a plurality of sectors, and has independently writable clusters each of which consists of a group of block units;

a buffer of capacity equivalent to that of said cluster; and

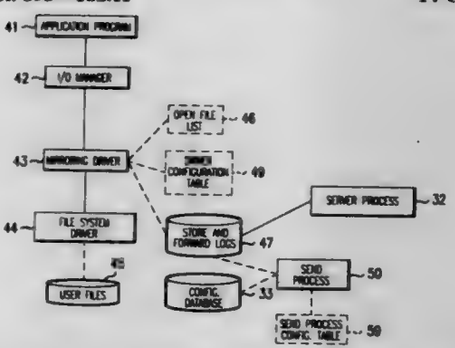
control means for writing in corresponding sectors in said buffer the same data as is written on said external semiconductor storage device when the data is written on said external semiconductor storage device, wherein said solid state disk storage device, responsive to a read request for sectors which have counterpart sectors in said buffer of said solid state disk storage device, executes read requests from said counterpart sectors in said buffer.

5,799,141

REAL-TIME DATA PROTECTION SYSTEM AND METHOD

Kenneth J. Galipeau, Randolf, and Winston Edward Lee, Somerset, both of N.J., assignors to Qualix Group, Inc., San Mateo, Calif.

Filed Jun. 9, 1995, Ser. No. 489,198
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—182.11 **14 Claims**



1. A data protection system comprising:

a. a local computer system containing one or more data files residing in a file system, which are accessed by at least one application program having no data protection code;

b. a remote computer system for storing back-up copies of at least one of the one or more data files, each of the back-up copies corresponding to one of the one or more data files;

c. a network connecting the local computer system and the remote computer system;

d. a mirroring driver that captures change information representing an individual change to a file from a selected subset of the one or more data files by the at least one application program; and

e. a file system driver on the local computer system that applies the individual chance to one of the one or more data files;

f. wherein the mirroring driver is attached to the file system driver; and

g. wherein the change information is transmitted from the local computer system across the network to the remote computer system substantially concurrently with the time the individual change is made on the local computer system.

5,799,142

DEBUGGING METHOD AND DEBUGGING SYSTEM FOR MULTI-TASK PROGRAMS

Koichi Toyoda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 527,007
Claims priority, application Japan, Sep. 12, 1994, 6-216974
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—183.14 **2 Claims**

1. A system for debugging multi-task programs, comprising:

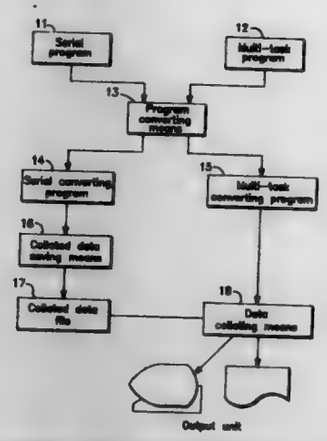
means for converting a serial program from which a multi-task program was generated, into a converted serial program containing an instruction to save a first array of data generated prior to the execution of a parallel loop, and an instruction to save a second array of data generated after the execution of said parallel loop;

means for converting said multi-task program into a converted multi-task program containing an instruction to save a third array of data generated prior to execution of a parallel loop, and an instruction to save a fourth array of data generated after execution of said parallel loop;

means for executing said converted serial program, thereby to generate said first and second data arrays;

means for saving at least said first and second data arrays;

means for executing said converted multi-task program, thereby to generate said third and fourth data arrays;



means for collating said first and third data arrays and said second and fourth data arrays, respectively; and

means for generating an output indicative of a lack of identity between said first and third or said second and fourth data arrays.

5,799,143

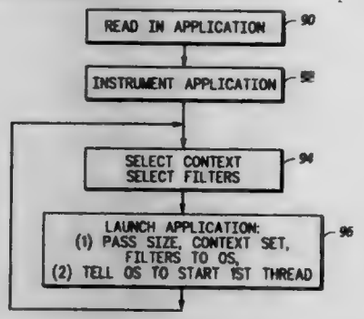
MULTIPLE CONTEXT SOFTWARE ANALYSIS

Farooq Butt; Roger Smith, and Katherine E. Stewart, all of Austin, Tex., assignors to Motorola, Inc., Schaumurg, Ill.

Filed Aug. 26, 1996, Ser. No. 703,261

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.14 **22 Claims**



1. A method for multiple context analysis of a software application in a computer system, comprising the steps of:

providing an instrumented software application;

selecting a context set to characterize a level of analysis to be applied to the instrumented software application;

launching the instrumented software application to produce an output for determining a usage of computer system resources by each context in the context set, wherein launching comprises:

establishing an analysis mode for enabling collection of intermediate data in accordance with the context set;

identifying a beginning of a context of the context set during execution of the instrumented software application;

allocating a memory area having a memory size requirement for storing intermediate data for the context of the context set;

providing an address for identifying the memory area for storing the intermediate data;

determining that the collection of the intermediate data is complete; and

transforming the intermediate data to produce the output for determining a usage of computer system resources by each context of a predetermined context set.

5,799,144

MICROCOMPUTER FOR RESOLVING PROBLEMS FOUND IN A PROGRAM STORED IN A ROM

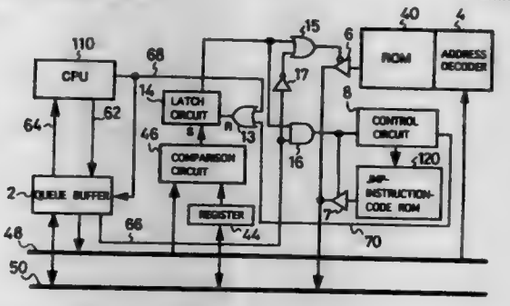
Masao Mio, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1996, Ser. No. 757,751

Claims priority, application Japan, May 31, 1996, 8-139138

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.14 **4 Claims**



1. A microcomputer comprising:

a queue buffer for prefetching each instruction of a program stored in a first ROM prior to execution of the instruction by a CPU, contents of said queue buffer being cleared by a branch-generation signal for indicating completion of execution of a branch instruction by said CPU;

a second ROM for storing an instruction for branching to an address space outside an address space of said first ROM; and

an address-information storing unit for storing address information,

said microcomputer further comprising a ROM-output switching unit for comparing address information stored in said address-information storing unit with contents of a program counter of said queue buffer, for enabling an operation to output data from said second ROM and disabling an operation to output data from said first ROM when said address information matches said contents, and for enabling an operation to output data from said first ROM and disabling an operation to output data from said second ROM when said branch-generation signal or an instruction-code-end signal indicating that an instruction has been output from said second ROM is input.

5,799,145

DISK DRIVE APPARATUS HAVING SECURITY FUNCTION USING PASSWORD

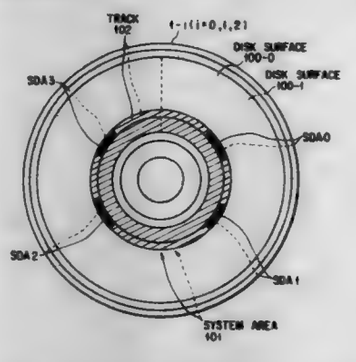
Hiroshi Imai, and Tasuku Kasebayashi, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 2, 1996, Ser. No. 691,551

Claims priority, application Japan, Dec. 25, 1995, 7336975

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—188.01 **10 Claims**



1. A disk drive apparatus having at least one disk capable of accessing to the disk when a set password is input to the disk drive apparatus, comprising:

at least two disk surfaces with plural password data areas arranged thereon among all disk surfaces;

means for writing password data to said plural password data areas, whereby the password data areas have a backup function;

effective password data area selecting means for selecting a predetermined number of password data areas each having a low read error rate as effective password data areas from said plural password data areas such that the predetermined number of password data areas are dispersed on said at least two disk surfaces;

a rewritable non-volatile memory;

registering means for writing position data of the predetermined number of effective password data areas selected by said effective password data area selecting means into said non-volatile memory; and

means for reading the password data based on said position data written in said non-volatile memory.

5,799,146

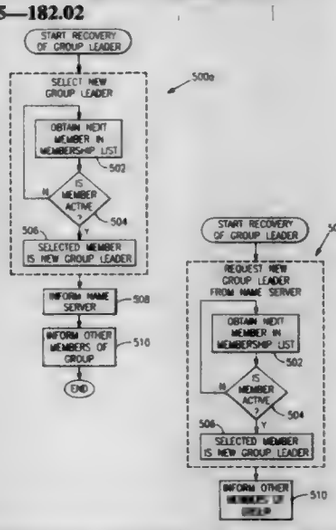
COMMUNICATIONS SYSTEM INVOLVING GROUPS OF PROCESSORS OF A DISTRIBUTED COMPUTING ENVIRONMENT

Peter Richard Badovinatz, Kingston; Tushar Deepak Chandra, Elmsford, both of N.Y.; Ajei Sarat Gopal, Fort Lee, N.J.; Orvalle Theodore Kirby, Pleasant Valley, and John Arthur Pershing, Jr., Buchanan, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1996, Ser. No. 640,374

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.02 **15 Claims**



1. A communications system for a distributed computing environment comprising:

means for sending a first message to a first group of processors and a second message to a second group of processors;

means for maintaining, by said first group of processors, said first message and, by said second group of processors, said second message;

said means for sending said first message comprising a first group leader of said first group of processors, said first group leader being adaptable to receive a request to multicast said first message, being adaptable to assign a sequence number to said first message providing a first ordered message, and being adaptable to multicast said first ordered message to said first group of processors;

means for recovering from a failure of said first group leader, said means for recovering comprising means for determining a new group leader; and

said means for determining comprising means for obtaining from a membership list ordered in sequence of joins of processors to said first group of processors said new group leader, said new group leader being a next processor in said membership list.

5,799,147

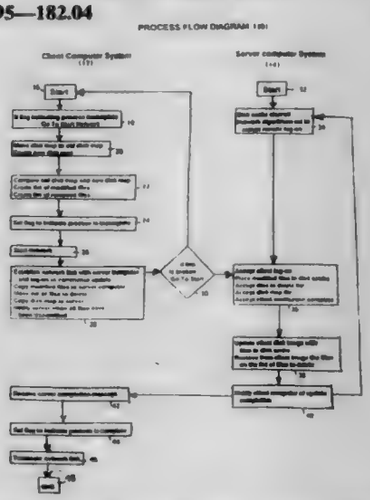
COMPUTER RECOVERY BACKUP METHOD

John P. Shannon, 46 Summer St., Yarmouth Port, Mass. 02675

Continuation of Ser. No. 325,485, Oct. 19, 1994, abandoned. This application Jun. 28, 1996, Ser. No. 670,873

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—182.04 **12 Claims**



1. A computer file data backup method which comprises:

a) providing at least one client computer having a client disk image composed of a plurality of client data files, having a set of selected attributes, on a client computer storage means;

b) providing by the client computer a client disk map composed of the attributes of the client data files;

c) providing a separate server computer adapted to be connected periodically to said client computer and having server computer storage means only to receive, and to store said client disk image as a client logical disk image;

d) transmitting from said client computer by a client said client disk image in logical form into said server computer storage means to provide a stored client logical disk image;

e) updating periodically by the client in said client computer said client disk map by comparing said client disk map with the previous client disk map to identify any client data file with additions, modifications or deletions occurring since the last update of the previous client disk map to provide a revised client disk map;

f) transmitting from the client computer and only receiving and storing in said storage means of said server computer, the added or modified client data files and removing said deleted client data files to provide a revised updated client logical disk image;

g) acknowledging between said server computer and client computer the completing of the transmission;

h) storing in said server computer said revised updated client logical disk image; and

i) disconnecting the transmission link between said server computer and said client computer until the next client-initiated updating of said revised updated client logical disk image.

5,799,148

SYSTEM AND METHOD FOR ESTIMATING A MEASURE OF CONFIDENCE IN A MATCH GENERATED FROM A CASE-BASED REASONING SYSTEM

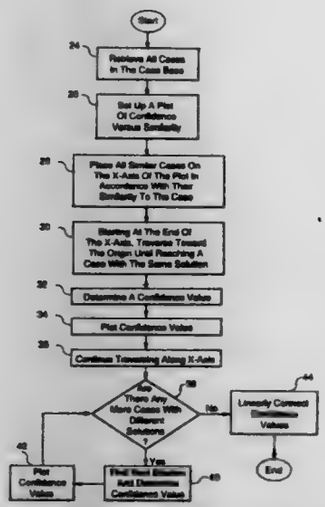
Paul Edward Cuddihy, Schenectady, and William Estel Cheetham, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 23, 1996, Ser. No. 772,451

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.02 **12 Claims**

4. A method for estimating a measure of confidence in a match generated from a case-based reasoning system, the method comprising the steps of:



storing a plurality of existing cases, each of the plurality of existing cases having similarity information on the similarity to other existing cases in the case base;

retrieving existing cases from the case base that are similar to a new case, the retrieved existing cases being retrieved according to a predetermined similarity threshold, each retrieved existing case having a measure of similarity to the new case;

mapping the similarity measurement in each of the retrieved existing cases to a measure of confidence on how closely the existing case matches the new case, the mapping comprising generating a confidence function for each of the retrieved cases, wherein the confidence function is formed by plotting confidence function points determined from solutions of the similar cases, the confidence function providing a relationship between confidence and similarity with other existing cases; and

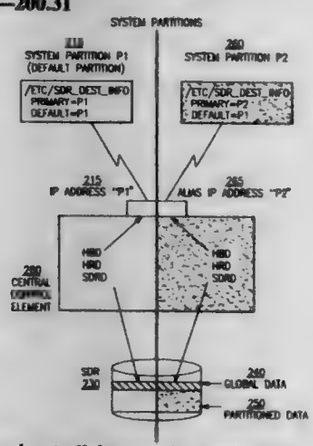
providing a list of the existing cases having the best measures of confidence.

5,799,149

SYSTEM PARTITIONING FOR MASSIVELY PARALLEL PROCESSORS

Larry Bert Brenner, Austin, Tex.; Kenneth Charles Briskey, Hyde Park, and Krystal Kay Rothaupt, Rhinebeck, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 17, 1996, Ser. No. 664,900
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.31 **33 Claims**



25. A massively parallel processing environment partitioned into sub-environments and having a plurality of nodes connected via a network in such a way as to initially create a single system unit, said processing environment comprising:

a central control element for controlling all communications between said nodes and for maintaining configuration and status information, said central control element being in processing communications with said nodes via said network;

at least two partitioned sub-environments each having exclusive ownership of a subset of nodes in a manner that no two nodes in said system unit environment belong to said same sub-environment;

a system data repository located in said central control element for storing system data, said data in said repository organized into a plurality of object classes; and

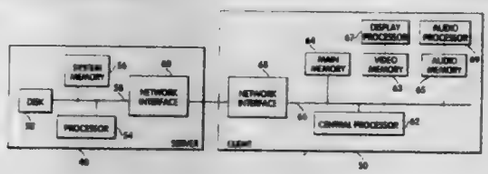
said object classes being divided into system and partitioned classes, said system classes having data targeted to be globally available to all nodes on both sub-environments and said data in said partitioned classes being exclusively accessible only to nodes of one sub-environment or another.

5,799,150

SYSTEM FOR SENDING LIST OF MEDIA DATA OBJECTS TO SERVER WHICH MAY BE READ BY CLIENT AND RECEIVING FROM THE SERVER INDICATOR OF ALLOCATED RESOURCE

James Hamilton, Carlisle, Mass.; Richard Hennessy, Nashua, N.H.; Pong Chou, Cambridge, Mass.; Avinash Chopde, Andover, Mass.; Eric Peters, Carlisle, Mass., and Jay Koutavas, Nashua, N.H., assignors to Avid Technology, Inc., Tewksbury, Mass.

Continuation of Ser. No. 215,849, Mar. 21, 1994, abandoned. This application Feb. 20, 1997, Ser. No. 804,521
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.33 **48 Claims**



21. A client computer for use in a distributed multimedia network system including a server computer having a nonvolatile storage medium on which media data is stored in a plurality of media data files, wherein the server computer is connected to the client computer by a computer network, comprising:

means for sending the server computer a list of media data objects which may be read by the client computer, wherein each media data object includes an indicator of one of the plurality of media data files and a range of data within the media data file;

means for receiving from the server computer an indicator of a resource allocated at the server computer for storing the media data of the media objects; and

means for sending a request for media data of one of the media data objects to the server computer, including the indicator of the allocated resource for storing the media data.

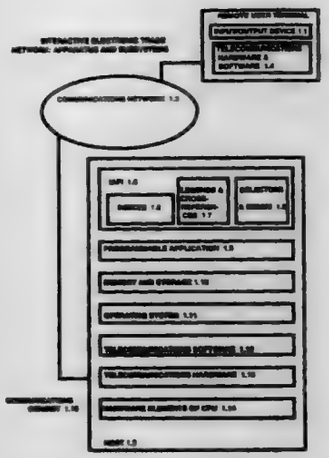
5,799,151

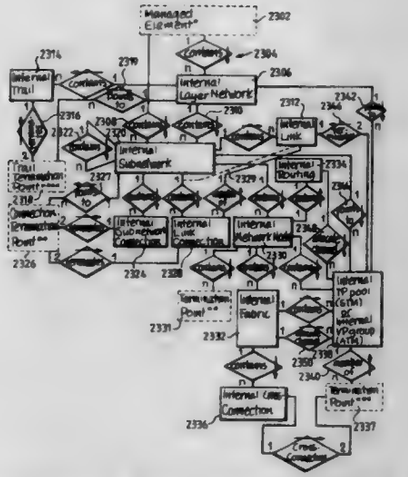
INTERACTIVE ELECTRONIC TRADE NETWORK AND USER INTERFACE

Steven M. Hoffer, 5438 Bryant Ave., Oakland, Calif. 94618

Continuation-in-part of Ser. No. 222,671, Apr. 4, 1994, abandoned. This application Jul. 24, 1995, Ser. No. 506,371
Int. Cl.[6] H04L *12/18*
U.S. Cl. 395—200.34 **25 Claims**

19. A method of messaging among at least two remote user terminals ("RUTs") in addition to a host computer ("Host") that is a trade messaging center, that uses software and hardware to





connect to a communication network that supports asynchronous transfer mode for concurrent multiline serial data transmission, said method comprises the steps of:

configuring a programmable application ("PA") to support menu functions, system commands, and message conferencing over a single logical network;

partitioning said Host's memory using an operating system, a PA's configuration editor for storage, and PA files;

storing in said Host's memory, conferences matching a series of subdivisions from at least one published index that divides broad economic activity into mutually exclusive numbered topics that routinely are used in public and private sectors;

coordinating said Host and said PA using an integrated application program interface ("IAPI") to allow said RUTs to display menus for conference selection and to process commands to exchange messages; and

establishing communications over said network between said Host and said plurality of RUTs to control both said Host's processing of said RUTs's commands, and said Host's transmission of data for message exchange.

5,799,152

Patent Not Issued For This Number

5,799,153

TELECOMMUNICATION SYSTEM

Staffan Blau, Stockholm; Göran Eneroth, Bandhagen, and Peter Carlsund, Skärholmen, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jun. 13, 1995, Ser. No. 489,732

Claims priority, application Sweden, Jun. 13, 1994, 9402054; Jan. 11, 1995, 9500079

Int. Cl.[6] G06F *11/30*

U.S. Cl. 395—200.53 **18 Claims**

1. A telecommunications system comprising:

a network of elements providing functions to enable communications between elements; each element including resources of hardware and software that are used to perform the functions, the software including objects representing the resources;

at least one operations system for performing the functions, in addition to setting up calls, having means for managing the resources according to a first management information model using the objects, wherein the elements offer the operations system a standardized service specific "black box" view of only the parts of the resources that are available and needed for communication between the elements and connected subscribers,

wherein at least one element includes several nodes, forming part of an internal system of the element, for providing functions in an internal bearer network service, and internal resources hardware and software for performing internal functions, the internal software including objects representing the internal resources and

the at least one element offers an operations system a "white box" view, wherein the internal resources are available to the operations system to manage the internal resources using the objects according to a second management information model, when using internal resources to perform the internal functions,

wherein the second management information model is implemented as an addition to the first management model and

a management information tree, based upon the second management information model, has in its root a managed object which is also used for management according to the first information model, and a management information tree, based upon the second management information model, has in its root a managed object which is also used for management according to the first information model.

5,799,154

SYSTEM AND METHOD FOR THE REMOTE MONITORING OF WIRELESS PACKET DATA NETWORKS

George W. Kuriyan, Bridgewater, N.J., assignor to MCI Communications Corporation, Washington, D.C.

Filed Jun. 27, 1996, Ser. No. 672,138

Int. Cl.[6] H04Q *7/00*; H04M *15/00*

U.S. Cl. 395—200.53 **19 Claims**

1. A method for remotely monitoring the performance of a telecommunications network having at least two cells, comprising the steps:

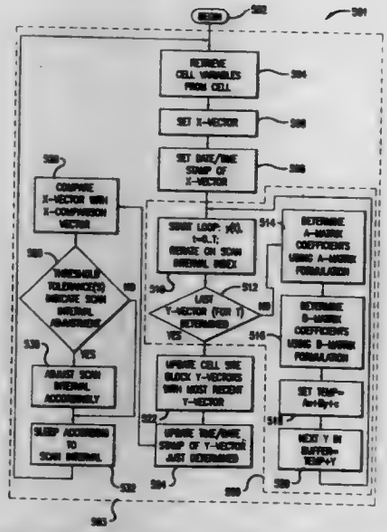
collecting performance data for each cell wherein said data is functionally related to performance parameters in each cell;

creating a unique cell data structure for each cell, wherein each cell data structure includes a unique scan interval;

forecasting, independently, a state of each cell, for future points in time during each cell's said unique scan interval, based on data collected prior to said unique scan interval and on prior forecasts, without collecting additional data during said unique scan interval;

comparing, independently, said collected data from each cell, to predetermined thresholds; and

modifying, independently, each unique scan interval in response to said comparing step, whereby the modification of one cell's



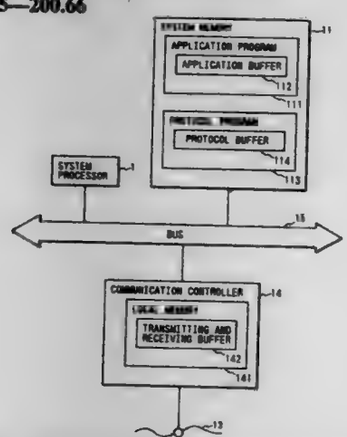
unique scan interval does not affect the modification of another cell's unique scan interval.

5,799,155

METHOD OF DATA COMMUNICATION AND SYSTEM FOR CARRYING OUT THE METHOD

Toshikazu Yasue, Chigasaki; Hidemitsu Higuchi, Yokohama; Toru Horimoto, Atsugi; Yukio Shimamoto, and Takahisa Miyamoto, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 197,514, Feb. 16, 1994, abandoned. This application Nov. 19, 1996, Ser. No. 752,712
Claims priority, application Japan, Feb. 22, 1993, 5-031575
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.66 **16 Claims**



1. In a data transmission system transmitting data by frames, each frame including a communication header and an application data in a data field in the frame, a transmission line for sending said frames, a processor for processing application data under a communication protocol, and a system memory for storing said application data, a data communication method comprising:

a step of processing said application data by words each having a basic word width of plural bytes, said basic word width being a unit length for accessing and processing by said processor;

a step of deciding a maximum available length of an application data included in a sending frame, by deciding a maximum length of said sending frame as a maximum available length in said transmission line, said maximum available length of the application data being an integer times of said basic word width; and

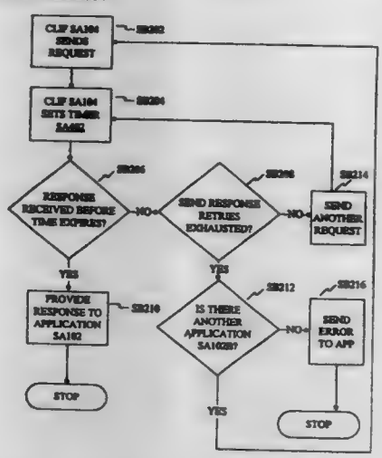
a step of sending the frame of the decided maximum available length through said transmission line.

5,799,156

SYSTEM FOR DETERMINING AN ALTERNATIVE APPLICATION TO RECEIVE MESSAGE FROM FIRST APPLICATION WHEN THE NUMBER OF TIMES TO RESEND THE MESSAGE TO SECOND APPLICATION IS EXCEEDED

Steven J. Hogan; Kristi T. Feltz; Douglas R. Murdock; Todd A. Goodman; David J. Vercande, and Eric M. Busch, all of Cedar Rapids, Iowa, assignors to LinkUSA Corporation, Cedar Rapids, Iowa

Division of Ser. No. 136,211, Oct. 15, 1993, Pat. No. 5,590,181. This application Apr. 13, 1995, Ser. No. 421,827
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.67 **46 Claims**



1. In a client interface, a method for interfacing a first application in a first client computer system to a second application in one of a second client computer system and a server computer system, the method comprising the steps of:

(a) receiving an instruction from said first application in said first client computer system to send a message to said second application;

(b) sending said message to said second application and setting a timer to indicate an amount of time since said message was sent;

(c) providing a response to said first application if a response to said message is received from said second application within a predetermined period of time;

(d) resending said message to said second application if said response is not received within said predetermined period of time; and

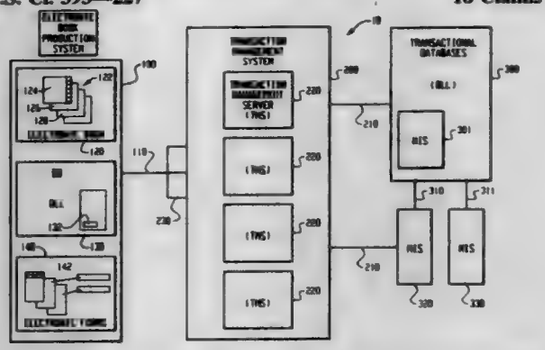
(e) determining a number of times to resend said message to said second application if said response is not received within said predetermined period of time; wherein if said determined number of times is exceeded and a response has not been received, the client interface determines whether there is an alternative application to which said message can be sent; sends said message to said alternative application; and provides a response to said first application if a response to said message is received from said alternative application within a determined period of time.

5,799,157

SYSTEM AND METHOD FOR CREATING INTERACTIVE ELECTRONIC SYSTEMS TO PRESENT INFORMATION AND EXECUTE TRANSACTIONS

Andres Escallon, Wellesley, Mass., assignor to Elcom Systems, Inc., Norwood, Mass.

Filed Dec. 13, 1994, Ser. No. 353,787
Int. Cl.[6] G06F *17/00;17/30*
U.S. Cl. 395—227 **18 Claims**



1. A method executed in a computer system for presenting data and executing transactions, the computer system including at least one client computer, a transaction management system having at least one transaction management server, and at least one transactional database, the method comprising the steps of:

providing an electronic book on a client computer, the electronic book including data for presentation to a user of the client computer;

providing a client database on the client computer, the client database including data corresponding to the data in the electronic book;

providing an electronic form on the client computer, the electronic form including data for execution of a transaction relating to the data in the electronic book and to the data in the client database;

presenting the electronic book to the user by displaying the electronic book to the user;

enabling the user to selectively view the data in the electronic book;

when the user desires to execute a transaction relating to the data in the electronic book, presenting the electronic form to the user by displaying the electronic form to the user;

enabling the user to selectively enter information into the electronic form, the information specifying the transaction desired to be executed by the user;

sending the information specifying the transaction desired to be executed by the user to a transaction management server in a transaction management system;

accessing a transactional database for executing the specified transaction; and

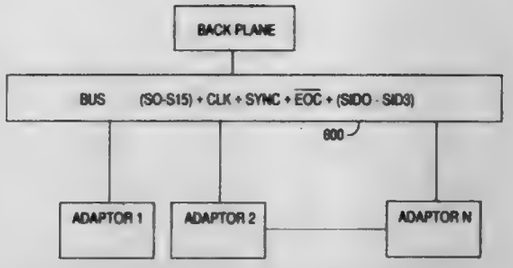
executing the specified transaction.

5,799,158

ADAPTER FOR TRANSFERRING BLOCKS OF DATA HAVING A VARIABLE SIZE TO OTHER ADAPTERS VIA A MAIN SYSTEM BUS

Alain Benayoun, Cagnes Sur Mer; Jean-Francois Le Pennec, Nice; Patrick Michel, La Gaude, and Patrick Sicsic, La Colle Sur Loup, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 251,540, May 31, 1994, abandoned. This application Jul. 15, 1996, Ser. No. 687,071
Int. Cl.[6] G06F *13/00;13/38*
U.S. Cl. 395—285 **12 Claims**



10. A transmission system for handling multimedia (composite) information including data, voice, video and audio (voice) comprising:

a high speed bus for transmitting the multimedia information;

a plurality of adapters coupled to the high speed bus; and

a back plane adapter coupled to the high speed bus; said back plane adapter receiving signals from the plurality of adapters requesting use of the bus and issuing signals indicating permission to use the bus to a selected one of the plurality of adapters wherein at least one of the plurality of adapters includes means for generating a data block comprising of a signalling word and reminder data words, said signalling word, to be transmitted as a first word of the data block to an adapter designated to receive the data block, comprising a command from said adapter to said adapter designated to receive the data block, an address of said adapter designated to receive data, a size of said data and an address of said adapter; and

means for successively transmitting said remainder data words in parallel via said system bus after said signalling word has been received and processed by said adapter designated to receive data, wherein said adapter and said

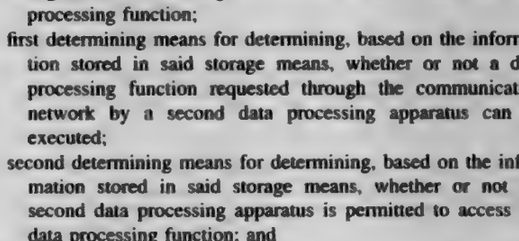
adapter designated to receive the data block are both located within said transmission system.

5,799,159

DATA PROCESSING APPARATUS, NETWORK SYSTEM, AND METHOD OF CONTROLLING THE SAME

Yoshinori Abe, Tama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1995, Ser. No. 425,794
Claims priority, application Japan, Apr. 20, 1994, 6-082003
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—287 **44 Claims**



23. A data processing apparatus, connected to a communication network, having at least one data processing function, comprising:

storage means for storing information on the at least one data processing function;

first determining means for determining, based on the information stored in said storage means, whether or not a data processing function requested through the communication network by a second data processing apparatus can be executed;

second determining means for determining, based on the information stored in said storage means, whether or not the second data processing apparatus is permitted to access the data processing function; and

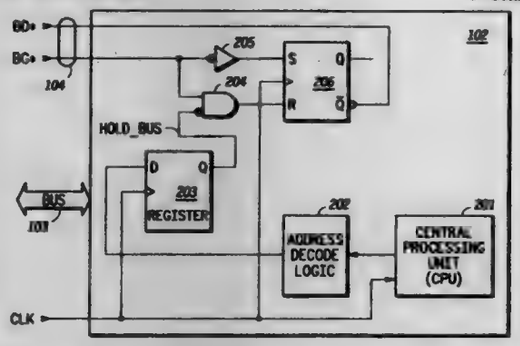
control means for controlling a data processing operation in accordance with the determination results of said first and second determining means.

5,799,160

CIRCUIT AND METHOD FOR CONTROLLING BUS ARBITRATION

Nancy G. Woodbridge; Thomas A. Volpe, both of Austin, and James G. Gay, Pflugerville, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1996, Ser. No. 669,071
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—293 5 Claims



1. A bus master which is adapted to be coupled to an external bus, comprising:

an input terminal coupled to the external bus for receiving a request signal which when activated indicates that an alternate bus master is requesting access to the external bus;

an output terminal coupled to the external bus for providing an acknowledge signal which when active indicates that the bus master is allowing said alternate bus master to receive control of the external bus;

a register for storing control information;

a central processing unit (CPU) having an output coupled to said register, wherein said CPU may alter a state of said control information in response to executing at least one introduction; and

a control circuit having a first input terminal for receiving said request signal, a second input terminal for receiving said control information, and an output terminal for providing said acknowledge signal,

wherein when said control information is in a first predetermined state, said control circuit activates said acknowledge signal in response to an activation of said request signal;

wherein when said control information is in a second predetermined state, said control circuit keeps said acknowledge signal inactive regardless of whether said request signal is active or inactive.

5,799,161

METHOD AND APPARATUS FOR CONCURRENT DATA ROUTING

Dale Merrick, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 83,045, Jun. 25, 1993, abandoned. This application Sep. 9, 1996, Ser. No. 709,904
Int. Cl.[6] G06F *13/38*
U.S. Cl. 395—309 14 Claims

1. A data router for routing data among a plurality of buses comprising:

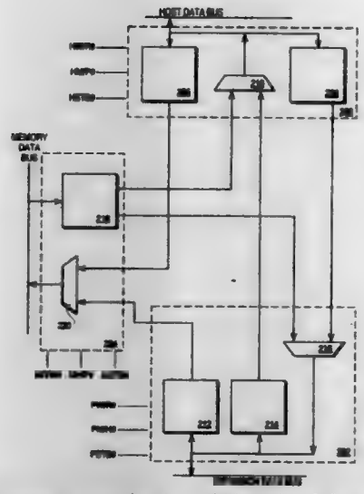
a plurality of interface means, each interface means for engaging in data transfers between an associated bus and at least two other interface means, each interface means comprising:

transfer means for transferring data from said associated bus to an interface output;

receiving means for receiving data from the at least two other interface means;

direction control means responsive to a direction control signal for determining whether data is to be transferred into each said interface means from another interface means or out of said each interface means to another interface means;

steering control means responsive to a steering control signal for determining with which other interface means said each interface means will engage in a transfer of data; and



timing means responsive to a timing signal for determining when data is to be transferred from an associated bus into said each interface means, said timing means further for determining when data is to be transferred from said at least one other interface means into said each interface means in response to said timing signal, said timing signal from said associated bus; and

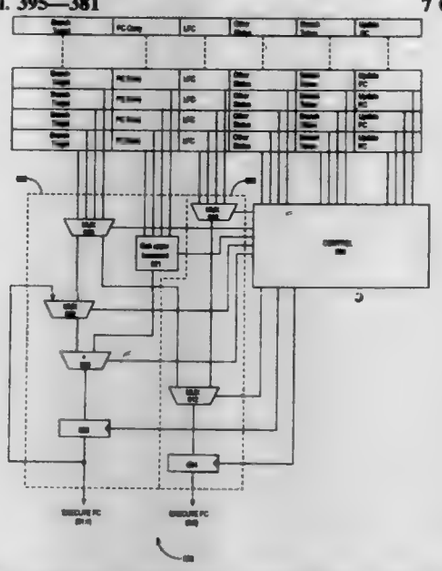
each interface means coupled to the at least two other interface means by way of separate data paths between the interface output and the receiving means of each other interface means, each interface means transferring data received by said receiving means to said associated bus.

5,799,162

PROGRAM COUNTER UPDATE MECHANISM

David S. Christie; Scott A. White, and Michael D. Goddard, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 252,030, Jun. 1, 1994, Pat. No. 5,559,975. This application Sep. 23, 1996, Ser. No. 716,764
Int. Cl.[6] G06F *9/26*
U.S. Cl. 395—381 7 Claims



1. An apparatus for generating a program counter value for use in a microprocessor having a pipeline for processing instructions, the apparatus comprising:

a first program counter circuit for providing a first program counter value having a more significant first program counter portion, a less significant first program counter portion and a

first carry signal, the first program counter value representing a program counter value of a retrieved instruction;

a plurality of storage locations coupled to the first program counter circuit for storing a plurality of less significant first program counter portions and first carry signals and branch target values;

an execute program counter circuit coupled to the plurality of storage locations for receiving the less significant first program counter portions and the first carry signals and the branch target values, and for generating a next execute program counter value, the next execute program counter value representing a program counter value of a next executed instruction;

the execute program counter circuit including a less significant execute program counter generator circuit for generating a less significant portion of the next execute program counter value, a more significant execute program counter generator circuit for generating a more significant portion of the next execute program counter value using the carry signals and the branch target values, and an execute program counter controller for controlling the less significant execute program counter generator circuit and the more significant execute program counter generator circuit;

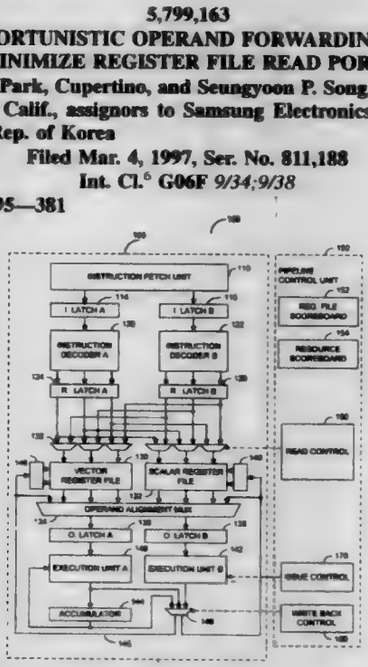
the less significant execute program counter generator circuit including a plurality of selector circuits for selecting as the less significant portion of the execute program counter value one of said less significant first program counter portions and a less significant branch target value, according to control signals provided from said execute program counter controller.

5,799,163

OPPORTUNISTIC OPERAND FORWARDING TO MINIMIZE REGISTER FILE READ PORTS

Heonchul Park, Cupertino, and Seungyoon P. Song, Los Altos, both of Calif., assignors to Samsung Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 4, 1997, Ser. No. 811,188
Int. Cl.[6] G06F *9/34;9/38*
U.S. Cl. 395—381 **9 Claims**



1. A method for executing instructions in a processor, comprising:

(a) fetching instructions;

(b) decoding the fetched instructions;

(c) fetching source operands for each of the fetched instructions by:

(c.1) reading said source operands from register files via register file read ports in response to (i) the number of the source operands being less than or equal to the number of currently available register file read ports, and (ii) the values of said source operands being independent of previously executed instructions;

(c.2) reading said source operands either from register files via register file read ports after said source operands are updated and become available in the register files, or directly from a result of the previously executed instruction in response to (i) the number of the source operands being less than or equal to the number of currently available register file read ports, and (ii) the values of said source operands depending on a previously executed instruction;

(c.3) reading said source operand from register files via register file read ports after enough register file read ports become available in response to (i) the number of the source operands being greater than the number of currently available register file read ports, and (ii) the values of said source operands being independent of previously executed instructions; and

(c.4) reading those source operands directly from a result of the previously executed instruction and the rest of the source operands whose values do not depend on said previously executed instruction from register files via register file read ports in response to (i) the number of the source operands being greater than the number of currently available register file read ports, and (ii) the number of said source operands whose values depend on a previously executed instruction being less than or equal to the number of currently lacking register file ports;

(d) applying, in said execution unit, each of the fetched instructions to its fetched operands to produce a result; and

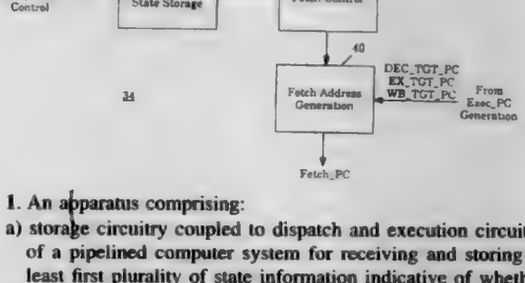
(e) storing each said result in a destination operand.

5,799,164

METHOD AND APPARATUS FOR PREFETCHING INSTRUCTIONS AT AN IMPROVED RATE BASED ON DISPATCHED CONTROL TRANSFER INSTRUCTION STATES

Donald L. Sollars, Milpitas, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 283,097, Jul. 29, 1994, abandoned. This application Mar. 20, 1997, Ser. No. 821,268
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—383 **20 Claims**



1. An apparatus comprising:

a) storage circuitry coupled to dispatch and execution circuitry of a pipelined computer system for receiving and storing at least first plurality of state information indicative of whether dispatched control transfer instructions are present in various pipeline stages of said pipelined computer system, second plurality of state information indicative of whether the dispatched control transfer instructions in the various pipeline stages are predicted to be taken, and third plurality of state information indicative for the predicted to be taken ones whether corresponding target instructions have been prefetched; and

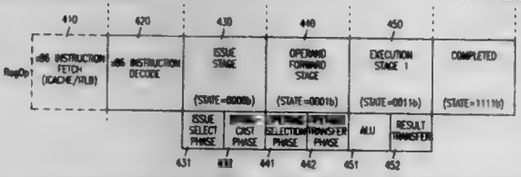
b) control and generation circuitry coupled to said storage circuitry and said execution circuitry for controlling and generating a new prefetch program counter value for instruction prefetching based on at least said stored first, second and third plurality of state information.

5,799,165

OUT-OF-ORDER PROCESSING THAT REMOVES AN ISSUED OPERATION FROM AN EXECUTION PIPELINE UPON DETERMINING THAT THE OPERATION WOULD CAUSE A LENGTHY PIPELINE DELAY

John G. Favor, San Jose, and Amos Ben-Meir, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 590,568, Jan. 26, 1996, abandoned. This application May 16, 1996, Ser. No. 649,242
Int. Cl.[6] G06F 9/38
U.S. Cl. 395—390 27 Claims



1. A method for out-of-order execution of operations, comprising:

selecting a first operation for issue to an execution unit, wherein the first operation is first in program order of all operations that are eligible for selection during a first clock cycle and can be executed by the execution unit;

advancing the first operation to a first stage of an execution pipeline for the execution unit, wherein during the first stage operands required for execution of the first operation are to be forwarded to the execution unit if the operands are available, and wherein being in the first stage makes the first operation ineligible for selection during a second clock cycle;

selecting a second operation for issue to the execution unit, wherein the second operation is first in program order of all operations that are eligible for selection during the second clock cycle and can be executed by the execution unit;

determining availability of operands for the first operation, wherein the availability of operands indicates whether forwarding operands to the first operation would require that the first operation remain in the first stage for more than a threshold time;

removing the first operation from first stage if the first operation would be in the first stage for more than the threshold time, wherein removing the first operation from the first stage makes the first operation eligible for selection during a third clock cycle and makes the first stage available for another operation; and

advancing the second operation to the first stage in response to the first operation being removed.

5,799,166

WINDOW DELTA FROM CURRENT WINDOW FOR FAST REGISTER FILE ADDRESS DEPENDENCY CHECKING

Arthur T. Leung, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 17, 1996, Ser. No. 664,479
Int. Cl.[6] G06F 9/34
U.S. Cl. 395—392 18 Claims

	ADDR_HI	SAVE (INC)	RSTORE (DEC)		NEW ADDR HI	WINDOW Δ
GLOBAL	00	X	X		00	0
LOCAL	10	X	X		10	1
	01	1	0		11	0
OUTPUT	01	0	1		01	1
	01	0	0		01	0
	11	1	0		11	1
INPUT	11	0	1		01	0
	11	0	0		11	0

13. A method for operating a microprocessor having at least one instruction execution pipeline having a plurality of stages and a register file coupled to said pipeline, comprising the steps of:

storing a current window of registers associated with dispatched instructions;

storing a logical register designation for at least one of said stages; and

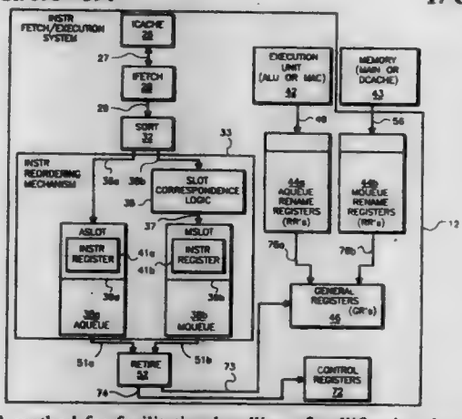
storing a window delta associated with said logical register designation, said window delta indicating a variation from said current window of registers.

5,799,167

INSTRUCTION NULLIFICATION SYSTEM AND METHOD FOR A PROCESSOR THAT EXECUTES INSTRUCTIONS OUT OF ORDER

Gregg Lesartre, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 15, 1996, Ser. No. 648,600
Int. Cl.[6] G06F 9/32
U.S. Cl. 395—394 17 Claims



1. A method for facilitating handling of nullification dependencies in a processor that executes instructions out of order, comprising the steps of:

commencing execution of said instructions in an out of order sequence in a reordering mechanism;

predicting whether an instruction is dependent upon a nullify instruction in that said dependent instruction can potentially be nullified by said nullify instruction;

permitting execution of said dependent instruction when said dependent instruction is predicted as not potentially nullified, regardless of when said nullify instruction commences execution;

preventing execution of said dependent instruction when said dependent instruction is predicted as potentially nullified, until said nullify instruction commences execution;

when said dependent instruction is mispredicted as not potentially nullified, then invalidating a result of said dependent instruction and re-executing said dependent instruction without purging said dependent instruction from said reordering mechanism prior to said re-execution; and

when said dependent instruction is mispredicted as potentially nullified, then validating said result of said dependent instruction.

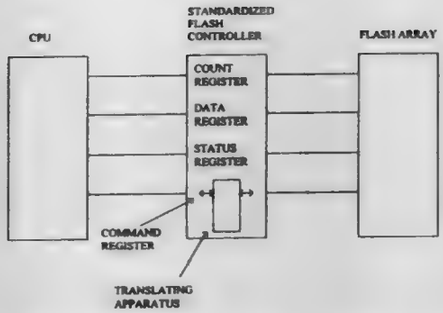
5,799,168

STANDARDIZED FLASH CONTROLLER

Amir Ban, Ramat Hasharon, Israel, assignor to M-Systems Flash Disk Pioneers Ltd., Tel Aviv, Israel

Filed Jan. 5, 1996, Ser. No. 583,351
Int. Cl.[6] G06F 12/06
U.S. Cl. 395—430 29 Claims

3. A flash array controller for controlling a flash array of a plurality of flash chips, the flash chips being of any type, the controller interacting with a driver on a CPU, the controller comprising a command register for receiving commands from the



driver on the CPU and translating said commands into commands particular to the flash array, such that the type of flash chip is not restricted by the driver of the CPU, said command register recognizing the following commands: read, write, erase and identify.

5,799,169

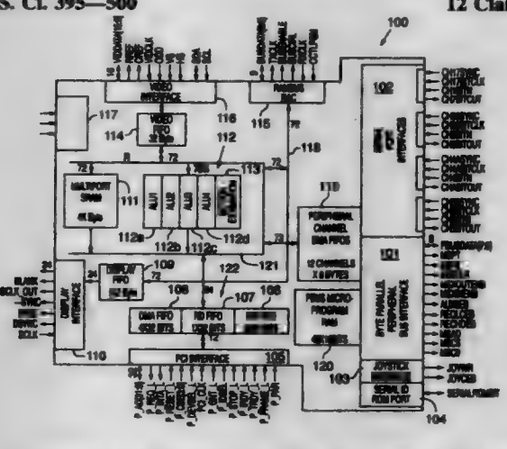
EMULATED REGISTERS

Paul E. Kalapathy, Los Gatos, Calif., assignor to Chromatic Research, Inc., Mountain View, Calif.

Filed Oct. 2, 1995, Ser. No. 537,496

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—500 **12 Claims**



1. A system for emulating memory address-mapped or input/output operations of multiple devices, said operations being requested in instructions or bus transactions issued by a host computer, each of said instructions specifying an address associated with one of said multiple devices, said system comprising:

a logic circuit for receiving from said host computer said instructions, said logic circuit providing, for each instruction received, an identifying code specifying which one of said multiple devices is to be emulated;

a first-in-first-out (FIFO) memory for queuing said instructions and said identifying codes associated with said instructions;

a central processing unit reading from said FIFO said queued instructions and emulating, for each of said instructions, the operation of said device specified by said identification code for said specified address in said instruction; and

wherein said logic circuit further comprising an interrupt generation circuit, said interrupt generation circuit detecting a selected instruction and generating an interrupt signal for said central processing unit to request immediate service.

5,799,170

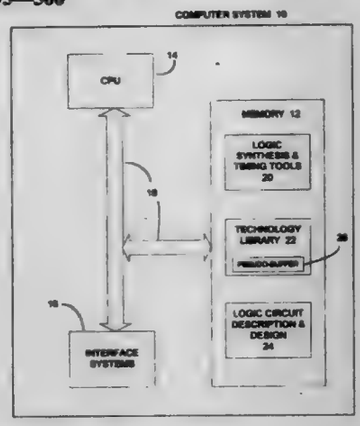
SIMPLIFIED BUFFER MANIPULATION USING STANDARD REPOWERING FUNCTION

Anthony DeGroff Drumm; Robert Lowell Kanzelman, and Bruce George Rudolph, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1996, Ser. No. 666,696

Int. Cl.[6] H01L *21/70*

U.S. Cl. 395—500 **24 Claims**



1. A computer system comprising:

a central processing unit;

a bus;

computer system memory, said computer system memory being connected to said central processing unit via said bus;

a logic synthesis tool stored in said computer system memory and executable on said central processing unit, said logic synthesis tool having a repowering mechanism; and

a technology library accessible by said logic synthesis tool, said technology library having a pseudo-buffer defined as a feedthrough.

5,799,171

IC CARD READER/WRITER FOR ALLOWING COMMUNICATION WITH A PLURALITY OF KINDS OF IC CARDS OF DIFFERENT PROTOCOL TYPES

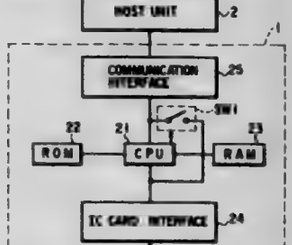
Youko Kondou, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 22, 1996, Ser. No. 651,483

Claims priority, application Japan, May 23, 1995, 7-123768

Int. Cl.[6] G06F *13/00;17/30*

U.S. Cl. 395—500 **7 Claims**



1. An IC card reader/writer connected to a host unit performing communication based on a first protocol and adapted to be operated based on a command from the host unit and to transfer data to and from an inserted IC card, comprising:

first receiving means for receiving an IC card insertion request command from the host unit;

activating means for activating the IC card when the IC card is inserted;

second receiving means for receiving a specific piece of data from the IC card when the IC card is activated;

identifying means for identifying a protocol type of the IC card based on the data received by the second receiving means;

first control means for, when the protocol type of the IC card corresponds to the first protocol, the same type as the host unit, as a result of identification by the identifying means, transferring data between the IC card and the host unit directly; and

second control means for, when as a result of identification by the identifying means the protocol type of the IC card corresponds to a second protocol different from the first protocol, transferring data between the host unit and the IC card after performing protocol conversion of transfer data.

5,799,172

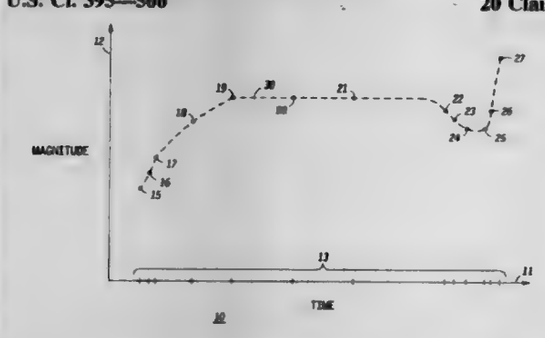
METHOD OF SIMULATING AN INTEGRATED CIRCUIT

Kiran Kumar Gullapalli; Brian J. Mulvaney; Steven D. Hamm, and Steven R. Beckerich, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 10, 1996, Ser. No. 711,638

Int. Cl.[6] G06G *7/48*

U.S. Cl. 395—500 **20 Claims**



1. A method for simulating an integrated circuit by storing history data while exercising the integrated circuit and then using that history data to generate a desired data point, the method comprising the steps of:

a) providing a model of the integrated circuit in computer readable media;

b) providing an initiation signal to the model to begin generating an output signal, wherein the output signal is a sequence of data points as a function of time, and the output signal represents a property of the integrated circuit;

c) generating a data point of the output signal using a selected approximation technique selected from a plurality of different possible approximation techniques;

d) storing a value of the data point in the history data;

e) storing a technique data value in the history data that indicates the selected approximation technique used for generating the data point;

f) repeating steps (c) through (e) for a simulation time to provide the sequence of data points; and

g) generating the desired data point at a uniform time interval that occurs adjacent and adjacent data point of the sequence of data points, wherein the desired data point is generated using the selected approximation technique used for generating the subsequent data point as identified by the history data.

5,799,173

DYNAMIC WORKLOAD BALANCING

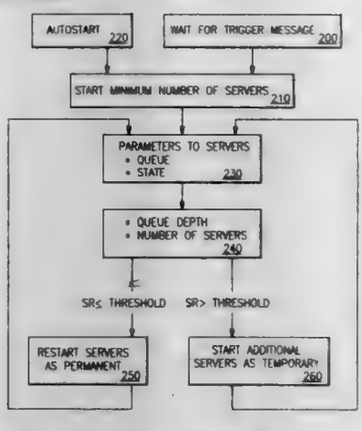
Thomas Gossler, Stuttgart, and Gerhard Stark, Althengstett, both of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 504,810, Jul. 20, 1995, abandoned. This application May 21, 1997, Ser. No. 861,188

Claims priority, application European Pat. Off., Jul. 25, 1994, 94111579

Int. Cl.[6] G06F *9/46*

U.S. Cl. 395—500 **14 Claims**



4. A method for dynamically controlling the number of servers in a transaction system comprising at least one service unit for processing service requests, and wherein each service unit comprises a queue for receiving and queuing incoming service requests and a plurality of servers for executing the service requests, said method comprising:

monitoring how many current service requests are pending and how many current servers are allocated to each one of the service units;

determining a specified number of servers for use in each one of the service units dependent on how many service requests are pending and upon how many servers are allocated; and

allocating said specified number of servers for each one of the service units without reliance on prior queue or server status information.

5,799,174

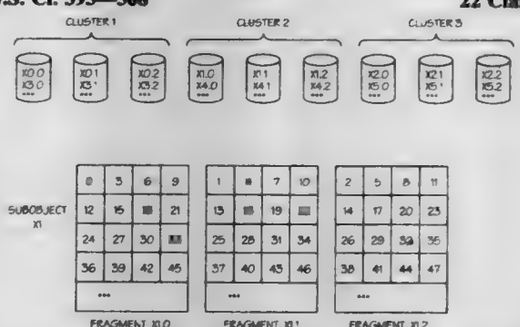
STAGGERED STRIPING IN MULTIMEDIA INFORMATION SYSTEMS

Richard Muntz, Pacific Palisades; Steven Berson, and Shahram Ghandeharizadeh, both of Los Angeles, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 8, 1994, Ser. No. 351,608

Int. Cl.[6] G06T *1/60*

U.S. Cl. 395—508 **22 Claims**



1. A method for managing a plurality of objects of multimedia information, each having an original bandwidth which varies from object to object, comprising the steps of:

providing a plurality of memories, having a total number of memories, D and a bandwidth m;

for each object logically dividing said plurality of memories into a subplurality of clusters of said memories, with number of memories per cluster being defined by modulo bandwidth of the object divided by bandwidth m and with a degree of declustering, M, for the object being equal to the number of memories in each cluster;

dividing each object into a plurality of subobjects and storing the subobjects, one subobject per cluster;

dividing each subobject into a plurality of fragments, said fragments being stored in said memories, one fragment per each memory of the subobject's cluster with the fragments disposed so that a first fragment of a subobject is a number, k, of memories, defined as stride, apart from a memory in which a first fragment of the preceding subobject is stored, with stride for all objects being identical; and

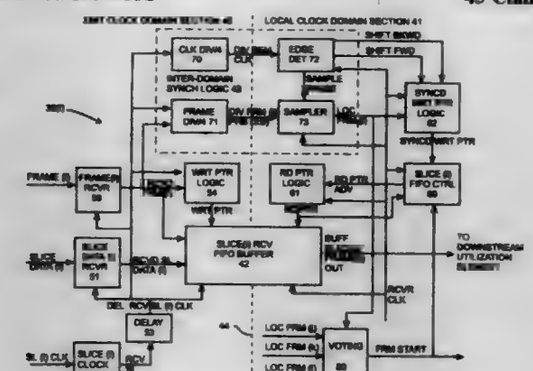
accessing all memories of one cluster concurrently to retreive the stored subobject, whereby objects of differing bandwidths can be efficiently mixed and continuous random retrieval of each object is realized at a bandwidth equal to the original bandwidth of that object to support display thereof.

5,799,175

SYNCHRONIZATION SYSTEM AND METHOD FOR PLESIOCHRONOUS SIGNALING

Daniel R. Cassiday, Topsfield, and David L. Satterfield, Acton, both of Mass., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 674,316
Int. Cl.[6] G06F *1//12;5/06*
U.S. Cl. 395—551 **45 Claims**



1. An information transfer system for transferring information, in the form of at least one digital data word, from a source operating in a first clock signal domain defined by a first clock signal, to a destination operating in a second clock signal domain defined by a second clock signal, said information transfer system comprising:

A. a buffer;

B. a buffer storage element configured to store said at least one data word in said buffer under control of a data word present indication provided by said source;

C. a buffer retrieval element configured to retrieve said at least one data word from said buffer for provision to said destination under control of a synchronized data word present indication; and

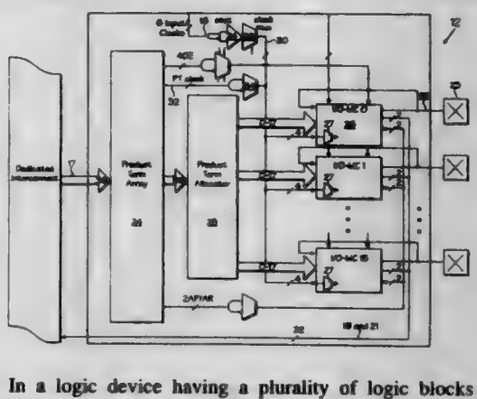
D. a synchronizer configured to generate the synchronized data word present indication in response to the first clock signal, said second clock signal, and said data word present indication, the synchronized data word present indication conforming to the data word present indication synchronized from the first clock signal domain into the second clock signal domain.

5,799,176

METHOD AND APPARATUS FOR PROVIDING CLOCK SIGNALS TO MACROCELLS OF LOGIC DEVICES

Richard L. Kapusta, San Jose, and Christopher W. Jones, Pleasanton, both of Calif., assignors to Cypress Semiconductor Corp., San Jose, Calif.

Filed Dec. 26, 1995, Ser. No. 578,478
Int. Cl.[6] G06F *1//10*
U.S. Cl. 395—556 **16 Claims**



1. In a logic device having a plurality of logic blocks each having a plurality of macrocells and a product term array, an improvement comprising:

providing J product term clock signals from each product term array;

providing an N:M multiplexer within each logic block for selecting M synchronous clock signals from N input clock signals; and

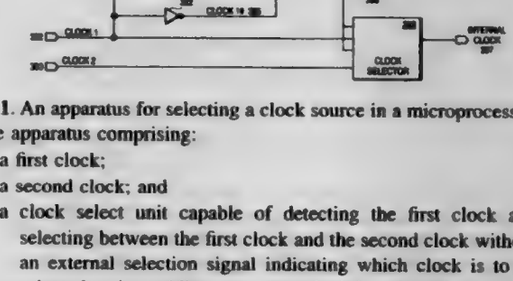
providing a M+J:1 multiplexer within each macrocell for selecting a single clock signal from said M synchronous clocking signals and from said J product term clock signals.

5,799,177

AUTOMATIC EXTERNAL CLOCK DETECT AND SOURCE SELECT CIRCUIT

Meredith McKenzie, Cupertino, Calif.; Jerry D. Carter, Mesa, and Nicholas Ong, Tempe, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 3, 1997, Ser. No. 778,559
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—556 **10 Claims**



1. An apparatus for selecting a clock source in a microprocessor, the apparatus comprising:

a first clock;

a second clock; and

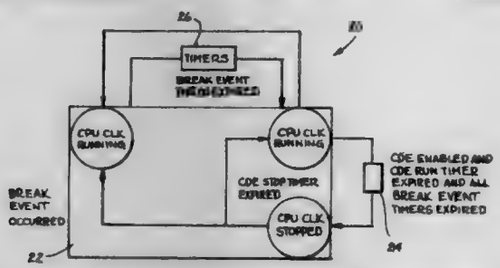
a clock select unit capable of detecting the first clock and selecting between the first clock and the second clock without an external selection signal indicating which clock is to be selected and providing an output clock based on the selected clock, where the clock select unit selects the first clock if the first clock is detected and selects the second clock if the first clock is not detected.

5,799,178

SYSTEM AND METHOD FOR STARTING AND MAINTAINING A CENTRAL PROCESSING UNIT (CPU) CLOCK USING CLOCK DIVISION EMULATION (CDE) DURING BREAK EVENTS

Gary Walker; Mike Crews, both of Phoenix, and James Steele, Chandler, all of Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Apr. 19, 1996, Ser. No. 634,794
Int. Cl.[6] G06F 1/04
U.S. Cl. 395—557 **4 Claims**



1. A system for starting and maintaining a Central Processing Unit (CPU) clock having a Clock Division Emulation (CDE) scheme during Break Events in a computer system comprising, in combination:

CPU clock means for controlling a speed of operation of said computer system;

CDE signalling means coupled to said CPU clock means for sending a signal to only alternately stop and start said CPU clock means to reduce power consumption of said computer system; and

timer means coupled to said CPU clock means for allowing said CPU clock means to continue to run for predetermined time periods for servicing of said Break Events in said computer systems

wherein said timer means comprises:

at least two programmable event timer means each of said at least two programmable event timer means programmed with different time limits for allowing said CPU clock means to continue to run for sufficient amounts of time for servicing different types of said Break Events, and

logic gate means having an input coupled to each of said at least two programmable event timer means for preventing said CPU clock means from stopping prior to all of said at least two programmable event timer means expire:

wherein each of said at least two programmable event timer means may correspond to a different plurality of Break Events having similar time limits associated therewith within each of said different plurality of Break Events such that each of said at least two programmable event timer means may be reloaded with its corresponding time limit when a newly detected corresponding Break Event is recognized while a previously detected corresponding Break Event has already been recognized to commence its corresponding programmable event timer means count down.

5,799,179

HANDLING OF EXCEPTIONS IN SPECULATIVE INSTRUCTIONS

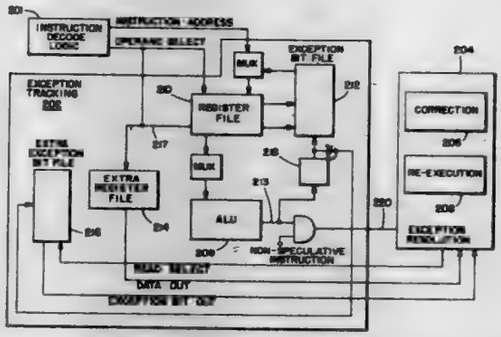
Kemal Ebcioglu, Somers, and Gabriel Mauricio Silberman, Millwood, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1995, Ser. No. 377,563
Int. Cl.[6] G06F 9/00
U.S. Cl. 395—581 **59 Claims**

1. A method for handling speculative exceptions while parallel processing sequential code, comprising the steps:

speculatively executing one or more instructions;

tracking a speculative exception caused by a speculative instruction; and



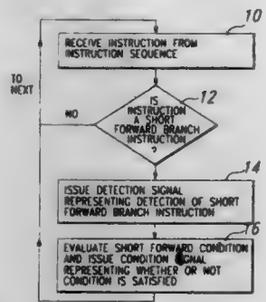
subsequently resolving the speculative exception by correcting for the exception condition and re-executing only the speculative instruction and any speculative instructions that are dependent on the speculative instruction.

5,799,180

MICROPROCESSOR CIRCUITS, SYSTEMS, AND METHODS PASSING INTERMEDIATE INSTRUCTIONS BETWEEN A SHORT FORWARD CONDITIONAL BRANCH INSTRUCTION AND TARGET INSTRUCTION THROUGH PIPELINE, THEN SUPPRESSING RESULTS IF BRANCH TAKEN

Jonathan H. Shiell, and James Oliver Bondi, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 30, 1996, Ser. No. 741,242
Int. Cl.[6] G06F 9/38
U.S. Cl. 395—581 **34 Claims**



1. A method of operating a processor to process a plurality of sequentially arranged instructions, said method comprising the steps of:

receiving into a processor pipeline an instruction from the plurality of sequentially arranged instructions;

determining whether the received instruction comprises a short forward branch instruction, the short forward branch instruction directing processor control to a target instruction in response to satisfying a condition;

in response to determining that the received instruction comprises a short forward branch instruction, the steps of:

issuing a detection signal representing detection of the short forward branch instruction; and

issuing a condition signal representing whether the condition of the short forward branch instruction is satisfied or is not satisfied;

receiving into the processor pipeline a first group of instructions of the plurality of sequentially arranged instructions, wherein each first group instruction is sequentially arranged after the short forward branch instruction and before the target instruction, and is operable for causing a result;

passing each first group instruction fully through the processor pipeline; and

suppressing the result of each first group instruction in response to the detection signal if the condition signal represents that the condition of the short forward branch is satisfied.

5,799,181

BOSSLESS ARCHITECTURE AND DIGITAL CELL TECHNOLOGY FOR COMPUTER PROGRAMS

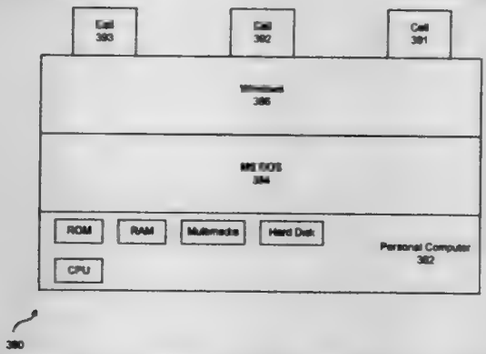
Daisuke Tabuchi; Wataru Shoji, and Ichiro Nakajima, all of Tokyo, Japan, assignors to Sofmap Future Design, Inc., Tokyo, Japan

Filed Oct. 5, 1995, Ser. No. 539,806

Claims priority, application Japan, Apr. 7, 1995, 7-107066; Jun. 6, 1995, 7-139385

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—590 **8 Claims**



2. A system for executing computer applications, comprising:

a plurality of program cells each containing program instructions;

a plurality of files of a first type each associated with one of said plurality of program cells, each file of said first type guiding behavior of its associated program cells;

a plurality of multimedia files;

at least a first one of said program cells associating with a first file of said first type which makes references to at least a first one of said multimedia files and at least a second program cell;

said first program cell, when invoked, retrieving said first multimedia file, thereby creating a multimedia presentation, and invoking said second program cell;

said second program cell associating with a second file of said first type which makes references to at least a second one of said multimedia files;

said second program cell, when invoked, retrieving said second multimedia file, thereby creating a multimedia presentation; and

means for terminating said second program cell without informing said first program cell.

5,799,182

MULTIPLE THREAD MICRO-SEQUENCER APPARATUS AND METHOD WITH A SINGLE PROCESSOR

Martin G. Gravenstein; Michael A. Vigil, and Silvia E. Jaeckel, all of Colorado Springs, Colo., assignors to Ford Motor Company, Dearborn, Mich.

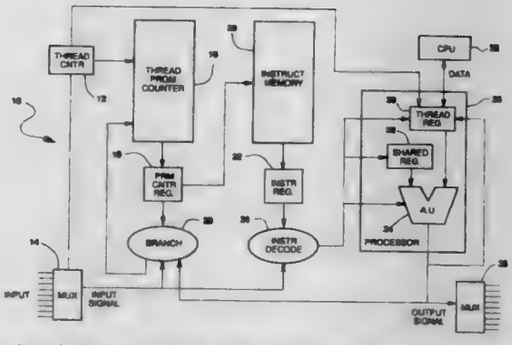
Filed Jan. 21, 1997, Ser. No. 786,585

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—595 **20 Claims**

1. A micro-sequencer apparatus for processing multi-threads including multiple data and multiple instructions in parallel on a single processor, said apparatus comprising:

a thread counter (**12**) for identifying a current thread from a plurality of threads for producing a thread signal representative of said current thread, each thread representing an independent process, for determining subsequent sequence of each of said plurality of threads for subsequent identification as the current thread, and for identifying an input signal associated with said current thread;



a thread program counter (**16**) for storing a program count for each of said plurality of threads indicating the address location of an executable instruction within the respective independent process, said program count for each current thread being different than said program count for a subsequent thread, and for receiving said thread signal to produce said program count for said current thread;

an instruction memory (**20**) storing at least one algorithm providing a process and having a plurality of executable instructions for receiving said program count to designate one of said plurality of instructions as a current instruction; and

a processor (**20**) for receiving said current instruction of said current thread and performing a function of said current instruction with said input to produce an output, said processor being shared to process each of said plurality of threads.

5,799,183

METHOD OF PROCESSING DATA BATCH TRANSFER AMONG THE MEMORIES IN A COMPUTER SYSTEM HAVING A HIERARCHICAL MEMORY STRUCTURE

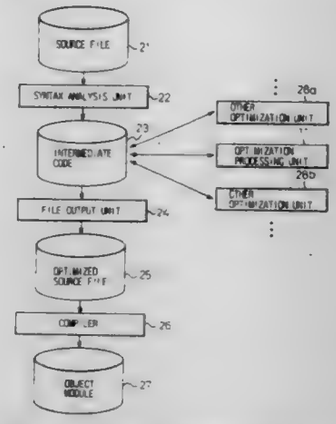
Hidetoshi Iwashita, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 13, 1994, Ser. No. 242,451

Claims priority, application Japan, Jul. 27, 1993, 5-185065; Nov. 24, 1993, 5-292919

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—602 **7 Claims**



1. A method for optimizing a program having a loop with access elements which access array data in a computer utilizing a high speed local first memory and a global second memory by defining a data batch transfer for use when data is written from the first memory into the second memory and also when the data is read from the second memory into the first memory wherein said second memory and said first memory form a hierarchical memory structure, said method comprising:

analyzing a preference order relation of the array data accesses in the loop;

classifying the array data accesses into groups that can share storage regions in said first memory;

calculating a sum of sets of access elements pertaining to each of the groups and determining a transfer range of array data for transferring into the first memory; and

generating, outside the loop, an instruction code for batchwisely making accesses to the array data in the transfer range for each of the groups.

5,799,184

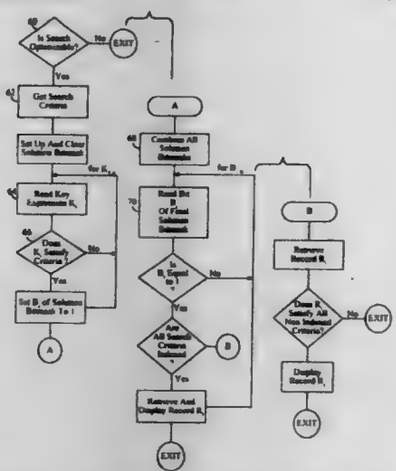
SYSTEM AND METHOD FOR IDENTIFYING DATA RECORDS USING SOLUTION BITMASKS

David L. Fulton, Sylvania, and Eric R. Christensen, Bowling Green, both of Ohio, assignors to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 32,729, Mar. 16, 1993, abandoned, which is a continuation of Ser. No. 593,089, Oct. 5, 1990, abandoned. This application Aug. 17, 1993, Ser. No. 108,841

Int. Cl.[6] G06F *12/30*

U.S. Cl. 395—602 **28 Claims**



1. A method in a computer system for identifying a subset of a plurality of data records that satisfy a search criterion, each of the plurality of data records having a record identifier and containing data organized into one or more fields, the search criterion relating to a selected one of the fields, the method comprising the steps of:

receiving a search query specifying the search criterion;

before receiving the search query, providing an index identifying the contents of the selected field of at least a portion of the data records, the index containing, for each data record, a data record identifier usable to access the data record and an indication of the contents of the selected field, the data record identifiers in the index being separated by a uniform offset; and

after receiving the search query, using the index to select the data record identifiers of the data records that satisfy the search criterion without accessing the data records.

5,799,185

METHOD AND SYSTEM FOR MANAGING SYSTEM MEMORY RECLAMATION

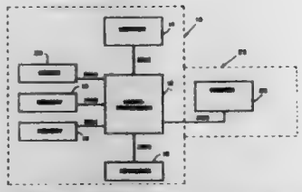
Yoshiki Watanabe, Nakai-machi, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 623,991

Claims priority, application Japan, Apr. 10, 1995, 7-107780

Int. Cl.[6] G06F *12/00;17/30*

U.S. Cl. 395—622 **19 Claims**



10. A memory managing method for an object-oriented database management system that manages permanent objects by recording in a cache area of a main memory apparatus the permanent object that has been read from the secondary memory apparatus and the management table that manages access corresponding to this permanent object, while recording in the main memory apparatus, outside the cache area, management information that is used to secure the cache area for the permanent object and the management table and to conduct recovery, wherein the management table holds information that establishes a correspondence among identifier of the permanent object, the storage address of the permanent object in the secondary memory apparatus, and the pointer to the permanent object in the cache area, the management information has non-pointer information that is considered to be invalid as the reference basis in the examination of the absence or presence of reference for recovery, and address information for the procedure called during recovery, while for the pointer of the management table, all non-pointer information is designated and in addition, the procedure called during recovery contains a process that sets the pointer of the management table corresponding to the permanent object that is recovered to NULL, wherein in the recovery process for the permanent object in the cache area, the permanent object to be recovered is determined on the basis of the non-pointer information of the management information and the absence or presence of a reference from the variable area that is the data area in the main memory apparatus that holds the variable of the application program, and a procedure that sets the pointer to NULL is called and executed.

5,799,186

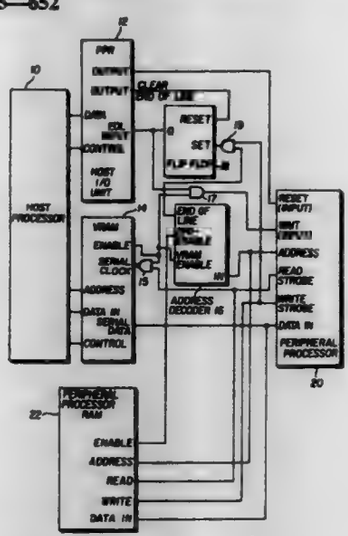
METHOD AND APPARATUS FOR PROGRAMMING A PERIPHERAL PROCESSOR WITH A SERIAL OUTPUT MEMORY DEVICE

John T. Compton, LeRoy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 630,871, Dec. 20, 1990, abandoned. This application Jan. 7, 1993, Ser. No. 1,411

Int. Cl.[6] G06F *9/06*

U.S. Cl. 395—652 **9 Claims**



1. An apparatus comprising:

a host processor and a peripheral processor;

a peripheral processor memory unit coupled to said peripheral processor;

a serial output memory unit coupled to the host processor and the peripheral processor, wherein the serial output memory

unit generates an output data stream of serial words in response to a serial clock signal;

address decoding circuitry coupled to the peripheral processor, the peripheral processor memory unit, and the serial output memory unit, wherein the address decoding circuitry supplies a first enable signal to the serial output memory unit when the address decoding circuitry receives addresses of a first selected group of addresses from the peripheral processor and the address decoding circuitry supplies a second enable signal to the peripheral processor memory unit when the address decoding circuitry receives addresses of a second selected group of addresses from the peripheral processor;

reset circuitry coupled to the host processor, the peripheral processor and the address decoding circuitry, wherein the reset circuitry supplies a reset signal to the peripheral processor in response to a control signal from the host processor and supplies a wait signal to the peripheral processor in response to a signal received from the address decoding circuitry; and

means coupled to the serial output memory unit for supplying a serial clock signal to the serial output memory unit when said first enable signal is supplied to the serial output memory unit and a read strobe signal is supplied to the serial clocking means by the peripheral processor;

wherein the serial output memory unit receives and stores bootstrap program instructions and main program instructions from the host processor in response to a control signal generated by the host processor, and supplies a serial output data stream, comprising the bootstrap program instructions, to the peripheral processor in response to the first enable signal and the serial clock signal;

wherein the peripheral processor serially executes each of the bootstrap program instructions as they are received from the serial output memory unit and supplies the second selected group of addresses to the address decoding circuitry in response to the execution of at least one of the bootstrap program instructions; and

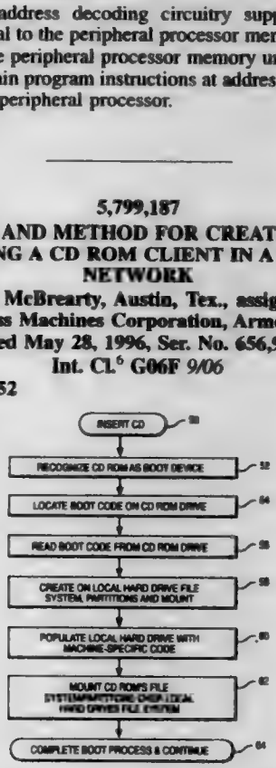
wherein the address decoding circuitry supplies the second enable signal to the peripheral processor memory unit thereby enabling the peripheral processor memory unit to receive and store the main program instructions at address locations specified by the peripheral processor.

5,799,187

SYSTEM AND METHOD FOR CREATING AND MAINTAINING A CD ROM CLIENT IN A COMPUTER NETWORK

Gerald Francis McBrearty, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1996, Ser. No. 656,992
Int. Cl.[6] G06F 9/06
U.S. Cl. 395—652 **15 Claims**



1. A method for configuring a client machine including a CD ROM drive and a local hard drive in a computer network, comprising:

booting said client machine from said CD ROM drive;

detecting from information stored on said local hard drive whether a version of said client machine was previously installed on said client machine;

installing on said local hard drive in response to said detecting indicating that said version was not previously installed, client machine-specific program code from said CD ROM drive; and

accessing network-generic operating system program code and said client machine-specific program code from said CD ROM drive and said local hard drive, respectively; and

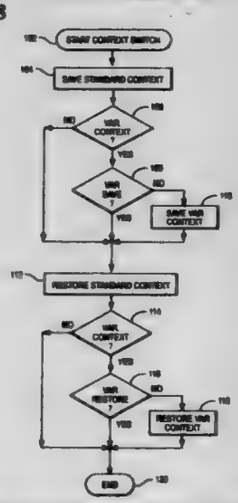
wherein, during said installing and accessing steps, said CD ROM drive includes said network-generic program code; and wherein said network-generic program code is precluded from being installed on said local hard drive during said installing.

5,799,188

SYSTEM AND METHOD FOR MANAGING VARIABLE WEIGHT THREAD CONTEXTS IN A MULTITHREADED COMPUTER SYSTEM

Ravindranath K. Manikundalam, and Freeman Leigh Rawson, III, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1995, Ser. No. 572,925
Int. Cl.[6] G06F 9/44
U.S. Cl. 395—678 **8 Claims**



1. A computer implemented method for managing a thread in a multithreaded operating system, comprising the steps of:

creating a thread based on a thread class, the thread having a variable size memory area, including a standard thread state memory area, a variable thread state indicator memory area containing a value based on said thread class, and, if a variable state is indicated by said thread class, a variable thread state memory area;

detecting a thread context switch; and

saving said current thread state memory area and, if indicated by said indicator, current variable thread state memory area, and restoring a new thread state memory area and, if indicated by a new indicator, a new variable thread state memory area based upon the thread class of the current thread.

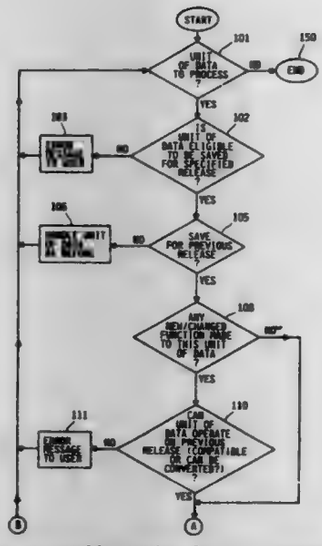
5,799,189

COMPUTER SYSTEM WITH DOWNWARD COMPATIBILITY FUNCTION

Leonard William Koser, Oronoco; Mary Christine Manges, Rochester; Frances Mary Ring, Rochester; Cynthia Ann Rogers, Rochester; Michael John Snyder, Rochester, and John Joseph Vriezen, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 401,210, Aug. 31, 1989, abandoned.
This application Jul. 20, 1993, Ser. No. 95,033
Int. Cl.[6] G06F 9/00
U.S. Cl. 395—680 **11 Claims**

1. A method in a data processing system having multiple computers operating at diverse release levels for transferring a unit of



data having an executable portion from a computer operating at release level N to a computer operating at a release level N–M, wherein M is greater than zero and less than N, said method comprising the data processing system implemented steps of:

designating a unit of data having an executable portion within a computer operating at release level N;

specifying an intent to transfer said designated unit of data having an executable portion from said computer operating at release level N to a computer operating at release level N–M;

automatically converting said executable portion of said unit of data from operation at said release level N to operation at said release level N–M in response to said specifying of said intent to transfer said designated unit of data; and

thereafter transferring said converted designated unit of data to said computer operating at said release level N–M wherein said converted designated unit of data will execute properly within said computer operating at said release level N–M.

5,799,190

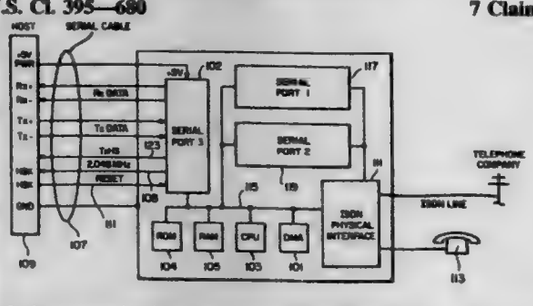
COMMUNICATIONS COPROCESSOR FOR REALIZING BIDIRECTIONAL ISOCHRONOUS COMMUNICATIONS LINK WITH HOST COMPUTER

John Lynch, Monte Sereno; James B. Nichols, Los Altos; Mark Devon, San Jose, and Jeff Soesbe, San Bruno, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 9, 1994, Ser. No. 288,144

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—680 **7 Claims**



1. A communications coprocessor, comprising:

computing means, comprising a microprocessor, a read-only semiconductor memory, and a random-access semiconductor memory, all coupled to a common bus, and including a real-time operating system, for receiving a real-time digital signal and processing the real-time digital signal to produce a series of data samples; and

interface means comprising a USART and a clock generator that supplies a data clock to a host computer and realizing a bidirectional isochronous communications link with the host computer, for receiving the digital data samples and inputting the digital data samples to the host computer;

wherein the digital data samples are input to the host computer at a constant bit rate.

5,799,191

METHOD AND APPARATUS FOR SUPPORTING COOPERATIVE WORKS VIA COMPUTER NETWORK

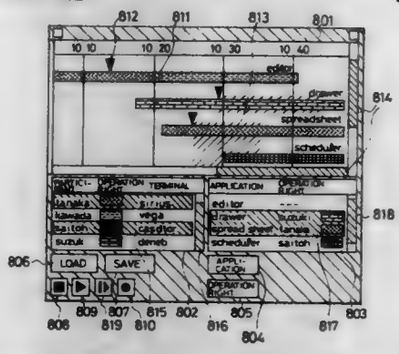
Takashi Moriyasu; Tetsuro Muranaga, and Mami Kodama, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 208,714, Mar. 11, 1994, abandoned. This application Nov. 19, 1996, Ser. No. 756,364

Claims priority, application Japan, Mar. 12, 1993, 5-052753

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—682 **23 Claims**



1. An apparatus for supporting cooperative works via a computer network by a plurality of users, comprising:

input means for entering inputs made by each user and used in executing applications during the cooperative works;

memory means for storing the inputs entered by the input means during the cooperative works together with input target data indicating input target applications associated with the stored inputs;

reproduction means for re-executing the input target applications indicated by the input target data using a recorded history of inputs stored in the memory means to reproduce results of the cooperative works once obtained in past; and

output means for presenting the results of the cooperative works once obtained in past as reproduced by the reproduction means.

5,799,192

TOOL ENCAPSULATING METHOD AND APPARATUS THEREOF

Mitsuhiro Yasuda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 257,742, Jun. 8, 1994, abandoned. This application Oct. 28, 1996, Ser. No. 738,685

Claims priority, application Japan, Jun. 11, 1994, 5-140718

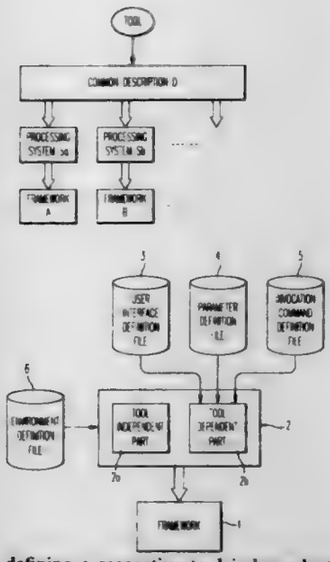
Int. Cl.[6] G06F *9/45*

U.S. Cl. 395—701 **4 Claims**

1. A method of encapsulating a tool for designing an object of design with computer aided design (CAD) in a plurality of frameworks for the CAD, each framework having a Shell Script as a command sequence and having a different unique extension language for tool encapsulation, comprising the steps of:

preparing a file for commonly providing to said plurality of frameworks regardless of said extension language a common description defining a tool encapsulation specification dependent process in which processing contents variously change according to an encapsulation specification of said tool;

preparing a plurality of processing systems, each processing system being encapsulated to only a respective framework



and defining a respective tool independent framework function dependent process in which processing contents are determined depending only on a function of said respective framework but independently of said encapsulation specification of said tool and for defining a tool independent procedure for making said respective framework execute said respective framework function dependent process and also defining a tool dependent procedure for making said respective framework execute said tool encapsulation specification dependent process defined by the description in said file; and

executing encapsulation of said tool into said plurality of frameworks by providing said file to each of said respective frameworks to which said respective processing system is encapsulated;

wherein the step of preparing said file includes at least one of the steps of preparing a user interface definition file providing a description defining user interface for acquiring predetermined information necessary to invoke said tool from a user,

preparing a parameter definition file for providing a description defining producing a parameter file in accordance with the Shell Script for transferring said predetermined information to said framework as tool invocation information, and

preparing an invocation command definition file for providing a description defining generation of a tool invocation command for defining an invocation sequence of said tool in accordance with an invocation of the Shell Script.

5,799,193

SCENARIO BASED ITERATIVE METHOD FOR DEVELOPMENT OF AN OBJECT ORIENTED SYSTEM MODEL

William Sherman, Belle Mead, N.J., and Wen-Pao Liao, Staten Island, N.Y., assignors to Siemens Corporate Research, Inc., Princeton, N.J.

Filed Apr. 29, 1996, Ser. No. 639,395
Int. Cl.[6] G06F 9/44
U.S. Cl. 395—703 **14 Claims**

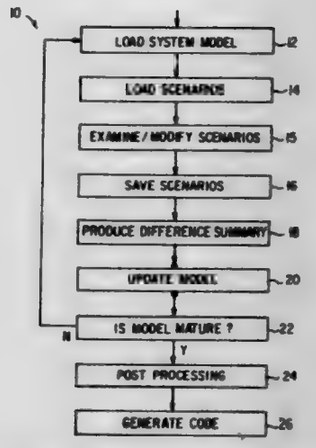
1. A scenario based method for updating an object system model which is implemented on a computer including memory, said method comprising the steps of:

loading a partial system model into the memory;

loading a plurality of scenarios into the memory which defines the desired behavior to be added to said partial model;

saving said plurality of scenarios;

producing a difference summary including the differences between said partial model and said plurality of scenarios, which enables a user to select an update set of scenarios; and



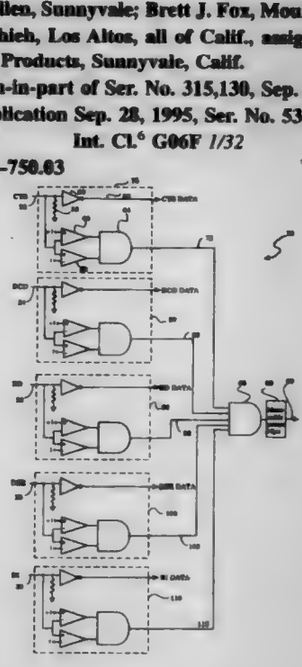
updating said partial model producing an updated model by extracting class, method and state transition information from said update set of scenarios.

5,799,194

COMMUNICATION INTERFACE CIRCUIT HAVING NETWORK CONNECTION DETECTION CAPABILITY

Charles M. Allen, Sunnyvale; Brett J. Fox, Mountain View, and Sui Ping Shieh, Los Altos, all of Calif., assignors to Maxim Integrated Products, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 315,130, Sep. 29, 1994. This application Sep. 28, 1995, Ser. No. 534,954
Int. Cl.[6] G06F 1/32
U.S. Cl. 395—750.03 **20 Claims**



1. An interface circuit comprising:

a first circuit for connection to a communication line for detecting a predetermined characteristic of the communication line connected to the first circuit and another device;

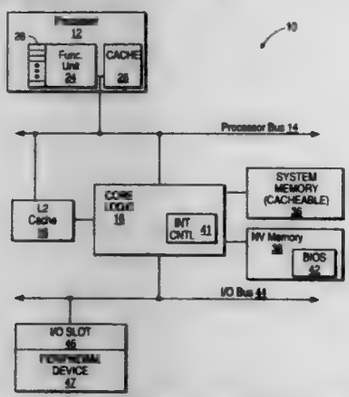
a second circuit coupled to the first circuit, the second circuit providing a control signal indicative of the detection or lack of detection of the predetermined characteristic of the communication line; and

a timing circuit coupled to the second circuit, the timing circuit periodically reactivates the first circuit during a powered off state to attempt to detect the predetermined characteristic of the communication line.

5,799,195
STRUCTURE AND METHOD FOR DETECTING OCCURRENCE OF EXTERNAL EVENTS USING SEMAPHORES

S. Timothy Ross, Georgetown, Tex., assignor to Dell USA, L.P., Round Rock, Tex.

Continuation of Ser. No. 506,288, Jul. 24, 1995, abandoned. This application Jul. 28, 1997, Ser. No. 901,821
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—739 29 Claims



1. In a computer system having a processor, a memory coupled to the processor, and a peripheral device coupled to the memory, the processor including a cache, a semaphore register, and snoop circuitry for the cache and the semaphore register, a method for detecting the occurrence of a peripheral event , the method comprising:

causing a peripheral device driver to allocate a semaphore address in the memory,

initializing the semaphore register to hold the semaphore address,

causing the peripheral device to write to an address thereby causing a snoop operation of the address by the snoop circuitry,

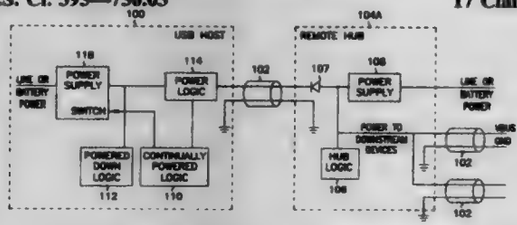
determining whether the semaphore address stored in the semaphore register matches the address written by the peripheral device, and

executing a semaphore service routine upon a match of the semaphore address and the address written by the peripheral device, the semaphore service routine being determined by the peripheral device driver.

5,799,196
METHOD AND APPARATUS OF PROVIDING POWER MANAGEMENT USING A SELF-POWERED UNIVERSAL SERIAL BUS (USB) DEVICE

Michael R. Flannery, Sioux City, Iowa, assignor to Gateway 2000, Inc., North Sioux City, S. Dak.

Filed Jul. 2, 1996, Ser. No. 677,325
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—750.03 17 Claims



1. A computer system coupled to a peripheral bus incorporating a power source therein, the computer system comprising:

a central processing unit;

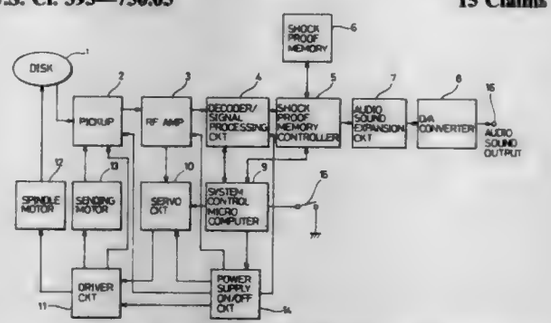
a power supply unit coupled to a power source and coupled to the central processing unit wherein the central processing unit draws power from the power supply unit during normal operation of the computer; and

a power manager coupled to the incorporated power source and to the power supply unit to shut down the power supply unit, and to monitor the computer system using power supplied by the incorporated power source when the computer system is in a suspend mode.

5,799,197
INFORMATION REPRODUCING APPARATUS BY WHICH READING OPERATION FROM RECORDING MEDIUM IS CONTROLLED BASED ON AMOUNT OF DATA IN MEMORY

Hiromi Juso, Gose; Yukihiko Haikawa, and Yukiharu Hosono, both of Higashihiroshima, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1993, Ser. No. 65,773
Claims priority, application Japan, Jun. 11, 1919, 4-152187
Int. Cl.[6] G06F *13/10*
U.S. Cl. 395—750.05 15 Claims



1. An information reproducing apparatus having information handling means for reading out information data from a recording medium in which time base-compressed information data is digitally stored, and storage means having a region formed to store the information data read out by said information handling means, for writing the information data read out by said information handling means once in said storage means, reading out information data from the storage means at a rate lower than the writing rate, and reproducing information by time base-expanding the information data, comprising:

switching means for switching power to said information handling means; and

control means for controlling said switching means so that power to said information handling means is removed when the amount of information data stored in said storage means reaches full storage capacity of the storage means, wherein

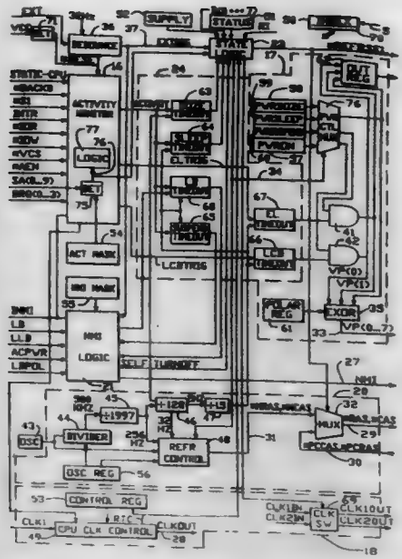
said control means controls said switching means to restore power to said information handling means when the amount of information data stored in said storage means is a prescribed amount or smaller, thereby resuming writing of information data to said storage means before said storage means becomes empty.

5,799,198
ACTIVITY MONITOR FOR COMPUTER SYSTEM POWER MANAGEMENT

Henry Tat-Sang Fung, San Jose, Calif., assignor to Vadem Corporation, San Jose, Calif.

Continuation of Ser. No. 285,169, Aug. 3, 1994, which is a continuation of Ser. No. 17,975, Feb. 12, 1993, Pat. No. 5,396,635, which is a continuation of Ser. No. 908,533, Jun. 29, 1992, which is a continuation of Ser. No. 532,314, Jun. 1, 1990. This application Jun. 2, 1995, Ser. No. 460,078
Int. Cl.[6] G06F *1/32*
U.S. Cl. 395—750.05 46 Claims

1. A computer system comprising a computer power management system and a plurality of computer system circuits including a CPU circuit, a plurality of input/output circuits, a system memory, a clock circuit, and a system bus which directly couples said CPU circuit with said input/output circuits and with said



system memory, said computer system identifying at least predetermined ones of said plurality of computer system circuits by unique circuit addresses; said power management system comprises:

an activity monitor directly connected to said system bus; said activity monitor further including:

a memory circuit for storing at least one particular address range data defining an address for a particular one of said computer system circuits that is controllable by said power management system;

an address detector operatively coupled to said system bus for receiving an address communicated over said system bus and to said memory circuit for receiving said or each address range data stored in said memory circuit and for comparing said received addresses with said or each stored address range data and for generating an address detection signal upon detecting the occurrence on said system bus of an address that is within said or each stored address range; and

logic means, coupled to said address detector, for receiving said address detection signal and for generating an ACTIVITY signal in response to receipt of at least one address detection signal indicating occurrence on said system bus of at least one address that is within one of said stored address range;

an activity timer, coupled to said activity monitor to receive said ACTIVITY signal and:

(i) in response to receipt of said ACTIVITY signal, resetting said activity timer to a predetermined initial condition, and

(ii) in response to failing to receive said ACTIVITY signal within a first predetermined period of time, generating a first TIMEOUT signal identifying that a predetermined time period has elapsed without occurrence of an activity involving one of said plurality of computer system circuits for which one of said address range data is stored in said memory circuit;

a mode controller, for controlling an operating mode condition of at least one of said computer system circuits and being responsive to said activity monitor to control transition of said computer system circuit from a first MODE to a second MODE in response to receipt of said first TIMEOUT signal, and to control transition of said computer system circuit from said second MODE to said first MODE in response to receipt of said ACTIVITY signal; and

a power conservation circuit responsive to said mode controller which selectively places a first group of said computer system circuit into said first MODE and places a second group comprising fewer of said computer system circuits than the first group into said second MODE, said second mode having a lower power consumption than said first mode so that power consumption of said computer system is reduced in response to the inactivity of the computer system without compromising computer system performance when activity is present including being responsive to an input from a user of the computer;

said activity means, said activity timer, said mode controller, and said power conservation circuit are connected together such that said ACTIVITY signal is propagated to said mode controller by hardwired logic circuitry and said computer system circuit transitions between said second and first MODEs substantially instantaneously with generation of said ACTIVITY signal and limited only by the propagation delay of signals within said hardwired logic circuitry.

5,799,199

MEMORY DEVICE IN WHICH ELECTRICAL POWER CONSUMPTION OF POWER CIRCUIT THEREOF IS REDUCED DURING AN IDLE STATE

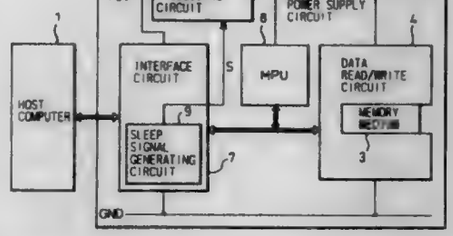
Masahiro Ito, Higashine, and Nobuhiko Isato, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 31, 1996, Ser. No. 688,905

Claims priority, application Japan, Aug. 7, 1995, 7-201176

Int. Cl.[6] G06F *1/00;1/18;1/26*

U.S. Cl. 395—750.06 **7 Claims**



1. A memory device connected to a host computer and comprising a memory medium, a data read/write circuit including a data read/write mechanism to read and write data from and onto a recording medium, a power circuit, an electric power processing IC provided in the power circuit, an interface circuit provided at a connection to the host computer, and a micro-processor unit which controls the operation of the memory device, wherein;

said interface circuit is connected to a first portion of the power circuit on an upstream side of the electric power processing IC and has an output terminal connected to the electric power processing IC,

said micro-processor unit is connected to a second portion of the power circuit on a downstream side of the electric power processing IC,

said interface circuit is provided with a sleep signal generating circuit which generates a sleep signal to stop a power supply to the downstream side of the electric power processing IC when a specific instruction signal is supplied from the host computer,

whereby the, power supply to the portion of the power circuit on the downstream side of the electric power processing IC including the micro-processor unit is interrupted in accordance with the specific instruction signal.

5,799,200

POWER FAILURE RESPONSIVE APPARATUS AND METHOD HAVING A SHADOW DRAM, A FLASH ROM, AN AUXILIARY BATTERY, AND A CONTROLLER

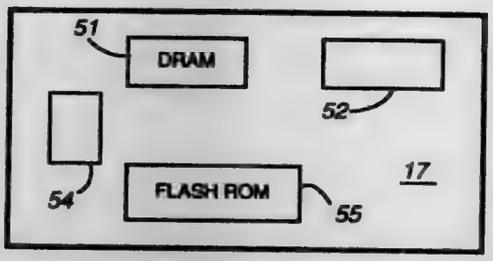
William A. Brant, Boulder; Michael E. Nielson, Broomfield, and Edde Tin-Shek Tang, Boulder, all of Colo., assignors to EMC Corporation, Hopkinton, Mass.

Filed Sep. 28, 1995, Ser. No. 536,519

Int. Cl.[6] G06F *1/00*

U.S. Cl. 395—750.08 **10 Claims**

1. Apparatus for preserving data that is stored in a volatile manner in a data processing system that is enabled by a primary



electrical power source of a non-battery type that is subject to failure, said data processing system employing a first volatile dynamic random access memory for storing said data and a second volatile dynamic random access memory providing backup data storage for said data stored in said first volatile dynamic random access memory, comprising:

a non-volatile Flash ROM connectable to the data processing system;

a controller positioned together with said Flash ROM to be connectable to the data processing system together with connection of said Flash ROM to the data processing system including initializing means and data preservation means;

said initializing means responding to each initial application of power from the primary source to said data processing system for applying an erase signal to said Flash ROM for clearing said Flash ROM;

said data preservation means including loss of power detecting means for subsequently detecting loss of power from the primary power source;

said data preservation means including transferring means immediately responsive to said loss of power detecting means for transferring the data contained in said second dynamic random access memory into said Flash ROM;

an auxiliary battery power source positioned together with said Flash ROM and said controller; and

power applying means responsive to said loss of power detecting means for temporarily and immediately applying power from said auxiliary battery power source to said controller until such time as the data transfer from said second dynamic random access memory to said Flash ROM is completed.

5,799,201

SIGNAL PROCESSOR

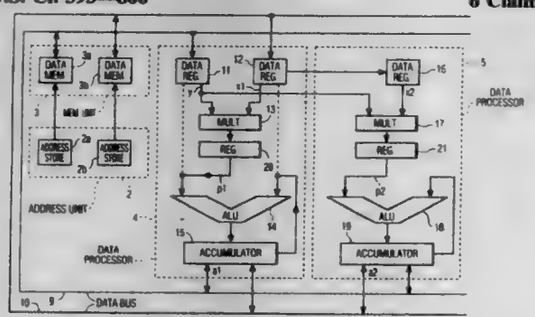
Dietmar Lorenz, Erlangen; Harald Bauer, Nürnberg; Rainer Dietsch, Heiligenstadt, and Karl Hellwig, Nürnberg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 363,185, Dec. 23, 1994, abandoned. This application Dec. 6, 1996, Ser. No. 761,237

Claims priority, application Germany, Dec. 23, 1993, 43 44 157.2

Int. Cl.[6] G06F *7/00*

U.S. Cl. 395—800 **6 Claims**



1. A signal processor comprising:

a data bus system for supplying, during successive command cycles, data symbols to be processed;

a first data processing unit having first and second data stores coupled to the bus system for storing data supplied therefrom during successive command cycles, the data symbols in said first and second stores at the end of a given command cycle being processed by said first processing unit during the next succeeding command cycle;

a second data processing unit having first and second inputs respectively coupled to said first and second stores of the first processing unit for receiving therefrom during a given command cycle data symbols which had been stored therein during the immediately preceding command cycle;

the second input of said second processing unit being an input of a third data store comprised therein for storing data symbols received from said second data store, the first input of said second processing unit receiving data symbols from said first data store; and the data symbols received from said first data store and the data symbols in said third data store being processed by said second processing unit concurrently with processing by the first processing unit of data symbols stored in said first and second data stores;

whereby data symbols supplied by said bus system to said first processing unit during successive command cycles are made available to said first and second processing units so as to enable concurrent processing thereof by the first and second processing units and without requiring supply of data symbols from said bus system directly to said second processing unit.

5,799,202

VIDEO TERMINAL ARCHITECTURE WITHOUT DEDICATED MEMORY

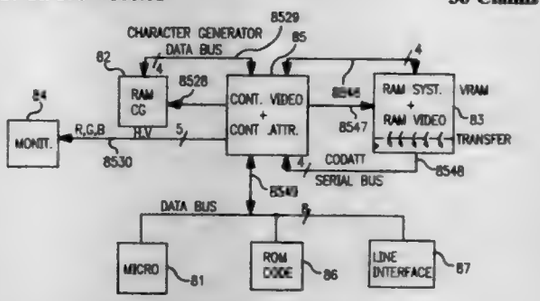
Eric Rongione, 121 Avenue de Malakoff, 75764 Paris, France

Continuation of Ser. No. 322,399, Oct. 12, 1994, abandoned, which is a continuation of Ser. No. 792,875, Nov. 19, 1991, abandoned. This application Apr. 16, 1997, Ser. No. 839,102

Claims priority, application France, Nov. 19, 1990, 90.14366

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—800.01 **36 Claims**



1. A terminal architecture, comprising:

a microprocessor chip (**581**);

a video memory chip (**83**);

a read-write character generator memory chip (**82**); and

a monolithic integrated management circuit chip wherein said monolithic integrated management circuit chip is connected to said microprocessor chip by a first data bus (**8549**) and a first address bus (**8558**), said management circuit chip managing a video display on a monitor (**84**) and accessing said video memory chip via a parallel data bus (**8546**) and a serial bus (**8548**), said video memory chip comprising a system memory storing an operating system of the terminal and a display memory;

a read-write character generator memory (**82**) connected to and controlled by said management circuit chip through a second address bus (**8528**) and a second data bus (**8529**); and

five output lines provided by the management circuit chip for delivering three color signals, a horizontal return signal and a vertical return (VRT) signal to the monitor.

5,799,203

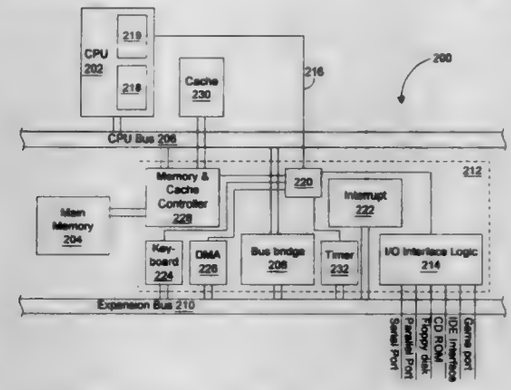
SYSTEM FOR RECEIVING PERIPHERAL DEVICE CAPABILITY INFORMATION AND SELECTIVELY DISABLING CORRESPONDING PROCESSING WITH FUNCTION WHEN THE DEVICE FAILING TO SUPPORT SUCH FUNCTION

Sherman Lee, Rancho Palos Verdes, Calif.; James R. MacDonald, Buda, and Michael T. Wisor, Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 17, 1996, Ser. No. 649,537

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—828 **28 Claims**



1. A computer system, comprising:

a central processing unit (CPU); and

a peripheral device operatively coupled to said CPU and configured to provide information indicative of whether said peripheral device supports a predetermined function of said CPU, wherein said CPU includes a control circuit coupled to receive said information from said peripheral device and is configured to disable said predetermined function of said CPU if said information indicates that said peripheral device does not support said predetermined function, and wherein said peripheral device is selected from the group consisting of: memory controllers, cache controllers, bus controllers, DMA controllers, interrupt controllers, serial port controllers, parallel controllers, floppy disk drive controllers, hard disk drive controllers, timers, keyboard controllers, chip select controllers, reset controllers, and bus controllers.

5,799,204

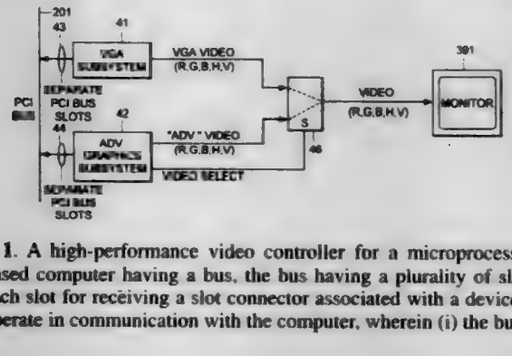
SYSTEM UTILIZING BIOS-COMPATIBLE HIGH PERFORMANCE VIDEO CONTROLLER BEING DEFAULT CONTROLLER AT BOOT-UP AND CAPABLE OF SWITCHING TO ANOTHER GRAPHICS CONTROLLER AFTER BOOT-UP

William Steve Pesto, Jr., Madison, Ala., assignor to Intergraph Corporation, Huntsville, Ala.

Filed May 1, 1995, Ser. No. 432,106

Int. Cl.[6] G06F *15/46;* **G09G** *1/00*

U.S. Cl. 395—830 **18 Claims**



1. A high-performance video controller for a microprocessor-based computer having a bus, the bus having a plurality of slots, each slot for receiving a slot connector associated with a device to operate in communication with the computer, wherein (i) the bus is of the type imposing a single-device-per-slot limitation and (ii) the computer has a BIOS requiring on boot-up of the computer the presence of a standard video controller, the high performance video controller comprising: (a) a connector arrangement having at least one slot connector; (b) a standard-video-controller subsystem for providing a first video mode during boot-up, the standard-video-controller subsystem coupled to the connector arrangement and having a first video output; and (c) a second-video-controller subsystem for providing a second video mode after boot-up, the second-video-controller subsystem coupled to the connector arrangement and having a second video output, wherein the controller switches from the first video mode to the second video mode after boot-up.

5,799,205

TRANSFER SYSTEM FOR DATA EXCHANGE USING TWO ACTIVE CENTRAL PROCESSING UNITS DIRECTLY CONNECTED TOGETHER PARALLEL TO SERIAL SYSTEM BUS DIRECTLY CONNECTING CPUS TO DISPERSED DEVICES

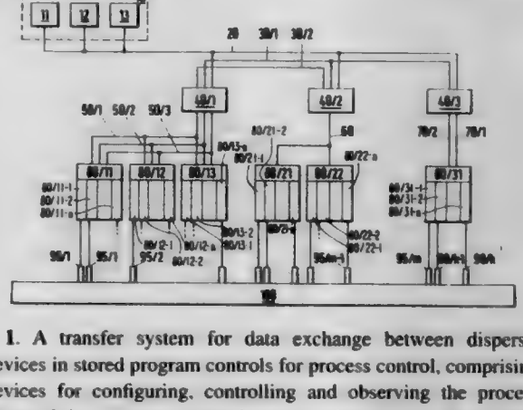
Karl-Heinz Niemann, and Michel Helmut, both of Hanover, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Continuation of Ser. No. 153,671, Nov. 16, 1993, abandoned. This application May 2, 1996, Ser. No. 641,949

Claims priority, application Germany, Nov. 13, 1992, 42 38 957.1

Int. Cl.[6] G06F *13/12;13/362*

U.S. Cl. 395—840 **4 Claims**



1. A transfer system for data exchange between dispersed devices in stored program controls for process control, comprising: devices for configuring, controlling and observing the process, disposed in a remote control area; at least two active central processing units; at least one active input/output device connected to each central processing unit; a serial system bus having a non-persistent access behavior and directly connecting the central processing units to the devices for configuring, controlling and observing, which are disposed in the remote control area; at least one lateral bus with priority-persistent access behavior to which the at least two central processing units are connected so that the central processing units are directly connected together parallel to the system bus; a plurality of input/output buses, with priority persistent access behavior, at least one of the input/output buses with priority-persistent access behavior being respectively connected to each of the central processing units and to at least one said input/output device, each input/output device having a number of connection units which are connectable with at least one of the input/output buses; and sensors and actuators connected to the connection units.

5,799,206

REMOTE PRINT SYSTEM HAVING A PLURALITY OF COMPUTERS WHICH ARE CAPABLE OF MONITORING AND CONTROLLING OPERATIONS OF A REMOTE PRINTER

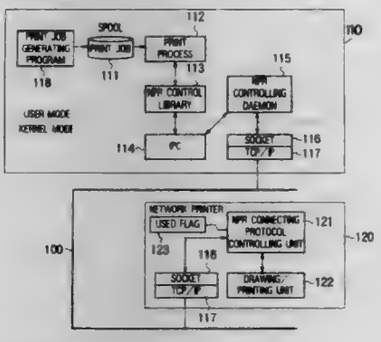
Makoto Kitagawa, Fujisawa; Seiji Kageyama; Satoru Matsumoto, both of Yokohama; Takuya Shimakawa, Yokohama, and Naomi Tamura, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1995, Ser. No. 418,521

Claims priority, application Japan, Apr. 11, 1994, 6-071813

Int. Cl.[6] G06F *15/00;13/38*

U.S. Cl. 395—856 **2 Claims**



1. A remote print system comprising:

a network;

a host computer connected to the network; and

a network printer (NPR) connected to the network;

wherein the host computer includes

an NPR control library serving as an interface to the network printer, the NPR control library providing a plurality of functions and converting the functions to corresponding command messages, and

an NPR controlling daemon which controls the network printer in accordance with command messages from the NPR control library;

wherein the network printer includes an NPR connecting protocol controlling unit which communicates with the NPR controlling daemon through the network in accordance with a printer control protocol so as to control the network printer to perform functions under control of the NPR controlling daemon;

wherein the command messages from the NPR control library include a command message specifying an amount of data to be transferred from the NPR control library to the NPR controlling daemon;

wherein when the NPR controlling daemon receives the command message specifying an amount of data to be transferred from the NPR control library to the NPR controlling daemon, the NPR controlling daemon sends a message to the NPR control library indicating whether the NPR controlling daemon can accept the amount of data specified by the command message; and

wherein when the message sent by the NPR controlling daemon to the NPR control library indicates that the NPR controlling daemon can accept the amount of data specified by the command message,

the NPR control library sends the amount of data specified by the command message to the NPR controlling daemon, and

the NPR controlling daemon sends the data to the NPR using an NPR connecting protocol, confirms whether the NPR has received the data normally, and after confirming that the NPR has received the data normally, sends a message to the NPR control library indicating that data transfer has been completed normally.

5,799,207

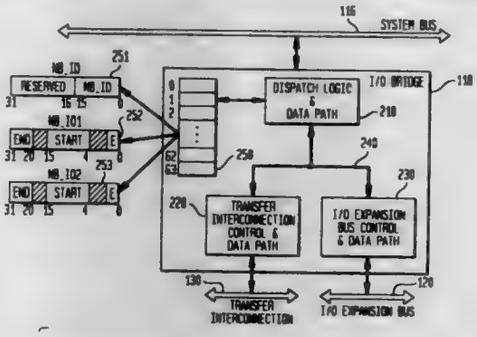
NON-BLOCKING PERIPHERAL ACCESS ARCHITECTURE HAVING A REGISTER CONFIGURE TO INDICATE A PATH SELECTION FOR DATA TRANSFER BETWEEN A MASTER, MEMORY, AND AN I/O DEVICE

Shih-Chieh Wang; Wei-Wen Chang, both of Taipei, and Zen-Dar Hsu, Hsinchu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Mar. 28, 1995, Ser. No. 413,807

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—858 **24 Claims**



1. In a computer system comprising a master, a memory, an I/O expansion bus, an I/O transfer interconnection not connected to the expansion bus, an I/O device connected to the I/O expansion bus and the I/O transfer interconnection, and a register configured to indicate one of said I/O expansion bus and said I/O transfer interconnection for transfers between said master and said I/O device, a transfer process comprising the steps of:

(a) selecting the I/O device to the I/O expansion bus for performing a transfer on a first path between said I/O device and said memory; and

(b) selecting the I/O device to the one of said I/O expansion bus and said I/O transfer interconnection in accordance with said register for performing a transfer between said master and said I/O device.

5,799,208

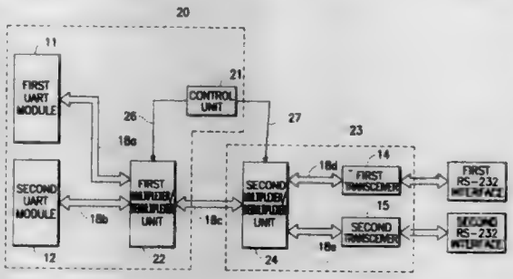
APPARATUS FOR DATA COMMUNICATION BETWEEN UNIVERSAL ASYNCHRONOUS RECEIVER/TRANSMITTER (UART) MODULES AND TRANSCEIVERS IN A CHIP SET BY SELECTIVELY CONNECTING A COMMON BUS BETWEEN MULTIPLEXER/DEMULTIPLEXER UNITS

Chyou-Hsiung Hwang, Hsinchu, and Cheng-Wang Huang, Chupei, both of Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Apr. 3, 1996, Ser. No. 626,947

Int. Cl.[6] G06F *13/40*

U.S. Cl. 395—858 **10 Claims**



1. In an apparatus in which data communication is provided between a plurality of universal asynchronous receiver/transmitter (UART) modules in a first IC chip and a plurality of transceivers in

a second IC chip, the transceivers being connected to a plurality of RS-232 interfaces, the improvement comprising:

(a) a first multiplexer/demultiplexer unit and a plurality of first bi-directional buses coupling said first multiplexer/demultiplexer unit to the plurality of UART modules;

(b) a second multiplexer/demultiplexer unit and a plurality of second bi-directional buses coupling said second multiplexer/demultiplexer unit to the plurality of transceivers;

(c) a bi-directional common bus, coupled between said first multiplexer/demultiplexer unit and said second multiplexer/demultiplexer unit, for providing data communication between the plurality of UART modules and the plurality of transceivers; and

(d) a control unit for selectively connecting said common bus to a selected one of said plurality of first buses and to one of said plurality of second buses, so as to connect one of the plurality of UART modules in the first IC chip to a selected one associated transceiver in the second IC chip.

5,799,209

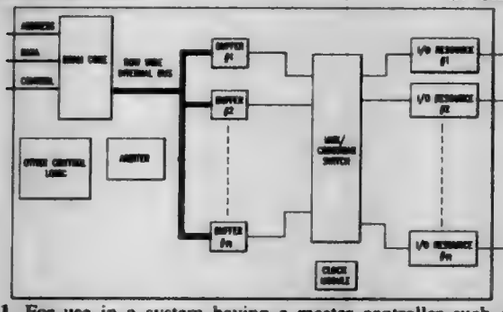
MULTI-PORT INTERNALLY CACHED DRAM SYSTEM UTILIZING INDEPENDENT SERIAL INTERFACES AND BUFFERS ARBITRATIVELY CONNECTED UNDER A DYNAMIC CONFIGURATION

Mukesh Chatter, 6 Gina Dr., Hopkinton, Mass. 01748

Filed Dec. 29, 1995, Ser. No. 581,467

Int. Cl.[6] G06F *13/00;13/20*

U.S. Cl. 395—876 **27 Claims**



1. For use in a system having a master controller such as a central processing unit (CPU) having parallel data ports and a dynamic random access memory (DRAM) each connected to and competing for access to a common system bus interface, an improved DRAM architecture comprising a multi-port internally cached DRAM(AMPIC DRAM) comprising a plurality of independent serial data interfaces each connected between a separate external I/O resource and internal DRAM memory through corresponding buffers; a switching module directly interposed between the serial interfaces and the buffers; and a switching module logic control for the arbitrative connecting of the random serial interfaces to the random buffers under a dynamic configuration by the bus master controller, such as said CPU, for switching allocation as appropriate for the desired data routability wherein the number of the serial interfaces is independent of the number of buffers and the number of serial interfaces varies under the dynamic configuration.

5,799,210

METHOD FOR ALLOCATING EITHER PRIVATE OR SHARED BUFFER MEMORY FOR STORING DATA FROM SORT OPERATIONS IN ACCORDANCE WITH AN ASSIGNED VALUE OR THRESHOLD VALUE

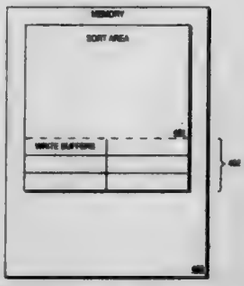
Jeffrey L. Cohen, Mountain View, and William H. Waddington, Foster City, both of Calif., assignors to Oracle Corporation, Redwood Shores, Calif.

Filed Apr. 18, 1996, Ser. No. 634,694

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—876 **19 Claims**

1. A method of allocating buffer memory for storing data generated by a process that is performing a sort operation on data to be written to a database in a computer system, the method comprising the steps of:



allocating a first amount of memory that is private to said process for performance of said sort operation;

inspecting a value assigned to a first parameter;

if said first parameter is set to a first value, then

allocating no portion of memory that is private to said process as buffer memory for storing data from said sort operation; and

causing said process to buffer data from said sort operation in a buffer cache shared by other processes;

if said first parameter does not have said first value, then

determining a second amount of memory to be used for write buffers for storing data from said sort operation; and

allocating said second amount of memory that is private to said process as buffer memory for storing data from said sort operation.

5,799,211

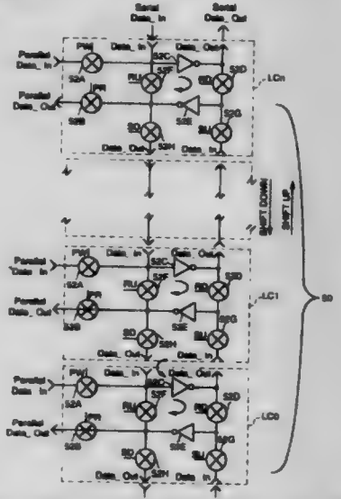
SHIFT REGISTER HAVING LATCH CELL OPERABLE IN SERIAL-IN/PARALLEL-OUT AND PARALLEL-IN/SERIAL-OUT MODES IN RESPONSE TO A SEQUENCE OF COMMANDS FOR CONTROLLING APPROPRIATE SWITCHES

Juka Mikko Hakkarainen, Coconut Grove, Fla.; Nga Cheung Lee, Schenectady, N.Y., and Chung-Yih Ho, Chavenay, France, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 22, 1996, Ser. No. 621,020

Int. Cl.[6] G06F *5/00*

U.S. Cl. 395—891 **6 Claims**



1. A shift register comprising a first latchcell operable in serial-in/parallel out and parallel-in/serial-out modes, said first latchcell comprising:

first and second inverters;

a parallel load switch coupled to an input of said first inverter;

a read down switch;

a read up switch;

a parallel read switch;

a shift up switch;

a shift down switch;

an output of said first inverter being coupled to said read down switch;

an output of said read down switch being coupled to an input of said second inverter, an output of said second inverter being coupled to inputs of said read up switch and said parallel read switch;

an input of said shift up switch being coupled to an input of said second inverter; and

an output of said second inverter being coupled as an input to said shift down switch.

5,799,212

EFFICIENT RECORDING MEDIUM

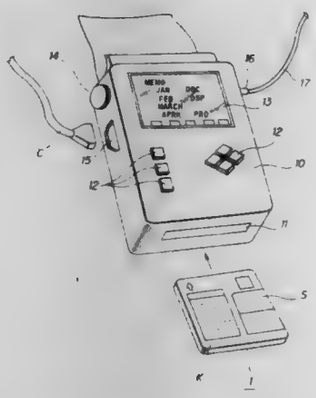
Takashi Ohmori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 196,469, Feb. 15, 1994, Pat. No. 5,687,397. This application Aug. 9, 1996, Ser. No. 695,332

Claims priority, application Japan, Feb. 26, 1993, 5-062992; Feb. 26, 1993, 5-062993

Int. Cl.[6] G11B *13/04*

U.S. Cl. 395—893 **35 Claims**



1. A recording medium comprising:

a first area for containing rewritable signals representing first management information associated with data signals representing a first type of information which may be recorded on said recording medium, and

a second area for containing rewritable signals representing second management information associated with data signals representing a second type of information which may be recorded on said recording medium, said second type of information being different than said first type of information.

5,799,213

BACKGROUND UNFURLING APPARATUS AND METHOD

Raymond K. Saar, 23859 Tocoloma Rd., Apple Valley, Calif. 92307

Filed Jun. 11, 1997, Ser. No. 872,526

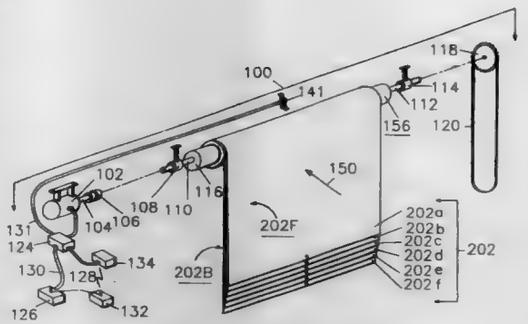
Int. Cl.[6] G03B *15/00*

U.S. Cl. 396—3 **16 Claims**

1. An apparatus comprising:

a plurality of flexible background sheets, each of the sheets having an outwardly facing surface, and an opposing inwardly facing surface, the surfaces providing at least two different visual effects;

the sheets being joined at a distal end of each of the sheets to a horizontally disposed roller, and coiled therearound to form a series of overlapping wraps so that proximal ends of the sheets are generally aligned and extended downwardly across a front face of the roller;



all of the sheets lying over a selected one of the sheets, being capable of being uncoiled by one of the series of overlapping wraps to a position exposing the selected one of the sheets so that as the roller is rotated to extend the sheets downwardly, the outwardly facing surface of the selected one of the sheets is visible from a viewpoint opposing the front face of the roller.

5,799,214

AUTOFOCUSING DEVICE

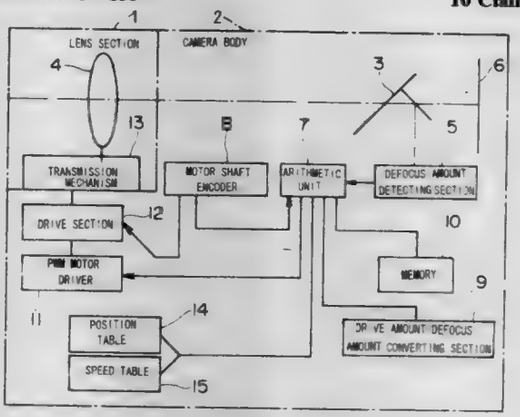
Touru Iwane, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Sep. 11, 1996, Ser. No. 712,413

Claims priority, application Japan, Sep. 12, 1995, 7-234095

Int. Cl.[6] G03B *13/36*

U.S. Cl. 396—135 **10 Claims**



1. An automatic focusing device comprising:

a lens drive section that drives and automatically focuses a photographing lens

a defocus amount detecting section that detects a defocus amount of said photographing lens,

a locus setting section that determines an optimum locus of a characteristic relating to movement of said photographing lens to a target point in advance;

a control section that determines a start point on the optimum locus based upon the defocus amount detected by said defocus amount detecting section, and controls said lens drive section to move said photographing lens along the optimum locus from the start point;

a lens drive amount calculating section that calculates a lens drive amount by which said photographing lens is moved to said target point, based upon the defocus amount detected by said defocus amount detecting section;

a lens travel amount detecting section that detects an actual travel amount of the photographing lens;

a residual drive amount calculating section that calculates a residual drive amount of the photographing lens, based upon the lens drive amount calculated by said lens drive amount

calculating section and the actual travel amount of the lens detected by said lens travel amount detecting section; and

a target value determining section that determines a target position on the locus to be reached when a predetermined time elapses, and a target speed at the target position, based upon the residual drive amount calculated by said residual drive amount calculating section, and wherein

said control section controls said lens drive section so that the photographing lens passes said target position at said target speed upon a lapse of said predetermined time.

5,799,215

CAMERA SYSTEM

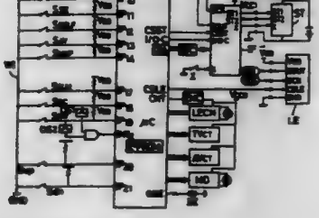
Takehiro Katoh; Yoshihiko Azuma; Masayasu Hirano; Naohiro Kageyama; Toshihiko Ishimura; Kenji Tsuji, and Hiroshi Ootsuka, all of Osaka, Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Continuation of Ser. No. 277,662, Jul. 20, 1994, Pat. No. 5,576,786, which is a continuation of Ser. No. 202,754, Feb. 28, 1994, Pat. No. 5,504,552, which is a continuation of Ser. No. 963,400, Nov. 25, 1992, Pat. No. 5,319,413, which is a continuation of Ser. No. 568,190, Aug. 16, 1990, Pat. No. 5,223,884, which is a continuation of Ser. No. 511,962, Apr. 17, 1990, Pat. No. 5,006,877, which is a continuation of Ser. No. 352,495, May 16, 1989. This application Jul. 8, 1996, Ser. No. 677,687

Claims priority, application Japan, May 16, 1988, 63-120305; May 28, 1988, 63-131289; May 28, 1988, 63-131290

Int. Cl.[6] G03B *7/08*

U.S. Cl. 396—168 **14 Claims**



1. A camera comprising:

selecting means for selecting one image capture mode from among a plurality of image capture modes in accordance with a scene of an image to be captured;

an external device for causing said selecting means to select a designated image capture mode;

exposing means for exposing an image of a subject on an image capturing medium;

a light source which emits light onto said subject; and

light amount control means for controlling said light source so as to emit a predetermined amount of light in accordance with the image capture mode designated by said external device.

5,799,216

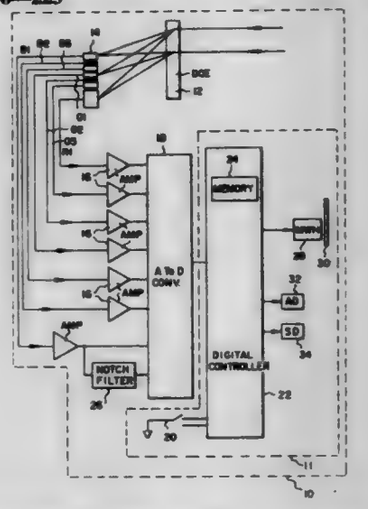
SCENE INTENSITY MEASURING AND ILLUMINATION SOURCE DETECTION APPARATUS

Paul Teremy, Rochester, and Mark M. Meyers, Hamlin, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 18, 1997, Ser. No. 844,483

Int. Cl.[6] G03B *7/08*; G01J *1/42;3/40*

U.S. Cl. 396—225 **22 Claims**



1. Scene intensity measuring and illumination source detection apparatus for determining scene illuminant and appropriate exposure settings for an image capture device, comprising:

(a) a diffractive optical element including an off-axis segment for dispersing incident scene illumination into its spectral components and for focusing the incident scene illumination;

(b) sensing means responsive to the spectral components of the incident scene illumination for producing detection signals corresponding to the spectral intensities of such spectral components;

(c) means coupled to the sensing means for producing digitized detection signals; and

(d) means responsive to the digitized detection signals for determining the scene illuminant and the appropriate exposure settings for the image capture device.

5,799,217

BATTERY CHECK DEVICE FOR A CAMERA

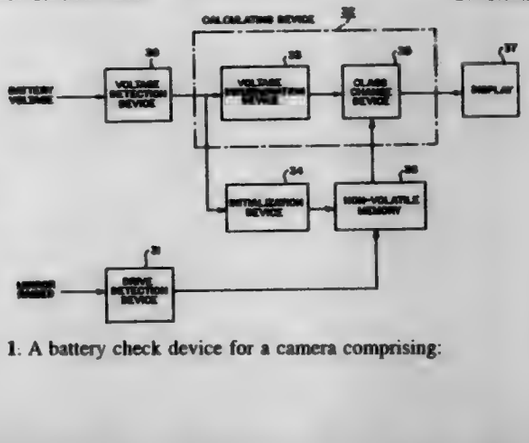
Takashi Saegusa, Kawasaki, and Hisatoshi Fujiwara, Koganei, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 497,168, Jun. 30, 1995, abandoned. This application Jan. 8, 1997, Ser. No. 780,718

Claims priority, application Japan, Sep. 7, 1994, 6-214039

Int. Cl.[6] G03B *17/18*

U.S. Cl. 396—279 **27 Claims**



1. A battery check device for a camera comprising:

a voltage detection device to detect a voltage of a camera battery and to output a detected battery voltage;

a drive detection device to detect a time required to drive a camera mechanism;

a classification device to classify the battery voltage detected by the voltage detection device into one of a plurality of classifications indicating respective states of exhaustion of the battery; and

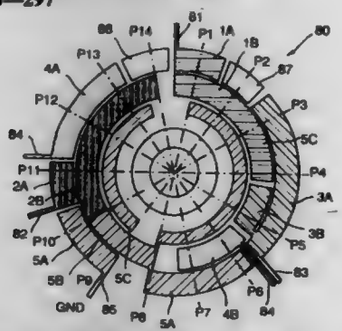
a classification change device to change the classification of the detected battery voltage according to a relationship between the classification of the battery voltage by the classification device and the time detected by the drive detection device.

5,799,218

ROTARY ENCODER

Nobuhiro Aoki, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Jun. 28, 1996, Ser. No. 671,000
Int. Cl.[6] G03B 17/00
U.S. Cl. 396—297 **4 Claims**



1. A rotary encoder for providing a plurality of multiple-bit encoded signals according to predetermined angular positions of said rotary encoder, said rotary encoder comprising:

a ground segment pattern comprising a plurality of arcuate conductive ground segments arranged within a first circle;

a signal segment pattern comprising a plurality of arcuate conductive signal segments corresponding to bits of said multiple-bit encoded signal, said arcuate conductive signal segments being arranged concentrically with, and outside of, said first circle; and

a rotary contact having a plurality of contact points making contact with one or more of said arcuate conductive signal segments in accordance with varying said predetermined angular positions and at least one contact point making contact with one of said arcuate conductive ground segments to provide bit signals forming said multiple-bit encoded signal;

wherein said signal segment pattern and said rotary slide contact are configured such that only one of said bit signals is changed between adjacent said predetermined angular positions of said rotary encoder.

5,799,219

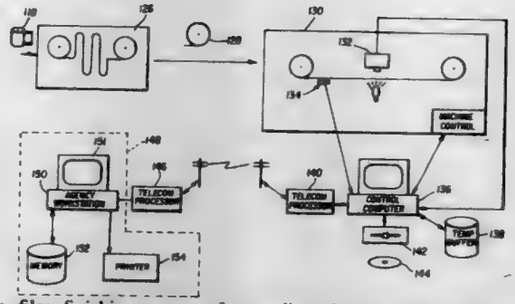
SYSTEM AND METHOD FOR REMOTE IMAGE COMMUNICATION AND PROCESSING USING DATA RECORDED ON PHOTOGRAPHIC FILM

Omid A. Moghadam; Joseph DiVincenzo, both of Rochester; Dale F. McIntyre, Honeoye Falls, and Edward Weissberger, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 602,540, Feb. 20, 1996, abandoned. This application Aug. 15, 1996, Ser. No. 698,496
Int. Cl.[6] G03B 17/24;29/00; H04N 1/387
U.S. Cl. 396—319 **24 Claims**

1. An automated film processing system, comprising:

a film having at least one recordable section for storing at least one customer selected electronic address;



a film finishing system for reading the electronic addresses recorded on said film, developing said film, digitizing the images developed on said film, and for transmitting the digitized images to the customer selected electronic addresses; and

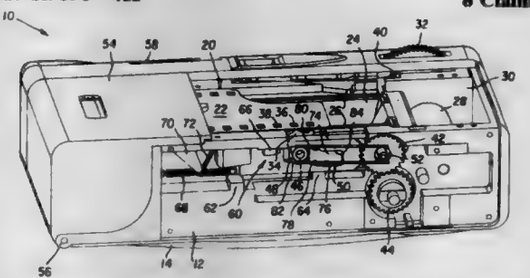
at least one customer station, remotely located from said film finishing system, said station electronically connected to said film finishing system for receiving and displaying the digitized images when addressed by said film finishing system.

5,799,220

CAMERA WITH ACTUATOR FOR MOVING SPROCKET WHEEL TO FILM ENGAGING POSITION WHEN DOOR CLOSED

Dennis R. Zander, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1997, Ser. No. 898,096
Int. Cl.[6] G03B 17/00
U.S. Cl. 396—411 **8 Claims**



1. A camera comprising a door moveable to be closed, a sprocket wheel having respective teeth for entering successive spaced perforations in a filmstrip to engage the filmstrip and being moveable to a film engaging position for one of said teeth to enter one of the film perforations, and an actuator moveable to move said sprocket wheel to its film engaging position when said door is moved to be closed, is characterized in that:

said actuator has a compliant member which yields elastically when the actuator is moved to move said sprocket wheel to its film engaging position, but one of said teeth comes to rest against a limited section of the filmstrip between two of the film perforations rather than the tooth entering one of the perforations, whereby said compliant member acts to prevent the tooth from perforating the limited section of the filmstrip.

5,799,221

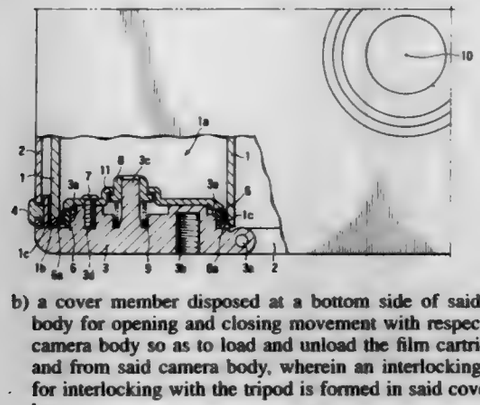
CAMERA

Harushige Yamamoto, Yamato, and Ryoji Okuno, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1996, Ser. No. 761,247
Int. Cl.[6] G03B 17/02
U.S. Cl. 396—535 **16 Claims**

1. A camera to which a tripod is attachable, comprising:

a) a camera body into and from which a film cartridge can be loaded and unloaded; and



b) a cover member disposed at a bottom side of said camera body for opening and closing movement with respect to said camera body so as to load and unload the film cartridge into and from said camera body, wherein an interlocking portion for interlocking with the tripod is formed in said cover member.

5,799,222

CAMERA WITH FILM CARTRIDGE LOADING FEATURE

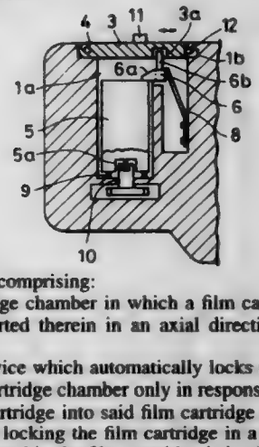
Masaaki Ishihara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 888,879, Dec. 18, 1991, abandoned. This application May 27, 1994, Ser. No. 250,347

Claims priority, application Japan, Jan. 14, 1990, 3-015970; Dec. 21, 1990, 2-412618

Int. Cl.[6] G03B *17/02*

U.S. Cl. 396—538 **60 Claims**



1. A camera comprising:

a film cartridge chamber in which a film cartridge is loaded by being inserted therein in an axial direction of the film cartridge;

a locking device which automatically locks the film cartridge in the film cartridge chamber only in response to full insertion of the film cartridge into said film cartridge chamber, said locking device locking the film cartridge in a position in which a film contained in the film cartridge is in alignment with a film transporting path for photographic operation of the film; and

a detection device which detects a position of said locking device and which determines whether the film cartridge is locked in the position by said locking device in accordance with the position of said locking device.

5,799,223

CAMERA IN USE OF A FILM CARTRIDGE WHICH CONTAINS A FILM WOUND AROUND A WINDING SHAFT IN A LIGHT-SHIELDING CONDITION

Yoshito Konishi, Sakai; Yoshiyuki Inoue, Izumi; Yoshiharu Tanaka, Sakai, and Junichi Tanii, Izumi, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

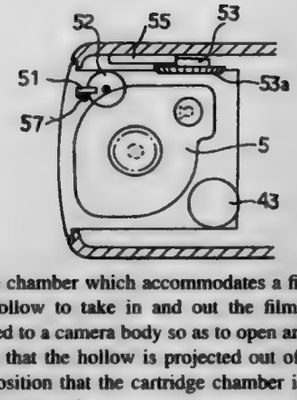
Filed May 30, 1997, Ser. No. 866,241

Claims priority, application Japan, May 31, 1996, 8-106915; May 31, 1996, 8-106916; May 31, 1996, 8-106917

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—538 **15 Claims**

1. A camera in use of a film cartridge which contains a film wound around a winding shaft in a light-shielding condition, comprising:



a cartridge chamber which accommodates a film cartridge, having a hollow to take in and out the film cartridge, and is supported to a camera body so as to open and close between a position that the hollow is projected out of the camera body and a position that the cartridge chamber is contained in the camera body; and

a motor which is disposed in the cartridge chamber and executes at least either one of opening and closing of the cartridge chamber.

5,799,224

PHOTOGRAPHIC SHEET MATERIAL PROCESSING APPARATUS AND A METHOD OF CLEANING

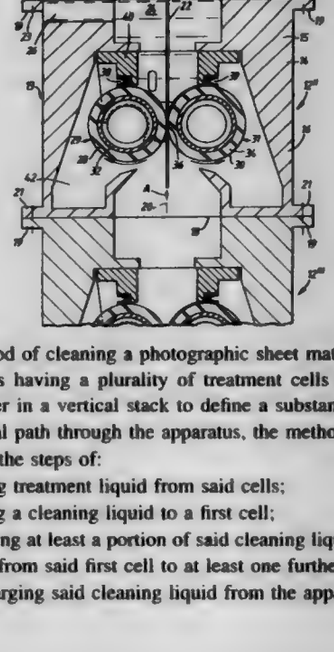
Bart Verlinden, Tongeren, and Jan Claes, Mortsel, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Sep. 26, 1996, Ser. No. 720,246

Claims priority, application European Pat. Off., Oct. 17, 1995, 95202799

Int. Cl.[6] G03D *3/08;3/02*

U.S. Cl. 396—619 **11 Claims**



1. A method of cleaning a photographic sheet material processing apparatus having a plurality of treatment cells mounted one above another in a vertical stack to define a substantially vertical sheet material path through the apparatus, the method being characterised by the steps of:

(i) draining treatment liquid from said cells;

(ii) feeding a cleaning liquid to a first cell;

(iii) allowing at least a portion of said cleaning liquid to pass by gravity from said first cell to at least one further cell; and

(iv) discharging said cleaning liquid from the apparatus.

5,799,225

IMAGE FORMING APPARATUS HAVING VARIABLE TRANSFER AND ATTRACTION VOLTAGE

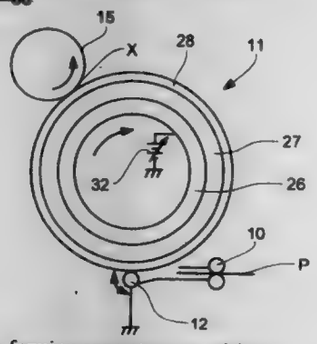
Takuya Abe; Kiyoshi Toizumi; Fumio Shimazu, all of Chiba; Hiromu Yoshimoto, Yamabe-gun; Kouichi Yamauchi; Hiroshi Tachiki, both of Yamatokoriyama; Tomohiro Oikawa, Chiba; Yoshie Iwakura, Narashino, and Atsuyuki Katoh, Tenri, all of Japan, assignors to Sharp Kabushiki Knisha, Osaka, Japan

Filed Sep. 29, 1995, Ser. No. 536,100

Claims priority, application Japan, Oct. 19, 1994, 6-253878; Jun. 8, 1995, 7-142277; Jun. 13, 1995, 7-146510; Jul. 14, 1995, 7-179108

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—66 **9 Claims**



1. An image forming apparatus comprising:

an image carrying body on which a toner image is formed;

transfer means for transferring the toner image formed on said image carrying body onto a transfer paper by bringing the transfer paper into contact with said image carrying body, said transfer means attracting and holding the transfer paper electrostatically, said transfer means including at least a dielectric layer on an outer surface side, and both a semi-conductive layer and a conductive layer on an inner surface side;

voltage applying means for applying an attracting voltage for attracting the transfer paper and a transferring voltage for transferring the toner image onto the transfer paper to said conductive layer of said transfer means, said voltage applying means being capable of changing a value of the attracting voltage and a value of the transferring voltage;

a grounded electrode member for pressing the transfer paper against a surface of said transfer means, and for generating a potential difference between said conductive layer to which the voltage is applied and the transfer paper; and

control means for controlling a transfer process to inhibit the transfer of the toner image while the attracting voltage is applied to said conductive layer and said transfer means is trying to attract the transfer paper fixedly, and to allow the transfer of the toner image while the transferring voltage is applied to said conductive layer after said transfer means has attracted the transfer paper fixedly, the transferring voltage being lower than the attracting voltage.

5,799,226

ELECTROSTATIC IMAGE FORMING APPARATUS WITH TRANSFER CONTROLS FOR DIFFERENT IMAGING MODES

Kunio Shigeta; Yotaro Sato, and Satoshi Haneda, all of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Jun. 16, 1997, Ser. No. 876,745

Claims priority, application Japan, Jun. 21, 1996, 8-161641; Apr. 11, 1997, 9-093842

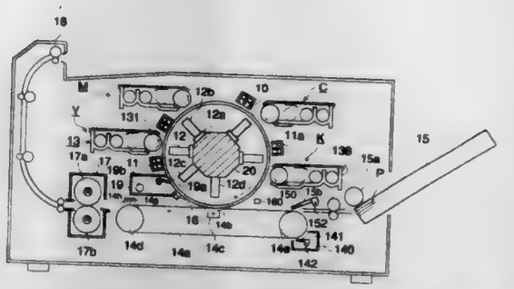
Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—66 **38 Claims**

1. An image forming apparatus comprising:

(a) a first image carrier;

(b) a toner image forming means for forming a toner image on the first image carrier;



(c) a second image carrier provided opposite to the first image carrier for carrying a transferred toner image;

(d) a first transfer means for transferring the toner image on the first image carrier onto the second image carrier, or for transferring the toner image on the first image carrier onto one side of a transfer material;

(e) a second transfer means for transferring the toner image carried on the second image carrier onto the other side of the transfer material;

(f) a fixing means for fixing at least one of the toner image on said one side of the transfer material on which the toner image has been transferred by the first transfer means and the toner image on said other side of the transfer material on which the toner image has been transferred by the second transfer means; and

(g) a control means for controlling the toner image forming means, the first transfer means and the second transfer means,

wherein the control means has a first image forming mode in which image formation is conducted only on said one side of the transfer material, a second image forming mode in which image formation is conducted only on said other side of the transfer material, and a third image forming mode in which image formation is conducted on both sides of the transfer material,

and wherein the control means changes a transfer current or a transfer voltage of at least one of the first transfer means and the second transfer means, in accordance with the first, second or third image forming mode.

5,799,227

NON-MAGNETIC TONER DYNAMIC RECYCLING

Mark A. Matheis, Frederick, Md.; Daniel E. Kanfoush, Niagara Falls, and Orrin D. Christy, North Tonawanda, both of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Jun. 6, 1996, Ser. No. 659,612

Int. Cl.[6] G03G *15/08*

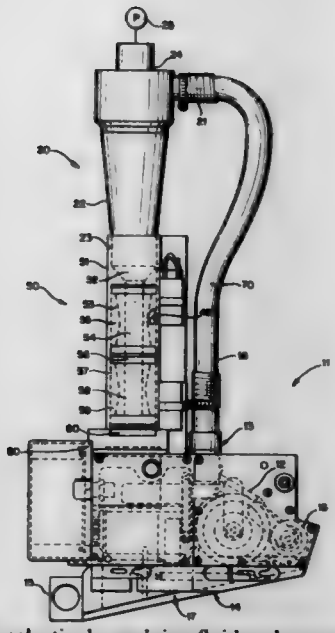
U.S. Cl. 399—92 **19 Claims**

1. A method of reusing toner in an electrostatic imaging system, the electrostatic imaging system using a fluidized bed of toner particles supplied by a reservoir of non-magnetic toner particles; said method comprising the steps of:

(a) vacuum collecting airborne wayward toner particles in the electrostatic imaging system to provide an air stream with entrained toner particles;

(b) causing the air stream with entrained toner particles to flow in a vortex so that the toner particles are separated from the entraining air; and

(c) dynamically returning the separated toner particles to the electrostatic imaging system, by returning the non-magnetic toner particles to the reservoir through at least one airlock which comprises first and second flexible material pinching



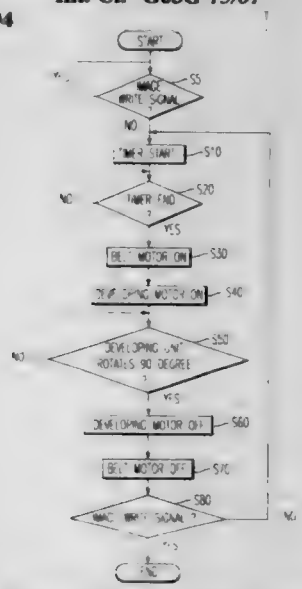
valves, by selectively applying fluid under pressure to the first and second valves so that only one valve is open at a time.

5,799,228

IMAGE FORMING APPARATUS WHICH PREVENTS ADVERSE AFFECTS FROM HEATING ELEMENTS

Nobuo Iwata, Kanagawa-ken; Shingo Katoh, Yokohama; Yutaka Shio, Yokohama, and Tomonori Yabuta, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 10, 1996, Ser. No. 661,116
Claims priority, application Japan, Jun. 9, 1995, 7-168226
Int. Cl.[6] G03G *15/01*
U.S. Cl. 399—94 **19 Claims**



1. An image forming device including a revolver developing unit, comprising:

a first controller for detecting a presence of an image write signal in the image forming device;

a second controller for rotating said revolver developing unit when the first controller initially detects the presence of the image write signal and then does not detect the presence of the image write signal for a predetermined timing, wherein the second controller continuously rotates said revolver developing unit when the first controller does not detect the presence of the image write signal for the predetermined timing;

a photosensitive belt to contact the revolver developing unit;

a third controller for driving said photosensitive belt when the first controller does not detect the presence of the image write signal; and

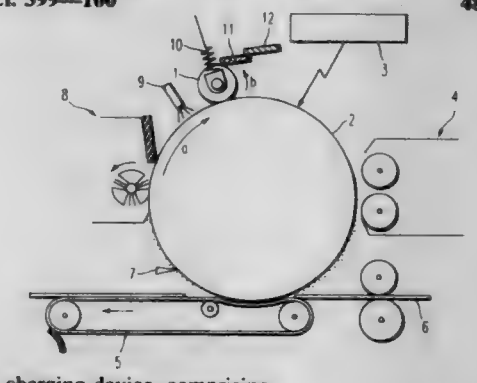
wherein the third controller drives said photosensitive belt for a predetermined period prior to the developing roller contacting the photosensitive belt to the predetermined period after the developing roller contacts the photosensitive belt.

5,799,229

TONER SPREADING DEVICE FOR A CHARGING ROLLER OF AN IMAGE FORMING APPARATUS

Masato Yokoyama, Tokyo; Takaya Muraishi; Masumi Sato, both of Yokohama; Hiroshi Saito, Kawasaki, and Toshiyuki Uchida, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 11, 1997, Ser. No. 814,361
Claims priority, application Japan, Mar. 11, 1996, 8-083116
Int. Cl.[6] G03G *15/02;21/00*
U.S. Cl. 399—100 **48 Claims**



1. A charging device, comprising:

a charging roller which charges an image bearing member and rotates in a predetermined direction;

a holder, and

a spreading blade having a contact surface and a width which is parallel to the contact surface, the width having a first end and a second end opposite to the first end, the first end being a free end which is unsupported and the second end being supported by the holder, the contact surface being held in contact with said charging roller to spread toner adhered to a surface of the charging roller when the charging roller rotates in the predetermined direction,

wherein the holder supports said spreading blade at the second end so that a frictional force acting on the spreading blade, which results from contact between the charging roller and spreading blade when the charging roller rotates in the predetermined direction, urges the spreading blade away from the holder.

5,799,230

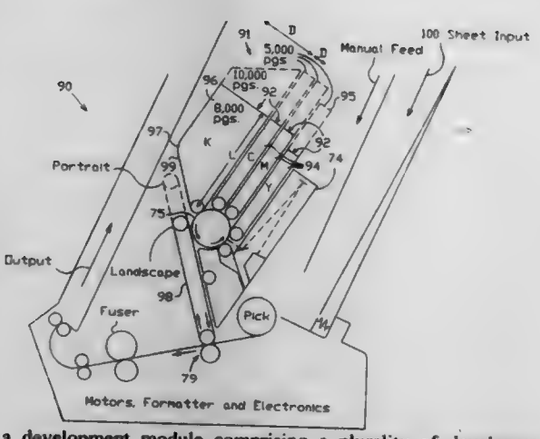
COMPACT ELECTROPHOTOGRAPHIC COLOR DEVELOPER MODULE

Michael B. Lloyd, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 24, 1997, Ser. No. 823,276
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—107 **12 Claims**

1. A compact, vertically-oriented electrophotographic print engine for placement on a horizontal desk surface, the print engine having a front side, a back side, and a width, the print engine comprising:

a generally cylindrical photoconductor drum having an axis parallel to said print engine width and a circumference with a top half and a bottom half, wherein the photoconductor drum axis lies on a horizontal plane for being parallel to a horizontal desk surface;



a development module comprising a plurality of developers, each developer having a canister disposed above the photoconductor drum and each having a development sleeve in close proximity to said top half of the photoconductor drum; and

an intermediate transfer member, a waste toner removal member, and a charging member, all disposed substantially below the photoconductor drum and in close proximity to said bottom half of the drum circumference:

wherein all of the canisters have front and back horizontal extents lying on planes intersecting said drum axis, and wherein all of said planes of the horizontal extents are at angles greater than 45° above said horizontal plane;

wherein said intermediate transfer member is an elongated belt disposed substantially below the photoconductor drum and at an angle between 45°–80° relative to said horizontal plane; and

the print engine further comprising a laser scanner having a longitudinal axis, said scanner disposed on a side of the photoconductor drum opposite from said elongated belt with said scanner longitudinal axis disposed at greater than 45 relative to said horizontal plane so that said elongated belt and said scanner form a V-configuration beneath the drum;

whereby the print engine exhibits a small footprint when placed on the desk surface.

5,799,231

VARIABLE INDEX DISTRIBUTED MIRROR

Stephen McConnell Gates, Ossining, N.Y.; Anthony C. Lowe, Braishfield, United Kingdom, and Bardin Pezeshki, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1996, Ser. No. 687,311

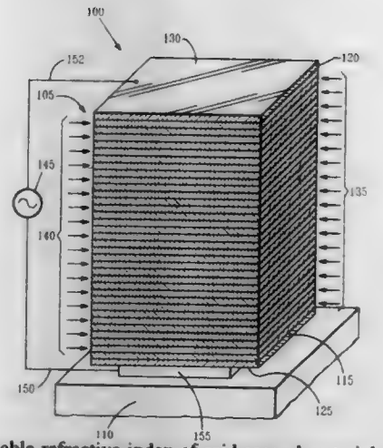
Int. Cl.[6] G02F *1/1335;1/1337;1/1333;1/13*

U.S. Cl. 349—115 **21 Claims**

1. A vertical distributed mirror, electrically variable between substantially transparent and reflective states, comprising:

a pair of electrodes,

alternating layers having discrete interfaces therebetween, said alternating layers respectively being of a first material having a fixed refractive index and a second material having a variable refractive index, said discrete interfaces controlling alignment of said second material, said alternating layers being located between said pair of electrodes, said first material being different from said second material,



said variable refractive index of said second material varying in response to a signal applied across said pair of electrodes.

5,799,232

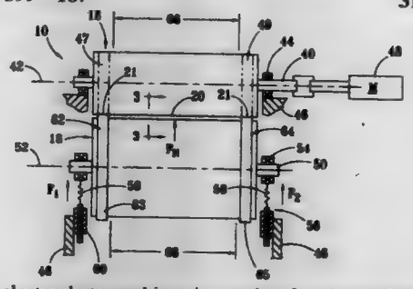
FRICTION DRIVE FOR AN ELECTROPHOTOGRAPHIC PRINT ENGINE

E. Neal Tompkins, Atlanta; Keith J. Bradley, Dunwoody, and Peter A. Zuber, Norcross, all of Ga., assignors to T/R Systems, Norcross, Ga.

Filed Oct. 7, 1996, Ser. No. 727,791

Int. Cl.[6] G03G *15/00;15/16*

U.S. Cl. 399—167 **31 Claims**



1. An electrophotographic print engine for electrophotographically printing images onto an image carrier, said print engine having a transfer device for transferring a developed image across a transfer nip, comprising:

a photoconductive member for carrying a developed image;

an image carrier for receiving from said photoconductive member said developed image in a defined image path on said image carrier, an arcuate one of said photoconductive member and said image carrier having an arcuate surface associated therewith that is disposed adjacent the other of said photoconductive member and said image carrier to form a transfer nip therebetween;

a drive region disposed outside of said image path on both said photoconductive member and said image carrier;

a drive mechanism for driving a first one of said photoconductive member or said image carrier; and

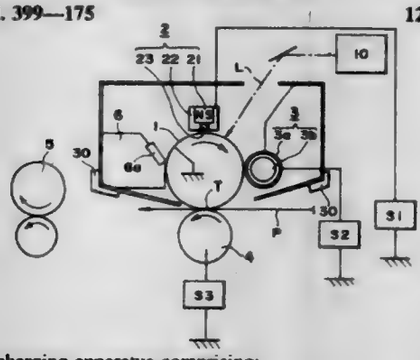
a pressure member for urging said photoconductive member and said image carrier together at said transfer nip, such that a predetermined first force is provided at said transfer nip, with first and second surfaces of respective ones of said photoconductive member and said image carrier which are disposed in said drive region configured to provide a second force therebetween, which is greater than said first force and provides a frictional engagement between said first and second surfaces to drive a second one of said photoconductive member and said image carrier which is not driven by said drive mechanism.

5,799,233

CHARGING APPARATUS AND IMAGE FORMING APPARATUS

Yasuyuki Ishii, Mishima; Hiroyuki Adachi, Shizuoka-ken; Hiroki Kisu, Fujisawa, and Hiroaki Ogata, Shizuoka-ken, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 710,998
Claims priority, application Japan, Sep. 26, 1995, 7-273516
Int. Cl.[6] G03G 15/02
U.S. Cl. 399—175 12 Claims



1. A charging apparatus comprising;

a charging member contactable or proximatable to a member to be charged, said charging member being capable of being supplied with a voltage;

wherein said charging member comprises a magnetic particle layer, and a magnetic force generating means with a gap for generating magnetic force in the magnetic particles, said magnetic particle layer and magnetic force generating means forming a magnetic circuit; and

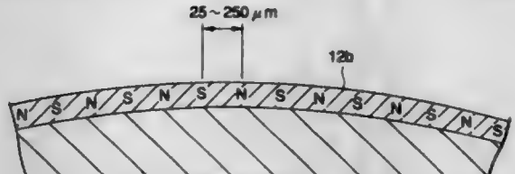
wherein the magnetic particles have a particle size of no less than 10 μm and no more than 100 μm, and the maximum magnetic flux density in the gap ranges $1,000\times10^{-4}$ T–$10,000\times10^{-4}$ T.

5,799,234

DEVELOPING APPARATUS USING A DUAL COMPONENT DEVELOPER

Nobumasa Furuya, and Shigehito Ando, both of Ashigarakami-gun, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 30, 1997, Ser. No. 791,164
Claims priority, application Japan, Feb. 2, 1996, 8-040380
Int. Cl.[6] G03G 15/09
U.S. Cl. 399—277 19 Claims



1. A developing apparatus comprising:

a developer support being disposed in the proximity of or in contact with an image support having a surface on which an electrostatic latent image is formed, said developer support having a peripheral surface supported turnably; and

a developing bias power supply for supplying a developing bias voltage between said developer support and said image support,

wherein

a dual component developer including toner and magnetic carriers is supported on the peripheral surface of said developer support to be transported, and the toner is transferred to said image support in an electric field formed at a position where said image support faces said developer support for forming a toner image,

said developer support has a plurality of magnetic poles for attracting almost one layer of the carriers on the peripheral surface of said developer support almost uniformly,

said plurality of magnetic poles are placed as an alternating pattern of S and N poles, and

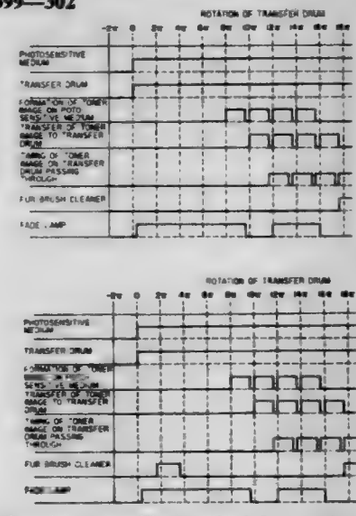
a distance between centers of positions corresponding to said magnetic poles, of a magnetic field formed in the vicinity of the peripheral surface of said developer support ranges from 25 μm to 250 μm.

5,799,235

ELECTROPHOTOGRAPHIC APPARATUS HAVING AN INTERMEDIATE TRANSFER DEVICE AND REGISTRATION CONTROLLING METHODS THEREFOR

Masaru Nakano, Tsukuba; Masafumi Suzaki, Hitachi; Tetsuro Akasaki, Hitachinaka, and Masahiko Saito, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 227,336, Apr. 14, 1994. This application Jan. 20, 1995, Ser. No. 375,668
Claims priority, application Japan, Jan. 20, 1994, 6-004411
Int. Cl.[6] G03G 21/00;21/14
U.S. Cl. 399—302 8 Claims



8. A registration controlling method for a color electrophotographic apparatus, comprising the steps of:

charging a photosensitive medium by an electrostatic charger;

forming an electrostatic latent image on the photosensitive medium by an exposure device;

transforming the electrostatic latent image into a toner image by a developer;

transferring the toner image to an intermediate transfer device;

repeating the steps recited above for a plurality of colors of toner images;

transferring a color toner image formed on the intermediate transfer device to a recording medium; and

fixing the recording medium by a fixing device; and ejecting the recording medium out of the apparatus,

wherein a cleaner for removing toner on the intermediate transfer device is rendered operative for a first period of time during a time period after the start of driving the photosensitive medium and before the front edge of the toner image formed on the photosensitive medium reaches the intermediate transfer device, said first period of time being equal to a time required for the intermediate transfer device to rotate at least once or more, and wherein, after the first period of time, the cleaner is rendered inoperative for a second period of time sufficient to allow toner to be present on the intermediate

transfer device at a transfer point between the photosensitive medium and the intermediate transfer device in order to reduce electrostatic attraction between the photosensitive medium and the intermediate transfer device during transfer of the toner image.

5,799,236

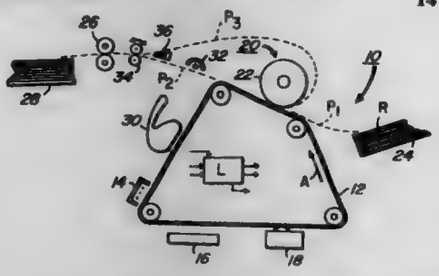
FACILITATING DUPLEX COPYING WITH A REPRODUCTION APPARATUS UTILIZING AN INTERMEDIATE TRANSFER MEMBER

Francis M. Paczkowski, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 31, 1997, Ser. No. 903,583

Int. Cl.[6] G03G *15/00;15/20*

U.S. Cl. 399—309 **14 Claims**



1. An electrostatographic reproduction apparatus, utilizing an intermediate image transfer member to transfer marking particle images to a receiver member transported along a travel path, said reproduction apparatus including a mechanism for facilitating duplex copying, said mechanism for facilitating duplex copying comprising:

a prefuser located in juxtaposition with a portion of a receiver member travel path, downstream of said intermediate transfer member;

an inverter for transporting a receiver member from said prefuser back to said intermediate transfer member in a side-for-side inverted orientation; and

a control for selectively activating said prefuser for tacking a first side image to a receiver member, and diverting such receiver member into said inverter to be transported back to said intermediate transfer member to have a second side image formed thereon.

5,799,237

READING APPARATUS IN WHICH IMAGE READING MEANS MAY BE FIXED TO READ AND ORIGINAL BEING CONVEYED

Noriyoshi Ueda; Masakazu Hiroi, both of Yokohama; Shinichi Nakamura, Kawasaki; Yoshio Mizuno, Ichikawa; Chikara Sato, Hachioji; Tokuharu Kaneko, Yokohama; Yoshinori Isobe, Tokyo; Akimaro Yoshida, Yokohama; Yasuhide Hishikawa, Kawasaki, and Tomohito Nakagawa, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

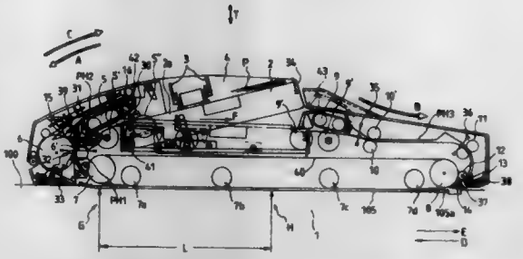
Continuation of Ser. No. 674,989, Jul. 3, 1996, abandoned, which is a continuation of Ser. No. 321,923, Oct. 12, 1994, abandoned. This application May 30, 1997, Ser. No. 865,620

Claims priority, application Japan, Oct. 14, 1993, 5-280404; Oct. 14, 1993, 5-280405

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—367 **56 Claims**

1. A reading apparatus including an image reading means for reading a sheet original positioned at a reading position and an automatic sheet convey means for conveying the sheet original onto the reading position, and the sheet original can be read through an image flow-reading mode while the sheet original is being conveyed by said automatic sheet convey means by fixing said image reading means, characterized by that:



a convey path for directing the sheet original to the reading position; and

a control means for initiating conveyance of the sheet original waiting at a predetermined position in the convey path in response to a flow-reading mode start signal during the image flow-reading mode, and for initiating the image flow-reading when a tip end of the sheet original reaches a flow-reading position,

wherein a distance between a tip end of the sheet original waiting at the predetermined position and the flow-reading position is set to have a predetermined running distance so that a convey speed of the sheet original when the tip end of the sheet original reaches the flow-reading position reaches substantially a flow-reading speed.

5,799,238

METHOD OF MAKING MULTILAYERED TITANIUM CERAMIC COMPOSITES

George T. Fisher, II, Shedd; Jeffrey S. Hansen, Corvallis; Laurance L. Oden, Albany; Paul C. Turner, Albany, and Thomas L. Ochs, Albany, all of Oreg., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 14, 1995, Ser. No. 490,262

Int. Cl.[6] B22K *7/02*

U.S. Cl. 419—7 **14 Claims**



1. A method making a multilayered, laminated metal ceramic composite plate or sheet, comprising:

a) forming a hot pressed composite body having a microscrostructure comprising at least one metal-based layer and at least one ceramic particulate reinforced metal- based layer, wherein hot pressing comprises exothermically reacting a metal powder or metal powder allows with ceramic particulate of the ceramic particulate reinforced metal-based layer, where the ceramic particulate is selected from the group consisting of C, B, N, BN, B_4C, SiC, and Si_3N_4 at temperatures from about 900° to about 1300° C., for about 5 to about 30 minutes in a forming die under pressures of from about 1000 to 5000 psi:

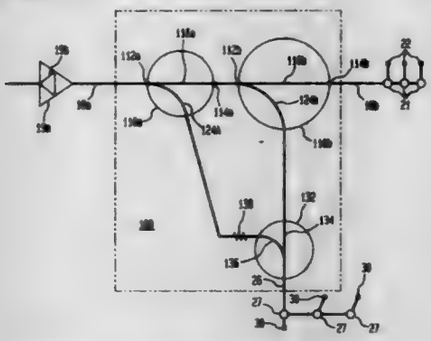
b) hot working the hot pressed body in a manner to substantially reduce a thickness dimension of said hot pressed body and to substantially increase a lateral dimension of said hot pressed body to form a composite plate or sheet having a microstructure including at least one metal-based layer and at least one ceramic reinforced metal-based layer in the thickness direction of said composite plate or sheet,

where the metal is selected from the group consisting of titanium, zirconium, hafnium, chromium, molybdenum, tungsten vanadium, niobium, and tantalum.

5,799,239
ASYMMETRIC COUPLING METHOD FOR ATTENUATING UPSTREAM AND DOWNSTREAM SIGNALS BY DIFFERENT AMOUNTS TO REDUCE INGRESS NOISE

Cameron Gough, Hackettstown, N.J., and Isaac E. Morgan, Stone Mountain, Ga., assignors to AT&T Corp, Middletown, N.J.

Filed Aug. 26, 1996, Ser. No. 703,290
Int. Cl.[6] H04H *1/00;* **H04N** *7/173*
U.S. Cl. 455—5.1 **5 Claims**



1. An asymmetric coupling method for attenuating downstream signals by a different attenuation value from upstream signals, comprising the steps of:

diverting a portion of a downstream signal present on a transmission line onto a first diversion path;

passing the diverted portion of the downstream signal on the first diversion path to at an output port through a first path of a diplex filter that separates the downstream signals on the first path from the upstream signals received on a second path;

passing the upstream signals received on the second path of the diplex filter through a matching loss element; and

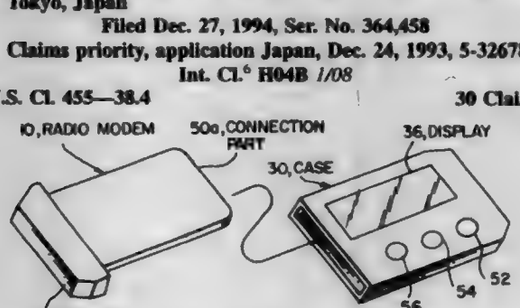
transmitting the upstream signals received from the matching loss element through a second diversion path onto the transmission line, wherein

the collective attenuation of the downstream signal along the first diversion path and the first path of the diplex filter being different than the collective attenuation of the upstream signal along the second path of the diplex filter, the matching loss element and the second diversion path.

5,799,240
RADIO COMMUNICATION DEVICE COMBINABLE WITH A RADIO MODEM FOR COMPUTER

Yukio Miyashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1994, Ser. No. 364,458
Claims priority, application Japan, Dec. 24, 1993, 5-326785
Int. Cl.[6] H04B *1/08*
U.S. Cl. 455—38.4 **30 Claims**



1. A radio communication device, comprising:

a radio modem for a computer having a first connection part electrically connectable to said computer; and

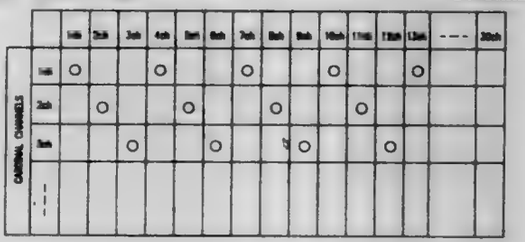
a case having a second connection part electrically connectable to said first connection part of said radio modem when said radio modem is separated from said computer, wherein said case is other than a general-purpose computer;

wherein said radio modem and said case operate as said radio communication device when said radio modem and said case are connected electrically, and wherein said radio communication device automatically goes into a signal receiving mode in response to connection of said radio modem to said case.

5,799,241
RADIO APPARATUS

Akihiro Matsubara, Kasuga, and Masahiro Shigyo, Chikushi-gun, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 26, 1996, Ser. No. 592,788
Claims priority, application Japan, Jan. 27, 1995, 7-011744
Int. Cl.[6] H04B *15/00*
U.S. Cl. 455—62 **14 Claims**



1. A radio apparatus comprising:

a parent unit; and

a child unit having:

a transceiver for transmitting to said parent unit and receiving from said parent unit over one channel of a plurality of channels, said one channel establishing a radio link between said parent unit and said child unit and determining a cardinal point;

first control means for controlling said transceiver to scan channels for a signal, wherein said channels are scanned in a first limited group which is a subset of the plurality of channels; and

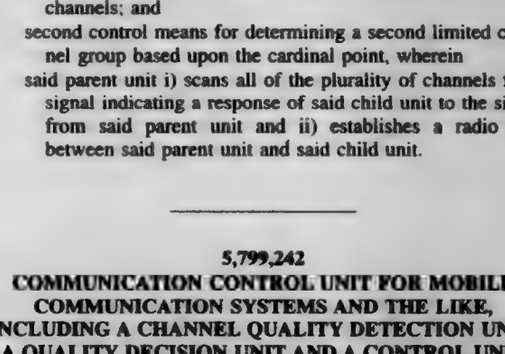
second control means for determining a second limited channel group based upon the cardinal point, wherein

said parent unit i) scans all of the plurality of channels for a signal indicating a response of said child unit to the signal from said parent unit and ii) establishes a radio link between said parent unit and said child unit.

5,799,242
COMMUNICATION CONTROL UNIT FOR MOBILE COMMUNICATION SYSTEMS AND THE LIKE, INCLUDING A CHANNEL QUALITY DETECTION UNIT, A QUALITY DECISION UNIT AND A CONTROL UNIT

Hiroyasu Sano, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 22, 1996, Ser. No. 735,245
Claims priority, application Japan, Mar. 8, 1996, 8-051778
Int. Cl.[6] H04B *1/10;15/00*
U.S. Cl. 455—63 **13 Claims**



1. A communication control unit, comprising:

a channel quality detection unit for calculating an index of the quality of a channel employed using a received signal, wherein said channel quality detection unit includes: a differential unit for calculating a multi-differential phase by performing a plurality of times subtraction on a first received signal and a second received signal laaging behind said first received signal by a predetermined time, a frequency calculation block for calculating a frequency by which said multi-differential phase falls into a pseudo-error area within a predetermined observation time, and a quality index calculation block for calculating an index of the quality of a channel on the basis of an output of said frequency calculation block;

a quality decision unit for deciding from the result of channel quality index calculation performed on the channel employed which is provided by said channel quality detection unit whether or not a channel is good; and

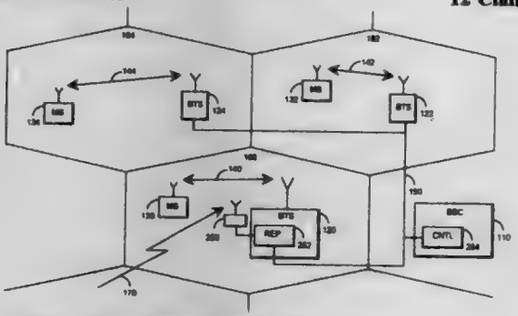
a control unit for controlling the channel according to the result of channel quality decision performed by said quality decision unit.

5,799,243

CELLULAR RADIQ SYSTEM AND A METHOD FOR MEASURING THE INTERFERENCE LEVEL

Heikki Ojaniemi, San Diego, Calif., assignor to Nokia Telecommunications Oy, Espoo, Finland

Filed Dec. 30, 1996, Ser. No. 774,647
Int. Cl.[6] H04B *15/00*
U.S. Cl. 455—63 **12 Claims**



1. A cellular radio system comprising:

at least one base transceiver station,

at least one mobile station,

an air interface communication link between said base transceiver station and said mobile station, which air interface communication link is transmitted on at least one radio frequency channel,

means for measuring the interference level on said at least one radio frequency channel,

means for reporting the measured interference level,

means for making decisions on system level actions including at least one of handoffs, power-control, new call initiations and call releases using the measured interference, level as an aid,

said means for measuring the interference level being arranged to measure in three steps, namely;

A) after each base transceiver station has been installed and commissioned and is ready to be taken into use, measuring the level of out-of-system interference,

B) when base transceiver stations neighboring a respective said base transceiver station are in use, measuring their effect on the interference level, and

C) when a respective said base transceiver station is in use, measuring the overall interference level, and

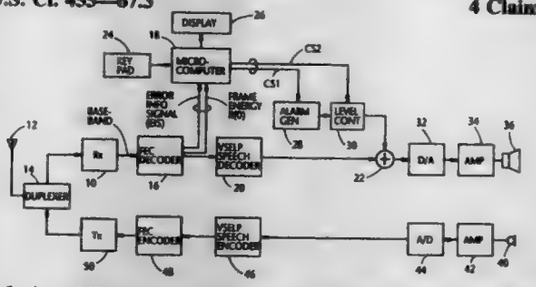
said means for measuring being arranged for using the interference level measured in step A) as a noise floor reference point relative to which the interference level in normal operation in step C) is reported.

5,799,244

DIGITAL MOBILE UNIT HAVING A FUNCTION OF ISSUING A TONE LEVEL CONTROLLABLE INPUT SIGNAL DEGRADATION ALARM AND A METHOD THEREOF

Kouichi Matsumoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 21, 1996, Ser. No. 668,191
Claims priority, application Japan, Jun. 21, 1995, 7-153738
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—67.3 **4 Claims**



1. A mobile telephone unit having an alarm signal generating function for audibly advising a subscriber of incoming speech signal deterioration, comprising:

first means for deriving an error information signal and a speech energy value during decoding an incoming signal;

second means for receiving said error information signal and said speech energy value, said second means checking said error information signal and issuing an alarm signal when said incoming signal is deteriorated to an extent that communication interruption is imminent, said second means controlling a level of said alarm signal in accordance with said speech energy value; and

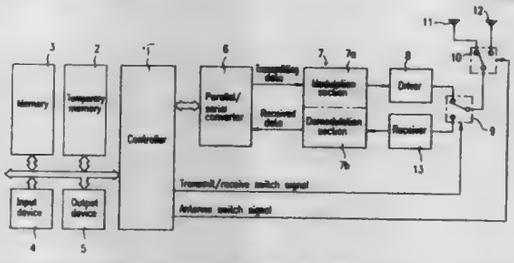
third means for superimposing said alarm signal on a speech signal derived from said incoming signal.

5,799,245

COOPERATIVE DIVERSITY ANTENNA SWITCHING ON TRANSMITTER AND RECEIVER SIDE

Masakazu Ohashi, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 26, 1996, Ser. No. 638,562
Claims priority, application Japan, Apr. 27, 1995, 7-104433
Int. Cl.[6] H04B *7/06;7/08;* **H04L** *1/06*
U.S. Cl. 455—69 **12 Claims**



1. A pair of radio communication apparatuses on a transmitter side and a receiver side for conducting data transmission and reception through radio communication by a space diversity method where a plurality of antennas are switched there between.

wherein the radio communication apparatus on the transmitter side comprises a transmission circuit for conducting data transmission and a transmitting antenna switch circuit for selecting a transmitting antenna among a plurality of transmitting antennas for transmitting radio waves and connecting the selected transmitting antenna to the transmission circuit;

the radio communication apparatus on the receiver side comprises a reception circuit for conducting data reception and a receiving antenna switch circuit for selecting a receiving antenna among a plurality of receiving antennas on the

receiver side the radio waves and connecting the selected receiving antenna to the reception circuit

wherein the radio communication apparatus on the transmitter side further comprises transmitting antenna switch means for executing an antenna switch processing by controlling whether or not the transmitting antennas are switched by the transmitting antenna switch circuit and which transmitting antenna is selected in accordance with an antenna switch procedure designed so that, when both the transmitting antenna switch circuit and the receiving antenna switch circuit switch the transmitting antennas and the receiving antennas simultaneously or either one of the transmitting antenna switch circuit and the receiving antenna switch circuit switches the transmitting or receiving antennas and a switch count corresponding to the number of times of switching is equal to a product of the number of transmitting antennas and the number of receiving antennas, all combinations of the transmitting antennas and the receiving antennas realized by all of the switching are different from one another, and

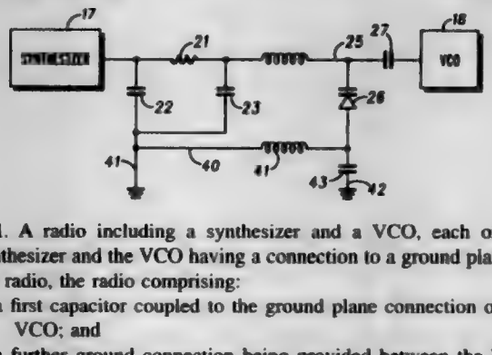
the radio communication apparatus on the receiver side further comprises receiving antenna switch means for executing an antenna switch processing by controlling whether or not the receiving antennas are switched by the receiving antenna switch circuit and which receiving antenna is selected in accordance with the antenna switch processing.

5,799,246

RADIO WITH SYNTHESIZER AND VCO

Ariel Luzzatto, Tel Aviv; Moshe Ben-Ayun; Roni Shamsian, both of Holon, and Ilan Y. Horowitz, Nes-Ziona, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 21, 1994, Ser. No. 263,294
Int. Cl.[6] H04B 1/40
U.S. Cl. 455—76 **19 Claims**



1. A radio including a synthesizer and a VCO, each of the synthesizer and the VCO having a connection to a ground plane of the radio, the radio comprising:

a first capacitor coupled to the ground plane connection of the VCO; and

a further ground connection being provided between the VCO and the synthesizer for providing a common baseband ground for the VCO and the synthesizer, isolated with respect to baseband frequency currents in the ground plane of the radio.

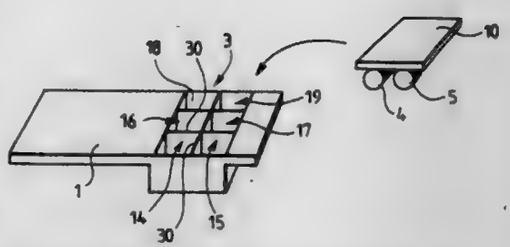
5,799,247

FILTER

Jari Lapinlampi, Oulu, Finland, assignor to ADC Solitra Oy, Kempele, Finland

Filed Jul. 11, 1996, Ser. No. 678,764
Claims priority, application Finland, Nov. 8, 1995, 955385
Int. Cl.[6] H04B 1/38
U.S. Cl. 455—90 **31 Claims**

1. In a radio equipment having a body and filter the filter comprising a shell construction with at least one section and a conductor means mounted in the section of the shell construction, the improvement wherein:



the shell construction is a fixed part of the body; and

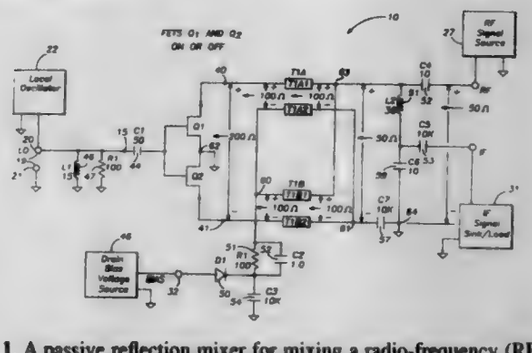
the shell construction is integral with the body.

5,799,248

QUASI-DOUBLE BALANCED PASSIVE REFLECTION FET MIXER

Michael W. Vice, El Granada, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed Dec. 20, 1995, Ser. No. 575,409
Int. Cl.[6] H04B 1/28
U.S. Cl. 455—333 **24 Claims**



1. A passive reflection mixer for mixing a radio-frequency (RF) signal with a local oscillator (LO) signal comprising:

a first (Q1) and a second (Q2) FET transistor each having a gate and a drain and a source terminal, the first and second FET transistors having said gate terminals directly joined together and said source terminals directly joined together such that the first and second FET transistors are connected in series such that a current entering a drain terminal of said first FET exits said drain terminal of said second FET and a current entering a drain terminal of said second FET exits said drain terminal of said first FET;

a local oscillator input circuit having an unbalanced input port for connecting to an external local oscillator signal source, and a first two terminal output port for communicating said local oscillator signal to said joined gates and said joined sources of said first and second FET transistors such that said first and second FET transistors are both either driven on and off at the same time in response to said externally applied local oscillator signal;

a coupling network having first and second terminals of a primary port and third and fourth terminals of a secondary port, and comprising a transmission line balun having first and second transmission line components connected to divide the voltage of an incident traveling wave at said primary port equally between said first and second transmission line components, and to sum the currents of traveling waves generated by said first and second transmission line components to generate an exitant traveling wave signal at said secondary port;

said Q1 and Q2 presenting a substantially higher impedance than the impedance of said transmission line components coupling said RF signal to said FET drains when said Q1 and Q2 are OFF, and said Q1 and Q2 presenting a substantially lower impedance than the impedance of said transmission line

coupling said RF signal to said FET drains when said Q1 and Q2 are ON; said RF signal being substantially completely reflected by each said Q1 and Q2 with no phase shift by said OFF Q1 and Q2, and said signal being substantially completely reflected by each said Q1 and Q2 with 180° phase shift by said ON Q1 and Q2;

a diplexer circuit having a first port for coupling to said coupling network secondary port, and including low-pass filter means for separating an intermediate frequency (IF) signal from said exitant traveling wave signal and having means for receiving a radio-frequency (RF) signal and communicating said signal to said first and second FETs;

substantially all of said RF signal incident on said first and second FETs being reflected from said first and second FETs during ON and OFF FET conduction states such that commutation of said RF signal during each half cycle of said local oscillator signal is substantially symmetrical, and such that said RF reflected signal components in said reflected wave are substantially canceled from said exitant traveling wave to generate said intermediate-frequency (IF) signal;

said coupling network first terminal being connected to said first FET transistor drain terminal, said coupling network second terminal being connected to said second FET transistor drain terminal, said third terminal being connected to a first terminal of said first diplexer port, and said fourth terminal being connected to a second terminal of said diplexer port; and

a bias circuit coupleable to an external bias source for providing a direct current bias to the drains of said first and second FET transistors coupled to said coupling network so that a direct current circuit path is defined between said bias source, said coupling network, said FET transistor drain terminals, and said FET transistor source terminals.

5,799,249

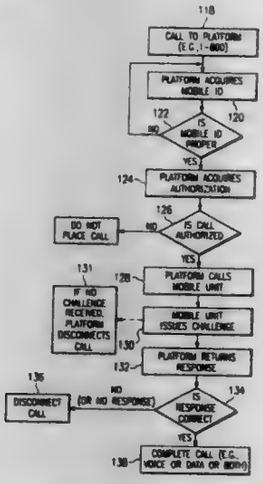
METHOD AND APPARATUS FOR A NATION-WIDE CELLULAR TELEPHONE NETWORK

William C. Kennedy, III, Dallas, and Kenneth R. Westerlage, Fort Worth, both of Tex., assignors to HighwayMaster Communications, Inc., Dallas, Tex.

Continuation of Ser. No. 95,166, Jul. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 826,521, Jan. 27, 1992, abandoned. This application Oct. 25, 1995, Ser. No. 548,379

Int. Cl.[6] H04Q *7/22*

U.S. Cl. 455—411 **32 Claims**



1. A method of controlling access to cellular telephone systems, comprising:

establishing a voice channel between a telecommunications platform and a mobile unit by directing a call from the telecommunications platform to the mobile unit through a local cellular telephone system;

performing a handshake protocol between the mobile unit and the telecommunications platform using the voice channel, the handshake protocol comprises generating a response at the telecommunications platform as a mathematical function of a challenge received at the telecommunications platform;

communicating the response to the mobile unit; and

providing voice communication using the previously established voice channel if the response is proper.

5,799,250

INTERFACE ARRANGEMENT FOR CONNECTING BASE STATIONS TO A PRIVATE BRANCH EXCHANGE

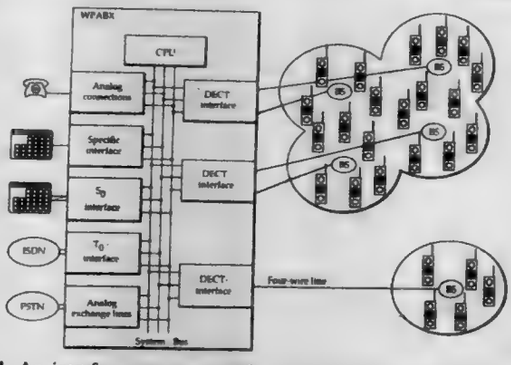
Artur Veloso, Göppingen; Klaus Geywitz, Gerlingen; Joachim Endler, and Hans-Joachim Adolphi, both of Stuttgart, all of Germany, assignors to Alcatel N.V., Stuttgart, Germany

Continuation of Ser. No. 238,306, May 5, 1994. This application Mar. 22, 1996, Ser. No. 621,206

Claims priority, application Germany, May 11, 1993, 43 15 621.5

Int. Cl.[6] H04Q *7/24*

U.S. Cl. 455—422 **7 Claims**



1. An interface arrangement for connecting a plurality of base stations (BS), each serving an area called a cell, to a private branch exchange (WPABX) to which cordless terminals in a cell have access via a radio interface to the base station (BS) serving the cell for communication between the cordless terminals and the WPABX according to protocol of the DECT-Standard, characterized in that each of said base stations (BS) is connected via a line interface to a different, corresponding which performs protocol layer number two functions of the DECT-Standard, and thereby to a single microprocessor with associated RAM and EPROM; and further in that the MAC modules are connected jointly, via a module for converting adaptive differential pulse code modulation (ADPCM) to pulse code modulation (PCM) and for echo cancellation, to a system interface circuit, which is connected by a system bus to a central processing unit (CPU) of the private branch exchange (WPABX).

5,799,251

RADIO SYSTEM HAVING ADDITIONAL SIGNALLING CHANNEL DEDICATED FOR USER DATA TRANSMISSION OTHERWISE CARRIED ON CONTROL CHANNEL

Tapio Paavonen, Saarijärvi, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland

Continuation-in-part of Ser. No. 211,900, Apr. 18, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 691,442

Claims priority, application Finland, Aug. 18, 1992, 923708

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—517 **13 Claims**

1. A radio system, comprising

a plurality of mobile radio stations,



a base station,

a mobile exchange,

a first radio channel dedicated to operating only as a control channel for signalling control messages between said base station and said mobile stations and for transmitting user data messages, said control messages transmitted on said control channel by said base station including a first system code indicating to said plurality of mobile stations that said first radio channel is a control channel,

a second radio channel dedicated to operating only as an additional signalling channel for transmitting user data messages and control messages and operating according to the same protocol as said first radio channel, said control messages transmitted on said additional signalling channel by said base station including a second system code indicating to said plurality of mobile stations that said second radio channel is not a control channel,

said first radio channel being capable of operating as a control channel while said second radio channel is transmitting user data messages.

5,799,252

RADIO COMMUNICATION SYSTEM WITH PLURALITY OF WIRED LINES

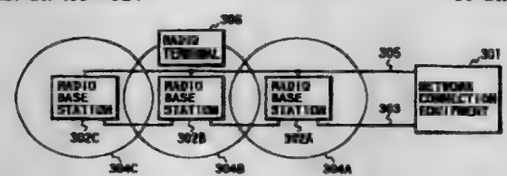
Arata Nakagoshi, Tokyo, and Takafumi Kojima, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1996, Ser. No. 609,747

Claims priority, application Japan, Mar. 3, 1995, 7-043848

Int. Cl.[6] H04B *7/00*

U.S. Cl. 455—524 **10 Claims**



1. A radio communication system which includes a plurality of radio base stations, which are connected to each other in a sequence, comprising:

at least one radio terminal;

a plurality of radio base stations for communicating with said radio terminal via radio;

a network connecting apparatus including means for managing information of radio channels utilized by each of said plurality of radio base stations; and

a plurality of wired lines including a plurality of wired communication lines and a plurality of wired control lines, said wired communication lines and said wired control lines connecting said network connecting apparatus and said plurality of radio base stations in sequence so that communication information is relayed in sequence and so that information regarding a radio channel is transmitted among said network connecting apparatus and said plurality of radio base stations;

wherein when said radio terminal requests an assignment of a radio channel to a first radio base station of said plurality of radio base stations, said first radio base station requests an assignment of a radio channel to said means for managing information of said network connecting apparatus via one of said wired control lines; and

wherein said means for managing information of radio channels in said network connecting apparatus assigns a vacant radio channel, which is not used by any of said plurality of radio base stations based on information regarding said radio channel utilization as collected from each of said radio base stations through said plurality of wired control lines, and assigns a vacant wired communication line among said plurality of wired communication lines, in accordance with a request from said first radio base station;

wherein said network connecting apparatus holds a first wired communication line of said plurality of wired communication line, when said radio terminal moves from a first communication zone delimited by said first radio base station to a second communication zone delimited by a second radio station, so that said second radio base station communicates with said network connecting apparatus using said first wired communication line; and

wherein said means for managing information assigns the same radio channel to said second radio station as assigned for said first radio base station before said radio terminal moves from said first zone to said second zone.

5,799,253

METHOD OF SWITCHING IN A SIGNAL SELECTING SYSTEM

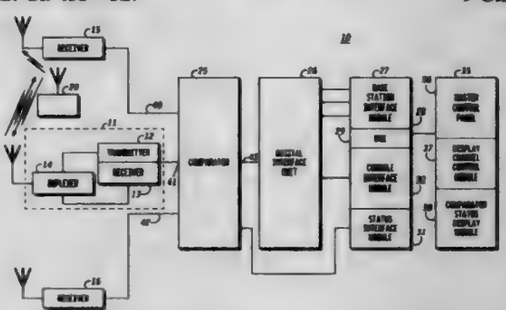
Kristian Pedersen; Tommy Hjordt, both of Copenhagen, and Keld Andersen, Vanloese, all of Denmark, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1996, Ser. No. 621,413

Claims priority, application United Kingdom, Apr. 3, 1995, 9506873

Int. Cl.[6] H04Q *7/30*

U.S. Cl. 455—527 **9 Claims**



1. A method of switching selected first and second inputs to an output in a signal selecting system, comprising:

receiving a block divided first signal at the first input, buffering it and passing it to the output as a block divided output signal;

receiving a block divided second signal at the second input;

waiting to the next occurrence of a block boundary in the block divided output signal;

identifying that the signal at the second input has priority in routing to the output;

waiting for an outbound arbitration time which is a predetermined time in advance of a block boundary in the block divided output signal;

comparing at the outbound arbitration time priorities of the block divided signals at the first and second inputs; and

passing the second signal to the output.

5,799,254

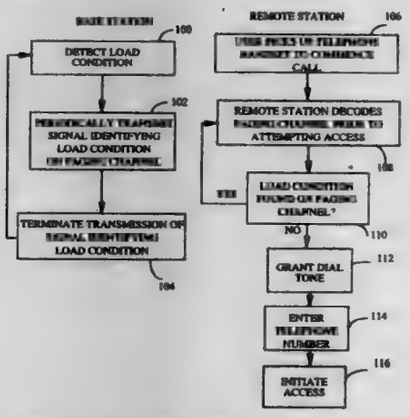
METHOD AND APPARATUS FOR PROVIDING A DIAL TONE TO A TELEPHONE WITHIN A WIRELESS LOCAL LOOP SYSTEM

Gadi Karmi, La Jolla, and Barry Robbins, San Diego, both of Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Continuation of Ser. No. 496,421, Jun. 19, 1995. This application Jul. 23, 1997, Ser. No. 898,741

Int. Cl.[6] H04M *11/00*; H04Q *7/00*

U.S. Cl. 455—528 **36 Claims**



30. A method for generating a dial tone within a wireless local loop signal transmission system subject to possible load conditions, said wireless local loop signal transmission system having a base station and a remote station, said method comprising the steps of:

determining whether a load condition exists within the wireless local loop signal transmission system by employing a power control feedback system to determine whether a total power transmitted by the base station of the system exceeds a predetermined threshold;

detecting a handset of the remote station being taken off-hook; and

if a load condition does not exist, outputting a simulated dial tone through the handset of the remote station substantially immediately; and

if a load condition does exist, waiting until the wireless local loop signal transmission system is no longer subject to the load condition while outputting no audible signal through the hand set of the remote station then, if the handset is still off-hook, outputting the simulated dial tone through the handset of the remote station.

5,799,255

METHOD FOR CONTROLLING AN ACCESSORY OF A SUBSCRIBER TERMINAL EQUIPMENT AND AN ACCESSORY OF A SUBSCRIBER TERMINAL EQUIPMENT

Jukka Berg, and Raimo Malila, both of Oulu, Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

Filed Nov. 12, 1996, Ser. No. 748,242

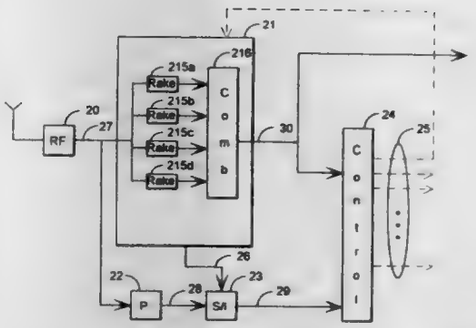
Claims priority, application Finland, Nov. 13, 1995, 955455

Int. Cl.[6] H04B *1/38*; H04M *1/00*

U.S. Cl. 455—551 **16 Claims**

1. A method for controlling an accessory of a location data maintaining subscriber terminal equipment of a cellular network, said cellular network comprises one or more base stations in each cell, and said accessory comprises a specified subscriber identifier differing from the identifier of the subscriber terminal equipment within the network, the method comprising the steps of:

connecting the accessory to the subscriber terminal equipment when the accessory is activated for location determination,



the combination of the terminal equipment and the accessory determining its location by communicating with one or more base stations and storing the location data into a memory register,

whenever a call is being established when the subscriber terminal equipment is connected to the accessory, said combination checking its location by communicating with one or more base stations,

comparing its location at that moment with the location in the memory register, and in case the locations differ from one another more than a preset threshold value,

obstructing the use of the subscriber identifier of the accessory during the call, and enabling use of the subscriber identifier of the terminal equipment.

5,799,256

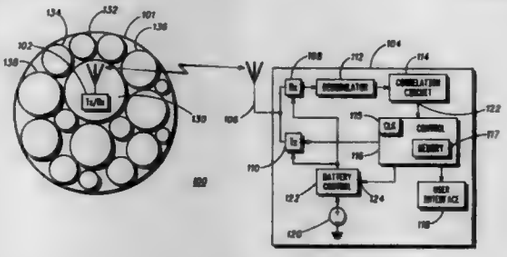
BATTERY SAVING METHOD AND COMMUNICATION DEVICE USING PREDICTION OF USER LOCATION, MOVEMENT AND ACTIONS

Raul A. Pombo, Grayslake, Ill., and Paul D. Marko, Pembroke Pines, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 17, 1996, Ser. No. 678,432

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—574 **20 Claims**



7. A portable communication device configured for communication with one or more remote base stations using one or more control channels, the portable communication device comprising:

a battery for providing power to the portable communication device;

a switch for decoupling the battery from portions of the portable communication device;

a controller coupled to the switch for selectively controlling the switch, the controller including:

a clock for maintaining a current time; and

a memory configured for storing a call activity table and a control activity table, the call activity table including a record of past communication activity by the portable communication device, the control activity table including a record of detected control channel frequencies, associated received signal strength indications and associated times,

the controller predicting future communication activity by the portable communication device using the record of past communication activity and predicting future communication activity in response to the control activity table, the controller

controlling the switch to decouple the battery from the portions of the portable communication device during times when the controller predicts no future communication activity.

5,799,257

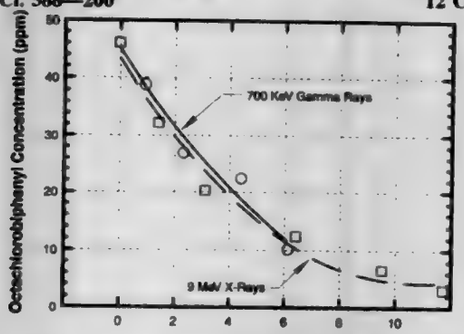
PROCESS FOR GAMMA RAY INDUCED DEGRADATION OF POLYCHLORINATED BIPHENYLS

David H. Meikrantz, Idaho Falls; Bruce J. Mincher, Shelley, and Rodney E. Arbon, Blackfoot, all of Id., assignors to Lockheed Martin Idaho Technologies Company, Idaho Falls, Id.

Continuation of Ser. No. 967,306, Oct. 27, 1992, abandoned. This application Jun. 29, 1995, Ser. No. 496,385

Int. Cl.[6] **A62D** *3/00;* **C07B** *35/06*

U.S. Cl. 588—200 **12 Claims**



1. A process for the high energy selective decomposition of chlorinated hydrocarbons in oil without generating off-gas byproducts, comprising, subjecting the oil containing chlorinated hydrocarbons to a gamma radiation energy having an average energy in the range of between 700 to 9000 keV for a sufficient time and applied dose rate to decompose the chlorinated hydrocarbons at a decomposition rate that exceeds a decomposition rate of the oil to provide desired concentration levels of chlorinated hydrocarbons in the chlorinated hydrocarbons and oil mixture.

5,799,258

WHEELCHAIR MONITORING SYSTEM

Andre Fidanza, and Marco Dicioccio, both of 123 James St. N., Hamilton, Ontario, Canada, L8R 2K8

Filed Feb. 22, 1996, Ser. No. 605,721

Int. Cl.[6] **G06F** *7/70;* **B62D** *11/00*

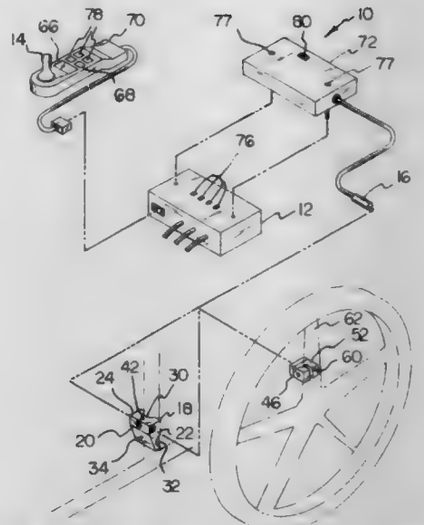
U.S. Cl. 701—1 **2 Claims**

1. A new and improved wheelchair monitoring system comprising, in combination:

standard wheelchair control means situated at a rear extent of a conventional wheelchair and connected to a standard battery supply, the wheelchair control means allowing controlled movement of the wheelchair with an associated joy stick connected thereto;

a magnet sensor with a cylindrical configuration actuated upon the placement of a magnet adjacent thereto;

a sensor couple with a generally rectangular configuration having, in a preferred operative orientation, a front surface, a rear surface, a top face, a bottom face, and a pair of side edges, the sensor couple having a first semicircular axial bore vertically formed on the rear surface thereof and a second semicircular axial bore horizontally formed on a lower extent of the rear surface whereby the bores form an intersection with an aperture situated at an apex thereof for allowing the insertion of a coupling screw therethrough, the sensor couple further having a first full axial bore horizontally formed therein at an upper extent thereof and extended between the side edges and a second axial bore horizontally formed therein and extended between the front surface and rear surface whereby the full bores form an intersection with an aperture extending there-



through past the top face for allowing the passage of a coupling screw, the sensor coupling allowing the securement thereof to any one of a plurality of wheelchairs whereby one of the semicircular bores is attached to a frame of the wheelchair adjacent to a side extent thereof and further the magnet sensor is insertably coupled within one of the full bores so that it faces outwardly from the side extent of the wheelchair in a horizontal direction;

a magnet couple with a generally rectangular configuration having, in a preferred operative orientation, a front surface, a rear surface, a top face, a bottom face, and a pair of side edges, the magnet couple having a magnet attached to a first side edge, a groove formed on a second side edge for receiving a conventional spoke of a conventional wheelchair wheel, and an aperture formed between the front surface and the groove allowing the insertion of a coupling screw for securing the magnet in a position whereby it passes adjacent to the magnet sensor upon the revolution of the wheel thus allowing the activation thereof;

display means connected to the standard control means for depicting a plurality of numerals; and

information means connected to the control means and magnet sensor, the information means calculating a distance the wheelchair travelled and a speed of the wheelchair by monitoring the number and rate of actuation of the magnet sensor respectively, the information means further depicting on the display means the distance upon a first depression of the primary switch button and depict the speed upon a second depression thereof.

5,799,259

VEHICLE WITH STEERABLE FRONT AND REAR WHEELS

Klaus Rief, Leinzell; Dieter Elser, Essingen, and Walter Kogel, Abtsgmünd, all of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

PCT No. PCT/EP94/04010, § 371 Date Jul. 11, 1996, § 102(e) Date Jul. 11, 1996, PCT Pub. No. WO95/15879, PCT Pub. Date Jun. 15, 1995

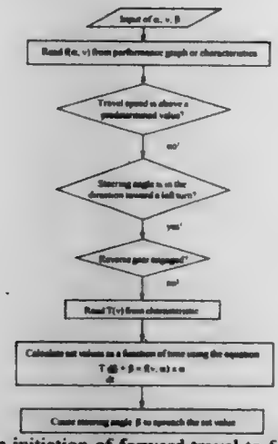
PCT Filed Dec. 2, 1994, Ser. No. 649,622

Claims priority, application Germany, Dec. 7, 1993, 43 41636.5

Int. Cl.[6] **G06G** *7/76;* **B62D** *61/10*

U.S. Cl. 701—41 **8 Claims**

1. A method for steering a vehicle (1) with steerable front wheels (2) having a steering angle (α) and steerable rear wheels (3) having a steering angle (β), the method comprising the steps of setting the steering angle (β) of the rear wheels (3) at least as a function of the steering angle (α) of the front wheels (2) and displacing the rear



wheels (3) at the initiation of forward travel to follow the steering movement of the front wheels (2) with a time delay, calculating intermediate set values as a function of time using the equation

$$T\frac{d\beta}{dt}+\beta=f(v,\alpha)\times\alpha$$

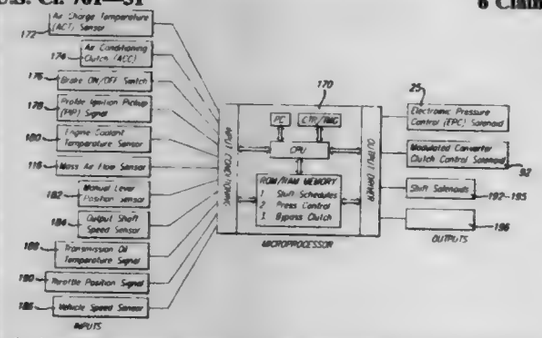
wherein T is the time constant and v is the speed, and causing the steering angle B of the rear wheels (3) to approach a kinematic set value using the calculated intermediate set values, so that the rear wheels (3) do not move beyond a predetermined track.

5,799,260

SYSTEM FOR CONTROLLING MULTIPLE HYDRAULIC PUMPS IN AN AUTOMATIC TRANSMISSION

Timothy A. Droste, Howell; Charles W. Barnes, Plymouth; Mark J. Kane, Eastpointe, and Paul J. Castiglione, Milford, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Feb. 20, 1996, Ser. No. 602,559
Int. Cl.[6] F16H 61/14; F04B 23/04
U.S. Cl. 701—51 **6 Claims**



1. A pump control system for an automatic transmission, comprising:

a first pump having an inlet connected to a source of hydraulic fluid and outlet;

a second pump having an inlet and outlet;

a feedline supplying fluid to a torque converter;

a secondary pressure regulating valve means connected to the said feedline for opening a connection between the outlet of the first pump to said feedline and inlet of the second pump when pressure at the outlet of the first pump reaches a first relatively high magnitude, and for closing a connection between the outlet of the first pump to the inlet of the second pump and said feedline when pressure at the outlet of the first pump reaches a second magnitude lower than the first magnitude; and

hydraulically actuated friction elements whose selective engagement and disengagement produce multiple gear ratios of the transmission;

a source of regulated line pressure hydraulically connected to said friction elements and the outlet of the second pump; and

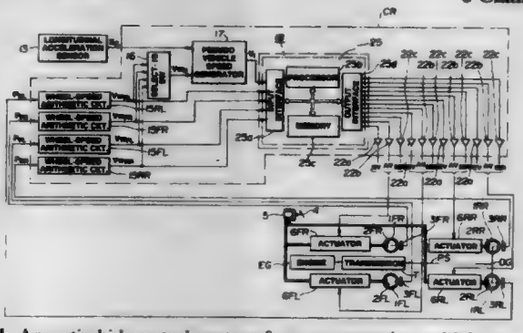
a clutch capacity pressure regulator valve means connected to the line pressure source and outlet of first pump for opening a connection between the outlets of the first and second pumps to the line pressure source and closing a connection between the line pressure source and inlet of the second pump when line pressure reaches a third relatively low magnitude, and for closing a connection between the outlet of the first pump and the line pressure source and opening a connection between the line pressure source and the outlet of the second pump when line pressure magnitude reaches a fourth magnitude greater than the third magnitude.

5,799,261

ANTI-SKID CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

Yuji Ozaki, Zama, and Kenji Ogino, Ishibashi, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1996, Ser. No. 583,884
Claims priority, application Japan, Jan. 13, 1995, 7-004468
Int. Cl.[6] B60T 8/58; 8/62
U.S. Cl. 701—78 **6 Claims**



1. An anti-skid control system for an automotive vehicle, comprising:

a plurality of actuators associated with one of four road wheels located respectively at front-left, front-right, rear-left and rear-right positions of the vehicle, for adjusting braking forces applied to the four road wheels independently of each other;

sensors for detecting wheel speeds of the four road wheels to generate wheel-speed indicative signals;

a pseudo vehicle speed generator for estimating a pseudo vehicle speed as a function of at least a highest one of values of the wheel-speed indicative signals;

a calculator for calculating slip ratios of the road wheels as a function of the pseudo vehicle speed and each of the wheel-speed indicative signal values; and

a controller having a comparator for comparing each of the slip ratios of the road wheels with a reference slip ratio to produce a skid-control signal for each of the actuators for regulating the actuators in response to the control signals;

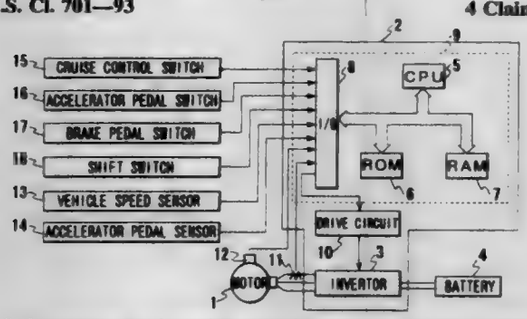
wherein the controller is configured to control an actuator associated with a rear wheel subjected to skid control, so that a skid control for the rear wheel is in correlation with a skid control for a diagonal front wheel located on the vehicle diagonally to the rear wheel subjected to skid control and so that a braking force of the rear wheel subjected to skid control is adjusted toward a value essentially equivalent to a braking force of the diagonal front wheel via the correlative skid control.

5,799,262

CONSTANT SPEED CONTROL SYSTEM FOR ELECTRIC VEHICLE AND THE METHOD THEREOF

Akira Suzuki, Tochigi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1996, Ser. No. 589,465
Claims priority, application Japan, Feb. 10, 1995, 7-023057
Int. Cl.[6] B60K *31/04*
U.S. Cl. 701—93 **4 Claims**



1. A constant speed running control system of an electric vehicle for automatically operating said electric vehicle at a selectively designated vehicle speed, said vehicle having a driving motor for driving said electric vehicle, a controller for controlling said motor and an accelerator pedal for controlling said motor through said controller, comprising:

motor indication torque calculating means for calculating a motor indication torque needed when said vehicle runs at said designated vehicle speed;

motor indication torque instructing means for inputting said motor indication torque to said controller;

vehicle speed detecting means for detecting a vehicle speed after said motor torque instructing means inputs said motor indication torque;

vehicle speed comparing means for judging whether or not said vehicle speed is equal to or larger than said designated vehicle speed;

accelerator indication torque calculating means for calculating an accelerator indication torque inputted from said accelerator pedal;

accelerator indication torque instructing means for inputting said accelerator indication torque to said controller when said vehicle speed comparing means judges that said vehicle speed is equal to or larger than said designated vehicle speed; and

constant speed running instructing means for instructing said motor indication torque to said controller so as to operate said vehicle in accordance with said designated vehicle speed when said vehicle speed comparing means judges that said vehicle speed is smaller than said designated vehicle speed.

5,799,263

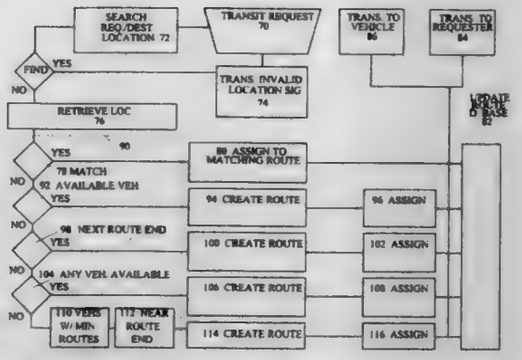
PUBLIC TRANSIT SYSTEM AND APPARATUS AND METHOD FOR DISPATCHING PUBLIC TRANSIT VEHICLES

Russell D. Culbertson, Austin, Tex., assignor to BCT Systems, Austin, Tex.

Filed Apr. 15, 1996, Ser. No. 631,147
Int. Cl.[6] G08G *1/123*
U.S. Cl. 701—117 **31 Claims**

1. A method of dispatching public transit vehicles to service transit requests within a geographic transit cell, the method comprising the steps of:

(a) at a dispatching computer system, receiving a plurality of transit requests, each transit request being transmitted to the dispatching computer system through a transit request communication system and including a destination location identifier and a request location identifier;



(b) at the dispatching computer system, periodically receiving vehicle status signals from a plurality of intracell vehicles, each vehicle status signal containing vehicle status information;

(c) for each transit request, associating the request location identifier with a request location within the transit cell, and associating the destination location identifier with a destination location within the transit cell;

(d) for each transit request, determining a request direction from the request location and the destination location;

(e) assigning each transit request to a matching intracell vehicle route of an intracell vehicle having available passenger capacity, the matching intracell vehicle route having a route area including the request location and the destination location associated with the respective transit request, and also having a route direction matching the request direction of the respective transit request; and

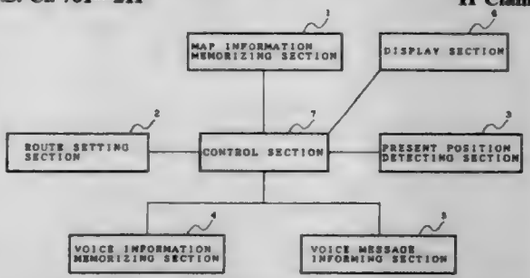
(f) for each transit request, after assigning the respective transit request to the matching intracell vehicle route, transmitting from the dispatching computer system a dispatch signal to an intracell vehicle servicing the matching intracell vehicle route, the dispatch signal including transit request service information.

5,799,264

IN-CAR NAVIGATION APPARATUS WITH VOICE GUIDANCE

Yoshisada Mizutani, and Toshiki Kusama, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1995, Ser. No. 533,787
Claims priority, application Japan, Jan. 20, 1995, 7-007788
Int. Cl.[6] G01C *21/00*; G06F *165/00*
U.S. Cl. 701—211 **11 Claims**



1. An in-car navigation apparatus installed in a moving body for presenting information for guiding said moving body along a set drive route to a motorist of the moving body, said apparatus comprising:

a map information memorizing means for storing digitized map data including at least road data and intersection data:

a route setting means for setting a drive route, where said moving body moves, between two points on said digitized map data:

a present position detecting means for detecting a present position of said moving body on said digitized map data;

a detachable voice information memorizing means for storing a plurality of voice message pattern codes respectively corresponding to a plurality of voice message concepts to be informed to said motorist of the moving body, and for storing a plurality of voice waveform data respectively corresponding to said plurality of voice message pattern codes:

a control means for determining at least a voice informing point on said drive route set by said route setting means on the basis of the detected present position of said moving body and said digitized map data, and a concept of a voice message to be informed at the point, and for reading out a voice message pattern code corresponding to a concept of a determined voice message from said voice information memorizing means, and for outputting an instruction for reading out a voice wave form datum corresponding to said voice message pattern code; and

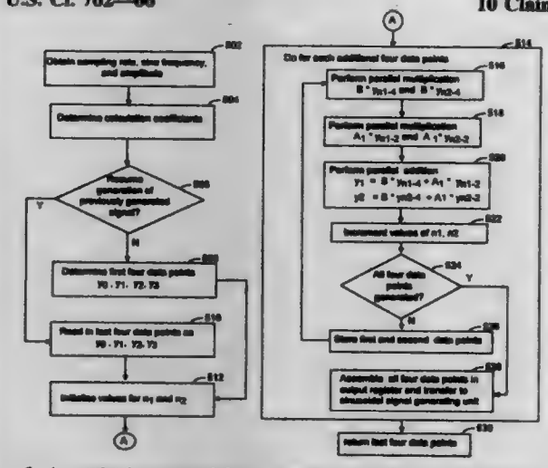
a voice message informing means for reading out said voice waveform datum memorized in said voice information memorizing means in response to the instruction from said control means to execute digital to analogue conversion, and then for outputting a voice message based on the voice waveform datum.

5,799,265

APPARATUS AND METHOD FOR GENERATING A SINUSOIDAL SIGNAL

Liang He, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Nov. 26, 1996, Ser. No. 756,030
Int. Cl.[6] G06F *1/02*
U.S. Cl. 702—66 **10 Claims**



6. A method executed by a computer under the control of a program, said computer including a memory for storing said program, said method comprising the steps of:

(a) simultaneously generating a group of offset sinusoidal signal segments from instructions that execute a mathematical operation on multiple variables in a single cycle; and

(b) combining said set of sinusoidal signal segments to generate a single sinusoidal signal at a specified sampling rate and frequency;

wherein said single sinusoidal signal includes M data points per signal cycle; and

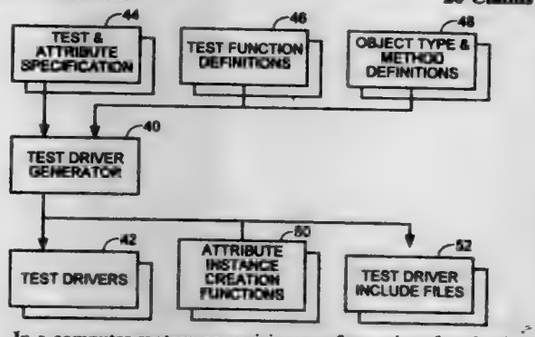
wherein said group includes P offset sinusoidal signal segments, each said offset sinusoidal signal segment including M/P data points per signal cycle offset by P−1 data points.

5,799,266

AUTOMATIC GENERATION OF TEST DRIVERS

Roger Hayes, Berkeley, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Sep. 19, 1996, Ser. No. 715,854
Int. Cl.[6] G06F *11/263*
U.S. Cl. 702—123 **20 Claims**



1. In a computer system comprising a software interface having a plurality of procedures and corresponding test functions for testing said procedures, a method for automatically generating a test driver for executing said test functions in sequence, said method comprising the steps of:

a) declaring at least one local variable to be used by said test functions for testing said plurality of procedures, wherein said at least one local variable is modified by a first test function in said plurality of functions and said modified local variable is used by a second test function in said plurality of functions, and expressing formally sequential execution order of said test functions using said at least one local variable;

b) specifying assignable attribute values selected for each of said test function parameter attributes, said test functions comprising a plurality of parameters having a plurality of attributes, said attributes being assigned attribute values when said test functions are invoked; and

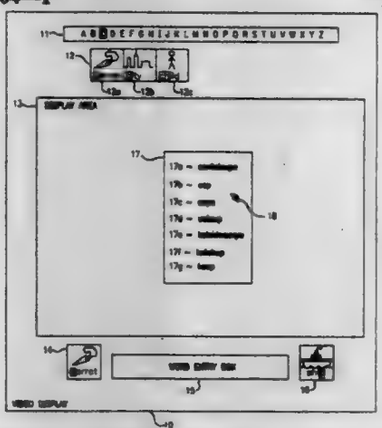
c) generating said test driver based on said local variable declaration and said formally expressed sequential execution order of said test functions and said specified assignable attribute values, said generated test driver when invoked executes said test functions in said designated order with all combinations of said specified assignable attribute values.

5,799,267

PHONIC ENGINE

Steven H. Siegel, 468 11th St., Brooklyn, N.Y. 11215

Continuation-in-part of Ser. No. 278,928, Jul. 22, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 485,164
Int. Cl.[6] G06F *17/20*; H02B *5/00*; G09B *5/00*
U.S. Cl. 704—1 **20 Claims**



18. Apparatus for accessing one item from a collection of items, comprising:

means for receiving a non-verbal first sound indication signal representing an initial sound of a word or words which represent the one item;

means for receiving a non-verbal second sound indication signal representing a sound other than the initial sound of the word or words which represent the one item;

means for associating ones of items in the collection of items with the first and second sound indication signals; and

means for indicating the associated items to a user in a manner which allows an individual who cannot read to recognize and select the one item from among the associated items.

5,799,268

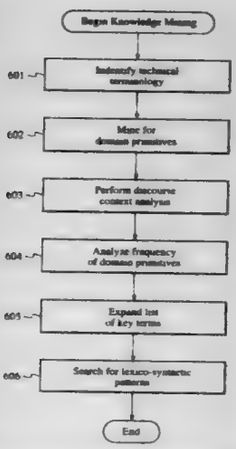
METHOD FOR EXTRACTING KNOWLEDGE FROM ONLINE DOCUMENTATION AND CREATING A GLOSSARY, INDEX, HELP DATABASE OR THE LIKE

Branimir K. Boguraev, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Sep. 28, 1994, Ser. No. 314,589

Int. Cl.[6] G06F *17/20;17/21;17/28;17/60*

U.S. Cl. 704—9 **15 Claims**



1. In a computer system having access to online documentation, a method of extracting knowledge from said online documentation, comprising the steps of:

a) linguistically analyzing and annotating text of said online documentation to create a linguistically analyzed and annotated text:

b) mining said linguistically analyzed and annotated text for text representative of said online documentation, including the steps of:

i) searching for syntactic patterns indicative of key terms and maintaining a list of said key terms;

ii) searching for syntactic patterns indicative of manifestations of a domain primitive involving one of said key terms and maintaining a list of said manifestations; and

iii) analyzing said list of said manifestations to determine said manifestations that are representative of said online documentation on the basis of frequency of their occurrence: and

c) combining said list of said key terms and said list of said manifestations that are representative of said online documentation in a domain catalog.

5,799,269

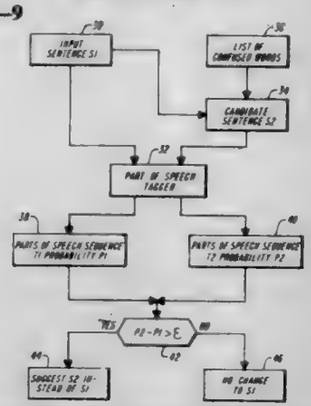
SYSTEM FOR CORRECTING GRAMMAR BASED ON PARTS OF SPEECH PROBABILITY

Yves Schabes; Emmanuel Roche, both of Boston, and Andrew R. Golding, Cambridge, all of Mass., assignors to Mitsubishi Electric Information Technology Center America, Inc., Cambridge, Mass.

Division of Ser. No. 252,106, Jun. 1, 1994, Pat. No. 5,537,317. This application May 17, 1996, Ser. No. 650,057

Int. Cl.[6] G06F *17/27*

U.S. Cl. 704—9 **5 Claims**



1. In a grammar checking system in which an input sentence is first tagged as to parts of speech, apparatus for correcting word usage in said input sentence by checking for easily confused words, comprising:

a list of easily confused words;

means for ascertaining the probability of the part of speech tag sequence of a candidate word in the input sentence and an easily confused word from said list in a candidate sentence,

said ascertaining means including means for detecting that input or candidate sentence having the higher part of speech tag sequence probability; and,

means for selecting as the correct word the word in that input or candidate sentence having the highest part of speech tag sequence probability.

5,799,270

SPEECH CODING SYSTEM WHICH USES MPEG/AUDIO LAYER III ENCODING ALGORITHM

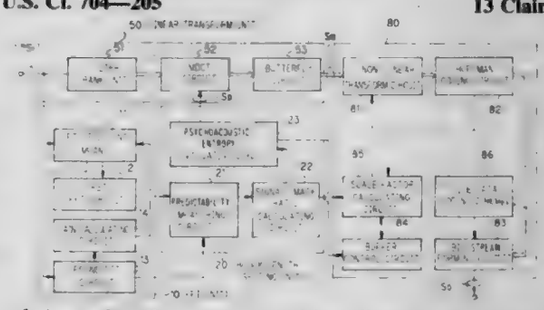
Satoshi Hasegawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 8, 1995, Ser. No. 569,737

Claims priority, application Japan, Dec. 8, 1994, 6-304941

Int. Cl.[6] G10L *3/02*

U.S. Cl. 704—205 **13 Claims**



1. A speech coding system comprising a linear transform unit for executing linear transform on an input signal with a predetermined block length, an FFT unit for executing Fast Fourier transform on the input signal with large and small block lengths, a block length setting unit for calculating a predetermined block length to be set in the linear transform unit according to an FFT signal obtained in the FFT unit and setting the block length in the linear transform unit, and a coding unit for coding an intermediate signal generated

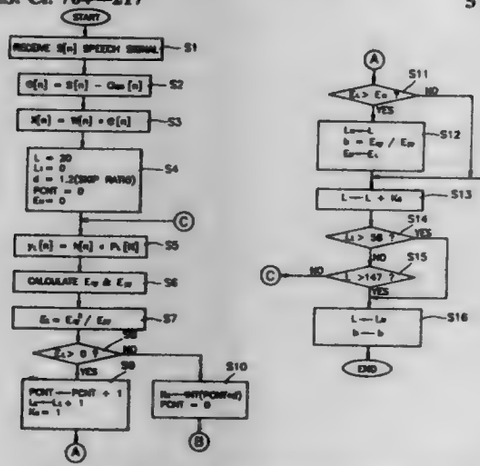
in the linear transform unit to form and output a bit stream, wherein the FFT unit having an FFT selecting function of selecting the block length used for the Fast Fourier transform among the large and small block lengths according to the gain difference of a continuous portion of the input signal.

5,799,271

METHOD FOR REDUCING PITCH SEARCH TIME FOR VOCODER

Kyung-Jin Byun; Ha-Young Yoo; Jong-Jae Kim; Ki-Chun Han; Jae-Suk Kim, all of Daejeon, and Myung-Jin Bae, Seoul, all of Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Jun. 24, 1996, Ser. No. 670,789
Int. Cl.[6] G10L *9/02*
U.S. Cl. 704—217 **5 Claims**



1. A method for reducing pitch search time for a CELP vocoder, said method comprising the steps of:

(a) receiving a speech signal and removing ZIR(Zero Input Response) of a formant synthesizing filter from the speech signal;

(b) performing a recognition weighting process on the ZIR-free speech signal and assuming a pitch lag to be a predetermined value;

(c) synthesizing a synthetic speech signal by passing remaining formant components of said input speech signal of a present frame and an output signal of a pitch filter of a prior frame through a weighting filter;

(d) calculating an autocorrelation of the synthetic speech signal whose delay is a predetermined value and an autocorrelation whose delay is 0 and dividing the square of the autocorrelation whose delay is a predetermined value by the autocorrelation whose delay is 0;

(e) calculating a pitch lag and a pitch filter coefficient by calculating only a positive peak by skipping over a negative peak by using the results from said step (d);

(f) determining whether a total number of lag to be considered to be of a positive peak is greater than a predetermined value;

(g) determining whether the pitch lag is greater than a predetermined value, if it is determined that the total number of lag to be considered a positive peak is not greater than a predetermined value at said step (f);

(h) returning to said step (c), if it is determined that the pitch lag is not greater than a predetermined value at said step (g); and

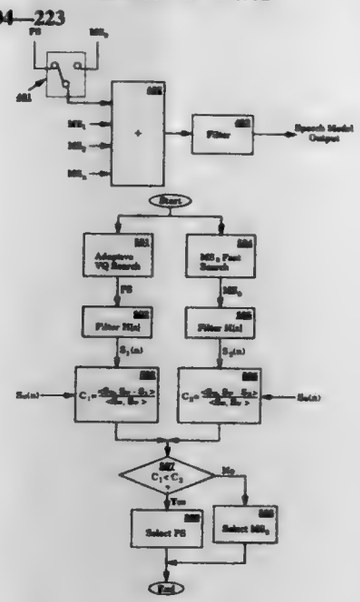
(i) outputting the pitch lag and the pitch filter coefficient, if it is determined that the pitch lag is greater than a predetermined value at said step (f) or if it is determined that the pitch lag is greater than a predetermined value at said step (g).

5,799,272

SWITCHED MULTIPLE SEQUENCE EXCITATION MODEL FOR LOW BIT RATE SPEECH COMPRESSION

Qinglin Zhu, Santa Clara, Calif., assignor to ESS Technology, Inc., Fremont, Calif.

Filed Jul. 1, 1996, Ser. No. 673,007
Int. Cl.[6] G10L *3/02*
U.S. Cl. 704—223 **12 Claims**



1. An apparatus for compressing a speech signal into a compressed speech signal that is represented by a plurality of parameters, comprising:

a time-varying digital filter for modeling a vocal tract, wherein a plurality of coefficients per frame specify a transfer function of the filter;

an excitation circuit coupled to the filter for generating an excitation signal as an input to the filter, wherein the excitation circuit generates an adaptive vector quantiser code, a first pulse sequence, and a second pulse sequence for a plurality of subframes, each of the first pulse sequence and the second pulse sequence having delta pulses with varying amplitudes and a time pattern constrained to be equally spaced with a prechosen value so that the first pulse sequence and the second pulse sequence are characterized by the phase and amplitudes of the delta pulses and wherein the second pulse sequence is non-switchable;

selection logic coupled to the excitation circuit for determining whether the adaptive vector quantiser code or the first pulse sequence better corresponds to the speech signal by using a normalized cross-correlation function;

a switch coupled to the excitation circuit for selecting between a first excitation mode characterized by the adaptive vector quantiser code and a second excitation mode characterized by a first pulse sequence according to the selection logic;

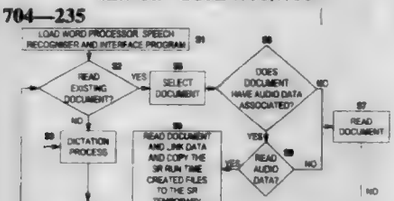
a combination circuit coupled to the switch for combining either the selected adaptive vector quantiser code plus the second pulse sequence or the first pulse sequence plus the second pulse sequence, wherein the parameters which are transmitted through a channel to a destination decoder include the plurality of filter coefficients, either the adaptive vector quantiser code or the first pulse sequence, the second pulse sequence, and a bit indicating the state of the switch in order to produce a switched multiple-sequence excitation modeling.

5,799,273

AUTOMATED PROOFREADING USING INTERFACE LINKING RECOGNIZED WORDS TO THEIR AUDIO DATA WHILE TEXT IS BEING CHANGED

John C. Mitchell; Alan James Heard; Steven Norman Corbett, and Nicholas John Daniel, all of Devon, England, assignors to AllVoice Computing Plc, Devon, England

Filed Sep. 27, 1996, Ser. No. 720,373
Int. Cl.[6] G10L 7/08;9/06
U.S. Cl. 704—235 78 Claims



64. A speech-recognition interface that enables operative coupling of a speech-recognition engine to a computer-related application, the interface comprising:

input means for receiving speech-recognition data including recognised words;

output means for outputting the recognised words into a computer-related application to allow processing of the recognised words as input text, including changing positions of the recognised words; and

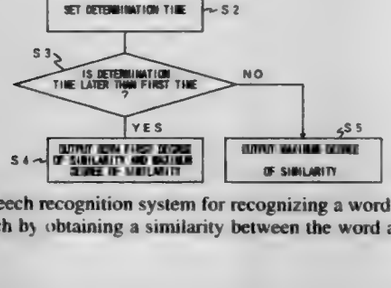
means, independent of the computer-related application, for determining positions of the recognised words in the computer-related application.

5,799,274

SPEECH RECOGNITION SYSTEM AND METHOD FOR PROPERLY RECOGNIZING A COMPOUND WORD COMPOSED OF A PLURALITY OF WORDS

Masaru Kuroda, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 18, 1996, Ser. No. 715,108
Claims priority, application Japan, Oct. 9, 1995, 7-261524; Mar. 7, 1996, 8-050008
Int. Cl.[6] G10L 9/100
U.S. Cl. 704—239 25 Claims



1. A speech recognition system for recognizing a word contained in a speech by obtaining a similarity between the word and one of registered words registered in said speech recognition system, said speech recognition system comprising:

standard information storing means for storing standard information corresponding to each of said registered words, said registered words including a compound word composed of a first word and a second word pronounced in an order of the first word and then the second word, said standard information including predetermined feature information and time information with respect to each of said registered words, said time information representing a continuous time length for pronouncing each of said registered words at a normal speed;

collating means for collating feature information extracted from the word to be recognized with the standard information so as to obtain a similarity between the feature information and the standard information corresponding to one of said registered words; and

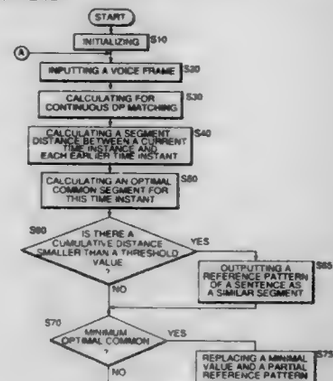
determination time setting means for setting a determination time to determine a result of recognition when the compound word is inputted for recognition and when a first degree of similarity is obtained from the first word at a first time and a maximum degree of similarity is obtained from one of the second word and the compound word at a second time, said determination time being set to a time prior to said second time, by the continuous time length which corresponds to the one of the second word and the compound word having said maximum degree of similarity.

5,799,275

SPEECH RECOGNIZING DEVICE AND METHOD ASSUMING A CURRENT FRAME IS AN END POINT OF A CURRENT REFERENCE PATTERN

Yoshiaki Itoh, Tokyo; Jiro Kiyama, Chiba; Hiroshi Kojima, Kawasaki; Susumu Seki, Chiba, and Ryuichi Oka, Tsukuba, all of Japan, assignors to The Japan Iron and Steel Federation, Tokyo; Sharp Kabushiki Kaisha, Osaka, and Real World Computing Partnership, Tokyo, all of Japan

Filed Jun. 18, 1996, Ser. No. 665,502
Claims priority, application Japan, Jun. 22, 1995, 7-156539
Int. Cl.[6] G10L 3/00
U.S. Cl. 704—241 9 Claims



1. A speech recognizing device for sequentially performing frame-by-frame calculation of a distance between an input speech pattern extracted from an input speech signal and a reference sentence pattern by continuous dynamic programming method, accumulating results of the frame-by-frame distance calculations in the direction from a starting position to an ending position of the reference pattern and recognizing the input speech pattern on the basis of the accumulated results, the speech recognizing device comprising:

first arithmetic processing means for calculating a difference of the cumulative distance at each current frame within the starting position and the ending position of the reference pattern from the cumulative distance at a preceding frame nearer to the starting position of the reference pattern, considering the current frame as an end point of the current partial reference pattern; and

second arithmetic processing means for detecting a minimal differential value among the calculated differential values and for determining a partial reference pattern corresponding to the detected minimal differential value as a result of recognizing one of partial speech patterns composing the input speech pattern.

5,799,276

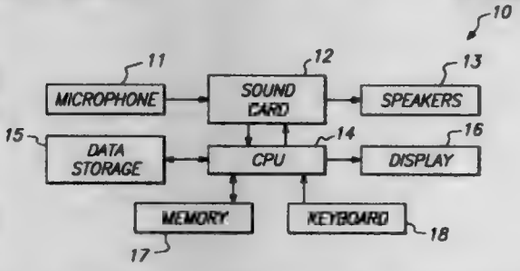
KNOWLEDGE-BASED SPEECH RECOGNITION SYSTEM AND METHODS HAVING FRAME LENGTH COMPUTER BASED UPON ESTIMATED PITCH PERIOD OF VOCALIC INTERVALS

Edward Komissarchik, Mill Valley, Calif.; Vladimir Arlazarov, Moscow, Russian Federation; Dimitri Bogdanov, Tiburon, Calif.; Yuri Finkelstein, Tiburon, Calif.; Andrey Ivanov, Tiburon, Calif.; Jacob Kaminsky, Moscow, Russian Federation; Julia Komissarchik, Mill Valley, Calif.; Olga Krivnova, Moscow, Russian Federation; Mikhail Kronrod, Larkspur, Calif.; Mikhail Malkovsky, Moscow, Russian Federation; Maxim Paklin, Tiburon, Calif.; Alexander Rozanov, Moscow, Russian Federation; Vladimir Segal, San Francisco, Calif., and Nina Zinovieva, Tiburon, Calif., assignors to Accent Incorporated, Mill Valley, Calif.

Filed Nov. 7, 1995, Ser. No. 554,862

Int. Cl.[6] G10L 5/06

U.S. Cl. 704—251 **52 Claims**



36. A method of applying knowledge-based rules in a processor-based system to recognize an input speech signal as a word in a natural language, the input speech signal including a sequence of phonemes, the method comprising steps of:

capturing and storing the input speech signal;

segmenting the input speech signal into a series of segments including vocalic intervals and non-vocalic intervals, the vocalic intervals having a frame length computed based on an estimation of the pitch period of the vocalic intervals of the input speech signal, the series of segments approximately corresponding to the sequence of phonemes;

generating an acoustic feature vector by characterizing the series of segments based upon acoustic events detected within the input speech signal;

retrieving from a store a dictionary having a multiplicity of words, each one of the multiplicity of words described by a phonetic transcription and an acoustic event transcription, the acoustic event transcription comprising a lattice of acoustic events corresponding to a plurality of pronunciations; and

comparing the acoustic feature vector to selected lattices of acoustic event transcriptions to select a word choice.

5,799,277

ACOUSTIC MODEL GENERATING METHOD FOR SPEECH RECOGNITION

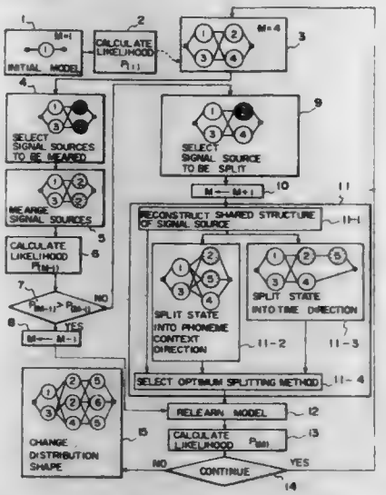
Junichi Takami, Yokosuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 25, 1995, Ser. No. 547,794

Claims priority, application Japan, Oct. 25, 1994, 6-284135

Int. Cl.[6] G10L 5/04

U.S. Cl. 704—256 **8 Claims**



1. An acoustic model generating method for a speech recognition dependent upon phoneme context, for executing speech data processing using hidden Markov models obtained by modeling static speech features indicative of speech feature pattern shape in minute time and dynamic speech features indicative of speech change with the lapse of time, as a chain of signal sources composed of one output probability distribution and one set of state transition probability, which comprises the steps of:

reiterating splitting processing or merging processing of the output probability distribution of at least one signal source of an initial model by selecting one of the processing successively to generate a plurality of signal sources, until a specific number of the generated signal sources reaches a predetermined value for achieving optimum speech recognition; and

deciding, when the number reaches the predetermined value, a sharing structure of states used for representing a model among a plurality of models, a sharing structure of each signal source among the states, and a parameter of each output probability distribution, all under a common evaluation criterion.

5,799,278

SPEECH RECOGNITION SYSTEM AND METHOD USING A HIDDEN MARKOV MODEL ADAPTED TO RECOGNIZE A NUMBER OF WORDS AND TRAINED TO RECOGNIZE A GREATER NUMBER OF PHONETICALLY DISSIMILAR WORDS.

Michael Cobbett, Eastleigh, and John Brian Pickering, Winchester, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1996, Ser. No. 673,862

Claims priority, application United Kingdom, Sep. 15, 1995, 9518949

Int. Cl.[6] G10L 5/00

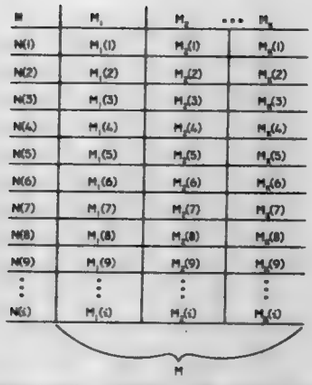
U.S. Cl. 704—256 **13 Claims**

1. A speech recognition system for discrete words, comprising:

interface means for receiving incoming voice signals;

processing means, operatively coupled to said interface means, for processing said incoming voice signals;

program means, responsive to said processed voice signals from said processing means, for performing speech recognition on



said processed voice signals, said program means using a single Hidden Markov Model (HMM), said HMM nominally being adapted to recognise N different words, characterised in that said HMM is trained to recognise M different words, where M>N, said M words being phonetically dissimilar from one another.

5,799,279

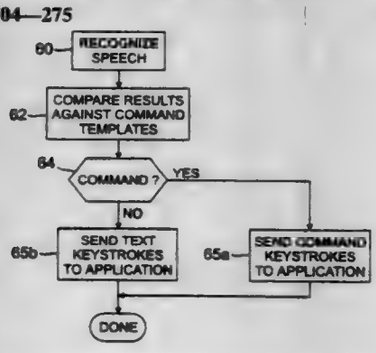
CONTINUOUS SPEECH RECOGNITION OF TEXT AND COMMANDS

Joel M. Gould, Winchester, and Jonathan H. Young, Cambridge, both of Mass., assignors to Dragon Systems, Inc., Newton, Mass.

Filed Nov. 13, 1995, Ser. No. 559,207

Int. Cl.[6] G10L *5/02;5/06;9/00*

U.S. Cl. 704—275 **22 Claims**



1. A method for use in recognizing continuous speech comprising

accepting signals corresponding to interspersed speech elements including text elements corresponding to text to be recognized and command elements corresponding to commands to be executed, wherein a particular one of the speech elements may correspond to a text element in one context and to a command element in another context,

recognizing the speech elements,

when a recognized one of the speech elements may be either a command element or a text element, designating the recognized speech element as corresponding to a text element or to a command element based on a context in which the recognized speech element appears, and

acting on the recognized speech elements in a manner which depends on whether the speech elements correspond to text elements or command elements.

5,799,280

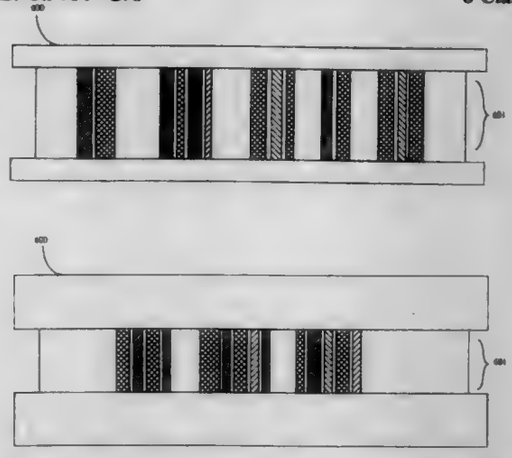
RECORDING METHOD AND APPARATUS AND AUDIO DATA USER INTERFACE

Leo Degen, Menlo Park; S. Joy Mountford, Mountain View; Richard Mander, Palo Alto, and Gitta B. Salomon, Menlo Park, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 477,779, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 951,579, Sep. 25, 1992, Pat. No. 5,586,216. This application May 2, 1997, Ser. No. 850,646

Int. Cl.[6] G10L *9/00*

U.S. Cl. 704—276 **6 Claims**



1. An audio data user interface for use in a computerized system having a processor, a memory and a display device comprising:

a visual representation of said audio data displayed on said display device by said processor, said memory storing information corresponding to said visual representation, wherein said visual representation is displayed along a first axis and a second axis, wherein a width of one of said first and said second axis varies as a magnification of said audio data shown by said visual representation varies.

5,799,281

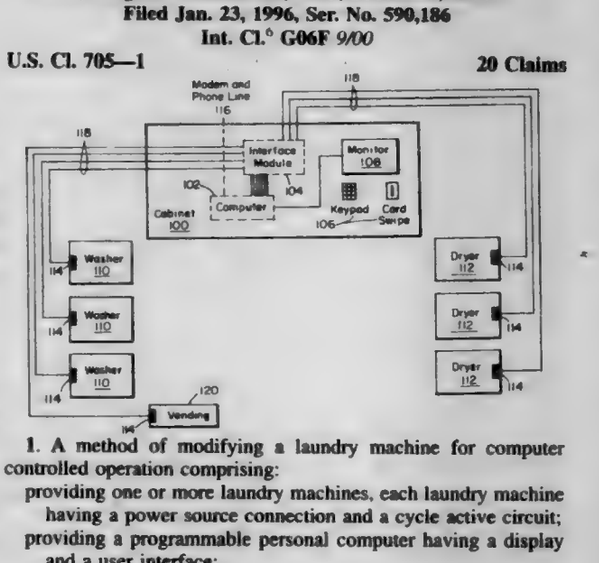
COMPUTER CONTROL AND MANAGEMENT SYSTEM FOR LAUNDRY INSTALLATION

Gary R. Login, and Ronald B. Wilkinson, both of Brookline, Mass., assignors to E.L.M.S., LLC, Brookline, Mass.

Filed Jan. 23, 1996, Ser. No. 590,186

Int. Cl.[6] G06F *9/00*

U.S. Cl. 705—1 **20 Claims**



1. A method of modifying a laundry machine for computer controlled operation comprising:

providing one or more laundry machines, each laundry machine having a power source connection and a cycle active circuit;

providing a programmable personal computer having a display and a user interface;

providing a laundry system controller connected to the personal computer, the controller having output ports to control power delivery to each of the one or more laundry machines through the power source connection of each machine, the controller further comprising a sensor system connected to a sensor connector for each laundry machine; and

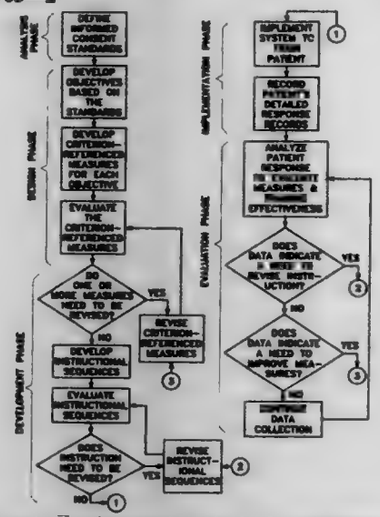
connecting a sensor connector to each of the one or more laundry machines at the cycle active circuit of each of the one or more laundry machines.

5,799,282

METHODS FOR ESTABLISHING CERTIFIABLE INFORMED CONSENT FOR A MEDICAL PROCEDURE.

Amitabha Rakshit, Boulder, and Wilson A. Judd, Woodland Park, both of Colo., assignors to Medical Training and Services, International, Boulder, Colo.

Filed May 19, 1992, Ser. No. 886,384
Int. Cl.[6] G06F *17/60*; G09B *3/00*
U.S. Cl. 705—2 **31 Claims**



1. A computer implemented method of establishing certifiable patient informed consent for a medical procedure, said method comprising the steps of:

a. evaluating actual legal and medical requirements for establishing informed consent; then

b. estimating legal and medical standards for establishing informed consent; then

c. defining a set of computer measurable patient behaviors which can be approximately coincided with said estimated legal and medical standards; then

d. computer training with a first set of instructions said patient on desired aspects of said medical procedure through a computer controlled automatic utilization of preprogrammed information stored in a computer, and

e. computer interacting with said patient in a standardized fashion through an automatic computer controlled use of preprogrammed information stored in said computer to produce computer measurable patient behaviors and computer measurable patient behaviors automatically varying said interaction; and

f. automatically computer analyzing said patient behaviors; then

g. determining whether said training should be adjusted depending on said analyzing said patient behaviors;

h. identifying which portions of said training should be adjusted;

i. modifying to create at least one modified portion of said training to a different set of instructions than said first set of instructions based on said step of determining whether said training should be adjusted;

j. continuing said interacting with said patient on said desired aspects of said medical procedure;

k. additionally training with said modified portion;

l. additionally computer interacting with said patient in a standardized fashion through an automatic computer controlled use of preprogrammed information stored in said computer to produce computer measurable patient behaviors said computer measurable patient behaviors automatically varying said interaction; and

m. additionally computer analyzing said patient behaviors; then

n. additionally determining whether said training should be adjusted depending on said analyzing said patient behaviors;

o. additionally determining whether said training should be further adjusted;

p. computer providing an automatic indication of certifiability that said patient likely meets said legal and medical standards; and

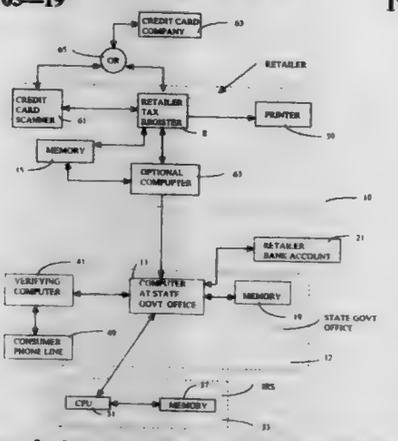
q. obtaining informed consent of said patient.

5,799,283

POINT OF SALE GOVERNMENTAL SALES AND USE TAX REPORTING AND RECEIPT SYSTEM

Paul A. Francisco, 101 Norwood Ave., Loch Arbour, N.J. 07711, and Frederick J. Petschauer, 402 10th Ave., Belmar, N.J. 07719

Filed May 10, 1995, Ser. No. 438,890
Int. Cl.[6] G06F *17/60*
U.S. Cl. 705—19 **17 Claims**



1. A point of sale tax reporting system for automatically reporting sales tax to a governmental authority so as to allow for enforcing tax laws and verifying that a retailer pays collected sales and use tax to the governmental authority, the system comprising:

at least one tax register located at a retailer location, said at least one tax register for processing consumer sales transaction data at the retailer location and computing sales tax data to be paid to the retailer by the consumer based on the amount of a sale, said at least one tax register automatically forwarding said transaction data and said sales tax data for each transaction to a first governmental authority remote location;

a printer located at the retailer location and in communication with said at least one tax register, said printer for printing consumer receipts, said receipts having listed thereon the computed sales tax paid to the retailer by the consumer;

automatic reporting means for allowing for the enforcing of tax laws and verifying that the retailer pays collected sales tax to the governmental authority, said automatic reporting means including:

a) a first governmental authority computer and corresponding first memory disposed at said first governmental authority remote location, said first computer and memory for receiving and storing said forwarded transaction and sales tax data;

b) a first communication link connecting said tax register at said retailer location to said first computer and memory at said first remote governmental authority location, said first communication link including means for forwarding said transaction and sales tax data from said tax register to said

first computer and memory for each transaction whereby said transaction and sales and use tax data from the retailer is stored at said first remote governmental authority location; and

c) said automatic reporting means for enabling said governmental authority to verify that for each retail transaction upon which a receipt for tax paid was issued, the collected sales tax has been paid by the retailer to the government by using said sales tax data from said first computer and memory.

5,799,284

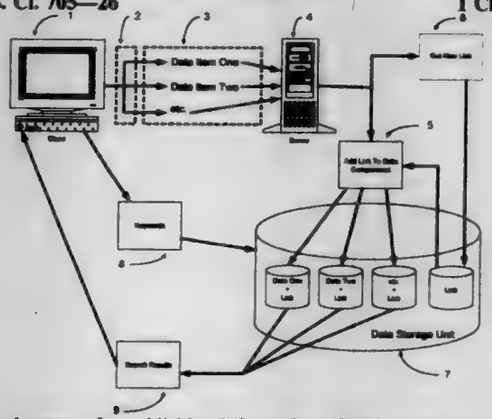
SOFTWARE AND HARDWARE FOR PUBLISHING AND VIEWING PRODUCTS AND SERVICES FOR SALE

Roy E. Bourquin, 1361 White Rock Way, Antioch, Calif. 94509, assignor to Roy E. Bourquin, Antioch, Calif.

Filed Mar. 13, 1996, Ser. No. 614,669

Int. Cl.[6] G06F *15/22*

U.S. Cl. 705—26 **1 Claim**



1. A system for publishing information of and relating to products and services to a remote computer data base system acting as a server from a computer system acting as a client via a communication system comprising:

client software means operating on said computer system acting as a client,

server software means operating on said remote computer data base system acting as a server,

new ad information means for allowing a client to enter information about said products or said services into said remote computer data base system,

dialog maker means for allowing said client to communicate an entire file containing information to said server,

search engine means for allowing said client to search data in said remote computer data base system and displaying resulting information, and

view ad means for allowing said client to retrieve additional data from said remote computer data base system corresponding to said resulting information.

5,799,285

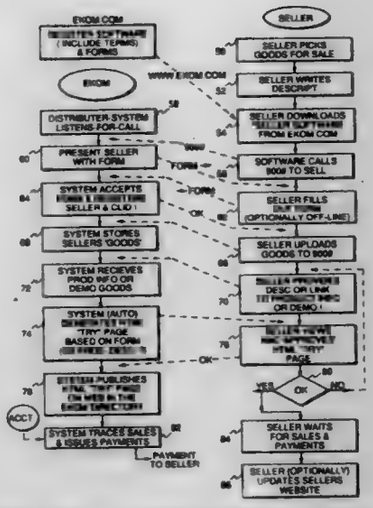
SECURE SYSTEM FOR ELECTRONIC SELLING

Edwin E. Klingman, 3000 Hwy. 84, San Gregorio, Calif. 94074

Continuation-in-part of Ser. No. 684,135, Jul. 19, 1996, which is a continuation-in-part of Ser. No. 660,529, Jun. 7, 1996, Pat. No. 5,729,594. This application Aug. 30, 1996, Ser. No. 705,036

Int. Cl.[6] H04M *11/00;* **H04L** *12/22*

U.S. Cl. 705—26 **17 Claims**



13. A method of establishing communication links for enabling a seller of a product to securely communicate the product to a distributor through electronic media for advertising the product to potential purchasers through electronic media and for establishing communication links to securely transfer the product to a buyer through secure electronic media, said method comprising:

establishing a first communication link between a seller communication subsystem and a remote communication subsystem, said seller subsystem having a seller identifying number and said remote subsystem having a registration form, wherein said first communication link uses the Internet transmission media;

downloading through said first communication link, said registration form to said seller subsystem;

using the form for input of registration data;

retrieving through said first communication link, a registration telephone toll number;

using said registration toll number to establish a registration telephone toll connection through a second communication link between said seller subsystem and said remote subsystem;

causing said seller subsystem to transmit said seller identifying number to said remote subsystem through said second communication link;

storing the transmitted seller identifying number in said remote subsystem;

uploading the input registration data from the seller subsystem to the remote subsystem through said second communication link;

uploading the product through the second communication link from the local subsystem to the remote subsystem

whereby during said product uploading, a fee is assessed and charged at a rate determined by the registration toll connection provider;

extracting product description information from the uploaded registration data for use by the distributor in advertising the product;

establishing a third communication link between a buyer subsystem and the remote subsystem, said buyer subsystem having a buyer identifying number associated therewith;

selecting the advertised product through said third communication link;

retrieving a BUY telephone toll number associated with the product through said third communication link;

using the retrieved BUY toll number to establish a BUY telephone toll connection through a fourth telephone toll communication link between the buyer subsystem and the remote subsystem;

transmitting the buyer identifying number from the buyer subsystem through said fourth communication link to the remote subsystem;

storing the transmitted buyer identifying number in the remote subsystem; and

downloading the product from said remote subsystem to said buyer subsystem through said fourth communication link

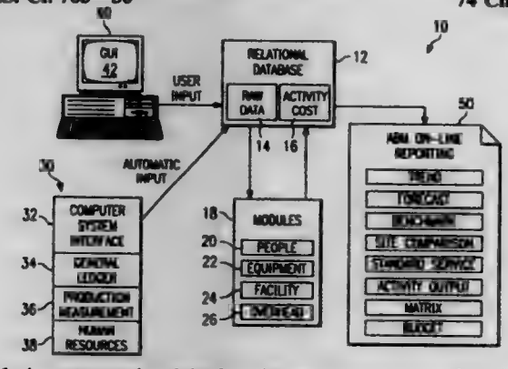
whereby during said downloading of the product, a fee is assessed and charged at a rate determined by the buy toll connection provider.

5,799,286

AUTOMATED ACTIVITY-BASED MANAGEMENT SYSTEM

James Joseph Morgan; Terry Lee Johnson; Leah Ellen Keefer; Patricia Ann Smith; William Howell Bradford; Kathryn Louise Wells, and Eric Todd Mason, all of Plano, Tex., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed Jun. 7, 1995, Ser. No. 488,003
Int. Cl.[6] G46F *17/60*
U.S. Cl. 705—30 **74 Claims**



1. An automated activity-based management system for a business organization having costs associated with its people, facilities, and equipment to produce products and/or provide services, said business organization having accounting information including an accounting structure and expenses stored electronically in a storage device, comprising;

at least one computer workstation having an user interface accepting activity information including information related to percentages of time spent on each activity by the people, and utilization information related to said facilities and equipment;

a relational database coupled to said storage device and said at least one computer workstation automatically downloading, receiving and storing said accounting information from said storage device, and receiving said activity information from said computer workstation; and

a database server coupled to said relational database and said computer workstation dynamically processing said accounting information and said activity information in response to requests received from said computer workstation, and mapping said expenses to the costs associated with the people, facilities, and equipment components of each activity, to determine a component cost allocation for each activity.

5,799,287

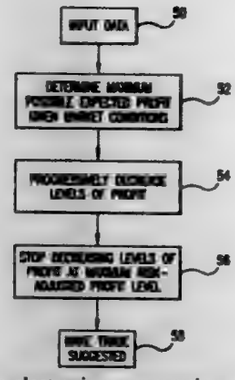
METHOD AND APPARATUS FOR OPTIMAL PORTFOLIO REPLICATION

Ron S. Dembo, 822 Richmond St. W., Toronto, Canada, MCJ 1C9

Continuation of Ser. No. 248,042, May 24, 1994, abandoned. This application May 30, 1997, Ser. No. 866,303
Int. Cl.[6] G06F *157/00*
U.S. Cl. 705—36 **12 Claims**

1. A computer-based method for constructing an optimal replicating portfolio for a given target portfolio of market instruments, the method comprising the steps of:

(a) generating an electronic representation of the collection of market instruments;



(b) generating an electronic representation of a set of available market instruments from which the replicating portfolio may be constructed;

(c) defining a set of future scenarios, wherein each member of the set of future scenarios associates a future value with a market parameter;

(d) defining a horizon date and a minimum required profit to be obtained on the horizon date from a replicating portfolio for the given target portfolio;

(e) calculating a trade-off between risk and expected profit for an arbitrary replicating portfolio;

(f) calculating a maximum risk-adjusted profit using the set of future scenarios and the trade-off between risk and expected profit, wherein the maximum risk-adjusted profit corresponds to a marginal cost of risk that is equivalent to a marginal benefit to be obtained from assuming that risk;

(g) generating an electronic representation of a replicating portfolio for the given target portfolio that will achieve the maximum risk-adjusted profit, wherein the replicating portfolio comprises market instruments selected from the set of available market instruments; and

(h) identifying a set of transactions required to construct the replicating portfolio.

5,799,288

REMAINING MONEY MANAGEMENT SYSTEM WITH CASH DEMAND PREDICTION

Takao Tanaka; Masanori Mukai; Takeshi Nagaoka, all of Kawasaki; Kazuo Nakamura, Maebashi; Takaaki Hirooka, Kawasaki; Takuji Shiota, Kawasaki; Yoshihiro Kakiuchi, Kawasaki; Ryoichi Tabei, Kawasaki, and Kouichi Matsuo, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

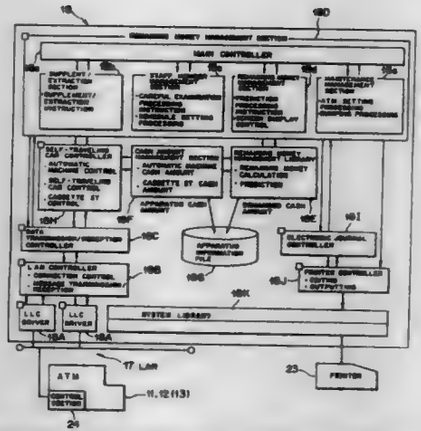
Filed Jun. 26, 1996, Ser. No. 672,052
Claims priority, application Japan, Jul. 11, 1995, 7-175283
Int. Cl.[6] G07F *19/00*
U.S. Cl. 705—43 **45 Claims**

1. A remaining money management system, comprising:

one or more automatic cash transaction apparatus; and

a remaining money management apparatus for managing remaining money amounts corresponding to cash accommodated in said automatic cash transaction apparatus based on transaction data from said automatic cash transaction apparatus;

said remaining money management apparatus including a storage section for cumulatively storing transaction data from said automatic cash transaction apparatus, and a prediction section for calculating and predicting demanded cash amounts within



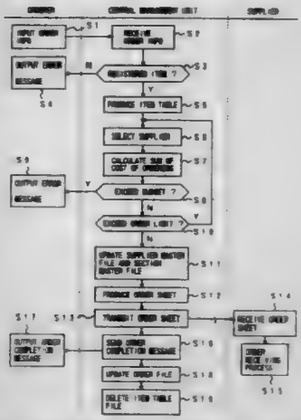
a designated period of time for said automatic cash transaction apparatus based on the transaction data in the past stored in said storage section.

5,799,289

ORDER MANAGEMENT SYSTEM AND METHOD CONSIDERING BUDGET LIMIT

Kazuyoshi Fukushima, Tokyo, and Koubun Suzuki, Kawasaki, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Sep. 30, 1996, Ser. No. 723,115
Claims priority, application Japan, Oct. 2, 1995, 7-276217
Int. Cl.[6] G06F *17/60*
U.S. Cl. 705—400 **22 Claims**



1. An order management method for automatically placing an order with one of a plurality of suppliers when order information is input by one of a plurality of orderers, said order management method being performed in an order management system comprising a plurality of terminal units provided to the respective orderers and a central management unit connected to each of said terminal unit, said order management method comprising the steps of:

sending the order information from one said terminal units to said central management unit;

calculating a total cost of previous orders based on order history information of one of the orderers sending the order information and order information sent from the one of orderers by managing the order history information and section information with respect to each of said orderers;

permitting an execution of an ordering process when the calculated total cost of previous orders is within a budget of the orderer, the budget being included in the section information;

calculating a total cost of previously received orders for each of said suppliers based on the order history information and the order information; and

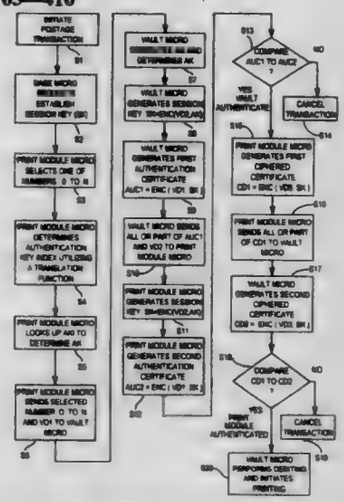
selecting one of the suppliers whose calculated total of previously received orders is within an order limit.

5,799,290

METHOD AND APPARATUS FOR SECURELY AUTHORIZING PERFORMANCE OF A FUNCTION IN A DISTRIBUTED SYSTEM SUCH AS A POSTAGE METER

Donald T. Dolan, Ridgefield; Dale A. French, Clinton, and Kathryn V. Lawton, Branford, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 27, 1995, Ser. No. 579,507
Int. Cl.[6] G07B *17/00*
U.S. Cl. 705—410 **2 Claims**



1. A method for authenticating functional modules of a postage meter having a vault and a printer in communication with each other, the method comprising:

A) sending first and second variable data from the printer to the vault;

B) generating a first session key within the vault by applying an encryption algorithm to the first variable data received from the printer and third variable data resident within the vault;

C) generating a first authentication certificate in the vault by applying the encryption algorithm to the second variable data received from the printer and to the first session key;

D) sending the first authentication certificate and the third variable data from the vault to the printer;

E) generating a second session key within the printer by applying the encryption algorithm to the third variable data received from the vault and the first variable data;

F) generating a second authentication certificate in the printer by applying the encryption algorithm to the second variable data and the second session key; and

G) the printer comparing the first authentication certificate received from the vault to the second authentication certificate and if the first and second authentication certificates are the same the printer verifies that the vault is authenticated.

5,799,291

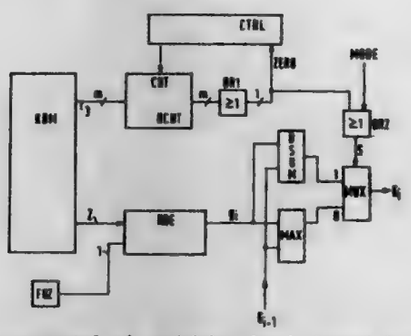
ARRANGEMENT FOR THE SEPARATE PROCESSING OF FUZZY RULES OF DIFFERING IMPORTANCE

Herbert Eichfeld, and Thomas Künemund, both of München, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE95/00115, § 371 Date Aug. 9, 1996, § 102(e) Date Aug. 9, 1996, PCT Pub. No. WO95/22099, PCT Pub. Date Aug. 17, 1995
PCT Filed Jan. 25, 1995, Ser. No. 687,586
Claims priority, application Germany, Feb. 11, 1994, 44 04 426.7
Int. Cl.[6] G06F *9/44*
U.S. Cl. 706—1 **1 Claim**

1. An arrangement for separate processing of fuzzy rules of differing importance, comprising:

knowledge base memory for storing more important rules and less important rules such that the more and less important rules can be distinguished from one another;



a new aggregated rule weighting that is formed from a rule weighting of a respective rule and from a previous aggregated rule weighting of previous rules, using an arrangement for forming an unsharp OR link;

the arrangement for forming an unsharp OR link having a unit for forming a limited sum, if a more important rule is present, and having a unit for forming a maximum, if a less important rule is present;

a multiplexer having a one input connected to an output of the unit for forming the limited sum and having a zero input connected to an output of the unit for forming a maximum;

a controller for controlling the knowledge base memory such that all the more important rules in one block are addressed chronologically after the less important rules of the knowledge base memory;

a reverse counter having a load input and a counting input, the load input being fed the number, stored in the knowledge base memory, of the more important rules, the controller, after the processing of a respective rule, supplying a signal to the counting input of the reverse counter until all the more important rules have been processed;

the reverse counter having an output signal that is OR linked bit by bit and that serves as a control signal for the multiplexer; and

each of the units for forming a limited sum and the unit for forming a maximum having a first input supplied with the rule weighting of the respective rule and a second input supplied with the previous aggregated rule weighting.

5,799,292

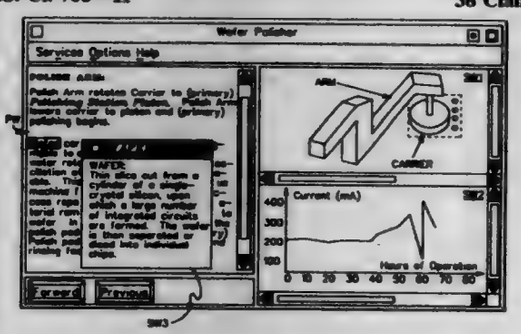
ADAPTIVE HYPERMEDIA PRESENTATION METHOD AND SYSTEM

Amir Hekmatpour, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 235,301, Apr. 29, 1994, Pat. No. 5,644,686. This application Sep. 25, 1995, Ser. No. 533,120

Int. Cl.[6] G06F *17/30*

U.S. Cl. 706—11 **38 Claims**



1. In a hypermedia computing environment having a logical page and a plurality of hypermedia objects therein, at least some hypermedia objects of said plurality of hypermedia objects comprising information content, a method for managing at least one of information content or presentation of said plurality of hypermedia objects within the logical page, said method comprising the steps of:

(a) acquiring an adaptation parameter; and

(b) automatically adjusting at least one of information content or presentation of said plurality of hypermedia objects within said logical page in response to said adaptation parameter;

(c) wherein each hypermedia object of said plurality of hypermedia objects of said logical page contains a set of attributes, said set of attributes including at least some of: an object content method (OCM) for initializing and updating content of the hypermedia object; a display order (DO) representative of order of appearance of the hypermedia object within a window of the logical page; a display order method (DOM) for initializing and updating the value of DO; an activation frequency coefficient (AFC) representing frequency of hypermedia object activation; an activation frequency coefficient method (AFCM) for initializing and updating the value of AFC; and a hide condition (HC) for concealing the hypermedia object from a window of the logical page, and wherein said adjusting step (b) comprises automatically adjusting at least one attribute of said set of attributes of at least one hypermedia object of said plurality of hypermedia objects; and

(d) wherein said adjusting step (b) comprises automatically adjusting at least one attribute of at least some hypermedia objects of said plurality of hypermedia objects, said at least one attribute comprising content of the hypermedia object, display order within a window of the logical page, a frequency of use characteristic, or said hide condition.

5,799,293

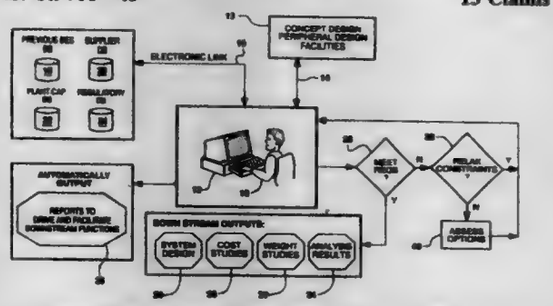
METHOD FOR OPTIMIZING THE DESIGN OF A PRODUCT USING KNOWLEDGE-BASED ENGINEERING TECHNIQUES

Gregory A. Kaepp, Dearborn, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Nov. 4, 1996, Ser. No. 743,611

Int. Cl.[6] G06F *15/18*

U.S. Cl. 706—45 **13 Claims**



1. A method for designing a product using a set of parameters and a set of instructions provided by a user, the method comprising the steps of:

receiving the set of parameters and the set of instructions to establish requirements of the product;

determining a first calculation based on a calculated reason;

performing the first calculation using the set of parameters and the set of instructions to achieve a first solution;

communicating the first calculation to the user;

communicating the calculated reason for performing the first calculation to the user;

reviewing a set of second calculations;

determining a preferred second calculation from the set of second calculations based on a second calculated reason;

performing the preferred second calculation using the set of parameters, the set of instructions and the first solution;

communicating the preferred second calculation to the user;

communicating the second calculation reason for performing the preferred second calculation to the user; and

testing whether the user understands the communicated reasons and calculations.

5,799,294

METHOD FOR FINDING CAUSE OF ABNORMAL EVENT IN SUPPORT OF PLANT OPERATION

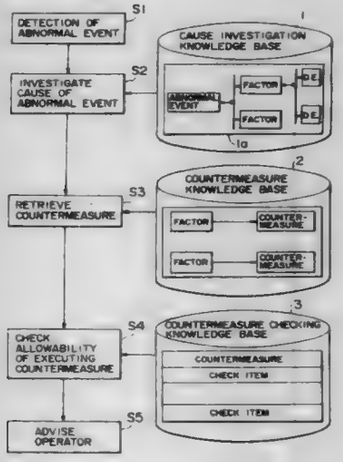
Satoshi Tanaka, Takasago, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1996, Ser. No. 606,088

Claims priority, application Japan, Feb. 28, 1995, 7-040475

Int. Cl.[6] G06F *17/00*

U.S. Cl. 706—46 **8 Claims**



6. A method performed in a slant operation supporting device having a computer for determining a cause of an abnormal event in a plant operation, comprising the steps of:

monitoring predetermined parameters for abnormal events in the plant operation;

detecting an abnormal event in the plant operation;

identifying a plurality of factors possibly causally related to said abnormal event in the plant operation defined by a fault tree;

comparing said possible factors with occurrence and non-occurrence of a plurality of deriving events;

assigning event evaluation values corresponding to the occurrence and non-occurrence of the respective deriving events and said identified factors;

negating deriving events for identified factors associated with non-occurrence of said deriving events by adding deriving events in negative form to said fault tree; and

determining a probability of fault of each of said factors corresponding to the occurrence and non-occurrence of said deriving events;

wherein when an event evaluation value for each deriving event is V_{ij}, a certainty CF_i of each factor is calculated using the following equation $CF_i=R_i \cdot V_{i1}^{R1/R} \cdot V_{i2}^{R2/R} \cdot \ldots \cdot V_{iM}^{RiM/R}$ wherein $R=R_{i1}+R_{i2}+\ldots+R_{iM}$ and R_{in} is a set value indicating the strength of a relationship between each deriving event and each factor; and

wherein a factor having a largest value among values of certainties CF_i is identified as the cause of the abnormal event.

5,799,295

CONSTRAINT-BASED SPREADSHEET SYSTEM CAPABLE OF DISPLAYING A PROCESS OF EXECUTION OF PROGRAMS

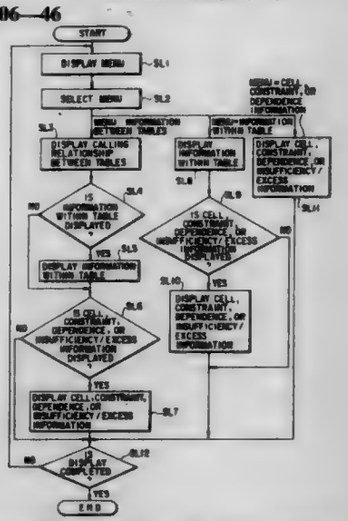
Yasuo Nagai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 365,803, Dec. 29, 1994, abandoned. This application Nov. 10, 1997, Ser. No. 966,741

Claims priority, application Japan, Dec. 29, 1993, 5-349605

Int. Cl.[6] G06F *15/18*

U.S. Cl. 706—46 **19 Claims**



1. A computer program product for controlling a computer to execute a spreadsheet program using tables including a plurality of cells, the computer program product comprising:

first calculating means for obtaining a calculation flow among the plurality of cells based on an input value and a formula which serve as constraint conditions for each cell of the plurality of cells;

second calculating means for obtaining cell dependency information by using at least one of 1) formulas within a table including the plurality of cells and 2) formulas between a plurality of tables including the plurality of cells, according to the calculation flow obtained by the first calculating means;

generating means for generating information related to an execution flow within the table or between the plurality of tables based on the cell dependency information obtained by the second calculating means; and

displaying means for displaying the information related to the execution flow generated by the generating means,

wherein the second calculating means includes

an inference engine which executes the constraint conditions as substitutions when the first calculating means succeeds in obtaining the calculation flow among the cells, and

constraint processing means for solving the constraint conditions as simultaneous equations when the first calculating means fails to obtain the calculation flow.

5,799,296

SYSTEM FOR CONTINUOUS LOGIC COMPUTATION AND METHOD OF USING SAME

Shay-Ping Thomas Wang, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

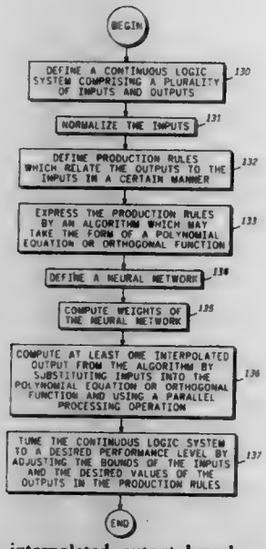
Continuation of Ser. No. 76,324, Jun. 14, 1993, Pat. No. 5,696,881. This application Feb. 13, 1997, Ser. No. 800,915

Int. Cl.[6] G06F *15/18*

U.S. Cl. 706—55 **20 Claims**

18. A method of producing an interpolated output comprising the steps of:

receiving input data at a plurality of inputs of a parallel processing network, the parallel processing network having a plurality of outputs and confgured based on a polynomial equation derived from a plurality of quantified production rules: and



computing the interpolated output based on the plurality of outputs of the parallel processing network.

5,799,297

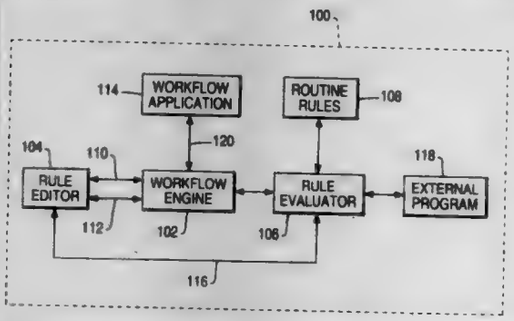
TASK WORKFLOW MANAGEMENT SYSTEM AND METHOD INCLUDING AN EXTERNAL PROGRAM EXECUTION FEATURE

Gilbert W. Goodridge, Lexington, S.C., and Michael J. Komichak, Alexandria, Va., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 15, 1995, Ser. No. 572,928

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—1 **15 Claims**



1. A computer-implemented task workflow management system, comprising:

(a) a workflow engine executed by a first computer based system for routing tasks in a predetermined task execution sequence to a plurality of workers and providing access to data and documents required by each worker to complete a particular task;

(b) a rule evaluator, operatively coupled to the workflow engine, for evaluating a plurality of rules describing the predetermined task execution sequence such that the workflow management system is rule-based;

(c) external program execution means, executed by a second computer based system, operatively coupled to the rule evaluator, for executing a program instruction external to the workflow management system, such that functionality of the workflow management system can be extended beyond a core workflow management feature set in the workflow engine; and

(d) wherein the plurality of rules are derived from a rule language which includes a function comprising means for causing the external program execution means to execute the external program instruction and return data generated by execution of the external program instruction to the rule evaluator means as a result string such that the rule evaluator means can evaluate current and subsequent clauses in the rules based on the returned result string.

5,799,298

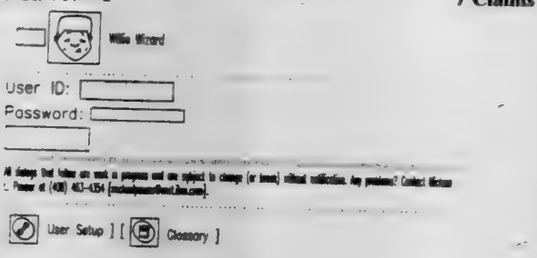
METHOD OF INDIRECT SPECIFICATION OF USER PREFERENCES

Ronald Edward Bingham, Capitola; Michael Jon Dockter, Hollister; Joel Frank Farber, San Jose; Michael Leon Pauser, Morgan Hill, and Randal James Richardt, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 512,272, Aug. 7, 1995, abandoned. This application May 27, 1997, Ser. No. 863,534

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—1 **7 Claims**



1. A system for interactively obtaining computer user preferences comprising:

a base set of graphical metaphor objects, said graphical metaphor objects representing recognizable multi-trait profiles;

a preselected list of attributes describing each of said graphical metaphor objects;

a first graphical template which enables entering of a value representing a user's preferences, including likes and dislikes, of each of said graphical metaphor objects, a second template for extracting a user's valued preferences of a connection between two objects; said extracting of a user's preferences of a value of a connection comprises entering a value representing a user's preferences of each of said graphical metaphors as it relates to said connection;

blending of each of said multi-trait graphical object attributes based on said user values to provide a weighted evaluation, and

wherein a user preference profile is determined based on said weighted evaluation of each of said values entered as they relate to said preselected list of attributes and a connection attribute profile is further determined based on an ordering and truncation of said weighted evaluation.

5,799,299

DATA PROCESSING SYSTEM, DATA RETRIEVAL SYSTEM, DATA PROCESSING METHOD AND DATA RETRIEVAL METHOD

Mutsumi Fujiwara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1995, Ser. No. 527,686

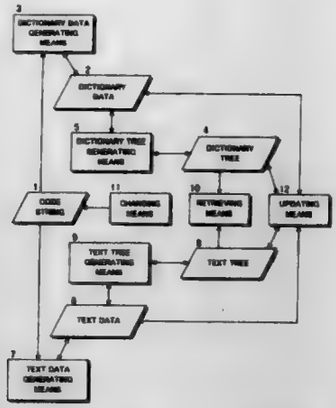
Claims priority, application Japan, Sep. 14, 1994, 6-219924; Jan. 31, 1995, 7-014651

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—3 **78 Claims**

1. A data processing system comprising:

dictionary data generating means for arranging lexicographically plural leading strings to be used for retrieving trailing strings each of which is a trailing part of a code string on which retrieval is to be made using a key string and for generating dictionary data representing pairs each including a respective



leading string and a position of said respective leading string within said code string;

dictionary tree generating means for generating a dictionary tree, which is a binary tree, based on said dictionary data;

text data generating means for generating text data based on said code string;

text tree generating means for generating a text tree, which is a binary tree, based on said text data;

retrieving means for retrieving trailing strings each containing at least part of a key string as one of the leading strings, based on said dictionary tree and text tree;

changing means for changing said code string;

sequence assigning means for assigning a sequence number to each of plural lexicographically registered dictionary data items; and

updating means for updating, based on a contents of the change, the dictionary data, the dictionary tree, the text data, the text tree, and a lexicographic order of said code string associated with the change,

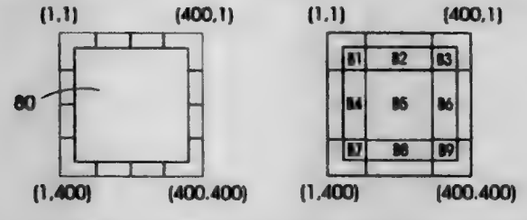
wherein said retrieving means counts a number of substrings, each containing an identical leading string using the sequence numbers of a first dictionary data item and a last dictionary data item.

5,799,300

METHOD AND SYSTEM FOR PERFORMING RANGE-SUM QUERIES ON A DATA CUBE

Rakesh Agrawal; Ching-Tien Ho, and Ramakrishnan Srikant, all of San Jose, Calif., assignors to International Business Machines Corporations, Armonk, N.Y.

Filed Dec. 12, 1996, Ser. No. 764,564
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—5 **36 Claims**



1. A method for performing a range-sum query in a database in which data include a plurality of attributes and are represented as a d-dimensional data cube having a plurality of cells, the dimensions of the data cube corresponding respectively to the attributes, each cell having an aggregate value of the corresponding data attribute values, and the range-sum query including a range of values for each data attribute, the method comprising the steps of:

selecting a subset of the dimensions of the data cube;

computing a plurality of prefix-sums along the selected dimensions, based on the aggregate values corresponding to the ranges of values of the data attributes; and

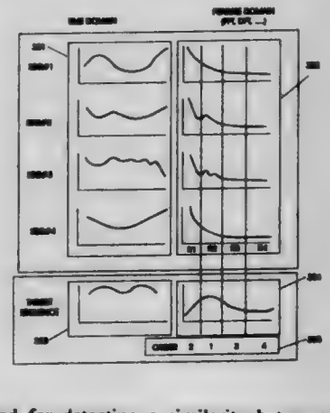
generating a range-sum result based on the data represented by the computed prefix-sums.

5,799,301

APPARATUS AND METHOD FOR PERFORMING ADAPTIVE SIMILARITY SEARCHING IN A SEQUENCE DATABASE

Vittorio Castelli, White Plains; Chung Sheng Li, Ossining, and Philip Shi-Lung Yu, Chappaqua, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1995, Ser. No. 513,583
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—6 **9 Claims**



1. A method for detecting a similarity between a target data sequence and one or more data sequences stored in a database comprising the steps of:

retrieving a subset of the stored sequences based on the target sequence and an indexing technique, wherein each of said stored sequences and said target sequence have a numerical value, and wherein each of said stored sequences and said target sequence are stored in a feature space;

correlating, based on the numerical values, between said target sequence and said one or more stored sequences at a first level of a predetermined hierarchy in said feature space;

testing a result of said correlating step against a predetermined threshold value;

declaring a match between said target sequence and said one or more stored sequences if said result of said correlating step is greater than said predetermined threshold value.

5,799,302

METHOD AND SYSTEM FOR MINIMIZING ATTRIBUTE NAMING ERRORS IN SET ORIENTED DUPLICATE DETECTION

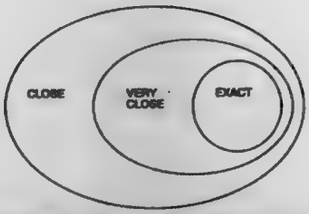
Robert J. Johnson, Naugatuck, and Shawn W. Szturma, Bridgeport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 30, 1995, Ser. No. 413,579
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—7 **16 Claims**

1. A method of detecting duplicate entries in an address file, comprising the steps of:

(a) entering an address list to an addressing system, wherein said address list is comprised of one or more address records and said address records are comprised of one or more address fields;

(b) applying a nickname lookup table to said address records, wherein said nickname lookup table comprises one or more nicknames corresponding to a common first name, said one or more nicknames located in one of said address fields; and further comprising the step of selecting the degree of precision to which a match sequence can be subjected;



TYPE OF MATCH	CRITERION
EXACT	THE FIELD PAIR MATCHES EXACTLY. THE MATCH IS CASE INSENSITIVE ALL SPACES REMOVED.
VERY CLOSE	PROXIMITY SCORING APPLIED TO ADJACENT FIELD PAIRS EXCEED 95%
CLOSE	THE SOUNDEX FUNCTION APPLIED TO THE FIELD PAIR MATCHES EXACTLY
DON'T USE	THE FIELD PAIR IS NOT USED WHEN DETERMINING DUPLICATES

(c) performing said match sequence by matching a first record from said address list with a second record and subsequent records, if any, from said address list by comparing said one or more address fields of said first record with said one or more address fields of said second or subsequent records;

(d) repeating said match sequence for each of said subsequent records;

(e) determining a duplicate set, wherein said duplicate set is comprised of all address records with address fields that match as determined by a set of pre-selected criteria;

(f) listing said duplicate set so that each address record follows sequentially;

(g) determining an address record to be retained within said address list; and

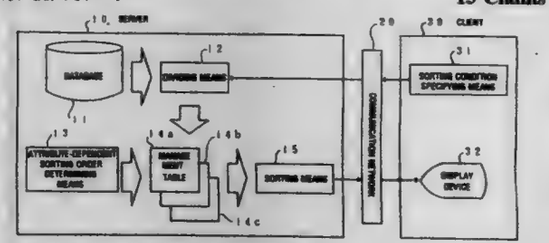
(h) retaining said address record within said address list; and placing said duplicate set on a second list.

5,799,303

APPARATUS AND METHOD FOR SORTING ATTRIBUTES-MIXED CHARACTER STRINGS

Tadao Tsuchimura, Odawara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 30, 1995, Ser. No. 413,889
Claims priority, application Japan, Jun. 28, 1994, 6-145913
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—7 **15 Claims**



1. A sorting apparatus, comprising:

storing means for storing character strings composed of characters with different attributes, the attributes defining properties of the characters and enabling the characters to be categorized into groups in different ways;

dividing means for separating each of the character strings into a plurality of substrings according to the attributes, and creating management tables associated with the respective attributes to store the substrings;

attribute-dependent sorting order determining means for determining a sorting order of the character strings for each type of attribute associated with each of the management tables, and determining setting values of sorting order indexes associated with the respective substrings of the character strings stored in the management tables; and

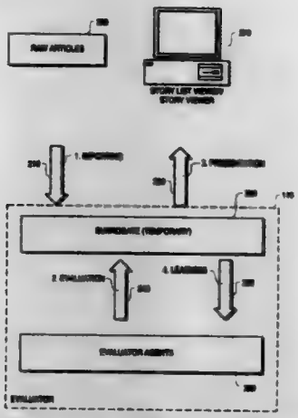
sorting means for sorting the character strings according to predetermined priorities of the attributes, using the values of the sorting order indexes in the management tables for sorting the character strings with an identical attribute.

5,799,304

INFORMATION EVALUATION

John David Miller, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 367,991, Jan. 3, 1995, abandoned. This application Oct. 23, 1997, Ser. No. 956,091
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—7 **16 Claims**



1. A method for evaluating any computer-readable articles, the method comprising the computer-implemented steps of:

presenting any such articles to a set of agents for each article within a session, each agent including an expression, a voting bias, and an indication of the statistical reliability of the agent;

determining whether the expression for each agent matches the article;

determining whether the agent is sufficiently reliably to vote when the agent's expression matches the article;

voting for or against the article according to the agent's voting bias, if the agent is sufficiently reliable to vote; and

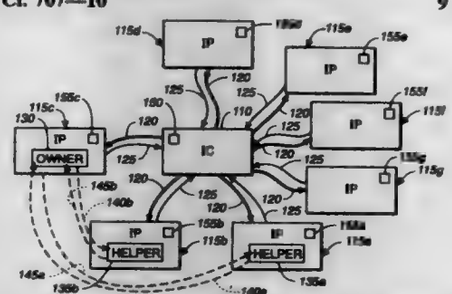
deriving an evaluation value for the article from a count of agents voting for the article and a count of agents voting against the article.

5,799,305

METHOD OF COMMITMENT IN A DISTRIBUTED DATABASE TRANSACTION

Gerald K. Bortvedt, Beaverton, and Robert H. Gerber, Portland, both of Oreg., assignors to Informix Software, Inc., Menlo Park, Calif.

Filed Nov. 2, 1995, Ser. No. 552,058
Int. Cl.[6] G06F *17/00;15/00*
U.S. Cl. 707—10 **9 Claims**



1. A method for determining commitment of a distributed transaction in a distributed database system, said distributed transaction including an owner and a helper, comprising:

running an interval coordinator;

running a plurality of coservers, the owner associated with a first coserver and the helper associated with a second coserver;

associating each of said coservers with a transaction log;

sending from the interval coordinator to each of the coservers a succession of interval messages, said interval messages representing a succession of temporal periods;

flushing the transaction log associated with said coserver to non-volatile storage in response to receiving one of said interval messages;

maintaining a state in each of the coservers identifying a most recently received interval message;

transmitting a closure message from each of the coservers to the interval coordinator after that coserver flushes its associated transaction log;

transmitting a request message from the owner to the helper identifying an operation in said distributed transaction for said second coserver to execute;

transmitting a completion message from the helper to the owner upon execution of the operation, said completion message including a tag identifying the most recently received interval message of said second coserver;

after receiving said completion message, transmitting an eligibility message for the transaction from the owner to the interval coordinator;

after receiving the eligibility message from the owner and a closure message from the helper, writing a commit state for the transaction to stable storage; and

after writing the commit state, sending from the interval coordinator to the owner and helper a commit message for the transaction.

5,799,306

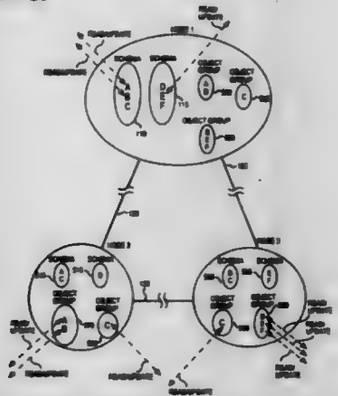
METHOD AND APPARATUS FOR FACILITATING DATA REPLICATION USING OBJECT GROUPS

Harry Sun, Redwood City; Benny Souder, Belmont, and Peter Lim, Redwood, all of Calif., assignors to Oracle Corporation, Redwood Shores, Calif.

Filed Jun. 21, 1996, Ser. No. 667,677

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—10 **21 Claims**



8. A machine-readable medium that has stored thereon one or more sequences of instructions, the one or more sequences of instructions including instructions which, when executed by a processor, cause said processor to perform the steps of:

creating a mapping between subsets of data within said one or more schemas and one or more object groups;

specifying one or more replication sites for each of said one or more object groups;

for each of said one or more object groups, creating at the one or more replication sites for said object group a replica of each subset of data that is mapped to said object group;

detecting at said first site a data modification to a particular subset of data within said one or more schemas; and

if said particular subset of data has been mapped to an object group of said one or more object groups, then propagating said data modification to the one or more replication sites of said object group.

5,799,307

RAPID STORAGE AND RECALL OF COMPUTER STORABLE MESSAGES BY UTILIZING THE FILE STRUCTURE OF A COMPUTER'S NATIVE OPERATING SYSTEM FOR MESSAGE DATABASE ORGANIZATION

Robert Bultron, Woodstock, Ill., assignor to Callware Technologies, Inc., Sandy, Utah

Filed Oct. 6, 1995, Ser. No. 540,294

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—100 **24 Claims**

```
/*****************************************************************
* GET_BOX_FILE_PATHNAME
*****************************************************************
* Return the box file pathname based on the box index and extension.
*****************************************************************
char *get_box_file_pathname(unsigned box_id, char *buf, char *ext)
{
  unsigned top_level;      /*TOP BOX SUBDIRECTORY INDEX FILE POINTER */
  unsigned sub_level;      /*SUB BOX SUBDIRECTORY INDEX FILE POINTER */
top_level = (box_id / 200) * 200;
if (sub_level = box_id %.2)
  {
  --sub_level;
  }
sprintf(buf, "DATA\\%4.4u\\%4.4u\\%4.4u%s",
    top_level, sub_level, box_id, ext);
return(buf);
}
```

1. A message processing system for storing and retrieving a plurality of messages, which are represented by digitized data segments, and received for a plurality of users, said system providing a stable database structure which comprises:

(a) a database which utilizes a native file structure of a computer operating system to create a plurality of storage locations in a computer-readable memory for storage of the plurality of messages, each of the plurality of storage locations having a corresponding unique address defined as a directory having a unique number which defines a unique path from a root directory to a directory created by the native file structure, wherein each of the unique addresses corresponds to a storage location for messages received for each of the plurality of users, and wherein the plurality of messages are selected from the group consisting of voice mail, email, fax, video mail and related data;

(b) means for creating a plurality of nested subdirectories which correspond to the unique path from the root directory to a subdirectory;

(c) means for determining a first storage location where a first digitized data segment is to be stored when the first digitized data segment is received;

(d) means for storing the first digitized data segment at the first storage location;

(e) means for determining the first storage location where the first digitized data segment is stored when it is to be retrieved;

(f) means for retrieving the first digitized data segment from the first storage location; and

(g) mean for recall controlling the means for retrieving such that digitized information saved in any of the plurality of storage locations can be retrieved, and wherein a filename for a segment of digitized data to be stored and later retrieved comprises:

a message owner absolute index number which identifies the owner of the file;

a data file index number which defines a unique number for the file within the subdirectory;

a message type indicator which defines the type of message contained in the data so that it can be retrieved using an appropriate method; and

a status indicator which defines a message state.

5,799,308

METHOD AND APPARATUS FOR DATA STORAGE AND RETRIEVAL

Robert Dixon, Warren Farmhouse, Thame Lane, Culham, Near Abingdon, Oxfordshire, OX14 3DT, Great Britain

PCT No. PCT/GB94/02148, § 371 Date Jun. 4, 1996, § 102(e) Date Jun. 4, 1996, PCT Pub. No. WO95/10091, PCT Pub. Date Apr. 13, 1995

PCT Filed Oct. 4, 1994, Ser. No. 624,465

Claims priority, application United Kingdom, Oct. 4, 1993, 9320404

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—100 **8 Claims**



1. A method of storing and retrieving data using an electronic file, the method comprising the steps of:

providing a list of alphanumeric descriptions to each of which is assigned a number;

entering data to be stored in terms of an entity type and an attribute of the entity type;

retrieving from the said list the respective numbers for the entity type and for the attribute;

forming a keyfield by concatenating the number identifying the entity type with the number identifying the attribute of the entity type; and

writing a record to the electronic file, the record comprising the said keyfield and a data part.

5,799,309

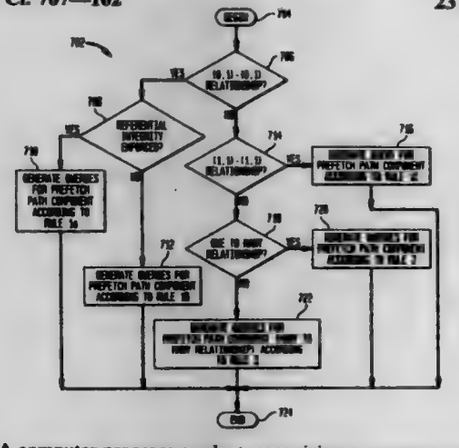
GENERATING AN OPTIMIZED SET OF RELATIONAL QUERIES FETCHING DATA IN AN OBJECT-RELATIONAL DATABASE

Venkatachary Srinivasan, Santa Clara, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 366,238, Dec. 29, 1994, abandoned. This application Jun. 6, 1995, Ser. No. 467,610

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—102 **23 Claims**



1. A computer program product comprising a computer readable medium having computer program logic recorded thereon for enabling a processor in a computer system to process object-oriented queries so as to retrieve data from a relational database management system (RDBMS), said computer program product comprising:

means for enabling the processor to receive an object-oriented query and at least one prefetch path from an object-oriented source, said at least one prefetch path identifying one or more objects which are desired to be constructed;

a first query generator for enabling the processor to translate said object-oriented query to a translated object query, said translated object query being a relational database query capable of retrieving from said RDBMS data to initialize base attributes of top-level objects identified by said object-oriented query;

a second query generator for enabling the processor to generate from said translated object query and said at least one prefetch path a set of relational queries capable of retrieving from said RDBMS data to construct said objects identified by said at least one prefetch path; and

means for enabling the processor to cause said RDBMS to process said set of relational queries.

5,799,310

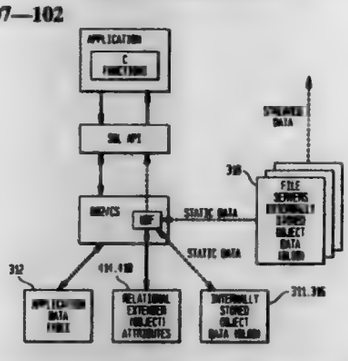
RELATIONAL DATABASE EXTENDERS FOR HANDLING COMPLEX DATA TYPES

Matthew Paul Anderson, Morgan Hill; Siyi Terry Donn, Saratoga; David Couttie Failside; Tri Q. Ha, both of San Jose; Douglas Michael Hembry, Los Gatos; Jean C. Ho, Saratoga; Jing-Song Jang, Cupertino; Nelson Mattos; Carlton Wayne Niblack, both of San Jose; Dragutin Petkovic; Frank Chin Tung, both of Saratoga; Peter Paval Uhrowczik, Los Gatos; Mimi Phuong-Thao Thi Vo, San Jose; Gerald Johann Wilmot, Marina; Peter C. Yanker, Mountain View, and Josephine Min-Kung Cheng, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 1, 1995, Ser. No. 548,301

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—102 **3 Claims**



1. A computer-readable storage medium storing a relational extender for a computer-based relational database, the relational extender providing the relational database with access to object data, comprising:

a first table having a user defined application database, and at least one column dedicated to an object handle created by the user for defining the complex data type of an object;

a second table containing at least one column defining a unique characteristic associated with said one object and one column dedicated to containing said object handle;

a third table containing at least one column defining a common characteristic associated with all objects defined within said first table and one column dedicated to containing said object handle and at least one column dedicated to containing a reference to object data associated with said object;

a fourth table storing each object handle and its associated complex data type as defined in said first table; and

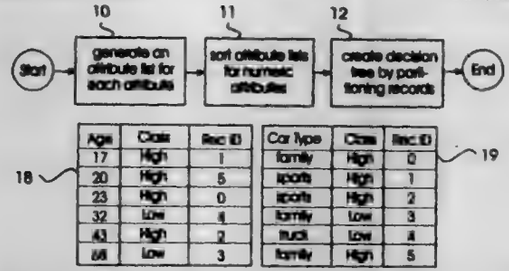
a fifth table containing the names of said second and third tables for each object defined in said first table.

5,799,311

METHOD AND SYSTEM FOR GENERATING A DECISION-TREE CLASSIFIER INDEPENDENT OF SYSTEM MEMORY SIZE

Rakesh Agrawal; Manish Mehta, both of San Jose, Calif., and John Christopher Shafer, Amherst, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1996, Ser. No. 646,893
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—102 51 Claims



18. A computer program product for use with a computer system for directing the system to generate a decision-tree classifier from a training set of records, each record having: (i) at least one attribute, each attribute having a value, (ii) a class label of the class to which the record belongs, and (iii) a record ID, the computer program product comprising:

a computer readable medium;

means, provided on the computer-readable medium, for directing the system to generate an attribute list for each attribute of the records, each entry in the attribute lists having the attribute value, class label, and record ID of the record from which the attribute value is obtained;

means, provided on the computer-readable medium, for directing the system to sort the attribute lists for numeric attributes based on attribute values; and

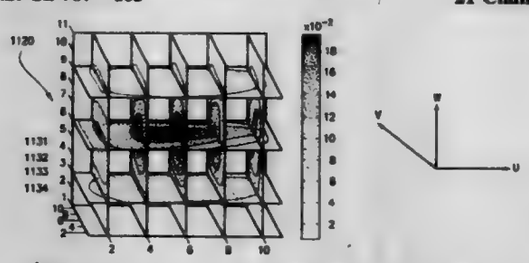
means, provided on the computer-readable medium, for directing the system to create a decision tree by repeatedly partitioning the records using the attribute lists, the resulting decision tree becoming the decision-tree classifier.

5,799,312

THREE-DIMENSIONAL AFFINE-INVARIANT HASHING DEFINED OVER ANY THREE-DIMENSIONAL CONVEX DOMAIN AND PRODUCING UNIFORMLY-DISTRIBUTED HASH KEYS

Isidore Rigoutsos, Long Island City, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 21, 1997, Ser. No. 786,054
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—103 21 Claims



1. A computer system of one or more processors for producing a uniform distribution of affine invariants for a plurality of one or more objects, comprising:

a database of one or more objects, each of the objects identified by a set of three-dimensional object points, the set of three-dimensional object points uniformly selected from an object feature domain, each of the objects further capable of being transformed through zero or more affine transformations, the database being stored in one or more memories that are accessible by the processors;

one or more five-point tuples of five object points, four of the points in the five-point tuple being non-coplanar and dividing the object feature domain into fifteen regions, the fifth point of the five-point tuple being in one of the fifteen regions, and defining one of two types of polyhedral arrangement of the five-point tuple that include a non reentrant polyhedral (NRP) arrangement and a reentrant polyhedral (RP) arrangement, five of the fifteen possible regions corresponding to the RP arrangements and the remaining ten of the regions corresponding to the NRP arrangements;

a transformer for representing each of the five-point tuples by a 3-tuple that is invariant under any of the affine transformations, the transformer producing a range of invariants for all arrangements of the five-point-tuples,

a tagger that identifies each of the five-point tuples as having one of the fifteen region arrangements and one of the two types of the polyhedral arrangements; and

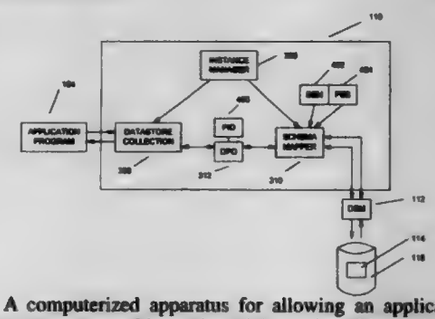
an equalizer, executing on one or more of the processors, that creates a remapping for the 3-tuples corresponding to each of the fifteen region arrangements by redistributing a plurality of the 3-tuples to produce a new distribution that is uniform over the range of invariants, the redistributing determined by the region arrangement and the polyhedral arrangement of the five-point tuple as identified by the tagger.

5,799,313

FRAMEWORK FOR OBJECT-ORIENTED ACCESS TO NON-OBJECT-ORIENTED DATASTORES

Kenneth R. Blackman, San Jose, and Jack L. Howe, III, Gilroy, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1996, Ser. No. 736,762
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—103 21 Claims



1. A computerized apparatus for allowing an application program to access non-object-oriented data using object-oriented techniques, comprising:

an external non-object-oriented datastore stored on a data storage device attached to a computer; and

a bridge program, executed by a computer, for retrieving data from the non-object-oriented datastore and for encapsulating the retrieved data in one or more datastore persistent objects, wherein the datastore persistent objects are materialized as members of a datastore collection accessible by the application program.

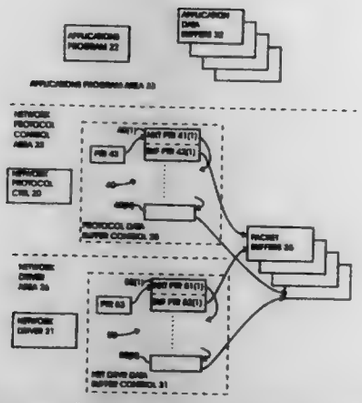
5,799,314

SYSTEM AND METHOD OF CONTROLLING MAPPING OF DATA BUFFERS FOR HETEROGENOUS PROGRAMS IN DIGITAL COMPUTER SYSTEM

Joseph E. Provino, Cambridge, and Mark M. Towfiqh, W. Medford, both of Mass., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 30, 1995, Ser. No. 496,982
Int. Cl.[6] G06F *12/08*
U.S. Cl. 707—104 9 Claims

1. A computer system comprising a plurality of programs each operating in an operating area and a plurality of common data buffers each for buffering data, each program having a buffer control including at least one buffer pointer, each buffer pointer



pointing to one of said common data buffers containing data to be processed by the one of said programs associated therewith, one of said programs, after processing the data in one of said common data buffers, thereafter updating another of said programs' buffer pointers to add a buffer pointer pointing to the one of said common data buffers thereby to facilitate processing of the data in the one of said common data buffers by said other of said programs, in which:

A. said one of said programs comprises a network protocol control program for receiving data from an application program to be transferred over a network and dividing the received data into one or more blocks each for transmission in a packet over the network, said network protocol control program loading each block of data into an associated one of common data buffers,

B. said other of said programs comprises a network driver program which enables each block to be transmitted over said network in an associated packet; and

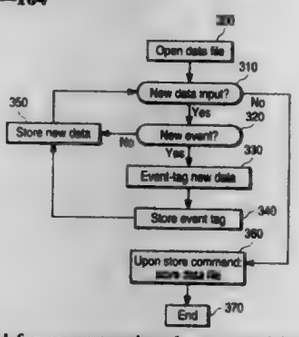
C. said network protocol control program, after loading each respective one of said blocks of data into one of said common data buffers, updating the buffer pointers associated with said network driver program to add a buffer pointer thereto pointing to the one of said common data buffers, the network driver program using its buffer pointers to identify each common data buffer containing data for which it is to generate a said packet for transmission over the network.

5,799,315

METHOD AND APPARATUS FOR EVENT-TAGGING DATA FILES AUTOMATICALLY CORRELATED WITH A TIME OCCURENCE IN A COMPUTER SYSTEM

Matthew Rainey, Palo Alto, and Luigi Alberto Pio-di Savoia, Mountain View, both of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 7, 1995, Ser. No. 499,586
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—104 **25 Claims**



1. A method for event-tagging data entered into a first data file stored in a memory of a computer system that includes a processor coupled to the memory, the method carried out by program instructions executed on said processor and including the steps of:

(1) receiving a plurality of new data entries;

(2) determining whether each new data entry constitutes a predefined type of event, and if so then storing in the memory, correlated with each new data entry, an event tag identifying that new data entry as a data segment, where the predefined event is automatically generated by the computer system substantially at the time of the new data entry and includes at least a spatial region and a temporal event such that the spatial region is correlated with a time of occurrence of the new data entry; and

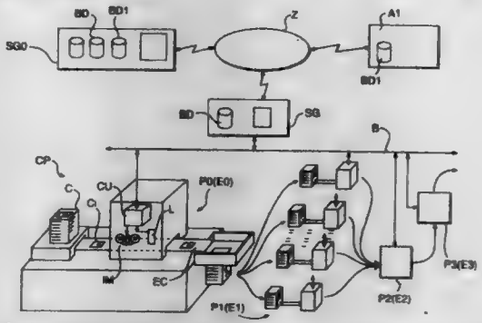
(3) outputting the data entries on a segment-by-segment basis; wherein the data segment constitutes one of a plurality of data segments of a predetermined type stored sequentially in time.

5,799,316

METHOD FOR THE BATCH CUSTOMIZATION OF CARDS

James Audren, Cleguer, France, assignor to Societe d'Etudes et de Realisation de Protection Electronique-Informatique Electronique Securite Maritime-S.E.R.P.E.-I.E.S.M. (S.A.), Guidel, France

Filed Oct. 5, 1995, Ser. No. 539,377
Claims priority, application France, Oct. 7, 1994, 94 12191
Int. Cl.[6] G06F *17/00*
U.S. Cl. 707—104 **11 Claims**



1. A manufacturing method for batch customization of cards in several stages, the method utilizing a database having information files relating to individuals for whom the cards are to be individually customized, the method comprising the steps:

subjecting each card to a preliminary stage including

a) requesting a digital identifier for a new card from a central management system;

b) assigning a digital identifier for each new card;

c) associating the identifier, in the database, with a corresponding file of information associated with a particular individual;

d) marking each card with an identification element corresponding to the digital identifier;

reading the identification element at the commencement of each successive stage of customization;

determining the digital identifier associated with the element;

accessing the database file that corresponds to the identifier;

downloading portions of data from the file that are required for a respective stage; and

recording preselected data from the file, associated with the particular individual, onto the card.

5,799,317

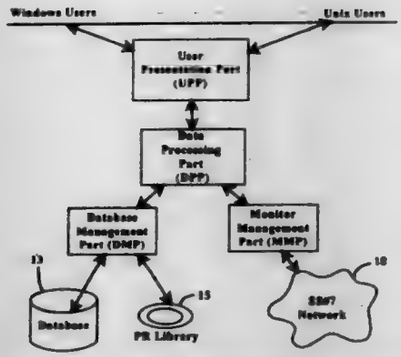
DATA MANAGEMENT SYSTEM FOR A TELECOMMUNICATIONS SIGNALING SYSTEM 7(SS#7)

Jingsha He, Plano, Tex., and Yi-Shang Shen, Potomac, Md., assignors to MCI Communications Corporation, Washington, D.C.

Filed Nov. 8, 1995, Ser. No. 555,422
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—104 **11 Claims**

1. A data management system for an SS#7 network that contains network elements, including SS#7 nodes and protocol monitoring units (PMUs), and comprising:

interconnection means for connecting data from the network elements to a central relational database for storing the data;



means for storing a problem/resolution library of historical network alarm events and their resolutions;

server means interposed between the central relational data base and the interconnection means and including

(a) means for connecting the central relational database to the problem/resolution library for selectively adding an event, derived from the central relational database to the problem/resolution library;

(b) data processing means connected to the central relational database for generating preselected reports from the data derived from the network elements: and first client means connected to the interconnection means for accessing the server means and maintaining the central relational database; and

second client means connected to the interconnection means for managing the SS#7 network.

5,799,318

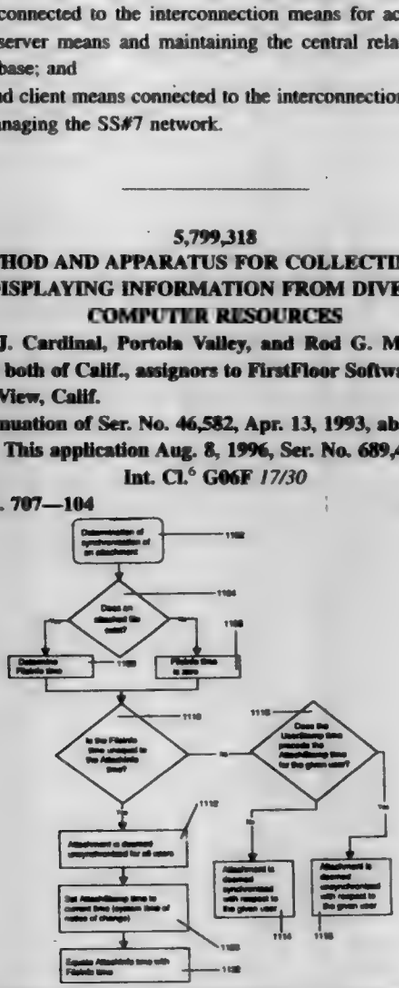
METHOD AND APPARATUS FOR COLLECTING AND DISPLAYING INFORMATION FROM DIVERSE COMPUTER RESOURCES

David J. Cardinal, Portola Valley, and Rod G. March, Palo Alto, both of Calif., assignors to FirstFloor Software, Mountain View, Calif.

Continuation of Ser. No. 46,582, Apr. 13, 1993, abandoned. This application Aug. 8, 1996, Ser. No. 689,405

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—104 **48 Claims**



1. A method for managing information in a computer memory and a display, the method comprising the steps of:

(a) forming a plurality of items in the memory, each item having a description corresponding to an article of stored information, said forming step being performed independently of a tool used for creating said article of stored information;

(b) detecting a change relating to the article of stored information, said detecting step being performed independently of a tool used for changing said article of stored information and independently of an explicit request for notification of the change; and

(c) indicating the detected change on the display.

5,799,319

METHOD FOR NAMING COMPUTER FILES

Hank Atkins, 90 Waterside La., W. Hartford, Conn. 06107

Filed Jul. 13, 1995, Ser. No. 501,778

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—200 **20 Claims**



1. A method for naming files to be stored in memory of a computer, comprising:

establishing a set in the computer, said set being designated by an identifier comprising a series of characters;

generating a plurality of data to be saved as files in the memory of the computer; and

automatically assigning each of said files a file name when saved, said file name being made up of said identifier with at least one character appended thereto which is modified for each sequential said file,

wherein said at least one character appended to said identifier is modified for each sequential said file by incrementing said at least one character for each sequential said file.

5,799,320

REMOTE MULTIPLE-USER EDITING SYSTEM AND METHOD

John R. Klug, 12600 W. Cedar Dr., Denver, Colo. 80228, assignor to John R. Klug, Denver, Colo.

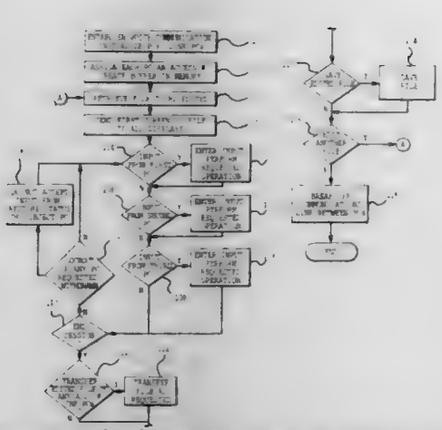
Continuation of Ser. No. 397,996, Aug. 23, 1989, abandoned. This application Nov. 12, 1992, Ser. No. 975,905

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—201 **20 Claims**

1. A computer file editing system for a plurality of users at different remote locations, comprising:

a plurality of personal computers, one for each of the users, each of said plurality of personal computers including computer file display means, at least one of said personal computers being designated host computer for given file editing operations and having multi-tasking processing means for coordinating the execution of said file editing operations comprising edits of less than the entirety of a given computer file inputted by at least the user of one of said personal computers, and for coordinating the transfer of data corresponding with and limited to said file editing operations from said host computer to the display means of the others of said plurality of personal



computers whereby said file editing operations and said corresponding limited data transfer are performed in a predetermined manner by said host computer; and

interconnecting means for electrically interconnecting said host computer with the others of said plurality of personal computers to permit transmission of electrical signals corresponding with said file editing operations therebetween;

wherein said plurality of users are permitted to concurrently view said given computer file and, subject to practical system limitations, said computer file display means, multi-tasking processing means and interconnecting means operate so that said file editing operations and said corresponding limited data transfer to said display means occur on a substantially real-time basis relative to said edit inputs to permit said plurality of users at said different remote locations to review with their respective display means said edits made to said given computer file substantially contemporaneously with the corresponding input of said edits and execution of said file editing operations.

5,799,321

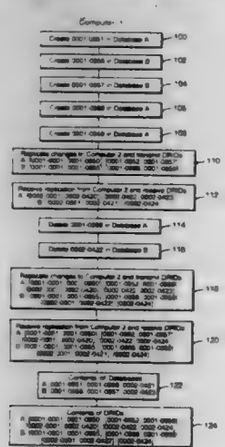
REPLICATING DELETION INFORMATION USING SETS OF DELETED RECORD IDS

Max L. Benson, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jul. 12, 1996, Ser. No. 678,967

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—201 **14 Claims**



1. A method of reducing storage requirements when replicating information regarding deleted records in a distributed network of replicas, wherein records in the replicas have unique record identification numbers, the method comprising the steps of:

storing at a first replica a first set of deleted record identification (DRID) numbers that identify records deleted from the first replica, the first set of DRID numbers being stored without associated change numbers;

modifying the first set of DRID numbers by adding new record identification numbers to the first set of DRID numbers to identify additional records, without associated change numbers, for newly deleted records from the first replica; and

replicating information regarding deleted records to other replicas by sending to said other replicas information corresponding to the modified first set of DRID numbers stored in the first replica in order to thereby reduce storage requirements for representing deleted records.

5,799,322

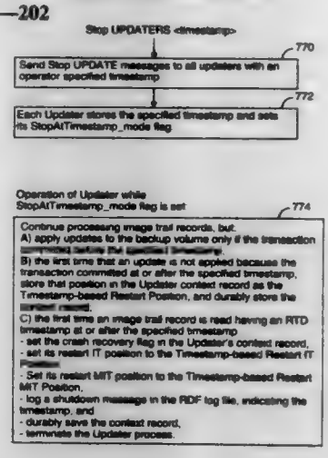
SYSTEM AND METHOD FOR STOPPING UPDATES AT A SPECIFIED TIMESTAMP IN A REMOTE DUPLICATE DATABASE FACILITY

Malcolm Mosher, Jr., Los Gatos, Calif., assignor to Tandem Computer, Inc., Cupertino, Calif.

Continuation-in-part of Ser. No. 761,725, Dec. 6, 1996, which is a continuation-in-part of Ser. No. 704,111, Aug. 28, 1996, Pat. No. 5,740,433, which is a continuation of Ser. No. 377,152, Jan. 24, 1995, abandoned. This application Jan. 30, 1997, Ser. No. 790,542

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—202 **4 Claims**



1. A distributed computer database system, comprising:

a local computer system having a local database stored on local memory media, application programs that modify the local database, and a transaction manager that stores audit records in a master audit trail (MAT) reflecting those application program modifications to the local database; the audit records in the MAT including A) commit/abort records each having transaction identifier, a transaction commit/abort status indicator, and a commit/abort timestamp indicating when a transaction associated with the transaction identifier committed or aborted, and B) database update records each having a transaction identifier and database modification information;

a remote computer system, remotely located from the local computer system, the remote computer system having a backup database stored on memory media associated with the remote computer system;

a communication channel for sending messages between the local computer system and the remote computer system;

a remote data duplication facility (RDF), partially located on the local computer system and partially located on the remote computer system, for maintaining virtual synchronization of

the backup database with the local database, the remote data duplication facility (RDF) including:

an Extractor process executed by the local computer system that extracts audit records from the MAT, constructs a corresponding stream of image records by adding supplemental information to at least some of the audit records, the added information including an image record timestamp, and transmits the stream of image records to the remote computer system; the image records including commit/abort image records and database update image records;

a Receiver process executed by the respective remote computer system that receives the image records transmitted by the Extractor process, and distributes the received image records to one or more image trails in the respective remote computer system; and

one or more Updater processes executed by the respective remote computer system, wherein each Updater process reads the image records in an assigned one of the image trails and applies at least a subset of the read image records against the backup database by initiating redo operations of the database modifications denoted the subset of the read image records against the backup database;

wherein each Updater process includes Stop Updaters at Timestamp instructions for preventing the Updater from applying against the backup database those of the read database update image records whose transaction ID matches the transaction ID in a corresponding commit/abort image record having a commit/abort timestamp whose value is not earlier than a specified Stop Timestamp.

5,799,323

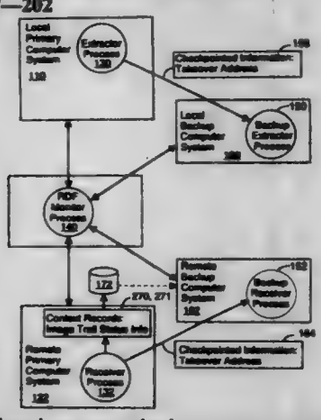
REMOTE DUPLICATE DATABASED FACILITY WITH TRIPLE CONTINGENCY PROTECTION

Malcolm Mosher, Jr., Los Gatos, and Gordon J. Bowring, San Jose, both of Calif., assignors to Tandem Computers, Inc., Cupertino, Calif.

Continuation-in-part of Ser. No. 761,725, Dec. 6, 1996, which is a continuation-in-part of Ser. No. 704,111, Aug. 28, 1996, Pat. No. 5,740,433, which is a continuation-in-part of Ser. No. 377,152, Jan. 24, 1995, abandoned. This application Jan. 30, 1997, Ser. No. 790,544

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—202 **6 Claims**



1. A distributed computer database system, comprising:

a local computer system having a local database stored on local memory media, application programs that modify the local database, and a transaction manager that stores audit records in a master audit trail reflecting the application program modifications to the local database;

a plurality of remote computer systems, each remotely located from the local computer system, each remote computer system having a backup database stored on memory media associated with the remote computer system;

communication channels for sending messages between the local computer system and the remote computer systems, and for sending messages between the remote computer systems;

a plurality of independent Extractor processes executed by the local computer system, each Extractor extracting audit records from the master audit trail and transmits the extracted audit records to a respective one of the remote computer systems; wherein the plurality of Extractor processes are not synchronized with each other;

each respective remote computer system having processes for receiving the image records transmitted to it by a corresponding one of the Extractor processes and for performing redo operations of database modifications denoted in at least a subset of the received audit records against the backup database in that remote computer system;

each respective remote computer system including a backup database synchronization procedure that synchronizes the backup database in that remote computer system with the backup database in another one of the remote computer systems, including instructions for copying from the one remote computer system audit records received by that one remote computer system that were not received by the respective remote computer system, and for processing the audit records copied from the one remote computer systems so as to synchronize the backup database on the respective remote computer with the backup database on the one remote computer system from which audit records were copied.

5,799,324

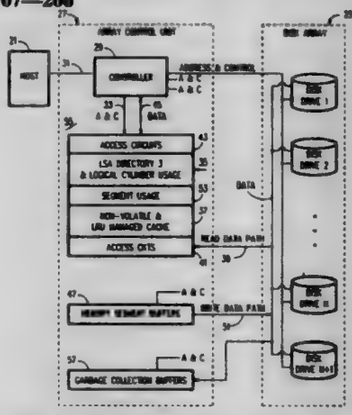
SYSTEM AND METHOD FOR MANAGEMENT OF PERSISTENT DATA IN A LOG-STRUCTURED DISK ARRAY

Bruce McNutt, Gilroy; Jaishankar Moothedath Menon, and Kevin Frank Smith, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 10, 1996, Ser. No. 644,295

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—206 **11 Claims**



1. A method for managing data in a storage system having a processor, memory, and at least one storage device, each storage device having an active region and an inactive region, wherein a plurality of data blocks are stored in each region, the method comprising the processor-executed steps of:

designating a group of data blocks as a persistent data block group when at least one data block in the data block group was accessed from the storage device at least once per cycle for an active cycle threshold number of cycles out of a predetermined number of cycles, wherein each data block in a persistent data block group is designated as a persistent data block;

at predetermined intervals, migrating at least one persistent data block, that is stored in the inactive region, to the active region; and

at said predetermined intervals, migrating at least one non-persistent data block, that is stored in the active region, to the inactive region.

5,799,325

SYSTEM, METHOD, AND COMPUTER PROGRAM PRODUCT FOR GENERATING EQUIVALENT TEXT FILES

Kevin G. Rivette, Palo Alto; Michael P. Florio, Atherton; Adam Jackson, Belmont; Don Ahn, Daly City; Irving S. Rappaport, Palo Alto, and Deborah Kurata, Pleasanton, all of Calif., assignors to SmartPatents, Inc., Mountain View, Calif.

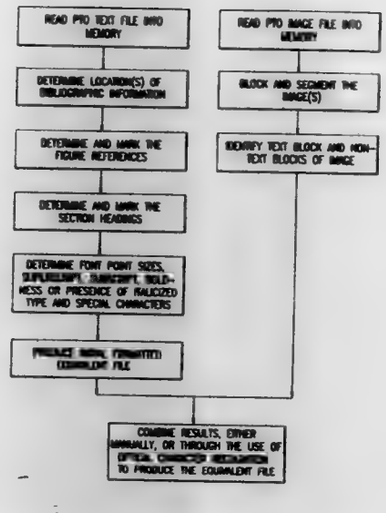
Division of Ser. No. 341,129, Nov. 18, 1994, which is a continuation-in-part of Ser. No. 155,752, Nov. 19, 1993, Pat. No. 5,623,681. This application Jun. 12, 1996, Ser. No. 662,377

Int. Cl.[6] G06F *17/21*

U.S. Cl. 707—500 **50 Claims**

1. A method of generating an equivalent text file of a document from a source text file and a source image file, comprising the steps of:

(1) extracting said source text file and said source image file from at least one storage medium, said source text file and said source image file constituting representations of said document; and



(2) paginating said source text file with said source image file according to a user-specified synchronization level to produce an equivalent text file.

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PATENTS

GRANTED August 25, 1998

ERRATA

Designs

For CLASS	See PATENT NO.
D24—215	D397,474

VOL
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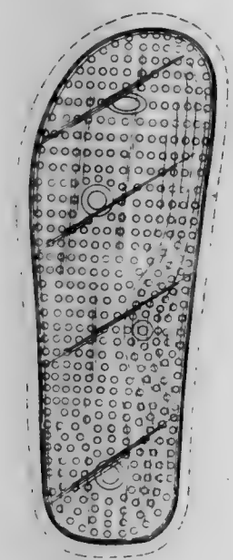
DESIGNS

AUGUST 25, 1998

397,235
SPORT SHOE SOLE
Emile Bouret, Carlsbad, Calif., assignor to No Fear Footwear, Inc., Carlsbad, Calif.
Filed May 29, 1996, Ser. No. 55,077
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—951



397,236
TRANSLUCENT COVERED MULTI POINT FOOT SUPPORT FOR FOOTWEAR
Elizabeth C. Wilmot, 4 Ambergate Rise, Pittsford, N.Y. 14534
Filed Apr. 24, 1996, Ser. No. 53,534
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—954



397,237
PORTION OF A SHOE OUTSOLE
Tracy L. Teague, Aloha, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 13, 1996, Ser. No. 62,353
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—954



397,238
PORTION OF A BLADDER FOR A SHOE SOLE
Sergio G. Lozano, Beaverton; Craig E. Santos, and Edward N. Thomas, both of Portland, all of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Jan. 9, 1998, Ser. No. 81,784
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—961



397,239

CAP

Michael T. Marrs, P.O. Box 909, Rochester, Ind. 46975

Filed Aug. 13, 1997, Ser. No. 74,926

Term of patent 14 years

LOC (6) Cl. 02 - *03*

U.S. Cl. D2—882



397,240

PORTION OF A SHOE UPPER

Tinker Linn Hatfield, Portland, and Mark J. Smith, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Apr. 15, 1998, Ser. No. 65,766

Term of patent 14 years

LOC (6) Cl. 02 - *99*

U.S. Cl. D2—972





397,241

PORTION OF A SHOE UPPER

Tinker Linn Hatfield, Portland, and Mark J. Smith, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.

Filed Apr. 15, 1998, Ser. No. 65,767

Term of patent 14 years

LOC (6) Cl. 02 - *99*

U.S. Cl. D2—972



397,242

SIDE ELEMENT OF A SHOE

Michael Mankowski, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jun. 4, 1997, Ser. No. 72,208

Term of patent 14 years

LOC (6) Cl. 02 - *99*

U.S. Cl. D2—972

397,243

SIDE ELEMENT OF A SHOE UPPER

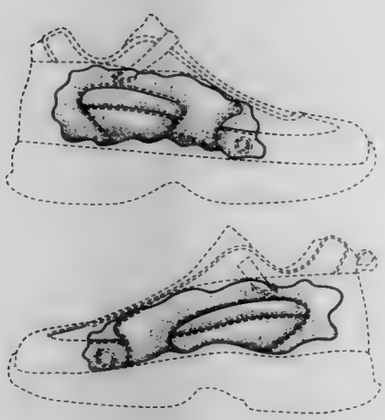
Richard D. Clarke, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Oct. 21, 1997, Ser. No. 78,198

Term of patent 14 years

LOC (6) Cl. 02 - *99*

U.S. Cl. D2—972



397,244

SIDE ELEMENT OF A SHOE UPPER

Bo Lupo, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jan. 22, 1998, Ser. No. 82,424

Term of patent 14 years

LOC (6) Cl. 02 - *99*

U.S. Cl. D2—972



397,245

SIDE ELEMENT OF A SHOE UPPER

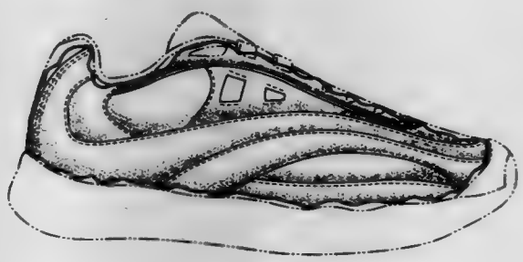
Robert Mervar, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Jan. 22, 1998, Ser. No. 82,425

Term of patent 14 years

LOC (6) Cl. 02 - *99*

U.S. Cl. D2—972



397,246

NETWORK TESTER HOLSTER

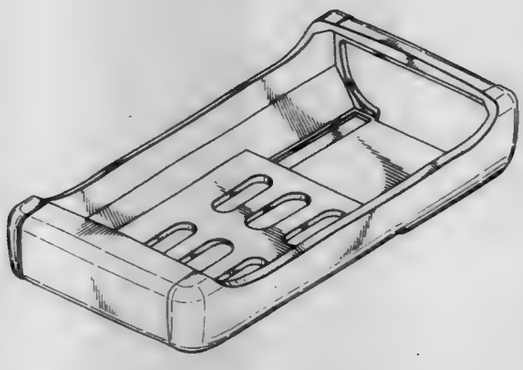
Wayne S. Hoofnagle, Redmond, and Edmond C. Eng, Kirkland, both of Wash., assignors to Fluke Corporation, Everett, Wash.

Filed Oct. 20, 1997, Ser. No. 78,540

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—201



397,247

PERSONAL VITAMIN DISPENSER

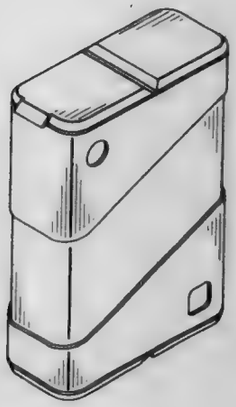
Christopher P. Gardner, Pittsford, and Michael S. Mahle, Fairport, both of N.Y., assignors to Varant Products, Ltd., Pittsford, N.Y.

Filed Nov. 20, 1997, Ser. No. 80,270

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—203



397,248

TOWEL CLIP

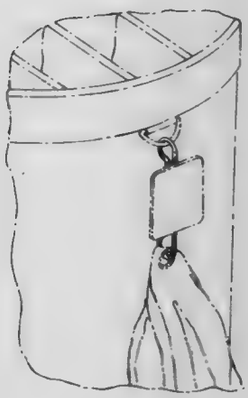
Terence J. McGrath, Jr., 193 Hulsetown Rd., Chester, N.Y. 10918

Filed Feb. 24, 1997, Ser. No. 68,830

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—215



397,249

PORTABLE CASE

Akira Akutsu, Itabashi 1-36-4, Itabashi-ku Tokyo 173, Japan

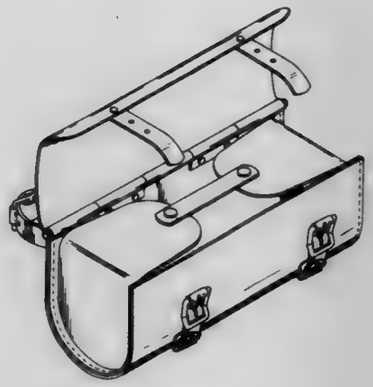
Filed Mar. 24, 1997, Ser. No. 68,575

Claims priority, application Japan, Nov. 26, 1996, 8-35631

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—290



397,250

HAND CARRIED SHOPPING BASKET

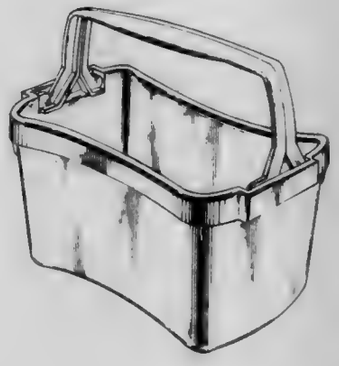
Stacey M. Fink, and Karen L. Ketner-Fink, both of 1901 Shadwell Way, Lawrenceville, Ga. 30243

Filed Jan. 22, 1997, Ser. No. 65,467

Term of patent 14 years

LOC (6) Cl. 03 - *01*

U.S. Cl. D3—309



397,251
BRUSH HEAD FOR ELECTRIC TOOTHBRUSH
Kyoko Eguchi, Kanagawa-ken, and Taro Mochida, Osaka-fu, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka-fu, Japan
Filed Jul. 14, 1997, Ser. No. 73,646
Claims priority, application Japan, Jan. 14, 1997, 9-769
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—101



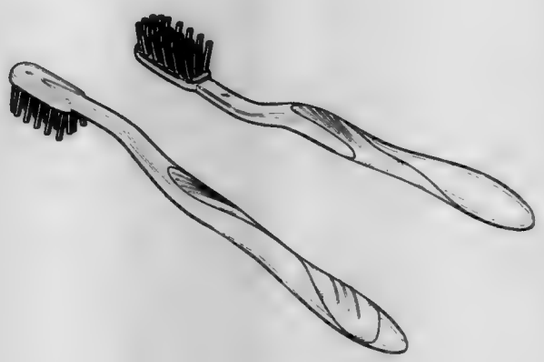
397,252
STEM WITH BRUSH HEAD FOR ELECTRIC TOOTHBRUSH
Paula Andrea Allende, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 4, 1997, Ser. No. 76,248
Claims priority, application WIPO, Mar. 25, 1997, DMA/003647
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—101



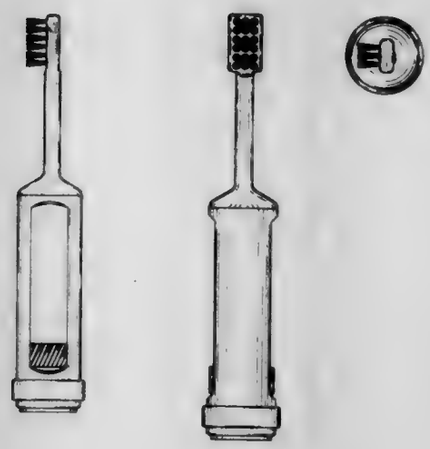
397,253
PERSONALIZED TOOTHBRUSH
Annette D Satterfield, 2712 W. North Ave., Baltimore, Md. 21216
Filed May 30, 1996, Ser. No. 55,139
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—104



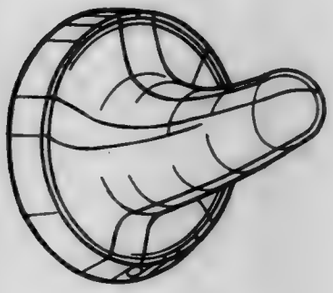
397,254
TOOTHBRUSH
Robert Moskovich, East Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sep. 5, 1996, Ser. No. 59,726
The portion of the term of this patent subsequent to Nov. 18, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—104



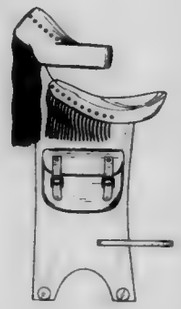
397,255
COMBINED TOOTHBRUSH AND TOOTHPASTE DISPENSING APPARATUS
John Loeffler, 8340 Nueva Vista Dr., Denver, Colo. 80229
Filed Sep. 18, 1997, Ser. No. 76,717
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—108



397,256
ROBE HOOK
Glenn David Moore, Newfoundland, and Leszek Solowiej, Montville, both of N.J., assignors to Melard Manufacturing Corporation, Passaic, N.J.
Filed Apr. 4, 1997, Ser. No. 68,346
Term of patent 14 years
LOC (6) Cl. 06 - *08*
U.S. Cl. D6—323



397,257
MOTORCYCLE STOOL
Bené M. Cambra, 5376 Clayton Rd #D, Concord, Calif. 94521, and Kenneth Tarlow, Corte Madera, Calif., assignors to Bene M. Cambra, Concord, Calif.
Filed May 6, 1996, Ser. No. 54,050
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—351



397,258
CHAIR
John H. Heyder, and Mark A. Kottman, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.
Filed Dec. 23, 1996, Ser. No. 64,168
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366

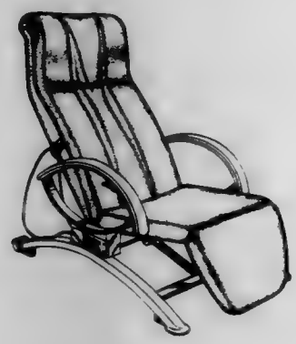


397,259

ELECTRIC MASSAGE CHAIR

Ayako Chatani, Hyogo-ken, and Taro Mochida, Osaka-fu, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka-fu, Japan

Filed Jul. 16, 1997, Ser. No. 73,759
Claims priority, application Japan, Jan. 16, 1997, 9-975
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—367

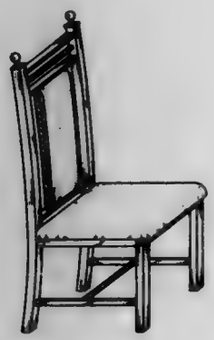


397,260

CHAIR

Arsho Diramarian, Pasadena, Calif., assignor to Aleco Furniture MFG Inc., Vernon, Calif.

Filed May 30, 1997, Ser. No. 71,491
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—380

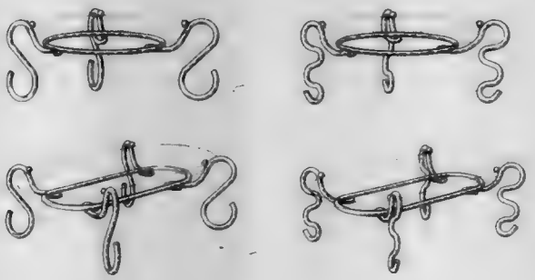


397,261

PLANT SAUCER SUPPORT STAND

Kathleen R. Sellers, 228 Boca Raton Rd. East, Boca Raton, Fla. 33432

Filed Aug. 8, 1997, Ser. No. 74,964
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—403

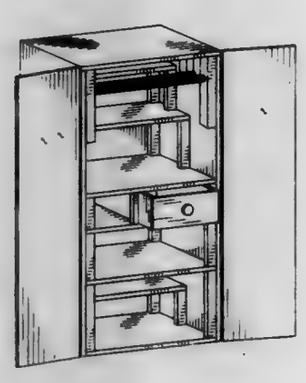


397,262

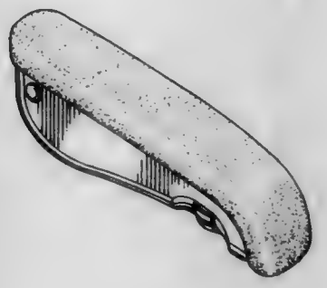
CABINET

Alan Thomas, 15 E. Greenwich Ave., Roosevelt, N.Y. 11575, assignor to Alan Thomas, New York, N.Y.

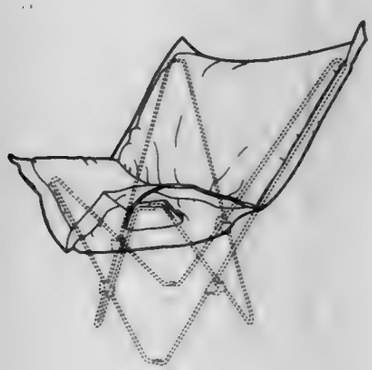
Filed Mar. 29, 1996, Ser. No. 577,852
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—446



397,263
ARMREST
Dennis J. Gryp, East Moline, Ill., assignor to Sears Manufacturing Company, Davenport, Iowa
Filed Apr. 4, 1997, Ser. No. 68,422
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—501



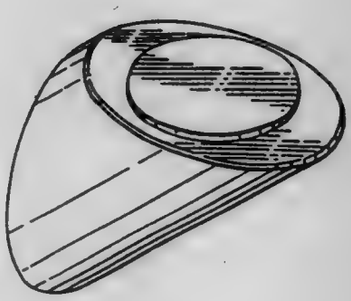
397,264
BUTTERFLY CHAIR SEAT PAD
Jean Joseph, 450 S. Kolin Ave., Chicago, Ill. 60632
Filed Sep. 24, 1996, Ser. No. 60,359
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—502



397,265
DISPENSER HOLDER FOR BATHROOM
Connie M. Badillo, 2518 N. Shady Forest, Orange, Calif. 92867
Filed Nov. 3, 1997, Ser. No. 78,881
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—520



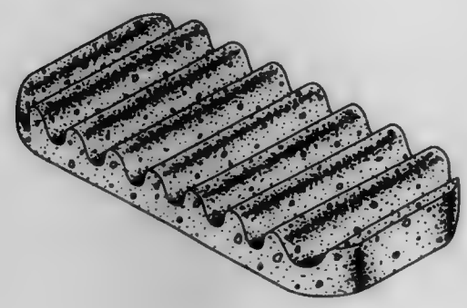
397,266
SHELF
Winfried Scholl, Dusseldorf, Germany, assignor to Hewi Heinrich Wilke GmbH, Bad Arolsen, Germany
Division of Ser. No. 31,993, Jan. 24, 1995, Pat. No. Des. 374,788, which is a division of Ser. No. 662,806, Feb. 27, 1991, Pat. No. Des. 358,732. This application Jun. 14, 1996, Ser. No. 55,874
Claims priority, application Germany, Aug. 27, 1990, M9005636.1
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D6—574



397,267
BAR SOAP PAD

Joseph Donald Scott, 20 Knoble Pl., Apt. #2, Hawthorne, N.J. 07506

Filed Mar. 4, 1997, Ser. No. 66,986
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D6—536



397,268
TOWEL HOLDER

Jerome Warshawsky, Hewlett Harbor, N.Y., assignor to IW Industries Inc., Melville, N.Y.

Filed Aug. 11, 1997, Ser. No. 75,128
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—548



397,269
EXERCISE MAT

Dennis Allen Kawamoto, 6028 Bixby Village Dr. #85, Long Beach, Calif. 90803

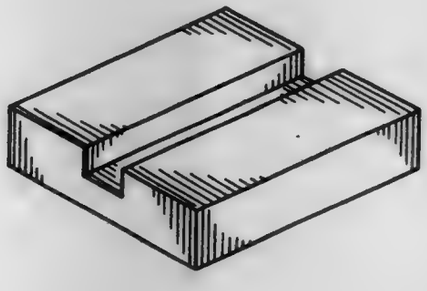
Filed Nov. 25, 1997, Ser. No. 79,770
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—596



397,270
PILLOW HAVING A CHANNEL FORMED CENTRALLY THERETHROUGH

Fadi Maalouf, 4908 Yeaworth La., Manlius, N.Y. 13104

Filed Jun. 13, 1997, Ser. No. 72,353
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



397,271

TOASTER

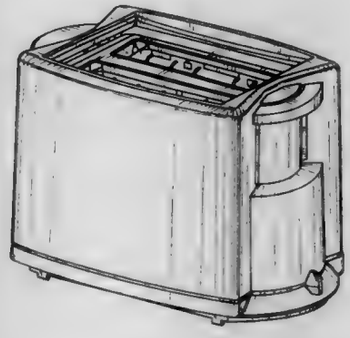
Jonathan Mandell, North Canton, Ohio, assignor to Sunbeam Products, Inc., Delray Beach, Fla.

Filed Apr. 25, 1997, Ser. No. 70,046

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—330



397,272

COOKWARE HANDLE

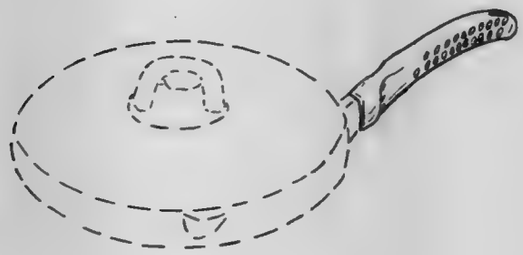
Randall Bell, River Forest; Ralph LaZar, Skokie; Christine Gilbert, and Marianne Grisdale, both of Chicago, all of Ill., assignors to Ekco Housewares, Inc., Franklin Park, Ill.

Filed Jan. 9, 1997, Ser. No. 64,695

Term of patent 14 years

LOC (6) Cl. 07 - *02*

U.S. Cl. D7—395



397,273

COOLER

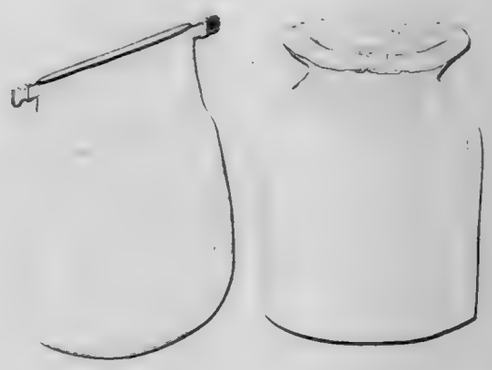
James Collie, 934 N. Hampton, #2, Richmond, Va. 23221

Filed Oct. 28, 1997, Ser. No. 78,517

Term of patent 14 years

LOC (6) Cl. 07 - *06*

U.S. Cl. D7—607



397,274

KITCHEN DRAWER ORGANIZER

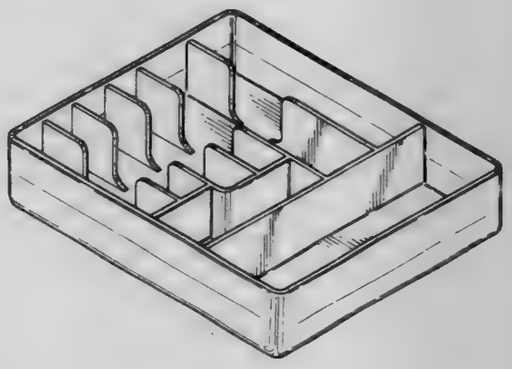
Sara M. Hise, 209 N. Sixth St., Roscommon, Mich. 48653

Filed Mar. 12, 1997, Ser. No. 68,475

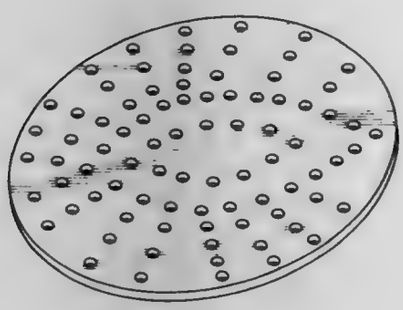
Term of patent 14 years

LOC (6) Cl. 07 - *07*

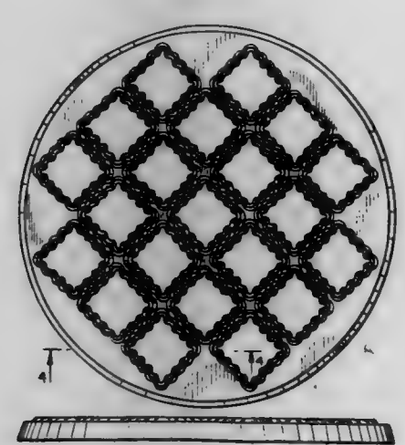
U.S. Cl. D7—637



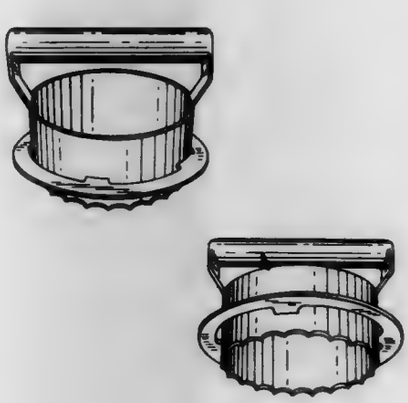
397,275
PRESS FOR COMPRESSING AND STRAINING FOOD PRODUCTS
William Garry DuBay, Sr., 18533 Phlox Dr., Ft. Myers, Fla. 33912, and Mitchell Dru DuBay, Ft. Myers, Fla., assignors to William Garry DuBay, Sr., Fort Myers, Fla.
Filed Jun. 4, 1997, Ser. No. 71,679
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—667



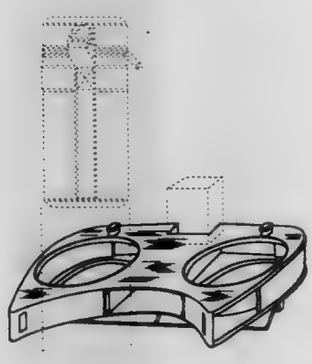
397,276
TRAY FOR MAKING STUFFED PASTA PRODUCTS
Edward I. Mishan, New York, N.Y., assignor to E. Mishan & Sons, Inc., New York, N.Y.
Division of Ser. No. 72,508, Jun. 19, 1997, Pat. No. Des. 397,588. This application Nov. 19, 1997, Ser. No. 79,611
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—672



397,277
BREAD CUTTER
William E. Gibbs, Jr., 10916 Oxford, Chicago Ridge, Ill. 60415
Filed Jun. 18, 1997, Ser. No. 72,455
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—696



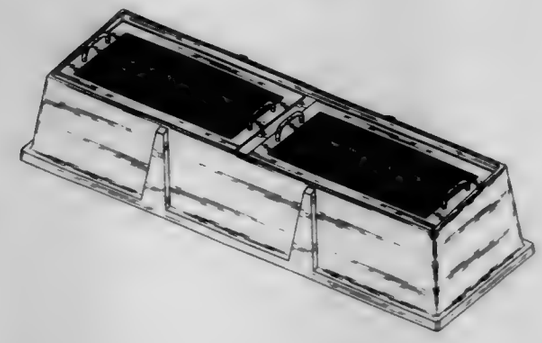
397,278
GOLF CART DRINK CADDY
Jessie Li-Kuo Wang, 46980 Ocotillo Ct., Fremont, Calif. 94539
Filed Sep. 12, 1997, Ser. No. 76,519
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—701



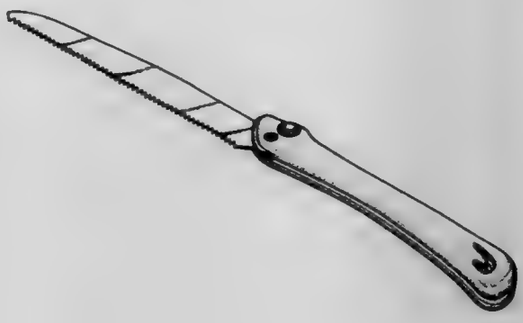
397,279
PORTION OF A ROUND POINT SHOVEL BLADE WITH TEETH
Christopher T. Rich, Lancaster; Barry R. Albert, Dillsburg, and Mark W. Pursel, Grantville, all of Pa., assignors to True Temper Hardware Company, Camp Hill, Pa.
Continuation-in-part of Ser. No. 58,221, Aug. 9, 1996, Pat. No. Des. 388,292. This application May 29, 1997, Ser. No. 71,445
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—10



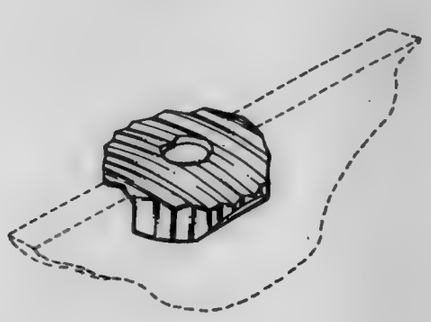
397,280
AEROPONIC PLANT GROWER HOUSING COVER WITH SEED SUPPORT
Steven M. Schorr, San Anselmo, Calif., assignor to Bioponic International, San Rafael, Calif.
Filed Nov. 4, 1997, Ser. No. 78,840
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



397,281
FOLDABLE SAW
Hung-Chi Hsu, and Hung-Lung Hsu, both of 58, Ma Yuan West St., Taichung, Taiwan
Filed Apr. 9, 1997, Ser. No. 70,875
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—95



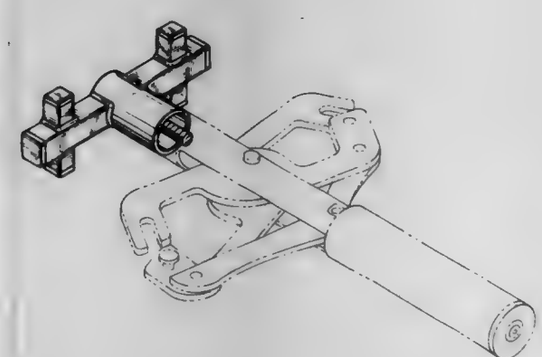
397,282
ABUTMENT FOR A KNIFE BLADE
Keith E. Derkatz, 56 S. Barkley St., #52, Mesa, Ariz. 85204
Continuation of Ser. No. 69,205, May 28, 1993, abandoned. This application Jul. 22, 1994, Ser. No. 54,068
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—107



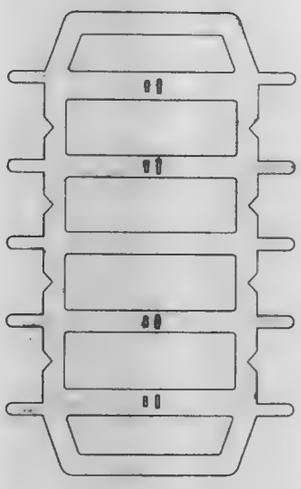
397,283
HANDLE FOR SAW AND T-SQUARE COMBINATION TOOL
Gerard Carratura, 68 Christie St., Ridgefield Park, N.J. 07660
Filed Jun. 18, 1996, Ser. No. 56,266
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—107



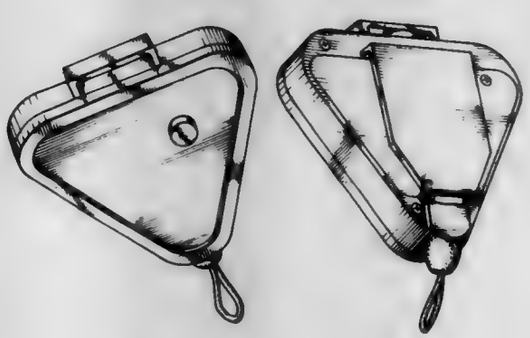
397,284
STABILIZING BASE FOR A VEHICLE THEFT PROTECTION PEDAL LOCK
Armand Cohen, 13411 Albers St., Van Nuys, Calif. 91401
Filed Oct. 23, 1996, Ser. No. 61,413
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—343



397,285
TANGLE-FREE MULTIPLE STRAND CHRISTMAS LIGHT STORAGE DEVICE
Carl A. Zindel, R.R. 1, Box 36, Stanford, Ill. 61774
Filed Oct. 7, 1996, Ser. No. 60,796
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—358



397,286
RETRACTABLE LANYARD
Lowell J. Dreyfus, Chatsworth, and Thomas J. Bird, Northridge, both of Calif., assignors to Underwater Diving, Inc., Chatsworth, Calif.
Filed Apr. 18, 1997, Ser. No. 69,954
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—358



397,287

HOOK FOR A SAUSAGE CONVEYOR

Steven P. Hergott, West Des Moines, and Brent M. Veldkamp, Des Moines, both of Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa

Filed Oct. 17, 1997, Ser. No. 78,406
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—367

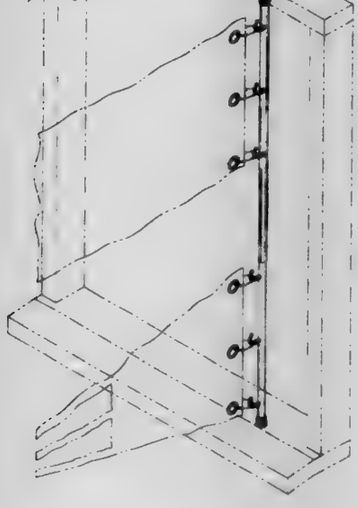


397,288

WIND SOCK POLES

Brian R. Johanson, 522 W. 64th St., Richfield, Minn. 55423

Filed Apr. 17, 1997, Ser. No. 69,813
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—372

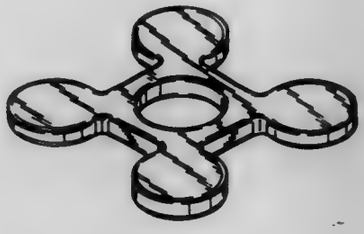


397,289

DUNNAGE RACK LINK

Larry D. Maddux, Westminster, Calif., assignor to Cambro Manufacturing Company, Huntington Beach, Calif.

Filed Aug. 12, 1996, Ser. No. 58,334
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—382

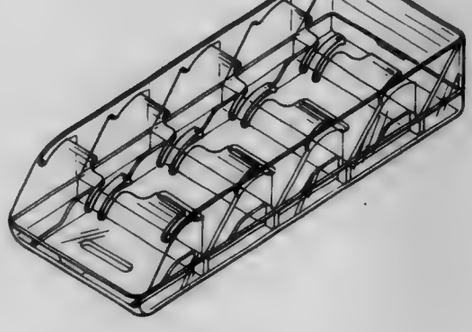


397,290

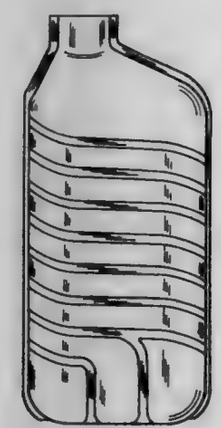
RAZOR BLADE CARTRIDGE DISPENSER

John D. Petricca, Leominster, and Norman D. Poisson, Andover, both of Mass., assignors to The Gillette Company, Boston, Mass.

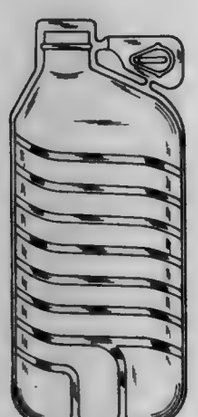
Filed Feb. 19, 1997, Ser. No. 67,307
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—342



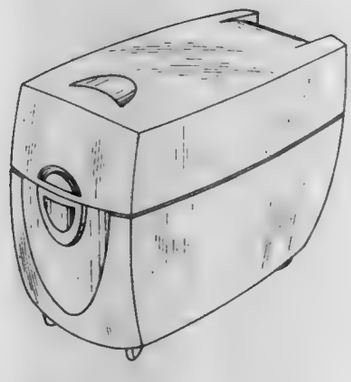
397,291
CONTAINER FOR FLUID POWDER OR GRANULATED PRODUCTS
Roberto Tabaroni, Bologna, and Andrea Bartoli, Emilia, both of Italy, assignors to Unifill S.p.A., Modena, Italy
Division of Ser. No. 33,098, Jan. 5, 1995, Pat. No. Des. 384,882. This application Jul. 1, 1997, Ser. No. 73,139
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—416



397,292
CONTAINER FOR FLUID, POWDER OR GRANULATED PRODUCTS
Roberto Tabaroni, Bologna, and Andrea Bartoli, Emilia, both of Italy, assignors to Unifill S.P.A., Modena, Italy
Division of Ser. No. 33,098, Jan. 5, 1995, Pat. No. Des. 384,882. This application Jul. 2, 1997, Ser. No. 74,316
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—416

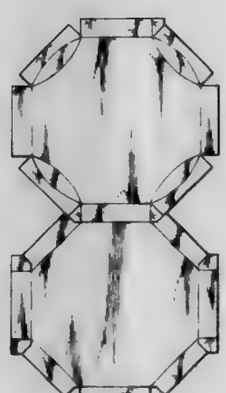


397,293
STORAGE CASE FOR INK CARTRIDGE
Hisakazu Shimizu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 4, 1997, Ser. No. 76,289
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—424



397,294
CARTON
Alain Saulas, Chateauroux, France, assignor to The Mead Corporation
Filed Jul. 29, 1997, Ser. No. 74,334
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—430





397,295

DOSAGE INDICATOR

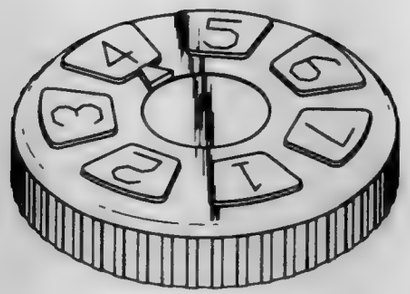
Paige Shelton-Ferrell, 3476 Westwood, Salt Lake City, Utah 84109

Filed Mar. 17, 1997, Ser. No. 68,637

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—436



397,296

EASY OPEN CONTAINER END

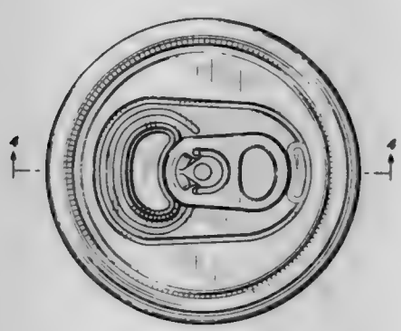
Carl F. McEldowney, Russia; Ken M. Fultz; Wayne A. Spoltman, both of Sidney, and Greg S. Williams, Wapakoneta, all of Ohio, assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 20, 1996, Ser. No. 64,070

Term of patent 14 years

LOC (6) Cl. 09 - *07*

U.S. Cl. D9—438



397,297

COMBINED BOTTLE AND CAP

Shyue-Jong Albert Yang, 19847 E. Country Hollow Dr., Walnut, Calif. 91789

Filed Aug. 8, 1996, Ser. No. 58,135

Term of patent 14 years

LOC (6) Cl. 09 - *01*

U.S. Cl. D9—523



397,298

TELEPHONE ALARMCLOCK

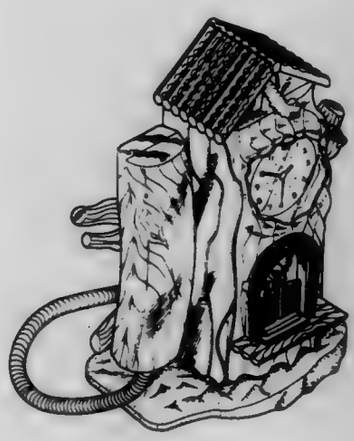
Chiu-Hua Yang, Taipei, Taiwan, assignor to Yang Handle Enterprise Co., Ltd, Taipei, Taiwan

Filed Jul. 30, 1997, Ser. No. 74,214

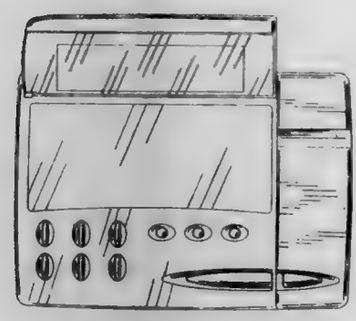
Term of patent 14 years

LOC (6) Cl. 10 - *01*

U.S. Cl. D10—2



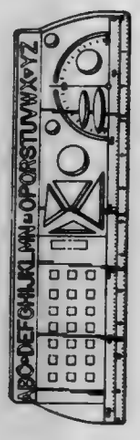
397,299
LCD CALENDAR CLOCK
Shu Kwan Wong, New Territories, Hong Kong, assignor to Herald Electronics Limited, New Territories, Hong Kong
Filed Dec. 26, 1996, Ser. No. 64,292
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—3



397,300
WATCH CASE
Li Chen, Kowloon Bay, Hong Kong, assignor to Delta-Tech Electronics Co. Ltd., Hong Kong, Hong Kong
Filed Jul. 31, 1997, Ser. No. 74,779
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



397,301
RULER
Mark A. Bedol, P.O. Box 1268, Claremont, Calif. 91711, and Edward Wong, Alhambra, Calif., assignors to Mark A. Bedol, Claremont, Calif.
Filed Aug. 14, 1997, Ser. No. 75,373
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—71



397,302
RULER
Mark A. Bedol, P.O. Box 1268, Claremont, Calif. 91711, and Edward Wong, Alhambra, Calif., assignors to Mark A. Bedol, Claremont, Calif.
Filed Aug. 14, 1997, Ser. No. 75,374
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—71



397,303
RULER

Mark A. Bedol, P. O. Box 1268, Claremont, Calif. 91711, and Edward Wong, Alhambra, Calif., assignors to Mark A. Bedol, Claremont, Calif.

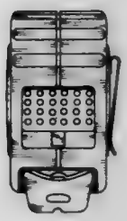
Filed Aug. 19, 1997, Ser. No. 75,401
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—71



397,304
TAPE MEASURE

Dong-hun Kang, Pusan-si, Rep. of Koren, assignor to Komelon Co., Rep. of Korea

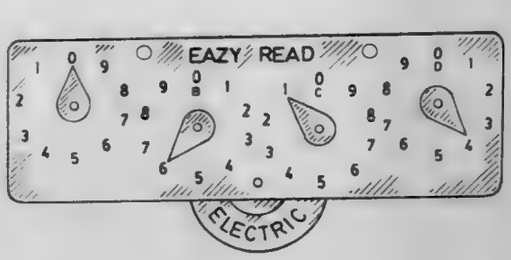
Filed Oct. 21, 1997, Ser. No. 78,212
Claims priority, application Rep. of Korea, May 30, 1997, 1997-10978
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—72



397,305
ADJUSTABLE DISPLAY TO INDICATE METER READINGS

Ronald M. Miller, 12162 Marble Clr., Garden Grove, Calif. 92843

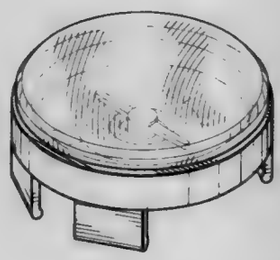
Filed Apr. 2, 1997, Ser. No. 68,405
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—102



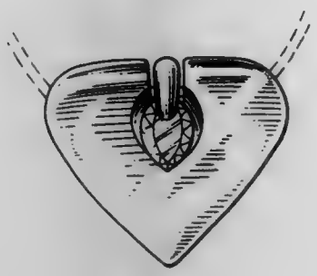
397,306
GAUGE DIAL

Herbert G. Ross, Jr., Argyle, Tex., assignor to Rochester Gauges, Inc., Dallas, Tex.

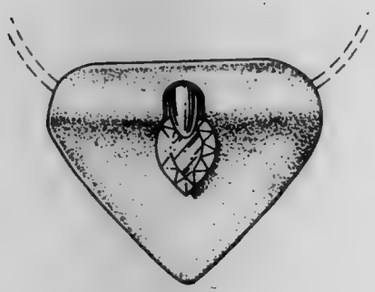
Filed Jun. 27, 1997, Ser. No. 73,004
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—103



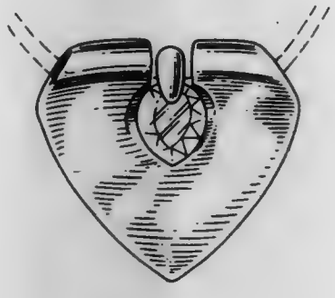
397,307
PENDANT
Eran Shenhav, Teich, Germany, assignor to Feeling the Collection Schmuckwaren GmbH, Pforzheim, Germany
Continuation of Ser. No. 57,192, Jul. 18, 1996. This application Sep. 8, 1997, Ser. No. 76,179
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—79



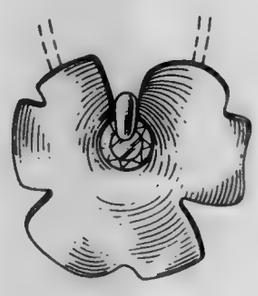
397,308
PENDANT
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Continuation of Ser. No. 57,170, Jul. 18, 1996. This application Sep. 8, 1997, Ser. No. 76,180
Claims priority, application Japan, Jul. 18, 1996, 8-6884
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—79



397,309
PENDANT
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Continuation of Ser. No. 57,168, Jul. 18, 1996. This application Sep. 8, 1997, Ser. No. 76,193
Claims priority, application Japan, Mar. 13, 1996, 8-6887
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—81



397,310
PENDANT
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Continuation of Ser. No. 57,169, Jul. 18, 1996, Pat. No. Des. 387,694. This application Sep. 8, 1997, Ser. No. 76,174
Claims priority, application Japan, Mar. 13, 1996, 8-6886
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—84



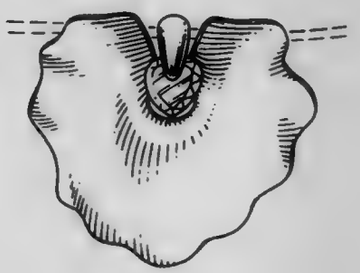
397,311
PENDANT
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Continuation of Ser. No. 57,171, Jul. 18, 1996. This application Sep. 8, 1997, Ser. No. 76,177
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—84



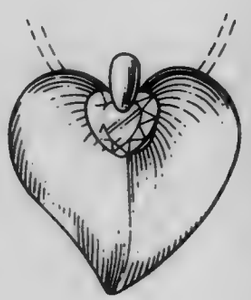
397,312
PENDANT
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Continuation of Ser. No. 57,173, Jul. 18, 1996, Pat. No. No. Des. 387,696. This application Sep. 8, 1997, Ser. No. 76,178
Claims priority, application Japan, Mar. 13, 1996, 8-6885
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—84



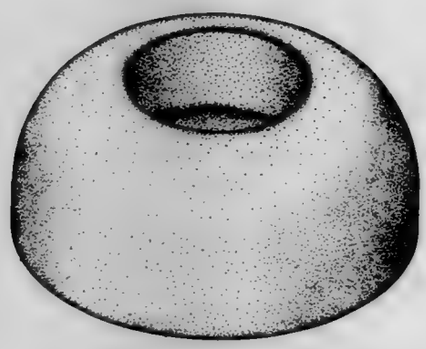
397,313
PENDANT
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Continuation of Ser. No. 57,172, Jul. 18, 1996, Pat. No. Des. 387,695. This application Sep. 8, 1997, Ser. No. 76,182
Claims priority, application Japan, Mar. 13, 1996, 8-6883
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—84



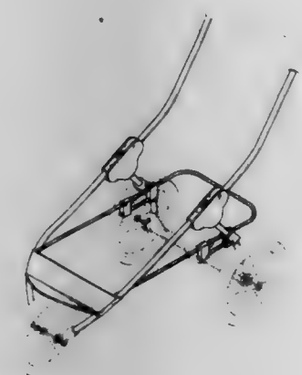
397,314
PENDANT
Eran Shenhav, Teich, Germany, assignor to Feeling The Collection Schmuckwaren GmbH, Pforzheim, Germany
Continuation of Ser. No. 57,193, Jul. 18, 1996, Pat. No. Des. 387,697. This application Sep. 8, 1997, Ser. No. 76,203
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—84



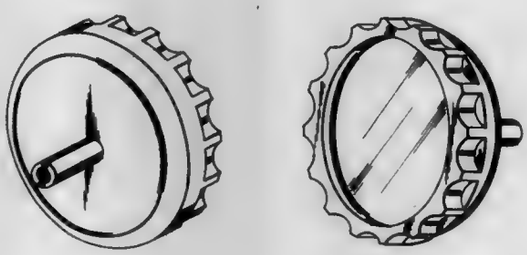
397,315
SPHAGNUM MOSS PLANTER
Milton D. Oglesby, 158 Concordia, Katy, Tex. 77450
Filed Jun. 12, 1997, Ser. No. 72,298
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—152



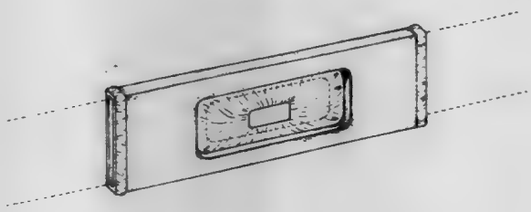
397,316
BABY STROLLER
Philip A. Baechler, Yakima, Wash., assignor to Racing Strollers, Inc., Yakima, Wash.
Filed Jul. 28, 1997, Ser. No. 74,205
Term of patent 14 years
LOC (6) Cl. 12 - *12*
U.S. Cl. D12—129



397,317
MOTORCYCLE SIDE VIEW MIRROR
Calvin C. Hoagland, IV, 6 Widewater Rd., Hilton Head Island, S.C. 29926-2021
Division of Ser. No. 58,301, Jul. 11, 1996, Pat. No. Des. 390,507. This application Nov. 21, 1997, Ser. No. 79,710
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—189



397,318
SUN VISOR
John D. Wilson, 11201 Euclid Ave. #11, Garden Grove, Calif. 92840-1420
Filed Oct. 31, 1997, Ser. No. 78,699
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—191



397,319

MOTORCYCLE MUFFLER

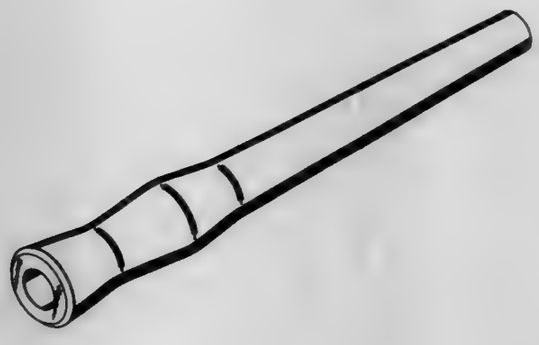
Calvin C. Hoagland, IV, 6 Widewater Rd., Hilton Head Island, S.C. 29926-2021

Division of Ser. No. 58,301, Jul. 11, 1996, Pat. No. Des. 390,507. This application Nov. 12, 1997, Ser. No. 79,709

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—194



397,320

GAS CAP

Calvin C. Hoagland, IV, 6 Widewater Rd., Hilton Head Island, S.C. 29926-2021

Division of Ser. No. 58,301, Jul. 11, 1996, Pat. No. Des. 390,507. This application Nov. 21, 1997, Ser. No. 79,712

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—197



397,321

BRACKET FOR HEADLIGHTS

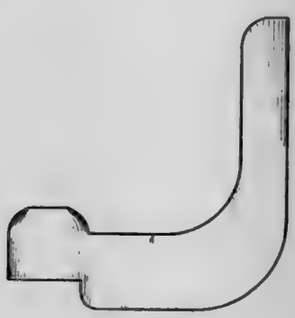
Nan Huang, Rancho Palos Verdes, Calif., assignor to Grand General Accessories Manufacturing Inc., Compton, Calif.

Filed May 2, 1997, Ser. No. 70,913

Term of patent 14 years

LOC (6) Cl. 12 - *06*

U.S. Cl. D12—223



397,322

VEHICLE BED ORGANIZER

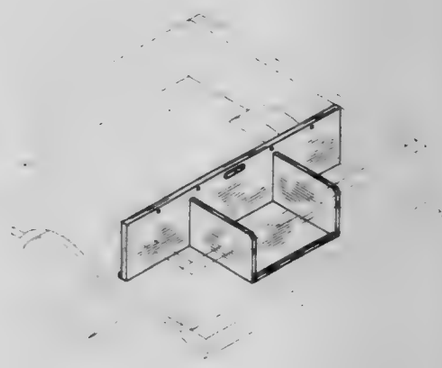
Arthur Clarence Tobin, 140 Myrtle Ave., Waynesboro, Pa. 17268-1628

Filed Aug. 7, 1997, Ser. No. 74,431

Term of patent 14 years

LOC (6) Cl. 12 - *16*

U.S. Cl. D12—414

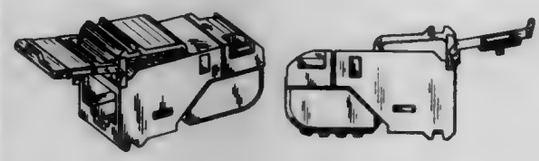


397,323

MODULAR JACK WITH HINGED DOOR

Brian Tulley, Ansonia; Denny Lo, Danbury; John A. Siemon, Woodbury, and Art Bauer, Ivoryton, all of Conn., assignors to The Siemon Company, Watertown, Conn.

Filed May 23, 1996, Ser. No. 54,866
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147

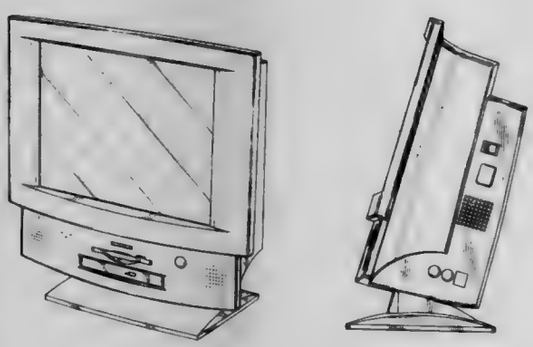


397,324

COMPUTER

Takeshi Minemoto, Sagamihara; Atsuhiko Urushihara; Minoru Ikeda, both of Kokubunji; Yoshiaki Amano, Tama; Taisuke Kashima, Urawa, and Satoshi Hamazaki, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 3, 1997, Ser. No. 75,619
Claims priority, application Japan, Mar. 10, 1997, 9-6597
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100

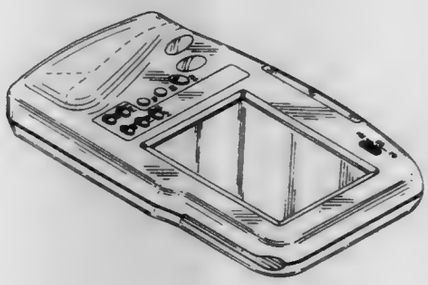


397,325

COORDINATE INPUT DEVICE

Shinichi Kawakami, and Osamu Yoshikawa, both of Tokyo, Japan, assignors to SMK Corporation, Tokyo, Japan

Filed Aug. 28, 1997, Ser. No. 75,944
Claims priority, application Japan, Feb. 28, 1997, 9-5987
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100

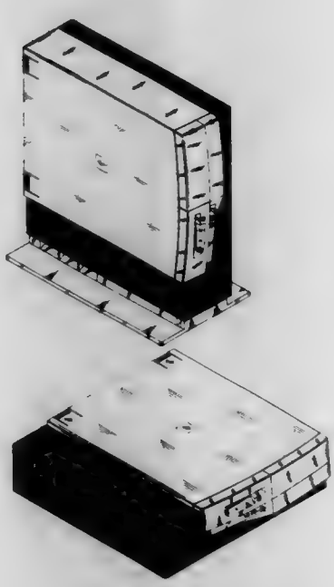


397,326

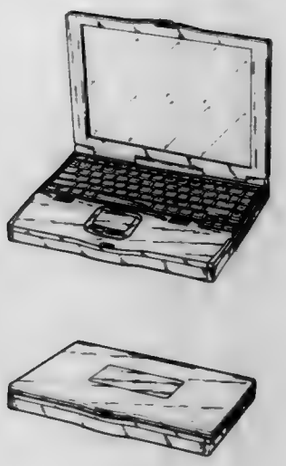
CONVERTIBLE DESKTOP PERSONAL COMPUTER WITH OPTIONAL BASE

David Wayne Hill, Cary, and Susan Sommers Moffatt, Chapel Hill, both of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

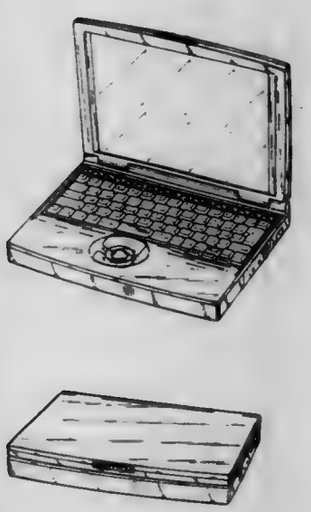
Filed Oct. 14, 1997, Ser. No. 77,892
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



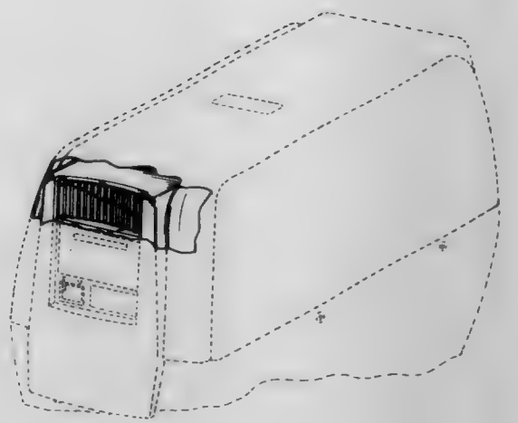
397,327
PORTABLE COMPUTER
Toshio Horiki; Yashio Kishi; Takaharu Kabetani, and Yutaka Kohno, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Aug. 27, 1997, Ser. No. 75,979
Claims priority, application Japan, Apr. 4, 1997, 9-50496
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—106



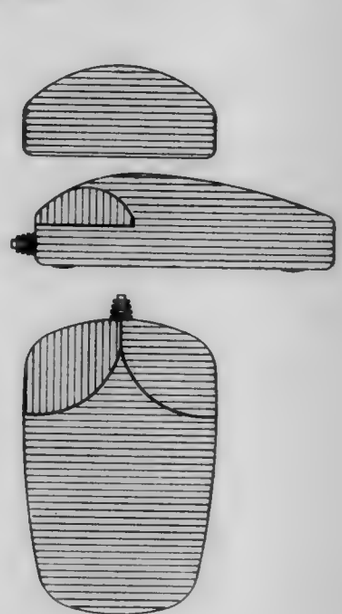
397,328
PORTABLE COMPUTER
Nobuhiro Ide, Nara; Toshio Horiki, Osaka; Yashio Kishi, Osaka, and Takaharu Kabetani, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan
Filed Aug. 27, 1997, Ser. No. 75,984
Claims priority, application Japan, Apr. 22, 1997, 9-52284
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—106



397,329
OUTER SURFACE PORTION OF AN ELECTRONIC ENCLOSURE
Mark A. Vackar, Houston, Tex., assignor to Toshiba International Corporation, Houston, Tex.
Filed Aug. 25, 1997, Ser. No. 75,341
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



397,330
COMPUTER MOUSE
Elaine M. Lister-Myers, and Deon E. Myers, both of 1004 Zante Cresent Mississauga, Mississauga Ontario, Canada, L5J 4M8
Filed Sep. 18, 1997, Ser. No. 76,726
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



397,331

COMPUTER SCREEN WITH A SET OF ICONS

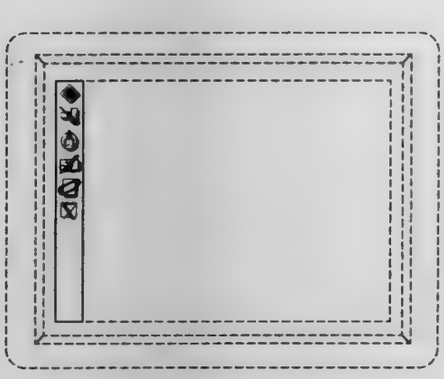
Chris Ryan, Mountain View, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 30, 1997, Ser. No. 73,101

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114.9



397,332

COMPUTER SCREEN WITH A SET OF ICONS

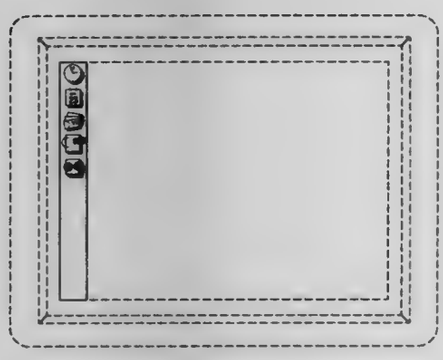
Chris Ryan, Mountain View, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 30, 1997, Ser. No. 73,122

Term of patent 14 years

LOC (6) Cl. 14 - *02*

U.S. Cl. D14—114.9



397,333

FACSIMILE TRANSMITTER-RECEIVER

Hideki Kawai, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

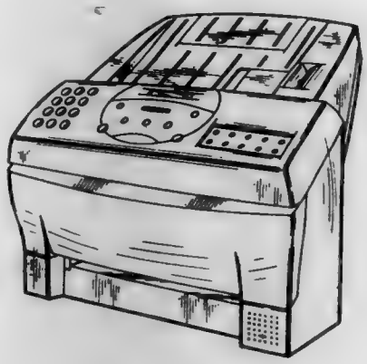
Filed Oct. 10, 1997, Ser. No. 77,857

Claims priority, application Japan, Apr. 14, 1997, 9-51185

Term of patent 14 years

LOC (6) Cl. 16 - *03*

U.S. Cl. D14—118



397,334

VIRTUAL REALITY WALKIE TALKIE WITH FLIP-DOWN EYE SHIELD

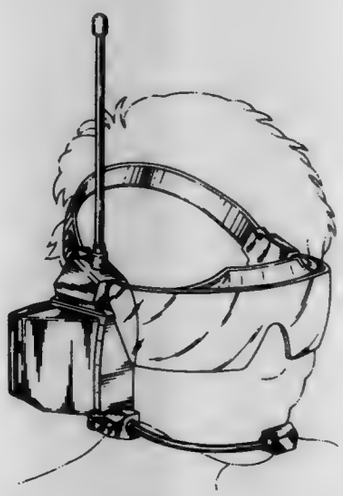
Isaac Larian, Los Angeles, Calif., assignor to ABC International Traders, Inc., Calif.

Filed Feb. 11, 1998, Ser. No. 83,499

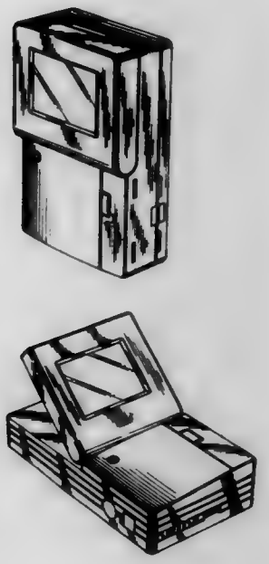
Term of patent 14 years

LOC (6) Cl. 02 - *03*

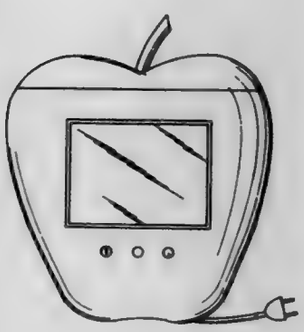
U.S. Cl. D14—124



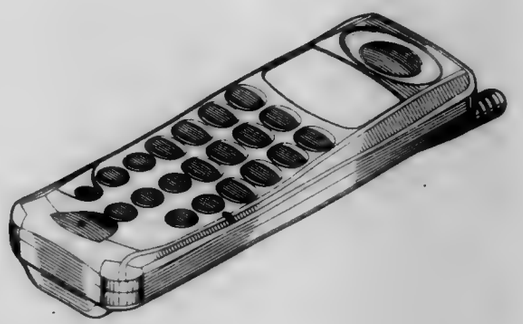
397,335
COMBINED MONITOR AND TELEVISION RECEIVER
Takeshi Matsushita, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1997, Ser. No. 67,338
Claims priority, application Japan, Sep. 2, 1996, 8-26129
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—126



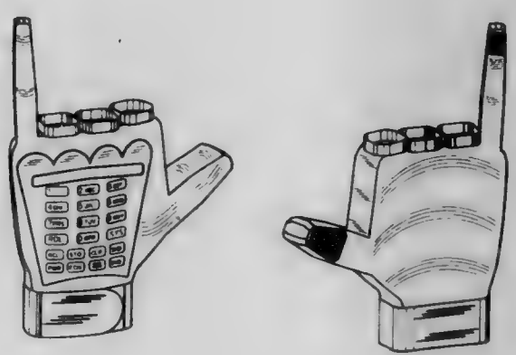
397,336
TELEVISION CASE
Zoanne Woodworth, 3101 Sugarbush, Carrollton, Tex. 75007
Filed Jun. 12, 1997, Ser. No. 72,256
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—126



397,337
PORTABLE TELEPHONE
Phillip E. Lindeman, Gurnee; Steven M. Mina, Lake Villa, and Thomas E. Paulick, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 54,069, Aug. 21, 1996. This application Aug. 8, 1997, Ser. No. 75,205
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



397,338
CELLULAR PHONE
Jason D. Gray, 5040 Island Club Dr., Tamarac, Fla. 33319
Filed Jul. 9, 1996, Ser. No. 56,823
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—143



397,339

SEASHELL RADIO

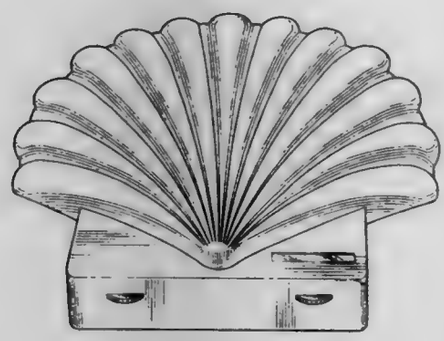
Omar Davis, Clifton, N.J., assignor to Salton-Maxim Housewares, Inc., Mt. Prospect, Ill.

Filed Aug. 15, 1997, Ser. No. 74,986

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—189



397,340

EAR CUSHION FOR TELEPHONES

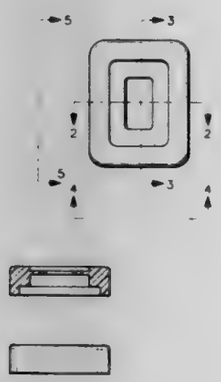
Ronald L. Brito, P.O. Box 309, San Dimas, Calif. 91773

Division of Ser. No. 51,430, Nov. 3, 1996, Pat. No. Des. 386,765. This application Jul. 24, 1997, Ser. No. 74,003

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—249



397,341

EAR CUSHION FOR TELEPHONES

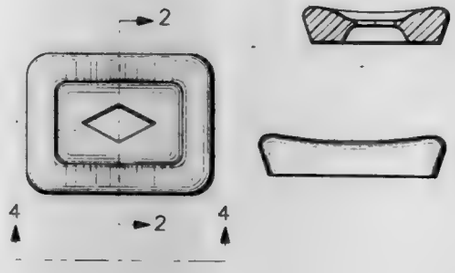
Ronald L. Brito, P.O. Box 309, San Dimas, Calif. 91773

Division of Ser. No. 51,430, Nov. 3, 1996, Pat. No. Des. 386,765. This application Jul. 24, 1997, Ser. No. 74,090

Term of patent 14 years

LOC (6) Cl. 14 - *03*

U.S. Cl. D14—749



397,342

INTERNAL COMBUSTION ENGINE HOOD

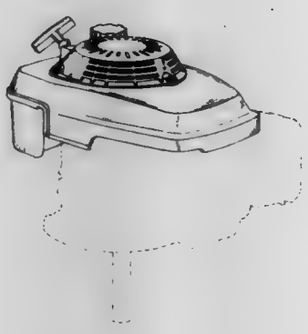
Hirohide Shimizu, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 10, 1997, Ser. No. 77,848

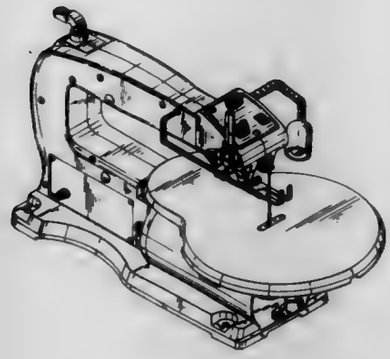
Term of patent 14 years

LOC (6) Cl. 15 - *01*

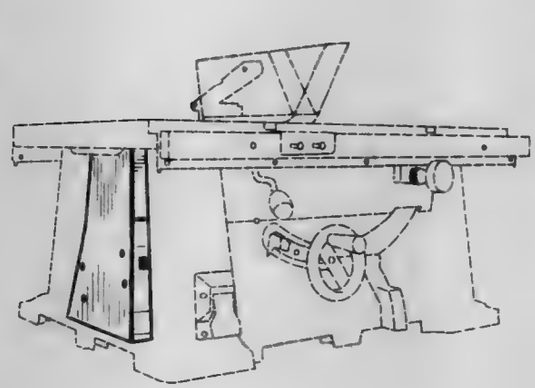
U.S. Cl. D15—5



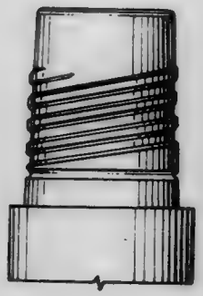
397,343
SCROLL SAW
Ruey-Zon Chen, Taichung, Taiwan, assignor to Rexon Industrial Corp. Ltd., Taichung, Taiwan
Filed Oct. 18, 1996, Ser. No. 61,222
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—133



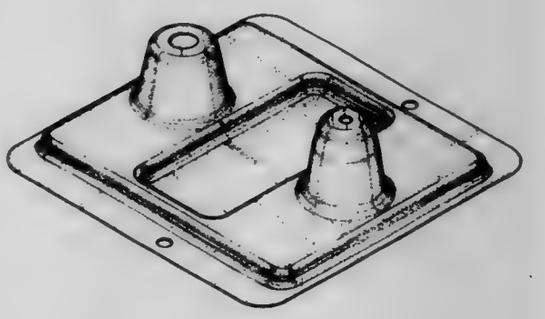
397,344
MITER GAUGE HOLDER FOR A TABLE SAW
Warren A. Ceroll, Owings Mills; Robert S. Gehret, Hampstead; Daniel Puzio, Baltimore; Frederick R. Bean, Finksburg; Michael L. O'Banion, Westminster, all of Md.; David A. Porter, Hanover, Pa., and Daniel A. Ferrara, Jr., Bantam, Conn., assignors to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 57,853, Aug. 1, 1996, Pat. No. Des. 394,071, which is a continuation of Ser. No. 51,851, Mar. 1, 1996, abandoned. This application May 8, 1997, Ser. No. 70,465
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—133



397,345
PROBE ROD THREAD
Lawrence E. Screen, Abilene, and Melvin P. Kejr, Brookville, both of Kans., assignors to Kejr Engineering, Inc., Salina, Kans.
Filed Oct. 8, 1996, Ser. No. 60,828
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—138



397,346
WAFER-BOAT POSITIONING MEMBER OF WAFER CONTAINER
Horng-Kuang Fan, and Gwo-Jou Huang, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Jul. 16, 1997, Ser. No. 73,699
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—144.1



397,347

VIDEO STILL CAMERA

Noriko Katayama, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

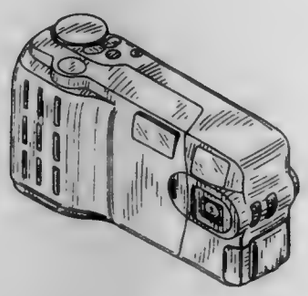
Filed Sep. 16, 1997, Ser. No. 76,937

Claims priority, application Japan, Mar. 31, 1997, 9-9129

Term of patent 14 years

LOC (6) Cl. 16 - *01*

U.S. Cl. D16—202



397,348

CAMERA

Yutaka Senda, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

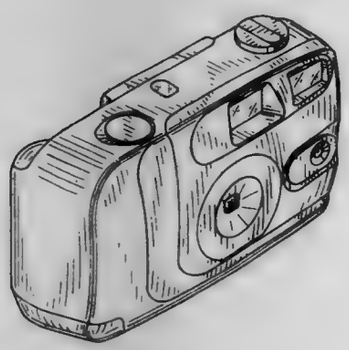
Filed Aug. 19, 1997, Ser. No. 75,165

Claims priority, application Japan, Feb. 19, 1997, 9-4820

Term of patent 14 years

LOC (6) Cl. 16 - *01*

U.S. Cl. D16—209



397,349

EYEGLASSES

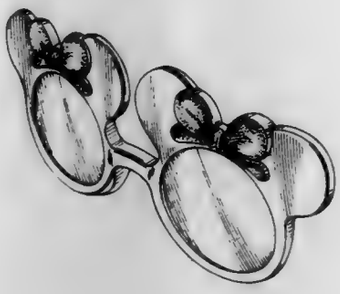
Wen-Te Wang, No. 246-1, Kang-Kou, Kang-Kou Tsun, An-Ting Hsiang, Tainan Hsien, Taiwan

Filed Nov. 25, 1997, Ser. No. 79,797

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—306



397,350

EYEGLASS FRONT

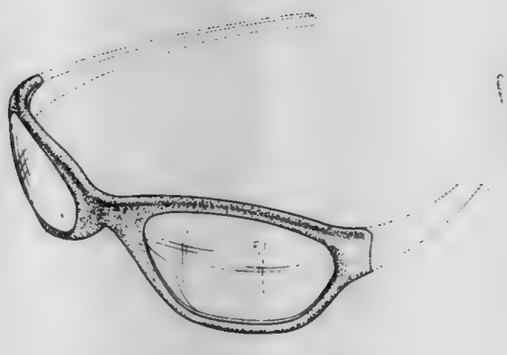
James H. Jannard, Eastsound, Wash., and Peter Yee, Irvine, Calif., assignors to Oakley, Inc., Foothill Ranch, Calif.

Filed Nov. 12, 1996, Ser. No. 62,287

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



397,351

SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop Eyewear S.p.A., Pederobba, Italy

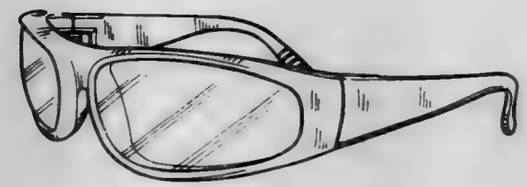
Filed May 16, 1997, Ser. No. 70,787

Claims priority, application Italy, Nov. 19, 1996, TV9600063

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—326



397,352

SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop Eyewear S.p.A., Pederobba, Italy

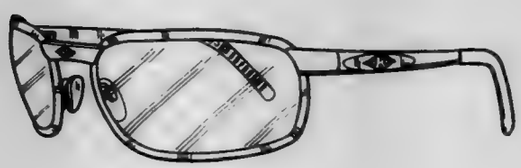
Filed May 16, 1997, Ser. No. 70,783

Claims priority, application Italy, Nov. 19, 1996, TV9600063

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—327



397,353

SUNGLASSES

Luciano Simioni, Montebelluna, Italy, assignor to Killer Loop Eyewear S.p.A., Pederobba, Italy

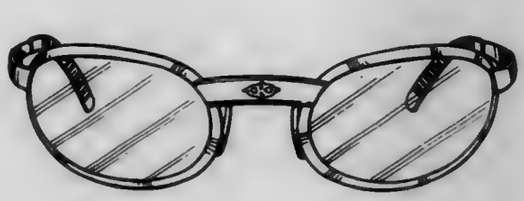
Filed May 16, 1997, Ser. No. 70,786

Claims priority, application Italy, Nov. 19, 1996, TV9600063

Term of patent 14 years

LOC (6) Cl. 16 - *06*

U.S. Cl. D16—327



397,354

SPECTACLE FRAME

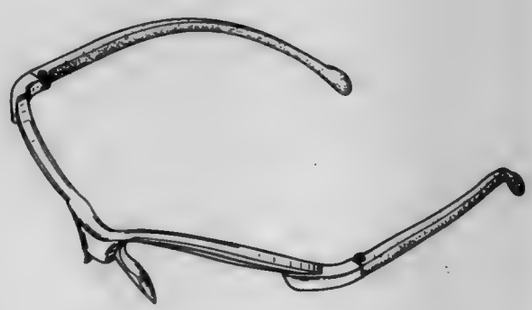
Yao-ling Kuo, Hsin Tien, Taiwan, assignor to Gazelle Corporation, Taipei, Taiwan

Filed Jun. 5, 1997, Ser. No. 71,722

Term of patent 14 years

LOC (6) Cl. 16 - *06*

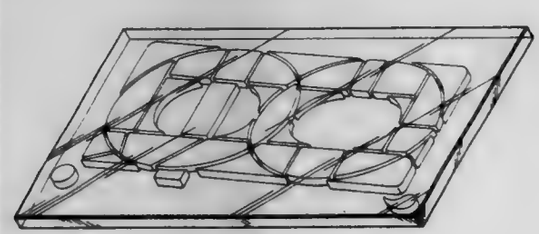
U.S. Cl. D16—330



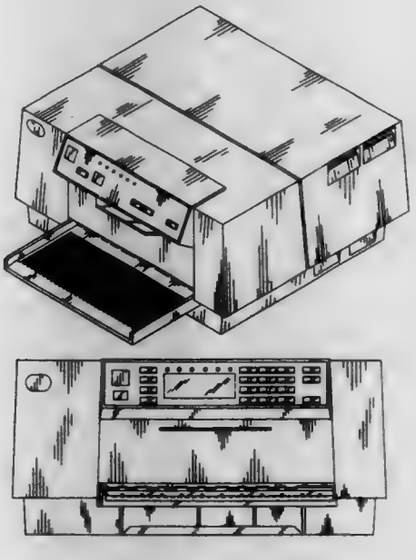
397,355
TYPE FONT
Garrett A. Boge, 526 First Ave. S. #227, Seattle, Wash. 98104
Filed Jul. 8, 1997, Ser. No. 74,008
Term of patent 14 years
LOC (6) Cl. 18 - *03*
U.S. Cl. D18—24



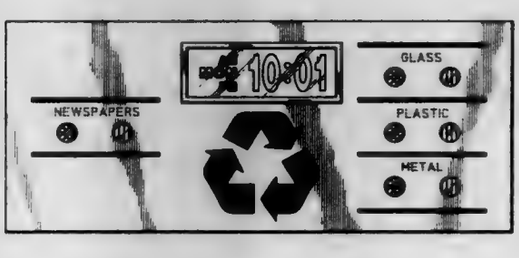
397,356
LIQUID CRYSTAL DISPLAY BOARD
Ming Wen; Zhang Shen; Chia-Wang Chen, and Dai-Shui Ho, all of Taipei, Taiwan, assignors to Inventec Corporation, Taiwan
Filed Oct. 17, 1997, Ser. No. 78,054
Term of patent 14 years
LOC (6) Cl. 18 - *03*
U.S. Cl. D18—26



397,357
PRINTER
Richard L. Herman; Frederick C. Miller; Carl W. Robinson, all of Charlotte, and Robert P. Tennant, Apex, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 21,304, Apr. 11, 1994, abandoned.
This application Aug. 6, 1996, Ser. No. 65,300
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D18—55



397,358
RECYCLABLE MATERIAL PICK-UP DAY INDICATOR
Rene P. Supino, 46 Goodwin Ter., Westwood, N.J. 07675
Filed Mar. 28, 1997, Ser. No. 69,326
Term of patent 14 years
LOC (6) Cl. 19 - *03*
U.S. Cl. D19—21



397,359

COMBINATION HOLE PUNCH AND ELECTRONIC UNIT

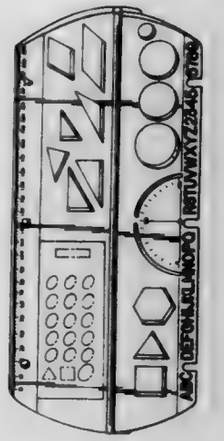
Mark A. Bedol, P.O. Box 1268, Claremont, Calif. 91711, and Edward Wong, Alhambra, Calif., assignors to Mark A. Bedol, Claremont, Calif.

Filed Aug. 14, 1997, Ser. No. 75,521

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—72



397,360

CLIP AND CARD HOLDER

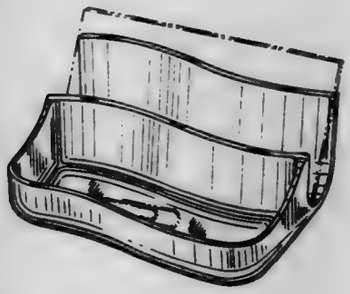
Albert B. Cheris, Highland Park, and Mark Dziersk, Chicago, both of Ill., assignors to Tenex Corporation, Elk Grove Village, Ill.

Filed Aug. 29, 1997, Ser. No. 75,950

Term of patent 14 years

LOC (6) Cl. 19 - *02*

U.S. Cl. D19—75



397,361

PENCIL CUP

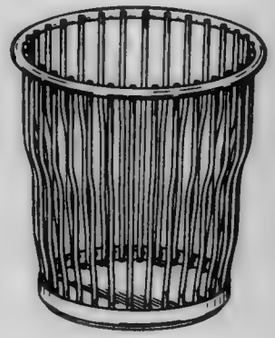
Sheldon H. Goodman, 30905 Stratford, Solon, Ohio 44139, and Harold A. Goodman, Orange Village, Ohio, assignors to Sheldon H. Goodman, Solon, Ohio

Filed Nov. 26, 1997, Ser. No. 80,048

Term of patent 14 years

LOC (6) Cl. 19 - *06*

U.S. Cl. D19—85



397,362

DISPLAY PIECE

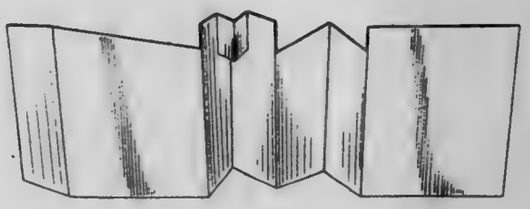
Jerome H. Rafferty, Indian Wells, Calif., assignor to Wallenstein & Wagner, Ltd., Chicago, Ill.

Filed Jan. 30, 1996, Ser. No. 49,710

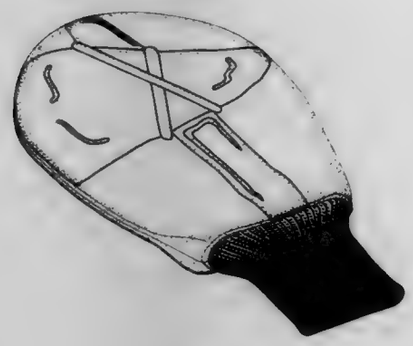
Term of patent 14 years

LOC (6) Cl. 20 - *03*

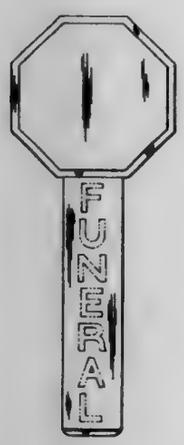
U.S. Cl. D20—10



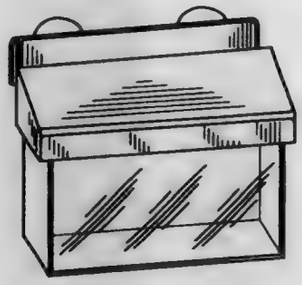
397,363
DISPLAY GARMENT FOR THE HAND
Douglas Anthony Williams, 926 Victoria Landing Dr., Woodstock, Ga. 30188
Continuation of Ser. No. 39,919, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 35,252, Feb. 23, 1995, Pat. No. Des. 377,053. This application Dec. 18, 1995, Ser. No. 47,969
Term of patent 14 years
LOC (6) Cl. 02 - *06*
U.S. Cl. D20—33



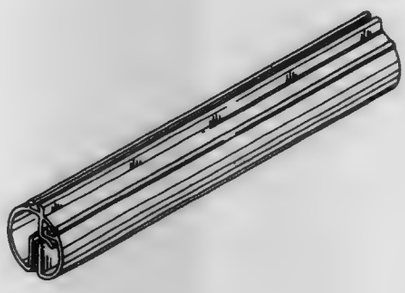
397,364
FUNERAL SIGN FOR AUTOMOBILES
W. Raymond Barrett, 1868 Ironstone Rd., Des Peres, Mo. 63131
Filed Aug. 21, 1997, Ser. No. 75,460
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—41



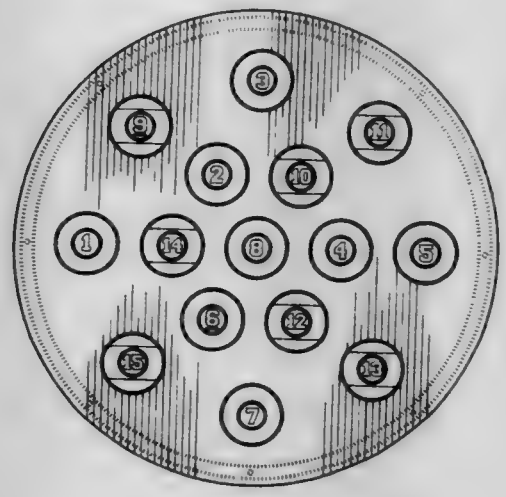
397,365
OUTDOOR BUSINESS CARD HOLDER
Gregory H. Johnson, P.O. Box 688, Ogunquit, Me. 03907
Filed May 7, 1997, Ser. No. 71,004
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—43



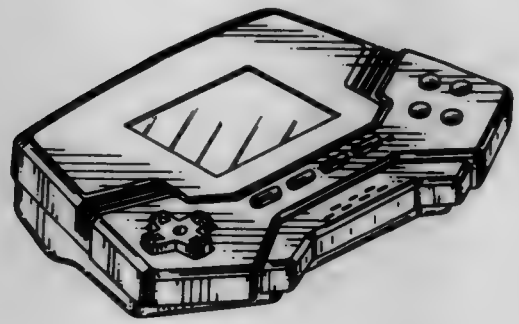
397,366
BANNER HANGER
Stephen D. Wamsley, Lakewood, Ohio, assignor to Fasteners For Retail, Inc., Cleveland, Ohio
Filed Aug. 20, 1997, Ser. No. 75,440
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D20—43



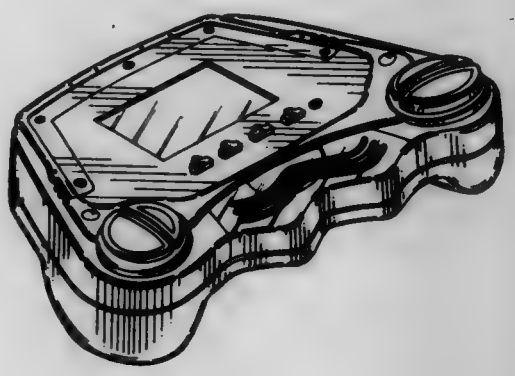
397,367
BILLIARD DART GAME
Darrell M. Barr, 2263 St. Rte. 131, Hillsboro, Ohio 45133
Filed Oct. 2, 1996, Ser. No. 60,636
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—6



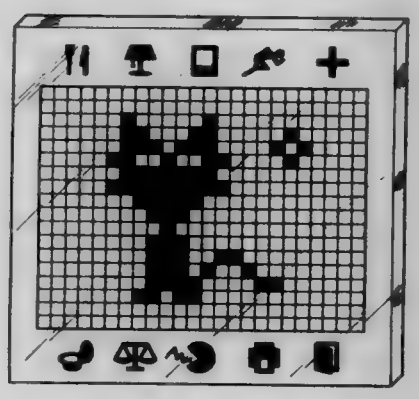
397,368
CABINET HOUSING FOR A HAND-HELD ELECTRONIC GAME
Owen R. Rissman, Vernon Hills, Ill., assignor to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Sep. 23, 1997, Ser. No. 76,768
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



397,369
CABINET HOUSING FOR A HAND-HELD ELECTRONIC GAME
Owen R. Rissman, Vernon Hills, Ill., assignor to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Sep. 23, 1997, Ser. No. 76,776
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



397,370
ELECTRONIC GAME DISPLAY PANEL
Chi-Ping Chen, Hsihchu, Taiwan, assignor to Hohek Microelectronics, Inc., Hsinchu, Taiwan
Filed Sep. 19, 1997, Ser. No. 77,100
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



397,371

HAND HELD ELECTRONIC FISHING GAME

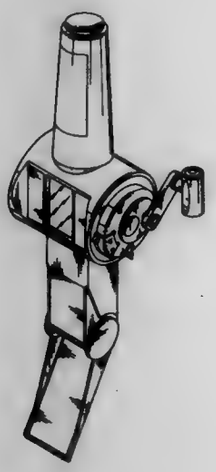
Ronald D. Bagley, Garland, Tex., assignor to Radica China Limited, Hong Kong

Filed Dec. 22, 1997, Ser. No. 80,941

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—13



397,372

HAND HELD ELECTRONIC FISHING GAME

Andrew J. Riggs, Carrolton, Tex., assignor to Radica China Limited, Hong Kong

Filed Dec. 22, 1997, Ser. No. 80,947

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—13



397,373

BOARD GAME

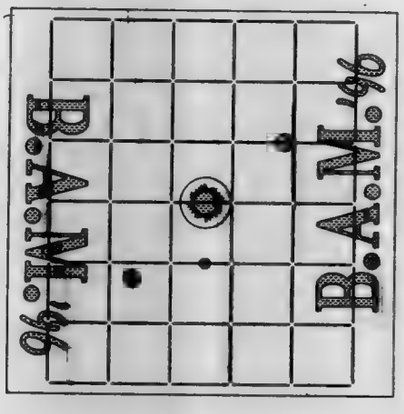
Bradd Mielke, 816 1st Ave. S., Sleepy Eye, Minn. 56085

Filed Jul. 5, 1996, Ser. No. 56,683

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—34



397,374

TRACKBALL DEVICE FOR A VIDEO GAME

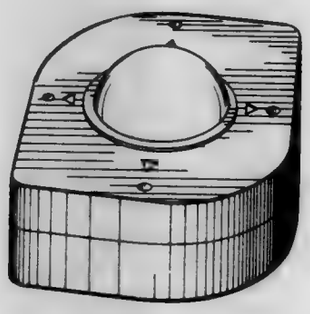
Edward F. Brooks, Skokie, Ill., assignor to H. Betti Industries Inc., Carlstadt, N.J.

Filed Oct. 16, 1997, Ser. No. 78,053

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—48

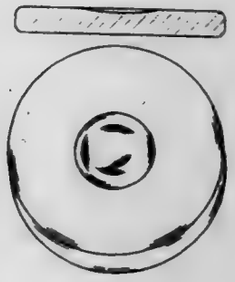


397,375

GAME MARKER

Kaylyn H. Fletcher, and Paul C. Fletcher, both of 726 Northridge Rd., Highlands Ranch, Colo. 80126

Filed May 2, 1994, Ser. No. 22,219
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—51

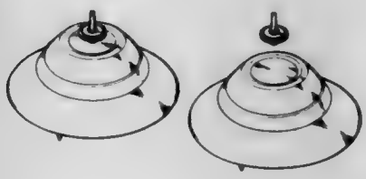


397,376

MAGNETIC LEVITATION TOY

Sung Hyun Hwang, 502-1504, Sinwondang Apt., Sungsa-dong, Duckyang-ku, Koyang-si, Kyungki-do, 412-0202, Rep. of Korea

Filed Sep. 3, 1997, Ser. No. 75,616
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—59



397,377

SOFT CAR SEAT TOY

Missy Schwartz, Lake Bluff, Ill., assignor to Kids II, Inc., Alpharetta, Ga.

Filed Jun. 25, 1997, Ser. No. 72,832
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—62

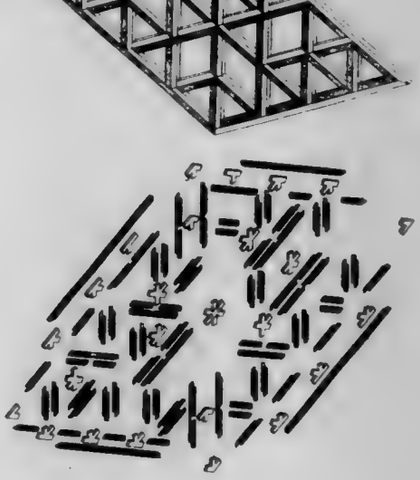


397,378

MIRROR IMAGE GEOMETRIC PUZZLE

Matthew F. Lennon, and Patricia A. Lennon, both of 3873 Evelyn Dr., Wilmington, Del. 19808

Filed Jul. 7, 1997, Ser. No. 73,356
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—104



397,379

TOY SHERIFF STAR

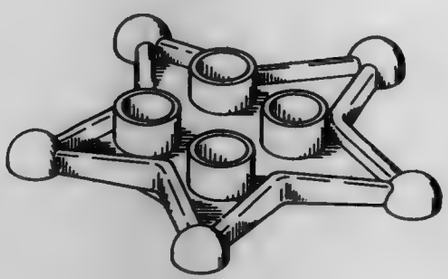
Thomas Aleth Thomsen, Copenhagen, Denmark, assignor to INTERLEGO AG, Baar, Switzerland

Filed Sep. 18, 1997, Ser. No. 76,852

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—108



397,380

RADIO-CONTROLLED MODEL VEHICLE INCLUDING A MODEL DRIVER

Shigeki Araki, and Yoshiharu Kubota, both of Shizuoka, Japan, assignors to Tamiya, Inc., Shizuoka, Japan

Filed Aug. 25, 1997, Ser. No. 75,789

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—137



397,381

COMBINED DOLL AND SHOE CONTAINER THEREFOR

Josephine Reese, 11606 Mapleview Dr., Silver Spring, Md. 20902

Filed Aug. 1, 1997, Ser. No. 74,351

Term of patent 14 years

LOC (6) Cl. 21 - *01*

U.S. Cl. D21—167



397,382

TOY STUFFED FACE

Sherry R. Gensler, 180 Mary Ellen Dr., North Versailles, Pa. 15137

Filed Oct. 22, 1997, Ser. No. 78,157

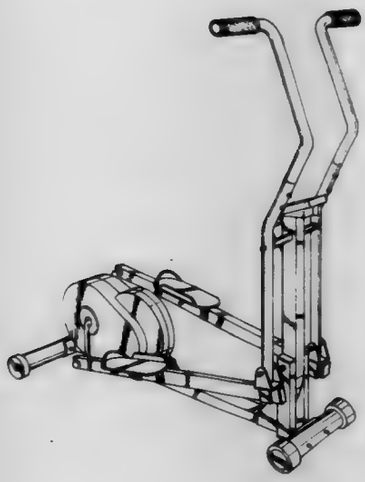
Term of patent 14 years

LOC (6) Cl. 21 - *01*

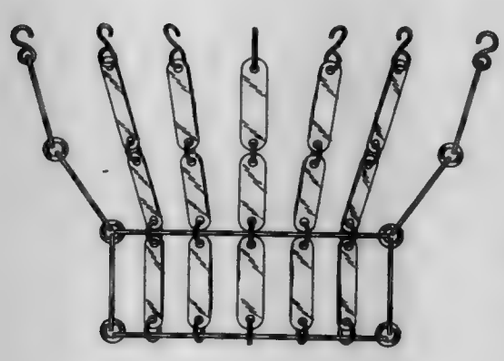
U.S. Cl. D21—184



397,383
EXERCISER
Lenny Sands, 4555 Reseda Blvd., Tarzana, Calif. 91356, and Johnson Kuo, 5F., No. 6, Lane 12, Sec. 6, Hsin 1 Rd., Taipei, Taiwan
Filed Jul. 2, 1997, Ser. No. 72,809
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—194



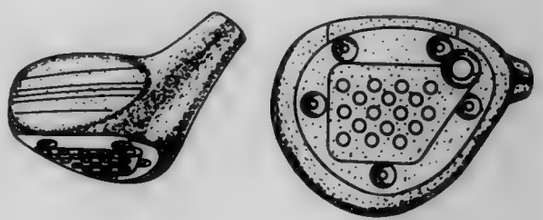
397,384
BASKETBALL NET
Richard Frank DeArmond, P.O. Box 41, Hightstown, N.J. 08520
Filed Oct. 17, 1996, Ser. No. 61,215
Term of patent 14 years
LOC (6) Cl. 21 - *99*
U.S. Cl. D21—201



397,385
BASEBALL TRAINING BAT
Jeff M. LaBorde, 11528 Hela Ave., Lake View Terr., Calif. 91342; Carl M. Mattera, 10463 Ormond St., Shadow Hills, Calif. 91040, and Dean Brassfield, 4815 Forman Ave., North Hollywood, Calif. 91601
Filed Jul. 16, 1997, Ser. No. 73,702
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—211



397,386
GOLF CLUB HEAD
Bo Berglund, Box 17055, 40261 Göteborg, Sweden
Filed Jul. 14, 1997, Ser. No. 73,492
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



397,387

GOLF CLUB HEAD

Dillis V. Allen, Elgin, Ill., assignor to Vardon Golf Company, Inc., Elk Grove Village, Ill.

Filed Oct. 9, 1997, Ser. No. 77,772

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—214





397,388

HEAD OF GOLF PUTTER

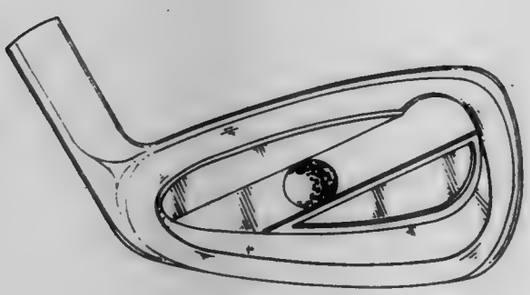
Kardy Nelson, 6-2F., No. 23, Sec. 1, Han Chou South Street, Taipei, Taiwan

Filed Apr. 2, 1997, Ser. No. 68,408

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—220



397,389

ROLLER SKATE

Kenny Yiu Wing Fung, Hong Kong, Hong Kong, assignor to Grace Artificial Jewellery Manufacturing Company Limited, Hong Kong, Hong Kong

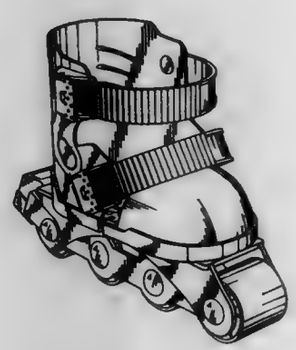
Filed Jan. 8, 1997, Ser. No. 64,676

Claims priority, application United Kingdom, Nov. 26, 1996, 2061172

Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—226



397,390

WHEEL HUB

Scott Portzline, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.

Filed Apr. 3, 1997, Ser. No. 68,416

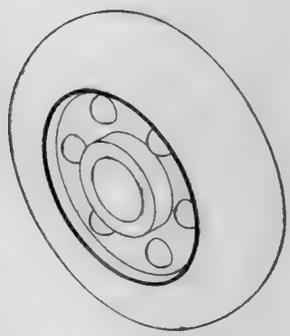
Term of patent 14 years

LOC (6) Cl. 21 - *02*

U.S. Cl. D21—226



397,391
ILLUMINATED INLINE SKATE WHEEL
Tracy Jirout, 39894 Moria Ct., Murrietta, Calif. 92562
Filed Apr. 4, 1997, Ser. No. 69,692
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—226



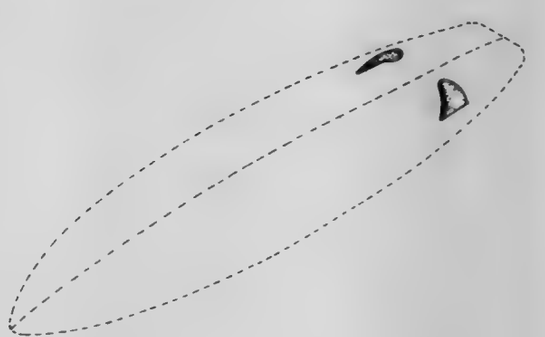
397,392
ROLLER SKATE BOOT
Hung-Pin Lee, 10th Fl., No. 34, Sec. 3, Pate Rd., Taipei, Taiwan
Filed May 21, 1997, Ser. No. 71,105
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—226



397,393
ROLLER POLE
Dale Lopez Reed, 114 3rd Ave., Tawas City, Mich. 48763
Filed Aug. 6, 1997, Ser. No. 74,548
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—230



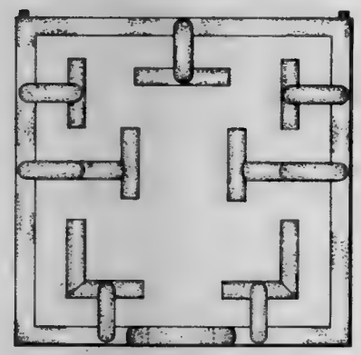
397,394
CURVED SIDE FINS FOR A SURFBOARD
Ethan Akins, 7961 Hermosa St., Ventura, Calif. 93004
Filed Feb. 5, 1997, Ser. No. 66,114
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—231



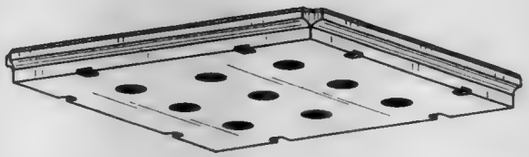
397,395
GOLF STANCE TRAINING AID
Daniel Stephen Massey, 50 N. Timber Top, The Woodlands, Tex. 77380
Filed Jun. 26, 1997, Ser. No. 72,943
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—234



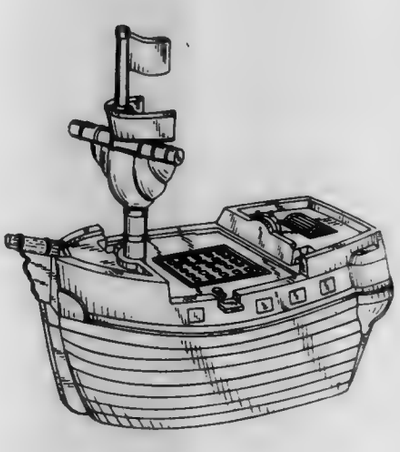
397,396
WATER TAG GAME STRUCTURE
Gary M. Sanders, 355 N. Lantana #720, Camarillo, Calif. 93010
Filed Oct. 20, 1997, Ser. No. 78,678
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D21—236



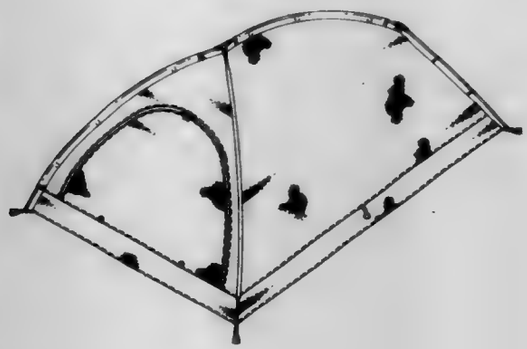
397,397
MOLDED SQUARE RECREATIONAL EQUIPMENT PLATFORM
Grant M. Strawcutter, 529 Dilworth Rd. West, Charlotte, N.C. 28203; James O. Dunn, Jr., 416 N. Laurel Ave., Charlotte, N.C. 28204, and Jonathan E. Brooks, 7000 Spandril La., Charlotte, N.C. 28215
Filed Jun. 5, 1996, Ser. No. 55,325
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—240



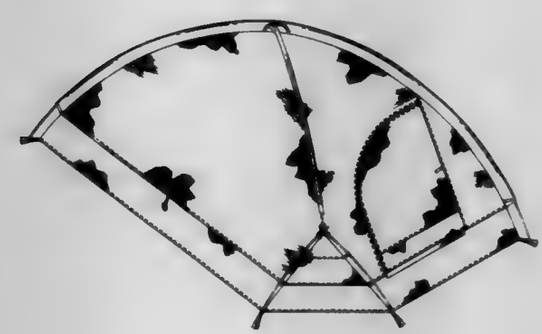
397,398
COMBINED CHILD'S PLAY CENTER AND TOY BOX
Jay M. Bro, Plano; Robert H. Escher, Lewisville, both of Tex.; James S. Panzarella, Denver, Colo., and James D. Amburgey, Richardson, Tex., assignors to Today's Kids, Inc., Booneville, Ark.
Filed Feb. 6, 1997, Ser. No. 66,101
Term of patent 14 years
LOC (6) Cl. 21 - *03*
U.S. Cl. D21—247



397,399
TWO-PERSON TENT
Robert R. Bury, Seattle, Wash., and Robert Swanson, Carmel Valley, Calif., assignors to Walrus, Inc., Seattle, Wash.
Filed Aug. 22, 1996, Ser. No. 58,746
Term of patent 14 years
LOC (6) Cl. 21 - *04*
U.S. Cl. D21—253



397,400
TENT
Robert R. Bury, Seattle, Wash., and Robert Swanson, Carmel Valley, Calif., assignors to Walrus, Inc., Seattle, Wash.
Filed Aug. 22, 1996, Ser. No. 58,775
Term of patent 14 years
LOC (6) Cl. 21 - *04*
U.S. Cl. D21—253



397,401
TENT STAKE
Scott Diederich, 916 W. Peck St., Whitewater, Wis. 53190
Filed Mar. 3, 1997, Ser. No. 67,303
Term of patent 14 years
LOC (6) Cl. 21 - *04*
U.S. Cl. D21—255



397,402
ARROW REST SUPPORT GUIDE
Edward M. Jessee, Louisville, Ky., assignor to Coffey Marketing Corporation
Continuation-in-part of Ser. No. 322,868, Oct. 17, 1994. This application Jan. 31, 1996, Ser. No. 49,790
The portion of the term of this patent subsequent to Oct. 7, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—107

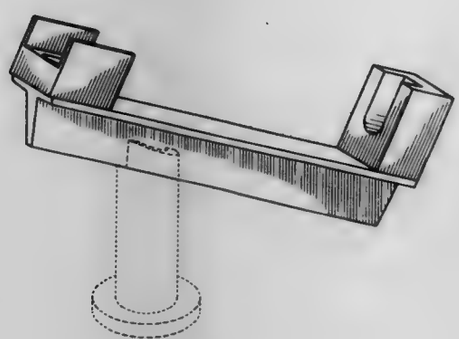


397,403

ALTERNATE DESIGN OF SHORT SPINED GUN RACK

Dieter H. Zebbedies, 4175 Springcrest Dr., Brooklyn, Ohio 44144

Filed Jun. 29, 1995, Ser. No. 40,891
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—108



397,404

FISHING LURE

Perry Scott Randall, 1442 Stickney Ave., South St. Paul, Minn. 55075

Filed May 31, 1996, Ser. No. 55,177
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—128

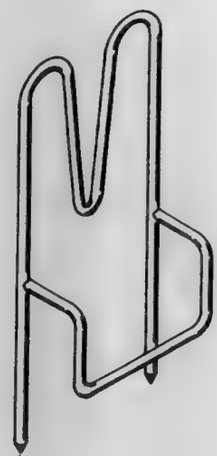


397,405

FISHING ROD HOLDER

Clyde D. Smith, RR II Box 182G, Louisana, Mo. 63353

Filed Nov. 12, 1996, Ser. No. 62,276
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—147

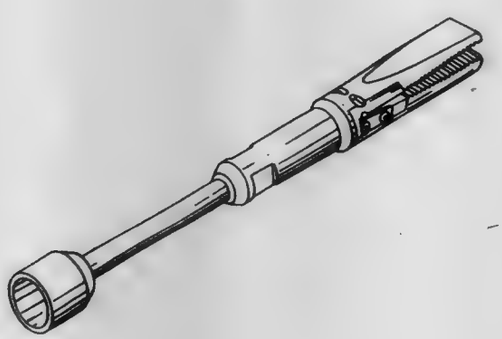


397,406

FISH HOOK REMOVER

Rupert N. Koblegard, 401-A S. Indian River Dr., Fort Pierce, Fla. 34950

Filed Apr. 23, 1997, Ser. No. 69,009
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—149



397,407

SHAMPOOING SHOWER HEAD

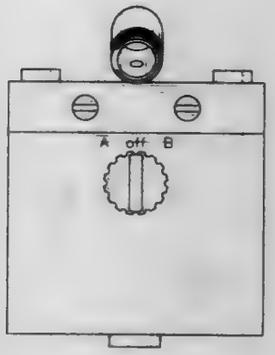
Earl Keith Forbes, 145 Helen Rd., Covington, Ga. 30016

Filed Aug. 29, 1997, Ser. No. 76,156

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—213



397,408

HAND HELD SPRAY GUN

David Robert Baker, Guernsey, Channel Islands, and Jeffrey Philip Earp, Solihull, United Kingdom, assignors to Abrasive Developments Limited, Solihull, United Kingdom

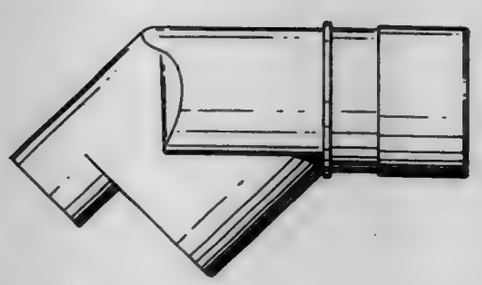
Filed Dec. 20, 1996, Ser. No. 65,704

Claims priority, application United Kingdom, Jun. 27, 1996, 2057298

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—223



397,409

WATER SPRAY GUN

King-Yuan Wang, Changhua Hsien, Taiwan, assignor to Yuan Mei Corp., Changhua Hsien, Taiwan

Filed May 7, 1997, Ser. No. 70,431

The portion of the term of this patent subsequent to Aug. 26, 2011, has been disclaimed.

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—226



397,410

LID FOR FUEL FILLER GUN DISPLAY

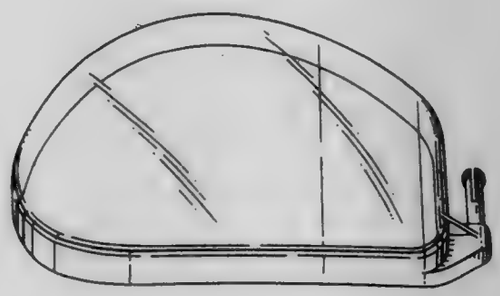
Stein Alvern, Houston, Tex., assignor to Alvern-Norway A/S, Norway

Division of Ser. No. 56,728, Jul. 8, 1996. This application Aug. 11, 1997, Ser. No. 74,775

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—227



397,411

SUPPORT MEMBER FOR FUEL FILLER GUN DISPLAY

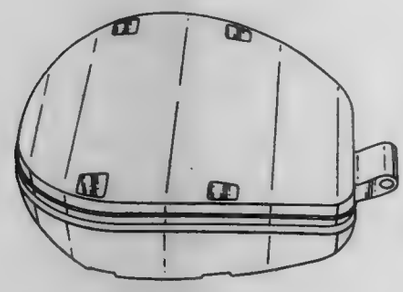
Stein Alvern, Houston, Tex., assignor to Alvern-Norway A/S, Norway

Division of Ser. No. 56,728, Jul. 8, 1996. This application Aug. 11, 1997, Ser. No. 74,778

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—227



397,412

HANDLE FOR A PLUMBING FITTING

Erich D. Slothower, Sheboygan, and Carter J. Thomas, Port Washington, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Jan. 17, 1997, Ser. No. 64,984

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—250



397,413

PIPE FITTING

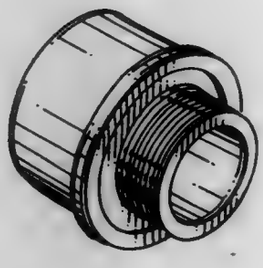
Paul S. Sapp, 1143 E. Rovey, Phoenix, Ariz. 85014

Filed Dec. 15, 1997, Ser. No. 80,732

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—262



397,414

BATHING ENCLOSURE

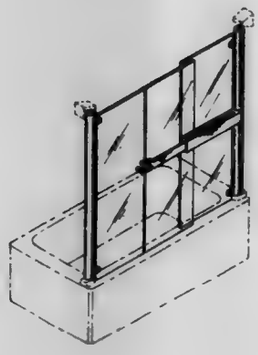
Thomas R. Moncaster, 251 Cloydon Cir., Santa Barbara, Calif. 93108

Division of Ser. No. 730,140, Oct. 15, 1996. This application Apr. 2, 1997, Ser. No, 68,320

Term of patent 14 years

LOC (6) Cl. 23 - *02*

U.S. Cl. D23—283



397,415

PEDESTAL LAVATORY

William C. McKeone, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Nov. 21, 1996, Ser. No. 62,664
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—292

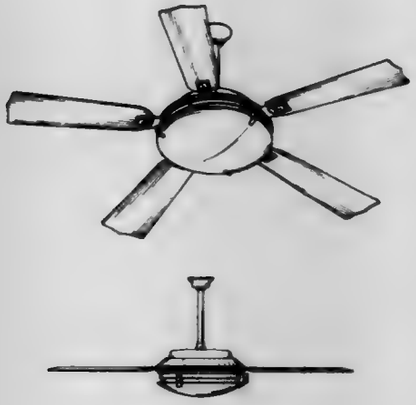


397,416

COMBINED CEILING FAN AND LIGHT

Ching-Tan Lee, No. 52, Lane 480, Section 2, Fenghsi Rd., Taichung Hsien, Taiwan

Filed Oct. 27, 1997, Ser. No. 78,507
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—377

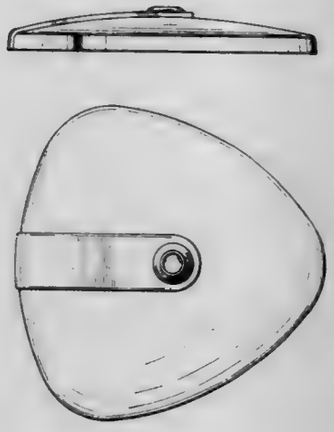


397,417

BASE FOR A STAND FAN

Rodney Jané , Westboro; Diane Allen, Marlborough, both of Mass.; Jui-Shang Wang, Taipei, Taiwan, and Stanley Gresens, Homewood, Ill., assignors to Honeywell Consumer Products, Inc., Southborough, Mass.

Filed Jan. 16, 1996, Ser. No. 48,903
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411

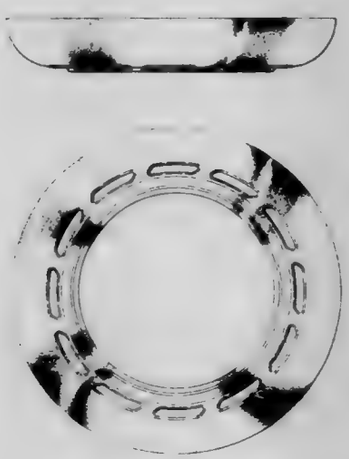


397,418

LOWER HOUSING FOR A CEILING FAN

Masao Tsuji, Germantown, Tenn., and Jack W. Gee, II, Huntsville, Ala., assignors to Hunter Fan Company, Memphis, Tenn.

Division of Ser. No. 58,277, Aug. 9, 1996. This application Aug. 5, 1997, Ser. No. 74,542
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411



397,419

UPPER HOUSING FOR A CEILING FAN

Masao Tsuji, Germantown, Tenn., and Jack W. Gee, II, Huntsville, Ala., assignors to Hunter Fan Company, Memphis, Tenn.

Division of Ser. No. 58,246, Aug. 9, 1996, Pat. No. Des. 392,035. This application Aug. 5, 1997, Ser. No. 74,752

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—411



397,420

SPRAY CONTAINER

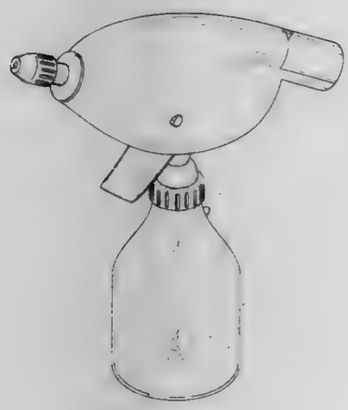
Charles E. Campbell, 2222 Melrose Dr., Apt 135, Wooster, Ohio 44691

Filed Nov. 5, 1997, Ser. No. 78,912

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—225



397,421

POWDER SPRAY GUN

Horst Adams, Nonnenhorn, Germany, assignor to Wagner International AG, Alstatten, Switzerland

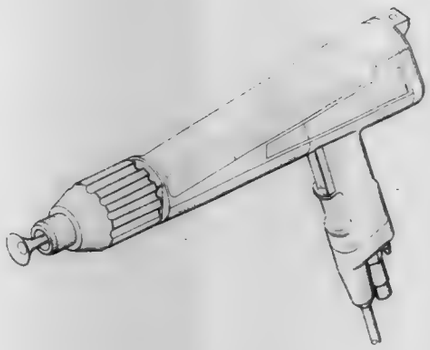
Division of Ser. No. 53,826, Apr. 30, 1996. This application Aug. 4, 1997, Ser. No. 74,895

Claims priority, application Germany, Oct. 31, 1995, 95 08 798.2

Term of patent 14 years

LOC (6) Cl. 23 - *01*

U.S. Cl. D23—226



397,422

FAUCET BODY

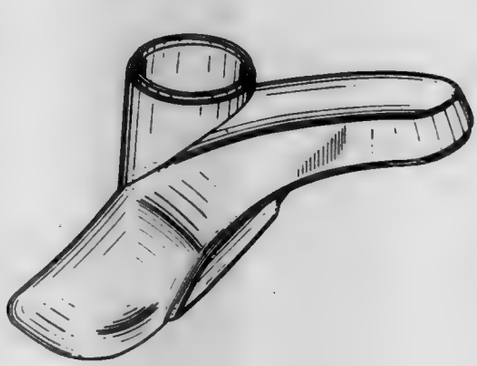
David J. Meisner, Monmouth Beach, and Wilfried A. Delker, Bridgewater, both of N.J., assignors to American Standard Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 20,701, Mar. 30, 1994. This application Feb. 12, 1996, Ser. No. 49,423

Term of patent 14 years

LOC (6) Cl. 23 - *01*

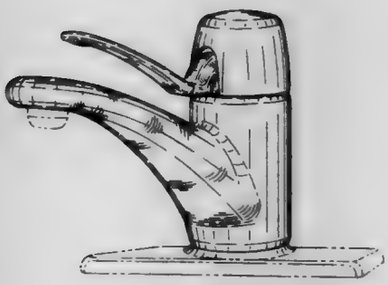
U.S. Cl. D23—238



397,423
FAUCET

Kevin Short, LaGrange; Scott C. Baker, Hoffman Estates, and John C. Watson, Westchester, all of Ill., assignors to The Chicago Faucet Company, Des Plaines, Ill.

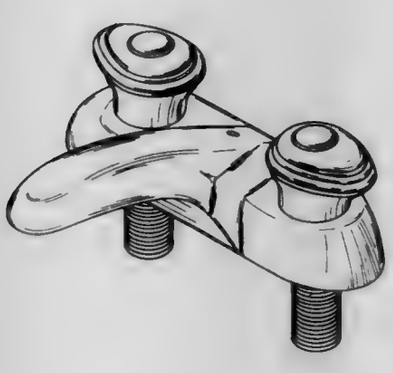
Filed Nov. 13, 1996, Ser. No. 62,309
The portion of the term of this patent subsequent to Dec. 2, 2011, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



397,424
FAUCET ASSEMBLY

William H. Ficken, Jr., Grayslake, Ill.; Michael W. Regelbrugge, Reynolds, Ind.; Roger H. Ramsey, Akron, Ohio; Cherry Bochmann, Richfield, Ohio, and William E. Brazis, Medina, Ohio, assignors to Gerber Plumbing Fixtures Corp., Chicago, Ill.

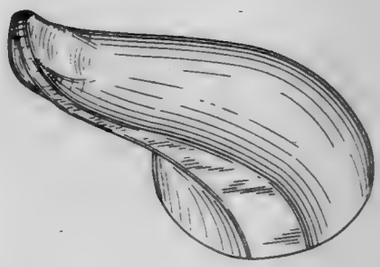
Filed Apr. 1, 1997, Ser. No. 69,450
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—241



397,425
HANDLE

Raul M. Paredes, Barrington, and Frank T. Poggio, Hoffman Estates, both of Ill., assignors to Sterling Plumbing Group, Inc., Rolling Meadows, Ill.

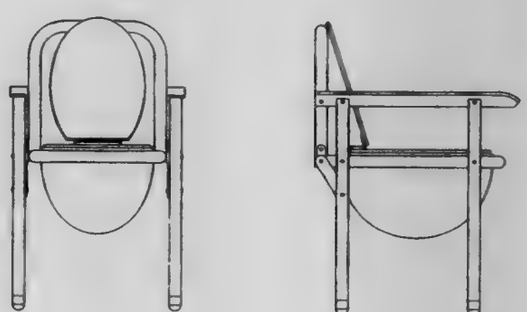
Filed Apr. 23, 1997, Ser. No. 69,022
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—250



397,426
FOLDING PORTABLE TOILET

Frankie Woods, 1502 Virginia St., South Bend, Ind. 46613

Filed May 16, 1997, Ser. No. 70,825
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—299



397,427

COMBINED PORTABLE FAN AND SPRAY MISTING DEVICE

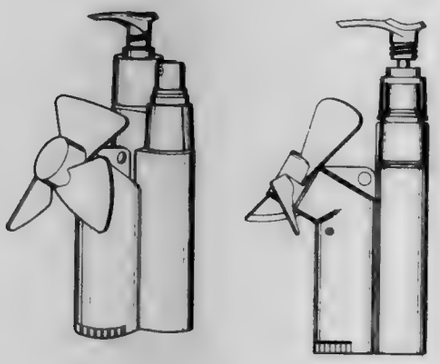
Eric F. Junkel, Des Plaines; Lee Radtke, Lake Zurich, and Linda M. Usher, Chicago, all of Ill., assignors to Circulair, Inc., Chicago, Ill.

Division of Ser. No. 69,929, Apr. 29, 1997. This application Sep. 17, 1997, Ser. No. 76,493

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—328



397,428

PORTABLE FIREPLACE

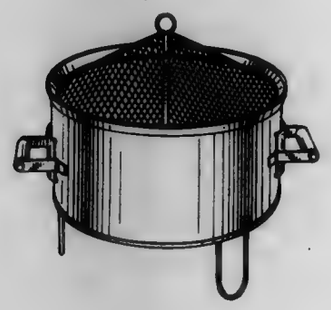
Ted Reitsma, and Cheryl L. Reitsma, both of 323 Calle Juanita, San Marcos, Calif. 92069

Filed Mar. 25, 1997, Ser. No. 69,295

Term of patent 14 years

LOC (6) Cl. 23 - *03*

U.S. Cl. D23—348



397,429

AIR CONDITIONING APPLIANCE

Eric Vignot, Bussy-Saint-Georges, France, assignor to Laboratoires Prodene Klint, Mitry Mory, France

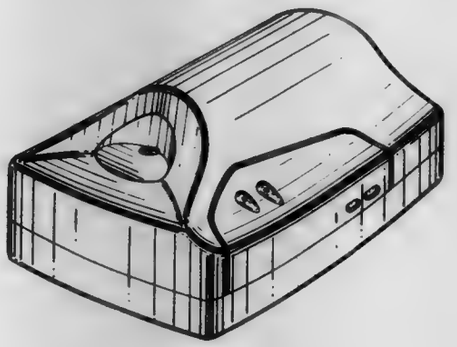
Filed Aug. 5, 1997, Ser. No. 74,613

Claims priority, application Hague Agreement, Feb. 14, 1997, DM039181

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—351



397,430

HOUSING FOR A HEATER

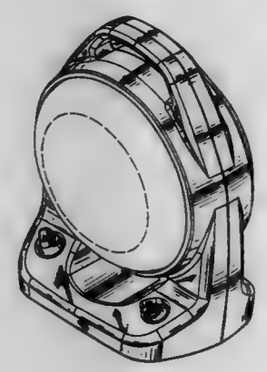
Glen W. Ediger, North Newton; Gary P. Israel, Andover; Kevin E. Keller, and Michael C. Coup, both of Wichita, all of Kans., assignors to Vornado Air Circulation Systems, Inc., Wichita, Kans.

Filed Feb. 20, 1997, Ser. No. 67,013

Term of patent 14 years

LOC (6) Cl. 23 - *03*

U.S. Cl. D23—386



397,431

HOODED EXHAUST VENT

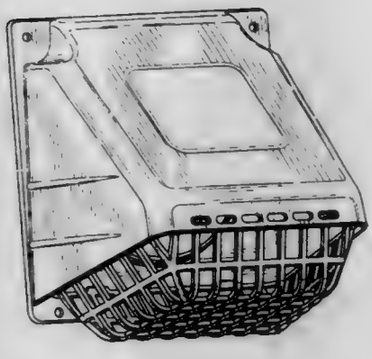
Stephen T. Meyer, Indianapolis, Ind., assignor to Deflecto Corporation, Indianapolis, Ind.

Filed Jul. 18, 1997, Ser. No. 75,555

Term of patent 14 years

LOC (6) Cl. 23 - *04*

U.S. Cl. D23—393



397,432

BAG FOR AN ADMINISTRATION SET

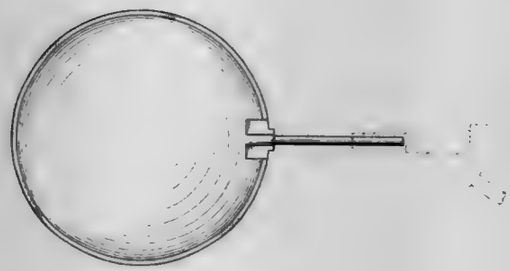
Kenneth W. Rake, 28625 Vista Ladera, Laguna Niguel, Calif. 92677, and Orvil L. Judge, 840 N. Shaffer, Orange, Calif. 92667

Continuation of Ser. No. 1,364, Nov. 12, 1992, which is a continuation-in-part of Ser. No. 824,855, Jan. 24, 1992, and a continuation-in-part of Ser. No. 898,958, Jun. 15, 1992. This application Jan. 25, 1995, Ser. No. 34,712

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—118



397,433

SURGICAL HANDPIECE HOLDER

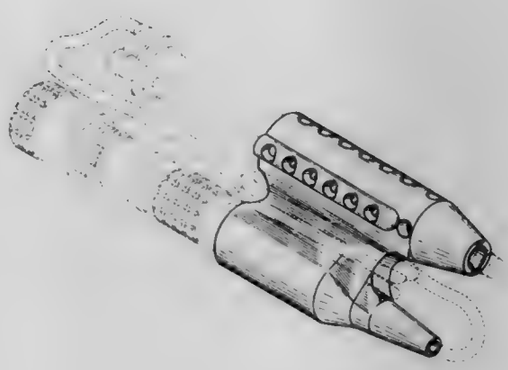
Peter D. Casica, San Juan Capistrano, and James Y. Chon, Chino Hills, both of Calif., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Division of Ser. No. 47,874, Dec. 14, 1995, Pat. No. Des. 381,421. This application Jul. 26, 1996, Ser. No. 57,549

Term of patent 14 years

LOC (6) Cl. 06 - *04*

U.S. Cl. D24—128



397,434

COMBINED CATHETER HUB AND NEEDLE PROTECTOR

Kevin H. Pike, Ypsilanti, Mich., assignor to Aeroquip Corporation, Maumee, Ohio

Filed Jan. 8, 1997, Ser. No. 64,677

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—112



397,435

COMBINED INHALER AND COVER

Peter F. Naumann, München, Germany, assignor to GGU Gesellschaft fuer Gesundheits-und Umweltforschung mbH, Puch-Heim-Muenchen, Germany

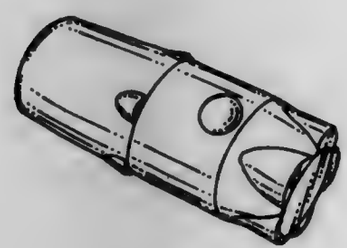
Filed Jun. 30, 1997, Ser. No. 73,156

Claims priority, application Hague Agreement, Jan. 3, 1997, DM/038703

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—110



397,436

COMBINED DISTRACTOR AND SLEEVE FOR INSERTING SPINAL IMPLANTS

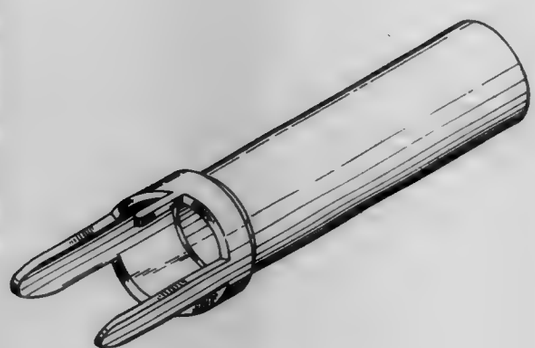
Gary Karlin Michelson, 438 Sherman Canal, Venice, Calif. 90291

Division of Ser. No. 23,141, May 19, 1994, Pat. No. Des. 374,283. This application Sep. 30, 1996, Ser. No. 60,514

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—135



397,437

DESIGN FOR BONE MILLING BURR SHAFT

Imre Hlavicska, Santa Barbara, Calif., assignor to Hall Surgical, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 9,496, Jun. 15, 1993, abandoned. This application Aug. 23, 1993, Ser. No. 12,093

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—146



397,438

CARTRIDGE FOR A DENTAL HANDPIECE

Takasuke Nakanishi, Tochigi-ken, Japan, assignor to Nakanishi Inc., Kanuma, Japan

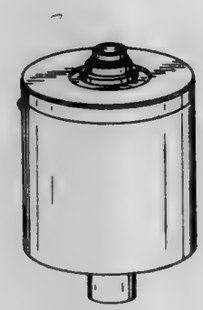
Filed Jul. 27, 1995, Ser. No. 41,929

Claims priority, application Japan, Feb. 2, 1995, 7-2243

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—152



397,439

SPINAL IMPLANT

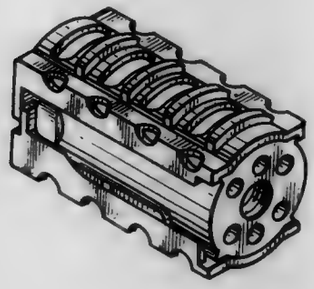
Tibor Koros, and Cabriel Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021

Filed Jul. 22, 1994, Ser. No. 27,857

Term of patent 14 years

LOC (6) Cl. 24 - *03*

U.S. Cl. D24—155



397,440

SURGICAL X-RAY APPARATUS

Jan Erik Baars, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

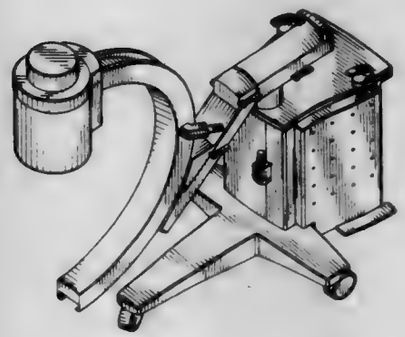
Filed Nov. 22, 1996, Ser. No. 64,262

Claims priority, application WIPO, May 23, 1996, DMA/003334

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—158



397,441

DROPLET LIQUID APPLICATOR BRUSH

Phillip Mark, 4505 131st Ave. North #8, Clearwater, Fla. 34622

Filed Mar. 30, 1995, Ser. No. 36,926

Term of patent 14 years

LOC (6) Cl. 24 - *02*

U.S. Cl. D24—176



397,442

ONE PIECE POWER ENHANCING DENTAL APPLIANCE

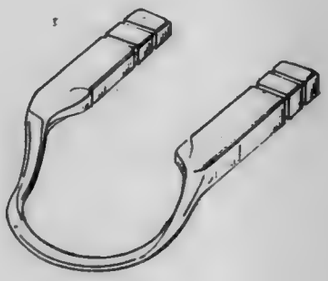
Jon D. Kittelsen, Fridley, Minn., assignor to Big Picture, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 689,253, Aug. 5, 1996. This application Dec. 16, 1996, Ser. No. 63,762

Term of patent 14 years

LOC (6) Cl. 24 - *01*

U.S. Cl. D24—180



397,443

PAD FOR PREVENTION OF DECUBITUS ULCERS

Veronica Fletcher, Streatley; Clive Perry, and Paul-William Chapman, both of Upper Caldecote, all of England, assignors to Huntleigh Technology PLC, United Kingdom

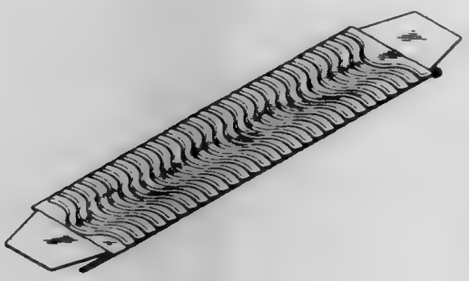
Filed May 28, 1997, Ser. No. 71,375

Claims priority, application United Kingdom, Nov. 28, 1996, 2061231

Term of patent 14 years

LOC (6) Cl. 24 - *04*

U.S. Cl. D24—183



397,444

NON-DRIP, NON-ROLL BABY BOTTLE

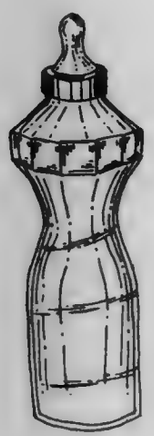
Jerry A. Ibey, P.O. Box 9106, Whittier, Calif. 90608

Filed Oct. 16, 1997, Ser. No. 78,079

Term of patent 14 years

LOC (6) Cl. 07 - *01*

U.S. Cl. D24—197



397,445

EMERGENCY SHELTER

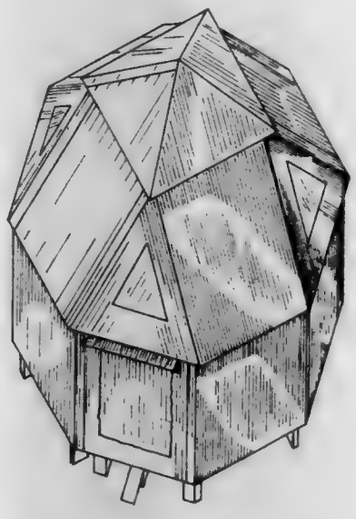
Duane Thorbeck, 2121 Delaware Ave., Mendota Heights, Minn. 55118, and Joel Tilsner, 2505 Sylvan Rd., Minnetonka, Minn. 55305

Filed Jul. 28, 1997, Ser. No. 74,681

Term of patent 14 years

LOC (6) Cl. 25 - *03*

U.S. Cl. D25—32



397,446

DOOR

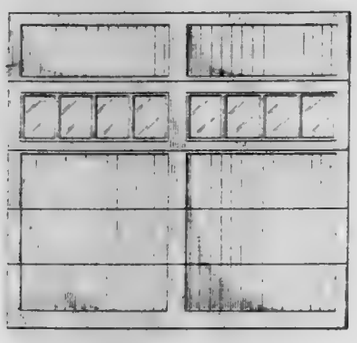
Kent H. Forsland, 283 Troy St., River Falls, Wis. 54022

Division of Ser. No. 40,278, Jun. 14, 1995. This application Jun. 10, 1996, Ser. No. 55,655

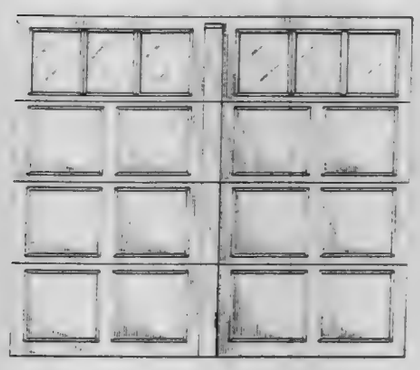
Term of patent 14 years

LOC (6) Cl. 25 - *02*

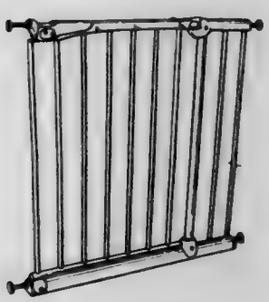
U.S. Cl. D25—48



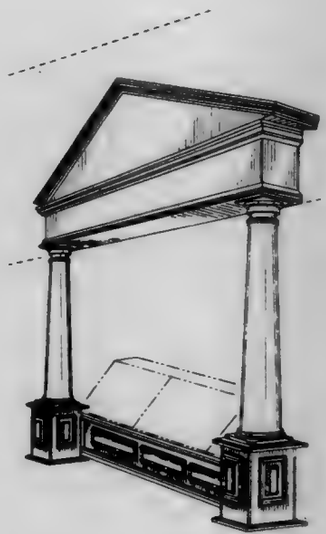
397,447
DOOR
Kent H. Forsland, 283 Troy St., River Falls, Wis. 54022
Division of Ser. No. 40,278, Jun. 14, 1995. This application Jun. 10, 1996, Ser. No. 55,656
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—48



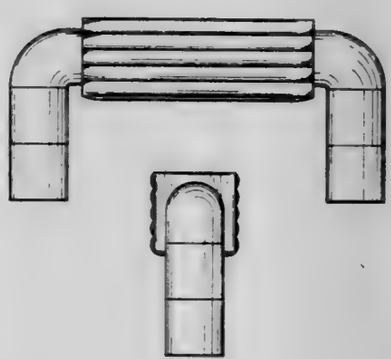
397,448
BARRIER
Mauro Brevi, Bergamo, Italy, assignor to Brevi S.r.l., Telgate, Italy
Filed Jul. 3, 1997, Ser. No. 73,319
Claims priority, application Italy, Jan. 10, 1997, MI9700019
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—50



397,449
STORE FACADE
Annarita Nora, Tinton Falls, N.J., assignor to Frank Brunckhorst Co., Brooklyn, N.Y.
Filed Oct. 23, 1995, Ser. No. 45,543
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—59



397,450
INFLATABLE ARCHWAY
Mark Lindsey Cotton, Longmont, and Michael Warren Doland, Niwot, both of Colo., assignors to Omnistructure R&D llc, Boulder, Colo.
Filed May 28, 1996, Ser. No. 54,990
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—102

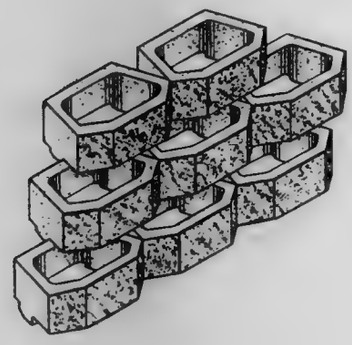


397,451

SECTION OF A RETAINING WALL WITH PLANTABLE BLOCKS

J. Michael Stevenson, San Diego, Calif., assignor to Keystone Retaining Wall Systems, Inc., Bloomington, Minn.

Division of Ser. No. 45,497, Oct. 23, 1995, Pat. No. Des. 384,168. This application Jun. 10, 1997, Ser. No. 71,987
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—115

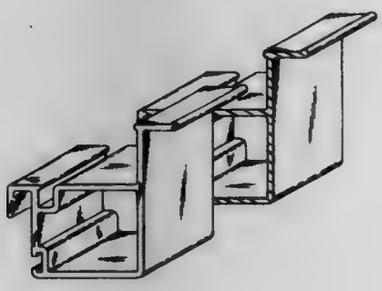


397,452

WINDOW COMPONENT EXTRUSION

Jeffrey R. Franson, Maple Valley, Wash., assignor to Mikron Industries, Inc., Kent, Wash.

Filed Oct. 10, 1997, Ser. No. 77,877
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



397,453

ROOF SAFETY SUPPORT

William G. Dahlin; William S. Pladson, and Rick McComas, all of 3301 Fiechtner Dr., Suite 102, Fargo, N. Dak. 58103

Filed Dec. 30, 1996, Ser. No. 65,457
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—131

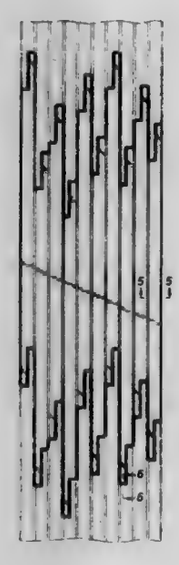


397,454

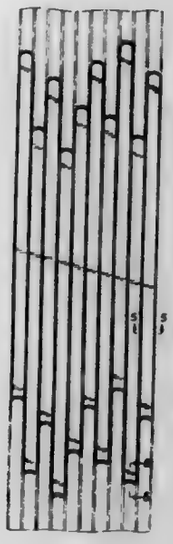
VENEER PANEL

Fred I. Ormiston, 5446 First St., Katy, Tex. 77493

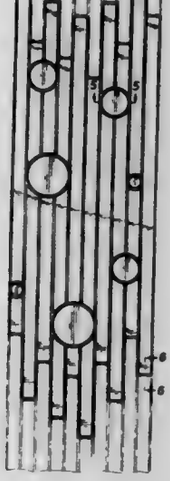
Continuation-in-part of Ser. No. 45,017, Oct. 5, 1995, Pat. No. Des. 387,439. This application Aug. 15, 1997, Ser. No. 74,981
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—138



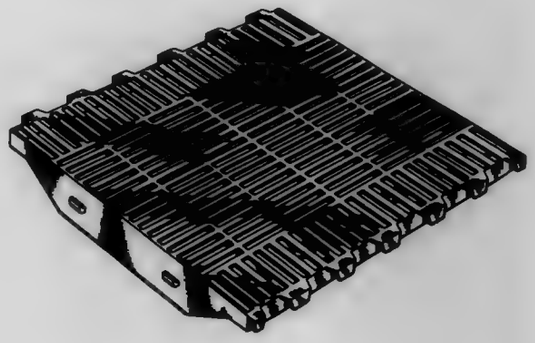
397,455
VENEER PANEL
Fred I. Ormiston, 5446 First St., Katy, Tex. 77493
Continuation-in-part of Ser. No. 45,017, Oct. 5, 1995, Pat. No. Des. 387,439. This application Aug. 15, 1997, Ser. No. 74,983
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—138



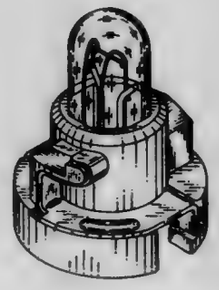
397,456
VENEER PANEL
Fred I. Ormiston, 5446 First St., Katy, Tex. 77493
Continuation-in-part of Ser. No. 45,017, Oct. 5, 1995, Pat. No. Des. 387,439. This application Aug. 15, 1997, Ser. No. 74,984
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—138



397,457
FLOORING UNIT
Warren Hutchings, Calgary, Canada, assignor to BCM Manufacturing Ltd., Calgary, Canada
Filed Mar. 15, 1996, Ser. No. 51,695
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—156



397,458
LAMP
Masahito Higano, Kamitsuga-gun, and Munehiko Yamagita, Utsunomiya, both of Japan, assignors to Moriyama Sangyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 30, 1997, Ser. No. 74,243
Claims priority, application Japan, Sep. 30, 1996, 8-29238
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—2



397,459

SPIRAL-CORE CANDLE

John Chung-Yuan Hsu, Moraga, Calif., assignor to American Candle Designs, Inc.

Filed Apr. 28, 1997, Ser. No. 70,087
Term of patent 14 years
LOC (6) Cl. 26 - *04*
U.S. Cl. D26—6

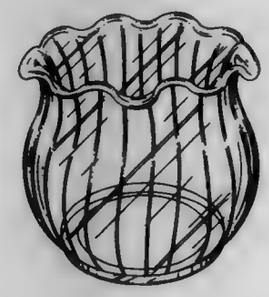


397,460

CANDLE HOLDER

Gregory V. Chambers, Scottsdale, Ariz.; Robert D. Colchagoff, and Eldred Edward Lloyd Martin, both of Tulsa, Okla., assignors to The Dial Corporation, Phoenix, Ariz.

Filed Apr. 2, 1997, Ser. No. 68,851
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—9

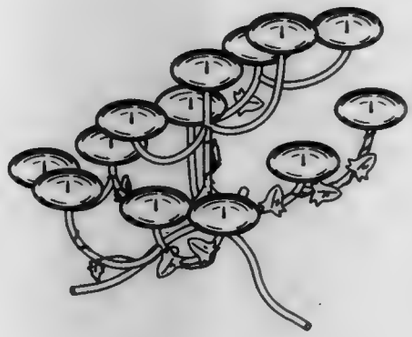


397,461

FIREPLACE CANDLE HOLDER

Craig M. Tingley, 10414 St. Tropez Pl., Tampa, Fla. 33615

Filed Jul. 28, 1997, Ser. No. 74,144
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—15

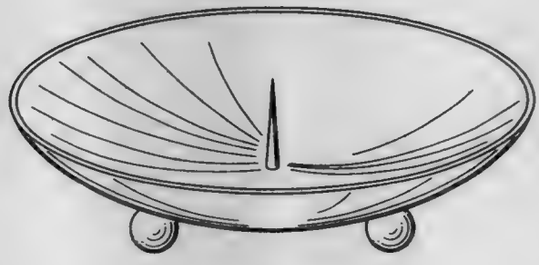


397,462

CANDLE HOLDER

Fred Hollinger, Kings Park, N.Y., assignor to KV and F Metal Products, Inc., Great Neck, N.Y.

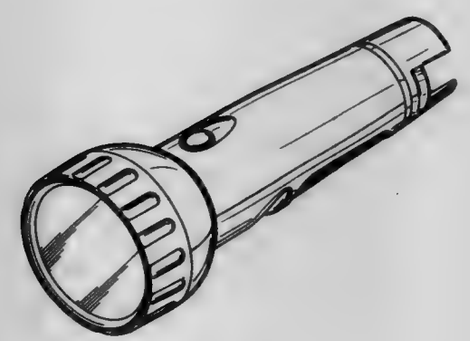
Filed Jul. 25, 1997, Ser. No. 74,137
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—20



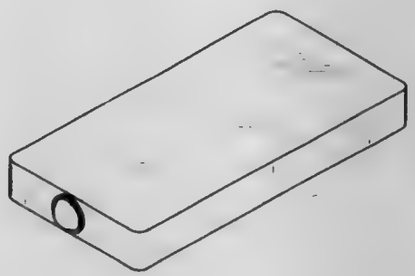
397,463
LIGHTING DISPLAY STAND ASSEMBLY
Kuo-Hsing Karl Lee, 9945-B Harwin Dr., Houston, Tex. 77036
Filed Oct. 15, 1996, Ser. No. 61,047
Term of patent 14 years
LOC (6) Cl. 26 - *04*
U.S. Cl. D26—25



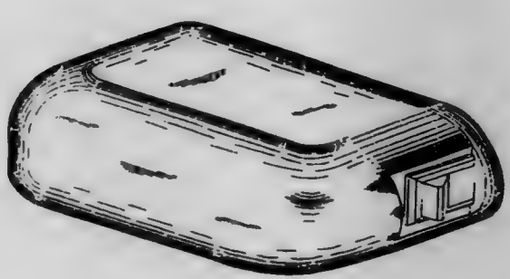
397,464
FLASHLIGHT
Gabriel E. Concari, Eldersburg, and Gregory Scott Snider, Bel Air, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Jul. 29, 1997, Ser. No. 75,966
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—37



397,465
TOILET LIGHT
Franklin Youri, 4398 Silva Ave., San Jose, Calif. 95118
Filed Jul. 1, 1996, Ser. No. 56,531
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—38



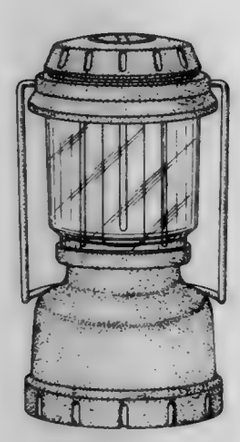
397,466
THERMOSTAT LIGHT
David D. Conley, P.O. Box 9, Stillwater, N.Y. 12170
Filed Jul. 3, 1997, Ser. No. 73,950
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—38



397,467
LANTERN

John Donaldson Howard, Brewster, N.Y., and Gary Evan van Deursen, Evergreen, Colo., assignors to The Coleman Company, Inc., Kans.

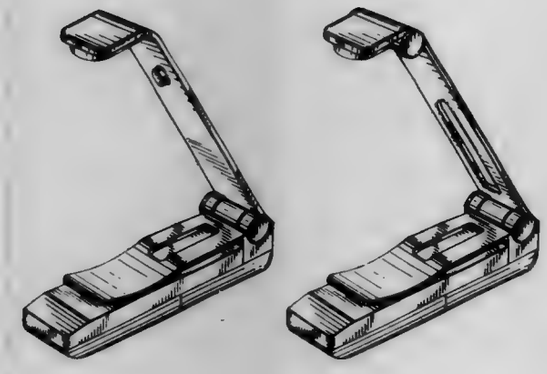
Filed Jun. 2, 1997, Ser. No. 71,566
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—41



397,468
BOOK LIGHT

Noel E. Zeller, c/o Zelco Industries, Inc. 65 Haven Ave., Mount Vernon, N.Y. 10553

Filed Jul. 28, 1997, Ser. No. 74,191
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—60



397,469
DESK LAMP

Atsushi Yumita, Saitama, and Naoto Ogimoto, Okayama, both of Japan, assignors to Yamagiwa Kabushiki Kaisha, Tokyo, and Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, both of Japan

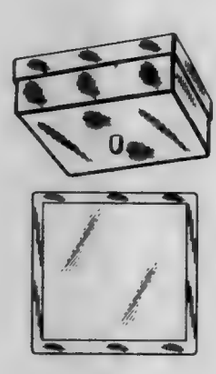
Filed Feb. 27, 1997, Ser. No. 66,954
Claims priority, application Japan, Aug. 27, 1996, 8-25289; Aug. 27, 1996, 8-25290; Aug. 27, 1996, 8-25291
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—65



397,470
SOLAR-POWERED AREA LIGHT

Paul Stanley Bassford, Bend, Oreg., and Frank Wesley Engle, Pt. Richmond, Calif., assignors to Startronics Solar Lighting II, Inc., Bend, Oreg.

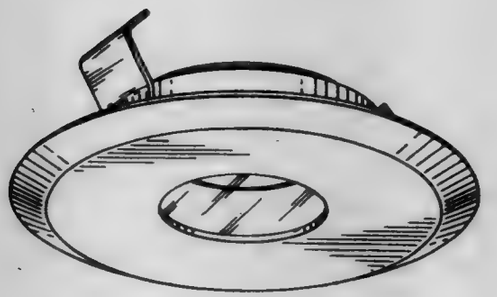
Filed Feb. 3, 1997, Ser. No. 66,090
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—67



397,471
CHANDELIER
Pasquale Miranda, 154 Sleepy Hollow Rd., Briarcliff Manor, N.Y. 10510
Filed Jun. 20, 1997, Ser. No. 72,591
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—81



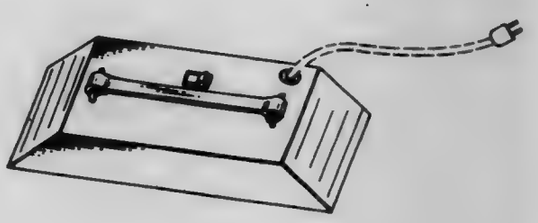
397,472
TRIM FOR RECESSED LIGHT FIXTURE
Michel Lecluze, 1009 rue du Parc Industriel, St-Jean-Chrysostome, Québec, Canada, G6Z 1C5
Filed Jul. 21, 1997, Ser. No. 73,227
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—118



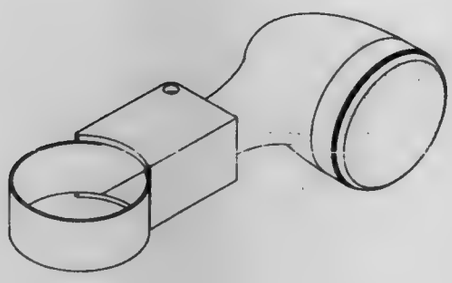
397,473
LAMP SHADE
Keen Hsu, 58, Ma Yuan West St., Taichung, Taiwan
Filed Jul. 26, 1997, Ser. No. 74,369
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—127



397,474
VIBRATING BODY MASSAGING DEVICE
Shemshon Lazari, 252 Omira Dr., San Jose, Calif. 95123
Continuation-in-part of Ser. No. 45,737, Oct. 27, 1995, Pat. No. Des. 375,364, and Ser. No. 61,591, Oct. 25, 1996, Pat. No. Des. 387,872. This application Dec. 6, 1996, Ser. No. 63,358
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—215



397,475
ROADWAY LIGHT FOR VEHICLES
Christopher G. Jacobs, 1137 Fort View Pl., Cincinnati, Ohio 45202
Filed Oct. 10, 1995, Ser. No. 45,127
Term of patent 14 years
LOC (6) Cl. 26 - *06*
U.S. Cl. D26—28



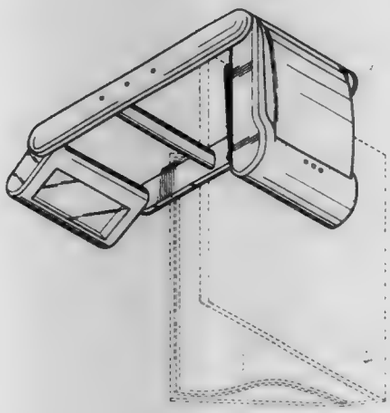
397,476
COMBINED LAMP AND FLOWER HOLDER
David T. Gween, 9940 Norwalk Rd., Litchfield, Ohio 44253
Filed Jan. 27, 1997, Ser. No. 65,510
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—55



397,477
AUTOMATIC ROTATABLE LIGHTING APPARATUS
Helen I. Chen, 2646 River Ave., Suite A, Rosemead, Calif. 91770
Filed Oct. 14, 1997, Ser. No. 77,806
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—61



397,478
LIGHT
Donald J. Booty, Jr., Chicago, Ill., assignor to Phorm Concept & Design, Inc., Chicago, Ill.
Filed Sep. 16, 1997, Ser. No. 76,309
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—65



397,479

INDIRECT LIGHT FIXTURE

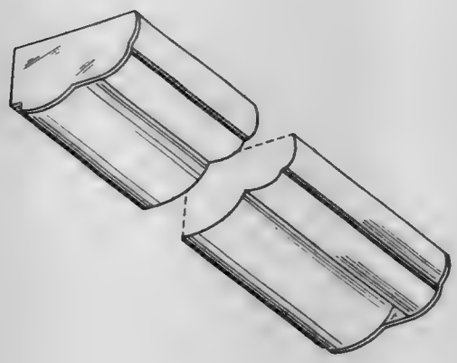
Frederick A. Compton, Houston, Tex., and Jeffrey L. Brown, Ann Arbor, Mich., assignors to Precision Architectural Lighting,Inc., Houston, Tex.

Filed Jan. 21, 1997, Ser. No. 65,098

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—76



397,480

DIRECT-INDIRECT LUMINAIRE HOUSING

Douglas J. Herst, Ross, and Utkan Salman, Oakland, both of Calif., assignors to Peerless Lighting Corporation, Berkeley, Calif.

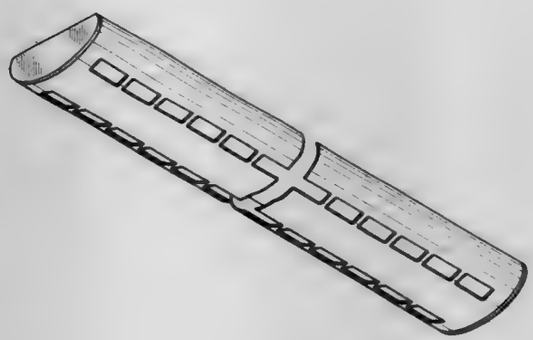
Continuation of Ser. No. 54,873, May 23, 1996, abandoned.

This application Jul. 8, 1997, Ser. No. 73,970

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—77



397,481

LIGHT FIXTURE

Katharina Schäfer, Lemgo, Germany, assignor to Staff GmbH & Co KG, Lemgo, Germany

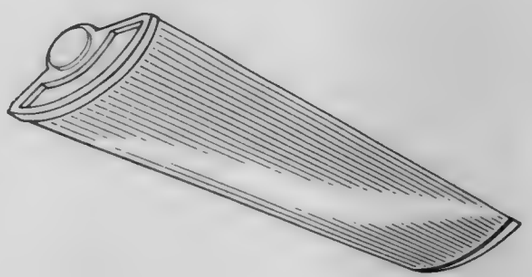
Filed Oct. 15, 1996, Ser. No. 61,013

Claims priority, application Germany, Apr. 19, 1996, 96 03 483.1

Term of patent 14 years

LOC (6) Cl. 26 - *05*

U.S. Cl. D26—85



397,482

WALL LUMINAIRE

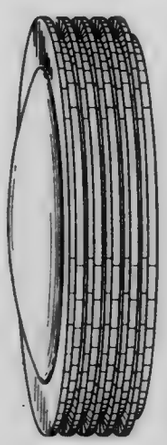
Wisoot Binsukor, Samutprakarn, Thailand, assignor to We-ef Lighting Co., Ltd., Samutprakarn, Thailand

Filed Mar. 13, 1997, Ser. No. 67,774

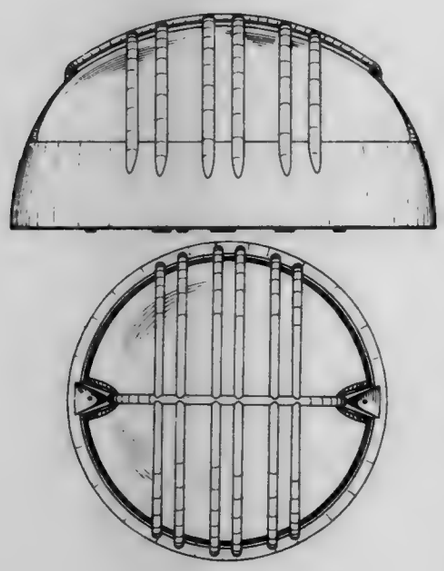
Term of patent 14 years

LOC (6) Cl. 26 - *05*

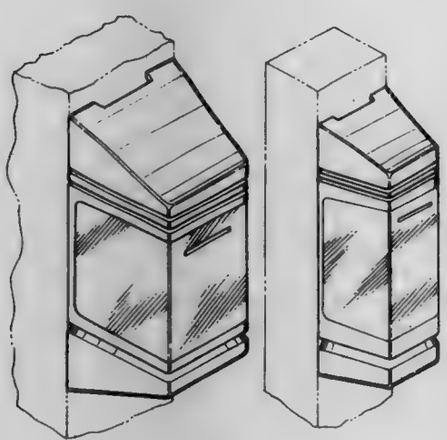
U.S. Cl. D26—85



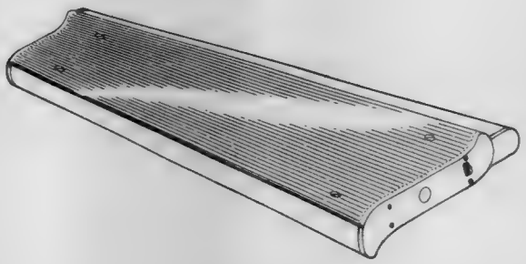
397,483
LUMINAIRE
Roberto Florato, Viale Del Lavoro, 9/11, 37030 Colognola Ai Colli, Italy, 37030
Filed Jul. 7, 1997, Ser. No. 73,364
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



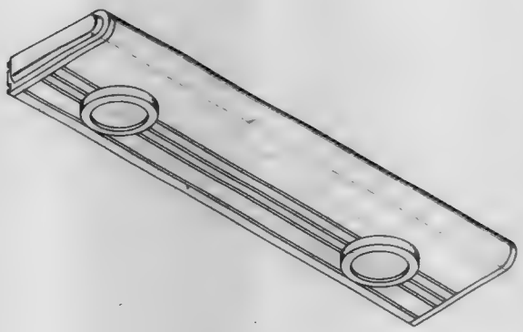
397,484
OUTDOOR LIGHTING FIXTURE FOR A DECK
Garry G. Ballard, 27 Greenwood La., Pontiac, Mich. 48340
Filed Nov. 14, 1997, Ser. No. 79,560
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



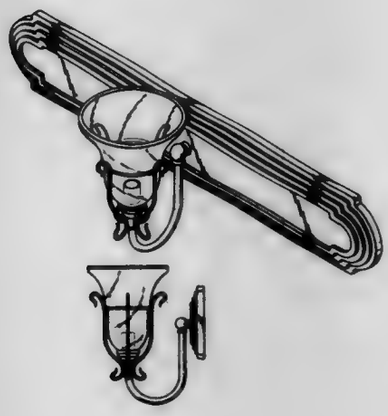
397,485
LIGHT FIXTURE
Alfred Kalthoff, Entrup, Germany, assignor to Staff GmbH & Co KG, Lemgo, Germany
Filed Oct. 15, 1996, Ser. No. 61,014
Claims priority, application Germany, Apr. 19, 1996, M 96 03 483.1
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—87



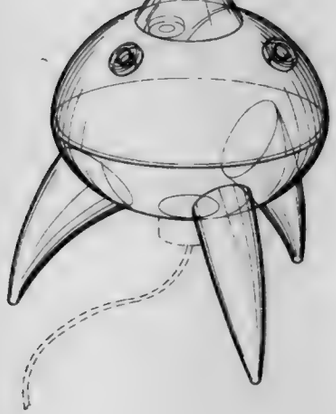
397,486
MODULAR LIGHT UNIT
Joseph D. Engle, Naperville; John R. Howard, West Chicago; Robert Machacek, Lombard, all of Ill., and George S. Boznos, Westchester, Ohio, assignors to JJI Lighting Group, Inc., Greenwich, Conn.
Division of Ser. No. 42,791, Aug. 17, 1995, Pat. No. Des. 386,278, which is a continuation of Ser. No. 31,998, Dec. 12, 1994, abandoned. This application Oct. 25, 1996, Ser. No. 64,249
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—87



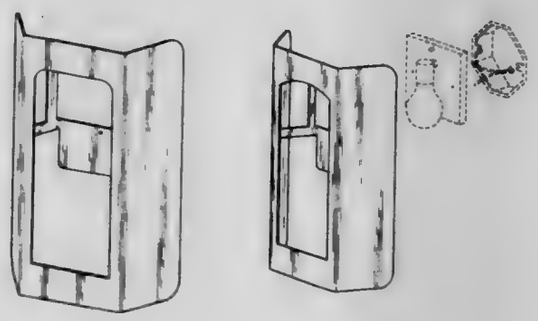
397,487
BATHROOM LAMP
Keen Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd, Taichung, Taiwan
Filed Jun. 30, 1997, Ser. No. 73,071
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—87



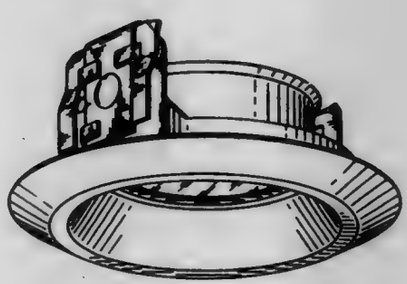
397,488
LAMP
Anthony Michael Ball, 72½ Thurman Ave., Columbus, Ohio 43206, and Mark Edward Lagergren, 175 E. Tompkins St., Columbus, Ohio 43202
Filed Sep. 16, 1997, Ser. No. 76,306
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—97



397,489
LIGHT FIXTURE
Erich Alexander, 1775 Narragansett Cir., S. Lake Tahoe, Calif. 96158
Filed Nov. 19, 1996, Ser. No. 62,589
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—118



397,490
TRIM FOR RECESSED LIGHT FIXTURE
Michel Lecluze, 1009 rue du Parc Industriel, St-Jean-Chrysostome, Québec, Canada, G6Z 1C5
Filed Jun. 30, 1997, Ser. No. 72,780
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—118



397,491
LAMP SHADE
Keen Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd, Taichung, Taiwan
Filed Jun. 30, 1997, Ser. No. 73,069
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—127



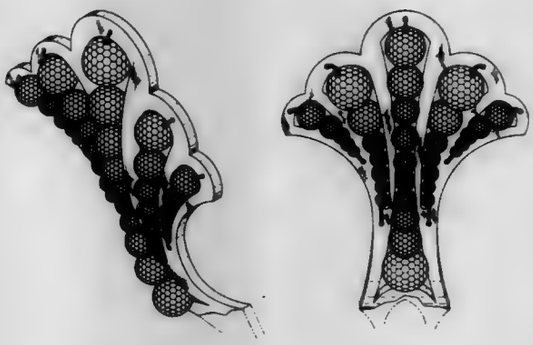
397,492
LAMP SHADE
Keen Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan
Filed Jun. 30, 1997, Ser. No. 73,068
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—127



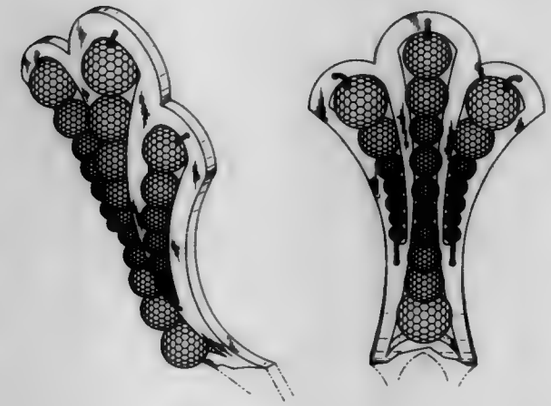
397,493
LAMP SHADE
Keen Hsu, 58, Ma Yuan West St., Taichung, Taiwan
Filed Jul. 26, 1997, Ser. No. 74,370
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—127



397,494
LIGHTING FIXTURE COMPONENT
Georg Bayer, Plattsburgh; Roslyn Yando, Brainardsville, and Andrew M. Schuyler, Plattsburgh, all of N.Y., assignors to Schonbek Worldwide Lighting, Inc., Plattsburgh, N.Y.
Division of Ser. No. 33,177, Jan. 6, 1995, Pat. No. Des. 389,264. This application Mar. 21, 1997, Ser. No. 68,535
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—154



397,495
LIGHTING FIXTURE COMPONENT
Georg Bayer, Plattsburgh; Roslyn Yando, Brainardsville, and Andrew M. Schuyler, Plattsburgh, all of N.Y., assignors to Schonbek Worldwide Lighting, Inc., Plattsburgh, N.Y.
Division of Ser. No. 33,178, Jan. 6, 1995, Pat. No. Des. 382,077. This application Mar. 20, 1997, Ser. No. 69,249
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—154



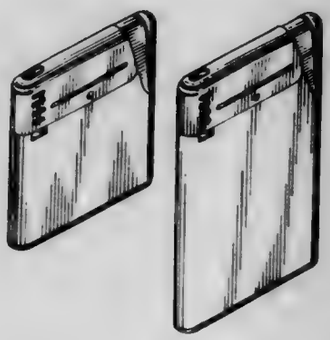
397,496
COMBINATION SMOKING DEBRIS RECEPTACLE AND TABLE
Carol S. Luedecke, 709 Bayou Dr., Destin, Fla. 32541
Filed Jul. 25, 1997, Ser. No. 74,135
Term of patent 14 years
LOC (6) Cl. 27 - *03*
U.S. Cl. D27—123



397,497
GAS LIGHTER
Yoshinitu Kaga, Shizuoka-ken, Japan, assignor to Tokai Corporation, Shizuoka-ken, Japan
Filed Sep. 25, 1996, Ser. No. 60,273
Term of patent 14 years
LOC (6) Cl. 27 - *05*
U.S. Cl. D27—154



397,498
CIGARETTE LIGHTER
Takaaki Segawa, Ichikawa, Japan, assignor to Kabushiki Kaisha Saromc, Tokyo, Japan
Filed Aug. 11, 1997, Ser. No. 74,770
Term of patent 14 years
LOC (6) Cl. 27 - *05*
U.S. Cl. D27—154



397,499

GAS LIGHTER

Masaki Saito, and Toshihiro Ichikawa, both of Shizuoka-ken, Japan, assignors to Tokai Corporation, Kanagawa-ken, Japan

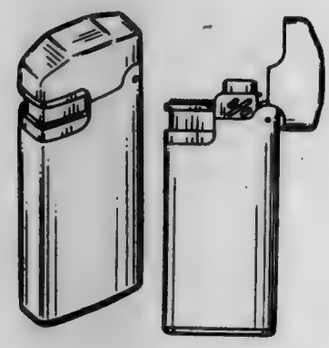
Filed Nov. 6, 1996, Ser. No. 62,055

Claims priority, application Japan, May 9, 1996, 8-13318

Term of patent 14 years

LOC (6) Cl. 27 - *05*

U.S. Cl. D27—157



397,500

GAS LIGHTER

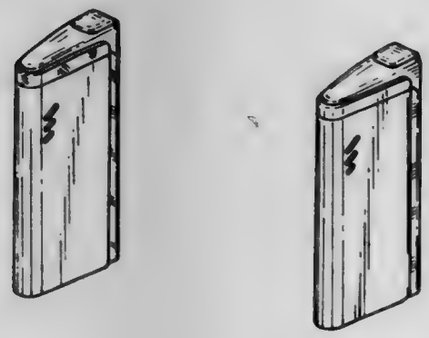
Yigal Cohen Harel, Nof Harim 15, Jerusalem, Israel

Filed Jul. 8, 1997, Ser. No. 73,423

Term of patent 14 years

LOC (6) Cl. 27 - *05*

U.S. Cl. D27—157



397,501

CIGARETTE LIGHTER

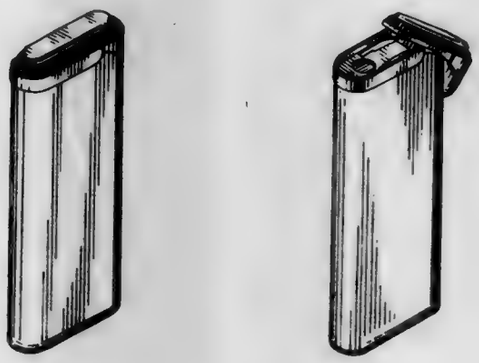
Takaaki Segawa, Ichikawa, Japan, assignor to Kabushiki Kaisha Sarome, Tokyo, Japan

Filed Aug. 11, 1997, Ser. No. 74,771

Term of patent 14 years

LOC (6) Cl. 27 - *05*

U.S. Cl. D27—157



397,502

CIGARETTE LIGHTER

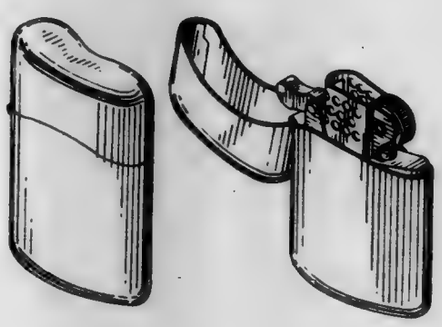
Takaaki Segawa, Ichikawa, Japan, assignor to Kabushiki Kaisha Sarome, Tokyo, Japan

Filed Aug. 28, 1997, Ser. No. 75,319

Term of patent 14 years

LOC (6) Cl. 27 - *05*

U.S. Cl. D27—159



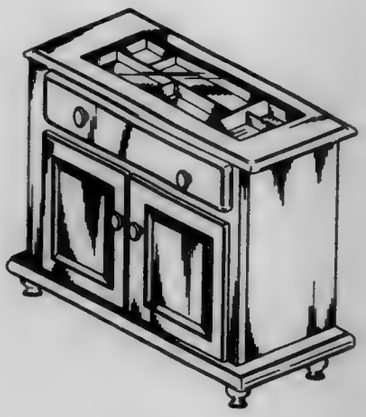
397,503
COMBINED CIGAR HOLDER AND BALL MARK REPAIR TOOL
Anthony Lalli, 554 McKendimen Rd., Medford, N.J. 08055, assignor to Anthony Lalli, and Michael Newland, both of Medford, N.J.
Filed Jul. 17, 1997, Ser. No. 73,767
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—183



397,504
COMBINED SMOKING CASE AND LIGHTER
Steven E. Zelenik, 1380 S. Elmhurst Rd. Apt. 115, Mount Prospect, Ill. 60056
Filed Jun. 17, 1997, Ser. No. 72,495
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—187



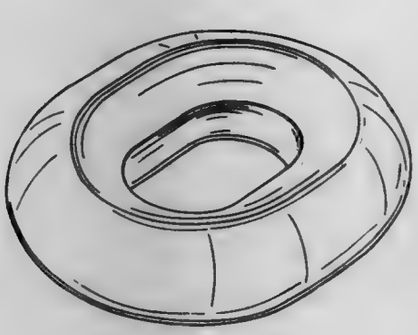
397,505
FLOOR HUMIDOR
Ronald D. McDiarmid, La Habra Heights, Calif., assignor to Gruga U.S.A., Industry, Calif.
Filed Jun. 12, 1997, Ser. No. 72,200
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—188



397,506
CIGAR CUTTER
Stefano Ricci, Rome, Italy, assignor to Asprey London Limited, London, United Kingdom
Filed Feb. 27, 1997, Ser. No. 68,542
Claims priority, application United Kingdom, Jan. 7, 1997, 2058829
Term of patent 14 years
LOC (6) Cl. 27 - *99*
U.S. Cl. D27—195



397,507
SOAP BAR
Phyllis R. Bern, 9801 E. Cholla St., Scottsdale, Ariz. 85260
Filed Aug. 29, 1997, Ser. No. 75,872
Term of patent 14 years
LOC (6) Cl. 28 - *02*
U.S. Cl. D28—8.1



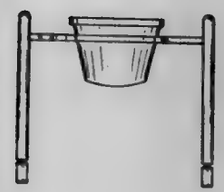
397,509
COMBINED WAX DEPILATOR AND BASE
Hagai Shvadron, Ramat Hasharon, Israel, assignor to Mepro Co. Kibbutz Hagoshrim (1987) Ltd., Upper Galilee, Israel
Filed Jan. 26, 1996, Ser. No. 49,660
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—10

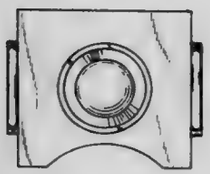


397,510
HAIR FASTENER
Betsy G. Sears, 876 Lexington St., Hemet, Calif. 92545
Filed Jun. 18, 1996, Ser. No. 56,283
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. 28—41



397,508
MOBILE BED/BATH SALON APPARATUS
Rose Rashid, 8230 NW. 20th Ct., Sunrise, Fla. 33313
Filed Aug. 30, 1996, Ser. No. 59,002
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—9

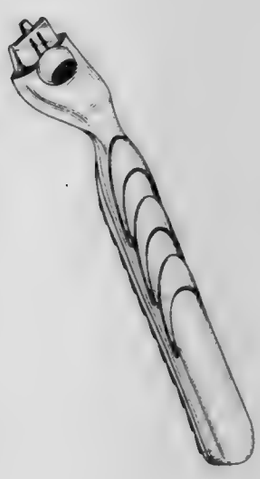




397,511
HAIR ACCESSORY
Joel P. Levine, Wyckoff, N.J., assignor to Hanover Accessories, Inc., Plymouth, Minn.
Filed Nov. 10, 1997, Ser. No. 79,237
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—41



397,512
RAZOR HANDLE
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Apr. 10, 1996, Ser. No. 53,027
The portion of the term of this patent subsequent to Mar. 17, 2012, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—48



397,513
ELECTRIC SHAVER
Aurelie Tu, West Hollywood, Calif.; Lorrie Vogel, Oswego, Oreg.; Vince Rozo, Granada Hills, Calif., and Akio Goto, Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Dec. 9, 1996, Ser. No. 63,439
Claims priority, application Japan, Jun. 6, 1996, 8-16892
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—51



397,514
COMBINED SET OF ARTIFICIAL NAILS AND SUPPORT THEREFOR
Paul R. Shilinsky, and Ross McCay, both of Reno, Nev., assignors to Cosmar Corporation, Garden Grove, Calif.
Filed Sep. 24, 1996, Ser. No. 61,068
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—56



397,515

NAIL FILE WITH ELONGATED HANDLE

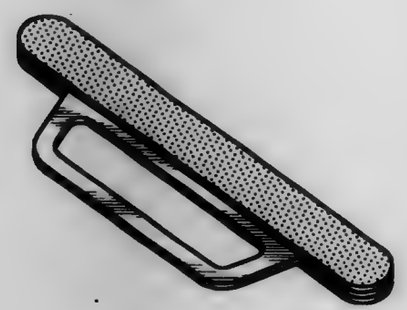
Larry P. Salvino, Dundee, Ill., assignor to Larry Salvino, Dundee, Ill.

Filed Oct. 8, 1996, Ser. No. 60,992

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—59



397,516

NAIL CLIPPER

Kiyoshi Ishida, Osaka, Japan, assignor to Green Bell Co., Ltd., Osaka, Japan

Filed Feb. 9, 1996, Ser. No. 50,076

Claims priority, application Japan, Jan. 5, 1996, 8-33

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—60



397,517

MANICURE CASE WITH BUFFING FILE

Jung Hoon Choyee, Samho Apt., 13 dong 903 ho, 1301-6, Seocho 4-dong, Seocho-ku, Seoul 137 074, Rep. of Korea

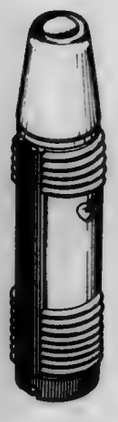
Filed Aug. 7, 1997, Ser. No. 74,552

Claims priority, application Rep. of Korea, Mar. 12, 1997, 1997-4398

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—61



397,518

CASE FOR POWDER

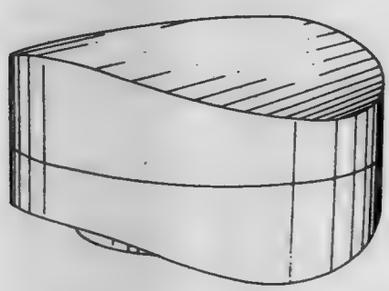
Aoshi Kudo, Tokyo, Japan, assignor to Shiseido Co., Ltd., Tokyo, Japan

Filed Aug. 22, 1997, Ser. No. 75,757

Term of patent 14 years

LOC (6) Cl. 28 - *03*

U.S. Cl. D28—91



397,519

PROTECTIVE MINE CLEARANCE HELMET

Vincent G. Crupi, Ottawa; Shaik M. Kalaam, Nepean; Alan J. S. Stanish, Ottawa; Richard J. L'Abbe, Ottawa, and Christopher P. Graham, Ottawa, all of Canada, assignors to Med-Eng Systems Inc., Ottawa, Canada

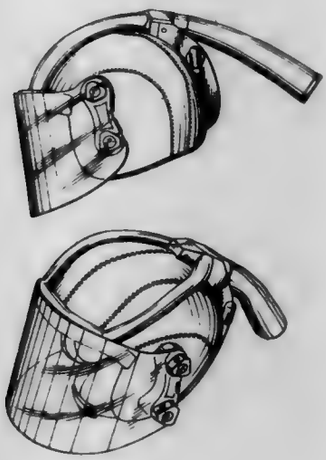
Filed Nov. 18, 1996, Ser. No. 62,539

Claims priority, application Canada, May 17, 1996, 1996-1166

Term of patent 14 years

LOC (6) Cl. 09 - *03*

U.S. Cl. D29—107



397,520

AQUARIUM TANK

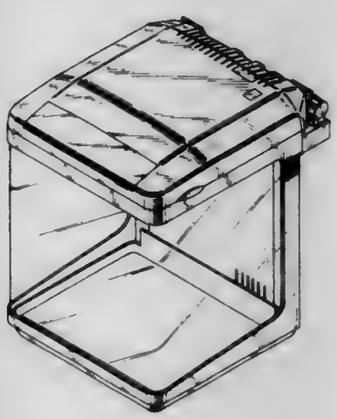
Minoru Ichikawa, Tokyo, Japan, assignor to Nisso Industry Co., Ltd., Tokyo, Japan

Filed Oct. 22, 1996, Ser. No. 61,317

Term of patent 14 years

LOC (6) Cl. 30 - *02*

U.S. Cl. D30—101



397,521

AQUARIUM

Takeshi Gomi, Osaka, Japan, assignor to Gex Corporation, Osaka, Japan

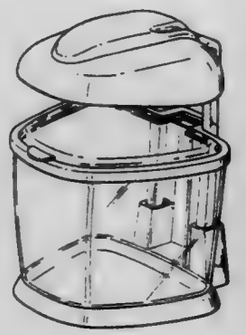
Filed May 20, 1997, Ser. No. 71,493

Claims priority, application Japan, Mar. 27, 1997, 9-9067

Term of patent 14 years

LOC (6) Cl. 30 - *02*

U.S. Cl. D30—101



397,522

AQUARIUM

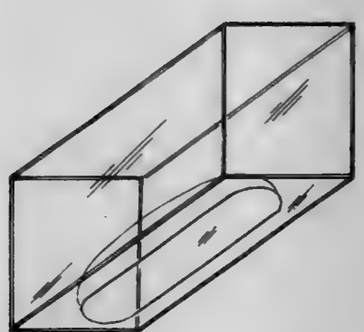
Steven P. Bishop, 5985 W. Herrick, Lake, Mich. 48632

Filed Aug. 20, 1997, Ser. No. 75,409

Term of patent 14 years

LOC (6) Cl. 30 - *02*

U.S. Cl. D30—101



397,523

HABITAT FOR ANIMALS AND PLANTS

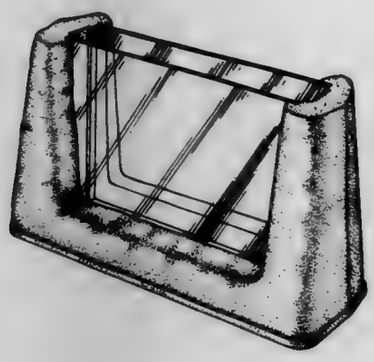
Richard M. Ray, 17 Aruba Bend, Coronado, Calif. 92118

Filed Aug. 15, 1996, Ser. No. 58,471

Term of patent 14 years

LOC (6) Cl. 30 - *02*

U.S. Cl. D30—108



397,524

PET PLAYHOUSE

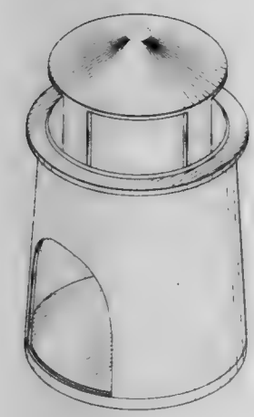
Charles S. P. Teng, Walnut, Calif., assignor to Tenwood International, Inc., Irwindale, Calif.

Filed Jun. 30, 1997, Ser. No. 73,120

Term of patent 14 years

LOC (6) Cl. 30 - *02*

U.S. Cl. D30—118



397,525

COMBINED BIRD PERCH AND CHAIN

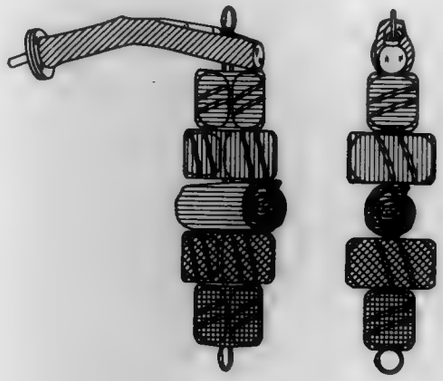
Debbie Edlebeck, and David J. Day, both of 10270 Atchison Rd., Dayton, Ohio 45458

Filed May 14, 1996, Ser. No. 54,451

Term of patent 14 years

LOC (6) Cl. 30 - *02*

U.S. Cl. D30—119



397,526

FEEDER FOR AN ANIMAL CAGE

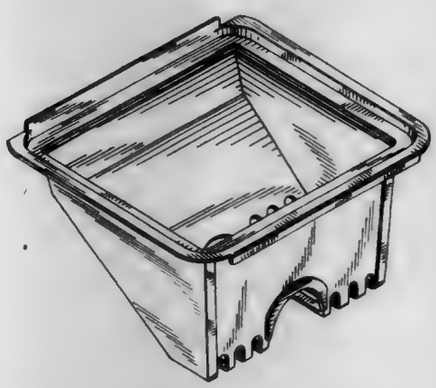
John E. Sheaffer, Perryville, Md., assignor to Lab Products Inc., Seaford, Del.

Filed Nov. 1, 1996, Ser. No. 61,904

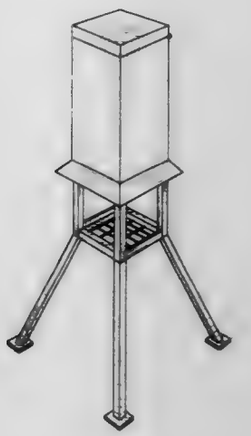
Term of patent 14 years

LOC (6) Cl. 30 - *02*

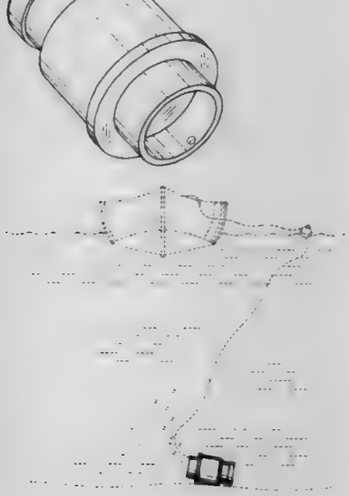
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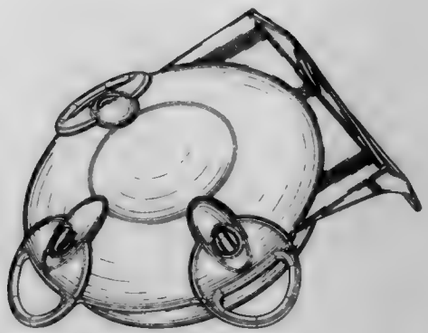
397,527
MINERAL BLOCK FEEDER FOR LIVESTOCK AND WILDLIFE
David A. Bruder; Ben E. Bruder, and Hubert G. Lovelady, all of 4352 Wildt Rd., San Antonio, Tex. 78222
Filed May 21, 1996, Ser. No. 54,771
Term of patent 14 years
LOC (6) Cl. 30 - *07*
U.S. Cl. D30—121



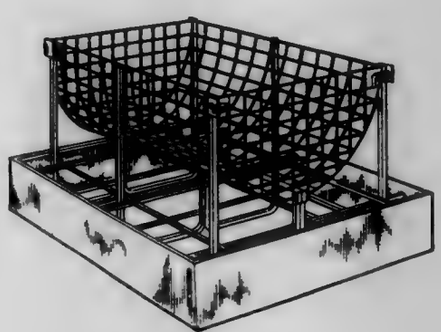
397,528
OFF-SHORE FISH FEEDER
Wayne Mowry, Largo, Fla., assignor to Brady Products, Inc., Clearwater, Fla.
Filed May 22, 1997, Ser. No. 71,187
Term of patent 14 years
LOC (6) Cl. 30 - *07*
U.S. Cl. D30—121



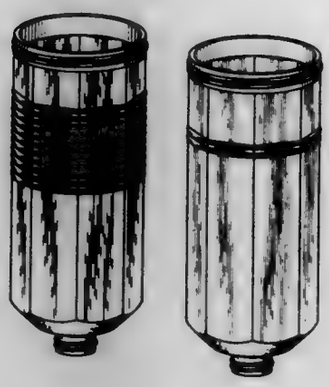
397,529
HUMMINGBIRD FEEDER
John M. Fuller, Apple Creek; Steven L. Paletti, and Oren Shai, both of Columbus, all of Ohio, assignors to Rubbermaid Specialty Products, Inc., Wooster, Ohio
Filed Nov. 12, 1996, Ser. No. 62,299
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—124



397,530
HAY SAVER
Kenneth Lile, 2003 Menefee St., Arlington, Tex. 76010
Filed Jul. 9, 1996, Ser. No. 56,819
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—131



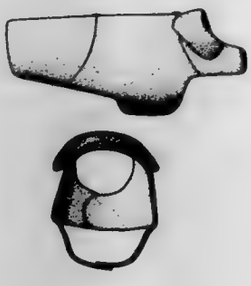
397,531
PET WATER BOTTLE
Marvin E. Huff, Hayward, Calif., assignor to Novalek, Inc., Hayward, Calif.
Filed Aug. 13, 1997, Ser. No. 74,940
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—132



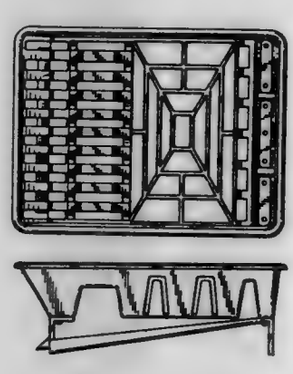
397,532
SADDLE ATTACHMENT FOR PROTECTING LEG AND CALF
Virginia C. Majewski, 32 Treasure Ave., Kensington, Conn. 06037
Filed Aug. 19, 1996, Ser. No. 58,596
Term of patent 14 years
LOC (6) Cl. 30 - *04*
U.S. Cl. D30—135



397,533
DOG COAT
Suzanne Lidis, 966 N. Lawrence St., Philadelphia, Pa. 19123
Filed Aug. 6, 1996, Ser. No. 58,009
Term of patent 14 years
LOC (6) Cl. 30 - *01*
U.S. Cl. D30—145



397,534
ELEVATED DISH DRAINING RACK
William Alvarez, 7858 W. 34 La. Apt#202, Hialeah, Fla. 33018
Filed Mar. 7, 1997, Ser. No. 67,452
Term of patent 14 years
LOC (6) Cl. 07 - *05*
U.S. Cl. D32—55



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25th DAY OF AUGUST, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Volvo: *See*—
Brokholc, Michal, 5,797,618, Cl. 280-689.000.

ABB Power T&D Company, Inc.: *See*—
Ochoa, J. Rafael; and Hirt, Robert L., 5,798,939, Cl. 364-493.000.

ABB Research Ltd.: *See*—
Börner, Gunter; and Sopka, Jörg, 5,797,590, Cl. 251-324.000.
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Takahashi, Kazuyoshi; Masuda, Kazuaki; Takayanagi, Yoshiaki; Suzuki, Akio; Kurata, Mitsuru; Abe, Tsutomu; Karita, Seiichiro; Tajika, Hiroshi; Koitabashi, Noriburni; Uchida, Haruo; Yano, Kentaro; Sugimoto, Hitoshi; and Matsubara, Miyuki, 5,798,775, Cl. 347-33.000.

Abe, Yoshinori, to Canon Kabushiki Kaisha. Data processing apparatus, network system, and method of controlling the same. 5,799,159, Cl. 395-287.000.

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Aruga, Tsuyoshi; Mochizuki, Wataru; Akiyama, Shuji; Hosaka, Hisatomi; and Abe, Yuichi, 5,798,651, Cl. 324-754.000.

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Littlejohn, Gavin Stuart; and Rodger, Albert Alexander, 5,798,981, Cl. 367-13.000.

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Suggs, Steven M.; and Meyer, Reid M., 5,797,982, Cl. 118-304.000.

Accent Incorporated: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

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Evans, Alfred J.; and Kandasamy, Balaji, 5,797,308, Cl. 83-618.000.

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Lovegrove, Ross Nigel; Pearson, Luke Neil; and Russell-Clarke, Peter Granville, 5,797,535, Cl. 227-120.000.

Accu-Sort Systems, Inc.: *See*—
Shreesha, Vasanth, 5,798,516, Cl. 235-472.000.

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Domanik, Richard A., 5,798,514, Cl. 235-464.000.

Ackley, H. Sprague, to Intermec Corporation. Method and apparatus for decoding unresolved profiles produced from relief formed symbols. 5,798,513, Cl. 235-462.000.

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Boehm, Herbert C., 5,798,071, Cl. 264-275.000.

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Marian, Vaughn R.; and Curley, Michael G., 5,797,848, Cl. 600-459.000.

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Ishii, Yasuyuki; Adachi, Hiroyuki; Kisu, Hiroki; and Ogata, Hiroaki, 5,799,233, Cl. 399-175.000.

Adachi, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. Liquid cooled A.C. generator for use in vehicle. 5,798,586, Cl. 310-54.000.

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Paulus, Wolfgang; Häussling, Lukas; Siemensmeyer, Karl; Etzbach, Karl-Heinz; Adam, Dieter; Simmerer, Juergen; Ringsdorf, Helmut; Schuhmacher, Peter; Haarer, Dietrich; and Kumar, Sundeep, 5,798,197, Cl. 430-56.000.

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Snow, David W.; Adams, Craig L.; Donlon, Brian S.; and Gifford, Hanson S., III, 5,797,933, Cl. 606-151.000.

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Chowdhury, Geeta; Adams, William; Conway, Brian; and Souritajan, Srinivasa, 5,798,180, Cl. 428-411.100.

ADC Solitra Oy: *See*—
Lapinlampi, Jari, 5,799,247, Cl. 455-90.000.

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Adolf, Günther: *See*—
Himmler, Adolf; Hauptmann, Rudolf; Hauel, Norbert; Adolf, Günther; and Swetly, Peter, 5,798,228, Cl. 435-69.510.

Adolor Corporation: *See*—
Farrar, John J.; Chang, An-Chih; Maycock, Alan L.; and Balogh, Imre, 5,798,093, Cl. 424-45.000.

Adolphi, Hans-Joachim: *See*—
Veloso, Artur; Geywitz, Klaus; Endler, Joachim; and Adolphi, Hans-Joachim, 5,799,250, Cl. 455-422.000.

Advanced Ceramics Corporation: *See*—
Moore, Arthur William, 5,798,075, Cl. 264-320.000.

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Christie, David S.; White, Scott A.; and Goddard, Michael D., 5,799,162, Cl. 395-381.000.
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Lozano, Leonel, 5,798,953, Cl. 364-715.100.
Runaldue, Thomas Jefferson; and Cheng, Yi, 5,798,661, Cl. 327-106.000.

Advanced Silicon Materials, Inc.: *See*—
Lord, Stephen M.; and Milligan, Robert J., 5,798,137, Cl. 427-213.000.

Advantest Corporation: *See*—
Nowara, Kenji; and Nakada, Juichi, 5,799,038, Cl. 375-224.000.

Aebischer, Patrick: *See*—
Dionne, Keith E.; Emerich, Dwaine F.; Hoffman, Diane; Sanberg, Paul R.; Christenson, Lisa; Hegre, Orion D.; Scharp, David W.; Lacy, Paul E.; Aebischer, Patrick; Vasooncellos, Alfred V.; Lysaght, Michael J.; and Gentile, Frank T., 5,798,113, Cl. 424-422.000.

AEgidius, Poul Erik, to Foss Electric A/S. Method for the conditioning of liquid samples. 5,798,221, Cl. 435-23.000.

AEP Industries, Inc.: *See*—
Wilkie, Andrew F., 5,798,174, Cl. 428-347.000.

Aerospace Corporation, The: *See*—
Beiting, Edward Joseph, 5,798,840, Cl. 356-437.000.

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Coquin, Laurent, 5,798,712, Cl. 340-970.000.

Aerts, Wilhelmus Joseph, to Oce-Nederland B.V. Method of and apparatus for correcting the output signals of an array of photodetector elements. 5,798,847, Cl. 358-464.000.

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AGA Technologies, Inc.: *See*—
Khizh, Adam, 5,797,356, Cl. 122-17.000.

Agatsuma, Tsutomu: *See*—
Mizukami, Tamio; Ogawa, Harumi; Nakai, Ryuichiro; Asai, Akira; Yamashita, Yoshinori; Ando, Katsuhiko; Agatsuma, Tsutomu; Akinaga, Shiro; Ouchi, Kozo; and Kawasaki, Hideki, 5,798,379, Cl. 514-441.000.

Agency of Industrial Science & Technology: *See*—
Sato, Yoshiyuki; Tamura, Shigeharu; Mochizuki, Shoichi; and Mihara, Toshiyuki, 5,798,134, Cl. 427-126.600.

Agfa-Gevaert AG: *See*—
Zahn, Wolfgang; and von Stein, Werner, 5,798,821, Cl. 355-46.000.

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Broddin, Dirk; and Deschuytere, Frank, 5,799,137, Cl. 395-109.000.
Verlinden, Bart; and Claes, Jan, 5,799,224, Cl. 396-619.000.

Agnew, Samuel G.: *See*—
Runciman, John; Agnew, Samuel G.; and Leighton, Ross Kenneth, 5,797,912, Cl. 606-69.000.

Ago, Kenji: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.

Agostini, Giorgio: *See*—
Zimmer, René Jean; Visel, Friedrich; Frank, Uwe Ernst; Materne, Thierry Florent Edmé; and Agostini, Giorgio, 5,798,405, Cl. 524-496.000.

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Tao, Yang, 5,799,105, Cl. 382-167.000.

Ahmad, Saiyad Salahuddin: *See*—
Chen, Weizhi; and Ahmad, Saiyad Salahuddin, 5,798,132, Cl. 426-305.000.

Ahn, Don: *See*—
Rivette, Kevin G.; Florio, Michael P.; Jackson, Adam; Ahn, Don; Rappaport, Irving S.; and Kurata, Deborah, 5,799,325, Cl. 707-500.000.

Ahn, Seung-Ho: *See*—
Jeong, Myung-Yung; Park, Sang-Ho; Chun, Oh-Gone; Ahn, Seung-Ho; Choy, Tae-Goo; and Kim, Hak-Seok, 5,799,122, Cl. 385-59.000.

Aiba, Shinnosuke: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.

Aihara, Katsuzo: *See*—
Okada, Michiya; Tanaka, Kazuhide; Yuasa, Toyotaka; Matsumoto, Toshimi; Aihara, Katsuzo; and Matsuda, Shinpei, 5,798,312, Cl. 505-230.000.

Aihara, Koutoku: *See*—
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,798,358, Cl. 514-254.000.

Aiki, Kiyoshi: *See*—
Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; Aoki, Kaoru; and Gohara, Shinobu, 5,799,014, Cl. 370-358.000.

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Gaddis, Edward Shafik, 5,798,061, Cl. 261-77.000.
Huling, Bruce Alan; Schneider, Charles Anthony; and Engle, George Martin, 5,797,195, Cl. 34-404.000.
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Akasaki, Tetsuro: *See*—
Nakano, Masaru; Suzaki, Masafumi; Akasaki, Tetsuro; and Saito, Masahiko, 5,799,235, Cl. 399-302.000.

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Mizoguchi, Akinobu; Nakanishi, Shinji; and Akasawa, Toshiyuki, 5,798,165, Cl. 428-160.000.

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Mizukami, Tamio; Ogawa, Harumi; Nakai, Ryuichiro; Asai, Akira; Yamashita, Yoshinori; Ando, Katsuhiko; Agatsuma, Tsutomu; Akinaga, Shiro; Ouchi, Kozo; and Kawasaki, Hideki, 5,798,379, Cl. 514-441.000.

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Tsutsui, Hiroshi; Komori, Kazunori; Nishiyama, Kazuhiro; Kuratomi, Yasunori; Takimoto, Akio; Akiyama, Koji; and Mizuguchi, Shinichi, 5,798,806, Cl. 349-29.000.

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Miyadera, Kazutaka; Yamada, Yuji; Takebayashi, Yuji; and Akiyama, Shinichi, 5,798,213, Cl. 435-7.400.

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Stenzel, Gerhard; Albert, Bodo; Buchmann, Klaus; and Schmidt, Alfred, 5,798,929, Cl. 364-478.010.

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Mas, Luis Rey, 5,797,288, Cl. 72-7.100.
Maurer, Michael, 5,799,078, Cl. 379-410.000.

Alcatel Converters: *See*—
Thereze, Jean-Marie, 5,798,578, Cl. 307-18.000.

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Veloso, Artur; Geywitz, Klaus; Endler, Joachim; and Adolphi, Hans-Joachim, 5,799,250, Cl. 455-422.000.

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Doshi, Rupa, 5,798,356, Cl. 514-249.000.

Alday, Marcelino G. Carpet dryer. 5,797,197, Cl. 34-618.000.

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Schlosberg, Richard Henry; Turner, David Wayne; Krevalis, Martin Anthony; Munley, William Joseph, Jr.; and Aldrich, Haven Scott, 5,798,319, Cl. 507-138.000.

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Blomgren, Ralf, 5,797,446, Cl. 165-81.000.

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Deshpande, Rajendra D.; and Alfano, James P., 5,797,826, Cl. 492-7.000.

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Bracha, Gabriel; Weissberger, Eytan; Volpert, Yehuda; and Algor, Ilan, 5,798,937, Cl. 364-490.000.

Allan, Richard Douglas: *See*—
Bointon, Richard Guy; Allan, Richard Douglas; and Funnell, Nicola Marie, 5,797,475, Cl. 194-317.000.

Allard, Randall N.: *See*—
Meyers, John E.; Price, Gregory G.; and Allard, Randall N., 5,797,908, Cl. 606-54.000.

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Tehim, Ashok; Fu, Jian-Min; and Rakhit, Sumanas, 5,798,350, Cl. 514-212.000.

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Wang, Matthew Y.; Maurer, Calvin R., Jr.; and Fitzpatrick, J. Michael, 5,799,099, Cl. 382-131.000.

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Jachowski, Douglas R., 5,798,676, Cl. 333-202.000.

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Burk, Robert M., 5,798,378, Cl. 514-438.000.
Davies, Peter A. J.; Chandraratna, Roshantha A.; and Benedict, Claude R., 5,798,372, Cl. 514-356.000.

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Trevino, Leo A.; Schutt, Ernest George; Klein, David H.; Tarara, Thomas E.; Weers, Jeffry G.; and Kabalnov, Alexey, 5,798,091, Cl. 424-9.520.

Allied Tube & Conduit Corporation: *See*—
Mild, Edward E.; and Seilheimer, Stephen E., 5,798,157, Cl. 428-36.900.

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Turner, Darin James; Goestenkors, Gregory Neil; and Zelenak, Daniel Gene, 5,797,622, Cl. 280-731.000.

Allier, Jean-Francois: *See*—
Reynes, Jean-Michel; Allier, Jean-Francois; and Caillaba, Jean, 5,798,475, Cl. 102-202.500.

Allison Advanced Development Company: *See*—
Rhodes, Jeffrey F., 5,797,725, Cl. 415-209.200.

Allouche, Claude: *See*—
Fichepain, Frederic, 5,797,609, Cl. 280-11.190.

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Drost, Johannes John Cornelis Isbister; Ploeg, Albert; and Rooduijn, Erik Jan, 5,797,702, Cl. 405-166.000.

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Mitchell, John C.; Heard, Alan James; Corbett, Steven Norman; and Daniel, Nicholas John, 5,799,273, Cl. 704-235.000.

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Alpine Engineered Products, Inc.: *See*—
Breivik, Arne Norris, 5,797,694, Cl. 403-231.000.

Alrutz, Herbert: *See*—
Elmis, Herbert; Koehne, Heinrich; Alrutz, Herbert; and Zibold, Hermann, 5,798,802, Cl. 348-689.000.

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Winnerl, Josef; and Alsmeier, Johann, 5,798,297, Cl. 438-622.000.

Altieri, Paul A.: *See*—
Billmers, Robert L.; and Altieri, Paul A., 5,797,984, Cl. 127-33.000.

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Fugere, Robert H.; and Alvernaz, James, 5,798,663, Cl. 327-205.000.

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Haak, Ronald P.; Gyory, J. Richard; and Theeuwes, Felix, 5,797,866, Cl. 604-20.000.

Amakawa, Katsumi: *See*—
Yamamoto, Haruo; Amakawa, Katsumi; Hayashi, Shuji; Fujimoto, Masaya; Matsuo, Koichi; Okumura, Ryuichi; and Hayashi, Shinji, 5,799,139, Cl. 395-114.000.

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Fichepain, Frederic, 5,797,609, Cl. 280-11.190.

Ambu International A/S: *See*—
Køhnke, Ole, 5,797,863, Cl. 602-18.000.

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American Industrial Design Co., Inc.: *See*—
Snoke, Phillip Jack; Mark, Michael John; Verdura, Javier; and Nagatani, Kevin A., 5,797,670, Cl. 362-119.000.

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Thomas, Bruce L.; Bass, Henry M.; Loftus, Lloyd K.; and Churchill, Russell J., 5,798,828, Cl. 356-141.300.

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Miller, Todd; Feller, Craig; Wickemeyer, Daniel; Potter, David; Purdom, Erik; and Le, Tuan, 5,797,199, Cl. 36-28.000.

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Li, Qi; Michels, William J.; Parrella, Ronald D.; Riley, Gilbert N., Jr.; Teplitsky, Mark D.; and Fleshler, Steven, 5,798,318, Cl. 505-501.000.
Manlief, Michael D.; Riley, Gilbert N., Jr.; Voccio, John; and Rodenbush, Anthony J., 5,798,678, Cl. 335-216.000.

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Tynan, John K., Jr.; and Chrzanowski, Deborah Anne, 5,798,175, Cl. 428-355.0EN.

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Amioka, James Minoru. Orthopedic body pillow. 5,797,153, Cl. 5-632.000.

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Lin, Xianghong; Johnson, William L.; and Peker, Atakan, 5,797,443, Cl. 164-4.100.

Amway Corporation: *See*—
Lehmkuhl, Bradley P.; and Mettler, Mark F., 5,797,506, Cl. 215-228.000.

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Fukushima, Yoshimitsu; Furusawa, Shigeharu; and Anada, Satoru, 5,798,998, Cl. 369-178.000.

Anagnostopoulos, Constantine N.; Kosman, Stephen Lawrence; and Chang, Win-chyi, to Eastman Kodak Company. Image sensor having ITO electrodes with overlapping color filters for increased sensitivity. 5,798,542, Cl. 257-232.000.

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Pedersen, Kristian; Hjordt, Tommy; and Andersen, Keld, 5,799,253, Cl. 455-527.000.

Andersen, Per Just; and Hodson, Simon K., to E. Khashoggi Industries, LLC. Hydraulically settable articles which include helically wound filaments. 5,798,151, Cl. 428-34.500.

Anderson, Erland D.: *See*—
Dudrey, Denis J.; Kahlbaugh, Brad; and Anderson, Erland D., 5,797,973, Cl. 55-372.000.

Anderson, Jeffrey P., to LTV Steel Company, Inc. Electrical steel with improved magnetic properties in the rolling direction. 5,798,001, Cl. 148-120.000.

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Olson, Kenneth F.; Gilman, Byron L.; and Anderson, Katherine H., 5,797,969, Cl. 607-5.000.

Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Mattos, Nelson; Niblack, Carlton Wayne; Petkovic, Draugutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, to International Business Machines Corporation. Relational database extenders for handling complex data types. 5,799,310, Cl. 707-102.000.

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He, Wei; and Anderson, Roger N., 5,798,982, Cl. 367-73.000.

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Ando, Kazuo; Shohoji, Tomokazu; Watanabe, Naoya; and Noguchi, Minoru, to Honda Giken Kogyo Kabushiki Kaisha. Capacitor. 5,798,906, Cl. 361-520.000.

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Furuya, Nobumasa; and Ando, Shigehito, 5,799,234, Cl. 399-277.000.

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Andrei, Maria; Capuano, Federico; and Mercuri, Sandro, to Enitricerche S.p.A.; and Olivetti Personal Computer S.p.A. Process for the preparation of a current collector in contact with the cathode material. 5,798,190, Cl. 429-192.000.

Angell, Robert C., to GTECH Corporation. Multiple-playstation game of chance. 5,797,794, Cl. 463-18.000.

Angert, Joseph C. pad encryption method and software. 5,799,090, Cl. 380-43.000.

Anglada, Lluis: *See*—
Foguet, Rafael; Anglada, Lluis; Sacristan, Aurelio; Castello, Josep M.; and Ortiz, Jose A., 5,798,361, Cl. 514-258.000.

Anselm, Klaus A.: *See*—
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Anson, Donald Stewart: *See*—
Wilson, Peter J.; Morris, Charles Phillip; Anson, Donald Stewart; Occhiodoro, Teresa; Bielicki, Julie; Clements, Peter Roy; and Hopwood, John Joseph, 5,798,239, Cl. 435-183.000.

Antesberger, Edward A., to United States of America, Army. Viewing device adaptor and insert for a vehicle. 5,798,862, Cl. 359-503.000.

Anthony, James M.: *See*—
Colson, Wendell B.; Swiszcz, Paul G.; and Anthony, James M., 5,797,442, Cl. 160-236.000.

Anton, Waifong Liew; Spinelli, Harry Joseph; and Patil, Anjali Abhimanyu, to Du Pont de Nemours, E. I., and Company. Acrylic polymer compounds. 5,798,426, Cl. 526-318.410.

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Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; Aoki, Kaoru; and Gohara, Shinobu, 5,799,014, Cl. 370-358.000.

Aoki, Katuyuki: *See*—
Kotoh, Satoru; Sakuma, Kiyoshi; Yoshida, Takayuki; Sano, Hiromi; Aoki, Katuyuki; Suzuki, Shin'ichi; Koizumi, Hideaki; Yamamoto, Kaoru; Matsushita, Kunio; Unno, Kenichi; and Oguma, Tomoko, 5,797,792, Cl. 454-320.000.

Aoki, Nobuhiro, to Fuji Photo Optical Co., Ltd. Rotary encoder. 5,799,218, Cl. 396-297.000.

Aoki, Yoshihito, to Yazaki Corporation. PCB multi-pole connector. 5,797,757, Cl. 439-101.000.

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Kogami, Yuji; Aono, Naomi; and Mochizuki, Daisuke, 5,798,382, Cl. 514-469.000.
AOS Holding Company: *See*—
Brandt, John H.; Meyer, Randall T.; and Plank, Bradley N., 5,797,358, Cl. 122-448.100.
Aoyama, Shoji: *See*—
Aoyama, Yoshitaka; and Aoyama, Shoji, 5,798,494, Cl. 219-98.000.
Aoyama, Tadamichi: *See*—
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Herscu, Paul, 5,797,839, Cl. 600-300.000.
Apple Computer, Inc.: *See*—
Boguraev, Branimir K., 5,799,268, Cl. 704-9.000.
Degen, Leo; Mountford, S. Joy; Mander, Richard; and Salomon, Gitta B., 5,799,280, Cl. 704-276.000.
Lynch, John; Nichols, James B.; Devon, Mark; and Soesbe, Jeff, 5,799,190, Cl. 395-680.000.
Applied Materials, Inc.: *See*—
Morita, Katsumi, 5,798,029, Cl. 204-298.160.
Applied Spectral Imaging Ltd.: *See*—
Garini, Yuval; Katzir, Nir; Wine, David; and Cabib, Dario, 5,798,262, Cl. 435-287.200.
Aptargroup, Inc.: *See*—
Gross, Richard A., 5,797,523, Cl. 222-498.000.
Aquaman (UK) Ltd.: *See*—
Gunzi, Laurence A.; and Malavasi, Massimo G. F., 5,797,683, Cl. 383-68.000.
Arai, Hirokazu, to Sumitomo Bakelite Company, Limited. Resin pulley. 5,797,819, Cl. 474-161.000.
Arai, Masayuki, to Sony Corporation. Method and apparatus for recording digital data by controlling the location of the edge of recording pits through modulation of a laser. 5,798,996, Cl. 369-59.000.
Arai, Takahiro: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.
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Sannomiya, Hitoshi; Tomita, Takashi; Yamazaki, Shunpei; and Arai, Yasuyuki, 5,797,999, Cl. 136-258.0PC.
Arai, Youichi, to Yazaki Corporation. Apparatus for measuring remaining capacity of a battery. 5,798,646, Cl. 324-427.000.
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Araki, Satoru; Shinoura, Osamu; Sato, Yuuichi; and Honda, Yuuji, to TDK Corporation. Apparatus for detecting a magnetic field using a giant magnetoresistance effect multilayer and method for preventing an output reduction of the multilayer. 5,798,896, Cl. 360-113.000.
Araki, Soichiro: *See*—
Nagahori, Takeshi; Hatakeyama, Ichiro; Araki, Soichiro; and Miyoshi, Kazunori, 5,798,664, Cl. 327-307.000.
Arbon, Rodney E.: *See*—
Meikrantz, David H.; Mincher, Bruce J.; and Arbon, Rodney E., 5,799,257, Cl. 588-200.000.
Archbold, John Michael: *See*—
Jordan, Norman James; and Archbold, John Michael, 5,798,799, Cl. 348-552.000.
Archibald, G. Kent; Curran, Timothy G.; Danielson, Orland H.; Poliac, Marius O.; and Thede, Roger C., to Medwave, Inc. Method and apparatus for calculating blood pressure of an artery. 5,797,850, Cl. 600-494.000.
ARCO Chemical Technology, L.P.: *See*—
Carroll, Kevin M.; Morales, Edrick; and Han, Yuan-Zhang, 5,798,313, Cl. 502-38.000.
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Ajika, Natsuo; Arima, Hideaki; and Hachisuka, Atsushi, 5,798,289, Cl. 438-239.000.
Arimilli, Murty N.: *See*—
Bischofberger, Norbert W.; Jones, Robert J.; Arimilli, Murty N.; Louie, Michael S.; Prisbe, Ernest J.; and Lee, William A., 5,798,340, Cl. 514-45.000.
Arimoto, Kazutami, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device with reduced current consumption in data holding mode. 5,798,976, Cl. 365-222.000.
Arisaka, Atsushi: *See*—
Kawabe, Tsuyoshi; Yoneguchi, Hiroshi; Arisaka, Atsushi; Kuwabara, Takahiro; and Aoyama, Tadamichi, 5,797,450, Cl. 165-167.000.
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Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.
Armament Systems and Procedures, Inc.: *See*—
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Armand, Michel: *See*—
Choquette, Yves; Armand, Michel; Simoneau, Martin; Gagnon, René; and Belanger, André, 5,798,191, Cl. 429-192.000.
Armbrust, Ronald Oran. Exercise grip for attachment to handlebars. 5,797,165, Cl. 16-114.00R.
Armstrong, John R.: *See*—
Pruszynski, Przemyslaw; and Armstrong, John R., 5,798,023, Cl. 162-181.100.
Armstrong, Steven, to Emhart Inc. Lockset. 5,797,286, Cl. 70-224.000.
Aromafarm Limited: *See*—
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Artistry In Motion Entertainment, Inc.: *See*—
Sterr, Ardina K.; and Bason, S. Clark, 5,797,304, Cl. 83-27.000.
Artysiewicz, John Stanley: *See*—
Zimmerman, William H.; Saturno, Thomas Frank; Artysiewicz, John Stanley; Trainham, James Arthur; Law, Clarence Garlan, Jr.; Newman, John Scott; and Eames, Douglas John, 5,798,036, Cl. 205-620.000.
Aruga, Tsuyoshi; Mochizuki, Wataru; Akiyama, Shuji; Hosaka, Hisatomi; and Abe, Yuichi, to Tokyo Electron Limited. Probe system. 5,798,651, Cl. 324-754.000.
Asada, Masahiro: *See*—
Yamashita, Koichi; Kobayashi, Hiroshi; and Asada, Masahiro, 5,798,403, Cl. 524-447.000.
Asada, Takafumi; and Morimoto, Masato, to Matsushita Electric Industrial Co., Ltd. Sleeve bore machining apparatus and sleeve bore machining method. 5,797,303, Cl. 82-1.110.
Asahi Breweries, Ltd.: *See*—
Yuuki, Toshifumi; Okumura, Yasushi; and Yamakawa, Hiroshi, 5,798,099, Cl. 424-185.100.
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Asahi, Hitoshi: *See*—
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Kogami, Yuji; Aono, Naomi; and Mochizuki, Daisuke, 5,798,382, Cl. 514-469.000.
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Asano, Kazutoshi: *See*—
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Nielsen, Henrik; and Ruchti, Christoph, 5,797,259, Cl. 60-39.182.
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Aspnes, David E.; Opsal, Jon; and Fanton, Jeffrey T., to Therma-Wave, Inc. Thin film optical measurement system and method with calibrating ellipsometer. 5,798,837, Cl. 356-369.000.
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Atkins, Hank. Method for naming computer files. 5,799,319, Cl. 707-200.000.
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Australian Membrane and Biotechnology Research Institute: *See*—
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Auvity, Michel, to Valeo Climatisation. Control device for a pivoting valve flap for a heating and/or air conditioning installation in a motor vehicle. 5,797,585, Cl. 251-80.000.
Au-Young, Janice; Cocks, Benjamin Graeme; Coleman, Roger; and Seilhamer, Jeffrey J., to Incyte Pharmaceuticals, Inc. Cyclic nucleotide phosphodiesterase. 5,798,246, Cl. 435-196.000.
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Cheng, Chih-liang Eric, 5,798,936, Cl. 364-489.000.
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Baader, Uwe; and Bruske, Johannes, to Barmag AG. Apparatus for heating an advancing yarn. 5,797,256, Cl. 57-290.000.
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Baca, Lawrence D.: *See*—
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Bach, Chinh T.: *See*—
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Badorc, Alain; Despeyroux, Pierre; Gully, Daniele; De Cointet, Paul; Frehel, Daniel; and Maffrand, Jean-Pierre, to Sanofi. Polysubstituted 3-acylamino-5-phenyl-1,4-benzodiazepin-2-one derivatives, process for their preparation and the pharmaceutical compositions containing them. 5,798,353, Cl. 514-221.000.
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Badyal, Jas Pal Singh: *See*—
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Bae, Tae Hong; Bae, Sang Yun; and Bae, Sang Il. Position-sensing light and alarm for a fishing rod. 5,797,211, Cl. 43-17.000.
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Baggen, Constant P.M.J., to U.S. Philips Corporation. Method fo error protected transmission, method of error protected reception of data and transmission system for transmission of data. 5,799,033, Cl. 375-200.000.
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Lokhoff, Gerardus C. P.; and Baggen, Constant P. M. J., 5,798,990, Cl. 369-47.000.
Bailey, Ronald L., to Young Dental Manufacturing Company, Inc. Autoclavable dental handpiece with disposable high speed turbine. 5,797,743, Cl. 433-126.000.
Bailey, Todd R., to TRW Inc. Initiator for an air bag inflator. 5,798,476, Cl. 102-202.700.
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Bakhmutsky, Michael; and Gornstein, Viktor L., to Philips Electronics North America Corporation. One-hot overflow matrix with enhanced architecture and one-hot variable length decoder incorporating the same. 5,798,717, Cl. 341-50.000.
Balagan Medical Inc.: *See*—
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Balcom, Richard W.: *See*—
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Baldwin, David Robert, to 3DLabs Inc. Ltd. Graphics rendering system with reconfigurable pipeline sequence. 5,798,770, Cl. 345-506.000.
Ballard Power Systems Inc.: *See*—
Fletcher, Nicholas J.; Boehm, Gustav A.; and Pow, Eric G., 5,798,186, Cl. 429-13.000.
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Balogh, Imre: *See*—
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Banta, Robert H., Jr.; Snyder, Richard A.; and Ossmann, William J., to Hewlett-Packard Company. Methods and apparatus for ultrasound imaging using combined scan patterns. 5,798,461, Cl. 73-625.000.
Barabash, Leonid S.; LaBarge, Aaron E.; and Wang, Angel T. M. Ultrasound apparatus for three dimensional image reconstruction. 5,797,845, Cl. 600-443.000.
Barak, Gideon: *See*—
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Barancyk, Steven V.; Verardi, Christopher A.; and Humphrey, William A., to PPG Industries, Inc. Flexible aminoplast-curable film-forming compositions providing films having resistance to acid etching. 5,798,145, Cl. 427-393.500.
Barath, Peter, to Interventional Technologies Inc. Balloon activated forced concentrators for incising stenotic segments. 5,797,935, Cl. 606-159.000.
Barclay, Bruce Alan, to Motorola, Inc. Three dimensional light intensity display map. 5,798,765, Cl. 345-426.000.
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Barnett, Ron; Finkle, Thomas W.; and Powers, Michael T., to Hewlett-Packard Company. Coaxial connector for mounting on a circuit substrate. 5,797,765, Cl. 439-63.000.
Barron, William; Kirk, Ian Alistair; and Clark, Alistair Bertram, to Downhole Products (UK) Limited. Casing centraliser. 5,797,455, Cl. 166-241.600.
Barta, John J.: *See*—
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Barth, Gunter; and Schmitz, Michael, to F. von Langsdorff Licensing Ltd. Paving elements for the water-permeable reinforcement of surfaces. 5,797,698, Cl. 404-39.000.
Bartholmes, Peter; Kaufmann, Michael; and Schwarz, Thomas, to Bitop Gesellschaft für Biotechnische Optimierung mbH. Method of culturing micro-organisms under a mutagenic influence. 5,798,253, Cl. 435-243.000.
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Albrecht, Hans-Peter; Böhm, Hans-Joachim; Brady, Kenneth Dale; Eckard, Peter; Ritter, Kurt; Talanian, Robert Vincent; and Walker, Nigel, 5,798,247, Cl. 435-212.000.
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Paulus, Wolfgang; Häussling, Lukas; Siemensmeyer, Karl; Etzbach, Karl-Heinz; Adam, Dieter; Simmerer, Juergen; Ringsdorf, Helmut; Schuhmacher, Peter; Haarer, Dietrich; and Kumar, Sundeep, 5,798,197, Cl. 430-56.000.
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Bass, Henry M.: *See*—
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Baynes, Ian David; and Hancock, Michael Thomas, to Nastech Europe Limited. Snap connection system. 5,797,696, Cl. 403-377.000.
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Culbertson, Russell D., 5,799,263, Cl. 701-117.000.
Beagle, Leo, to Dana Corporation. Hose coupling and method of securing a hose to the coupling by crimping. 5,797,629, Cl. 285-256.000.
Beal, Harold F., to Cove Corporation. Ammunition projectile having enhanced flight characteristics. 5,798,478, Cl. 102-501.000.
Beaudoin, Adrien R.; and Sevigny, Jean, to Universite de Sherbrooke. ATP-diphosphohydrolases. 5,798,241, Cl. 435-188.000.
Beck, Erich; Meyer, Frank; Poth, Ulrich; Siemensmeyer, Karl; Sierakowski, Claudia; Greif, Norbert; Ostertag, Werner; Zirnstein, Michael; Leyrer, Reinhold; Jahns, Ekkehard; Etzbach, Karl-Heinz; and Schuhmacher, Peter, to BASF Aktiengesellschaft. Process for coating and printing substrates. 5,798,147, Cl. 427-511.000.
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Beckè , Wolfgang; Esser, Joachim; Bublitz, Heiko; Kooths, Uwe; and Trecker, Oliver, to Mercedes-Benz AG. Adaptive hydropneumatic pulsation damper. 5,797,430, Cl. 138-30.000.
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Beckmann, Frank: *See*—
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Kusche, David W., 5,797,776, Cl. 440-52.000.
Moore, Prentice Gean; and Malak, Stephen P., 5,797,339, Cl. 114-144.00A.

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Buma, Shuuichi; Sano, Katsuyuki; and Kawata, Tetsuaki, to Toyota Jidosha Kabushiki Kaisha. Air suspension device of input force separation type of vehicle, having air chamber combined below shock absorber. 5,797,595, Cl. 267-64.270.

Bunce, Keith Thomas: *See*—
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Busby, James S., to GT Bicycles, Inc. Bicycle flex joint. 5,797,613, Cl. 280-284.000.

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Buschulte, Rainer; Rensch, Clemens; and Zahn, Erich, to Heidelberger Druckmaschinen AG. Method and apparatus for form-processing paper in a printing press. 5,797,320, Cl. 101-226.000.

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Busenhart, Peter: *See*—
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Bussard, Ray E.: *See*—
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Butcher, Christopher J.: *See*—
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Butler, Byron, to I.D. Golf. Golf club having shock isolation between the head and the shaft. 5,797,806, Cl. 473-310.000.

Butsch, Rainer; Hartley, John George; and Stickel, Werner, to International Business Machines Corporation. Correction of pattern dependent position errors in electron beam lithography. 5,798,528, Cl. 250-492.200.

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Buus, Henning: *See*—
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Buxton, Bradly J. Vest pack with back and neck supports. 5,797,143, Cl. 2-102.000.

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Byun, Kyung-Jin; Yoo, Ha-Young; Kim, Jong-Jae; Han, Ki-Chun; Kim, Jae-Suk; and Bae, Myung-Jin, to Electronics and Telecommunications Research Institute. Method for reducing pitch search time for vocoder. 5,799,271, Cl. 704-217.000.

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Caillaba, Jean: *See*—
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Lin, Xianghong; Johnson, William L.; and Peker, Atakan, 5,797,443, Cl. 164-4.100.

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Cushner, Stephen; Fan, Roxy Ni; Calisto, Edward Andrew; and Sheehan, Daniel Francis, Jr., 5,798,019, Cl. 156-425.000.

Callahan, Joseph P., Jr.; and Samuelson, Bruce E., to Minnesota Mining and Manufacturing Company. Adhesive sheet pad with center tabbed leader strip. 5,798,159, Cl. 428-40.100.

Callidus Technologies, Inc.: *See*—
Keller, Michael R.; Petersen, John R.; and Caffey, David, 5,797,332, Cl. 110-226.000.

CallManage: *See*—
Vulcan, Isaac; and Barak, Gideon, 5,799,072, Cl. 379-114.000.

Callware Technologies, Inc.: *See*—
Buitron, Robert, 5,799,307, Cl. 707-100.000.

Calogic Corporation: *See*—
Blanchard, Richard A., 5,798,549, Cl. 257-335.000.

Caloritech Inc.: *See*—
Holbeche, George L.; Moore, Bernard C.; Ten Eycke, David R.; and Williams, Carl D., 5,798,910, Cl. 361-809.000.

Calspan Corporation: *See*—
Ort, James R.; Lange, Douglas L.; Kiefer, Frederick W.; and Dennison, Raymond J., 5,799,098, Cl. 382-125.000.

Camire, Arthur J., to New Product Development, Inc. Pager operated control unit. 5,798,707, Cl. 340-825.440.

Campbell, Ewan J: *See*—
New, Roger R C; Charles, Stephen A; and Campbell, Ewan J, 5,798,117, Cl. 424-445.000.

Campbell, Joanne Marie, to Production Metal Forming, Inc. Nozzle for a fluid vacuum cleaning system. 5,797,161, Cl. 15-322.000.

Campbell, Robert J.: *See*—

McCurley, Jeffrey L.; Campbell, Robert J.; White, James E.; and Spence, Scott L., 5,798,639, Cl. 324-207.200.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Fortin, Jean; and Chevrette, Paul, 5,798,875, Cl. 359-813.000.

Canard, Bruno; and Sarfati, Simon, to Institut Pasteur. Derivatives utilizable in nucleic acid sequencing. 5,798,210, Cl. 435-6.000.

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Duboc, Robert M., Jr.; and Lovoi, Paul A., 5,798,604, Cl. 313-495.000.

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Abe, Yoshinori, 5,799,159, Cl. 395-287.000.
Fujimoto, Kosuke, 5,798,598, Cl. 310-323.000.
Harada, Takashi; and Fukuda, Ryoji, 5,798,758, Cl. 345-339.000.
Hiramatsu, Akira; Tanaka, Kiyoharu; and Takanaka, Yasuyuki, 5,798,773, Cl. 347-19.000.
Hoshi, Hidenori, 5,799,130, Cl. 386-124.000.
Hoshi, Koji; and Nishimura, Takeshi, 5,798,873, Cl. 359-692.000.
Ishihara, Masaaki, 5,799,222, Cl. 396-538.000.
Ishii, Yasuyuki; Adachi, Hiroyuki; Kisu, Hiroki; and Ogata, Hiroaki, 5,799,233, Cl. 399-175.000.
Katayama, Tatsushi; Suda, Shigeyuki; and Mitsutake, Hideaki, 5,798,791, Cl. 348-218.000.
Kimura, Makiko; Sugitani, Hiroshi; Sugama, Sadayuki; and Ishinaga, Hiroyuki, 5,798,778, Cl. 347-45.000.
Koizumi, Yutaka; and Watanabe, Yasutomo, 5,798,780, Cl. 347-50.000.
Nagano, Masatoshi, 5,798,876, Cl. 359-819.000.
Nakagawa, Katsumi, 5,798,284, Cl. 438-80.000.
Nakamura, Katsutoshi, 5,798,056, Cl. 252-299.010.
Nishii, Teruyuki; and Sugiyama, Norio, 5,798,771, Cl. 347-7.000.
Noguchi, Hiromichi; Kimura, Makiko; Katayama, Masato; Kashiwazaki, Akio; Nakata, Yoshie; and Nishioka, Yuko, 5,798,397, Cl. 522-81.000.
Ono, Takeshi; Yoshida, Takehiro; Kobayashi, Makoto; Takeda, Tomoyuki; Wada, Satoshi; Yokoyama, Minoru; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; and Yamada, Masakatsu, 5,798,789, Cl. 347-186.000.
Tachihara, Masayoshi; and Tamura, Yasuyuki, 5,798,772, Cl. 347-11.000.
Takahashi, Kazuyoshi; Masuda, Kazuaki; Takayanagi, Yoshiaki; Suzuki, Akio; Kurata, Mitsuru; Abe, Tsutomu; Karita, Seiichiro; Tajika, Hiroshi; Koitabashi, Noribumi; Uchida, Haruo; Yano, Kentaro; Sugimoto, Hitoshi; and Matsubara, Miyuki, 5,798,775, Cl. 347-33.000.
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Ueda, Noriyoshi; Hiroi, Masakazu; Nakamura, Shinichi; Mizuno, Yoshio; Sato, Chikara; Kaneko, Tokuharu; Isobe, Yoshinori; Yoshida, Akimaro; Hishikawa, Yasuhide; and Nakagawa, Tomohito, 5,799,237, Cl. 399-367.000.
Yamamoto, Harushige; and Okuno, Ryoji, 5,799,221, Cl. 396-535.000.
Yoshino, Motoaki; and Mikuni, Makoto, 5,798,710, Cl. 340-825.520.

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Ichikawa, Kazuo; and Nakajima, Toshiyuki, 5,797,937, Cl. 606-167.000.

Canton Gongora, Antonio; Cruz Fernandez, Carlos Jesús; Munagorri Enriquez, José Maria; and Rayo Ortigüela, Juan Carlos, to Telefonica de Espana S.A. Multi-position television monitor stand. 5,797,568, Cl. 248-122.100.

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Li, Yi; Cao, Liang; and Rosen, Craig A., 5,798,223, Cl. 435-69.100.

Cao, Yong: *See*—
Zhang, Chi; Yu, Gang; and Cao, Yong, 5,798,170, Cl. 428-212.000.

Capelle, Jean-Yves: *See*—
Brocard, Jean-Marie; Capelle, Jean-Yves; Desaulty, Michel André Albert; Perrin, Jean-Paul; and Varizat, Alain Michel, 5,797,266, Cl. 60-725.000.

Capone, Gaetano A.: *See*—
Cozewith, Charles; Ver Strate, Gary William; West, Roger K.; and Capone, Gaetano A., 5,798,420, Cl. 525-323.000.

Capozzi, Ann M.: *See*—
Greer, Carol S.; Capozzi, Ann M.; and Wilkins, Linda S., 5,798,046, Cl. 210-705.000.

Cappel, Jerome Paul: *See*—
Vogel, Alice Marie; Wahl, Errol Hoffman; Cappel, Jerome Paul; and Ward, Thomas Carl, 5,798,107, Cl. 424-400.000.

Capuano, Federico: *See*—
Andrei, Maria; Capuano, Federico; and Mercuri, Sandro, 5,798,190, Cl. 429-192.000.

Caras, Ingrid W.; and Winslow, John W., to Genentech, Inc. AL-1 neurotrophic factor antibodies. 5,798,448, Cl. 530-387.100.

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Wada, Yasutaro, 5,797,435, Cl. 141-81.000.

Cardiac Pacemakers, Inc.: *See*—
KenKnight, Bruce H., 5,797,967, Cl. 607-4.000.

Cardinal, David J.; and March, Rod G., to FirstFloor Software. Method and apparatus for collecting and displaying information from diverse computer resources. 5,799,318, Cl. 707-104.000.

Cardinali, Paolo: *See*—
Tagliaferri, Roberto; and Cardinali, Paolo, 5,797,243, Cl. 53-413.000.

Cardiometrics, Inc.: *See*—
Frisbie, Jeffrey S.; Kurse, Ravi S.; and Chechelski, Victor, 5,797,856, Cl. 600-585.000.

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Gruber, Patrick Richard; Kolstad, Jeffrey John; Witzke, David Roy; Hartmann, Mark Henry; and Brosch, Andrea Lee, 5,798,435, Cl. 528-354.000.
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Carlson, Gary; and Norris, Jeffrey A., to Baxter International Inc. Selectively programmable variable-voltage direct-current voltage source. 5,797,964, Cl. 607-2.000.

Carlson, Kirk D.: *See*—
Gallagher, Michael D.; Carlson, Kirk D.; Jeffery, Stuart S.; Lee, Ming J.; Grencions, Vilnis G.; and Snyder, Randall A., 5,799,084, Cl. 380-23.000.

Carlson, Richard W.: *See*—
Taylor, James E.; Bargenquest, Brian M.; and Carlson, Richard W., 5,797,318, Cl. 101-148.000.

Carlsund, Peter: *See*—
Blau, Staffan; Eneroth, Göran; and Carlsund, Peter, 5,799,153, Cl. 395-200.530.

Carney, Michael John: *See*—
LaRosa, Christopher Peter; Carney, Michael John; Becker, Christopher John; and Ling, Fuyun, 5,799,011, Cl. 370-335.000.

Carpenter, Neil Michael: *See*—
Anderson, Steven John; and Carpenter, Neil Michael, 5,798,331, Cl. 510-501.000.

Carrier, André; Couvrat-Desvergnes, Bruneau; de Lambert, Nicolas; and Pommaret, Bernard, to Compagnie Gervais Danone. Plastics material packaging for long-term storage of food. 5,797,510, Cl. 220-266.000.

Carrier Corporation: *See*—
Guo, Zhichao; and Dolan, Robert P., 5,797,273, Cl. 62-156.000.

Carroll, Kevin M.; Morales, Edrick; and Han, Yuan-Zhang, to ARCO Chemical Technology, L.P. Heterogeneous catalyst regeneration. 5,798,313, Cl. 502-38.000.

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McKenzie, Meredith; Carter, Jerry D.; and Ong, Nicholas, 5,799,177, Cl. 395-556.000.

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Cartmell, Daniel H.; Borgeas, David B.; Buus, Henning; Duffy, Keith S.; Gast, Mark E.; Huynh, Neal V.; Lochtie, David W.; and Piersbacher, Clifton A., to Boeing Company, The. System for backdrive of flight deck controls during autopilot operation. 5,797,564, Cl. 244-223.000.

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Martin, Stephen J.; Wiczer, James J.; Cernosek, Richard W.; Frye, Gregory C.; Gebert, Charles T.; Casaus, Leonard; and Mitchell, Mary A., 5,798,452, Cl. 73-32.00R.

Case Corporation: *See*—
Matousek, Robert A.; Burke, Dan J.; Payne, Jeffrey R.; and Volk, Charles E., 5,797,793, Cl. 460-111.000.
Snell, Richard A., Jr.; Nannet, Bryan L.; and Price, Ralph D., 5,797,649, Cl. 297-14.000.

Case, T. Scott: *See*—
Walker, Jay S.; and Case, T. Scott, 5,798,508, Cl. 235-380.000.

Casey, Todd; and Jackson, Alan, to Eaton Corporation. Dual self level valve. 5,797,310, Cl. 91-515.000.

Cash, Ronald J.: *See*—
Shah, Shaileah; Cash, Ronald J.; LaFreeda, Ronald; Aloye, James; and Mulvey, Joseph L., 5,798,398, Cl. 523-404.000.

Cassada, Rhonda: *See*—
Lao, Tim; Blankenship, Dennis; and Cassada, Rhonda, 5,798,972, Cl. 365-189.110.

Cassese, Bruno: *See*—
Herzberger, Erick; Nicolai, Jean-Marc; Cassese, Bruno; and Wacheux, Patrick, 5,798,908, Cl. 361-707.000.

Cassiday, Daniel R.; and Satterfield, David L., to Sun Microsystems, Inc. Synchronization system and method for plesiochronous signaling. 5,799,175, Cl. 395-551.000.

Castel, Philippe, to Bosch Systems de Freingae. Pressure-modifying valve and electric bypass. 5,797,662, Cl. 303-119.200.

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Castelli, Vittorio; Li, Chung Sheng; and Yu, Philip Shi-Lung, to International Business Machines Corporation. Apparatus and method for performing adaptive similarity searching in a sequence database. 5,799,301, Cl. 707-6.000.

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Foguet, Rafael; Anglada, Lluis; Sacristan, Aurelio; Castello, Josep M.; and Ortiz, Jose A., 5,798,361, Cl. 514-258.000.

Castiglione, Paul J.: *See*—
Droste, Timothy A.; Barnes, Charles W.; Kane, Mark J.; and Castiglione, Paul J., 5,799,260, Cl. 701-51.000.

Castonguay, Roger N.: *See*—
Smith, James I.; and Castonguay, Roger N., 5,797,483, Cl. 200-401.000.

Castro, Salvatore; and McGarry, Richard A., to United States Surgical Corporation. Surgical apparatus with articulating jaw structure. 5,797,959, Cl. 606-207.000.

Caterpillar Inc.: *See—*
Kauk, Zachary A.; and Walker, Richard D., 5,797,656, Cl. 298-1.00H.

Cathey, Cheryl A.; Saul, Tom; Bloom, Nicole D.; Ribi, Hans O.; Schwartz, Henry L.; Langford, Jeffrey B.; and Paul, David J., to Biocircuits Corporation. Device for use in analyte detection assays. 5,798,215, Cl. 435-7.900.

Catlow, John T.; Cohen, Marlene L.; Martinelli, Michael J.; Schaus, John M.; Swanson, Steven; Thompson, Dennis C.; and Wilson, Thomas M., to Eli Lilly and Company. Indazolecarboxamides. 5,798,367, Cl. 514-322.000.

Cato, John: *See—*
Marable, David; and Cato, John, 5,797,207, Cl. 42-71.020.

Cauwet, Danièle; and Sebag, Henri, to L'Oreal. Stable cosmetic, dermatological or pharmaceutical composition comprising selenium disulphide and at least one zinc salt. 5,798,121, Cl. 424-642.000.

Cavolina, Alejandro: *See—*
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Cebula, Edwin; and Kaminkow, Joseph E., to Sega Pinball, Inc. Multiple ball feed unit for pinball machine. 5,797,600, Cl. 273-121.00A.

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Robinson, James E., 5,798,251, Cl. 435-240.270.

Celgene Corporation: *See—*
Muller, George W.; Stirling, David I.; and Chen, Roger Shen-Chu, 5,798,368, Cl. 514-323.000.

Cell Therapeutics, Inc.: *See—*
Nudelman, Edward D., 5,798,386, Cl. 514-547.000.

Celltech Therapeutics, Limited: *See—*
Warrellow, Graham John, 5,798,373, Cl. 514-357.000.

Cellular Sciences, Inc.: *See—*
Katz, Stanley E., 5,798,388, Cl. 514-557.000.

Central Plastics Company: *See—*
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Centre International De Recherches Dermatologiques Galderma: *See—*
Bernardon, Jean-Michel; and Charpentier, Bruno, 5,798,354, Cl. 514-239.200.

Centre National d'Etudes Spatiales: *See—*
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Martin, Stephen J.; Wiczer, James J.; Cernosek, Richard W.; Frye, Gregory C.; Gebert, Charles T.; Casaus, Leonard; and Mitchell, Mary A., 5,798,452, Cl. 73-32.00R.

CertCo LLC: *See—*
Sudia, Frank Wells, 5,799,086, Cl. 380-23.000.

Certech Incorporated: *See—*
Uram, Stuart Z., 5,798,066, Cl. 264-85.000.

Chaban, Philip A., to Lear Corporation. Plastic drive block for vehicle seat adjuster. 5,797,293, Cl. 74-89.150.

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Alexander, Stephen B.; Chaddick, Steve W.; and Huber, David R., 5,798,855, Cl. 359-177.000.

Champagne, Blaise: *See—*
Lefebvre, Louis-Philippe; Pelletier, Sylvain; and Champagne, Blaise, 5,798,439, Cl. 528-489.000.

Chan, Hiang C.: *See—*
Fazan, Pierre C.; and Chan, Hiang C., 5,798,296, Cl. 438-592.000.

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Mattis, John S.; Milroy, James Craig; von der Lippe, Paul; Shimirak, Gerald L.; Chan, Paul S.; and Scarampi, Sebastiano, 5,797,759, Cl. 439-201.000.

Chan, Tsiu Chiu; and Smith, Gregory C., to SGS-Thomson Microelectronics, Inc. Method of forming raised source/drain regions in an integrated circuit. 5,798,278, Cl. 437-43.000.

Chandra, Tushar Deepak: *See—*
Badovinatz, Peter Richard; Chandra, Tushar Deepak; Gopal, Ajei Sarat; Kirby, Orvalle Theodore; and Pershing, John Arthur, Jr., 5,799,146, Cl. 395-182.020.

Chandraratna, Roshantha A.: *See—*
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Chang, An-Chih: *See—*
Farrar, John J.; Chang, An-Chih; Maycock, Alan L.; and Balogh, Imre, 5,798,093, Cl. 424-45.000.

Chang, Chun-Ye Susan; Webster, James Rodney; and Powell, Clinton C., II, to Motorola, Inc. Method and apparatus for decoding a two-level radio signal. 5,799,043, Cl. 375-286.000.

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Chiueh, Tzi-Dar; and Chang, Hwai-Tsu, 5,799,134, Cl. 395-24.000.

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Wang, Shih-Chieh; Chang, Wei-Wen; and Hsu, Zen-Dar, 5,799,207, Cl. 395-858.000.

Chang, Win-chyi: *See—*
Anagnostopoulos, Constantine N.; Kosman, Stephen Lawrence; and Chang, Win-chyi, 5,798,542, Cl. 257-232.000.

Chao, Dennis L.: *See—*
Li, Chia-Hsin; Pascovici, Andrei; Shu, Joseph S.; and Chao, Dennis L., 5,799,136, Cl. 395-109.000.

Chao, Ying-Chen: *See—*
King, Ming-Chu; Chen, Shih-Shiung; and Chao, Ying-Chen, 5,798,192, Cl. 430-5.000.

Chardin, Michel: *See—*
Fay, Jean-Baptiste; and Chardin, Michel, 5,798,153, Cl. 428-34.500.

Charles, Stephen A: *See—*
New, Roger R C; Charles, Stephen A; and Campbell, Ewan J, 5,798,117, Cl. 424-445.000.

Charlton, Steven C.; Johnson, Larry D.; Musho, Matthew K.; and Slomski, Dennis, to Bayer Corporation. Electrochemical biosensor. 5,798,031, Cl. 204-403.000.

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Alvarez, Eric; and Charton, Bruno, 5,797,229, Cl. 52-204.620.

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Chatterjee, Dilip K.; Majumdar, Debasis; and Blanton, Thomas N., to Eastman Kodak Company. Ceramic article. 5,798,308, Cl. 501-103.000.

Chazen, David: *See—*
van Os, Ron; and Chazen, David, 5,798,618, Cl. 315-248.000.

Chechelski, Victor: *See—*
Frisbie, Jeffrey S.; Kurse, Ravi S.; and Chechelski, Victor, 5,797,856, Cl. 600-585.000.

Chee, Alland: *See—*
Hwang, Jeffrey H.; Yu, Donald; Hsu, Calvin; and Chee, Alland, 5,798,635, Cl. 323-222.000.

Cheetham, William Estel: *See—*
Cuddihy, Paul Edward; and Cheetham, William Estel, 5,799,148, Cl. 395-183.020.

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Shibasaki, Mitsuhiro; Kubo, Hiroaki; Mori, Akira; Hatakeda, Hachiro; Takahashi, Tsutao; and Nakamura, Tetsuo, 5,797,465, Cl. 175-108.000.

Chemtrac Systems, Inc.: *See—*
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Issa, Darrell E.; Birchfield, Jerry W.; and Chen, Charles, 5,798,711, Cl. 340-825.310.

Chen, Ching-Shih, to Board of Governors for Higher Education State of Rhode Island and Providence Plantations, The. Antibodies specific for D-myo-inositol 1, 4, 5-trisphosphate and the enzyme-linked immunosorbent assay of D-myo-inositol 1, 4, 5-trisphosphate. 5,798,447, Cl. 530-387.100.

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Yang, Tsung-Lin; and Chen, Jiunn-Ren, 5,797,769, Cl. 439-571.000.

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Chen, Tong: *See—*
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Chen, Xiao: *See—*
Shue, Ho-Jane; Shih, Neng-Yang; Piwinski, John; Chen, Xiao; and Blythin, David J., 5,798,359, Cl. 514-255.000.

Chen, Yu-Ren Brian: *See—*
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Cheng, Chih-liang Eric, to Avant! Corporation. Congestion-driven placement method and computer-implemented integrated-circuit design tool. 5,798,936, Cl. 364-489.000.

Cheng, Josephine Min-Kung: *See—*
Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Mattos, Nelson; Niblack, Carlton Wayne; Petkovic, Draugutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, 5,799,310, Cl. 707-102.000.

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Cheng, Yihao: *See—*

Duck, Gary S.; and Cheng, Yihao, 5,799,121, Cl. 385-47.000.
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Abercrombie, David A.; Brownson, Rickey S.; and Cherniawski, Michael R., 5,798,568, Cl. 257-758.000.
Cherry Semiconductor Corporation: *See*—
Fugere, Robert H.; and Alvernaz, James, 5,798,663, Cl. 327-205.000.
Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See*—
Kanga, Vispi Dorab; Slavtcheff, Craig Stephen; and Znaiden, Alexander Paul, 5,798,111, Cl. 424-401.000.
Chevrette, Paul: *See*—
Fortin, Jean; and Chevrette, Paul, 5,798,875, Cl. 359-813.000.
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Woehleke, Steven P., 5,797,993, Cl. 134-8.000.
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Tarr, Phillip I.; Bilge, Sima S.; Besser, Thomas E.; and Vary, James C., Jr., 5,798,260, Cl. 435-252.300.
Chin, Albert K., to Origin Medsystems, Inc. Method for arterial harvest and anastomosis for coronary bypass grafting. 5,797,946, Cl. 606-190.000.
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Tanioka, Satoshi; Murata, Shizuo; Kono, Makoto; and Hirano, Masayuki, 5,798,810, Cl. 349-123.000.
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McCurley, Jeffrey L.; Campbell, Robert J.; White, James E.; and Spence, Scott L., 5,798,639, Cl. 324-207.200.

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Martinis, Susan A.; Sassanfar, Mandana; Kim, Sunghoon; Lee, Sang Ho; and Schimmel, Paul R., 5,798,240, Cl. 435-183.000.

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Meek, Matthew P.; and Hager, Frank M., 5,797,364, Cl. 123-90.360.

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Kotidis, Petros Amestis; Cunningham, James Frederick; Gozewski, Paul Fred; Klimek, Daniel Edward; and Woodroffe, Jaime A., 5,798,835, Cl. 356-358.000.

Curley, Michael G.: *See*—
Marian, Vaughn R.; and Curley, Michael G., 5,797,848, Cl. 600-459.000.

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Kapusta, Richard L.; and Jones, Christopher W., 5,799,176, Cl. 395-556.000.

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Guissin, Rami, 5,799,111, Cl. 382-254.000.

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Daewoo Electronics Co., Ltd.: *See*—
Joe, Yeo-Uk, 5,798,893, Cl. 360-109.000.
Lee, Jin Bang; Kim, Seon Kyu; and Kim, Suk Gu, 5,797,661, Cl. 301-111.000.

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Taylor, James E.; Bargenquest, Brian M.; and Carlson, Richard W., 5,797,318, Cl. 101-148.000.
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Kojima, Hiroshi; and Naito, Nobuo, 5,797,668, Cl. 362-31.000.
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Jorke, Helmut, 5,798,539, Cl. 257-197.000.
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Dana Corporation: *See—*
Beagle, Leo, 5,797,629, Cl. 285-256.000.
Rhoades, Michael L.; and Reynolds, James T., 5,797,800, Cl. 464-130.000.
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Anderson, Paul J.; and Tian, Qingsheng, 5,798,245, Cl. 435-194.000.
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Mitchell, John C.; Heard, Alan James; Corbett, Steven Norman; and Daniel, Nicholas John, 5,799,273, Cl. 704-235.000.
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Lattard, Didier; Lequepeys, Jean René; Piaget, Bernard; and Daniele, Norbert, 5,799,035, Cl. 375-206.000.
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Bertolotti, Raymond L.; and Blake, Thomas S., 5,797,749, Cl. 433-228.100.
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Bodeep, George E.; Darcie, Thomas Edward; Lu, Xiaolin; and Woodward, Sheryl Leigh, 5,798,858, Cl. 359-191.000.
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Okada, Akihiro, 5,797,329, Cl. 101-488.000.
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Purdy, Edmund Robert; and Daugherty, Charles W., 5,797,882, Cl. 604-164.000.
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Stevens, Kenneth A.; Daugherty, Jonathan M.; McGovern, David R.; and Jones, Joseph P., 5,797,503, Cl. 211-187.000.
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Elzenbeck, Manfred; Haar, Klaus; and Nathmann, Harald, 5,797,653, Cl. 297-300.500.
Davenport, Scott A.: *See—*
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David Sarnoff Research Center, Inc.: *See—*
Meehan, Paul Harquail; Isnardi, Michael Anthony; and Dieterich, Charles Benjamin, 5,798,788, Cl. 348-180.000.
Strolle, Christopher H.; and Jaffe, Steven T., 5,799,037, Cl. 375-233.000.
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Kühn, Gideon Jacobus; Davies, Donald Watts; and Rix, Simon Paul Ashley, 5,799,089, Cl. 380-37.000.
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Davis, Dean A.: *See—*
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Davis, Mary B.: *See—*
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Davis, R. Matt. Filter frame. 5,797,975, Cl. 55-493.000.
Davis, Scott Burdell, to Motorola, Inc. Method and apparatus for detecting key actuations. 5,798,716, Cl. 341-26.000.
Davis, Stephen J.: *See—*
Janes, Richard; and Davis, Stephen J., 5,797,814, Cl. 473-551.000.
Davis, Wayne Samuel; Whiteman, Robert Neil, Jr.; and Shirk, Michael Eugene, to Whitaker Corporation, The. Shielded electrical connector. 5,797,770, Cl. 439-607.000.
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Knowles, Donald P.; McGuire, Travis C.; Palmer, Guy H.; Davis, William C.; and McElwain, Terry F., 5,798,219, Cl. 435-7.930.
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Jackaman, David Peter; and Featherstone, William Barry, 5,797,274, Cl. 62-171.000.
Dawson, David A.: *See—*
Oswald, James I.; and Dawson, David A., 5,797,449, Cl. 165-165.000.
Dawson, Jeffrey C.; and Le, Hoang Van, to BJ Services Company. Gelation additive for hydraulic fracturing fluids. 5,798,320, Cl. 507-271.000.
Dawson, John, to Molins PLC. Cigarette manufacture. 5,797,406, Cl. 131-84.100.
Dawson, Ted: *See—*
Steiner, Joseph P.; Snyder, Solomon; Hamilton, Gregory S.; and Dawson, Ted, 5,798,355, Cl. 514-248.000.
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Sauer, Hartmut Karl, 5,797,242, Cl. 53-399.000.
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Mooi, Frederik Robert, 5,798,103, Cl. 424-240.100.
Debitus, Cécile: *See—*
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Debnath, Asim Kumar: *See—*
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Bontoux, Daniel; Paget, Monique; and Debourg, Jean-Pierre, 5,797,966, Cl. 607-3.000.
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DeCampli, William M. Apparatus and methods for providing selectively adjustable blood flow through a vascular graft. 5,797,879, Cl. 604-96.000.
de Carle, John Trevor, to Aspect Vision Care Ltd. Bifocal contact lenses. 5,798,817, Cl. 351-161.000.
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Badorc, Alain; Despeyroux, Pierre; Gully, Daniele; De Cointet, Paul; Frehel, Daniel; and Maffrand, Jean-Pierre, 5,798,353, Cl. 514-221.000.
Deere & Company: *See—*
Augie, Patrick, 5,797,250, Cl. 56-10.20J.
Goman, Gerald Eugene, 5,797,252, Cl. 56-17.200.
Parker, Paul David; and Wattonville, Jason Daniel, 5,797,460, Cl. 172-151.000.
Simon, Merlin Emmet; Teiga, Michael Timothy; and Lamb, Mark Edward, 5,797,458, Cl. 172-2.000.
Defaye, Jacques; Laine, Valérie; Djedaini-Pilard, Florence; and Perly, Bruno, to Commissariat A L' Energie Atomique. Use of natural cyclodextrins and their derivatives for the solubilization of platelet anti-aggregating agents from the family of ginkgolides. 5,798,342, Cl. 514-58.000.
Degen, Leo; Mountford, S. Joy; Mander, Richard; and Salomon, Gitta B., to Apple Computer, Inc. Recording method and apparatus and audio data user interface. 5,799,280, Cl. 704-276.000.
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Engel, Paul C.; and Rice, David, 5,798,234, Cl. 435-128.000.
Schmidt, Wolfgang; Thiele, Ulrich; Schauhoff, Stephanie; and Yu, Dahai, 5,798,433, Cl. 528-279.000.
Weise, Wolfgang; Wolmer, Roger; and Braumann, Peter, 5,798,468, Cl. 75-232.000.
Dehennau, Claude; Leo, Vito; and Cuvelliez, Charles, to SOLVAY (Société Anonyme). Process for moulding a thermoplastic material by injection onto a rotating core. 5,798,072, Cl. 264-312.000.
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Whitaker, Emert Robert; Deiterman, Lenard Keith; and Kramer, Michael Gerald, 5,797,163, Cl. 15-413.000.

Delamatyr, George, to Searex, Inc. Elevating unit for use with jack-up rig. 5,797,703, Cl. 405-198.000.

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Carrier, André; Couvrat-Desvergnes, Bruneau; de Lambert, Nicolas; and Pommaret, Bernard, 5,797,510, Cl. 220-266.000.

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Berntsson, Leif; and Hedberg, Bengt, 5,797,238, Cl. 52-612.000.

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Dell USA, L.P.: *See*—
Ross, S. Timothy, 5,799,195, Cl. 395-739.000.

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Larsen, Einar V.; and Delmerico, Robert W., 5,798,633, Cl. 323-207.000.

Delonzor, Russ; Mannheimer, Paul D.; Fein, Michael E.; and Hannula, Don, to Nellcor Puritan Bennett Incorporated. Shunt barrier in pulse oximeter sensor. 5,797,841, Cl. 600-323.000.

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Nowicki, Michael L.; and Naslund, Paul E., 5,797,420, Cl. 137-216.000.

Dembo, Ron S. Method and apparatus for optimal portfolio replication. 5,799,287, Cl. 705-36.000.

Demedash, Lloyd, to FIA Inc. Fastening a fabric cover to a vehicle surface. 5,797,643, Cl. 296-100.000.

De Mol, Eugen J.: *See*—
Wacyk, Ihor T.; Jayaraj, Vinit; and De Mol, Eugen J., 5,798,620, Cl. 315-307.000.

DenBaars, Steven P.: *See*—
Mishra, Umesh Kumar; and DenBaars, Steven P., 5,798,555, Cl. 257-410.000.

Denharco Inc.: *See*—
Dye, Stanley E., 5,797,438, Cl. 144-246.100.

Dennison, Raymond J.: *See*—
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Shirai, Noriaki; Hibino, Katsuhiko; and Nishimura, Takao, 5,798,727, Cl. 342-70.000.

de Queiroz, Ricardo L.; Luo, Jiebo; and Fan, Zhigang, to Xerox Corporation. Method and apparatus for wavelet-based universal halftone image unscreening. 5,799,112, Cl. 382-254.000.

Derderian, Ara J.; Minear, Daniel J.; Embree, Paul M.; and Mercs, James S., to Sony Corporation; and Sony Pictures Entertainment. Configurable cinema sound system. 5,798,818, Cl. 352-31.000.

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Schuh, Matthias; Dersch, Volker; and Baur, Walter, 5,797,241, Cl. 53-375.500.

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Bhatt, Ashwinkumar Chinuprasad; Desai, Subahu Dhirubhai; Duffy, Thomas Patrick; and Knight, Jeffrey Alan, 5,798,909, Cl. 361-764.000.

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Jepson, Steven C.; Dudar, Thomas E.; Zdeb, Brian D.; and Desecki, Vince C., 5,797,897, Cl. 604-412.000.

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Deutsch, Julius: *See*—
Schmitt-Willich, Heribert; Platzek, Johannes; Gries, Heinz; Schumann-Giampieri, Gabrielle; Weinmann, Hanns-Joachim; Vogler, Hubert; Deutsch, Julius; and Conrad, Juergen, 5,798,092, Cl. 424-9.364.

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Fend, Thomas; Hoffschmidt, Bernhardt; Pitz-Paal, Robert; and Rietbrock, Peter, 5,797,387, Cl. 126-680.000.

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Elmis, Herbert; Koehne, Heinrich; Alrutz, Herbert; and Zibold, Hermann, 5,798,802, Cl. 348-689.000.

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Lundvik, Kjell Per, 5,797,740, Cl. 433-29.000.

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Dewar, Kevin D.: *See*—
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Glenn, William E.; Dhein, Robert L.; Guediri, Fouad; Monteiro, Pedro; and Moreno, Adalberto, 5,798,795, Cl. 348-398.000.

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Dicioccio, Marco: *See*—
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Brahm, Martin; Dieris, Carl-gerd; Schmalstieg, Lutz; and Halpaap, Reinhard, 5,798,431, Cl. 528-73.000.

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Spronk, Johannes Fredericus, deceased; and Dik, by Anna, administratrix, 5,797,543, Cl. 229-116.100.

DiLorenzo, Daniel J. Method for reduction of neurosurgical edema, hemorrhage, and respiration-induced tissue movement. 5,797,403, Cl. 128-656.000.

Dionne, Keith E.; Emerich, Dwaine F.; Hoffman, Diane; Sanberg, Paul R.; Christenson, Lisa; Hegre, Orion D.; Scharp, David W.; Lacy, Paul E.; Aebischer, Patrick; Vasooncellos, Alfred V.; Lysaght, Michael J.; and Gentile, Frank T., to Brown University Research Foundation. Implantable biocompatible immunoisolatory vehicle for delivery of selected therapeutic products. 5,798,113, Cl. 424-422.000.

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Conley, Ralph F., Jr., 5,797,630, Cl. 281-15.100.

Direct-Haler A/S: *See*—
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Issa, Darrell E.; Birchfield, Jerry W.; and Chen, Charles, 5,798,711, Cl. 340-825.310.

Dirik, Akin: *See*—
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Mooney, Jonathan M.; Silverman, Jerry; and DiSalvo, Steven, 5,799,106, Cl. 382-172.000.

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Hendricks, John S.; Bonner, Alfred E.; and Wundertich, Richard E., 5,798,785, Cl. 348-1.000.

Discovision Associates: *See*—
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DiStefano, Thomas H.: *See*—
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Ditto, William L.: *See*—
Spano, Mark L.; Schiff, Steven J.; Gluckman, Bruce J.; and Ditto, William L., 5,797,965, Cl. 607-2.000.

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Dixon, Robert. Method and apparatus for data storage and retrieval. 5,799,308, Cl. 707-100.000.

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Walther, Brian W.; and Bethea, James R., 5,798,410, Cl. 524-570.000.

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Danks, John K.; Mazzola, Richard V.; and Johnson, Thomas R., 5,797,943, Cl. 606-185.000.

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Engellenner, Thomas J. Electronic locating systems. 5,798,693, Cl. 340-505.000.

England/Corsair, Inc.: *See*—
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Huling, Bruce Alan; Schneider, Charles Anthony; and Engle, George Martin, 5,797,195, Cl. 34-404.000.

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Eshenbach, Ralph F., to Trimble Navigation Limited. GPS receiver having a fast time to first fix. 5,798,732, Cl. 342-357.000.

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EST Group, Inc.: *See*—
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Paraschac, Joseph F.; Wales, Kenneth S.; Nobis, Rudolph H.; and Rupp, Kip, 5,797,938, Cl. 606-167.000.
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Ethridge, Jeffrey Noel, to Northrop Grumman Corporation. Interactive position guidance apparatus and method for guiding a user to reach a predetermined target position. 5,798,733, Cl. 342-357.000.

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Beck, Erich; Meyer, Frank; Poth, Ulrich; Siemensmeyer, Karl; Sierakowski, Claudia; Greif, Norbert; Ostertag, Werner; Zirnstein, Michael; Leyrer, Reinhold; Jahns, Ekkehard; Etzbach, Karl-Heinz; and Schuhmacher, Peter, 5,798,147, Cl. 427-511.000.
Paulus, Wolfgang; Häussling, Lukas; Siemensmeyer, Karl; Etzbach, Karl-Heinz; Adam, Dieter; Simmerer, Juergen; Ringsdorf, Helmut; Schuhmacher, Peter; Haarer, Dietrich; and Kumar, Sundeep, 5,798,197, Cl. 430-56.000.

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Elsinger, Herbert; Oberndorfer, Johannes; and Plappert, Friedrich, 5,798,486, Cl. 174-92.000.

Eustache, Jean-Pierre: *See—*
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Prunbauer, Kurt, 5,797,287, Cl. 70-409.000.

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Sato, Takehisa; Ueda, Hironari; Kuribayashi, Toshiaki; Asano, Satoshi; Niwa, Tadashi; Ueno, Hiroshi; Fujii, Takeaki; and Suzuki, Sadakatsu, 5,798,054, Cl. 252-68.000.
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Varadaraj, Ramesh; Robbins, Max Leo; Pace, Salvatore James; and Brons, Cornelius Hendrick, 5,797,700, Cl. 405-60.000.
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Faessler, Shawn Patrick: *See—*
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Fahey, James D.; McGrath, Michael C.; and Taylor, David A., to Iomega Corporation. Disk hub for a removable cartridge and spindle motor for using same. 5,798,888, Cl. 360-99.080.

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Elsdon, Stanley Robert; Fairles, Gordon Elford; and Cornford, Arthur S., 5,797,511, Cl. 220-326.000.

Falk, Theodore J.; Brown, W. Richard; Morris, Lawrence E.; Frenz, Norbert W., Jr.; Gillies, Douglas K.; and Konopa, Raymond S., to Wilson Greatbatch Ltd. Low power electromagnetic pump. 5,797,733, Cl. 417-416.000.

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Fallon, Kenneth Michael: *See—*
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Seaton, William Ernest; Fanning, Mark Joseph; Drager, Craig; Robinson, Ron; Morris, Roger James; and Gayral, Jean-Pierre Bernard, 5,798,084, Cl. 422-65.000.
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Farrall, George: *See—*
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Farrar, John J.; Chang, An-Chih; Maycock, Alan L.; and Balogh, Imre, to Adolor Corporation. Spray formulations of antihyperalgesic opiates and method of treating topical hyperalgesic conditions and pruritus therewith. 5,798,093, Cl. 424-45.000.

Fathi, Zakaryae: *See—*
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Fay, Jean-Baptiste; and Chardin, Michel, to Institut Francais du Petrole. Linking device for composite rods. 5,798,153, Cl. 428-34.500.

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Feehley, William Alfred, Jr.: *See—*
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FIA Inc.: *See*—
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Fierek, David P.; and Hubert, Jack J., to Fiskars Inc. Tool carrier-organizer. 5,797,491, Cl. 206-373.000.
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Finkle, Thomas W.: *See*—
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Fischer, Reiner; Wachendorff-Neumann, Ulrike; Erdelen, Christoph; Turberg, Andreas; and Mencke, Norbert, to Bayer Aktiengesellschaft. Azatrioxaspiroalkenes and their use as insecticidal, acaricidal and nematocidal agents. 5,798,376, Cl. 514-374.000.
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Fitch, Geoffrey N.; and Feigenbaum, Harvey, to Eastman Kodak Company. Enhancement of organ wall motion discrimination via use of superimposed organ images. 5,797,843, Cl. 600-437.000.
Fitch, Michael Crim, to Phoenix Closures, Inc. Closure package having a crimped liner pull tab and forming method therefor. 5,797,509, Cl. 220-258.000.
Fitzgerald, Joseph Michael, to International Business Machines Corporation. Method and apparatus for estimating durations of activities in forming a current system, based on past durations of activities in forming past systems. 5,798,950, Cl. 364-578.000.
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Fixemer, James V.: *See*—
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Flagg, Richard Edward, to Double E Company, Inc. Web edge control system. 5,797,532, Cl. 226-119.000.
Flaherty, Dennis K.; Gordon, Russell P.; Taylor, Paul M.; and Zielinski, Frank D., to Monsanto Company. Respiratory filter and sampling device. 5,797,974, Cl. 55-482.000.
Flannery, Michael R., to Gateway 2000, Inc. Method and apparatus of providing power management using a self-powered universal serial bus (USB) device. 5,799,196, Cl. 395-750.030.
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Rivette, Kevin G.; Florio, Michael P.; Jackson, Adam; Ahn, Don; Rappaport, Irving S.; and Kurata, Deborah, 5,799,325, Cl. 707-500.000.
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Vanderlinden, Glenn M., 5,797,203, Cl. 37-227.000.
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Quirk, Roderic P., 5,798,418, Cl. 525-314.000.
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Adamczyk, Andrew A., Jr.; Pakko, James D.; and Hepburn, Jeffrey S., 5,798,270, Cl. 436-143.000.
Droste, Timothy A.; Barnes, Charles W.; Kane, Mark J.; and Castiglione, Paul J., 5,799,260, Cl. 701-51.000.
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Gravenstein, Martin G.; Vigil, Michael A.; and Jaeckel, Silvia E., 5,799,182, Cl. 395-595.000.
Kalebjian, Christopher Joseph; Hamby, Stephen Joseph; and Coots, Wade, 5,797,589, Cl. 251-305.000.

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Khesin, Mark, 5,798,946, Cl. 364-551.010.

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Zähringer, Ulrich; Beckmann, Frank; and Moll, Hermann, 5,798,343, Cl. 514-54.000.

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Hansson, Göran, 5,799,032, Cl. 372-99.000.

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Freek, Michael Alan; Goodyear, Scott; and Patel, Jack, 5,798,079, Cl. 264-554.000.

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AEgidius, Poul Erik, 5,798,221, Cl. 435-23.000.

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Billes, Laurent; Simon, Jean-Claude; and Valiente, Ivan, 5,798,852, Cl. 359-158.000.

Francis, Andrew M.: *See—*
Bitzakidis, Stefanos; and Francis, Andrew M., 5,798,740, Cl. 345-92.000.

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Picataggio, Stephen K.; Zhang, Min; Franden, Mary Ann; Mc Millan, James D.; and Finkelstein, Mark, 5,798,237, Cl. 435-139.000.

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Zimmer, René Jean; Visel, Friedrich; Frank, Uwe Ernst; Materne, Thierry Florent Edmé; and Agostini, Giorgio, 5,798,405, Cl. 524-496.000.

Franke Inc.: *See—*
Lanz, Melchior, 5,797,150, Cl. 4-619.000.

Franz, Hans-Werner; and Nies, Berthold, to Merck Patent Gesellschaft mit Beschrankter Haftung. Process for the preparation of bone cements comprising active compounds. 5,797,873, Cl. 604-49.000.

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French, Dale A.; and Lawton, Kathryn V., to Pitney Bowes Inc. Process and apparatus for remote system inspection of a value dispensing mechanism such as a postage meter. 5,799,093, Cl. 380-51.000.

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Dolan, Donald T.; French, Dale A.; and Lawton, Kathryn V., 5,799,290, Cl. 705-410.000.

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Falk, Theodore J.; Brown, W. Richard; Morris, Lawrence E.; Frenz, Norbert W., Jr.; Gillies, Douglas K.; and Konopa, Raymond S., 5,797,733, Cl. 417-416.000.

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Vock, Curtis A.; Grealish, Kevin J.; Frey, Robert D.; Darcy, Dennis; and Bianco, Joseph, 5,798,519, Cl. 250-206.100.

Frick, Robert J. Adjustable live well bracket. 5,797,213, Cl. 43-54.100.

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Martin, Stephen J.; Wiczer, James J.; Cernosek, Richard W.; Frye, Gregory C.; Gebert, Charles T.; Casaus, Leonard; and Mitchell, Mary A., 5,798,452, Cl. 73-32.00R.

Fu, Jian-Min: *See—*
Tehim, Ashok; Fu, Jian-Min; and Rakhit, Sumanas, 5,798,350, Cl. 514-212.000.

Fugere, Robert H.; and Alvernaz, James, to Cherry Semiconductor Corporation. Precision hysteresis generator. 5,798,663, Cl. 327-205.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Suzuki, Akira, 5,799,262, Cl. 701-93.000.

Fuji Kiko Co., Ltd.: *See—*
Kataumi, Yoshimasa; and Ikegami, Yasuyuki, 5,797,295, Cl. 74-483.00R.

Fuji Photo Film Co., Ltd.: *See—*
Fukui, Kouta; Hirano, Mitsunori; and Inoue, Nobuaki, 5,798,204, Cl. 430-399.000.
Nakagoshi, Isao; Shimura, Hiromi; Katsumata, Ikuo; and Suzuki, Osamu, 5,797,247, Cl. 53-442.000.
Terashita, Takaaki, 5,798,511, Cl. 235-462.000.
Yamazaki, Yoshirou, 5,798,842, Cl. 358-302.000.

Fuji Photo Optical Co., Ltd.: *See—*
Aoki, Nobuhiro, 5,799,218, Cl. 396-297.000.
Minami, Itsuji, 5,797,837, Cl. 600-109.000.
Udagawa, Tetsuo; Kakizawa, Haruo; Nagata, Kouichi; and Tanaka, Kazuto, 5,798,863, Cl. 359-557.000.
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Fuji Xerox Co., Ltd.: *See—*
Furuya, Nobumasa; and Ando, Shigehito, 5,799,234, Cl. 399-277.000.
Hayashi, Naoki; and Shibuta, Kazuo, 5,798,766, Cl. 345-431.000.
Watanabe, Yoshiki, 5,799,185, Cl. 395-622.000.
Yamamoto, Susumu; Nakada, Toshio; Nakamura, Toshifumi; and Okabe, Gen, 5,798,843, Cl. 358-404.000.

Fujii, Nagatoshi: *See—*
Suda, Taiichiro; Fujii, Nagatoshi; Kawasaki, Masami; Moriguchi, Yoshiko; Iijima, Masaki; and Sera, Toshikuni, 5,798,087, Cl. 423-555.000.

Fujii, Takeaki: *See—*
Sato, Takehisa; Ueda, Hironari; Kuribayashi, Toshiaki; Asano, Satoshi; Niwa, Tadashi; Ueno, Hiroshi; Fujii, Takeaki; and Suzuki, Sadakatsu, 5,798,054, Cl. 252-68.000.

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Fujimaki, Shigeo; and Osada, Ryouichi, to NEC Corporation. OAM cell transmission method and system. 5,799,003, Cl. 370-244.000.
Fujimori, Koichi: *See*—
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Fujimoto, Hiroaki: *See*—
Ozawa, Shigeyuki; Nakase, Ryoichi; Hiki, Keiichi; and Fujimoto, Hiroaki, 5,797,775, Cl. 440-1.000.
Fujimoto, Kosuke, to Canon Kabushiki Kaisha. Vibration driven device. 5,798,598, Cl. 310-323.000.
Fujimoto, Masaya: *See*—
Yamamoto, Haruo; Amakawa, Katsumi; Hayashi, Shuji; Fujimoto, Masaya; Matsuo, Koichi; Okumura, Ryuichi; and Hayashi, Shinji, 5,799,139, Cl. 395-114.000.
Fujimoto, Shuichi; Kunii, Hisashi; Sato, Kazumi; Ura, Yoshiyuki; and Shimada, Takamichi, to Honda Giken Kogyo Kabushiki Kaisha. Shift control apparatus for automatic transmission. 5,797,821, Cl. 475-120.000.
Fujishiro, Kinya; and Uwajima, Takayuki, to Kyowa Hakko Kogyo Co., Ltd. Cholesterol oxidase. 5,798,242, Cl. 435-190.000.
Fujita, Hiroshi; and Obayashi, Kazuyoshi, to Nippondenso Co., Ltd. Inverter control system which dynamically varies a voltage vector applied to the inverter based on primary flux and torque deviations. 5,798,628, Cl. 318-805.000.
Fujita, Masahiko, to Nihon Kagaku Hakko K.K. Chemical luminescence apparatus. 5,797,669, Cl. 362-34.000.
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Tanaka, Hitoshi; and Fujita, Shunji, 5,797,717, Cl. 417-14.000.
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Shibayama, Atsushi; Suzuki, Masatoshi; and Fujita, Takanori, 5,798,871, Cl. 359-684.000.
Fujitani, Shin: *See*—
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Fujitsu Limited: *See*—
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Inagaki, Shinya; and Sumiya, Takeshi, 5,799,125, Cl. 385-127.000.
Ito, Masahiro; and Isato, Nobuhiko, 5,799,199, Cl. 395-750.060.
Iwashita, Hidetoshi, 5,799,183, Cl. 395-602.000.
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Matsuda, Hiroaki; Noda, Hideki; and Fukushima, Nobuhiro, 5,798,865, Cl. 359-583.000.
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Nakamura, Kimiaki; and Koike, Yoshio, 5,798,809, Cl. 349-119.000.
Nakayasu, Hirofumi; Kaiju, Yoshihiko; Kameya, Kotaro; Shimura, Takaki; Iida, Atsuo; and Tanida, Toshifumi, 5,798,779, Cl. 347-46.000.
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Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.
Tamura, Yuji; Itou, Hiroyuki; Takahashi, Tsukasa; Shima, Michikazu; Kawasaki, Yumiko; and Yamane, Kazuo, 5,798,857, Cl. 357-189.000.
Tanaka, Takao; Mukai, Masanori; Nagaoka, Takeshi; Nakamura, Kazuo; Hirooka, Takaaki; Shiota, Takuji; Kakiuchi, Yoshihiro; Tabei, Ryoichi; and Matsuo, Kouichi, 5,799,288, Cl. 705-43.000.
Taniguchi, Tomohiko; and Johnson, Mark, 5,799,131, Cl. 395-2.130.
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Watanabe, Mitsuo; Sato, Shinichi; Iwaguchi, Isao; and Shinoda, Ichiro, 5,798,510, Cl. 235-462.000.
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Fujiwara, Hideaki, to Sanyo Electric Co., Ltd. Semiconductor device having multiple control gates. 5,798,548, Cl. 257-319.000.
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Fujiwara, Mutsumi, to Kabushiki Kaisha Toshiba. Data processing system, data retrieval system, data processing method and data retrieval method. 5,799,299, Cl. 707-3.000.
Fukuchi, Kunio, to Fujitsu Limited. Control system for pen-input type computer. 5,799,107, Cl. 382-181.000.
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Fukui, Kouta; Hirano, Mitsunori; and Inoue, Nobuaki, to Fuji Photo Film Co., Ltd. Development processing method of ultrahigh-contrast black-and-white silver halide photographic material. 5,798,204, Cl. 430-399.000.
Fukunaga, Akio: *See*—
Murata, Kiyoshi; Komiya, Takashi; Nakanishi, Sadayuki; Sato, Yoshiharu; and Fukunaga, Akio, 5,797,583, Cl. 251-57.000.
Fukushima, Kazuyoshi; and Suzuki, Koubun, to Ricoh Company, Ltd. Order management system and method considering budget limit. 5,799,289, Cl. 705-400.000.
Fukushima, Nobuhiro: *See*—
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Fukushima, Takehiro: *See*—
Anayama, Chikashi; Fukushima, Takehiro; and Furuya, Akira, 5,799,027, Cl. 372-46.000.
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Fukushima, Yoshimitsu; Furusawa, Shigeharu; and Anada, Satoru, to Pioneer Electronic Corporation. Optical disc reproducing device. 5,798,998, Cl. 369-178.000.
Fuller, Everett, to Coyote Enterprises, Inc. Lug nut apparatus with square drive. 5,797,659, Cl. 301-35.620.
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Lang, Gregory J.; Fulmer, Brian H.; Parker, Todd S.; Miller, Harry W., II; Jackson, Scott A.; Spear, Steven A.; and Oba, Graig S., 5,797,624, Cl. 280-741.000.
Fulton, David L.; and Christensen, Eric R., to Microsoft Corporation. System and method for identifying data records using solution bitmasks. 5,799,184, Cl. 395-602.000.
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Funaki, Keisuke; Okada, Akihiko; and Uchida, Takaaki, to Idemitsu Petrochemical Co., Ltd. Styrenic resin composition and polystyrene oriented film. 5,798,172, Cl. 428-327.000.
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Fung, Henry Tat-Sang, to Vadem Corporation. Activity monitor for computer system power management. 5,799,198, Cl. 395-750.050.
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Furlan, Roberto; Knott, Ulrich; and Friedrich, Horst, to MTU Motoren- und Turbinen-Union Muenchen GmbH. Method for producing rotors with blades. 5,797,182, Cl. 29-889.210.
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Furukawa, Toshiharu; Mandelman, Jack Allan; and Tonti, William R., to International Business Machines Corporation. Trench isolated FET devices, and method for their manufacture. 5,798,553, Cl. 257-394.000.
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Fukushima, Yoshimitsu; Furusawa, Shigeharu; and Anada, Satoru, 5,798,998, Cl. 369-178.000.
Furuya, Akira: *See*—
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Fuse, Takeshi: *See*—
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Fuse, Yoshihide: *See*—
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Fusion Lighting, Inc.: *See*—
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Fuso Pharmaceuticals, Ltd.: *See*—
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G & G Intellectual Properties, Inc.: *See*—
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Benjey, Robert P.; and Bergsma, Rudolph, 5,797,434, Cl. 141-59.000.

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Dorchak, Thomas P.; Gangwal, Santosh K.; and Harkins, Scott M., 5,798,088, Cl. 423-567.100.

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Katzer, Johann; Lindermeir, Wolfgang; and Lopic, Franz, 5,797,633, Cl. 285-243.000.

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Sharples, Leigh William, 5,797,379, Cl. 123-527.000.

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Geissbuehler, Hans; and Gasser, Heinz, 5,797,989, Cl. 117-200.000.

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Cartmell, Daniel H.; Borgens, David B.; Buus, Henning; Duffy, Keith S.; Gast, Mark E.; Huynh, Neal V.; Lochtie, David W.; and Piersbacher, Clifton A., 5,797,564, Cl. 244-223.000.

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Kundmann, Michael Karl; Gubbens, Alexander Jozef; Friedman, Stuart Lawrence; and Krivanek, Ondrej L., 5,798,524, Cl. 250-305.000.

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Flannery, Michael R., 5,799,196, Cl. 395-750.030.

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Brannen, William; Myers, Aaron; Patel, Harish; and Miller, Philip R., 5,798,322, Cl. 508-442.000.

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Seaton, William Ernest; Fanning, Mark Joseph; Drager, Craig; Robinson, Ron; Morris, Roger James; and Gayral, Jean-Pierre Bernard, 5,798,084, Cl. 422-65.000.

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Muehllehner, Gerd; and Geagan, Michael, 5,798,527, Cl. 250-363.030.

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Schmucki, Peter; and Marti, Silvio, 5,797,572, Cl. 248-222.520.

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Martin, Stephen J.; Wiczer, James J.; Cernosek, Richard W.; Frye, Gregory C.; Gebert, Charles T.; Casaus, Leonard; and Mitchell, Mary A., 5,798,452, Cl. 73-32.00R.

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Jeunehomme, Sylvie; Evennou, Patrick; and Hachet, Joël, 5,797,646, Cl. 296-197.000.

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Huling, Bruce Alan; Schneider, Charles Anthony; and Engle, George Martin, 5,797,195, Cl. 34-404.000.

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Beresford, John M.; and Crowther, Paul A., 5,798,488, Cl. 181-102.000.

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Frost, John W.; Draths, Karen M.; and Ward, Timothy L., 5,798,236, Cl. 435-136.000.

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Caras, Ingrid W.; and Winslow, John W., 5,798,448, Cl. 530-387.100.
Somers, Todd C.; Elias, Kathleen A.; Clark, Ross G.; McDowell, Robert S.; Stanley, Mark S.; Burnier, John P.; and Rawson, Thomas E., 5,798,337, Cl. 514-19.000.

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Kern, Robert D., 5,797,540, Cl. 228-182.000.

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Cuddihy, Paul Edward; and Cheetham, William Estel, 5,799,148, Cl. 395-183.020.
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Hakkarainen, Juka Mikko; Lee, Nga Cheung; and Ho, Chung-Yih, 5,799,211, Cl. 395-891.000.
Hoffman, David M.; Mruzek, Michael Thomas; and Englert, August O., 5,799,057, Cl. 378-147.000.
Hum, Russell Wayne; Murray, Thomas Robert; and Faessler, Shawn Patrick, 5,799,054, Cl. 378-17.000.
Krabbenhoft, Herman Otto; and Webb, Jimmy Lynn, 5,797,995, Cl. 134-19.000.
Larsen, Einar V.; and Delmerico, Robert W., 5,798,633, Cl. 323-207.000.
Lee, Ching-Pang, 5,797,726, Cl. 416-96.00R.
Miller, Steven C.; Lillegard, Gregory A.; and Milon, Daniel, 5,797,847, Cl. 600-447.000.
Premerlani, William James; Adamiak, Mark Gerard; Sreenivas, Dingari; and Venugopal, Eyyunni, 5,798,932, Cl. 364-483.000.
Seyed-Bolorforosh, Mir Said; Washburn, Michael J.; and Becker, David D., 5,797,846, Cl. 600-447.000.
Smith, James I.; and Castonguay, Roger N., 5,797,483, Cl. 200-401.000.

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Levy, Julia; Miller, Joan W.; Gradoudas, Evangelos S.; Hasan, Tayyaba; and Schmidt-Erfurth, Ursula, 5,798,349, Cl. 514-185.000.

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Mollenauer, Kenneth H., 5,797,947, Cl. 606-192.000.

Generation II Orthotics, Inc.: *See*—
Taylor, Dean A., 5,797,864, Cl. 602-26.000.

Genly, Chris Hind: *See*—

Brothers, Harlan Jay; and Genly, Chris Hind, 5,799,083, Cl. 380-20.000.

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Dionne, Keith E.; Emerich, Dwaine F.; Hoffman, Diane; Sanberg, Paul R.; Christenson, Lisa; Hegre, Orion D.; Scharp, David W.; Lacy, Paul E.; Aebischer, Patrick; Vasooncellos, Alfred V.; Lysaght, Michael J.; and Gentile, Frank T., 5,798,113, Cl. 424-422.000.

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Pratt, Dan W.; Wesson, David S.; George, Kevin R.; and Rollins, James A., 5,797,464, Cl. 175-4.600.

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Liddell, John Macdonald; and George, Neil, 5,798,440, Cl. 528-499.000.

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Gerber, Robert H.: *See*—
Bortvedt, Gerald K.; and Gerber, Robert H., 5,799,305, Cl. 707-10.000.

Gerigk, Hans-Willi, to TRW Fahrwerksystems GmbH & Co. KG. Steering valve. 5,797,469, Cl. 180-441.000.

Gerling, Dieter; and Lürkens, Peter, to U.S. Philips Corporation. Fan unit generating gas streams. 5,797,718, Cl. 417-44.110.

Gess, Lawrence R. Luminaria frame. 5,797,671, Cl. 362-162.000.

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Politt, Joachim-Christian; Schroter, Holger; and Borchers, Kerstin, 5,798,698, Cl. 340-618.000.

Getty, Edward Eugene: *See*—
Goldstein, Alan Scott; Getty, Edward Eugene; and Scheper, William Michael, 5,798,326, Cl. 510-221.000.

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Veloso, Artur; Geywitz, Klaus; Endler, Joachim; and Adolphi, Hans-Joachim, 5,799,250, Cl. 455-422.000.

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Muntz, Richard; Berson, Steven; and Ghandeharizadeh, Shahram, 5,799,174, Cl. 395-508.000.

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Gheewala, Tushar R., to Duet Technologies, Inc. Method for direct access test of embedded cells and customization logic. 5,799,021, Cl. 371-22.100.

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Stenzel, Gerhard; Albert, Bodo; Buchmann, Klaus; and Schmidt, Alfred, 5,798,929, Cl. 364-478.010.

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Selle, Paul A.; Gietman, Peter J., Jr.; Dutter, Timothy R.; Jansen, Thomas C.; and Slama, Frank M., 5,797,828, Cl. 493-225.000.

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Stevens, John H.; Reitz, Bruce A.; Roth, Alex T.; Peters, William S.; and Gifford, Hanson S., 5,797,960, Cl. 606-213.000.

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Snow, David W.; Adams, Craig L.; Donlon, Brian S.; and Gifford, Hanson S., III, 5,797,933, Cl. 606-151.000.

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Kaehler, David L., 5,798,931, Cl. 364-479.010.

Gilbert, Dale A., to Blalack, Carl L. Tool for cutting rectilinear openings for electrical outlet boxes in sheet material. 5,797,189, Cl. 30-500.000.

Gilbert, Richard, to Stanley Works Limited, The. Hand-held utility knife. 5,797,188, Cl. 30-330.000.

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Bischofberger, Norbert W.; Jones, Robert J.; Arimilli, Murty N.; Louie, Michael S.; Prisbe, Ernest J.; and Lee, William A., 5,798,340, Cl. 514-45.000.

Gill, Peter L.: *See*—
Ramsey, Joseph W.; and Gill, Peter L., 5,797,344, Cl. 116-206.000.

Gillette Company, The: *See*—
Vu, Tuan M.; Sane, Jayant N.; and Coe, Craig M., 5,798,094, Cl. 424-65.000.

Gillies, Douglas K.: *See*—
Falk, Theodore J.; Brown, W. Richard; Morris, Lawrence E.; Frenz, Norbert W., Jr.; Gillies, Douglas K.; and Konopa, Raymond S., 5,797,733, Cl. 417-416.000.

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Olson, Kenneth F.; Gilman, Byron L.; and Anderson, Katherine H., 5,797,969, Cl. 607-5.000.

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GKN Automotive AG: *See*—
Deschatrettes, Gérard; and Verbrugge, François, 5,797,799, Cl. 464-111.000.

Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, to Kimberly-Clark Worldwide, Inc. Toilet training aid providing a dimensional change. 5,797,892, Cl. 604-361.000.

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Gross, William E.; and Ellwanger, Charles G., 5,797,605, Cl. 279-4.050.

Glenn, William E.; Dhein, Robert L.; Guediri, Fouad; Monteiro, Pedro; and Moreno, Adalberto, to Florida Atlantic University. Method and apparatus for encoding and decoding video signals. 5,798,795, Cl. 348-398.000.

Gluckman, Bruce J.: *See*—
Spano, Mark L.; Schiff, Steven J.; Gluckman, Bruce J.; and Ditto, William L., 5,797,965, Cl. 607-2.000.

Gobbetti, Carlo: *See*—
Berner, Markus; and Gobbetti, Carlo, 5,798,839, Cl. 356-402.000.

Godard, Pascal C.: *See*—
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Christie, David S.; White, Scott A.; and Goddard, Michael D., 5,799,162, Cl. 395-381.000.

Godec, Richard D.; O'Neill, Kevin J.; and Kosenka, Paul K., to Sievers Instruments, Inc. Apparatus for the measurement of dissolved carbon in deionized water. 5,798,271, Cl. 436-146.000.

Goelz, John F.: *See*—
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Crispie, Fimbarr J.; Rodgers, Bertram J., III; and Goenawan, Sofjan, 5,798,692, Cl. 340-501.000.

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Turner, Darin James; Goestenkors, Gregory Neil; and Zelenak, Daniel Gene, 5,797,622, Cl. 280-731.000.

Gofuku, Tatsuya: *See*—
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Eng, Kian Teng; and Goh, Jing Sua, 5,798,564, Cl. 257-686.000.

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Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; Aoki, Kaoru; and Gohara, Shinobu, 5,799,014, Cl. 370-358.000.

Gohl, David W.: *See*—
Rolando, John J.; Klos, Terry J.; Thomas, John E.; Gohl, David W.; and Buchanan, Allison, 5,797,986, Cl. 134-6.000.

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Goix, Philippe J., to Guava Technologies, Inc. Apparatus for monitoring substances in organisms. 5,798,222, Cl. 435-29.000.

Gold, Peter N. Temporary tarp-like barrier assembly, kit and method therefor. 5,798,163, Cl. 428-100.000.

Golding, Andrew R.: *See*—
Schabes, Yves; Roche, Emmanuel; and Golding, Andrew R., 5,799,269, Cl. 704-9.000.

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Goldman, Michael J.; Kuhn, James O.; and Christen, Richard P., 5,797,815, Cl. 473-588.000.

Goldstein, Alan Scott; Getty, Edward Eugene; and Scheper, William Michael, to Procter & Gamble Company, The. Automatic dishwashing compositions comprising cobalt III catalysts. 5,798,326, Cl. 510-221.000.

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Vock, Curtis A.; Grealish, Kevin J.; Frey, Robert D.; Darcy, Dennis; and Bianco, Joseph, 5,798,519, Cl. 250-206.100.

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Frank, Robert S.; Wyatt, James L.; Gong, Weiyan; Rodriguez, Carlos M.; and Leif, Robert C., 5,798,827, Cl. 356-39.000.

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Goodby, John William; Toyne, Kenneth Johnson; Hird, Michael; and Lewis, Robert Andrew, to United Kingdom of Gt. Britain & N. Ireland of Defence Evaluation and Research Agency, Secretary of State for Defence in her Britannic Majesty's Government of the. Liquid crystal compounds, mixtures and devices. 5,798,058, Cl. 252-299.610.

Goode, Richard, to ReSound Corporation. Hearing improvement device. 5,797,834, Cl. 600-25.000.

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Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; Goodman, Todd A.; Vercande, David J.; and Busch, Eric M., 5,799,156, Cl. 395-200.670.

Goodrich, Raymond P., Jr.; and Park, Sang Chul, to Baxter International Inc. Method of inactivation of viral and bacterial blood contaminants with quinolines as photosensitizer. 5,798,238, Cl. 435-173.300.

Goodridge, Gilbert W.; and Komichak, Michael J., to NCR Corporation. Task workflow management system and method including an external program execution feature. 5,799,297, Cl. 707-1.000.

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Blodgett, James R.; Bouchard, Bruce R.; Goodwin, Michael W.; and Ward, Robert B., 5,798,902, Cl. 361-149.000.

Goody Products, Inc.: *See—*
Montgomery, Holliday S., 5,797,755, Cl. 434-429.000.

Goodyear, Scott: *See—*
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Goodyear Tire & Rubber Company, The: *See—*
Howald, John Alan; and Rohweder, Steven Craig, 5,798,124, Cl. 425-32.000.
Thayer, Ronda Renee Bayer; Benedict, Robert Leon; Chlebina, Larry Edward; Jacobs, Bernard Byron; Laurich, Thomas Andrew; Macesich, Walter George; Majerus, Norbert; Rambacher, John Sylvester; Rex, William Allen; Rooney, Timothy Michael; Sobhanie, Mohammad Eghbal; Yovichin, Albert James; Wolfe, David Lowell; and Hentosz, Daniel Patrick, 5,798,127, Cl. 425-117.000.
Zanzig, David John; Hsu, Wen-Liang; Halasa, Adel Farhan; and Matrana, Barry Allen, 5,798,408, Cl. 524-505.000.
Zimmer, René Jean; Visel, Friedrich; Frank, Uwe Ernst; Materne, Thierry Florent Edmé; and Agostini, Giorgio, 5,798,405, Cl. 524-496.000.

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Flaherty, Dennis K.; Gordon, Russell P.; Taylor, Paul M.; and Zielinski, Frank D., 5,797,974, Cl. 55-482.000.

Gornstein, Viktor L.: *See—*
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Tomczak, Charles, 5,797,319, Cl. 101-216.000.

Gossler, Thomas; and Stark, Gerhard, to International Business Machines Corporation. Dynamic workload balancing. 5,799,173, Cl. 395-500.000.

Goto, Masaru: *See—*
Kawamura, Motoshi; and Goto, Masaru, 5,797,686, Cl. 384-544.000.

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Goulter, Barbara: *See—*
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Goulter, Victor H.; and Goulter, Barbara, 5,797,890, Cl. 604-351.000.

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Gouriou, Eliane; Raynal, Annie; Baudet, Régine; Hulaud, Jean-Pierre; and Biesse, Jean-Paul, to Parfums Christian Dior. Method and apparatus for determining the foundation makeup color that substantially reproduces a person's natural skin color. 5,797,750, Cl. 434-100.000.

Gouvis, George A., II. Strain reducing weighted jogging belt. 5,797,823, Cl. 482-105.000.

Gouws & Scheepers (Proprietary) Limited: *See—*
Bloomberg, Martin David; Scholtz, Coenraad Jacobus Beukes; and Brink, Ian Francois, 5,798,346, Cl. 514-137.000.

Gozewski, Paul Fred: *See—*
Kotidis, Petros Amestis; Cunningham, James Frederick; Gozewski, Paul Fred; Klimek, Daniel Edward; and Woodroffe, Jaime A., 5,798,835, Cl. 356-358.000.

GPI NIL Holdings, Inc.: *See—*
Steiner, Joseph P.; Snyder, Solomon; Hamilton, Gregory S.; and Dawson, Ted, 5,798,355, Cl. 514-248.000.

Gradoudas, Evangelos S.: *See—*
Levy, Julia; Miller, Joan W.; Gradoudas, Evangelos S.; Hasan, Tayyaba; and Schmidt-Erfurth, Ursula, 5,798,349, Cl. 514-185.000.

Graef, H. Thomas: *See—*
Meyer, Jerry L.; Wellbaum, Wayne D.; and Graef, H. Thomas, 5,797,599, Cl. 271-272.000.

Graf & CIE AG: *See—*
Graf, Ralph A.; and Geisser, Stefan, 5,797,788, Cl. 451-28.000.

Graf, Hans Rudolf: *See—*
Ziada, Samir; and Graf, Hans Rudolf, 5,798,465, Cl. 73-861.210.

Graf, Ralph A.; and Geisser, Stefan, to Graf & CIE AG. Grinding a mounted card clothing. 5,797,788, Cl. 451-28.000.

Graffeo, Robert; and Pickow, David. Collapsible article support. 5,797,578, Cl. 248-453.000.

Grande, Dodd H.; Meibock, Antonin A.; and Svensson, John E., to K-2 Corporation. Ventilated in-line skate. 5,797,610, Cl. 280-11.220.

Granger, Edward M.: *See—*
Cook, Robert L.; Herrmann, Eric M.; Offner, Nelson; Granger, Edward M.; Dirik, Akin; and Baca, Lawrence D., 5,798,943, Cl. 364-526.000.

Grant, Alexander, to Norfrost Limited. Refrigeration apparatus. 5,797,451, Cl. 165-171.000.

Gravenstein, Martin G.; Vigil, Michael A.; and Jaeckel, Silvia E., to Ford Motor Company. Multiple thread micro-sequencer apparatus and method with a single processor. 5,799,182, Cl. 395-595.000.

Graves, Thomas Howard, Jr.: *See—*
Smith, Jack Edward; Bedi, James J.; Sierocuk, Thomas J.; and Graves, Thomas Howard, Jr., 5,797,536, Cl. 227-175.100.

Gray, Philip: *See—*
Hollier, Michael P.; and Gray, Philip, 5,799,133, Cl. 395-23.000.

Grealish, Kevin J.: *See—*
Vock, Curtis A.; Grealish, Kevin J.; Frey, Robert D.; Darcy, Dennis; and Bianco, Joseph, 5,798,519, Cl. 250-206.100.

Greater Harris County 9-1-1 Emergency Network: *See—*
Melcher, John R.; Maw, Richard A.; and Pickett, David L., 5,799,061, Cl. 379-45.000.

Green Cross Corporation, The: *See—*
Ikegawa, Ruriko; Imada, Teruaki; Nakamura, Norifumi; Tanikawa, Keizo; and Tsuruzoe, Nobutomo, 5,798,357, Cl. 514-252.000.

Green, Leroy C. Infinitely variable rotary drive transmission system. 5,797,822, Cl. 475-306.000.

Green, Martin Andrew: *See—*
Wenham, Stuart Ross; and Green, Martin Andrew, 5,797,998, Cl. 136-255.000.

Green, Philip S. System and method for endosurgery employing conjoint operation of an endoscope and endosurgical instrument. 5,797,835, Cl. 600-106.000.

Greenberg, Steve: *See—*
Schuchman, Leonard; Bruno, Ronald; Kefaliotis, John; Greenberg, Steve; and Zakrzewski, Edward J., 5,798,726, Cl. 342-37.000.

Greenshields, Roderick Norman: *See—*
Hobson, John Charles; and Greenshields, Roderick Norman, 5,798,252, Cl. 435-243.000.

Greenwood, Edward James: *See—*
Fitzgerald, Patrick Henry; Raiford, Kimberly Gheysen; and Greenwood, Edward James, 5,798,402, Cl. 524-167.000.

Greer, Carol S.; Capozzi, Ann M.; and Wilkins, Linda S., to Nalco Chemical Company. Enhanced removal of hydrophobic contaminants from water clarification systems. 5,798,046, Cl. 210-705.000.

Gregg, James R. Battery powered balanced floor buffer. 5,797,157, Cl. 15-49.100.

Greif, Norbert: *See—*
Beck, Erich; Meyer, Frank; Poth, Ulrich; Siemensmeyer, Karl; Sierakowski, Claudia; Greif, Norbert; Ostertag, Werner; Zimstein, Michael; Leyrer, Reinhold; Jahns, Ekkehard; Etzbach, Karl-Heinz; and Schuhmacher, Peter, 5,798,147, Cl. 427-511.000.

Grencions, Vilnis G.: *See—*
Gallagher, Michael D.; Carlson, Kirk D.; Jeffery, Stuart S.; Lee, Ming J.; Grencions, Vilnis G.; and Snyder, Randall A., 5,799,084, Cl. 380-23.000.

Grenouilloux, Charles; and Joffre, Francis, to Commissariat a l'Energie Atomique. Process for the production of random access memories of the preloading static type. 5,798,288, Cl. 438-238.000.

Gretag Imaging AG: *See—*
Kraft, Walter; and Zolliker, Peter, 5,798,820, Cl. 355-40.000.

Grevel, Gerald A. Fuse pulling device having safety blockout and fuse holder features. 5,797,298, Cl. 81-3.800.

Gries, Heinz: *See—*
Schmitt-Willich, Heribert; Platzek, Johannes; Gries, Heinz; Schumann-Giampieri, Gabrielle; Weinmann, Hanns-Joachim; Vogler, Hubert; Deutsch, Julius; and Conrad, Juergen, 5,798,092, Cl. 424-9.364.

Grieser-Schmitz, Stefan, to Varity GmbH. Monitoring circuit for an ABS warning lamp. 5,798,690, Cl. 340-458.000.

Griffith, Richard S.; Petty, Thomas D.; and Vyne, Robert L., to Motorola, Inc. Low voltage operational amplifier bias circuit and method. 5,798,673, Cl. 330-255.000.

Griggs, Allen L.; and McKenzie, Taun L., to Minnesota Mining and Manufacturing Company. Curing agent compositions and a method of making. 5,798,399, Cl. 523-414.000.

Griggs, James H.: *See*—
Landry-Coltrain, Christine J.; Corrigan, Michael J.; Keyes, Gregory W.; Griggs, James H.; and Coltrain, Bradley K., 5,798,136, Cl. 427-131.000.

Grimaldi, Antonio; and Schillaci, Antonino, to Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno. MOS-technology power device integrated structure and manufacturing process thereof. 5,798,554, Cl. 257-401.000.

Grims, Connie M., Sr.: *See*—
Johansson, Bert E.; and Grims, Connie M., Sr., 5,797,292, Cl. 72-348.000.

Griswold, Michael R.; Guillerm, Thierry; Jiang, Wayne; Mossman, Bruce; Rogers, Spencer; and Tata, Giovanni, to Bancroft, William M. Method and system for computerized learning response, and evaluation. 5,797,753, Cl. 434-322.000.

Griswold, Michael R.; Guillerm, Thierry; Jiang, Wayne; Mossman, Bruce; Rogers, Spencer; and Tata, Giovanni, to Bancroft, William M. Method and system for computerized learning, response, and evaluation. 5,797,754, Cl. 434-322.000.

Gropelier, Gefard: *See*—
Dumazet, Philippe; Ougier, Daniel; and Gropelier, Gefard, 5,798,128, Cl. 425-147.000.

Gross, Brian, to Albany International Corp. Insulation for sleeping bags and similar items. 5,798,166, Cl. 428-156.000.

Gross, Laurence Herbert: *See*—
Foster, George Norris; Chen, Tong; Wasserman, Scott Hanley; Lee, Day-Chyuan; Kurtz, Stuart Jacob; Gross, Laurence Herbert; and Vogel, Robert Harold, 5,798,427, Cl. 526-352.000.

Gross, Richard A., to Aptargroup, Inc. Snap-action closure with disengaged compression member when lid is closed. 5,797,523, Cl. 222-498.000.

Gross, William E.; and Ellwanger, Charles G., to Gleason Works, The. Workholding apparatus. 5,797,605, Cl. 279-4.050.

Grotte, Lawrence C.: *See*—
Karakasoglu, Ahmet; Hung, Chin N.; Matouk, Anthony F.; and Grotte, Lawrence C., 5,797,852, Cl. 600-529.000.

Groupe Lepine: *See*—
Dambreville, Alain; and Pfaifer, Patrick, 5,797,913, Cl. 606-72.000.

Grubbs, Robert H.: *See*—
Kirk, Gregory L.; and Grubbs, Robert H., 5,798,035, Cl. 205-335.000.

Gruber, Patrick Richard; Kolstad, Jeffrey John; Witzke, David Roy; Hartmann, Mark Henry; and Brosch, Andrea Lee, to Cargill, Incorporated. Viscosity-modified lactide polymer composition and process for manufacture thereof. 5,798,435, Cl. 528-354.000.

Gruber, Patrick Richard; Kolstad, Jeffrey John; Ryan, Christopher M.; Hall, Eric Stanley; and Eichen Conn, Robin Sue, to Cargill, Incorporated. Melt-stable amorphous lactide polymer film and process for manufacture thereof. 5,798,436, Cl. 528-354.000.

Grulke, David H.; Huyser, Richard F.; Lautenschlager, Eugene; Stratton, Dennis A.; Wellons, Harry A., III; and Wixson, Richard L., to Stryker Corporation. Surgical cement mixer apparatus. 5,797,679, Cl. 366-139.000.

Grzybowski, Thomas: *See*—
Jurik, Mirjana; Dziegielewski, Thomas; Perri, John; and Grzybowski, Thomas, 5,797,685, Cl. 384-215.000.

GSF-Forschungszentrum fur Umwelt und Gesundheit GmbH: *See*—
Bornkamm, Georg Wilhelm; Eick, Dirk; Kempkes, Bettina; Jochner, Nicola Maria; and Strobl, Lothar J., 5,798,230, Cl. 435-70.210.

GT Bicycles, Inc.: *See*—
Busby, James S., 5,797,613, Cl. 280-284.000.

GTECH Corporation: *See*—
Angell, Robert C., 5,797,794, Cl. 463-18.000.

Guava Technologies, Inc.: *See*—
Goix, Philippe J., 5,798,222, Cl. 435-29.000.

Gubbens, Alexander Jozef: *See*—
Kundmann, Michael Karl; Gubbens, Alexander Jozef; Friedman, Stuart Lawrence; and Krivanek, Ondrej L., 5,798,524, Cl. 250-305.000.

Gucker, Carl: *See*—
Smith, Daniel J.; Gucker, Carl; Elik, Zivko; Parisi, Paul; Ruetsch, Randolph; McJames, William; and Skula, Emil Richard, 5,797,961, Cl. 606-222.000.

Gudkova, Julia Vasilievna: *See*—
Komissarova, Irina Alexeevna; Gudkova, Julia Vasilievna; Soldatenkova, Tatyana Dmitrievna; Kondrashova, Tatyana Tikhonovna; and Burbenskaya, Natalya Mikhailovna, 5,798,371, Cl. 514-345.000.

Guediri, Fouad: *See*—
Glenn, William E.; Dhein, Robert L.; Guediri, Fouad; Monteiro, Pedro; and Moreno, Adalberto, 5,798,795, Cl. 348-398.000.

Guerin, Daniel: *See*—
Marie, Bruno; Guerin, Daniel; Larquet, Christian; and Willemot, Antoine, 5,799,031, Cl. 372-59.000.

Guerra, Lawrence E.: *See*—
Coughlin, Michael E.; Leonard, Ronald A.; Guerra, Lawrence E.; and Kudera, Keith W., 5,798,020, Cl. 156-542.000.

Guerrera, Stephen K.; and Bernhard, Michael I., to Becton Dickinson and Company. Iontophoretic drug delivery system, including method for activating same for attachment to patient. 5,797,867, Cl. 604-20.000.

Gugel, Saveliy M. Method of and device for producing carbide and carbon solid solution containing surface layers. 5,798,002, Cl. 148-209.000.

Guidant Corporation: *See*—
Bleam, Jefferey, 5,797,878, Cl. 604-196.000.

Guillerm, Thierry: *See*—
Griswold, Michael R.; Guillerm, Thierry; Jiang, Wayne; Mossman, Bruce; Rogers, Spencer; and Tata, Giovanni, 5,797,753, Cl. 434-322.000.
Griswold, Michael R.; Guillerm, Thierry; Jiang, Wayne; Mossman, Bruce; Rogers, Spencer; and Tata, Giovanni, 5,797,754, Cl. 434-322.000.

Guissin, Rami, to D.V.P. Technologies, Ltd. Apparatus and methods for smoothing images. 5,799,111, Cl. 382-254.000.

Gullapalli, Kiran Kumar; Mulvaney, Brian J.; Hamm, Steven D.; and Beckerich, Steven R., to Motorola, Inc. Method of simulating an integrated circuit. 5,799,172, Cl. 395-500.000.

Gully, Daniele: *See*—
Badorc, Alain; Despeyroux, Pierre; Gully, Daniele; De Cointet, Paul; Frehel, Daniel; and Maffrand, Jean-Pierre, 5,798,353, Cl. 514-221.000.

Gunji, Yoshihide: *See*—
Ohi, Shinichi; Umegaki, Fuhito; Takemasa, Masami; Haraguchi, Tatsuo; Gunji, Yoshihide; and Ohsawa, Hiroshi, 5,798,589, Cl. 310-90.000.

Günter, Stephan: *See*—
Gieser, Michael; and Günter, Stephan, 5,797,327, Cl. 101-483.000.

Gunthardt, Ray R. Prefabricated expandable architecture and method of making. 5,797,224, Cl. 52-79.400.

Gunze Limited: *See*—
Tomihata, Kenji; Sasaki, Ikuo; and Suzuki, Masakazu, 5,797,962, Cl. 606-228.000.

Gunzi, Laurence A.; and Malavasi, Massimo G. F., to Aquaman (UK) Ltd. Sealable bag. 5,797,683, Cl. 383-68.000.

Guo, Zhichao; and Dolan, Robert P., to Carrier Corporation. Control of defrost in heat pump. 5,797,273, Cl. 62-156.000.

Gupta, Dev Vrat; Chen, Yu-Ren Brian; Sharper, Craig A.; and Stone, Alan E., to Cisco Technology, Inc. Scalable multimedia network. 5,799,017, Cl. 370-419.000.

Gurney, Harry C.: *See*—
McMichael, John; and Gurney, Harry C., 5,798,102, Cl. 424-198.100.

Gürtler, Lutz G.: *See*—
Hauser, Hans-Peter; Knapp, Stefan; Brust, Stefan; Gürtler, Lutz G.; Eberle, Josef; Kaptue, Lazare; and Zekeng, Léopold Achenqui, 5,798,205, Cl. 435-5.000.

Guterman, Daniel C.: *See*—
Lee, Douglas J.; Mehrotra, Sanjay; Mofidi, Mehrdad; and Guterman, Daniel C., 5,798,968, Cl. 365-185.290.

Guth, Jérôme, to Sollac. Process and device for determining the mass fraction of one constituent of a layer, and effecting the quality control of a composite metal sheet. 5,798,650, Cl. 324-663.000.

Gutman, George, to Ovonic Synthetic Materials Company, Inc. Optical element of multilayered thin film for x-rays and neutrons. 5,799,056, Cl. 378-84.000.

Guy, Thomas D.; Eisensmith, Terry C.; and Morin, Donald A., to United States Surgical Corporation. Apparatus for forming curved, rectangular bodied needle blanks from tubular stock. 5,797,174, Cl. 29-56.500.

Guyot, Francois, to Lam Research Corporation. High power electrostatic chuck contact. 5,798,904, Cl. 361-234.000.

Gyory, J. Richard: *See*—
Haak, Ronald P.; Gyory, J. Richard; and Theeuwes, Felix, 5,797,866, Cl. 604-20.000.

H. Niemeyer Soehne GmbH & Co. KG: *See*—
Ungruh, Josef, 5,797,253, Cl. 56-370.000.

Ha, Tri Q.: *See*—
Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Mattos, Nelson; Niblack, Carlton Wayne; Petkovic, Draugutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, 5,799,310, Cl. 707-102.000.

Haak, Ronald P.; Gyory, J. Richard; and Theeuwes, Felix, to ALZA Corporation. Device and method of iontophoretic drug delivery. 5,797,866, Cl. 604-20.000.

Haar, Klaus: *See*—
Elzenbeck, Manfred; Haar, Klaus; and Nathmann, Harald, 5,797,653, Cl. 297-300.500.

Haarer, Dietrich: *See*—
Paulus, Wolfgang; Häussling, Lukas; Siemensmeyer, Karl; Etzbach, Karl-Heinz; Adam, Dieter; Simmerer, Juergen; Ringsdorf, Helmut; Schuhmacher, Peter; Haarer, Dietrich; and Kumar, Sundeep, 5,798,197, Cl. 430-56.000.

Hachet, Joël: *See*—
Jeunehomme, Sylvie; Evennou, Patrick; and Hachet, Joël, 5,797,646, Cl. 296-197.000.

Hachisuka, Atsushi: *See*—
Ajika, Natsuo; Arima, Hideaki; and Hachisuka, Atsushi, 5,798,289, Cl. 438-239.000.

Hackel, Uwe: *See*—
Brammer, Hartmut; Jaki, Friedrich; Hackel, Uwe; and Krebs, Holger, 5,798,453, Cl. 73-35.090.

Hadady, Craig Eric, to Lexmark International, Inc. Sliding window data compression method and apparatus. 5,798,718, Cl. 341-51.000.

Hadewe B.V.: *See*—
van Oosten, Rocus Johannes, 5,798,930, Cl. 364-478.010.

Haga, Takashi: *See*—
Kimura, Eisuke; Yano, Toru; Hanada, Kohei; Tatara, Yusuke; Haga, Takashi; and Hayashi, Masanori, 5,797,370, Cl. 123-478.000.
Hagan, Russell Michael; and Bunce, Keith Thomas, to Glaxo Group Limited. Use for tachykinin antagonists to treat emesis. 5,798,363, Cl. 514-299.000.
Hager, Frank M.: *See*—
Meek, Matthew P.; and Hager, Frank M., 5,797,364, Cl. 123-90.360.
Hager, Rudolf; Kolleritsch, Günther; and Knaup, Wolfgang, to Wacker-Chemie GmbH. Composition for the water- and oil-repellent treatment of absorbent materials. 5,798,429, Cl. 528-42.000.
Hagerman, Edward M.: *See*—
Doudican, John C.; Hagerman, Edward M.; Henshaw, John M.; Meyer, Laura J.; and Houston, Daniel Q., 5,798,463, Cl. 73-789.000.
Hägglund, Thomas. Utilization of low-value heat in a supercharged thermal engine. 5,797,265, Cl. 60-599.000.
Hagiwara, Tsuneyuki, to Nikon Corporation. Defect inspecting apparatus and defect inspecting method. 5,798,831, Cl. 356-237.000.
Haikawa, Yukihiko: *See*—
Juso, Hiromi; Haikawa, Yukihiko; and Hosono, Yukiharu, 5,799,197, Cl. 395-750.050.
Hakkarainen, Juka Mikko; Lee, Nga Cheung; and Ho, Chung-Yih, to General Electric Company. Shift register having latch cell operable in serial-in/parallel-out and parallel-in/serial-out modes in response to a sequence of commands for controlling appropriate switches. 5,799,211, Cl. 395-891.000.
Halasa, Adel Farhan: *See*—
Zanzig, David John; Hsu, Wen-Liang; Halasa, Adel Farhan; and Matrana, Barry Allen, 5,798,408, Cl. 524-505.000.
Haldemann, Gaston, to Skis Rossignol S.A. In-line roller skate with releasable boot. 5,797,608, Cl. 280-11.300.
Hall, Edward A., to McDonnell Douglas Corporation. Antenna system having a plurality of fundamental resonances. 5,798,736, Cl. 343-791.000.
Hall, Eric Stanley: *See*—
Gruber, Patrick Richard; Kolstad, Jeffrey John; Ryan, Christopher M.; Hall, Eric Stanley; and Eichen Conn, Robin Sue, 5,798,436, Cl. 528-354.000.
Halliday, Jonathan: *See*—
Labinsky, Alexander Numa, deceased; Reynolds, Gerald Alfred John; and Halliday, Jonathan, 5,798,999, Cl. 369-266.000.
Halpaap, Reinhard: *See*—
Brahm, Martin; Dieris, Carl-gerd; Schmalstieg, Lutz; and Halpaap, Reinhard, 5,798,431, Cl. 528-73.000.
Halterman, Carl; Bonnici, Chuck; Mangini, Mike; and Tognoli, Steve. Rejuvenator chill device. 5,797,270, Cl. 62-64.000.
Hamabata, Mitsuo, to Toyoda Gosei Co., Ltd. Weather strip for a motor vehicle. 5,797,644, Cl. 296-146.900.
Hamada, Satoru: *See*—
Ishikawa, Toshiharu; Ueda, Kenji; Hamada, Satoru; and Nishimura, Hiroyuki, 5,798,850, Cl. 359-12.000.
Hamada, Takashi: *See*—
Tanaka, Noriko; Uranaka, Hiroshi; Uesugi, Akio; and Hamada, Takashi, 5,799,023, Cl. 371-5.100.
Hamamatsu Photonics K.K.: *See*—
Tanioka, Satoshi; Murata, Shizuo; Kono, Makoto; and Hirano, Masayuki, 5,798,810, Cl. 349-123.000.
Hamamoto, Hiroyuki: *See*—
Hirai, Junji; Hiraga, Yoshiji; Hirose, Kenji; Nitta, Yuji; Hamamoto, Hiroyuki; and Nomura, Kenji, 5,798,622, Cl. 318-16.000.
Hamamoto, Tohru: *See*—
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Hamamoto, Toshiro: *See*—
Tsuji, Shuichi; Yoshida, Yukiko; Kojima, Naoya; Kurosawa, Nobuyuki; and Hamamoto, Toshiro, 5,798,244, Cl. 435-193.000.
Hamasaka, Hiroshi: *See*—
Fukushima, Yoshihisa; Inagaki, Masahiro; Azumatani, Yasushi; and Hamasaka, Hiroshi, 5,798,995, Cl. 369-59.000.
Hamby, Stephen Joseph: *See*—
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Hamilton, Bruce; and Sahatjian, Ronald A., to Boston Scientific Corporation. Medical device balloons containing thermoplastic elastomers. 5,797,877, Cl. 604-96.000.
Hamilton, Gregory S.: *See*—
Steiner, Joseph P.; Snyder, Solomon; Hamilton, Gregory S.; and Dawson, Ted, 5,798,355, Cl. 514-248.000.
Hamilton, James; Hennessy, Richard; Choa, Pong; Chopde, Avinash; Peters, Eric; and Koutavas, Jay, to Avid Technology, Inc. System for sending list of media data objects to server which may be read by client and receiving from the server indicator of allocated resource. 5,799,150, Cl. 395-200.330.
Hamm, Steven D.: *See*—
Gullapalli, Kiran Kumar; Mulvaney, Brian J.; Hamm, Steven D.; and Beckerich, Steven R., 5,799,172, Cl. 395-500.000.
Hämynen, Jari. Disposable pet excrement collection device. 5,797,636, Cl. 294-1.300.
Han, Ki-Chun: *See*—
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Han, Tae-Hyeon: *See*—
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Hanada, Kohei: *See*—
Kimura, Eisuke; Yano, Toru; Hanada, Kohei; Tatara, Yusuke; Haga, Takashi; and Hayashi, Masanori, 5,797,370, Cl. 123-478.000.
Hancock, Lawrence Francis; Kishbaugh, Alan Jay; and Parham, Marc Ellous, to Circe Biomedical, Inc. Thermoplastic block copolymers. 5,798,437, Cl. 528-373.000.
Hancock, Michael Thomas: *See*—
Baynes, Ian David; and Hancock, Michael Thomas, 5,797,696, Cl. 403-377.000.
Haneda, Naoya, to Sony Corporation. Data processing method and data processing apparatus. 5,798,991, Cl. 369-47.000.
Haneda, Satoshi: *See*—
Shigeta, Kunio; Sato, Yotaro; and Haneda, Satoshi, 5,799,226, Cl. 399-66.000.
Hannula, Don: *See*—
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Hanright, William L., to Siemens Hearing Instruments, Inc. Beside-the-door programming system for programming hearing aids. 5,799,095, Cl. 381-68.000.
Hans Huber GmbH Maschinenund Anlagenbau: *See*—
Huber, Hans Georg, 5,798,038, Cl. 210-154.000.
Hansen, David J.: *See*—
Jost, Mark E.; Hansen, David J.; and McDonald, Steven M., 5,798,292, Cl. 438-401.000.
Hansen, Gale L.: *See*—
Honda, Kenji; Molin, Richard M.; and Hansen, Gale L., 5,798,323, Cl. 510-176.000.
Hansen, Hans J., to Immunomedics, Inc. Multi-stage cascade boosting vaccine. 5,798,100, Cl. 424-130.100.
Hansen, James M. Adjustable retrofit ignition kit for portable gas appliances. 5,798,601, Cl. 310-339.000.
Hansen, Jeffrey S.: *See*—
Fisher, George T., II; Hansen, Jeffrey S.; Oden, Laurance L.; Turner, Paul C.; and Ochs, Thomas L., 5,799,238, Cl. 419-7.000.
Hansson, Göran, to Forsvarets Forskningsanstalt. Laser resonator for at least two laser modes from an optically pumped laser medium. 5,799,032, Cl. 372-99.000.
Hara, Hiroki: *See*—
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Hara, Nobuhiko: *See*—
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Hara, Takuya: *See*—
Tamehiro, Hiroshi; Asahi, Hitoshi; Hara, Takuya; and Terada, Yoshio, 5,798,004, Cl. 148-336.000.
Harada, Takashi; and Fukuda, Ryoji, to Canon Kabushiki Kaisha. Gesture-based data processing method and apparatus. 5,798,758, Cl. 345-339.000.
Harada, Toru, to Kokusai Electric Co., Ltd. Method for semiconductor filming. 5,798,141, Cl. 427-248.100.
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Harley Murray, Inc.: *See*—
Murray, Douglas Glen, 5,797,615, Cl. 280-441.200.
Harper, Ronald M.: *See*—
Rector, David M.; and Harper, Ronald M., 5,798,798, Cl. 348-476.000.
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Doolittle, Glayne D.; and Harrell, Mark O., 5,797,215, Cl. 47-57.500.
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Kennedy, Michael; and Potts, Joseph A., Jr., 5,799,060, Cl. 379-29.000.
Myers, Brent, 5,798,724, Cl. 341-146.000.
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Liff, Harold J.; Hart, Brian T.; Wallace, Robert L.; and Berube, Arthur A., 5,797,515, Cl. 221-2.000.

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Ware, Eric A.; and Hart, Robert G., 5,798,997, Cl. 369-75.200.

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Butsch, Rainer; Hartley, John George; and Stickel, Werner, 5,798,528, Cl. 250-492.200.

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Amend, Richard E.; and Hartlove, William A., 5,797,193, Cl. 33-614.000.

Hartmann, Mark Henry: *See*—
Gruber, Patrick Richard; Kolstad, Jeffrey John; Witzke, David Roy; Hartmann, Mark Henry; and Brosch, Andrea Lee, 5,798,435, Cl. 528-354.000.

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Hartness, Thomas Patterson, 5,797,249, Cl. 53-473.000.

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Sasaki, Norio; and Hashiguchi, Itsuro, 5,797,722, Cl. 415-170.100.

Hata, Yoshio: *See*—
Takahashi, Yuji; Kawamura, Ichiro; Kashihara, Toshiaki; and Hata, Yoshio, 5,799,009, Cl. 369-291.000.

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Shibasaki, Mitsuhiro; Kubo, Hiroaki; Mori, Akira; Hatakeda, Hachiro; Takahashi, Tsutao; and Nakamura, Tetsuo, 5,797,465, Cl. 175-108.000.

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Nagahori, Takeshi; Hatakeyama, Ichiro; Araki, Soichiro; and Miyoshi, Kazunori, 5,798,664, Cl. 327-307.000.

Hatakeyama, Naoki: *See*—
Koga, Takasuke; Morimoto, Keiji; and Hatakeyama, Naoki, 5,798,606, Cl. 313-440.000.

Hattori, Tetsuo; and Oikawa, Yoshiro, to Nikon Corporation. Projection-display apparatus and method providing improved brightness of projected color image. 5,798,819, Cl. 353-33.000.

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Spelthann, Heinz H.; and Hausmann, Karlheinz, 5,798,413, Cl. 525-66.000.

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Paulus, Wolfgang; Häussling, Lukas; Siemensmeyer, Karl; Etzbach, Karl-Heinz; Adam, Dieter; Simmerer, Juergen; Ringsdorf, Helmut; Schuhmacher, Peter; Haarer, Dietrich; and Kumar, Sundeep, 5,798,197, Cl. 430-56.000.

Haverlag, Marco: *See*—
Oehrlein, Gottlieb Stefan; Vender, David; Zhang, Ying; and Haverlag, Marco, 5,798,016, Cl. 156-345.000.

Haveson, Brian, to HPF, L.L.C. Herbal appetite suppressant and weight loss composition. 5,798,101, Cl. 424-195.100.

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Blissell, William H.; Fink, David J.; Snyder, David A.; and Hawkins, Phillip J., 5,797,290, Cl. 72-53.000.

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Kawachi, Atsushi; Matsuda, Norifumi; and Hayashi, Akiyoshi, 5,797,357, Cl. 122-398.000.

Hayashi, Hideki, to Pioneer Electric Corporation. Digital data signal reproducing apparatus. 5,799,046, Cl. 375-341.000.

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Uchiyama, Yaeko; Hayashi, Hiroko; and Itano, Masaaki, 5,798,776, Cl. 347-43.000.

Hayashi, Junji; and Yamagishi, Hisashi, to Bridgestone Sports Co., Ltd. Wound golf ball. 5,797,808, Cl. 473-364.000.

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Kimura, Eisuke; Yano, Toru; Hanada, Kohei; Tatara, Yusuke; Haga, Takashi; and Hayashi, Masanori, 5,797,370, Cl. 123-478.000.

Hayashi, Naoki; and Shibuta, Kazuo, to Fuji Xerox Co., Ltd. Drawing system. 5,798,766, Cl. 345-431.000.

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He, Wei; and Anderson, Roger N., to Trustees of Columbia University in the City of New York, The. Method for inverting reflection trace data from 3-D and 4-D seismic surveys and identifying subsurface fluid and pathways in and among hydrocarbon reservoirs based on impedance models. 5,798,982, Cl. 367-73.000.

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Chu, Tsann Ming; and Papsidero, Lawrence D., 5,798,445, Cl. 530-350.000.

Heard, Alan James: *See*—
Mitchell, John C.; Heard, Alan James; Corbett, Steven Norman; and Daniel, Nicholas John, 5,799,273, Cl. 704-235.000.

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Snow, David W.; Adams, Craig L.; Donlon, Brian S.; and Gifford, Hanson S., III, 5,797,933, Cl. 606-151.000.

Heaton, Lisa W.; Palmer, Mitchell J.; Milliman, Keith L.; and McClure, Richard C., to United States Surgical Corporation. Articulating apparatus for applying surgical fasteners to body tissue. 5,797,538, Cl. 227-176.100.

Hebbel, Gerd: *See*—
Schulze, Reiner; and Hebbel, Gerd, 5,797,473, Cl. 192-77.000.

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Berntsson, Leif; and Hedberg, Bengt, 5,797,238, Cl. 52-612.000.

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Bertin, Claude Louis; Hedberg, Erik Leigh; and Howell, Wayne John, 5,798,282, Cl. 438-15.000.

Hedgecock, James L. Method and apparatus for testing and measuring current perception threshold and motor nerve junction performance. 5,797,854, Cl. 600-554.000.

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Heidelberg Harris S.A.: *See*—
Marmin, Jean-Claude, 5,797,531, Cl. 226-97.000.

Heidelberger Druckmaschinen AG: *See*—
Buschulte, Rainer; Rensch, Clemens; and Zahn, Erich, 5,797,320, Cl. 101-226.000.
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Rodi, Anton, 5,798,782, Cl. 347-123.000.

Heikes, Craig A.; and Beraha, Rodolfo G., to Hewlett-Packard Co. System and method for verification of a precharge critical path for a system of cascaded dynamic logic gates. 5,798,938, Cl. 364-490.000.

Heintke, Hans-Eberhardt, to Braun Aktiengesellschaft. Depilating device with a multiple-shell housing. 5,797,925, Cl. 606-133.000.

Heise, Michael L.: *See*—
Proulx, Stephen; Cook, Paul J.; and Heise, Michael L., 5,798,049, Cl. 210-767.000.

Heitz, James R.; Mangan, Robert L.; and Moreno, Daniel S., to United States of America, Agriculture; and Photodyne International Inc. Phototoxic insecticidal composition and method for controlling insect populations. 5,798,112, Cl. 424-405.000.

Hekmatpour, Amir, to International Business Machines Corporation. Adaptive hypermedia presentation method and system. 5,799,292, Cl. 706-11.000.

Helkey, Roger J.: *See*—
Bowers, John E.; Mar, Alan; Helkey, Roger J.; and Karin, Judy, 5,799,024, Cl. 372-11.000.

Heller, Walter R., Sr. Fixed welding apparatus and method. 5,798,493, Cl. 219-75.000.

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Lorenz, Dietmar; Bauer, Harald; Dietsch, Rainer; and Hellwig, Karl, 5,799,201, Cl. 395-800.000.

Helmetsie, Eugene A.: *See*—
Uber, John E.; Matson, Carl A.; and Helmetsie, Eugene A., 5,797,481, Cl. 198-813.000.

Helmut, Michel: *See*—
Niemann, Karl-Heinz; and Helmut, Michel, 5,799,205, Cl. 395-840.000.

Hemasure, Inc.: *See*—
Zuk, Peter, Jr., 5,798,041, Cl. 210-456.000.

Hembry, Douglas Michael: *See*—
Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Mattos, Nelson; Niblack, Carlton Wayne; Petkovic, Draugutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, 5,799,310, Cl. 707-102.000.

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Darbyshire, Paul, 5,797,652, Cl. 297-284.400.

Hendrick, Paul. Manual trash compactor. 5,797,314, Cl. 100-265.000.

Hendricks, John S.; Bonner, Alfred E.; and Wunderlich, Richard E., to Discovery Communications, Inc. Terminal for suggesting programs offered on a television program delivery system. 5,798,785, Cl. 348-1.000.

Henkel Corporation: *See*—
Beleck, Scott J., 5,798,325, Cl. 510-201.000.
Shah, Shailesh; Cash, Ronald J.; LaFreeda, Ronald; Aloye, James; and Mulvey, Joseph L., 5,798,398, Cl. 523-404.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Kottwitz, Beatrix; Poethkow, Joerg; and Upadek, Horst, 5,798,328, Cl. 510-438.000.

Hennessy, Richard: *See*—
Hamilton, James; Hennessy, Richard; Choa, Pong; Chopde, Avinash; Peters, Eric; and Koutavas, Jay, 5,799,150, Cl. 395-200.330.

Henningsson, Carina: *See*—
Longenecker, B. Michael; and Henningsson, Carina, 5,798,090, Cl. 424-279.100.

Henshaw, John M.: *See*—
Doudican, John C.; Hagerman, Edward M.; Henshaw, John M.; Meyer, Laura J.; and Houston, Daniel Q., 5,798,463, Cl. 73-789.000.

Hensley, Carroll G. Fuel pellet fines collection system. 5,797,333, Cl. 110-233.000.

Hentosz, Daniel Patrick: *See*—
Thayer, Ronda Renee Bayer; Benedict, Robert Leon; Chlebina, Larry Edward; Jacobs, Bernard Byron; Laurich, Thomas Andrew; Macesich, Walter George; Majerus, Norbert; Rambacher, John Sylvester; Rex, William Allen; Rooney, Timothy Michael; Sobhanie, Mohammad Eghbal; Yovichin, Albert James; Wolfe, David Lowell; and Hentosz, Daniel Patrick, 5,798,127, Cl. 425-117.000.

Hepburn, Jeffrey S.: *See*—
Adamczyk, Andrew A., Jr.; Pakko, James D.; and Hepburn, Jeffrey S., 5,798,270, Cl. 436-143.000.

Hepker, Myland D.: *See*—
Gaddis, Donald L.; Gaddis, Roy; and Hepker, Myland D., 5,797,480, Cl. 198-672.000.

Herbert, Brian K., to AT&T Global Information Solutions Company; Hyundai Electronics America; and Symbios, Inc. Method and apparatus for regulation of power dissipation. 5,798,667, Cl. 327-513.000.

Herbig, Scott M.; and Miller, Eric J., to S. C. Johnson & Son, Inc. Osmotic-delivery devices having vapor-permeable coatings. 5,798,119, Cl. 424-473.000.

Hercend, Thierry; Triebel, Frederic; Roman-Roman, Sergio; and Ferradini, Laurent, to Roussel Uclaf. Nucleotide sequences for α chain variable regions in human lymphocyte receptors, corresponding peptide segments and the diagnostic and therapeutic uses. 5,798,231, Cl. 435-91.200.

Herelier, Patrick: *See*—
Almeras, Roland; and Herelier, Patrick, 5,797,534, Cl. 227-10.000.

Heremans, Paul: *See*—
Kuijk, Maarten; Heremans, Paul; Borghs, Gustaaf; and Vounckx, Roger, 5,798,520, Cl. 250-214.00A.

Hermens, Hendrik C. M.; Jacobs, Lucas A. G.; Driessen, Henrikus C. M. P.; Van Der Horst, Cornelis H. T.; and Schäfer, Hubertus E. A., to U.S. Philips Corporation. Picture display device with partially clear contact areas. 5,798,811, Cl. 349-152.000.

Herrin, Robert M. Container contents unloading apparatus for unloading contents of a container and method of unloading same. 5,797,716, Cl. 414-420.000.

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Cook, Robert L.; Herrmann, Eric M.; Offner, Nelson; Granger, Edward M.; Dirik, Akin; and Baca, Lawrence D., 5,798,943, Cl. 364-526.000.

Herscu, Paul, to Apple Blossom, LLC. Homeopathic treatment selection system and method. 5,797,839, Cl. 600-300.000.

Herzberger, Erick; Nicolai, Jean-Marc; Cassese, Bruno; and Wacheux, Patrick, to Valeo Electronique. Electronic assembly with a heat sink, in particular for the high voltage transformer for the discharge lamp of a motor vehicle headlight. 5,798,908, Cl. 361-707.000.

Herzog, William R., Jr.: *See*—
Rosen, Gerald M.; Herzog, William R., Jr.; and Pou, Sovitj, 5,797,887, Cl. 604-265.000.

Hess, Robert; and Marquardt, Robert, to Redwood Sportswear Ltd. Shoe with stretchable top. 5,797,200, Cl. 36-97.000.

Hessel, Stephen R.; and Katz, Michael, to Balagan Medical Inc. Umbilical cord clamping device. 5,797,922, Cl. 606-120.000.

Hestia Technologies, Inc.: *See*—
Weber, Patrick O., 5,798,014, Cl. 156-263.000.

Hetherington, Michael; and Wassenaar, William, to Wassenaar, Willem. Manual capsule filling device. 5,797,248, Cl. 53-473.000.

Hetzler, Steven Robert: *See*—
Fontana, Robert Edward, Jr.; Hetzler, Steven Robert; Santini, Hugo Alberto Emilio; and Williams, Mason Lamar, 5,798,890, Cl. 360-103.000.

Heuser, Lothar: *See*—
Eufinger, Harald; Heuser, Lothar; Kruse, Dieter; Machtens, Egbert; and Seifert, Hans, 5,798,924, Cl. 364-468.240.

Heuser, Peter: *See*—
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Banta, Robert H., Jr.; Snyder, Richard A.; and Ossmann, William J., 5,798,461, Cl. 73-625.000.
Barnett, Ron; Finkle, Thomas W.; and Powers, Michael T., 5,797,765, Cl. 439-63.000.
Heikes, Craig A.; and Beraha, Rodolfo G., 5,798,938, Cl. 364-490.000.
Kelly, Michael G.; and Emad, Pirooz, 5,798,567, Cl. 257-723.000.
Lesartre, Gregg, 5,799,167, Cl. 395-394.000.
Lloyd, Michael B., 5,799,230, Cl. 399-107.000.
Miller, Robert H., Jr.; and Beraha, Rudolfo G., 5,798,952, Cl. 364-715.100.
Monty, Melissa L.; and Pang, Yuen-Yee Joanna, 5,799,070, Cl. 379-100.140.
Oyama, Alan J.; Boyce, James S.; and Sandfort, Patrick O., 5,797,689, Cl. 400-74.000.
Petersen, David M.; Mayer, Jeremy; and Nakada, Scott M., 5,797,687, Cl. 400-23.000.
Rosenberg, Mark, 5,797,397, Cl. 128-660.040.
Rourke, Jonathan M., 5,797,858, Cl. 600-585.000.
Tretter, Daniel R., 5,798,846, Cl. 358-456.000.

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Hi-Speed Checkweigher Co., Inc.: *See*—
Uber, John E.; Matson, Carl A.; and Helmetsie, Eugene A., 5,797,481, Cl. 198-813.000.

Hibino, Katsuhiko: *See*—
Shirai, Noriaki; Hibino, Katsuhiko; and Nishimura, Takao, 5,798,727, Cl. 342-70.000.

Hichwa, Bryant P.: *See*—
Yu, Phillip C.; Backfisch, David L.; O'Brien, Nada A.; and Hichwa, Bryant P., 5,798,860, Cl. 359-273.000.

Hidaka Seiki Kabushiki Kaisha: *See*—
Yamada, Mamoru, 5,797,291, Cl. 72-344.000.

Higashi, Kenichi: *See*—
Okamoto, Yuichi; Higashi, Kenichi; Akashiba, Masahiko; Ijima, Yoshitaka; and Matsunami, Kazuhiko, 5,798,702, Cl. 340-636.000.

HighwayMaster Communications, Inc.: *See*—
Kennedy, William C., III; and Westerlage, Kenneth R., 5,799,249, Cl. 455-411.000.

Higuchi, Hidemitsu: *See*—
Yasue, Toshikazu; Higuchi, Hidemitsu; Horimoto, Toru; Shimamoto, Yukio; and Miyamoto, Takahisa, 5,799,155, Cl. 395-200.660.

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Etoh, Kei; Hirasawa, Akira; Higurashi, Hisano; and Kawamura, Makoto, 5,798,315, Cl. 503-215.000.

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Ozawa, Shigeyuki; Nakase, Ryoichi; Hiki, Keiichi; and Fujimoto, Hiroaki, 5,797,775, Cl. 440-1.000.

Hikmet, Rifat A. M., to U.S. Philips Corporation. Method of manufacturing a switchable cholesteric filter as well as a luminaire having such a filter. 5,798,057, Cl. 252-299.500.

Hill, Gary C., to Build A Mold, Ltd. Sealing device for molten metal valve pin. 5,798,051, Cl. 222-590.000.

Hill, Winford Lee, II: *See*—
Hoover, Andrew Paul; Miller, Gregory Alan; McQuirk, Dale John; and Hill, Winford Lee, II, 5,798,295, Cl. 438-533.000.

Hilton, John; Roundtree, Stephan; and Avery, Hal, to Spacetec IMC Corporation. Force and torque converter with improved digital optical sensing circuitry. 5,798,748, Cl. 345-156.000.

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Hinkley, Douglas A.; Fixemer, James V.; and Barta, John J., to Square D Company. Conductive joint formed by electron beam welding and method thereof. 5,798,495, Cl. 219-121.140.

Hipp, James E., to Sonoma Corporation. Method and apparatus for downhole fluid blast cleaning of oil well casing. 5,797,454, Cl. 166-196.000.

Hipps, W. Michael: *See*—
Furnish, Gregory R.; and Hipps, W. Michael, 5,797,956, Cl. 606-205.000.

Hiraga, Yoshiji: *See*—
Hirai, Junji; Hiraga, Yoshiji; Hirose, Kenji; Nitta, Yuji; Hamamoto, Hiroyuki; and Nomura, Kenji, 5,798,622, Cl. 318-16.000.

Hirai, Junji; Hiraga, Yoshiji; Hirose, Kenji; Nitta, Yuji; Hamamoto, Hiroyuki; and Nomura, Kenji, to Kabushiki Kaisha Yaskawa Denki. Noncontacting electric power transfer apparatus, noncontacting signal transfer apparatus, split-type mechanical apparatus employing these transfer apparatus, and a control method for controlling same. 5,798,622, Cl. 318-16.000.

Hiramatsu, Akira; Tanaka, Kiyoharu; and Takanaka, Yasuyuki, to Canon Kabushiki Kaisha. Recording apparatus and method for correction of discharge failure and density unevenness. 5,798,773, Cl. 347-19.000.

Hirano, Koji: *See*—
Minematsu, Isao; Hirano, Koji; and Takita, Hiroki, 5,798,749, Cl. 345-123.000.

Hirano, Masayasu: *See*—
Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, 5,799,215, Cl. 396-168.000.

Hirano, Masayuki: *See*—
Tanioka, Satoshi; Murata, Shizuo; Kono, Makoto; and Hirano, Masayuki, 5,798,810, Cl. 349-123.000.

Hirano, Mitsunori: *See*—
Fukui, Kouta; Hirano, Mitsunori; and Inoue, Nobuaki, 5,798,204, Cl. 430-399.000.

Hirano, Ryo: *See*—
Morigami, Yuusuke; Kobayashi, Tadashi; Nishikawa, Misao; Yoshikawa, Hiroyuki; Ozawa, Kazuhito; Hirano, Ryo; Seki, Shinobu; and Wakamatsu, Shinji, 5,797,596, Cl. 270-58.110.

Hirao, Isami: *See*—
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Hird, Michael: *See*—
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Ueda, Noriyoshi; Hiroi, Masakazu; Nakamura, Shinichi; Mizuno, Yoshio; Sato, Chikara; Kaneko, Tokuharu; Isobe, Yoshinori; Yoshida, Akimaro; Hishikawa, Yasuhide; and Nakagawa, Tomohito, 5,799,237, Cl. 399-367.000.

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Tanaka, Takao; Mukai, Masanori; Nagaoka, Takeshi; Nakamura, Kazuo; Hirooka, Takaaki; Shiota, Takuji; Kakiuchi, Yoshihiro; Tabei, Ryoichi; and Matsuo, Kouichi, 5,799,288, Cl. 705-43.000.

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Tsuruoka, Atsushi; and Misono, Masayoshi, 5,798,603, Cl. 313-412.000.

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Kikushima, Kenichi; Ootsuka, Fumio; and Sato, Kazushige, 5,798,551, Cl. 257-368.000.
Kitagawa, Makoto; Kageyama, Seiji; Matsumoto, Satoru; Shimakawa, Takuya; and Tamura, Naomi, 5,799,206, Cl. 395-856.000.
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Nakagoshi, Arata; and Kojima, Takafumi, 5,799,252, Cl. 455-524.000.
Nakano, Masaru; Suzaki, Masafumi; Akasaki, Tetsuro; and Saito, Masahiko, 5,799,235, Cl. 399-302.000.
Okada, Michiya; Tanaka, Kazuhide; Yuasa, Toyotaka; Matsumoto, Toshimi; Aihara, Katsuzo; and Matsuda, Shinpei, 5,798,312, Cl. 505-230.000.
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Yasue, Toshikazu; Higuchi, Hidemitsu; Horimoto, Toru; Shimamoto, Yukio; and Miyamoto, Takahisa, 5,799,155, Cl. 395-200.660.

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Urano, Kazuaki; Maehara, Yoshimi; Ohkubo, Hiroshi; and Miyamoto, Takashi, 5,798,899, Cl. 360-132.000.

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Hitachi Metals, Ltd.: *See*—
Murata, Hideo; and Taniguchi, Shigeru, 5,798,005, Cl. 148-421.000.

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Padmanabhan, Gobi R.; Zelayeta, Joseph M.; Yegnashankaran, Visvamohan; Hively, James W.; and Daane, John P., 5,799,080, Cl. 380-4.000.

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Crucius, Wesley; and Schneider, Randall M., 5,798,920, Cl. 364-167.010.

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Ho, Jean C.: *See*—
Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Matios, Nelson; Niblack, Carlton Wayne; Petkovic, Draugutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, 5,799,310, Cl. 707-102.000.

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Krstenansky, John L.; Nestor, John J.; Ho, Teresa H.; Vickery, Brian H.; and Bach, Chinh T., 5,798,225, Cl. 435-69.400.

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Cook, Robert Stanley; Hobbs, Michael Anthony; Leighton, Ann-Marie; Simpkin, Gordon Thomas; and Trunley, Roy, 5,797,391, Cl. 128-203.150.

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Kirsch, Reinhard; Kleim, Jörg-Peter; Riess, Günther; Rösner, Manfred; and Winkler, Irvin, 5,798,365, Cl. 514-312.000.
Schneider, August; Bader, Jochen; and Leimer, Franz Xaver, 5,799,103, Cl. 382-141.000.

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Lee, Cherylyn; Provino, Vincent J.; and Linstid, H. Clay, III, 5,798,432, Cl. 528-176.000.

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Hoffer, Steven M. Interactive electronic trade network and user interface. 5,799,151, Cl. 395-200.340.

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Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; Goodman, Todd A.; Vercande, David J.; and Busch, Eric M., to LinkUSA Corporation. System for determining an alternative application to receive message from first application when the number of times to resend the message to second application is exceeded. 5,799,156, Cl. 395-200.670.

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Homaco, Inc.: *See*—
Coulombe, David J.; and Matlin, Ray, 5,797,764, Cl. 439-55.000.
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Akazaki, Shusuke; Nishimura, Yoichi; and Yasui, Yuji, 5,797,261, Cl. 60-276.000.
Ando, Kazuo; Shohoji, Tomokazu; Watanabe, Naoya; and Noguchi, Minoru, 5,798,906, Cl. 361-520.000.
Fujimoto, Shuichi; Kunii, Hisashi; Sato, Kazumi; Ura, Yoshiyuki; and Shimada, Takamichi, 5,797,821, Cl. 475-120.000.
Kawabe, Tsuyoshi; Yoneguchi, Hiroshi; Arisaka, Atsushi; Kuwabara, Takahiro; and Aoyama, Tadamichi, 5,797,450, Cl. 165-167.000.
Kimura, Eisuke; Yano, Toru; Hanada, Kohei; Tatara, Yusuke; Haga, Takashi; and Hayashi, Masanori, 5,797,370, Cl. 123-478.000.
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Wyatt, Ivan Sandy, 5,797,562, Cl. 244-1.00R.
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Hood, William L. Debris collection apparatus for use during boat hull cleaning. 5,797,341, Cl. 114-222.000.
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Hoover, Andrew Paul; Miller, Gregory Alan; McQuirk, Dale John; and Hill, Winford Lee, II, to Motorola, Inc. Method for forming a buried contact on a semiconductor substrate. 5,798,295, Cl. 438-533.000.
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Wilson, Peter J.; Morris, Charles Phillip; Anson, Donald Stewart; Occhiodoro, Teresa; Bielicki, Julie; Clements, Peter Roy; and Hopwood, John Joseph, 5,798,239, Cl. 435-183.000.
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Nicholson, R. Kent; Somerville, Norman; and Beckstrom, James L., 5,797,415, Cl. 137-15.000.
Hormel Foods Corporation: *See*—
Kunert, Gale F., 5,798,133, Cl. 426-438.000.
Horowitz, Ilan Y.: *See*—
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Horowitz, Mark Alan: *See*—
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Horton, Edward H. Portable combination table, cross-cut, rip-cut, and miter saw. 5,797,307, Cl. 83-471.300.
Horton, Robert; Ressler, Daniel E.; Kaspar, Thomas C.; and Baker, James L., to Iowa State University Research Foundation, Inc. Method and tool to increase in-use efficiency and reduce leaching. 5,797,459, Cl. 172-133.000.
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Hoshi, Hidenori, to Canon Kabushiki Kaisha. Video signal recording apparatus. 5,799,130, Cl. 386-124.000.
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Hosmer, Christopher Eugene, to Marshall and Williams Company. Tenter frame and method. 5,797,172, Cl. 26-89.000.
Hosono, Hiroko; Miyazawa, Tetsuo; Maruhashi, Yoshitsugu; Imazu, Katsuhiro; and Nakamura, Yasuji, to Toyo Seikan Kaisha, Ltd. Packaging material having excellent flavor retention. 5,798,183, Cl. 428-458.000.
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Hosoya, Kazuki: *See*—
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Breuers, Werner; Lecht, Rainer; and Böhm, Ludwig, 5,798,309, Cl. 502-111.000.
Hotset Seizpatronen U. Zubehor GmbH: *See*—
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Howald, John Alan; and Rohweder, Steven Craig, to Goodyear Tire & Rubber Company, The. Tire tread element mold chamfer to modify RCF and/or RSAT using the existing mold. 5,798,124, Cl. 425-32.000.
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Howell, Wayne John: *See*—
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Hwang, Jeffrey H.; Yu, Donald; Hsu, Calvin; and Chee, Alland, 5,798,635, Cl. 323-222.000.
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Huang, Ben. Handle grip. 5,797,813, Cl. 473-549.000.
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Hubert, Jack J.: *See*—
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Hudson Optical Corporation: *See*—
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Ries, Hans, 5,798,048, Cl. 210-767.000.
Huenke, Mark. Wheel hub hand wrench. 5,797,301, Cl. 81-176.150.
Huff, Carl L. Method for environmental treatment of heavy metals. 5,797,992, Cl. 134-7.000.
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Hughes, Henry G.; Stuckey, Marilyn J.; Kniffin, Margret L.; and Lue, Ping-chang, to Motorola, Inc. Sensor and method of fabrication. 5,798,556, Cl. 257-414.000.
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Huling, Bruce Alan; Schneider, Charles Anthony; and Engle, George Martin, to Air Products and Chemicals, Inc.; and GEC, Inc. Nitrogen trifluoride thermal cleaning apparatus and process. 5,797,195, Cl. 34-404.000.

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Hum, Russell Wayne; Murray, Thomas Robert; and Faessler, Shawn Patrick, to General Electric Company. Methods and apparatus for stabilizing a gantry in a computed tomography system. 5,799,054, Cl. 378-17.000.

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Hung, Chin N.: *See—*
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Huntsman Petrochemical Corporation: *See—*
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Hurt, Sara Coffield: *See—*
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Hurtig, Roy E.: *See—*
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McCready, Derek; and Kalemba, Jacek, 5,798,074, Cl. 264-318.000.

Hutcheson, William R.: *See—*
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Huynh, Neal V.: *See—*
Cartmell, Daniel H.; Borgens, David B.; Buus, Henning; Duffy, Keith S.; Gast, Mark E.; Huynh, Neal V.; Lochtie, David W.; and Piersbacher, Clifton A., 5,797,564, Cl. 244-223.000.

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Hwang, Chyou-Hsiung; and Huang, Cheng-Wang, to United Microelectronics Corporation. Apparatus for data communication between universal asynchronous receiver/transmitter (UART) modules and transceivers in a chip set by selectively connecting a common bus between multiplexer/demultiplexer units. 5,799,208, Cl. 395-858.000.

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Hyuga, Makoto. Golf course guidance method, guidance device, and management system. 5,797,809, Cl. 473-407.000.

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Chung, Jae-Won; Lee, Jin-Hak; Moon, Joo-Hee; and Kim, Jae-Kyoon, 5,799,109, Cl. 382-243.000.
Iga, Adam Sempa, 5,798,963, Cl. 365-97.000.
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Funaki, Keisuke; Okada, Akihiko; and Uchida, Takaaki, 5,798,172, Cl. 428-327.000.

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Massey, Richard J.; Blackburn, Gary F.; Wilkins, Elizabeth W.; and Shah, Haresh P., 5,798,083, Cl. 422-52.000.

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Suda, Taiichiro; Fujii, Nagatoshi; Kawasaki, Masami; Moriguchi, Yoshiko; Iijima, Masaki; and Sera, Toshikuni, 5,798,087, Cl. 423-555.000.

Iinuma Gauge Mfg. Co., Ltd.: *See—*
Tanioka, Satoshi; Murata, Shizuo; Kono, Makoto; and Hirano, Masayuki, 5,798,810, Cl. 349-123.000.

Iinuma, Kazuhiro: *See—*
Yoshioka, Hideki; and Iinuma, Kazuhiro, 5,797,844, Cl. 600-442.000.

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Nonaka, Jun; Shimizu, Shuichi; Kobayashi, Satoru; and Iizuka, Takashi, 5,798,784, Cl. 347-243.000.

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Ikebe, Masaru: *See—*
Shima, Motohiko; and Ikebe, Masaru, 5,797,555, Cl. 242-347.000.

Ikeda, Hideki: *See—*
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.

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Katsumi, Yoshimasa; and Ikegami, Yasuyuki, 5,797,295, Cl. 74-483.00R.

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Larson, Paul M., 5,797,232, Cl. 52-408.000.

Imada, Teruaki: *See—*
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Imai, Koji: *See—*
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Imazu, Katsuhiro: *See—*
Hosono, Hiroko; Miyazawa, Tetsuo; Maruhashi, Yoshitsugu; Imazu, Katsuhiro; and Nakamura, Yasuji, 5,798,183, Cl. 428-458.000.

IMEC vzw: *See—*
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Immunomedics, Inc.: *See—*
Hansen, Hans J., 5,798,100, Cl. 424-130.100.

Imodco, Inc.: *See—*
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Imperial Chemical Industries PLC: *See—*

Anderson, Steven John; and Carpenter, Neil Michael, 5,798,331, Cl. 510-501.000.

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Bastien, Denis; and Alber, Pierre, 5,797,798, Cl. 464-111.000.

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Fukushima, Yoshihisa; Inagaki, Masahiro; Azumatani, Yasushi; and Hamasaka, Hiroshi, 5,798,995, Cl. 369-59.000.

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Au-Young, Janice; Cocks, Benjamin Graeme; Coleman, Roger; and Seilhamer, Jeffrey J., 5,798,246, Cl. 435-196.000.
Braxton, Scott Michael; and Murry, Lynn E., 5,798,249, Cl. 435-233.000.

Indiana University Foundation: *See—*
March, Keith L.; and Zipes, Douglas P., 5,797,870, Cl. 604-49.000.

Industrial Technology Research Institute: *See—*
Chiueh, Tzi-Dar; and Chang, Hwai-Tsu, 5,799,134, Cl. 395-24.000.
Lee, Wen-Yeu, 5,798,587, Cl. 310-58.000.
Peng, Chao-Chi, 5,797,780, Cl. 445-25.000.
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Silberstein, Michael, 5,797,785, Cl. 446-227.000.

Informix Software, Inc.: *See—*
Bortvedt, Gerald K.; and Gerber, Robert H., 5,799,305, Cl. 707-10.000.

Infrasoft International LLC: *See—*
Shenk, John S.; and Westerhaus, Mark O., 5,798,526, Cl. 250-339.090.

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McDevitt, Dennis, 5,797,963, Cl. 606-232.000.

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Inoue, Nori: *See—*
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Kuroki, Yasuhisa; Miyata, Kazuyoshi; Tsuda, Yoshihiko; Inoue, Yasuhide; Kanaya, Jun; and Sato, Keigo, 5,798,344, Cl. 514-80.000.

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Konishi, Yoshito; Inoue, Yoshiyuki; Tanaka, Yoshiharu; and Tanii, Junichi, 5,799,223, Cl. 396-538.000.

Institut Francais de Recherche Scientifique pour le Development en Cooperation (Orstom): *See—*
Biard, Jean-Francois; Cortadellas, Dominique; Debitus, Cécile; Laurent, Dominique; Roussakis, Cristos; and Verbist, Jean-Francois, 5,798,381, Cl. 514-456.000.

Institut Francais du Petrole: *See—*
Cacas, Marie-Christine, 5,798,768, Cl. 345-441.000.
Fay, Jean-Baptiste; and Chardin, Michel, 5,798,153, Cl. 428-34.500.

Institut Pasteur: *See—*
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Institute Francais du Petrole: *See—*
Le Gal, Jean-Hervé; Martin, Gérard; and Euzen, Patrick, 5,797,737, Cl. 431-170.000.

Institute of Physical and Chemical Research, The: *See—*
Tsuji, Shuichi; Yoshida, Yukiko; Kojima, Naoya; Kurosawa, Nobuyuki; and Hamamoto, Toshiro, 5,798,244, Cl. 435-193.000.

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Linehan, Daniel S., 5,798,532, Cl. 250-559.220.

Integrated Sensor Solutions: *See—*
Crispie, Finbarr J.; Rodgers, Bertram J., III; and Goenawan, Sofjan, 5,798,692, Cl. 340-501.000.

Intel Corporation: *See—*
Alavi, Mohsen; and Ghani, Tahir, 5,798,552, Cl. 257-371.000.
Cho, Sung-Soo; Kardach, James P.; and Bryant, Diane M., 5,798,951, Cl. 364-708.100.
Jassowski, Michael, 5,798,541, Cl. 257-202.000.
Keeney, Stephen N., 5,798,966, Cl. 365-185.180.
Larsen, Robert E.; and Durante, Richard J., 5,798,971, Cl. 365-189.050.
McKenzie, Meredith; Carter, Jerry D.; and Ong, Nicholas, 5,799,177, Cl. 395-556.000.
Merrick, Dale, 5,799,161, Cl. 395-309.000.
Miller, John David, 5,799,304, Cl. 707-7.000.
Rashkovskiy, Oleg; and Kidder, Jeffrey N., 5,798,948, Cl. 364-572.000.
Weston, Patrick E.; and Laswell, Harry, 5,799,069, Cl. 379-93.330.

InterBold: *See—*
Meyer, Jerry L.; Wellbaum, Wayne D.; and Graef, H. Thomas, 5,797,599, Cl. 271-272.000.

Interdigital Technology Corporation: *See—*
Lomp, Gary; Kowalski, John; Ozluturk, Fatih; Silverberg, Avi; Regis, Robert; Luddy, Michael; Marra, Alexander; and Jacques, Alexander, 5,799,010, Cl. 370-335.000.

Intergraph Corporation: *See—*
Laskowski, Peter, 5,798,923, Cl. 364-420.000.
Pesto, William Steve, Jr., 5,799,204, Cl. 395-830.000.

Intermec Corporation: *See—*
Ackley, H. Sprague, 5,798,513, Cl. 235-462.000.
Swanson, Paul S.; McDonald, William M.; and Coffman, Kenneth L., 5,798,509, Cl. 235-462.000.

International Business Machines: *See—*
Gaynes, Michael A.; and Molla, Jaynal A., 5,798,050, Cl. 216-20.000.

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Bentlage, Mark Rudolf; Fallon, Kenneth Michael; and White, Lawrence Harold, 5,798,285, Cl. 438-108.000.

International Business Machines Corporation: *See—*
Agrawal, Rakesh; Mehta, Manish; and Shafer, John Christopher, 5,799,311, Cl. 707-102.000.
Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Mattos, Nelson; Niblack, Carlton Wayne; Petkovic, Draugutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, 5,799,310, Cl. 707-102.000.
Büttner, Stefan; Pille, Jürgen; Wendel, Dieter; and Wernicke, Friedrich, 5,798,975, Cl. 365-203.000.
Badovinatz, Peter Richard; Chandra, Tushar Deepak; Gopal, Ajei Sarat; Kirby, Orvalle Theodore; and Pershing, John Arthur, Jr., 5,799,146, Cl. 395-182.020.
Benayoun, Alain; Le Pennec, Jean-Francois; Michel, Patrick; and Sicsic, Patrick, 5,799,158, Cl. 395-285.000.
Benizri-Carl, Peter; Egert, Wolfgang; Jung, Manfred; and van Kessel, Theodore Gerard, 5,798,525, Cl. 250-310.000.
Bertin, Claude Louis; Hedberg, Erik Leigh; and Howell, Wayne John, 5,798,282, Cl. 438-15.000.
Bhatt, Ashwinkumar Chinuprasad; Desai, Subahu Dhirubhai; Duffy, Thomas Patrick; and Knight, Jeffrey Alan, 5,798,909, Cl. 361-764.000.
Bingham, Ronald Edward; Dockter, Michael Jon; Farber, Joel Frank; Pauser, Michael Leon; and Richardt, Randal James, 5,799,298, Cl. 707-1.000.
Blackman, Kenneth R.; and Howe, Jack L., III, 5,799,313, Cl. 707-103.000.
Brenner, Larry Bert; Briskey, Kenneth Charles; and Rothaupt, Krystal Kay, 5,799,149, Cl. 395-200.310.
Butsch, Rainer; Hartley, John George; and Stickel, Werner, 5,798,528, Cl. 250-492.200.
Castelli, Vittorio; Li, Chung Sheng; and Yu, Philip Shi-Lung, 5,799,301, Cl. 707-6.000.
Chang, Thomas Young; and Lee, Edward Hinpong, 5,798,897, Cl. 360-126.000.
Cobbett, Michael; and Pickering, John Brian, 5,799,278, Cl. 704-256.000.
Dahl, Scott S., 5,798,759, Cl. 345-339.000.
Dorius, Lee Kevin; Harker, John M.; and Samuelson, Laurence Scott, 5,798,889, Cl. 360-103.000.
Drumm, Anthony DeGroff; Kanzelman, Robert Lowell; and Rudolph, Bruce George, 5,799,170, Cl. 395-500.000.
Ebcioglu, Kemal; and Silberman, Gabriel Mauricio, 5,799,179, Cl. 395-581.000.
Feilchenfeld, Natalie Barbara; Kresge, John Steven; Moore, Scott Preston; Nowak, Ronald Peter; and Wilson, James Warren, 5,798,563, Cl. 257-668.000.
Fitzgerald, Joseph Michael, 5,798,950, Cl. 364-578.000.
Fontana, Robert Edward, Jr.; Hetzler, Steven Robert; Santini, Hugo Alberto Emilio; and Williams, Mason Lamar, 5,798,890, Cl. 360-103.000.
Furukawa, Toshiharu; Mandelman, Jack Allan; and Tonti, William R., 5,798,553, Cl. 257-394.000.
Gates, Stephen McConnell; Lowe, Anthony C.; and Pezeshki, Bardia, 5,799,231, Cl. 349-115.000.
Georgiou, Christos John; Kirkpatrick, Edward Scott; and Larsen, Thor Arne, 5,798,918, Cl. 364-148.000.
Gillis, Donald Ray; Jen, David H.; and Suk, Mike, 5,798,884, Cl. 360-75.000.
Gossler, Thomas; and Stark, Gerhard, 5,799,173, Cl. 395-500.000.
Hekmatpour, Amir, 5,799,292, Cl. 706-11.000.
Knox, Andrew; and Beeteson, John, 5,798,790, Cl. 348-191.000.
Koser, Leonard William; Manges, Mary Christine; Ring, Frances Mary; Rogers, Cynthia Ann; Snyder, Michael John; and Vriezen, John Joseph, 5,799,189, Cl. 395-680.000.
Lee, Pei-Ing Paul; Vollmer, Bernd; Restaino, Darryl; and Klaasen, Bill, 5,798,301, Cl. 438-653.000.
Manikundalam, Ravindranath K.; and Rawson, Freeman Leigh, III, 5,799,188, Cl. 395-678.000.
McBrearty, Gerald Francis, 5,799,187, Cl. 395-652.000.
McNutt, Bruce; Menon, Jaishankar Moothedath; and Smith, Kevin Frank, 5,799,324, Cl. 707-206.000.

Niijima, Hideoto; Matsuo, Nobuyuki; and Shimada, Mayumi, 5,799,140, Cl. 395-182.040.
Nufer, Robert Wolff, 5,798,469, Cl. 75-246.000.
Oehrlein, Gottlieb Stefan; Vender, David; Zhang, Ying; and Haverlag, Marco, 5,798,016, Cl. 156-345.000.
Rigoutsos, Isidore, 5,799,312, Cl. 707-103.000.
Selker, Edwin Joseph; Seki, Kazunori; Suzuki, Michio; and Yonemochi, Kenshin, 5,798,754, Cl. 345-161.000.
Srinivasan, Venkatachary, 5,799,309, Cl. 707-102.000.
Wagner, Alfred, 5,798,529, Cl. 250-492.200.
Ye, Jun; Pease, Roger Fabian Wedgwood; and Takac, Michael T., 5,798,947, Cl. 361-589.000.

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Agrawal, Rakesh; Ho, Ching-Tien; and Srikant, Ramakrishnan, 5,799,300, Cl. 707-5.000.

International Data Engineering, Inc.: *See*—
Ware, Eric A.; and Hart, Robert G., 5,798,997, Cl. 369-75.200.

International Flavors & Fragrances Inc.: *See*—
Marin, Anna Belle, 5,798,385, Cl. 514-512.000.

International Rectifier Corporation: *See*—
Nadd, Bruno C.; and Ranjan, Niraj, 5,798,538, Cl. 257-139.000.

International Technidyne Corporation: *See*—
Cimini, Catherine M.; and Mawhirt, James A., 5,797,921, Cl. 606-118.000.
Mawhirt, James A.; and Thompson, Nikki S., 5,797,940, Cl. 606-167.000.

Interventional Technologies Inc.: *See*—
Barath, Peter, 5,797,935, Cl. 606-159.000.

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Collin, Jean-Claude; Larue, Joseph; and Rojey, Alexandre, 5,797,981, Cl. 95-174.000.

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Madhani, Akhil J.; and Salisbury, J. Kenneth, 5,797,900, Cl. 606-1.000.

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Horton, Robert; Ressler, Daniel E.; Kaspar, Thomas C.; and Baker, James L., 5,797,459, Cl. 172-133.000.

Ip, Joseph: *See*—
Colbourne, Paul; Ip, Joseph; and Teitelbaum, Neil, 5,798,859, Cl. 359-247.000.

Ipics Corporation: *See*—
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Kühn, Gideon Jacobus; Davies, Donald Watts; and Rix, Simon Paul Ashley, 5,799,089, Cl. 380-37.000.

Isa, Satoshi, to NEC Corporation. Semiconductor memory device having redundant memory cells. 5,798,973, Cl. 365-200.000.

Isaacs, Paul M., to Silicon Graphics, Inc. Robust mapping of 2D cursor motion onto 3D lines and planes. 5,798,761, Cl. 345-419.000.

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Sammataro, Stephen R.; Kish, Jules G.; and Isabelle, Charles J., 5,797,185, Cl. 29-893.300.

Isato, Nobuhiko: *See*—
Ito, Masahiro; and Isato, Nobuhiko, 5,799,199, Cl. 395-750.060.

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Kobayashi, Makoto; Yamamoto, Masakazu; Miyake, Yoshio; Isemoto, Koji; Uwai, Keita; and Miyazaki, Yoshiaki, 5,797,731, Cl. 417-238.000.

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Endo, Haruyuki; Fuse, Takeshi; and Ishida, Hiroyuki, 5,798,684, Cl. 338-22.00R.

Ishida, Yasushi: *See*—
Ono, Takeshi; Yoshida, Takehiro; Kobayashi, Makoto; Takeda, Tomoyuki; Wada, Satoshi; Yokoyama, Minoru; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; and Yamada, Masakatsu, 5,798,789, Cl. 347-186.000.

Ishihara, Masaaki, to Canon Kabushiki Kaisha. Camera with film cartridge loading feature. 5,799,222, Cl. 396-538.000.

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Karasawa, Akio; Yamaguchi, Akihiro; Yamaguchi, Keizaburo; and Ishihara, Yuko, 5,798,422, Cl. 525-450.000.

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Ishikawa, Susumu; Tateno, Masao; and Tomita, Koji, to Tochigi Fuji Sangyo Kabushiki Kaisha. Fluid machine having balance correction. 5,797,735, Cl. 418-151.000.

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Iwashige, Naoyuki, 5,798,025, Cl. 162-261.000.

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Iwashige, Naoyuki, 5,798,025, Cl. 162-261.000.

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Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, 5,799,215, Cl. 396-168.000.

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Kimura, Makiko; Sugitani, Hiroshi; Sugama, Sadayuki; and Ishinaga, Hiroyuki, 5,798,778, Cl. 347-45.000.

Ishizaki, Hirokazu: *See*—
Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.

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Ishizaki, Kunihiko: *See*—
Wada, Katsuyuki; Ishizaki, Kunihiko; and Nagasuna, Kinya, 5,797,893, Cl. 604-372.000.

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Endo, Haruyuki; Fuse, Takeshi; and Ishida, Hiroyuki, 5,798,684, Cl. 338-22.00R.

Ishizuka, Masaaki; Kawazu, Masaji; Katsumi, Toshiaki; Fuse, Yoshihide; Maeda, Kenji; and Takeuchi, Tomio, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai; and Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Amino acid derivatives. 5,798,387, Cl. 514-551.000.

ISIS Pharmaceuticals, Inc.: *See*—
Cook, Phillip Dan; Kawasaki, Andrew M.; and Kung, Pei Pei, 5,798,360, Cl. 514-255.000.

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Meehan, Paul Harquail; Isnardi, Michael Anthony; and Dieterich, Charles Benjamin, 5,798,788, Cl. 348-180.000.

Isobe, Yoshinori: *See*—
Ueda, Noriyoshi; Hiroi, Masakazu; Nakamura, Shinichi; Mizuno, Yoshio; Sato, Chikara; Kaneko, Tokuharu; Isobe, Yoshinori; Yoshida, Akimaro; Hishikawa, Yasuhide; and Nakagawa, Tomohito, 5,799,237, Cl. 399-367.000.

Isota, Yoji: *See*—
Ohtsuka, Masataka; Isota, Yoji; Matsunaga, Makoto; Konishi, Yoshihiko; and Nakahara, Shintaro, 5,798,734, Cl. 343-700.0MS.

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Yamamoto, Eiji; and Ito, Masataka, 5,798,826, Cl. 356-4.090.

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Tsujita, Yoshio; Horikoshi, Hiroyoshi; and Ito, Takashi, 5,798,375, Cl. 514-369.000.

Ito, Yutaka: *See*—
Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; Aoki, Kaoru; and Gohara, Shinobu, 5,799,014, Cl. 370-358.000.

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Itou, Masaki: *See*—
Ohkubo, Shuichi; Okada, Mitsuya; and Itou, Masaki, 5,798,993, Cl. 369-54.000.

Itron, Inc.: *See*—
Lee, Thomas A., 5,798,670, Cl. 327-552.000.

ITW Fastex Italia S.p.A.: *See*—
Oddenino, Manrico, 5,797,714, Cl. 411-508.000.

Ivanov, Andrey: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

Iwaguchi, Isao: *See*—
Watanabe, Mitsuo; Sato, Shinichi; Iwaguchi, Isao; and Shinoda, Ichiro, 5,798,510, Cl. 235-462.000.

Iwakura, Yoshie: *See*—
Abe, Takuya; Toizumi, Kiyoshi; Shimazu, Fumio; Yoshimoto, Hiromu; Yamauchi, Kouichi; Tachiki, Hiroshi; Oikawa, Tomohiro; Iwakura, Yoshie; and Katoh, Atsuyuki, 5,799,225, Cl. 399-66.000.

Iwamaru, Akifumi: *See*—

Terada, Makoto; Iyoda, Isao; Kobayashi, Yoshiyuki; and Iwamaru, Akifumi, 5,798,634, Cl. 323-207.000.

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Iwasa, Shoichi; and Tani, Tomofune, to Nippon Steel Corporation. Semiconductor storage device. 5,798,545, Cl. 257-301.000.

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Iwashita, Hidetoshi, to Fujitsu Limited. Method of processing data batch transfer among the memories in a computer system having a hierarchical memory structure. 5,799,183, Cl. 395-602.000.

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Izuhara, Katsuhiro: *See*—
Kobayashi, Hisamine; and Izuhara, Katsuhiro, 5,797,498, Cl. 209-636.000.

Jachowski, Douglas R., to Allen Telecom Inc. Dual-mode dielectric resonator bandstop filter. 5,798,676, Cl. 333-202.000.

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Kert, John; Stephens, Robert; and Jack, Michael D., 5,797,682, Cl. 374-123.000.

Jackaman, David Peter; and Featherstone, William Barry, to Davy McKee (Stockton) Limited. Cooling of hot bodies. 5,797,274, Cl. 62-171.000.

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Rivette, Kevin G.; Florio, Michael P.; Jackson, Adam; Ahn, Don; Rappaport, Irving S.; and Kurata, Deborah, 5,799,325, Cl. 707-500.000.

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Thayer, Ronda Renee Bayer; Benedict, Robert Leon; Chlebina, Larry Edward; Jacobs, Bernard Byron; Laurich, Thomas Andrew; Macesich, Walter George; Majerus, Norbert; Rambacher, John Sylvester; Rex, William Allen; Rooney, Timothy Michael; Sobhanie, Mohammad Eghbal; Yovichin, Albert James; Wolfe, David Lowell; and Hentosz, Daniel Patrick, 5,798,127, Cl. 425-117.000.

Jacobs, Lucas A. G.: *See*—
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Jaconelli, Georges: *See*—
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Jacques, Alexander: *See*—
Lomp, Gary; Kowalski, John; Ozluturk, Fatih; Silverberg, Avi; Regis, Robert; Luddy, Michael; Marra, Alexander; and Jacques, Alexander, 5,799,010, Cl. 370-335.000.

Jaeckel, Silvia E.: *See*—
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Jaeger, Gérard, to Asulab S.A. Apparatus intended for dispensing successive zones of a disposable strip. 5,797,693, Cl. 403-24.000.

Jacsent Inc.: *See*—
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Jaffe, Steven T.: *See*—
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Jaggle, Carlota-Silvia: *See*—
Strittmatter, Wolfgang; Jaggle, Carlota-Silvia; Meuer, Stefan; Shraven, Burkhart; and Wild, Martin, 5,798,229, Cl. 435-70.210.

Jahns, Ekkehard: *See*—
Beck, Erich; Meyer, Frank; Poth, Ulrich; Siemensmeyer, Karl; Sierakowski, Claudia; Greif, Norbert; Ostertag, Werner; Zimstein, Michael; Leyrer, Reinhold; Jahns, Ekkehard; Etzbach, Karl-Heinz; and Schuhmacher, Peter, 5,798,147, Cl. 427-511.000.

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James, Brian: *See*—
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James, Robert Wilton, to F F Seeley Nominees Pty Ltd. Vacuum dewatering of desiccant brines. 5,797,272, Cl. 62-93.000.

Janes, Richard; and Davis, Stephen J., to Prince Sports Group, Inc. Retention device for sports racquets, especially for racquetball racquets. 5,797,814, Cl. 473-551.000.

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Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Mattos, Nelson; Niblack, Carlton Wayne; Petkovic, Draugutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, 5,799,310, Cl. 707-102.000.

Janik, Craig M., to ViA, Inc. Wearable computing device with module protrusion passing into flexible circuitry. 5,798,907, Cl. 361-683.000.

Janky, James M.: *See*—
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Jansen, Thomas C.: *See*—
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Jansson, Patricia, to Höganäs AB. Heat treating of magnetic iron powder. 5,798,177, Cl. 428-403.000.

Japan as represented by President of Hokkaido University: *See*—
Ohba, Ryoji; and Tamanoi, Yoshihito, 5,798,459, Cl. 73-587.000.

Japan Aviation Electronics Industry Limited: *See*—
Saito, Kazuki; Matsuno, Yuichi; Kuramitsu, Yuuji; and Tsuzuki, Hiroyuki, 5,797,762, Cl. 439-342.000.

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Itoh, Yoshiaki; Kiyama, Jiro; Kojima, Hiroshi; Seki, Susumu; and Oka, Ryuichi, 5,799,275, Cl. 704-241.000.

Japan Synthetic Rubber Co., Ltd.: *See*—
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Jassowski, Michael, to Intel Corporation. Standard semiconductor cell with contoured cell boundary to increase device density. 5,798,541, Cl. 257-202.000.

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JDS Fitel Inc.: *See*—
Colbourne, Paul; Ip, Joseph; and Teitelbaum, Neil, 5,798,859, Cl. 359-247.000.
Duck, Gary S.; and Cheng, Yihao, 5,799,121, Cl. 385-47.000.

Jeffer, Peter H.; and Fernandes, Michel, to New-View Windshield Wiper, L.P. Articulated windshield wiper blade assembly. 5,797,160, Cl. 15-250.361.

Jeffery, Stuart S.: *See*—
Gallagher, Michael D.; Carlson, Kirk D.; Jeffery, Stuart S.; Lee, Ming J.; Grencions, Vilnis G.; and Snyder, Randall A., 5,799,084, Cl. 380-23.000.

Jen, David H.: *See*—
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Jeng, Nanseng: *See*—
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Jenkins, Janice M.: *See*—
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Jenko, Edward J.: *See*—
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Jensen, Jens: *See*—
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Jeong, Myung-Yung; Park, Sang-Ho; Chun, Oh-Gone; Ahn, Seung-Ho; Choy, Tae-Goo; and Kim, Hak-Seok, to Electronics and Telecommunications Research Institute; and Korea Telecommunication Authority. Multifiber optical connector. 5,799,122, Cl. 385-59.000.

Jepson, Steven C.; Dudar, Thomas E.; Zdeb, Brian D.; and Desecki, Vince C., to Baxter International Inc. Pre-slit injection site and tapered cannula. 5,797,897, Cl. 604-412.000.

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Jerome Group, Inc., The: *See*—
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Jeter, Jack W., to Jeter Systems Corporation. File holders with folder retention. 5,797,665, Cl. 312-107.000.

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Jezuit, Richard J.: *See*—

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Jiang, Shibo: *See—*
Neurath, Alexander Robert; Debnath, Asim Kumar; Jiang, Shibo; Li, Yun-Yao; and Strick, Nathan, 5,798,206, Cl. 435-5.000.

Jiang, Wayne: *See—*
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Johansson, Bert E.; and Grims, Connie M., Sr., to Coors Brewing Company. Domer apparatus for a can body making apparatus. 5,797,292, Cl. 72-348.000.

John Hopkins University School of Medicine: *See—*
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Johnson & Johnson, Inc.: *See—*
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Johnson, Christopher L.: *See—*
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Johnson, Donald A. Automotive wire spoke wheels. 5,797,660, Cl. 301-73.000.

Johnson, John Kelly: *See—*
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Johnson, Kirk R.: *See—*
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Johnson, Larry D.: *See—*
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Johnson, Mark: *See—*
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Johnson, Michael G.; Knoedl, George; and Shevchuk, George J., to Lucent Technologies, Inc. Mold assembly for forming apertures in a molded body. 5,798,073, Cl. 264-313.000.

Johnson, Robert J.; and Szturma, Shawn W., to Pitney Bowes Inc. Method and system for minimizing attribute naming errors in set oriented duplicate detection. 5,799,302, Cl. 707-7.000.

Johnson, Terry Lee: *See—*
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Johnson, Thomas R.: *See—*
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Johnson, Todd M.; Ramion, Robert; and Johnson, Wilbur. Audio storage/reproduction system with automated inventory control. 5,798,921, Cl. 364-400.010.

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Johnson, William L.: *See—*
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Jolma, Petri: *See—*
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Jones, Joseph P.: *See—*
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Jones, Robert J.: *See—*
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Jordan, Norman James; and Archbold, John Michael, to Australian Research and Design Corporation Pty Ltd. Controller for providing timing signals for video data. 5,798,799, Cl. 348-552.000.

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Jorke, Helmut, to Daimler Benz AG. Bipolar transistor for very high frequencies. 5,798,539, Cl. 257-197.000.

Joseph, Alice; and Le Marchand, Alain, to Ateliers Reunis Caddie. Cart including a frame mounted on castors and a castor in particular for a cart of this kind. 5,797,611, Cl. 280-33.991.

Josić , Ante, to Josic, Ante. Automatic light system for motor vehicles of all kinds and a method for controlling a light system. 5,798,911, Cl. 362-66.000.

Jost, Mark E.; Hansen, David J.; and McDonald, Steven M., to Micron Technology, Inc. Method of forming wafer alignment patterns. 5,798,292, Cl. 438-401.000.

Joulia, Gérard, to L'Oreal. Process for molding a make-up composition. 5,798,110, Cl. 424-401.000.

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Joyce, Michael Julian; Ong, Ping-Wen; Ourmazd, Abbas; and Warwick, Colin Alan, to AT&T Corp. Automated message system for a calling party. 5,799,066, Cl. 379-88.000.

Judd, Wilson A.: *See—*
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Jui Chu Enterprise Co., Ltd.: *See—*
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Jun, Young Kwon, to LG Semicon Co., Ltd. Dynamic random access memory having no capacitor and method for fabricating the same. 5,798,965, Cl. 365-150.000.

Jung, Chul Hi. Wrist fixing band for golf. 5,797,803, Cl. 473-213.000.

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Jung, Ulrich: *See—*
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Jung, Won Young: *See—*
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Junqua, Jean-Claude; and Galler, Michael, to Matsushita Electric Industrial Co., Ltd. Call routing device employing continuous speech. 5,799,065, Cl. 379-88.000.

Jurik, Mirjana; Dziegielewski, Thomas; Perri, John; and Grzybowski, Thomas, to Chrysler Corporation. Gear shift tube support. 5,797,685, Cl. 384-215.000.

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Juso, Hiromi; Haikawa, Yukihiko; and Hosono, Yukiharu, to Sharp Kabushiki Kaisha. Information reproducing apparatus by which reading operation from recording medium is controlled based on amount of data in memory. 5,799,197, Cl. 395-750.050.

K-2 Corporation: *See—*
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K-Quay Enterprises, LLC: *See—*
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Kabalnov, Alexey: *See—*
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Kabushiki Kaisha Ace Denken: *See—*
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Kabushiki Kaisha Gotoh Seisakusho: *See—*
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Kabushiki Kaisha Iseki Kaihatsu Koki: *See—*
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Kabushiki Kaisha Kenlock: *See—*
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Kabushiki Kaisha Samco International Kenkyusho: *See—*
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Kabushiki Kaisha Shinkawa: *See—*
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Hayashida, Hirotaka; Teraoka, Hirohito; Ono, Tomoyuki; Soeda, Tsuyoshi; and Yamamoto, Masaaki, 5,798,189, Cl. 429-101.000.
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Kawagishi, Toshiyuki; and Kondou, Youko, 5,798,507, Cl. 235-380.000.
Kondou, Youko, 5,799,171, Cl. 395-500.000.
Mano, Hiroshi; Watanabe, Takashi; and Suwa, Terunori, 5,799,074, Cl. 379-142.000.
Matsubara, Gensoh, 5,798,955, Cl. 364-736.010.
Morita, Isao, 5,798,583, Cl. 310-42.000.
Moriyasu, Takashi; Muranaga, Tetsuro; and Kodama, Mami, 5,799,191, Cl. 395-682.000.
Nagai, Yasuo, 5,799,295, Cl. 706-46.000.
Nakamura, Hiroko; Sugihara, Kazuyoshi; and Komano, Haruki, 5,799,104, Cl. 382-144.000.
Nitta, Koichi, 5,798,537, Cl. 257-103.000.
Ogusu, Masahiro; and Ohshima, Shigeru, 5,799,118, Cl. 385-14.000.
Shimokawa, Yoshiyuki, 5,798,836, Cl. 356-375.000.
Toda, Haruki; and Kuyama, Hitoshi, 5,798,979, Cl. 365-233.000.
Yamaguchi, Hideaki; and Kasano, Akira, 5,798,787, Cl. 348-152.000.
Yoshioka, Hideki; and Iinuma, Kazuhiro, 5,797,844, Cl. 600-442.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kawaguchi, Masahiro; Sonobe, Masanori; Yokono, Tomohiko; and Suitou, Ken, 5,797,730, Cl. 417-222.200.
Saito, Yukio; Ohashi, Kengo; Morita, Takayuki; and Kasahara, Daiji, 5,797,255, Cl. 57-281.000.

Kabushiki Kaisha Yaskawa Denki: *See*—
Hirai, Junji; Hiraga, Yoshiji; Hirose, Kenji; Nitta, Yuji; Hamamoto, Hiroyuki; and Nomura, Kenji, 5,798,622, Cl. 318-16.000.

Kaczmarczyk, Christina T., to Novtex Corp. Crochet knitted decorative ribbon with severable sections forming decorative curls. 5,797,283, Cl. 66-193.000.

Kadoya, Yoshikuni; Kawai, Hisataka; and Magoshi, Ryotarou, to Mitsubishi Heavy Industries, Ltd. High-strength and high-toughness heat-resistant cast steel. 5,798,082, Cl. 420-38.000.

Kaehler, David L., to Gilbarco Inc. Fuel dispenser/operator intercom system. 5,798,931, Cl. 364-479.010.

Kaepp, Gregory A., to Ford Global Technologies, Inc. Method for optimizing the design of a product using knowledge-based engineering techniques. 5,799,293, Cl. 706-45.000.

Kageyama, Naohiro: *See*—
Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, 5,799,215, Cl. 396-168.000.

Kageyama, Seiji: *See*—
Kitagawa, Makoto; Kageyama, Seiji; Matsumoto, Satoru; Shimakawa, Takuya; and Tamura, Naomi, 5,799,206, Cl. 395-856.000.

Kahlbaugh, Brad: *See*—
Dudrey, Denis J.; Kahlbaugh, Brad; and Anderson, Erland D., 5,797,973, Cl. 55-372.000.

Kaiju, Yoshihiko: *See*—
Nakayasu, Hirofumi; Kaiju, Yoshihiko; Kameya, Kotaro; Shimura, Takaki; Iida, Atsuo; and Tanida, Toshifumi, 5,798,779, Cl. 347-46.000.

Kaito, Hiroyoshi: *See*—
Yano, Kazunori; Kaito, Hiroyoshi; Wakayama, Akeharu; and Yada, Shuhei, 5,798,407, Cl. 524-504.000.

Kajihara, Noriyuki, to Sharp Kabushiki Kaisha. Power source for driving liquid crystal. 5,798,741, Cl. 345-94.000.

Kajima Corporation: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.

Kajiyana, Kiyonori: *See*—
Ohya, Shuichi; Sakao, Masato; Takaishi, Yoshihiro; Kajiyana, Kiyonori; Akimoto, Takeshi; Oguro, Shizuo; and Shishiguchi, Seiichi, 5,798,544, Cl. 257-296.000.

Kakiuchi, Yoshihiro: *See*—
Tanaka, Takao; Mukai, Masanori; Nagaoka, Takeshi; Nakamura, Kazuo; Hirooka, Takaaki; Shiota, Takuji; Kakiuchi, Yoshihiro; Tabei, Ryoichi; and Matsuo, Kouichi, 5,799,288, Cl. 705-43.000.

Kakizawa, Haruo: *See*—
Udagawa, Tetsuo; Kakizawa, Haruo; Nagata, Kouichi; and Tanaka, Kazuto, 5,798,863, Cl. 359-557.000.

Kakuta, Masayuki; and Tabata, Yoshiaki, to Mita Industrial Co., Ltd. Automatic document conveying device. 5,797,597, Cl. 271-96.000.

Kalapathy, Paul E., to Chromatic Research, Inc. Emulated registers. 5,799,169, Cl. 395-500.000.

Kalebjian, Christopher Joseph; Hamby, Stephen Joseph; and Coots, Wade, to Ford Motor Company. Throttle body with captured bearings. 5,797,589, Cl. 251-305.000.

Kalemba, Jacek: *See*—
McCready, Derek; and Kalemba, Jacek, 5,798,074, Cl. 264-318.000.

Kalman, Jeffrey M.: *See*—
Vystrcil, Robert A.; Cipolla, Mark E.; Thur, Charles J.; Kalman, Jeffrey M.; and Wright, Michael F., 5,797,162, Cl. 15-323.000.

Kalmikov, Leon: *See*—
Goichman, Tal; and Kalmikov, Leon, 5,798,487, Cl. 177-83.000.

Kamani, Sanjay; Salmon, John K., deceased (by Lucy Mary Salmon, executor), to Otis Elevator Company. Reactive governor. 5,797,472, Cl. 187-373.000.

Kamata, Tsuneo; Niki, Makoto; and Ueda, Yoshihide, to Toyo Tire & Rubber Co., Ltd. Automobile vibration-isolating rubber composition and automobile vibration-isolating device. 5,798,416, Cl. 524-259.000.

Kamatani, Yasuo. Multi-layered optical disk reading method using liquid crystal diffraction device. 5,798,994, Cl. 369-58.000.

Kameya, Kotaro: *See*—
Nakayasu, Hirofumi; Kaiju, Yoshihiko; Kameya, Kotaro; Shimura, Takaki; Iida, Atsuo; and Tanida, Toshifumi, 5,798,779, Cl. 347-46.000.

Kaminkow, Joseph E.: *See*—
Cebula, Edwin; and Kaminkow, Joseph E., 5,797,600, Cl. 273-121.00A.

Kaminsky, Jacob: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

Kamura, Hitoshi: *See*—
Iida, Kazumasa; Miyamoto, Katsuhiko; Kamura, Hitoshi; Tamura, Hiroki; and Kojima, Atsuyoshi, 5,797,367, Cl. 123-295.000.

Kanaba, Seiji; Asakura, Kenji; Suesada, Tsuyoshi; Tsuru, Teruhisa; and Mandai, Harufumi, to Murata Mfg. Co., Ltd. Chip antenna. 5,798,737, Cl. 343-895.000.

Kanaya, Jun: *See*—
Kuroki, Yasuhisa; Miyata, Kazuyoshi; Tsuda, Yoshihiko; Inoue, Yasuhide; Kanaya, Jun; and Sato, Keigo, 5,798,344, Cl. 514-80.000.

Kanayama, Toshiji; Uchiyama, Taro; and Yanagisawa, Isao, to Shiseido Co., Ltd. Glomerulonephritis inhibitor. 5,798,389, Cl. 514-560.000.

Kanda, Jun, to Pioneer Electronic Corporation. Image processing apparatus. 5,798,751, Cl. 345-138.000.

Kandasamy, Balaji: *See*—
Evans, Alfred J.; and Kandasamy, Balaji, 5,797,308, Cl. 83-618.000.

Kane, Mark J.: *See*—
Droste, Timothy A.; Barnes, Charles W.; Kane, Mark J.; and Castiglione, Paul J., 5,799,260, Cl. 701-51.000.

Kanegae, Hirozoh: *See*—
Sakai, Kunito; Oshio, Kazuharu; and Kanegae, Hirozoh, 5,798,070, Cl. 264-272.170.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Ishizuka, Masaaki; Kawazu, Masaji; Katsumi, Toshiaki; Fuse, Yoshihide; Maeda, Kenji; and Takeuchi, Tomio, 5,798,387, Cl. 514-551.000.
Mishima, Ikuhiro; Doi, Norito; Matsumura, Youichi; and Matsumoto, Shigemi, 5,798,414, Cl. 525-77.000.
Yamashita, Koichi; Kobayashi, Hiroshi; and Asada, Masahiro, 5,798,403, Cl. 524-447.000.

Kanehara, Kenji: *See*—
Morishima, Shingo; Yamada, Jun; Kanehara, Kenji; and Yoshinaga, Tohru, 5,797,263, Cl. 60-311.000.

Kanekiyo, Tomoyuki; Kojima, Haruhiko; and Nishi, Hiroyuki, to Nippon Telegraph and Telephone Corp. Method and system for private communication with efficient use of bus type transmission path. 5,799,018, Cl. 370-451.000.

Kaneko, Hisashi: *See*—
Yoshida, Mitsuaki; and Kaneko, Hisashi, 5,798,887, Cl. 360-99.080.

Kaneko, Masahiro: *See*—
Okuyama, Toshihide; and Kaneko, Masahiro, 5,798,588, Cl. 310-81.000.

Kaneko, Shinji; Ohura, Seiji; Mihara, Yoshizo; and Sato, Yukio, to Sony Corporation. Laser diode monitoring apparatus for determining the decay of laser diode. 5,798,992, Cl. 369-116.000.

Kaneko, Tetsuya, to Yamaichi Electronics Co., Ltd. Contact. 5,797,774, Cl. 439-857.000.

Kaneko, Tokuharu: *See*—
Ueda, Noriyoshi; Hiroi, Masakazu; Nakamura, Shinichi; Mizuno, Yoshio; Sato, Chikara; Kaneko, Tokuharu; Isobe, Yoshinori; Yoshida, Akimaro; Hishikawa, Yasuhide; and Nakagawa, Tomohito, 5,799,237, Cl. 399-367.000.

Kanfoush, Daniel E.: *See*—
Matheis, Mark A.; Kanfoush, Daniel E.; and Christy, Orrin D., 5,799,227, Cl. 399-92.000.

Kanga, Vispi Dorab; Slavtcheff, Craig Stephen; and Znaiden, Alexander Paul, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Clear emulsion cosmetic compositions. 5,798,111, Cl. 424-401.000.

Kano, Kenichi; and Sugawara, Kokichi, to Sony Corporation. Casing having multiple printed layers which provide a protected decorative area and unprotected area on which writing can be formed. 5,799,008, Cl. 369-291.000.

Kansai Electric Power Co., Inc.: *See*—
Suda, Taiichiro; Fujii, Nagatoshi; Kawasaki, Masami; Moriguchi, Yoshiko; Iijima, Masaki; and Sera, Toshikuni, 5,798,087, Cl. 423-555.000.

Kansei Corporation: *See*—
Ono, Kazumi, 5,797,621, Cl. 280-730.200.

Kanzelman, Robert Lowell: *See*—
Drumm, Anthony DeGroff; Kanzelman, Robert Lowell; and Rudolph, Bruce George, 5,799,170, Cl. 395-500.000.

Kao Corporation: *See*—
Kitaori, Noriyuki; Yoshida, Osamu; Mizunoya, Hirohide; and Shiga, Akira, 5,798,176, Cl. 428-402.000.

Kappe, Thomas: *See*—

von Deyn, Wolfgang; Theobald, Hans; Nuebling, Christoph; Kardorff, Uwe; Walter, Helmut; Westphalen, Karl-Otto; Kappe, Thomas; and Gerber, Matthias, 5,798,451, Cl. 546-155.000.

Kaptue, Lazare: *See—*
Hauser, Hans-Peter; Knapp, Stefan; Brust, Stefan; Gürtler, Lutz G.; Eberle, Josef; Kaptue, Lazare; and Zekeng, Léopold Achenqui, 5,798,205, Cl. 435-5.000.

Kapusta, Richard L.; and Jones, Christopher W., to Cypress Semiconductor Corp. Method and apparatus for providing clock signals to macrocells of logic devices. 5,799,176, Cl. 395-556.000.

Karakasoglu, Ahmet; Hung, Chin N.; Matouk, Anthony F.; and Grotte, Lawrence C., to Local Silence, Inc. Sleep apnea screening and/or detecting apparatus and method. 5,797,852, Cl. 600-529.000.

Karasawa, Akio; Yamaguchi, Akihiro; Yamaguchi, Keizaburo; and Ishihara, Yuko, to Mitsui Toatsu Chemicals, Inc. Aromatic hydroxycarboxylic acid resins and their use. 5,798,422, Cl. 525-450.000.

Kardach, James P.: *See—*
Cho, Sung-Soo; Kardach, James P.; and Bryant, Diane M., 5,798,951, Cl. 364-708.100.

Kardorff, Uwe: *See—*
von Deyn, Wolfgang; Theobald, Hans; Nuebling, Christoph; Kardorff, Uwe; Walter, Helmut; Westphalen, Karl-Otto; Kappe, Thomas; and Gerber, Matthias, 5,798,451, Cl. 546-155.000.

Karin, Judy: *See—*
Bowers, John E.; Mar, Alan; Helkey, Roger J.; and Karin, Judy, 5,799,024, Cl. 372-11.000.

Karita, Seiichiro: *See—*
Takahashi, Kazuyoshi; Masuda, Kazuaki; Takayanagi, Yoshiaki; Suzuki, Akio; Kurata, Mitsuru; Abe, Tsutomu; Karita, Seiichiro; Tajika, Hiroshi; Koitabashi, Noribumi; Uchida, Haruo; Yano, Kentaro; Sugimoto, Hitoshi; and Matsubara, Miyuki, 5,798,775, Cl. 347-33.000.

Karl Spiegl GmbH & Co.: *See—*
Spiegl, Peter, 5,798,045, Cl. 210-662.000.

Karmi, Gadi; and Robbins, Barry, to QUALCOMM Incorporated. Method and apparatus for providing a dial tone to a telephone within a wireless local loop system. 5,799,254, Cl. 455-528.000.

Kasahara, Daiji: *See—*
Saito, Yukio; Ohashi, Kengo; Morita, Takayuki; and Kasahara, Daiji, 5,797,255, Cl. 57-281.000.

Kasano, Akira: *See—*
Yamaguchi, Hideaki; and Kasano, Akira, 5,798,787, Cl. 348-152.000.

Kasebayashi, Tasuku: *See—*
Imai, Hiroshi; and Kasebayashi, Tasuku, 5,799,145, Cl. 395-188.010.

Kashihara, Toshiaki: *See—*
Takahashi, Yuji; Kawamura, Ichiro; Kashihara, Toshiaki; and Hata, Yoshio, 5,799,009, Cl. 369-291.000.

Kashiwazaki, Akio: *See—*
Noguchi, Hiromichi; Kimura, Makiko; Katayama, Masato; Kashiwazaki, Akio; Nakata, Yoshie; and Nishioka, Yuko, 5,798,397, Cl. 522-81.000.

Kaspar, Thomas C.: *See—*
Horton, Robert; Ressler, Daniel E.; Kaspar, Thomas C.; and Baker, James L., 5,797,459, Cl. 172-133.000.

Kataumi, Yoshimasa; and Ikegami, Yasuyuki, to Fuji Kiko Co., Ltd. Shift lock mechanism for shift lever device. 5,797,295, Cl. 74-483.00R.

Katayama, Hideyuki, to NEC Corporation. Message protection radio display paging using confidential code and password. 5,798,708, Cl. 340-825.440.

Katayama, Masato: *See—*
Noguchi, Hiromichi; Kimura, Makiko; Katayama, Masato; Kashiwazaki, Akio; Nakata, Yoshie; and Nishioka, Yuko, 5,798,397, Cl. 522-81.000.

Katayama, Mikio: *See—*
Nishiki, Hirohiko; Shimada, Takayuki; and Katayama, Mikio, 5,798,812, Cl. 349-152.000.

Katayama, Tatsushi; Suda, Shigeyuki; and Mitsutake, Hideaki, to Canon Kabushiki Kaisha. Multieye imaging apparatus. 5,798,791, Cl. 348-218.000.

Kato, Akira, to Sanyo Machine Works, Ltd. Joined structure and joining method of metal plates. 5,798,185, Cl. 428-582.000.

Kato, Masahiko, to Sanshin Kogyo Kabushiki Kaisha. Fuel supply system. 5,797,378, Cl. 123-516.000.

Kato, Seishi: *See—*
Yazawa, Kazunaga; Yamada, Akiko; Kato, Seishi; and Kondo, Kiyosi, 5,798,259, Cl. 435-252.300.

Katoh, Atsuyuki: *See—*
Abe, Takuya; Toizumi, Kiyoshi; Shimazu, Fumio; Yoshimoto, Hiromu; Yamauchi, Kouichi; Tachiki, Hiroshi; Oikawa, Tomohiro; Iwakura, Yoshie; and Katoh, Atsuyuki, 5,799,225, Cl. 399-66.000.

Katoh, Shingo: *See—*
Iwata, Nobuo; Katoh, Shingo; Shio, Yutaka; and Yabuta, Tomonori, 5,799,228, Cl. 399-94.000.

Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, to Minolta Co., Ltd. Camera system. 5,799,215, Cl. 396-168.000.

Katsuki, Takayo; and Shikama, Takashi, to Murata Manufacturing Co., Ltd. Thermistor apparatus and manufacturing method thereof. 5,798,685, Cl. 338-195.000.

Katsumata, Ikuo: *See—*
Nakagoshi, Isao; Shimura, Hiromi; Katsumata, Ikuo; and Suzuki, Osamu, 5,797,247, Cl. 53-442.000.

Katsumi, Toshiaki: *See—*
Ishizuka, Masaaki; Kawazu, Masaji; Katsumi, Toshiaki; Fuse, Yoshihide; Maeda, Kenji; and Takeuchi, Tomio, 5,798,387, Cl. 514-551.000.

Katsura, Shingo: *See—*
Takanishi, Toshiaki; Kimura, Yuzuru; Hara, Nobuhiko; and Katsura, Shingo, 5,797,642, Cl. 296-37.300.

Katsuta, Yutaka: *See—*
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.

Katz, Michael: *See—*
Hessel, Stephen R.; and Katz, Michael, 5,797,922, Cl. 606-120.000.

Katz, Stanley E., to Cellular Sciences, Inc. Method and composition for treating mammalian diseases caused by inflammatory response. 5,798,388, Cl. 514-557.000.

Katzer, Johann; Lindermeir, Wolfgang; and Lopic, Franz, to Gardena Kress + Kastner GmbH. Hose connector, particularly for the connection of hoses, such as garden hoses. 5,797,633, Cl. 285-243.000.

Katzir, Nir: *See—*
Garini, Yuval; Katzir, Nir; Wine, David; and Cabib, Dario, 5,798,262, Cl. 435-287.200.

Kaub, Alan Richard. Traffic safety prediction model. 5,798,949, Cl. 364-578.000.

Kaufman, Paul L.; and Geiger, Benjamin, to Wisconsin Alumni Research Foundation. Cytoskeletal active agents for glaucoma therapy. 5,798,380, Cl. 514-456.000.

Kaufmann, Michael: *See—*
Bartholmes, Peter; Kaufmann, Michael; and Schwarz, Thomas, 5,798,253, Cl. 435-243.000.

Kauk, Zachary A.; and Walker, Richard D., to Caterpillar Inc. Apparatus for diverting a flow of exhaust from an engine of a truck. 5,797,656, Cl. 298-1.00H.

Kaura, Kam. Debris immune animal feeding nipple. 5,797,505, Cl. 215-11.500.

Kauvar, Lawrence M.; and Villar, Hugo O., to Terrapin Technologies, Inc. Profiling reference panel enriched by non-IG proteins. 5,798,275, Cl. 436-518.000.

Kawabe, Tsuyoshi; Yoneguchi, Hiroshi; Arisaka, Atsushi; Kuwabara, Takahiro; and Aoyama, Tadamichi, to Honda Giken Kogyo Kabushiki Kaisha; and Toyo Radiator Co., Ltd. Oil cooler for automobiles. 5,797,450, Cl. 165-167.000.

Kawachi, Atsushi; Matsuda, Norifumi; and Hayashi, Akiyoshi, to Energy Support Corporation. Apparatus for forming protective films in water feed pipes of boiler. 5,797,357, Cl. 122-398.000.

Kawagishi, Toshiyuki; and Kondou, Youko, to Kabushiki Kaisha Toshiba. IC card reader/writer. 5,798,507, Cl. 235-380.000.

Kawaguchi, Hiroshi; Okada, Akio; and Ohta, Masashi, to Toyota Jidosha Kabushiki Kaisha. Brake system having pump to start by forecast of braking. 5,797,663, Cl. 303-146.000.

Kawaguchi, Masahiro; Sonobe, Masanori; Yokono, Tomohiko; and Suitou, Ken, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate type compressor. 5,797,730, Cl. 417-222.200.

Kawai, Akiyoshi; Kawai, Makoto; and Stevens, Rodney W., to Pfizer Inc. Aryloxycycloalkenyl and aryloxyiminocycloalkenylhydroxyureas. 5,798,383, Cl. 514-482.000.

Kawai, Hisataka: *See—*
Kadoya, Yoshikuni; Kawai, Hisataka; and Magoshi, Ryotarou, 5,798,082, Cl. 420-38.000.

Kawai, Makoto: *See—*
Kawai, Akiyoshi; Kawai, Makoto; and Stevens, Rodney W., 5,798,383, Cl. 514-482.000.

Kawajiri, Masayuki: *See—*
Seki, Seizo; Kawajiri, Masayuki; and Asakura, Takashi, 5,797,492, Cl. 206-387.100.

Kawamoto, Sonja M.: *See—*
Blackburn, Ronald F.; Warmkessel, Barry M.; and Kawamoto, Sonja M., 5,797,563, Cl. 244-130.000.

Kawamura, Ichiro: *See—*
Takahashi, Yuji; Kawamura, Ichiro; Kashihara, Toshiaki; and Hata, Yoshio, 5,799,009, Cl. 369-291.000.

Kawamura, Makoto: *See—*
Etoh, Kei; Hirasawa, Akira; Higurashi, Hisano; and Kawamura, Makoto, 5,798,315, Cl. 503-215.000.

Kawamura, Motoshi; and Goto, Masaru, to Koyo Seiko Co., Ltd. Wheel bearing device. 5,797,686, Cl. 384-544.000.

Kawasaki, Andrew M.: *See—*
Cook, Phillip Dan; Kawasaki, Andrew M.; and Kung, Pei Pei, 5,798,360, Cl. 514-255.000.

Kawasaki, Hideki: *See—*
Mizukami, Tamio; Ogawa, Harumi; Nakai, Ryuichiro; Asai, Akira; Yamashita, Yoshinori; Ando, Katsuhiko; Agatsuma, Tsutomu; Akinaga, Shiro; Ouchi, Kozo; and Kawasaki, Hideki, 5,798,379, Cl. 514-441.000.

Kawasaki, Masami: *See—*
Suda, Taiichiro; Fujii, Nagatoshi; Kawasaki, Masami; Moriguchi, Yoshiko; Iijima, Masaki; and Sera, Toshikuni, 5,798,087, Cl. 423-555.000.

Kawasaki, Yumiko: *See—*

Tamura, Yuji; Itou, Hiroyuki; Takahashi, Tsukasa; Shima, Michikazu; Kawasaki, Yumiko; and Yamane, Kazuo, 5,798,857, Cl. 357-189.000.

Kawata, Shintaro: *See*—
Nakasuji, Mamoru; and Kawata, Shintaro, 5,798,194, Cl. 430-5.000.

Kawata, Tetsuaki: *See*—
Buma, Shuuichi; Sano, Katsuyuki; and Kawata, Tetsuaki, 5,797,595, Cl. 267-64.270.

Kawatsu, Hidetoshi: *See*—
Enya, Toshihiro; and Kawatsu, Hidetoshi, 5,798,492, Cl. 219-69.140.

Kawazu, Masaji: *See*—
Ishizuka, Masaaki; Kawazu, Masaji; Katsumi, Toshiaki; Fuse, Yoshihide; Maeda, Kenji; and Takeuchi, Tomio, 5,798,387, Cl. 514-551.000.

Kaye, Shelly. Full-figured woman's garment. 5,797,787, Cl. 450-30.000.

Kazal, Duane D.: *See*—
Salter, Peter W.; Curti, James N.; Kazal, Duane D.; and McGann, Laurence, 5,797,627, Cl. 285-38.000.

Kazama, Toshio; and Nanseki, Kenji, to NHK Spring Co., Ltd. Contact probe unit including needle members urged by a resilient material block. 5,798,655, Cl. 324-761.000.

KB Electronics, Inc.: *See*—
Saganovsky, Abraham, 5,798,573, Cl. 307-4.000.

Keagy, Jon M.; Mosebrook, Donald R.; and Spira, Joel S., to Lutron Electronics Co., Inc. Location independent dimmer switch for use in multiple location switch system, and switch system employing same. 5,798,581, Cl. 307-115.000.

Kean, Thomas A., to Xilinx, Inc. Match register with duplicate decoders. 5,798,656, Cl. 326-39.000.

Keana, John F. W.: *See*—
Weber, Eckard; and Keana, John F. W., 5,798,390, Cl. 514-634.000.

Keefer, Leah Ellen: *See*—
Morgan, James Joseph; Johnson, Terry Lee; Keefer, Leah Ellen; Smith, Patricia Ann; Bradford, William Howell; Wells, Kathryn Louise; and Mason, Eric Todd, 5,799,286, Cl. 705-30.000.

Keehn, William Henry, II: *See*—
Koenck, Steven E.; and Keehn, William Henry, II, 5,798,610, Cl. 313-498.000.

Keeney, Stephen N., to Intel Corporation. Flash memory VDS compensation techiques to reduce programming variability. 5,798,966, Cl. 365-185.180.

Kefaliotis, John: *See*—
Schuchman, Leonard; Bruno, Ronald; Kefaliotis, John; Greenberg, Steve; and Zakrzewski, Edward J., 5,798,726, Cl. 342-37.000.

Keldmann, Erik; and Reipur, John, to Direct-Haler A/S. Inhaler. 5,797,392, Cl. 128-203.150.

Keller, Michael R.; Petersen, John R.; and Caffey, David, to Callidus Technologies, Inc. Closed loop gasification drying system. 5,797,332, Cl. 110-226.000.

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Morigami, Yuusuke; Kobayashi, Tadashi; Nishikawa, Misao; Yoshikawa, Hiroyuki; Ozawa, Kazuhito; Hirano, Ryo; Seki, Shinobu; and Wakamatsu, Shinji, 5,797,596, Cl. 270-58.110.
Kobayashi, Yoshiyuki: *See*—
Terada, Makoto; Iyoda, Isao; Kobayashi, Yoshiyuki; and Iwamaru, Akifumi, 5,798,634, Cl. 323-207.000.
Koberger, Hermann: *See*—
Zikeli, Stefan; Rauch, Ernst; Koberger, Hermann; Ecker, Friedrich; Rüf, Hartmut; Jurkovic, Raimund; and Schwenninger, Franz, 5,798,125, Cl. 425-72.200.
Koch, Daniel, to Eta SA Fabriques d'Ebauches. Timepiece including a receiving and/or transmitting antenna for radio broadcast signals. 5,798,984, Cl. 368-10.000.
Kocher + Beck GmbH & Co.: *See*—
Beck, Rolf, 5,797,323, Cl. 101-389.100.
Kodama, Mami: *See*—
Moriyasu, Takashi; Muranaga, Tetsuro; and Kodama, Mami, 5,799,191, Cl. 395-682.000.
Kodama, Yasumasa, to Sony Corporation. Video data recording apparatus and video data reproducing apparatus. 5,799,127, Cl. 386-46.000.
Koehne, Heinrich: *See*—
Elmis, Herbert; Koehne, Heinrich; Alrutz, Herbert; and Zibold, Hermann, 5,798,802, Cl. 348-689.000.
Koenck, Steven E.; and Keehn, William Henry, II. Efficient electroluminescent backlight. 5,798,610, Cl. 313-498.000.
Koether, Mark Douglas: *See*—
Shay, Michael John; and Koether, Mark Douglas, 5,798,659, Cl. 326-86.000.
Koga, Takasuke; Morimoto, Keiji; and Hatakeyama, Naoki, to Victor Company of Japan, Ltd. Deflection yoke having an improved protection cover for protecting a terminal board. 5,798,606, Cl. 313-440.000.
Kogami, Yuji; Aono, Naomi; and Mochizuki, Daisuke, to Asahi Kasei Kogyo Kabushiki Kaisha. 2,3-dihydrobenzofuran derivatives, method for producing the same, and use thereof. 5,798,382, Cl. 514-469.000.
Kogasaka, Takahiro, to Olympus Optical Co., Ltd. Ligating apparatus. 5,797,928, Cl. 606-144.000.
Kogel, Walter: *See*—
Rief, Klaus; Elser, Dieter; and Kogel, Walter, 5,799,259, Cl. 701-41.000.
Kohama, Takeshi: *See*—
Ohashi, Nobuhiko; Kohama, Takeshi; and Sano, Tetsuya, 5,798,813, Cl. 349-154.000.
Kohl, Hans-Joachim, to Drägerwerk Aktiengesellschaft. Method for controlling the respirating phase in a ventilating apparatus. 5,797,393, Cl. 128-204.230.
Kohn, Henri-Armand, to Baltek Corporation. Foam-plastic core for structural laminate. 5,798,160, Cl. 428-56.000.
Køhnke, Ole, to Ambu International A/S. Collapsible cervical collar. 5,797,863, Cl. 602-18.000.
Koide, Masato: *See*—
Nogami, Keishi; Koide, Masato; Morimoto, Takashi; and Koshiba, Yutaka, 5,798,008, Cl. 148-682.000.
Koike, Eiji: *See*—
Kobayashi, Shinichi; Koike, Eiji; and Matubara, Kazuo, 5,797,833, Cl. 600-22.000.
Koike, Masaki; Suzuki, Atsushi; Tsutsumi, Daisuke; and Ichikawa, Masayoshi, to Toyoda Gosei Co., Ltd. Layered molding including fluoroplastic layer crosslinked with rubber layer. 5,798,158, Cl. 428-36.900.
Koike, Yoshio: *See*—
Nakamura, Kimiaki; and Koike, Yoshio, 5,798,809, Cl. 349-119.000.
Koitabashi, Noribumi: *See*—
Takahashi, Kazuyoshi; Masuda, Kazuaki; Takayanagi, Yoshiaki; Suzuki, Akio; Kurata, Mitsuru; Abe, Tsutomu; Karita, Seiichiro; Tajika, Hiroshi; Koitabashi, Noribumi; Uchida, Haruo; Yano, Kentaro; Sugimoto, Hitoshi; and Matsubara, Miyuki, 5,798,775, Cl. 347-33.000.
Koizumi, Hideaki: *See*—
Kotoh, Satoru; Sakuma, Kiyoshi; Yoshida, Takayuki; Sano, Hiromi; Aoki, Katuyuki; Suzuki, Shin'ichi; Koizumi, Hideaki; Yamamoto, Kaoru; Matsushita, Kunio; Unno, Kenichi; and Oguma, Tomoko, 5,797,792, Cl. 454-320.000.
Koizumi, Yutaka; and Watanabe, Yasutomo, to Canon Kabushiki Kaisha. Recording element driving unit having extra driving element to facilitate assembly and apparatus using same. 5,798,780, Cl. 347-50.000.
Kojima, Akihiro: *See*—
Inagaki, Toshiyasu; Morooka, Yoshinori; and Kojima, Akihiro, 5,797,604, Cl. 277-618.000.
Kojima, Atsuyoshi: *See*—
Iida, Kazumasa; Miyamoto, Katsuhiko; Kamura, Hitoshi; Tamura, Hiroki; and Kojima, Atsuyoshi, 5,797,367, Cl. 123-295.000.
Kojima, Haruhiko: *See*—
Kanekiyo, Tomoyuki; Kojima, Haruhiko; and Nishi, Hiroyuki, 5,799,018, Cl. 370-451.000.
Kojima, Hiroshi; and Naito, Nobuo, to Dai Nippon Printing Co., Ltd. Surface illumination device suitable for a backlit display. 5,797,668, Cl. 362-31.000.
Kojima, Hiroshi: *See*—

Itoh, Yoshiaki; Kiyama, Jiro; Kojima, Hiroshi; Seki, Susumu; and Oka, Ryuichi, 5,799,275, Cl. 704-241.000.

Kojima, Naoya: *See*—
Tsuji, Shuichi; Yoshida, Yukiko; Kojima, Naoya; Kurosawa, Nobuyuki; and Hamamoto, Toshiro, 5,798,244, Cl. 435-193.000.

Kojima, Osamu: *See*—
Komatsu, Hisateru; Watanabe, Takashi; and Kojima, Osamu, 5,798,886, Cl. 360-99.050.

Kojima, Takafumi: *See*—
Nakagoshi, Arata; and Kojima, Takafumi, 5,799,252, Cl. 455-524.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Suzuki, Masatoshi; Tanaka, Hideaki; and Matsushima, Yuichi, 5,798,856, Cl. 359-181.000.

Kokusai Electric Co., Ltd.: *See*—
Harada, Toru, 5,798,141, Cl. 427-248.100.

Kölbl, Heinz: *See*—
Springer, Wolfgang; Baumgarten, Jörg; Kretschmer, Axel; Kölbl, Heinz; Löbberding, Antonius; Strube, Walter; and Thein, Peter, 5,798,265, Cl. 435-364.000.

Kolesniak, Eugene: *See*—
Wacinski, Witold; and Kolesniak, Eugene, 5,798,026, Cl. 162-290.000.

Kolleritsch, Günther: *See*—
Hager, Rudolf; Kolleritsch, Günther; and Knaup, Wolfgang, 5,798,429, Cl. 528-42.000.

Kolstad, Jeffrey John: *See*—
Gruber, Patrick Richard; Kolstad, Jeffrey John; Witzke, David Roy; Hartmann, Mark Henry; and Brosch, Andrea Lee, 5,798,435, Cl. 528-354.000.
Gruber, Patrick Richard; Kolstad, Jeffrey John; Ryan, Christopher M.; Hall, Eric Stanley; and Eichen Conn, Robin Sue, 5,798,436, Cl. 528-354.000.

Komano, Haruki: *See*—
Nakamura, Hiroko; Sugihara, Kazuyoshi; and Komano, Haruki, 5,799,104, Cl. 382-144.000.

Komatsu, Hisateru; Watanabe, Takashi; and Kojima, Osamu, to Mitsumi Electric Co., Ltd. Magnetic disk chucking mechanism having a notched arm for clamping a roller. 5,798,886, Cl. 360-99.050.

Komatsu Ltd.: *See*—
Tamura, Yukio; Sakae, Mitsuhisa; Koyanagi, Satoru; and Nakayama, Toru, 5,797,548, Cl. 241-35.000.

Komichak, Michael J.: *See*—
Goodridge, Gilbert W.; and Komichak, Michael J., 5,799,297, Cl. 707-1.000.

Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, to Accent Incorporated. Knowledge-based speech recognition system and methods having frame length computer based upon estimated pitch period of vocalic intervals. 5,799,276, Cl. 704-251.000.

Komissarchik, Julia: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

Komissarova, Irina Alexeevna; Gudkova, Julia Vasilievna; Soldatenkova, Tatyana Dmitrievna; Kondrashova, Tatyana Tikhonovna; and Burbenskaya, Natalya Mikhailovna. Pharmaceutical composition endowed with an antialcoholic and nootropic effect. 5,798,371, Cl. 514-345.000.

Komiya, Takashi: *See*—
Murata, Kiyoshi; Komiya, Takashi; Nakanishi, Sadayuki; Sato, Yoshiharu; and Fukunaga, Akio, 5,797,583, Cl. 251-57.000.

Komori Corporation: *See*—
Ebina, Toshihiko; and Asai, Takeshi, 5,797,325, Cl. 101-425.000.
Shibata, Satoshi, 5,797,321, Cl. 101-246.000.

Komori, Kazunori: *See*—
Tsutsui, Hiroshi; Komori, Kazunori; Nishiyama, Kazuhiro; Kuratomi, Yasunori; Takimoto, Akio; Akiyama, Koji; and Mizuguchi, Shinichi, 5,798,806, Cl. 349-29.000.

Kondo, Kiyosi: *See*—
Yazawa, Kazunaga; Yamada, Akiko; Kato, Seishi; and Kondo, Kiyosi, 5,798,259, Cl. 435-252.300.

Kondou, Youko, to Kabushiki Kaisha Toshiba. IC card reader/writer for allowing communication with a plurality of kinds of IC cards of different protocol types. 5,799,171, Cl. 395-500.000.

Kondou, Youko: *See*—
Kawagishi, Toshiyuki; and Kondou, Youko, 5,798,507, Cl. 235-380.000.

Kondrashova, Tatyana Tikhonovna: *See*—
Komissarova, Irina Alexeevna; Gudkova, Julia Vasilievna; Soldatenkova, Tatyana Dmitrievna; Kondrashova, Tatyana Tikhonovna; and Burbenskaya, Natalya Mikhailovna, 5,798,371, Cl. 514-345.000.

Kone Oy: *See*—
Vairio, Olavi; Mäenpää, Jarmo; and Suur-Askola, Seppo, 5,798,490, Cl. 187-394.000.

Kong, Gap-goung; and Park, Youn-Seok, to Samsung General Chemicals Co., Ltd. Olefin polymerization catalyst and process for the polymerization of olefins using the same. 5,798,424, Cl. 526-124.200.

Konica Corporation: *See*—
Matsuura, Katsumi; and Takenouchi, Shigeki, 5,798,200, Cl. 430-126.000.
Shigeta, Kunio; Sato, Yotaro; and Haneda, Satoshi, 5,799,226, Cl. 399-66.000.

Konings, Rudolph Nicholaas Hendrik: *See*—
Schoenmakers, Johannes Gerardus Ghislain; Konings, Rudolph Nicholaas Hendrik; and Moelans, Inge Irma Maria Dominique, 5,798,106, Cl. 424-272.100.

Konings, Rudolph Nicolaas Hendrik: *See*—
Schoenmakers, Johannes Geradus Ghislain; Konings, Rudolph Nicolaas Hendrik; and Moelans, Inge Irma Maria Dominique, 5,798,105, Cl. 424-272.100.

Konishi, Hiroshi: *See*—
Weiss, Joel R.; Shima, Koji; Leigh, Joseph; Konishi, Hiroshi; Kuratake, Nobuo; Hara, Hiroki; and Inoue, Naoki, 5,798,164, Cl. 428-141.000.

Konishi, Nobutake: *See*—
Tanaka, Takeshi; Nagae, Yoshiharu; and Konishi, Nobutake, 5,798,744, Cl. 345-92.000.

Konishi, Yoshihiko: *See*—
Ohtsuka, Masataka; Isota, Yoji; Matsunaga, Makoto; Konishi, Yoshihiko; and Nakahara, Shintaro, 5,798,734, Cl. 343-700.0MS.

Konishi, Yoshito; Inoue, Yoshiyuki; Tanaka, Yoshiharu; and Tanii, Junichi, to Minolta Co., Ltd. Camera in use of a film cartridge which contains a film wound around a winding shaft in a light-shielding condition. 5,799,223, Cl. 396-538.000.

Kono, Makoto: *See*—
Tanioka, Satoshi; Murata, Shizuo; Kono, Makoto; and Hirano, Masayuki, 5,798,810, Cl. 349-123.000.

Konopa, Raymond S.: *See*—
Falk, Theodore J.; Brown, W. Richard; Morris, Lawrence E.; Frenz, Norbert W., Jr.; Gillies, Douglas K.; and Konopa, Raymond S., 5,797,733, Cl. 417-416.000.

Konuma, Toshimitsu, to Semiconductor Energy Laboratory Co., Ltd. Method of driving a ferroelectric liquid crystal optical device. 5,798,814, Cl. 349-172.000.

Koontz, Steven L., to United States of America, National Aeronautics and Space Administration. Distributed pore chemistry in porous organic polymers. 5,798,261, Cl. 435-283.100.

Kooths, Uwe: *See*—
Beckë , Wolfgang; Esser, Joachim; Bublitz, Heiko; Kooths, Uwe; and Trecker, Oliver, 5,797,430, Cl. 138-30.000.

Kopczynski, John F. Vehicle with vertically movable and vertically pulsating wheels. 5,797,607, Cl. 280-6.110.

Kopetzki, Erhard: *See*—
Lehle, Ludwig; Lehnert, Klaus; and Kopetzki, Erhard, 5,798,226, Cl. 435-69.100.

Koppel, Christophe; and Maine, Laurent, to Societe Europeenne de Propulsion. Pulse rocket engine. 5,797,260, Cl. 60-247.000.

Korea Telecommunication Authority: *See*—
Jeon, Hong Bum, 5,799,020, Cl. 370-468.000.
Jeong, Myung-Yung; Park, Sang-Ho; Chun, Oh-Gone; Ahn, Seung-Ho; Choy, Tae-Goo; and Kim, Hak-Seok, 5,799,122, Cl. 385-59.000.
Ryum, Byung-Ryul; Han, Tae-Hyeon; Cho, Deok-Ho; Lee, Soo-Min; and Pyun, Kwang-Eui, 5,798,277, Cl. 437-31.000.

Korea Telecommunications Authority: *See*—
Lee, Dong Choon; Kim, Jae Guen; Kim, Ho Geon; and Lee, Ho Jae, 5,799,001, Cl. 370-220.000.

Korenstra, Jan; Vonk, Willem Cornelis; and Westrenen, Jeroen Van, to Shell Oil Company. Bituminous composition. 5,798,401, Cl. 524-68.000.

Korsgaard, Niels; and Römer, John, to Novo Nordisk A/S. 2-Phenyl-3-Azoylbenzothiophene for lowering intraocular pressure. 5,798,369, Cl. 514-324.000.

Kosenka, Paul K.: *See*—
Godec, Richard D.; O'Neill, Kevin J.; and Kosenka, Paul K., 5,798,271, Cl. 436-146.000.

Koser, Leonard William; Manges, Mary Christine; Ring, Frances Mary; Rogers, Cynthia Ann; Snyder, Michael John; and Vriezen, John Joseph, to International Business Machines Corporation. Computer system with downward compatibility function. 5,799,189, Cl. 395-680.000.

Koshiba, Yutaka: *See*—
Nogami, Keishi; Koide, Masato; Morimoto, Takashi; and Koshiba, Yutaka, 5,798,008, Cl. 148-682.000.

Kosman, Stephen Lawrence: *See*—
Anagnostopoulos, Constantine N.; Kosman, Stephen Lawrence; and Chang, Win-chyi, 5,798,542, Cl. 257-232.000.

Kossovsky, Nir, to University of California, The Regents of the. Assay for humoral immunity to macromolecules. 5,798,220, Cl. 435-13.000.

Kosuge, Katsumi: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.

Kotidis, Petros Amestis; Cunningham, James Frederick; Gozewski, Paul Fred; Klimek, Daniel Edward; and Woodroffe, Jaime A., to Textron Systems Corporation. Laser ultrasonics-based material analysis system and method utilizing optimum triggering time. 5,798,835, Cl. 356-358.000.

Kotoh, Satoru; Sakuma, Kiyoshi; Yoshida, Takayuki; Sano, Hiromi; Aoki, Katuyuki; Suzuki, Shin'ichi; Koizumi, Hideaki; Yamamoto, Kaoru; Matsushita, Kunio; Unno, Kenichi; and Oguma, Tomoko, to Mitsubishi Denki Kabushiki Kaisha. Air-direction adjusting apparatus in air-conditioning equipment. 5,797,792, Cl. 454-320.000.

Kottwitz, Beatrix; Poethkow, Joerg; and Upadek, Horst, to Henkel Kommanditgesellschaft auf Aktien. Detergent composition comprising carbonate-amorphous silicate compound as builder and processes of using same. 5,798,328, Cl. 510-438.000.

Koutavas, Jay: *See*—
Hamilton, James; Hennessy, Richard; Choa, Pong; Chopde, Avinash; Peters, Eric; and Koutavas, Jay, 5,799,150, Cl. 395-200.330.

Kowalski, John: *See*—
Lomp, Gary; Kowalski, John; Ozluturk, Fatih; Silverberg, Avi; Regis, Robert; Luddy, Michael; Marra, Alexander; and Jacques, Alexander, 5,799,010, Cl. 370-335.000.

Kowalski, Michael J.: *See*—
Evans, William J., II; and Kowalski, Michael J., 5,797,345, Cl. 116-286.000.

Kowshik, Vikram: *See*—
Sarin, Vishal; Kowshik, Vikram; and Yu, Andy Teng-Feng, 5,798,967, Cl. 365-185.210.

Koyama, Jun, to Semiconductor Energy Laboratory Co., Ltd. Liquid crystal display device. 5,798,746, Cl. 345-98.000.

Koyama, Masayuki, to Pioneer Electronic Corporation. Optical pickup unit capable of reading signals recorded on different types of optical disks. 5,798,988, Cl. 369-44.140.

Koyanagi, Satoru: *See*—
Tamura, Yukio; Sakae, Mitsuhisa; Koyanagi, Satoru; and Nakayama, Toru, 5,797,548, Cl. 241-35.000.

Koyo Seiko Co., Ltd.: *See*—
Kawamura, Motoshi; and Goto, Masaru, 5,797,686, Cl. 384-544.000.

Kozaki, Takahiko; Yanagi, Junichirou; Aiki, Kiyoshi; Ito, Yutaka; Aoki, Kaoru; and Gohara, Shinobu, to Hitachi, Ltd. ATM cell switching system. 5,799,014, Cl. 370-358.000.

Krabbenhoft, Herman Otto; and Webb, Jimmy Lynn, to General Electric Company. Method for thermal removal of halogenated organic compounds from soil. 5,797,995, Cl. 134-19.000.

Kraemer, Jeffrey A.; Kirby, Alan J.; and Waterman, David C., to Raptor Systems, Inc. Detecting unauthorized network communication. 5,798,706, Cl. 340-825.070.

Kraft Jacobs Suchard France: *See*—
Balling, T. Thomas; and Godard, Pascal C., 5,797,494, Cl. 206-460.000.

Kraft, Walter; and Zolliker, Peter, to Gretag Imaging AG. Method for producing copies from photographic originals. 5,798,820, Cl. 355-40.000.

Krage, William G., to Energy Absorption Systems, Inc. Guardrail with improved ground anchor assembly. 5,797,591, Cl. 256-13.100.

Kragl, Hans; and Strake, Engelbert, to Robert Bosch GmbH. Integrated optical structural element, and method of producing the same. 5,799,117, Cl. 385-14.000.

Kramer, Donald R. Concrete slab dowel system and method for making same. 5,797,231, Cl. 52-396.020.

Kramer, Michael Gerald: *See*—
Whitaker, Emert Robert; Deiterman, Lenard Keith; and Kramer, Michael Gerald, 5,797,163, Cl. 15-413.000.

Kramer, Stanley. Nestable holiday container. 5,797,507, Cl. 220-4.230.

Krane, Leonard, to Talk Web Inc. Communication system and method of providing access to pre-recorded audio messages via the Internet. 5,799,063, Cl. 379-67.000.

Krane, Michael A.; Zuteck, Mike; and Nagy, Steve, to UT Automotive Dearborn, Inc. Method of assembling wire harness and trim panel. 5,798,012, Cl. 156-71.000.

Kratt, Alfred, to Robert Bosch GmbH. Method of detecting and documenting exhaust-gas relevant malfunctions of a vehicle. 5,797,375, Cl. 123-497.000.

Krebs, Holger: *See*—
Brammer, Hartmut; Jaki, Friedrich; Hackel, Uwe; and Krebs, Holger, 5,798,453, Cl. 73-35.090.

Kresge, John Steven: *See*—
Feilchenfeld, Natalie Barbara; Kresge, John Steven; Moore, Scott Preston; Nowak, Ronald Peter; and Wilson, James Warren, 5,798,563, Cl. 257-668.000.

Kretschmer, Axel: *See*—
Springer, Wolfgang; Baumgarten, Jörg; Kretschmer, Axel; Kölbl, Heinz; Löbberding, Antonius; Strube, Walter; and Thein, Peter, 5,798,265, Cl. 435-364.000.

Kreuter, Peter; and Heuser, Peter, to Meta Motoren- und Energie-Technik GmbH. Reciprocating piston internal combustion engine having at least one cylinder. 5,797,368, Cl. 123-308.000.

Krevalis, Martin Anthony: *See*—
Schlosberg, Richard Henry; Turner, David Wayne; Krevalis, Martin Anthony; Munley, William Joseph, Jr.; and Aldrich, Haven Scott, 5,798,319, Cl. 507-138.000.

Krichever, Mark J.; Metlitsky, Boris; Barkan, Edward D.; Shepard, Howard M.; and Swartz, Jerome, to Symbol Technologies, Inc. Hand-held terminal with movable window. 5,798,512, Cl. 235-472.000.

Krinner GmbH: *See*—
Krinner, Klaus, 5,797,579, Cl. 248-523.000.

Krinner, Klaus, to Krinner GmbH. Tree stand. 5,797,579, Cl. 248-523.000.

Krishnan, Murali R., to Microsoft Corporation. Adaptive bandwidth throttling for network services. 5,799,002, Cl. 370-234.000.

Kristol, David M.; and O'Gorman, Lawrence P., to Lucent Technologies Inc. Self-verifying identification card. 5,799,092, Cl. 380-51.000.

Krivanek, Ondrej L.: *See*—
Kundmann, Michael Karl; Gubbens, Alexander Jozef; Friedman, Stuart Lawrence; and Krivanek, Ondrej L., 5,798,524, Cl. 250-305.000.

Krivnova, Olga: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

Krone Aktiengesellschaft: *See*—
Nad, Ferenc, 5,797,756, Cl. 439-94.000.

Kronrod, Mikhail: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

Kronzer, Francis Joseph, to Kimberly-Clark Worldwide, Inc. Printable heat transfer material having cold release properties. 5,798,179, Cl. 428-411.100.

Kross, Brian J.: *See*—
Zorn, Carl J.; Kross, Brian J.; Majewski, Stanislaw; and Wojcik, Randolph F., 5,799,124, Cl. 385-125.000.

Krstenansky, John L.; Nestor, John J.; Ho, Teresa H.; Vickery, Brian H.; and Bach, Chinh T., to Syntex (U.S.A.) Inc. Process for recombinant production of PTH and PTHrp analogs. 5,798,225, Cl. 435-69.400.

Kruppa, Walter: *See*—
Boos, John Bradley; Kruppa, Walter; Park, Doewon; and Bennett, Brian R., 5,798,540, Cl. 257-194.000.

Kruse, Dieter: *See*—
Eufinger, Harald; Heuser, Lothar; Kruse, Dieter; Machtens, Egbert; and Seifert, Hans, 5,798,924, Cl. 364-468.240.

Kubbinga, Menno B.: *See*—
Legierse, Petrus E. J.; Severin, Jan W.; Kubbinga, Menno B.; Meeuwsen, Franciscus A.; and Van Veggel, Antonius F. P. M., 5,798,138, Cl. 427-230.000.

Kubo, Hiroaki: *See*—
Shibasaki, Mitsuhiro; Kubo, Hiroaki; Mori, Akira; Hatakeda, Hachiro; Takahashi, Tsutao; and Nakamura, Tetsuo, 5,797,465, Cl. 175-108.000.

Kubota, Hiroaki: *See*—
Asano, Mieko; Kubota, Hiroaki; and Shimotsuji, Shigeyoshi, 5,799,115, Cl. 382-305.000.

Kudera, Keith W.: *See*—
Coughlin, Michael E.; Leonard, Ronald A.; Guerra, Lawrence E.; and Kudera, Keith W., 5,798,020, Cl. 156-542.000.

Kudo, Yuji, to Nikon Corporation. Illumination optical apparatus and projection exposure apparatus using it. 5,798,823, Cl. 355-67.000.

Kudo, Yuji, to Nikon Corporation. Illuminance distribution exposure apparatus correcting. 5,798,824, Cl. 355-67.000.

Kufahl, Larry L., to Marathon Electric Mfg. Corp. Lamination notching apparatus. 5,797,306, Cl. 83-257.000.

Kühn, Gideon Jacobus; Davies, Donald Watts; and Rix, Simon Paul Ashley, to Irdeto B.V. System and apparatus for blockwise encryption/decryption of data. 5,799,089, Cl. 380-37.000.

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Goldman, Michael J.; Kuhn, James O.; and Christen, Richard P., 5,797,815, Cl. 473-588.000.

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Lauf, Robert J.; McMillan, April D.; Paulauskas, Felix L.; Fathi, Zakaryae; and Wei, Jianghua, 5,798,395, Cl. 522-1.000.

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Kristol, David M.; and O'Gorman, Lawrence P., 5,799,092, Cl. 380-51.000.
Seshadri, Nambirajan; and Sundberg, Carl-Erik Wilhelm, 5,799,013, Cl. 370-342.000.
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Luddy, Michael: *See*—
Lomp, Gary; Kowalski, John; Ozluturk, Fatih; Silverberg, Avi; Regis, Robert; Luddy, Michael; Marra, Alexander; and Jacques, Alexander, 5,799,010, Cl. 370-335.000.
Ludwig Institute For Cancer Research: *See*—
Pfreundschuh, Michael, 5,798,264, Cl. 435-326.000.
Ludwig Schwerdtel GmbH: *See*—
Brandl, Franz, 5,797,516, Cl. 222-80.000.
Lue, Ping-chang: *See*—
Hughes, Henry G.; Stuckey, Marilyn J.; Kniffin, Margret L.; and Lue, Ping-chang, 5,798,556, Cl. 257-414.000.
Lues, Ingeborg: *See*—
Mederski, Werner; Sombroek, Johannes; Schelling, Pierre; Beier, Norbert; Lues, Ingeborg; and Minck, Klaus-Otto, 5,798,364, Cl. 514-303.000.
Lukanidin, Eugene: *See*—
Zain, Sayeeda; and Lukanidin, Eugene, 5,798,257, Cl. 435-252.300.
Lumma, William C.; Tucker, Thomas J.; Witherup, Keith M.; Brady, Stephen F.; Whitter, Willie L.; Vacca, Joseph P.; Coburn, Craig; and Shafer, Jules A., to Merck & Co., Inc. Thrombin inhibitors. 5,798,377, Cl. 514-423.000.
Lundvik, Kjell Per, to Develodent GmbH. Dental instrument. 5,797,740, Cl. 433-29.000.
Luo, Jiebo: *See*—
de Queiroz, Ricardo L.; Luo, Jiebo; and Fan, Zhigang, 5,799,112, Cl. 382-254.000.
Lurie, Alan E. High security handcuffs. 5,797,284, Cl. 70-16.000.
Lürkens, Peter: *See*—
Gerling, Dieter; and Lürkens, Peter, 5,797,718, Cl. 417-44.110.
Lutron Electronics Co., Inc.: *See*—
Keagy, Jon M.; Mosebrook, Donald R.; and Spira, Joel S., 5,798,581, Cl. 307-115.000.
Luzzatto, Ariel; Ben-Ayun, Moshe; Shamsian, Roni; and Horowitz, Ilan Y., to Motorola, Inc. Radio with synthesizer and VCO. 5,799,246, Cl. 455-76.000.
Lynch, John; Nichols, James B.; Devon, Mark; and Soesbe, Jeff, to Apple Computer, Inc. Communications coprocessor for realizing bidirectional isochronous communications link with host computer. 5,799,190, Cl. 395-680.000.
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Rindoks, Kurt; and Lyons, S. Ross, 5,797,790, Cl. 454-59.000.
Lysaght, Michael J.: *See*—
Dionne, Keith E.; Emerich, Dwaine F.; Hoffman, Diane; Sanberg, Paul R.; Christenson, Lisa; Hegre, Orion D.; Scharp, David W.; Lacy, Paul E.; Aebischer, Patrick; Vasooncellos, Alfred V.; Lysaght, Michael J.; and Gentile, Frank T., 5,798,113, Cl. 424-422.000.
M & D Balloons, Inc.: *See*—
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Ban, Amir, 5,799,168, Cl. 395-430.000.
MacDonald, James R.: *See*—
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Nohr, Ronald Sinclair; and MacDonald, John Gavin, 5,798,015, Cl. 156-275.500.
Macesich, Walter George: *See*—
Thayer, Ronda Renee Bayer; Benedict, Robert Leon; Chlebina, Larry Edward; Jacobs, Bernard Byron; Laurich, Thomas Andrew; Macesich, Walter George; Majerus, Norbert; Rambacher, John Sylvester; Rex, William Allen; Rooney, Timothy Michael; Sobhanie, Mohammad Eghbal; Yovichin, Albert James; Wolfe, David Lowell; and Hentosz, Daniel Patrick, 5,798,127, Cl. 425-117.000.
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Donner, Julius; Niemann, Thomas; and Wilk, Wilhelm, 5,797,169, Cl. 24-287.000.

Machado, John V., to Energy Absorption Systems, Inc. Roadside energy absorbing barrier with improved fender panel fastener. 5,797,592, Cl. 256-13.100.

Machida, Hiromi: *See*—
Sekine, Chigaya; and Machida, Hiromi, 5,797,594, Cl. 267-64.170.

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Eufinger, Harald; Heuser, Lothar; Kruse, Dieter; Machtens, Egbert; and Seifert, Hans, 5,798,924, Cl. 364-468.240.

MacKarvich, Charles J. Drive anchor for manufactured home. 5,797,226, Cl. 52-155.000.

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Myers, Ronald Damian; and MacLeod, John Brenton, 5,798,394, Cl. 521-42.500.

Maddern, Peter: *See*—
Connor, Linda Ann; and Maddern, Peter, 5,798,167, Cl. 428-171.000.

Madhani, Akhil J.; and Salisbury, J. Kenneth, to Intuitive Surgical, Inc. Wrist mechanism for surgical instrument for performing minimally invasive surgery with enhanced dexterity and sensitivity. 5,797,900, Cl. 606-1.000.

Madrzak, Zygmunt, to Voith Sulzer Papiermaschinen GmbH. Unwinding station for fiber webs including a device for performing a flying splice. 5,797,561, Cl. 242-554.600.

Maeda, Kenji: *See*—
Ishizuka, Masaaki; Kawazu, Masaji; Katsumi, Toshiaki; Fuse, Yoshihide; Maeda, Kenji; and Takeuchi, Tomio, 5,798,387, Cl. 514-551.000.

Maehara, Yoshimi: *See*—
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Mäenpää, Jarmo: *See*—
Vairio, Olavi; Mäenpää, Jarmo; and Suur-Askola, Seppo, 5,798,490, Cl. 187-394.000.

Maffrand, Jean-Pierre: *See*—
Badorc, Alain; Despeyroux, Pierre; Gully, Daniele; De Cointet, Paul; Frehel, Daniel; and Maffrand, Jean-Pierre, 5,798,353, Cl. 514-221.000.

Magda, Darren; and Sessler, Jonathan L., to Board of Regents, The University of Texas System; and Pharmacyclics, Inc. Multi-mechanistic chemical cleavage using certain metal complexes. 5,798,491, Cl. 204-157.150.

Magee, Betty. Inserts providing size adaptable self watering systems for potted plants. 5,797,217, Cl. 47-79.000.

Magley, Robert E.: *See*—
McLelland, Douglas M.; and Magley, Robert E., 5,797,525, Cl. 222-530.000.

Magnafici, Bill. Easy fill locking bag holder. 5,797,567, Cl. 248-97.000.

Magnotta, Frank: *See*—
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Kadoya, Yoshikuni; Kawai, Hisataka; and Magoshi, Ryotarou, 5,798,082, Cl. 420-38.000.

Maier, Edmund K.; and Raburn, Richard W., to Span-America Medical Systems, Inc. Wheelchair cushion with protectively encased self-adjusting reservoir means. 5,797,155, Cl. 5-654.000.

Maine, Laurent: *See*—
Koppel, Christophe; and Maine, Laurent, 5,797,260, Cl. 60-247.000.

Majerus, Norbert: *See*—
Thayer, Ronda Renee Bayer; Benedict, Robert Leon; Chlebina, Larry Edward; Jacobs, Bernard Byron; Laurich, Thomas Andrew; Macesich, Walter George; Majerus, Norbert; Rambacher, John Sylvester; Rex, William Allen; Rooney, Timothy Michael; Sobhanie, Mohammad Eghbal; Yovichin, Albert James; Wolfe, David Lowell; and Hentosz, Daniel Patrick, 5,798,127, Cl. 425-117.000.

Majewski, Stanislaw: *See*—
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Majumdar, Debasis: *See*—
Chatterjee, Dilip K.; Majumdar, Debasis; and Blanton, Thomas N., 5,798,308, Cl. 501-103.000.

Maki, Hidetaka: *See*—
Kitagawa, Hiroshi; and Maki, Hidetaka, 5,797,384, Cl. 123-674.000.

Makower, Joshua: *See*—
Rhum, David; Wells, Rodney E.; and Makower, Joshua, 5,797,906, Cl. 606-48.000.

Malak, Stephen P.: *See*—
Moore, Prentice Gean; and Malak, Stephen P., 5,797,339, Cl. 114-144.00A.

Malamy, Adam Craig: *See*—
Sfarti, Adrian; Baker, Nicholas Robert; Laker, Robert William; and Malamy, Adam Craig, 5,798,762, Cl. 345-420.000.

Malavasi, Massimo G. F.: *See*—
Gunzi, Laurence A.; and Malavasi, Massimo G. F., 5,797,683, Cl. 383-68.000.

Malila, Raimo: *See*—
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Malkovsky, Mikhail: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

Maloe Vnedrencheskoe Predpriyatie "Interfall": *See*—
Pavlyk, Boris Ivanovich, 5,798,096, Cl. 424-78.350.

Mammoliti, John: *See*—
Ong, Alex; Chiodo, Ross; and Mammoliti, John, 5,797,832, Cl. 493-462.000.

Man, Chisum: *See*—
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MAN Roland Druckmaschinen AG: *See*—
Lippold, Andreas; and Dorsam, Edgar, 5,797,328, Cl. 101-483.000.
Schoppe, Herbert; Schneider, Jurgen; Rother, Michael; and Jung, Ulrich, 5,797,324, Cl. 101-424.100.
Sondergeld, Werner, 5,797,827, Cl. 492-37.000.

Mandai, Harufumi: *See*—
Kanaba, Seiji; Asakura, Kenji; Suesada, Tsuyoshi; Tsuru, Teruhisa; and Mandai, Harufumi, 5,798,737, Cl. 343-895.000.

Mandelman, Jack Allan: *See*—
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Mander, Richard: *See*—
Degen, Leo; Mountford, S. Joy; Mander, Richard; and Salomon, Gitta B., 5,799,280, Cl. 704-276.000.

Mangan, Robert L.: *See*—
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Mange, Christian: *See*—
Bertrand, Francis-Victor; and Mange, Christian, 5,798,131, Cl. 426-293.000.

Manges, Mary Christine: *See*—
Koser, Leonard William; Manges, Mary Christine; Ring, Frances Mary; Rogers, Cynthia Ann; Snyder, Michael John; and Vriezen, John Joseph, 5,799,189, Cl. 395-680.000.

Mangini, Mike: *See*—
Halterman, Carl; Bonnici, Chuck; Mangini, Mike; and Tognoli, Steve, 5,797,270, Cl. 62-64.000.

Mangum, Burney. Portable hoisting system. 5,797,504, Cl. 212-303.000.

Manikundalam, Ravindranath K.; and Rawson, Freeman Leigh, III, to International Business Machines Corporation. System and method for managing variable weight thread contexts in a multithreaded computer system. 5,799,188, Cl. 395-678.000.

Manley, Barry W.: *See*—
Lefebvre, Paul M.; Seeser, James W.; Seddon, Richard Ian; Scobey, Michael A.; and Manley, Barry W., 5,798,027, Cl. 204-192.260.

Manlief, Michael D.; Riley, Gilbert N., Jr.; Voccio, John; and Rodenbush, Anthony J., to American Superconductor Corporation. Superconducting wind-and-react-coils and methods of manufacture. 5,798,678, Cl. 335-216.000.

Mannesmann Aktiengesellschaft: *See*—
Niemann, Karl-Heinz; and Helmut, Michel, 5,799,205, Cl. 395-840.000.

Mannheimer, Paul D.: *See*—
Delonzor, Russ; Mannheimer, Paul D.; Fein, Michael E.; and Hannula, Don, 5,797,841, Cl. 600-323.000.

Manning, Thelma; Strauss, Bernard; Prezelski, Joseph P.; and Moy, Sam, to United States of America, Army. High energy TNAZ, nitrocellulose gun propellant. 5,798,481, Cl. 149-19.800.

Mano, Hiroshi; Watanabe, Takashi; and Suwa, Terunori, to Kabushiki Kaisha Toshiba. Communication terminal having function for displaying originator identification data. 5,799,074, Cl. 379-142.000.

Mar, Alan: *See*—
Bowers, John E.; Mar, Alan; Helkey, Roger J.; and Karin, Judy, 5,799,024, Cl. 372-11.000.

Marable, David; and Cato, John. Gun grip panel. 5,797,207, Cl. 42-71.020.

Marathon Electric Mfg. Corp.: *See*—
Kufahl, Larry I., 5,797,306, Cl. 83-257.000.

March, Keith L.; and Zipes, Douglas P., to Indiana University Foundation. Pericardial delivery of therapeutic and diagnostic agents. 5,797,870, Cl. 604-49.000.

March, Rod G.: *See*—
Cardinal, David J.; and March, Rod G., 5,799,318, Cl. 707-104.000.

Marian, Vaughn R.; and Curley, Michael G., to Acuson Corporation. Ultrasonic transducer assembly with improved electrical interface. 5,797,848, Cl. 600-459.000.

Marie, Bruno; Guerin, Daniel; Larquet, Christian; and Willemot, Antoine, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Device for feeding a gas-mixture laser apparatus, and laser apparatus equipped with such a device. 5,799,031, Cl. 372-59.000.

Marin, Anna Belle, to International Flavors & Fragrances Inc. Insect repellent composition and method of using same to repel insects. 5,798,385, Cl. 514-512.000.

Mark, Michael John: *See*—
Snoke, Phillip Jack; Mark, Michael John; Verdura, Javier; and Nagatani, Kevin A., 5,797,670, Cl. 362-119.000.

Marko, Paul D.: *See*—
Laird, Kevin Michael; Smith, Sybren D.; Marko, Paul D.; and Wadin, Craig P., 5,799,039, Cl. 375-244.000.
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Marman, Douglas H.: *See*—
Bernal, Brian A.; Croft, Daniel P.; Johnson, Kirk R.; Marman, Douglas H.; and Peltier, Mark A., 5,798,701, Cl. 340-628.000.

Marmin, Jean-Claude, to Heidelberger Druckmaschinen AG; and Heidelberg Harris S.A. Differential-pressure turner bar configuration. 5,797,531, Cl. 226-97.000.

Marosek, Mark W.; and Philpott, Rich, to National Semiconductor Corporation. Low-side driver with gate leakage detection circuitry. 5,798,662, Cl. 327-109.000.
Marquardt GmbH: *See*—
Schaeffeler, Alois; Geiger, August; and Mueller, Jens, 5,798,584, Cl. 310-50.000.
Marquardt, Robert: *See*—
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Marquet, André: *See*—
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Marquip, Inc.: *See*—
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Marquis, Edward T.: *See*—
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Marra, Alexander: *See*—
Lomp, Gary; Kowalski, John; Ozluturk, Fatih; Silverberg, Avi; Regis, Robert; Luddy, Michael; Marra, Alexander; and Jacques, Alexander, 5,799,010, Cl. 370-335.000.
Marra, Michael A., III: *See*—
Mengüc, M. Pinar; Walcott, Bruce L.; Swabb, Stephen R.; and Marra, Michael A., III, 5,797,736, Cl. 431-75.000.
Mars Incorporated: *See*—
Bointon, Richard Guy; Allan, Richard Douglas; and Funnell, Nicola Marie, 5,797,475, Cl. 194-317.000.
Marschall, Peter Hoegh, to Jorgen Kruuse A/S. Collar for mounting around the neck of an animal. 5,797,354, Cl. 119-815.000.
Marschke, Carl R.; and Rodewald, Dennis W., to Marquip, Inc. Method for shingling and stacking conveyed sheet material. 5,797,598, Cl. 271-202.000.
Marshall and Williams Company: *See*—
Hosmer, Christopher Eugene, 5,797,172, Cl. 26-89.000.
Marshall, George Pharris: *See*—
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Marti, Silvio: *See*—
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Martin Engineering Company: *See*—
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Martin, Geoffrey S.; and LeBlanc, Michael R., to Vas-Cath Incorporated. Multiple lumen catheter. 5,797,869, Cl. 604-43.000.
Martin, Gérard: *See*—
Le Gal, Jean-Hervé; Martin, Gérard; and Euzen, Patrick, 5,797,737, Cl. 431-170.000.
Martin, Gregory A.; and Bussard, Ray E., to Chrysler Corporation. Diagnostic test controller apparatus. 5,798,647, Cl. 324-503.000.
Martin, James F., to Eli Lilly and Company. Continuous cardiac output derived from arterial pressure waveform using pattern recognition. 5,797,395, Cl. 128-673.000.
Martin, Jean-Raymond, to Fairant, Paulette. Operative equipment for correcting a spinal deformity. 5,797,910, Cl. 606-61.000.
Martin, John Kaal. Double-acting, deep-well fluid extraction pump. 5,797,452, Cl. 166-110.000.
Martin, Paul. Extended ridge roof vent. 5,797,222, Cl. 52-198.000.
Martin, Richard R.; and Vayntraub, Michael, to Polymer Technology Corporation. Multispheric contact lens. 5,798,816, Cl. 351-160.00R.
Martin, Stephen J.; Wiczer, James J.; Cernosek, Richard W.; Frye, Gregory C.; Gebert, Charles T.; Casaus, Leonard; and Mitchell, Mary A., to Sandia Corporation. Textured-surface quartz resonator fluid density and viscosity monitor. 5,798,452, Cl. 73-32.00R.
Martin, Werner: *See*—
Winter, Udo; Schabelreiter, Johann; and Martin, Werner, 5,797,463, Cl. 173-211.000.
Martin-Cocher, Jean-Paul; and Jaconelli, Georges, to Newtec International. method of wrapping loads by means of a stretchable film, a machine and a film for implementing the method. 5,797,240, Cl. 53-399.000.
Martin-Cocher, Jean-Paul; and Jaconélli, Georges, to Thimon, S.A. Prestretched film, and apparatus and a method for outer packaging. 5,797,246, Cl. 53-399.000.
Martinelli, Michael J.: *See*—
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Martinis, Susan A.; Sassanfar, Mandana; Kim, Sunghoon; Lee, Sang Ho; and Schimmel, Paul R., to Cubist Pharmaceuticals, Inc. Recombinant mycobacterial methionyl-tRNA synthetase genes and methods of use therefore. 5,798,240, Cl. 435-183.000.
Maruhashi, Yoshitsugu: *See*—
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Maruyama, Akira: *See*—
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Mas, Luis Rey, to Alcatel Alsthom Compagnie Generale d'Electricite. Apparatus for operating a multiple-stand mill train. 5,797,288, Cl. 72-7.100.
Maschinenfabrik Rieter AG: *See*—
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Masco Corporation of Indiana: *See*—
Tokarz, Steven John, 5,797,422, Cl. 137-315.000.
Masini, Marco; Tavazzani, Claudio; and Boiocchi, Stefania, to SGS-Thomson Microelectronics S.r.l. Single-output dual-supply class D amplifier. 5,798,672, Cl. 330-251.000.
Maslanka, Daniel Charles; and Fisher, Terrence Lee, to Eastman Kodak Company. Thermal printer with sensor for leading edge of receiver sheet. 5,798,783, Cl. 347-215.000.
Mason, Eric Todd: *See*—
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Santini, John T., Jr.; Cima, Michael J.; and Langer, Robert S., 5,797,898, Cl. 604-890.100.
Massey, Richard J.; Blackburn, Gary F.; Wilkins, Elizabeth W.; and Shah, Haresh P., to IGEN International, Inc. Apparatus for improved luminescence assays using particle concentration and chemiluminescence detection. 5,798,083, Cl. 422-52.000.
Masters, Andrew Edward: *See*—
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Masuda, Kazuaki: *See*—
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Masure, H. Robert: *See*—
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Matas Gabalda, Carlos, to ICBT Diederichs. Weaving apparatus with motor controlled weft insertion. 5,797,433, Cl. 139-449.000.
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Matheis, Mark A.; Kanfoush, Daniel E.; and Christy, Orrin D., to Moore Business Forms, Inc. Non-magnetic toner dynamic recycling. 5,799,227, Cl. 399-92.000.
Mathews, Viju K.; Jeng, Nanseng; and Fazan, Pierre, to Micron Technology, Inc. Process for doping hemispherical grain silicon. 5,798,280, Cl. 437-165.000.
Matice, Christopher J.: *See*—
Sager, Frank Everett; and Matice, Christopher J., 5,798,600, Cl. 310-330.000.
Matich, Ronald D. Breath deflector with seal. 5,797,146, Cl. 2-424.000.
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Matousek, Robert A.; Burke, Dan J.; Payne, Jeffrey R.; and Volk, Charles E., to Case Corporation. Residue spreading apparatus for agricultural combines. 5,797,793, Cl. 460-111.000.
Matra BAe Dynamics (UK) Ltd.: *See*—
McPhee, Andrew J., 5,798,579, Cl. 307-106.000.
Matrana, Barry Allen: *See*—
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Matson, Carl A.: *See*—
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Matson, Kenneth N. Wheel alignment method and apparatus. 5,797,190, Cl. 33-203.180.
Matsubara, Akihiro; and Shigyo, Masahiro, to Matsushita Electric Industrial Co., Ltd. Radio apparatus. 5,799,241, Cl. 455-62.000.
Matsubara, Gensoh, to Kabushiki Kaisha Toshiba. High-speed division and square root calculation unit. 5,798,955, Cl. 364-736.010.
Matsubara, Miyuki: *See*—
Takahashi, Kazuyoshi; Masuda, Kazuaki; Takayanagi, Yoshiaki; Suzuki, Akio; Kurata, Mitsuru; Abe, Tsutomu; Karita, Seiichiro; Tajika, Hiroshi; Koitabashi, Noribumi; Uchida, Haruo; Yano, Kentaro; Sugimoto, Hitoshi; and Matsubara, Miyuki, 5,798,775, Cl. 347-33.000.
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Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.
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Berner, Markus; and Gobbetti, Carlo, 5,798,839, Cl. 356-402.000.

Michaelis, Jurgen; and Trigg, Timothy Elliot, to Peptide Technology Limited. Method for the treatment or prevention of eczema/dermatitis. 5,798,335, Cl. 514-15.000.

Michalczyk, Michael Joseph; and Sharp, Kenneth George, to Du Pont de Nemours, E. I., and Company. Molecular and oligomeric silane precursors to network materials. 5,798,430, Cl. 528-42.000.

Michel, Patrick: *See*—
Benayoun, Alain; Le Pennec, Jean-Francois; Michel, Patrick; and Sicsic, Patrick, 5,799,158, Cl. 395-285.000.

Michels, William J.: *See*—
Li, Qi; Michels, William J.; Parrella, Ronald D.; Riley, Gilbert N., Jr.; Teplitsky, Mark D.; and Fleshler, Steven, 5,798,318, Cl. 505-501.000.

Michelson, Gary Karlin. Apparatus for inserting spinal implants. 5,797,909, Cl. 606-61.000.

Micro Craft, Inc.: *See*—
Brown, William M.; and Wickremasinghe, Ranjit D., 5,798,912, Cl. 362-80.000.

Micro Linear Corporation: *See*—
Hwang, Jeffrey H.; Yu, Donald; Hsu, Calvin; and Chee, Alland, 5,798,635, Cl. 323-222.000.

Micro Mega International Manufactures, S.A.: *See*—
Badoz, Jean-Marie; Calas, Paul; and Vulcain, Jean-Marie, 5,797,747, Cl. 433-224.000.

Microchip Technology Incorporated: *See*—
Thomsen, Joseph A., 5,798,915, Cl. 363-60.000.

Micron Electronics, Inc.: *See*—
Boe, Craig L., 5,798,464, Cl. 73-830.000.

Micron Technology, Inc.: *See*—
Atkins, Glen G.; Cohen, Michael S.; Mauritz, Karl H.; and Shaffer, James M., 5,798,565, Cl. 257-701.000.
Clampitt, Darwin A., 5,798,303, Cl. 438-696.000.
Fazan, Pierre C.; and Chan, Hiang C., 5,798,296, Cl. 438-592.000.
Hudson, Guy F.; and Zahorik, Russell C., 5,798,302, Cl. 438-693.000.
Jost, Mark E.; Hansen, David J.; and McDonald, Steven M., 5,798,292, Cl. 438-401.000.
Mathews, Viju K.; Jeng, Nanseng; and Fazan, Pierre, 5,798,280, Cl. 437-165.000.
Ong, Adrian E., 5,798,970, Cl. 365-189.050.
Pierrat, Christophe; and Yang, Baorui, 5,798,193, Cl. 430-5.000.

Microsoft Corporation: *See*—
Benson, Max L., 5,799,321, Cl. 707-201.000.
Fulton, David L.; and Christensen, Eric R., 5,799,184, Cl. 395-602.000.
Krishnan, Murali R., 5,799,002, Cl. 370-234.000.
Lee, Ming-Chieh, 5,799,113, Cl. 382-256.000.

Microz Sweden AB: *See*—
Zettergren, Leif, 5,797,194, Cl. 34-259.000.

Midwest Research Institute: *See*—
Muljadi, Eduard, 5,798,632, Cl. 322-29.000.
Picataggio, Stephen K.; Zhang, Min; Franden, Mary Ann; Mc Millan, James D.; and Finkelstein, Mark, 5,798,237, Cl. 435-139.000.

Mihara, Toshiyuki: *See*—
Sato, Yoshiyuki; Tamura, Shigeharu; Mochizuki, Shoichi; and Mihara, Toshiyuki, 5,798,134, Cl. 427-126.600.

Mihara, Yoshizo: *See*—
Kaneko, Shinji; Ohura, Seiji; Mihara, Yoshizo; and Sato, Yukio, 5,798,992, Cl. 369-116.000.

Mijal, Terry: *See*—
Littlejohn, Jerry D.; and Sears, David F., 5,798,687, Cl. 340-426.000.

Mikame, Kazuhisa; and Iida, Tatsuo, to Toyta Jidosha Kabushiki Kaisha. Variable valve timing mechanism for internal combustion engine. 5,797,361, Cl. 123-90.170.

Mikkelsen, Steen B.: *See*—
Pedersen, Niels B.; Mikkelsen, Steen B.; and Wallström, Eva M., 5,798,781, Cl. 347-89.000.

Mikuni, Makoto: *See*—
Yoshino, Motoaki; and Mikuni, Makoto, 5,798,710, Cl. 340-825.520.

Mild, Edward E.; and Seilheimer, Stephen E., to Allied Tube & Conduit Corporation. In-line coating and curing a continuously moving welded tube with an organic polymer. 5,798,157, Cl. 428-36.900.

Miles, Ralph. Attachable arm rest for chairs. 5,797,655, Cl. 297-411.230.

Milkhaus Laboratory, Inc.: *See*—
McMichael, John; and Gurney, Harry C., 5,798,102, Cl. 424-198.100.

Miller, David J.: *See*—
Gearin, Peter; and Miller, David J., 5,797,712, Cl. 410-16.000.

Miller, Donald Lynn: *See*—
Przybysz, John Xavier; and Miller, Donald Lynn, 5,798,722, Cl. 341-133.000.

Miller, Eric J.: *See*—
Herbig, Scott M.; and Miller, Eric J., 5,798,119, Cl. 424-473.000.

Miller, Gérard: *See*—
Villeneuve, Luc; Miller, Gérard; Bernier, Robert; Laurendeau, Claude; and Pal, Prabir Kumar, 5,798,523, Cl. 250-234.000.

Miller, Gregory Alan: *See*—
Hoover, Andrew Paul; Miller, Gregory Alan; McQuirk, Dale John; and Hill, Winford Lee, II, 5,798,295, Cl. 438-533.000.

Miller, Harry W., II: *See*—
Lang, Gregory J.; Fulmer, Brian H.; Parker, Todd S.; Miller, Harry W., II; Jackson, Scott A.; Spear, Steven A.; and Oba, Graig S., 5,797,624, Cl. 280-741.000.

Miller, Joan W.: *See*—
Levy, Julia; Miller, Joan W.; Gradoudas, Evangelos S.; Hasan, Tayyaba; and Schmidt-Erfurth, Ursula, 5,798,349, Cl. 514-185.000.

Miller, John David, to Intel Corporation. Information evaluation. 5,799,304, Cl. 707-7.000.

Miller, Michael Gordon: *See*—
Bilbrey, David Brian; Jones, Rick Owen; Marshall, George Pharris; Miller, Michael Gordon; and Minor, James Craig, 5,798,199, Cl. 430-110.000.

Miller, Philip R.: *See*—
Brannen, William; Myers, Aaron; Patel, Harish; and Miller, Philip R., 5,798,322, Cl. 508-442.000.

Miller, Robert F., to Vemco Corporation. Pop-alert device. 5,797,428, Cl. 137-557.000.

Miller, Robert H., Jr.; and Beraha, Rudolfo G., to Hewlett-Packard Company. Leading bit anticipator. 5,798,952, Cl. 364-715.100.

Miller, Robert M. Rotary valve for musical instruments. 5,798,471, Cl. 84-390.000.

Miller, Steven C.; Lillegard, Gregory A.; and Milon, Daniel, to General Electric Company. Method and apparatus for complex bandpass filtering and decimation in ultrasound beamformer. 5,797,847, Cl. 600-447.000.

Miller, Todd; Feller, Craig; Wickemeyer, Daniel; Potter, David; Purdom, Erik; and Le, Tuan, to American Sporting Goods Corp. Sole construction for footwear. 5,797,199, Cl. 36-28.000.

Milligan, Robert J.: *See*—
Lord, Stephen M.; and Milligan, Robert J., 5,798,137, Cl. 427-213.000.

Milliman, Keith L.: *See*—
Heaton, Lisa W.; Palmer, Mitchell J.; Milliman, Keith L.; and McClure, Richard C., 5,797,538, Cl. 227-176.100.

Millipore Corporation: *See*—
Proulx, Stephen; Cook, Paul J.; and Heise, Michael L., 5,798,049, Cl. 210-767.000.
Shuler, John K.; Lovell, Stephen J.; Fisher, Abigail S.; Weiss, Alan J.; and Rosenstein, Robert W., 5,798,273, Cl. 436-514.000.

Milocco, Claudio; and Tassotti, Gianluca, to Electrolux Zanussi Elettrodomestici S.p.A. Method for controlling the amount of water filled in a dishwashing machine. 5,797,996, Cl. 134-18.000.

Milon, Daniel: *See*—
Miller, Steven C.; Lillegard, Gregory A.; and Milon, Daniel, 5,797,847, Cl. 600-447.000.

Milroy, James Craig: *See*—
Mattis, John S.; Milroy, James Craig; von der Lippe, Paul; Shimirak, Gerald L.; Chan, Paul S.; and Scarampi, Sebastiano, 5,797,759, Cl. 439-201.000.

Min, Byung-Moo; Yang, Joon Mook; and Cho, Nam Sook, to Park, Jong-Deok. Muscle clamping device. 5,797,932, Cl. 606-151.000.

Minagawa, Kazuji; and Oi, Kiyotoshi, to Nippondenso Co., Ltd. Fuel supply apparatus for engines. 5,797,374, Cl. 123-497.000.
Minami, Itsuji, to Fuji Photo Optical Co., Ltd. Endoscope image unit with circuit board having a hole therethrough. 5,797,837, Cl. 600-109.000.
Mincher, Bruce J.: *See*—
Meikrantz, David H.; Mincher, Bruce J.; and Arbon, Rodney E., 5,799,257, Cl. 588-200.000.
Minck, Klaus-Otto: *See*—
Mederski, Werner; Sombroek, Johannes; Schelling, Pierre; Beier, Norbert; Lues, Ingeborg; and Minck, Klaus-Otto, 5,798,364, Cl. 514-303.000.
Minear, Daniel J.: *See*—
Derderian, Ara J.; Minear, Daniel J.; Embree, Paul M.; and Mercs, James S., 5,798,818, Cl. 352-31.000.
Minebea Co., Ltd.: *See*—
Takehara, Takao; and Norizuki, Masashi, 5,798,616, Cl. 315-247.000.
Minematsu, Isao; Hirano, Koji; and Takita, Hiroki, to Mitsubishi Denki Kabushiki Kaisha. Graphic display control apparatus. 5,798,749, Cl. 345-123.000.
Minnesota Mining and Manufacturing Company: *See*—
Callahan, Joseph P., Jr.; and Samuelson, Bruce E., 5,798,159, Cl. 428-40.100.
Griggs, Allen L.; and McKenzie, Taun L., 5,798,399, Cl. 523-414.000.
Ho, Chia-Tie, 5,798,409, Cl. 524-506.000.
Netherly, Samuel G., 5,797,902, Cl. 606-32.000.
Minolta Camera Co., Ltd.: *See*—
Tanii, Junichi; Ootsuka, Hiroshi; Taniguchi, Toshihiko; Shimada, Takahisa; and Tsuji, Sadafusa, 5,798,625, Cl. 318-541.000.
Minolta Co., Ltd.: *See*—
Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, 5,799,215, Cl. 396-168.000.
Konishi, Yoshito; Inoue, Yoshiyuki; Tanaka, Yoshiharu; and Tanii, Junichi, 5,799,223, Cl. 396-538.000.
Morigami, Yuusuke; Kobayashi, Tadashi; Nishikawa, Misao; Yoshikawa, Hiroyuki; Ozawa, Kazuhito; Hirano, Ryo; Seki, Shinobu; and Wakamatsu, Shinji, 5,797,596, Cl. 270-58.110.
Minor, James Craig: *See*—
Bilbrey, David Brian; Jones, Rick Owen; Marshall, George Pharris; Miller, Michael Gordon; and Minor, James Craig, 5,798,199, Cl. 430-110.000.
Mio, Masao, to Mitsubishi Denki Kabushiki Kaisha. Microcomputer for resolving problems found in a program stored in a ROM. 5,799,144, Cl. 395-183.140.
Misawa, Rintaro, to Sunwa Ltd. Transporter for patient's emergency escape. 5,797,606, Cl. 280-5.220.
Mishima, Ikuhiro; Doi, Norito; Matsumura, Youichi; and Matsumoto, Shigemi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Resin composition excellent in impact strength. 5,798,414, Cl. 525-77.000.
Mishra, Umesh Kumar; and DenBaars, Steven P., to University of California, The Regents of the. Enhancement-depletion logic based on Ge mosfets. 5,798,555, Cl. 257-410.000.
Misono, Masayoshi: *See*—
Tsuruoka, Atsushi; and Misono, Masayoshi, 5,798,603, Cl. 313-412.000.
Misselyn, Anne-Marie; Durbut, Patrick; and Broze, Guy, to Colgate-Palmolive Co. Liquid cleaning compositions. 5,798,330, Cl. 510-421.000.
Mission Research Corporation: *See*—
Tyson, Scott M.; and Atlas, Eugene L., 5,798,558, Cl. 257-458.000.
Mita Industrial Co., Ltd.: *See*—
Kakuta, Masayuki; and Tabata, Yoshiaki, 5,797,597, Cl. 271-96.000.
Nishitani, Kazuhiro; and Osaka, Haruya, 5,798,483, Cl. 174-51.000.
Shibata, Tetsuya, 5,798,721, Cl. 341-106.000.
Yamamoto, Haruo; Amakawa, Katsumi; Hayashi, Shuji; Fujimoto, Masaya; Matsuo, Koichi; Okumura, Ryuichi; and Hayashi, Shinji, 5,799,139, Cl. 395-114.000.
Mitamura, Hisashi; Ureshino, Kashiro; Takebayashi, Hiroyuki; Onishi, Hisaaki; and Sarumaru, Shogo, to Kabushiki Kaisha Kobe Seiko Sho. Center mechanism of tire press. 5,798,123, Cl. 425-29.000.
Mitchell, John C.; Heard, Alan James; Corbett, Steven Norman; and Daniel, Nicholas John, to AllVoice Computing Plc. Automated proofreading using interface linking recognized words to their audio data while text is being changed. 5,799,273, Cl. 704-235.000.
Mitchell, Mary A.: *See*—
Martin, Stephen J.; Wiczer, James J.; Cernosek, Richard W.; Frye, Gregory C.; Gebert, Charles T.; Casaus, Leonard; and Mitchell, Mary A., 5,798,452, Cl. 73-32.00R.
Mitchell, Robert William: *See*—
Toussaint, Marc Emile; and Mitchell, Robert William, 5,798,310, Cl. 504-306.000.
Mitlitsky, Fred; Myers, Blake; and Magnotta, Frank. Lightweight bladder lined pressure vessels. 5,798,156, Cl. 428-35.900.
Mitsubishi Chemical Corporation: *See*—
Yano, Kazunori; Kaito, Hiroyoshi; Wakayama, Akeharu; and Yada, Shuhei, 5,798,407, Cl. 524-504.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Adachi, Katsumi, 5,798,586, Cl. 310-54.000.
Ajika, Natsuo; Arima, Hideaki; and Hachisuka, Atsushi, 5,798,289, Cl. 438-239.000.
Arimoto, Kazutami, 5,798,976, Cl. 365-222.000.
Asari, Kouki; Mori, Hiromichi; and Sakai, Eiichi, 5,798,878, Cl. 359-846.000.
Enya, Toshihiro; and Kawatsu, Hidetoshi, 5,798,492, Cl. 219-69.140.
Inoue, Tsutomu, 5,799,079, Cl. 379-433.000.
Kotoh, Satoru; Sakuma, Kiyoshi; Yoshida, Takayuki; Sano, Hiromi; Aoki, Katuyuki; Suzuki, Shin'ichi; Koizumi, Hideaki; Yamamoto, Kaoru; Matsushita, Kunio; Umno, Kenichi; and Oguma, Tomoko, 5,797,792, Cl. 454-320.000.
Minematsu, Isao; Hirano, Koji; and Takita, Hiroki, 5,798,749, Cl. 345-123.000.
Mio, Masao, 5,799,144, Cl. 395-183.140.
Mizutani, Yoshisada; and Kusama, Toshiki, 5,799,264, Cl. 701-211.000.
Mori, Kiyoshi; and Tsuchimoto, Junichi, 5,798,290, Cl. 438-245.000.
Niwa, Tomomitsu, 5,798,928, Cl. 364-474.220.
Ohtsuka, Masataka; Isota, Yoji; Matsunaga, Makoto; Konishi, Yoshihiko; and Nakahara, Shintaro, 5,798,734, Cl. 343-700.0MS.
Sakai, Kunito; Oshio, Kazuharu; and Kanegae, Hirozoh, 5,798,070, Cl. 264-272.170.
Sano, Hiroyasu, 5,799,242, Cl. 455-63.000.
Tada, Yasuo; Yamakawa, Tomoya; and Uramachi, Hiroyuki, 5,797,380, Cl. 123-572.000.
Terada, Makoto; Iyoda, Isao; Kobayashi, Yoshiyuki; and Iwamaru, Akifumi, 5,798,634, Cl. 323-207.000.
Tomishima, Chieko; and Sugimoto, Takahiko, 5,798,728, Cl. 342-93.000.
Yamagata, Tadato, 5,798,974, Cl. 365-200.000.
Yasuda, Mitsuhiro, 5,799,192, Cl. 395-701.000.
Mitsubishi Electric Information Technology Center America, Inc.: *See*—
Schabes, Yves; Roche, Emmanuel; and Golding, Andrew R., 5,799,269, Cl. 704-9.000.
Mitsubishi Heavy Industries, Ltd.: *See*—
Kadoya, Yoshikuni; Kawai, Hisataka; and Magoshi, Ryotarou, 5,798,082, Cl. 420-38.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Iida, Kazumasa; Miyamoto, Katsuhiko; Kamura, Hitoshi; Tamura, Hiroki; and Kojima, Atsuyoshi, 5,797,367, Cl. 123-295.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Sakakibara, Kiyokatsu, 5,798,590, Cl. 310-156.000.
Suda, Taiichiro; Fujii, Nagatoshi; Kawasaki, Masami; Moriguchi, Yoshiko; Iijima, Masaki; and Sera, Toshikuni, 5,798,087, Cl. 423-555.000.
Tanaka, Satoshi, 5,799,294, Cl. 706-46.000.
Mitsubishi Materials Corporation: *See*—
Nogami, Keishi; Koide, Masato; Morimoto, Takashi; and Koshiba, Yutaka, 5,798,008, Cl. 148-682.000.
Yamazaki, Masakazu; Yanaba, Michio; Taguchi, Hiroaki; Atami, Takashi; and Furuya, Hisashi, 5,797,638, Cl. 294-97.000.
Mitsubishi Materials Silicon: *See*—
Yamazaki, Masakazu; Yanaba, Michio; Taguchi, Hiroaki; Atami, Takashi; and Furuya, Hisashi, 5,797,638, Cl. 294-97.000.
Mitsubishi Paper Mills Limited: *See*—
Momma, Kenji; and Idei, Kouji, 5,798,173, Cl. 428-342.000.
Mitsubishi Semiconductor America, Inc.: *See*—
Lao, Tim; Blankenship, Dennis; and Cassada, Rhonda, 5,798,972, Cl. 365-189.110.
Mitsui Toatsu Chemicals, Inc.: *See*—
Karasawa, Akio; Yamaguchi, Akihiro; Yamaguchi, Keizaburo; and Ishihara, Yuko, 5,798,422, Cl. 525-450.000.
Mitsumi Electric Co., Ltd.: *See*—
Komatsu, Hisateru; Watanabe, Takashi; and Kojima, Osamu, 5,798,886, Cl. 360-99.050.
Mitsuo, Hashimoto: *See*—
Tomohisa, Matsushita; and Mitsuo, Hashimoto, 5,798,120, Cl. 424-482.000.
Mitsutake, Hideaki: *See*—
Katayama, Tatsushi; Suda, Shigeyuki; and Mitsutake, Hideaki, 5,798,791, Cl. 348-218.000.
Mittelman, Marc W.: *See*—
Santerre, Paul J.; and Mittelman, Marc W., 5,798,115, Cl. 424-423.000.
Miyachi Technos Corporation: *See*—
Uchida, Takahiro; and Nakayama, Shin-ichi, 5,798,867, Cl. 359-629.000.
Miyadera, Kazutaka; Yamada, Yuji; Takebayashi, Yuji; and Akiyama, Shinichi, to Taiho Pharmaceutical Co., Ltd. Monoclonal antibodies. 5,798,213, Cl. 435-7.400.
Miyake, Yoshio: *See*—
Kobayashi, Makoto; Yamamoto, Masakazu; Miyake, Yoshio; Isemoto, Koji; Uwai, Keita; and Miyazaki, Yoshiaki, 5,797,731, Cl. 417-238.000.
Miyamoto, Katsuhiko: *See*—
Iida, Kazumasa; Miyamoto, Katsuhiko; Kamura, Hitoshi; Tamura, Hiroki; and Kojima, Atsuyoshi, 5,797,367, Cl. 123-295.000.
Miyamoto, Takahisa: *See*—
Yasue, Toshikazu; Higuchi, Hidemitsu; Horimoto, Toru; Shimamoto, Yukio; and Miyamoto, Takahisa, 5,799,155, Cl. 395-200.660.
Miyamoto, Takashi: *See*—
Urano, Kazuaki; Maehara, Yoshimi; Ohkubo, Hiroshi; and Miyamoto, Takashi, 5,798,899, Cl. 360-132.000.
Miyamoto, Yoshiaki: *See*—
Onuki, Masahide; Kinuhata, Satoru; Takeuchi, Yuichi; Miyamoto, Yoshiaki; and Yamaguchi, Tetsuo, 5,798,833, Cl. 356-256.000.
Miyasaka, Seiichi: *See*—
Shibata, Kiyoshi; and Miyasaka, Seiichi, 5,798,499, Cl. 219-203.000.

Miyashita, Yukio, to NEC Corporation. Radio communication device combinable with a radio modem for computer. 5,799,240, Cl. 455-38.400.

Miyata, Kazuyoshi: *See*—
Kuroki, Yasuhisa; Miyata, Kazuyoshi; Tsuda, Yoshihiko; Inoue, Yasuhide; Kanaya, Jun; and Sato, Keigo, 5,798,344, Cl. 514-80.000.

Miyazaki, Kazuki; Shigehara, Kazunobu; and Zenke, Masanobu, to NEC Corporation. Semiconductor device having multilayered wiring structure. 5,798,569, Cl. 257-763.000.

Miyazaki, Seiji; Shirasu, Hiroshi; Saiki, Kazuaki; and Narabe, Tsuyoshi, to Nikon Corporation. Exposure apparatus. 5,798,822, Cl. 355-53.000.

Miyazaki, Yoshiaki: *See*—
Kobayashi, Makoto; Yamamoto, Masakazu; Miyake, Yoshio; Isemoto, Koji; Uwai, Keita; and Miyazaki, Yoshiaki, 5,797,731, Cl. 417-238.000.

Miyazawa, Tetsuo: *See*—
Hosono, Hiroko; Miyazawa, Tetsuo; Maruhashi, Yoshitsugu; Imazu, Katsuhiro; and Nakamura, Yasuji, 5,798,183, Cl. 428-458.000.

Miyoshi, Kazunori: *See*—
Nagahori, Takeshi; Hatakeyama, Ichiro; Araki, Soichiro; and Miyoshi, Kazunori, 5,798,664, Cl. 327-307.000.

Mizoguchi, Akinobu; Nakanishi, Shinji; and Akasawa, Toshiyuki, to Kuraray Co., Ltd. Porous polyurethane sheet. 5,798,165, Cl. 428-160.000.

Mizuguchi, Shinichi: *See*—
Tsutsui, Hiroshi; Komori, Kazunori; Nishiyama, Kazuhiro; Kuratomi, Yasunori; Takimoto, Akio; Akiyama, Koji; and Mizuguchi, Shinichi, 5,798,806, Cl. 349-29.000.

Mizukami, Tamio; Ogawa, Harumi; Nakai, Ryuichiro; Asai, Akira; Yamashita, Yoshinori; Ando, Katsuhiko; Agatsuma, Tsutomu; Akinaga, Shiro; Ouchi, Kozo; and Kawasaki, Hideki, to Kyowa Hakko Kogyo Co., Ltd. UCS1025 compounds. 5,798,379, Cl. 514-441.000.

Mizuno, Yoshio: *See*—
Ueda, Noriyoshi; Hiroi, Masakazu; Nakamura, Shinichi; Mizuno, Yoshio; Sato, Chikara; Kaneko, Tokuharu; Isobe, Yoshinori; Yoshida, Akimaro; Hishikawa, Yasuhide; and Nakagawa, Tomohito, 5,799,237, Cl. 399-367.000.

Mizunoya, Hirohide: *See*—
Kitaori, Noriyuki; Yoshida, Osamu; Mizunoya, Hirohide; and Shiga, Akira, 5,798,176, Cl. 428-402.000.

Mizusawa, Masayuki, to Nikon Corporation. Microscope objective lens and microscope. 5,798,870, Cl. 359-659.000.

Mizutani, Yoshisada; and Kusama, Toshiki, to Mitsubishi Denki Kabushiki Kaisha. In-car navigation apparatus with voice guidance. 5,799,264, Cl. 701-211.000.

Mochizuki, Daisuke: *See*—
Kogami, Yuji; Aono, Naomi; and Mochizuki, Daisuke, 5,798,382, Cl. 514-469.000.

Mochizuki, Shoichi: *See*—
Sato, Yoshiyuki; Tamura, Shigeharu; Mochizuki, Shoichi; and Mihara, Toshiyuki, 5,798,134, Cl. 427-126.600.

Mochizuki, Wataru: *See*—
Aruga, Tsuyoshi; Mochizuki, Wataru; Akiyama, Shuji; Hosaka, Hisatomi; and Abe, Yuichi, 5,798,651, Cl. 324-754.000.

Modine Manufacturing Co.: *See*—
Hughes, Gregory G.; and Gilner, Brian P., 5,797,448, Cl. 165-151.000.

Moelans, Inge Irma Maria Dominique: *See*—
Schoenmakers, Johannes Geradus Ghislain; Konings, Rudolph Nicolaas Hendrik; and Moelans, Inge Irma Maria Dominique, 5,798,105, Cl. 424-272.100.
Schoenmakers, Johannes Gerardus Ghislain; Konings, Rudolph Nicholaas Hendrik; and Moelans, Inge Irma Maria Dominique, 5,798,106, Cl. 424-272.100.

Mofidi, Mehrdad: *See*—
Lee, Douglas J.; Mehrotra, Sanjay; Mofidi, Mehrdad; and Guterman, Daniel C., 5,798,968, Cl. 365-185.290.

Moghadam, Omid A.; DiVincenzo, Joseph; McIntyre, Dale F.; and Weissberger, Edward, to Eastman Kodak Company. System and method for remote image communication and processing using data recorded on photographic film. 5,799,219, Cl. 396-319.000.

Moisin, Mihail S., to Pacific Scientific Company. Magnetic feedback ballast circuit for fluorescent lamp. 5,798,617, Cl. 315-247.000.

Mokadam, Anita R., to Nalco/Exxon Energy Chemicals,L.P. Surfactant additive for oil field acidizing. 5,797,456, Cl. 166-307.000.

Mokdad, Ayman, to Valeo. Damping flywheel, notably for motor vehicles. 5,797,297, Cl. 74-574.000.

Molecular Probes, Inc.: *See*—
Haugland, Richard P.; and Szalecki, Wojciech, 5,798,276, Cl. 436-546.000.

Molex Incorporated: *See*—
Yang, Tsung-Lin; and Chen, Jiunn-Ren, 5,797,769, Cl. 439-571.000.

Molin, Richard M.: *See*—
Honda, Kenji; Molin, Richard M.; and Hansen, Gale L., 5,798,323, Cl. 510-176.000.

Molina, Ricardo: *See*—
Flores, Albert; and Molina, Ricardo, 5,797,830, Cl. 493-361.000.

Molins PLC: *See*—
Dawson, John, 5,797,406, Cl. 131-84.100.

Moll, Hermann: *See*—
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Harrod, Jimmie A.; and Bernard, Dennis R., 5,797,305, Cl. 83-37.000.
Matheis, Mark A.; Kanfoush, Daniel E.; and Christy, Orrin D., 5,799,227, Cl. 399-92.000.

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Lang, Gregory J.; Fulmer, Brian H.; Parker, Todd S.; Miller, Harry W., II; Jackson, Scott A.; Spear, Steven A.; and Oba, Graig S., 5,797,624, Cl. 280-741.000.

Reed, Jeffrey S.; and Frazier, Richard L., 5,797,546, Cl. 239-280.500.

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Ayerst, Douglas I.; Khan, Malik J.; and Rudowicz, Michael J., 5,799,012, Cl. 370-336.000.
Barclay, Bruce Alan, 5,798,765, Cl. 345-426.000.
Bracha, Gabriel; Weissberger, Eytan; Volpert, Yehuda; and Algor, Ilan, 5,798,937, Cl. 364-490.000.
Butt, Farooq; Smith, Roger; and Stewart, Katherine E., 5,799,143, Cl. 395-183.140.
Chang, Chun-Ye Susan; Webster, James Rodney; and Powell, Clinton C., II, 5,799,043, Cl. 375-286.000.
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Hoover, Andrew Paul; Miller, Gregory Alan; McQuirk, Dale John; and Hill, Winford Lee, II, 5,798,295, Cl. 438-533.000.
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LaRosa, Christopher Peter; Carney, Michael John; Becker, Christopher John; and Ling, Fuyun, 5,799,011, Cl. 370-335.000.
Laird, Kevin Michael; Smith, Sybren D.; Marko, Paul D.; and Wadin, Craig P., 5,799,039, Cl. 375-244.000.
Luzzatto, Ariel; Ben-Ayun, Moshe; Shamsian, Roni; and Horowitz, Ilan Y., 5,799,246, Cl. 455-76.000.
McFarland, Duncan A.; and Benzer, Darrin R., 5,799,049, Cl. 375-362.000.
Pan, ShaoWei Wei; and Wang, Shay-Ping T., 5,798,957, Cl. 364-748.500.
Pedersen, Kristian; Hjordt, Tommy; and Andersen, Keld, 5,799,253, Cl. 455-527.000.
Pombo, Raul A.; and Marko, Paul D., 5,799,256, Cl. 455-574.000.
Reber, William L.; and Perttunen, Cary D., 5,798,694, Cl. 340-540.000.
Reynes, Jean-Michel; Allier, Jean-Francois; and Caillaba, Jean, 5,798,475, Cl. 102-202.500.
Sridhar, Manickam R.; Hoang, Minh; and Wortman, John, Jr., 5,799,064, Cl. 379-98.000.
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Mountford, S. Joy: *See—*
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Becker, Karl Helmut, 5,797,684, Cl. 384-99.000.

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Muraishi, Takaya: *See*—
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Muramoto, Hiroo: *See*—
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Murray, Thomas Robert: *See*—
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Mustarde, John Clarke. Bath lift. 5,797,149, Cl. 4-566.100.

Mustek Systems Inc.: *See*—
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Tsai, Jem-Tsair, 5,798,849, Cl. 358-475.000.

Muto, Akihiro, to Sony Corporation. Method and apparatus for reproducing coded data in which the coded data is decoded in reverse order of display. 5,799,129, Cl. 386-111.000.

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Nagano, Kenji, to Kabushiki Kaisha Kenlock. Two-loop coiled type clamping device. 5,797,168, Cl. 24-20.00R.

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Nagata, Kouichi: *See*—
Udagawa, Tetsuo; Kakizawa, Haruo; Nagata, Kouichi; and Tanaka, Kazuto, 5,798,863, Cl. 359-557.000.

Nagatani, Kevin A.: *See*—
Snoke, Phillip Jack; Mark, Michael John; Verdura, Javier; and Nagatani, Kevin A., 5,797,670, Cl. 362-119.000.

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Nagayama, Tadashi, to Nikon Corporation. Illumination optical system, alignment apparatus, and projection exposure apparatus using the same. 5,797,674, Cl. 362-268.000.

Nagayama, Tadashi: *See*—
Taniguchi, Tetsuo; Tsuji, Toshihiko; and Nagayama, Tadashi, 5,798,838, Cl. 356-401.000.

Nagy, Steve: *See*—
Krane, Michael A.; Zuteck, Mike; and Nagy, Steve, 5,798,012, Cl. 156-71.000.

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Kojima, Hiroshi; and Naito, Nobuo, 5,797,668, Cl. 362-31.000.

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Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; Kuramoto, Seiji; and Uchiyama, Naoki, 5,797,931, Cl. 606-151.000.

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Nowara, Kenji; and Nakada, Juichi, 5,799,038, Cl. 375-224.000.

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Petersen, David M.; Mayer, Jeremy; and Nakada, Scott M., 5,797,687, Cl. 400-23.000.

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Ueda, Noriyoshi; Hiroi, Masakazu; Nakamura, Shinichi; Mizuno, Yoshio; Sato, Chikara; Kaneko, Tokuharu; Isobe, Yoshinori; Yoshida, Akimaro; Hishikawa, Yasuhide; and Nakagawa, Tomohito, 5,799,237, Cl. 399-367.000.

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Ohtsuka, Masataka; Isota, Yoji; Matsunaga, Makoto; Konishi, Yoshihiko; and Nakahara, Shintaro, 5,798,734, Cl. 343-700.0MS.

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Mizukami, Tamio; Ogawa, Harumi; Nakai, Ryuichiro; Asai, Akira; Yamashita, Yoshinori; Ando, Katsuhiko; Agatsuma, Tsutomu; Akinaga, Shiro; Ouchi, Kozo; and Kawasaki, Hideki, 5,798,379, Cl. 514-441.000.

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Tabuchi, Daisuke; Shoji, Wataru; and Nakajima, Ichiro, 5,799,181, Cl. 395-590.000.

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Nakamura, Hideo, to Toyota Jidosha Kabushiki Kaisha. Engine valve adjuster. 5,797,363, Cl. 123-90.170.

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Murata, Kiyoshi; Komiya, Takashi; Nakanishi, Sadayuki; Sato, Yoshiharu; and Fukunaga, Akio, 5,797,583, Cl. 251-57.000.

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Ozawa, Shigeyuki; Nakase, Ryoichi; Hiki, Keiichi; and Fujimoto, Hiroaki, 5,797,775, Cl. 440-1.000.

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Kusaka, Hiroya; Sakaguchi, Takashi; and Nakayama, Masaaki, 5,798,792, Cl. 348-264.000.

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Pruszynski, Przemyslaw; and Armstrong, John R., 5,798,023, Cl. 162-181.100.

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Mokadam, Anita R., 5,797,456, Cl. 166-307.000.

Nanataki, Tsutomu: *See*—
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Rosenberg, Neil A., 5,797,744, Cl. 433-166.000.

Narabe, Tsuyoshi: *See*—
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Baynes, Ian David; and Hancock, Michael Thomas, 5,797,696, Cl. 403-377.000.
Nasu, Keyle H., to Boeing Company, The. Non-penetration clip attachment. 5,797,573, Cl. 248-231.310.
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Elzenbeck, Manfred; Haar, Klaus; and Nathmann, Harald, 5,797,653, Cl. 297-300.500.
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Chung, Henry Wei-Ming, 5,798,299, Cl. 438-625.000.
Fong, Edison, 5,798,723, Cl. 341-136.000.
Lau, Hung-Wah Anthony, 5,799,040, Cl. 375-258.000.
Marosek, Mark W.; and Philpott, Rich, 5,798,662, Cl. 327-109.000.
Shay, Michael John; and Koether, Mark Douglas, 5,798,659, Cl. 326-86.000.
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Moraveji, Farhood, 5,798,747, Cl. 345-98.000.
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Billmers, Robert L.; and Altieri, Paul A., 5,797,984, Cl. 127-33.000.
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Coffey, James B., 5,797,559, Cl. 242-527.600.
Goodridge, Gilbert W.; and Komichak, Michael J., 5,799,297, Cl. 707-1.000.
Leong, Liem Hak, 5,799,102, Cl. 382-135.000.
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Katayama, Hideyuki, 5,798,708, Cl. 340-825.440.
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Delonzor, Russ; Mannheimer, Paul D.; Fein, Michael E.; and Hannula, Don, 5,797,841, Cl. 600-323.000.
Nelson, Alan C.: *See*—
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Nelson, Arlin Dale: *See*—
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Adamovski, Victor Isaevich, 5,797,366, Cl. 123-237.000.
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Brant, William A.; Nielson, Michael E.; and Tang, Edde Tin-Shek, 5,799,200, Cl. 395-750.080.
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Nagayama, Tadashi, 5,797,674, Cl. 362-268.000.
Nakasuji, Mamoru; and Kawata, Shintaro, 5,798,194, Cl. 430-5.000.
Nishi, Kenji, 5,798,195, Cl. 430-22.000.
Okino, Teruaki, 5,798,196, Cl. 430-30.000.
Okumura, Masahiko, 5,798,530, Cl. 250-548.000.
Ozaki, Kazuchika, 5,798,750, Cl. 345-126.000.
Saegusa, Takashi; and Fujiwara, Hisatoshi, 5,799,217, Cl. 396-279.000.
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Taniguchi, Tetsuo; Tsuji, Toshihiko; and Nagayama, Tadashi, 5,798,838, Cl. 356-401.000.
Watanabe, Katsuya, 5,798,869, Cl. 359-658.000.
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Nilsson, Lennart S.; Rowe, Charles M.; and Yaffee, Donald, to Westinghouse Electric Corporation. Vibrational control system for stator coils. 5,798,595, Cl. 310-260.000.
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Labinsky, Alexander Numa, deceased; Reynolds, Gerald Alfred John; and Halliday, Jonathan, 5,798,999, Cl. 369-266.000.
Nippes, Helmut; and Funda, Friedhelm, to Teepack Spezialmaschinen GmbH & Co. Method and device for transferring filled tea bags from a single tea bag packaging machine to a processing machine. 5,797,244, Cl. 53-446.000.
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Sugimori, Katsunori; and Sakamoto, Hiroshi, 5,798,630, Cl. 320-137.000.
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Uemiya, Takafumi; Tsuchida, Hitoshi; Furukawa, Masayuki; Yamazaki, Kazuo; and Dohi, Tadashi, 5,798,033, Cl. 205-161.000.
Nippon Mining & Metals Co., Ltd.: *See*—
Narita, Katutoshi, 5,797,977, Cl. 75-426.000.
Nippon Ozone Co., Ltd.: *See*—
Ogata, Atsuya; and Suzuki, Shigeru, 5,797,872, Cl. 604-49.000.
Nippon Shokubai Co., Ltd.: *See*—
Wada, Katsuyuki; Ishizaki, Kunihiko; and Nagasuna, Kinya, 5,797,893, Cl. 604-372.000.
Nippon Signal Co., Ltd., The: *See*—
Sakai, Masayoshi; Futsuhara, Koichi; and Shirai, Toshihito, 5,798,703, Cl. 340-666.000.
Nippon Soda Co., Ltd.: *See*—
Takahashi, Eiji; and Muramoto, Hiroo, 5,798,396, Cl. 522-15.000.
Nippon Soken, Inc.: *See*—
Morishima, Shingo; Yamada, Jun; Kanehara, Kenji; and Yoshinaga, Tohru, 5,797,263, Cl. 60-311.000.
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Iwasa, Shoichi; and Tani, Tomofune, 5,798,545, Cl. 257-301.000.
Tamehiro, Hiroshi; Asahi, Hitoshi; Hara, Takuya; and Terada, Yoshio, 5,798,004, Cl. 148-336.000.
Nippon Telegraph and Telephone Corp.: *See*—
Kanekiyo, Tomoyuki; Kojima, Haruhiko; and Nishi, Hiroyuki, 5,799,018, Cl. 370-451.000.
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Fujita, Hiroshi; and Obayashi, Kazuyoshi, 5,798,628, Cl. 318-805.000.
Kuroyanagi, Akira; Yamaoka, Masami; Okabe, Yoshifumi; Tsuzuki, Yasuaki; and Tomatsu, Yutaka, 5,798,550, Cl. 257-341.000.
Minagawa, Kazuji; and Oi, Kiyotoshi, 5,797,374, Cl. 123-497.000.
Nir, Ari. Heat recovery system. 5,797,447, Cl. 165-140.000.
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Hnilica, Klaus D.; and Schneider, Klaus, 5,798,832, Cl. 356-316.000.
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Nishi, Kenji, to Nikon Corporation. Stepping accuracy measuring method. 5,798,195, Cl. 430-22.000.
Nishi, Shinichi: *See*—
Watanabe, Norinaga; and Nishi, Shinichi, 5,798,570, Cl. 257-796.000.
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Schwab, Stuart T.; Paul, Partha P.; and Nishida, Ryoichi, 5,798,428, Cl. 528-14.000.
Nishii, Teruyuki; and Sugiyama, Norio, to Canon Kabushiki Kaisha. Image recording method and apparatus. 5,798,771, Cl. 347-7.000.
Nishikawa, Misao: *See*—
Morigami, Yuusuke; Kobayashi, Tadashi; Nishikawa, Misao; Yoshikawa, Hiroyuki; Ozawa, Kazuhito; Hirano, Ryo; Seki, Shinobu; and Wakamatsu, Shinji, 5,797,596, Cl. 270-58.110.
Nishiki, Hirohiko; Shimada, Takayuki; and Katayama, Mikio, to Sharp Kabushiki Kaisha. Active matrix substrate and display device using the same with extending protrusions between gate and source line terminals. 5,798,812, Cl. 349-152.000.
Nishimura, Hiroyuki: *See*—
Ishikawa, Toshiharu; Ueda, Kenji; Hamada, Satoru; and Nishimura, Hiroyuki, 5,798,850, Cl. 359-12.000.
Nishimura, Kouichi; Satoh, Kouichi; Fujitani, Shin; Yonezu, Ikuo; and Nishio, Koji, to Sanyo Electric Co., Ltd. Hydrogen storage containers. 5,797,269, Cl. 62-46.200.
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Shirai, Noriaki; Hibino, Katsuhiko; and Nishimura, Takao, 5,798,727, Cl. 342-70.000.
Nishimura, Takeshi: *See*—
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Nishimura, Yoichi: *See*—
Akazaki, Shusuke; Nishimura, Yoichi; and Yasui, Yuji, 5,797,261, Cl. 60-276.000.
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Noguchi, Hiromichi; Kimura, Makiko; Katayama, Masato; Kashiwazaki, Akio; Nakata, Yoshie; and Nishioka, Yuko, 5,798,397, Cl. 522-81.000.
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Tsutsui, Hiroshi; Komori, Kazunori; Nishiyama, Kazuhiro; Kuratomi, Yasunori; Takimoto, Akio; Akiyama, Koji; and Mizuguchi, Shinichi, 5,798,806, Cl. 349-29.000.
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Nissan Chemical Industries, Ltd.: *See*—
Ikegawa, Ruriko; Imada, Teruaki; Nakamura, Norifumi; Tanikawa, Keizo; and Tsuruzoe, Nobutomo, 5,798,357, Cl. 514-252.000.
Nissan Motor Co., Ltd.: *See*—
Ozaki, Yuji; and Ogino, Kenji, 5,799,261, Cl. 701-78.000.
Tagawa, Yukio, 5,797,664, Cl. 303-190.000.
Terauchi, Kenji, 5,798,629, Cl. 320-15.000.
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Fujii, Tsuguo; Matsumura, Keizo; and Kikuchi, Toshihiro, 5,797,490, Cl. 206-365.000.
Nitta, Koichi, to Kabushiki Kaisha Toshiba. Blue light-emitting device. 5,798,537, Cl. 257-103.000.
Nitta, Yuji: *See*—
Hirai, Junji; Hiraga, Yoshiji; Hirose, Kenji; Nitta, Yuji; Hamamoto, Hiroyuki; and Nomura, Kenji, 5,798,622, Cl. 318-16.000.
Niwa, Tadashi: *See*—
Sato, Takehisa; Ueda, Hironari; Kuribayashi, Toshiaki; Asano, Satoshi; Niwa, Tadashi; Ueno, Hiroshi; Fujii, Takeaki; and Suzuki, Sadakatsu, 5,798,054, Cl. 252-68.000.
Niwa, Tomomitsu, to Mitsubishi Denki Kabushiki Kaisha. Tool specifying method and apparatus for an NC automatic programming system. 5,798,928, Cl. 364-474.220.
Nobi Oy: *See*—
Kivelä, Antti, 5,797,148, Cl. 4-235.000.
Nobis, Rudolph H.: *See*—
Paraschac, Joseph F.; Wales, Kenneth S.; Nobis, Rudolph H.; and Rupp, Kip, 5,797,938, Cl. 606-167.000.
Noble, Terry B., to Rockland Manufacting, Inc. Land clearing attachment for bulldozers. 5,797,461, Cl. 172-200.000.
Nobles, Anthony A.; Lancaster, Arthur; and Brosch, Ben G., Jr., to Ethicon Endo-Surgery, Inc. Visualization trocar. 5,797,944, Cl. 606-185.000.
Noda, Hideki: *See*—
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Noferi, Omero: *See*—
Cipparrone, Marco; and Noferi, Omero, 5,797,257, Cl. 57-902.000.
Nogami, Keishi; Koide, Masato; Morimoto, Takashi; and Koshiba, Yutaka, to Mitsubishi Materials Corporation. Method for producing copper alloy materials for molds for continuous steel casting, and molds made of the materials. 5,798,008, Cl. 148-682.000.
Noguchi, Hiromichi; Kimura, Makiko; Katayama, Masato; Kashiwazaki, Akio; Nakata, Yoshie; and Nishioka, Yuko, to Canon Kabushiki Kaisha. Active energy ray-curable composition, recording medium and image-forming method employing the same. 5,798,397, Cl. 522-81.000.
Noguchi, Minoru: *See*—
Ando, Kazuo; Shohoji, Tomokazu; Watanabe, Naoya; and Noguchi, Minoru, 5,798,906, Cl. 361-520.000.
Nohr, Ronald Sinclair; and MacDonald, John Gavin, to Kimberly-Clark Worldwide, Inc. Method of laminating a structure with adhesive containing a photoreactor composition. 5,798,015, Cl. 156-275.500.

Nojiri, Toshihiko: *See*—
Nakazeki, Tsugito; and Nojiri, Toshihiko, 5,798,454, Cl. 73-54.280.
Nokia Mobile Phones Ltd.: *See*—
Berg, Jukka; and Malila, Raimo, 5,799,255, Cl. 455-551.000.
Nokia Telecommunications: *See*—
Keskitalo, Ilkka; Kiema, Arto; Savusalo, Jari; and Jolma, Petri, 5,799,004, Cl. 370-335.000.
Nokia Telecommunications Oy: *See*—
Ojaniemi, Heikki, 5,799,243, Cl. 455-63.000.
Paavonen, Tapio, 5,799,251, Cl. 455-517.000.
Nomura, Kenji: *See*—
Hirai, Junji; Hiraga, Yoshiji; Hirose, Kenji; Nitta, Yuji; Hamamoto, Hiroyuki; and Nomura, Kenji, 5,798,622, Cl. 318-16.000.
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Sakano, Yukio; Tabata, Yasuhiro; and Nomura, Nobufumi, 5,798,844, Cl. 358-405.000.
Nonaka, Jun; Shimizu, Shuichi; Kobayashi, Satoru; and Iizuka, Takashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Laser drawing apparatus featuring a beam separator supported by an adjusting means swingable about a rotating shaft. 5,798,784, Cl. 347-243.000.
Nonaka, Kimihiro, to Sanshin Kogyo Kabushiki Kaisha. Cylinder-disabling control system for multi-cylinder engine. 5,797,371, Cl. 123-481.000.
Nonaka, Ryuji, to Sony Corporation. Apparatus for controlling a switcher and a special effects device. 5,798,800, Cl. 348-578.000.
Noreen, Darryl L. Oxygen producing thermophotovoltaic systems. 5,797,997, Cl. 136-253.000.
Norfrost Limited: *See*—
Grant, Alexander, 5,797,451, Cl. 165-171.000.
Noritsu Koki Co., Ltd.: *See*—
Kishi, Takuji; Murakami, Motoaki; and Ohtani, Kimiharu, 5,797,560, Cl. 242-528.000.
Yamane, Seiji, 5,798,501, Cl. 219-497.000.
Norizuki, Masashi: *See*—
Takehara, Takao; and Norizuki, Masashi, 5,798,616, Cl. 315-247.000.
Norris, Jeffrey A.: *See*—
Carlson, Gary; and Norris, Jeffrey A., 5,797,964, Cl. 607-2.000.
Norris, Keith E. Marking punch guide device. 5,797,315, Cl. 101-28.000.
Norsk Hydro A.S.: *See*—
Clausen, Edvin List, 5,797,575, Cl. 248-429.000.
Northern Telecom Limited: *See*—
Rolland, Claude; and Yu, Jun, 5,799,119, Cl. 385-28.000.
Northrop Grumman Corporation: *See*—
Donahue, Lawrence J., 5,797,520, Cl. 222-386.500.
Ethridge, Jeffrey Noel, 5,798,733, Cl. 342-357.000.
Metalis, Sam Anthony; and Rodriquez, Samuel Lee, 5,798,695, Cl. 340-576.000.
Przybysz, John Xavier; and Miller, Donald Lynn, 5,798,722, Cl. 341-133.000.
Northwestern University: *See*—
Peshkin, Michael A.; and Santos-Munné , Julio J., 5,799,055, Cl. 378-42.000.
Nouveau Technologies, Inc.: *See*—
Wiersma, Jack G., 5,797,891, Cl. 604-360.000.
Novatic Laser Systems, Inc.: *See*—
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Novo Nordisk A/S: *See*—
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Novon International: *See*—
Stevens, Henry Guy, 5,798,152, Cl. 428-34.100.
Novovasc LLC: *See*—
Rosen, Gerald M.; Herzog, William R., Jr.; and Pou, Sovitj, 5,797,887, Cl. 604-265.000.
Novtex Corp.: *See*—
Kaczmarczyk, Christina T., 5,797,283, Cl. 66-193.000.
Nowak, Florian I.; Nowak, Gary F.; and Nowak, Glen L., to Nowak Products, Inc. Die head. 5,797,802, Cl. 470-185.000.
Nowak, Gary F.: *See*—
Nowak, Florian I.; Nowak, Gary F.; and Nowak, Glen L., 5,797,802, Cl. 470-185.000.
Nowak, Glen L.: *See*—
Nowak, Florian I.; Nowak, Gary F.; and Nowak, Glen L., 5,797,802, Cl. 470-185.000.
Nowak Products, Inc.: *See*—
Nowak, Florian I.; Nowak, Gary F.; and Nowak, Glen L., 5,797,802, Cl. 470-185.000.
Nowak, Ronald Peter: *See*—
Feilchenfeld, Natalie Barbara; Kresge, John Steven; Moore, Scott Preston; Nowak, Ronald Peter; and Wilson, James Warren, 5,798,563, Cl. 257-668.000.
Nowara, Kenji; and Nakada, Juichi, to Advantest Corporation. Method for measuring modulation parameters of digital quadrature-modulated signal. 5,799,038, Cl. 375-224.000.
Nowicki, Michael L.; and Naslund, Paul E., to Dema Engineering Co. Proportioner. 5,797,420, Cl. 137-216.000.
Nozieres, Jean-Jacques: *See*—
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NSI Enterprises, Inc.: *See*—
Logan, Mark Campbell; Masters, Andrew Edward; and Hull, Edwin Lewis, 5,797,673, Cl. 362-234.000.
NTN Corporation: *See*—
Nakazeki, Tsugito; and Nojiri, Toshihiko, 5,798,454, Cl. 73-54.280.
Nudelman, Edward D., to Cell Therapeutics, Inc. Angiogenic lipid formulations. 5,798,386, Cl. 514-547.000.
Nuebling, Christoph: *See*—
von Deyn, Wolfgang; Theobald, Hans; Nuebling, Christoph; Kardorff, Uwe; Walter, Helmut; Westphalen, Karl-Otto; Kappe, Thomas; and Gerber, Matthias, 5,798,451, Cl. 546-155.000.
Nufer, Robert Wolff, to International Business Machines Corporation. Non-sintering controlled pattern formation. 5,798,469, Cl. 75-246.000.
Nupron GmbH Proteinwerk: *See*—
Neumüller, Waldemar, 5,798,446, Cl. 530-370.000.
Nycomed Salutar, Inc.: *See*—
Varadarajan, John; Watson, Alan David; and Berg, Arne, 5,798,089, Cl. 424-1.650.
Nyfelt, Leif, to Scarinus Development AB. Arrangement for preventing a motor vehicle from passing a specific place unauthorized. 5,798,714, Cl. 340-988.000.
Oak Frequency: *See*—
Comer, Donald T., 5,798,502, Cl. 219-497.000.
Oba, Graig S.: *See*—
Lang, Gregory J.; Fulmer, Brian H.; Parker, Todd S.; Miller, Harry W., II; Jackson, Scott A.; Spear, Steven A.; and Oba, Graig S., 5,797,624, Cl. 280-741.000.
Obayashi, Kazuyoshi: *See*—
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OBE-Werk Ohnmacht & Baumgartner GmbH & Co. KG: *See*—
Wagner, Reiner, 5,797,173, Cl. 29-11.000.
Oberlin, Jeffrey R.; Johnson, Christopher L.; and Dunlap, David A., to Richard-Allan Medical Industries, Inc. Articulated surgical instrument with improved firing mechanism. 5,797,537, Cl. 227-176.100.
Oberndorfer, Johannes: *See*—
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Obitsu, Hideshi, to Terumo Kabushiki Kaisha. Guide wire. 5,797,857, Cl. 600-585.000.
O'Brien, Nada A.: *See*—
Yu, Phillip C.; Backfisch, David L.; O'Brien, Nada A.; and Hichwa, Bryant P., 5,798,860, Cl. 359-273.000.
Occhiodoro, Teresa: *See*—
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Oce-Nederland B.V.: *See*—
Aerts, Wilhelmus Joseph, 5,798,847, Cl. 358-464.000.
Oceaneering International, Inc.: *See*—
Sager, Frank Everett; and Matice, Christopher J., 5,798,600, Cl. 310-330.000.
Ochi, Kengo, to Uni-Charm Corporation. Absorbent panel for pet animals. 5,797,347, Cl. 119-169.000.
Ochoa, J. Rafael; and Hirt, Robert L., to ABB Power T&D Company, Inc. System for optimizing power network design reliability. 5,798,939, Cl. 364-493.000.
Ochs, Thomas L.: *See*—
Fisher, George T., II; Hansen, Jeffrey S.; Oden, Laurance L.; Turner, Paul C.; and Ochs, Thomas L., 5,799,238, Cl. 419-7.000.
O'Connor, Fiona. Longitudinally-opening tubular container having split end caps. 5,797,542, Cl. 229-109.000.
Odagiri, Masaru: *See*—
Ueda, Hideyuki; Seki, Hiroshi; Kuwahara, Kenji; Murai, Mikio; Takahasi, Kiyosi; Odagiri, Masaru; and Okazaki, Sadayuki, 5,798,135, Cl. 427-130.000.
Oddenino, Manrico, to ITW Fastex Italia S.p.A. Plastic fastener, in particular, a vehicle panel fastener. 5,797,714, Cl. 411-508.000.
Odell, Michael; and Verkasalo, Lauri, to Valmet Corporation. Controlling web anistropy in a roll and blade twin-wire gap former. 5,798,024, Cl. 162-203.000.
Oden Corporation: *See*—
Phallen, Iver J.; Jezuit, Richard J.; and Payne, Steven D., 5,797,436, Cl. 141-82.000.
Oden, Laurance L.: *See*—
Fisher, George T., II; Hansen, Jeffrey S.; Oden, Laurance L.; Turner, Paul C.; and Ochs, Thomas L., 5,799,238, Cl. 419-7.000.
Oehrlein, Gottlieb Stefan; Vender, David; Zhang, Ying; and Haverlag, Marco, to International Business Machines Corporation. Apparatus for hot wall reactive ion etching using a dielectric or metallic liner with temperature control to achieve process stability. 5,798,016, Cl. 156-345.000.
Oerlemans, Cornelis A. M.: *See*—
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O'Farrell, Desmond J.; Veldman, Roger L.; and Schofield, Kenneth, to Donnelly Corporation. Vehicle mirror digital network and dynamically interactive mirror system. 5,798,575, Cl. 307-10.100.
Offner, Nelson: *See*—
Cook, Robert L.; Herrmann, Eric M.; Offner, Nelson; Granger, Edward M.; Dirik, Akin; and Baca, Lawrence D., 5,798,943, Cl. 364-526.000.
Ogata, Atsuya; and Suzuki, Shigeru, to Nippon Ozone Co., Ltd. Method of treating domestic animals such as cows for mastitis and apparatus for injecting ozone into breasts. 5,797,872, Cl. 604-49.000.
Ogata, Hiroaki: *See*—
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Ogawa, Harumi: *See*—

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Ogawa, Masatsugu, to NEC Corporation. Low noise magneto-optical disk drive. 5,798,987, Cl. 369-13.000.

Ogawa, Ryota: *See*—
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Ogino, Kenji: *See*—
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Ogino, Tetsuro: *See*—
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O'Gorman, Lawrence P.: *See*—
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Ogusu, Masahiro; and Ohshima, Shigeru, to Kabushiki Kaisha Toshiba. Integrated optical multiplexer-and-demultiplexer. 5,799,118, Cl. 385-14.000.

Oh, Seho: *See*—
Lee, Shih-Jong J.; Oh, Seho; Patten, Stanley F.; Nelson, Alan C.; and Nelson, Larry A., 5,799,101, Cl. 382-133.000.

Ohashi, Kengo: *See*—
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Ohashi, Masakazu, to Sharp Kabushiki Kaisha. Cooperative diversity antenna switching on transmitter and receiver side. 5,799,245, Cl. 455-69.000.

Ohashi, Nobuhiko; Kohama, Takeshi; and Sano, Tetsuya, to Ipics Corporation. Liquid crystal cell and method for producing the same in which a liquid crystal inlet port opening width is larger than an effective display area width. 5,798,813, Cl. 349-154.000.

Ohba, Kazuhide: *See*—
Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.

Ohba, Ryoji; and Tamanoi, Yoshihito, to Japan as represented by President of Hokkaido University; and Koa Oil Company, Limited. Subject identification method, apparatus and system. 5,798,459, Cl. 73-587.000.

Ohi, Shinichi; Umegaki, Fuhito; Takemasa, Masami; Haraguchi, Tatsuo; Gunji, Yoshihide; and Ohsawa, Hiroshi, to Zexel Corporation. Brushless motor having lubrication system for upper and lower bearings. 5,798,589, Cl. 310-90.000.

Ohkawa, Shigeaki; and Ohkoda, Toshiyuki, to Sanyo Electric Co., Ltd. Semiconductor integrated circuit having a spark killer diode. 5,798,560, Cl. 257-555.000.

Ohkoda, Toshiyuki: *See*—
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Ohkubo, Hiroshi: *See*—
Urano, Kazuaki; Maehara, Yoshimi; Ohkubo, Hiroshi; and Miyamoto, Takashi, 5,798,899, Cl. 360-132.000.

Ohkubo, Shuichi; Okada, Mitsuya; and Itou, Masaki, to NEC Corporation. System and method for simultaneously verifying optical data writing and optical data writing medium for use therein. 5,798,993, Cl. 369-54.000.

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Murata, Atsuya; and Taki, Yukio, 5,797,825, Cl. 483-53.000.

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Watanabe, Yasushi; and Ohnishi, Hideaki, 5,797,732, Cl. 417-310.000.

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Ohshima, Shigeru: *See*—
Ogusu, Masahiro; and Ohshima, Shigeru, 5,799,118, Cl. 385-14.000.

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Kawaguchi, Hiroshi; Okada, Akio; and Ohta, Masashi, 5,797,663, Cl. 303-146.000.

Ohtani, Kimiharu: *See*—
Kishi, Takuji; Murakami, Motoaki; and Ohtani, Kimiharu, 5,797,560, Cl. 242-528.000.

Ohtsuka, Masataka; Isota, Yoji; Matsunaga, Makoto; Konishi, Yoshihiko; and Nakahara, Shintaro, to Mitsubishi Denki Kabushiki Kaisha. Antenna apparatus, method of manufacturing same and method of designing same. 5,798,734, Cl. 343-700.0MS.

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Ohya, Shuichi; Sakao, Masato; Takaishi, Yoshihiro; Kajiyana, Kiyonori; Akimoto, Takeshi; Oguro, Shizuo; and Shishiguchi, Seiichi, to NEC Corporation. Semiconductor memory device having trench isolation regions and bit lines formed thereover. 5,798,544, Cl. 257-296.000.

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Minagawa, Kazuji; and Oi, Kiyotoshi, 5,797,374, Cl. 123-497.000.

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Yoshioka, Mamoru; and Oi, Yasuhiro, 5,797,382, Cl. 123-586.000.

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Sasa, Tomoo; and Oide, Ryosuke, 5,798,184, Cl. 428-484.000.

Oikawa, Tomohiro: *See*—
Abe, Takuya; Toizumi, Kiyoshi; Shimazu, Fumio; Yoshimoto, Hiromu; Yamauchi, Kouichi; Tachiki, Hiroshi; Oikawa, Tomohiro; Iwakura, Yoshie; and Katoh, Atsuyuki, 5,799,225, Cl. 399-66.000.

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Hattori, Tetsuo; and Oikawa, Yoshiro, 5,798,819, Cl. 353-33.000.

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Okabe, Gen: *See*—
Yamamoto, Susumu; Nakada, Toshio; Nakamura, Toshifumi; and Okabe, Gen, 5,798,843, Cl. 358-404.000.

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Kuroyanagi, Akira; Yamaoka, Masami; Okabe, Yoshifumi; Tsuzuki, Yasuaki; and Tomatsu, Yutaka, 5,798,550, Cl. 257-341.000.

Okada, Akihiko: *See*—
Funaki, Keisuke; Okada, Akihiko; and Uchida, Takaaki, 5,798,172, Cl. 428-327.000.

Okada, Akihiro, to Dataproducts Corporation. Hot melt ink printer and method printing. 5,797,329, Cl. 101-488.000.

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Okada, Mitsuya: *See*—
Ohkubo, Shuichi; Okada, Mitsuya; and Itou, Masaki, 5,798,993, Cl. 369-54.000.

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Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.

Okazaki, Sadayuki: *See*—
Ueda, Hideyuki; Seki, Hiroshi; Kuwahara, Kenji; Murai, Mikio; Takahasi, Kiyosi; Odagiri, Masaru; and Okazaki, Sadayuki, 5,798,135, Cl. 427-130.000.

Oki Data Corporation: *See*—
Yoshimura, Kotaro; Togashi, Shigemi; and Watanabe, Osamu, 5,798,777, Cl. 347-44.000.

Oki Electric Industry Co., Ltd.: *See*—
Shona, Yoshihiro, 5,799,085, Cl. 380-23.000.

Okino, Teruaki, to Nikon Corporation. Pattern transfer method utilizing distribution condition evaluation by charged particle beam. 5,798,196, Cl. 430-30.000.

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Sakurai, Toshikazu; Suzuki, Izumi; and Okumura, Hitoshi, 5,797,772, Cl. 439-752.000.

Okumura, Masahiko, to Nikon Corporation. Method and apparatus for aligning a mask and a set of substrates to be exposed. 5,798,530, Cl. 250-548.000.

Okumura, Ryuichi: *See*—
Yamamoto, Haruo; Amakawa, Katsumi; Hayashi, Shuji; Fujimoto, Masaya; Matsuo, Koichi; Okumura, Ryuichi; and Hayashi, Shinji, 5,799,139, Cl. 395-114.000.

Okumura, Yasushi: *See*—
Yuuki, Toshifumi; Okumura, Yasushi; and Yamakawa, Hiroshi, 5,798,099, Cl. 424-185.100.

Okuno, Ryoji: *See*—
Yamamoto, Harushige; and Okuno, Ryoji, 5,799,221, Cl. 396-535.000.

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Olin Microelectronic Chemicals, Inc.: *See*—
Honda, Kenji; Molin, Richard M.; and Hansen, Gale L., 5,798,323, Cl. 510-176.000.

Olinger, John L.; and Schelhorn, Jean E., to Owens Corning Fiberglas Technology, Inc. Insulated vessels. 5,797,513, Cl. 220-421.000.

Olivetti Personal Computer S.p.A.: *See*—
Andrei, Maria; Capuano, Federico; and Mercuri, Sandro, 5,798,190, Cl. 429-192.000.

Olson, Bruce David, to Sheldahl, Inc. Adherent film with low thermal impedance and high electrical impedance used in an electronic assembly with a heat sink. 5,798,171, Cl. 428-220.000.

Olson, Christopher Peter: *See*—
Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,797,892, Cl. 604-361.000.

Olson, Kenneth F.; Gilman, Byron L.; and Anderson, Katherine H., to SurVivaLink Corporation. One button lid activated automatic external defibrillator. 5,797,969, Cl. 607-5.000.

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Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; Kuramoto, Seiji; and Uchiyama, Naoki, 5,797,931, Cl. 606-151.000.
Kogasaka, Takahiro, 5,797,928, Cl. 606-144.000.
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Uzawa, Tsutomu, 5,798,872, Cl. 359-686.000.
Yamamoto, Eiji; and Ito, Masataka, 5,798,826, Cl. 356-4.090.

Omoto, Wataru, to SMC Corporation. Drive circuit for fluid operated actuator having high and low pressure reservoirs. 5,797,262, Cl. 60-410.000.

O'Neill, Kevin J.: *See*—
Godec, Richard D.; O'Neill, Kevin J.; and Kosenka, Paul K., 5,798,271, Cl. 436-146.000.

O'Neill, Roger A.: *See*—
Khan, Shaheer H.; O'Neill, Roger A.; and Hoff, Louis B., 5,798,032, Cl. 204-452.000.

Onetti, Andrea Mario; and Procurato, Sylvia, to SGS-Thomson Microelectronics S.r.l. Method and device for soft-driving an array of logic gates and suppression of switching distortion. 5,798,959, Cl. 365-26.000.

Ong, Adrian E., to Micron Technology, Inc. Memory device output buffer. 5,798,970, Cl. 365-189.050.

Ong, Alex; Chiodo, Ross; and Mammoliti, John, to Visy Paper PTY Ltd. Apparatus and method for forming lightweight pallets. 5,797,832, Cl. 493-462.000.

Ong, Nicholas: *See*—
McKenzie, Meredith; Carter, Jerry D.; and Ong, Nicholas, 5,799,177, Cl. 395-556.000.

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Joyce, Michael Julian; Ong, Ping-Wen; Ourmazd, Abbas; and Warwick, Colin Alan, 5,799,066, Cl. 379-88.000.

Onishi, Hisaaki: *See*—
Mitamura, Hisashi; Ureshino, Kashiro; Takebayashi, Hiroyuki; Onishi, Hisaaki; and Sarumaru, Shogo, 5,798,123, Cl. 425-29.000.

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Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.

Ono, Kazumi, to Kansei Corporation. Airbag configuration for a side airbag device. 5,797,621, Cl. 280-730.200.

Ono, Takahiro: *See*—
Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.

Ono, Takeshi; Yoshida, Takehiro; Kobayashi, Makoto; Takeda, Tomoyuki; Wada, Satoshi; Yokoyama, Minoru; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; and Yamada, Masakatsu, to Canon Kabushiki Kaisha. Recording method and apparatus with preheating using inverted image data. 5,798,789, Cl. 347-186.000.

Ono, Tomoyuki: *See*—
Hayashida, Hirotaka; Teraoka, Hirohito; Ono, Tomoyuki; Soeda, Tsuyoshi; and Yamamoto, Masaaki, 5,798,189, Cl. 429-101.000.

Onuki, Masahide; Kinuhata, Satoru; Takeuchi, Yuichi; Miyamoto, Yoshiaki; and Yamaguchi, Tetsuo, to Sumitomo Rubber Industries, Ltd. Rotation speed measuring machine for flying globe. 5,798,833, Cl. 356-256.000.

Onweller, Arthur E., to U S West, Inc. Network addressing scheme encoding communication channel information. 5,799,016, Cl. 370-401.000.

Ooi, Yasuhiro: *See*—
Yoshioka, Mamoru; and Ooi, Yasuhiro, 5,797,381, Cl. 123-585.000.

Ooi, Yoshiharu; and Wakabayashi, Tsuneo, to AG Technology Co., Ltd. Projection type display apparatus. 5,798,805, Cl. 349-10.000.

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Kikushima, Kenichi; Ootsuka, Fumio; and Sato, Kazushige, 5,798,551, Cl. 257-368.000.

Ootsuka, Hiroshi: *See*—
Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, 5,799,215, Cl. 396-168.000.
Tanii, Junichi; Ootsuka, Hiroshi; Taniguchi, Toshihiko; Shimada, Takahisa; and Tsuji, Sadafusa, 5,798,625, Cl. 318-541.000.

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Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; Kuramoto, Seiji; and Uchiyama, Naoki, 5,797,931, Cl. 606-151.000.

Opsal, Jon: *See*—
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Optical Coating Laboratory, Inc.: *See*—
Dolan, Norman E.; and Davis, Dean A., 5,797,570, Cl. 248-205.300.
LeFebvre, Paul M.; Engel, Timothy C.; and Mott, Leonard P., 5,798,182, Cl. 428-428.000.
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Oracle Corporation: *See*—
Cohen, Jeffrey L.; and Waddington, William H., 5,799,210, Cl. 395-876.000.
Sun, Harry; Souder, Benny; and Lim, Peter, 5,799,306, Cl. 707-10.000.

Orbot Instruments Ltd.: *See*—
Lahat, Eitan; and Zafrani, Nissim, 5,797,317, Cl. 101-127.100.

Oregon Health Sciences University: *See*—
Douglass, James O., 5,798,258, Cl. 435-252.300.

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Weber, Eckard; and Keana, John F. W., 5,798,390, Cl. 514-634.000.

Origin Medsystems, Inc.: *See*—
Chin, Albert K., 5,797,946, Cl. 606-190.000.

Orion Electric Co., Ltd.: *See*—
Yoon, Sang Youl, 5,797,781, Cl. 445-37.000.

Orlev Scientific Computing Ltd.: *See*—
Sirovich, Lawrence; Levich, Eugene; and Bronicki, Lucien Y., 5,797,414, Cl. 137-13.000.

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Strobel, Kalman; and Briceno, Godofredo Molina, 5,797,258, Cl. 59-35.100.

Orr, Max Stroble. Portable cooking device. 5,797,386, Cl. 126-25.00R.

Ort, James R.; Lange, Douglas L.; Kiefer, Frederick W.; and Dennison, Raymond J., to Calspan Corporation. Fingerprint identification system. 5,799,098, Cl. 382-125.000.

Ortel Corporation: *See*—
Blauvelt, Henry A.; and Regehr, Martin, 5,798,854, Cl. 359-161.000.

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Osada, Ryouichi: *See*—
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Schwab, Stuart T.; Paul, Partha P.; and Nishida, Ryoichi, 5,798,428, Cl. 528-14.000.

Osaka, Haruya: *See*—
Nishitani, Kazuhiro; and Osaka, Haruya, 5,798,483, Cl. 174-51.000.

Osborne, Elaine W. Organic refrigeration system. 5,797,279, Cl. 62-381.000.

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Sakai, Kunito; Oshio, Kazuharu; and Kanegae, Hirozoh, 5,798,070, Cl. 264-272.170.

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Geels, Randall S.; Osinski, Julian S.; Welch, David F.; and Scifres, Donald R., 5,799,028, Cl. 372-49.000.

Ossmann, William J.: *See*—
Banta, Robert H., Jr.; Snyder, Richard A.; and Ossmann, William J., 5,798,461, Cl. 73-625.000.

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Gier, Lothar; Österle, Bernd; Borchert, Rudolf; Porth, Wolfgang; Stark, Sabine; and Wallrafen, Werner, 5,798,640, Cl. 324-207.240.

Ostermann, Wilfried; and Welskopf, Fred, to Kiekert AG. Method for resetting a central lock system of a motor vehicle with a remote actuating device. 5,798,576, Cl. 307-10.300.

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Beck, Erich; Meyer, Frank; Poth, Ulrich; Siemensmeyer, Karl; Sierakowski, Claudia; Greif, Norbert; Ostertag, Werner; Zimstein, Michael; Leyrer, Reinhold; Jahns, Ekkehard; Etzbach, Karl-Heinz; and Schuhmacher, Peter, 5,798,147, Cl. 427-511.000.

Oswald, James I.; and Dawson, David A., to Rolls-Royce plc. Heat exchanger. 5,797,449, Cl. 165-165.000.

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Tuningley, Alan James; Oswald, Johannes Rainer; Click, Gary David; Starkey, Michael Brian; and Lee, Tommy, 5,797,565, Cl. 246-465.000.

Ota, Toshiyuki: *See—*
Inomata, Katsumi; Akiyama, Nasahiro; Ota, Toshiyuki; and Tsuji, Akira, 5,798,201, Cl. 430-192.000.

Oticon A/S: *See—*
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Otis Elevator Company: *See—*
Kamani, Sanjay; Salmon, John K., deceased, 5,797,472, Cl. 187-373.000.

Otsuka Pharmaceutical Co., Ltd.: *See—*
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,798,358, Cl. 514-254.000.

Otsuka Pharmaceutical Factory, Inc.: *See—*
Kuroki, Yasuhisa; Miyata, Kazuyoshi; Tsuda, Yoshihiko; Inoue, Yasuhide; Kanaya, Jun; and Sato, Keigo, 5,798,344, Cl. 514-80.000.

Ouchi, Kozo: *See—*
Mizukami, Tamio; Ogawa, Harumi; Nakai, Ryuichiro; Asai, Akira; Yamashita, Yoshinori; Ando, Katsuhiko; Agatsuma, Tsutomu; Akinaga, Shiro; Ouchi, Kozo; and Kawasaki, Hideki, 5,798,379, Cl. 514-441.000.

Ouchi, Tetsuya, to Brother Kogyo Kabushiki Kaisha. Facsimile system having a facsimile machine and an external data processing device. 5,798,848, Cl. 358-468.000.

Ougier, Daniel: *See—*
Dumazet, Philippe; Ougier, Daniel; and Gropelier, Gefard, 5,798,128, Cl. 425-147.000.

Ourmazd, Abbas: *See—*
Joyce, Michael Julian; Ong, Ping-Wen; Ourmazd, Abbas; and Warwick, Colin Alan, 5,799,066, Cl. 379-88.000.

Ovil, Joel, to Siev, Dan. Surgical implement and method of suturing. 5,797,930, Cl. 606-148.000.

Ovonic Synthetic Materials Company, Inc.: *See—*
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Pratt, Dan W.; Wesson, David S.; George, Kevin R.; and Rollins, James A., 5,797,464, Cl. 175-4.600.

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Owens, Patrick M.: *See—*
Swanson, David K.; Panescu, Dorin; Whayne, James G.; Owens, Patrick M.; and Thompson, Russell B., 5,797,903, Cl. 606-34.000.

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Oyama, Alan J.; Boyce, James S.; and Sandfort, Patrick O., to Hewlett-Packard Company. Avoiding memory fragmentation in printers. 5,797,689, Cl. 400-74.000.

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Ozaki, Kazuchika, to Nikon Corporation; and Nikon Systems, Inc. Image display apparatus. 5,798,750, Cl. 345-126.000.

Ozaki, Nobuo, to Sugino Cycle Industries, Ltd. Bicycle speed change operation assembly. 5,797,296, Cl. 74-489.000.

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Ozawa, Kazuhito: *See—*
Morigami, Yuusuke; Kobayashi, Tadashi; Nishikawa, Misao; Yoshikawa, Hiroyuki; Ozawa, Kazuhito; Hirano, Ryo; Seki, Shinobu; and Wakamatsu, Shinji, 5,797,596, Cl. 270-58.110.

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Paavonen, Tapio, to Nokia Telecommunications Oy. Radio system having additional signalling channel dedicated for user data transmission otherwise carried on control channel. 5,799,251, Cl. 455-517.000.

Pac-Seal Inc. International: *See—*
Less, Steven C., 5,797,602, Cl. 277-372.000.

Pace, Ronald J: *See—*
Raguse, Burkhard; Cornell, Bruce A; Braach-Maksvytis, Vijoleta L; and Pace, Ronald J, 5,798,030, Cl. 204-403.000.

Pace, Salvatore James: *See—*
Varadaraj, Ramesh; Robbins, Max Leo; Pace, Salvatore James; and Brons, Cornelius Hendrick, 5,797,700, Cl. 405-60.000.

Pacific Pool Water Products Ltd.: *See—*
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Pacific Scientific Company: *See—*
Lordo, Robert E., 5,798,596, Cl. 310-261.000.
Moisin, Mihail S., 5,798,617, Cl. 315-247.000.

Pacific Solar Pty. Limited: *See—*
Wenham, Stuart Ross; and Green, Martin Andrew, 5,797,998, Cl. 136-255.000.

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Bontoux, Daniel; Paget, Monique; and Debourg, Jean-Pierre, 5,797,966, Cl. 607-3.000.

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Rizzotto, Gianguido; Poluzzi, Rinaldo; and Pagni, Andrea, 5,799,132, Cl. 395-3.000.

Pailthorp, Robert M.: *See—*
Cutler, Donald R.; and Pailthorp, Robert M., 5,798,927, Cl. 364-474.300.

Paisley, Gary V.: *See—*
Schroeder, Alfred A.; Paisley, Gary V.; and Romanyszyn, Michael T., Jr., 5,797,519, Cl. 222-129.100.

Pakko, James D.: *See—*
Adamczyk, Andrew A., Jr.; Pakko, James D.; and Hepburn, Jeffrey S., 5,798,270, Cl. 436-143.000.

Paklin, Maxim: *See—*
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivanova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

Pal, Prabir Kumar: *See—*
Villeneuve, Luc; Miller, Gérard; Bernier, Robert; Laurendeau, Claude; and Pal, Prabir Kumar, 5,798,523, Cl. 250-234.000.

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Peacock, George B., 5,798,037, Cl. 210-85.000.

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Yang, Ming-Tzong; and Pan, Hong-Tsz, 5,798,298, Cl. 438-622.000.

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Chu, Tsann Ming; and Papsidero, Lawrence D., 5,798,445, Cl. 530-350.000.

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Gouriou, Eliane; Raynal, Annie; Baudet, Régine; Hulaud, Jean-Pierre; and Biesse, Jean-Paul, 5,797,750, Cl. 434-100.000.

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Hancock, Lawrence Francis; Kishbaugh, Alan Jay; and Parham, Marc Ellous, 5,798,437, Cl. 528-373.000.

Parisi, Paul: *See—*
Smith, Daniel J.; Gucker, Carl; Elik, Zivko; Parisi, Paul; Ruetsch, Randolph; McJames, William; and Skula, Emil Richard, 5,797,961, Cl. 606-222.000.

Park, Byeong-ho: *See—*
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Goodrich, Raymond P., Jr.; and Park, Sang Chul, 5,798,238, Cl. 435-173.300.

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Kim, Yung Gil; and Park, Tae Joon, 5,799,081, Cl. 380-5.000.

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Parker, Alonzo E. Tent framework. 5,797,411, Cl. 135-136.000.

Parker, Paul David; and Wattonville, Jason Daniel, to Deere & Company. Straight bar tillage implement. 5,797,460, Cl. 172-151.000.

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Lang, Gregory J.; Fulmer, Brian H.; Parker, Todd S.; Miller, Harry W., II; Jackson, Scott A.; Spear, Steven A.; and Oba, Graig S., 5,797,624, Cl. 280-741.000.

Parodi, Juan C. Method and apparatus for implanting a prosthesis within a body passageway. 5,797,949, Cl. 606-194.000.

Parodi, Michael L.; and Hurtig, Roy E., to Semiconductor Systems, Inc. Oscillatory chuck method and apparatus for coating flat substrates. 5,798,140, Cl. 427-240.000.

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Patel, Harish: *See*—
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Patel, Jack: *See*—
Freek, Michael Alan; Goodyear, Scott; and Patel, Jack, 5,798,079, Cl. 264-554.000.

Patil, Anjali Abhimanyu: *See*—
Anton, Waifong Liew; Spinelli, Harry Joseph; and Patil, Anjali Abhimanyu, 5,798,426, Cl. 526-318.410.

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Hong, Kwangtaek; and Patrosso, Albert A., 5,797,277, Cl. 62-285.000.

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Lee, Shih-Jong J.; Oh, Seho; Patten, Stanley F.; Nelson, Alan C.; and Nelson, Larry A., 5,799,101, Cl. 382-133.000.

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Cathey, Cheryl A.; Saul, Tom; Bloom, Nicole D.; Ribi, Hans O.; Schwartz, Henry L.; Langford, Jeffrey B.; and Paul, David J., 5,798,215, Cl. 435-7.900.

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Matousek, Robert A.; Burke, Dan J.; Payne, Jeffrey R.; and Volk, Charles E., 5,797,793, Cl. 460-111.000.

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Phallen, Iver J.; Jezuit, Richard J.; and Payne, Steven D., 5,797,436, Cl. 141-82.000.

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Ye, Jun; Pease, Roger Fabian Wedgwood; and Takac, Michael T., 5,798,947, Cl. 361-589.000.

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Lin, Xianghong; Johnson, William L.; and Peker, Atakan, 5,797,443, Cl. 164-4.100.

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Darigo, Robert Joseph; and Black, Daniel Virgil, 5,797,271, Cl. 62-64.000.

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Lefebvre, Louis-Philippe; Pelletier, Sylvain; and Champagne, Blaise, 5,798,439, Cl. 528-489.000.

Peltier, Mark A.: *See*—
Bernal, Brian A.; Croft, Daniel P.; Johnson, Kirk R.; Marman, Douglas H.; and Peltier, Mark A., 5,798,701, Cl. 340-628.000.

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Albrecht, Gerhard; Weichmann, Josef; Penkner, Johann; and Kern, Alfred, 5,798,425, Cl. 526-271.000.

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Willems, Roger Peter, 5,797,635, Cl. 292-111.000.

Peoples, Oliver P.; and Sinskey, Anthony J., to Massachusetts Institute of Technology. Gene encoding bacterial acetoacetyl-CoA reductase. 5,798,235, Cl. 435-135.000.

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Perclose, Inc.: *See*—
Andreas, Bernard H.; and Wood, Timothy J., 5,797,929, Cl. 606-148.000.

Perkin-Elmer Corporation, The: *See*—
Khan, Shaheer H.; O'Neill, Roger A.; and Hoff, Louis B., 5,798,032, Cl. 204-452.000.

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Shaffer, Terry M.; Perlick, Jeanette; and Burns, Robert J., 5,797,954, Cl. 606-201.000.

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Defaye, Jacques; Laine, Valérie; Djedaini-Pilard, Florence; and Perly, Bruno, 5,798,342, Cl. 514-58.000.

Perri, John: *See*—
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Brocard, Jean-Marie; Capelle, Jean-Yves; Desaulty, Michel André Albert; Perrin, Jean-Paul; and Varizat, Alain Michel, 5,797,266, Cl. 60-725.000.

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Badovinatz, Peter Richard; Chandra, Tushar Deepak; Gopal, Ajei Sarat; Kirby, Orvalle Theodore; and Pershing, John Arthur, Jr., 5,799,146, Cl. 395-182.020.

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Peters, Eric: *See*—
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Peters, Thomas S.: *See*—
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Stevens, John H.; Reitz, Bruce A.; Roth, Alex T.; Peters, William S.; and Gifford, Hanson S., 5,797,960, Cl. 606-213.000.

Petersen, David M.; Mayer, Jeremy; and Nakada, Scott M., to Hewlett-Packard Company. Paper stacker activation for printer input/output. 5,797,687, Cl. 400-23.000.

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Keller, Michael R.; Petersen, John R.; and Caffey, David, 5,797,332, Cl. 110-226.000.

Peterson, Brian, to Tri-tech, Inc. Simplified electric motor construction. 5,798,592, Cl. 310-164.000.

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Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Mattos, Nelson; Niblack, Carlton Wayne; Petkovic, Draugutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, 5,799,310, Cl. 707-102.000.

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Pettersson, Karl-Olof: *See—*
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Petty, Thomas D.: *See—*
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Pezeshki, Bardia: *See—*
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Pfaifer, Patrick: *See—*
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Pharmacopeia, Inc.: *See—*
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Strohmeier, Andreas; Schroeter, Ingulf; and Rovel, Jean-Marie, 5,798,044, Cl. 210-605.000.

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Wacyk, Ihor T.; Jayaraj, Vinit; and De Mol, Eugen J., 5,798,620, Cl. 315-307.000.

Philpott, Rich: *See—*
Marosek, Mark W.; and Philpott, Rich, 5,798,662, Cl. 327-109.000.

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Photodyne International Inc.: *See—*
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Piaget, Bernard: *See—*
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Pickow, David: *See—*
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Pierson, Raymond H., III; and Fallin, Thomas Wade. Cerclage system. 5,797,915, Cl. 606-74.000.

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Pinco, Frank, to South Brooklyn Casket Co., Inc. Casket display system and construction method. 5,797,499, Cl. 211-13.100.

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Pio-di Savoia, Luigi Alberto: *See—*
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Pioneer Electric Corporation: *See—*
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Kanda, Jun, 5,798,751, Cl. 345-138.000.
Koyama, Masayuki, 5,798,988, Cl. 369-44.140.
Takahashi, Tsutomu, 5,798,794, Cl. 348-398.000.

Pioneer Hi-Bred International, Inc.: *See—*
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Pirelli Coordinamento Pneumatici: *See—*
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French, Dale A.; and Lawton, Kathryn V., 5,799,093, Cl. 380-51.000.
Johnson, Robert J.; and Szturma, Shawn W., 5,799,302, Cl. 707-7.000.

Pitz-Paal, Robert: *See—*
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Piwinski, John: *See—*
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Pixtech S.A.: *See—*
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Plank, Bradley N.: *See—*
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Plappert, Friedrich: *See—*
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Plastic Form, Inc.: *See—*
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Platt, Frances M.; Neises, Gabrielle R.; Dwek, Raymond A.; and Butters, Terry D., to Monsanto Company. Method for treatment of CNS-involved lysosomal storage diseases. 5,798,366, Cl. 514-315.000.

Platzek, Johannes: *See—*
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Martin, Richard R.; and Vayntraub, Michael, 5,798,816, Cl. 351-160.00R.

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Lorig, Heinz-W.; and Sauressig, Karl, 5,797,322, Cl. 101-375.000.

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Rafuse, Lenley J., Jr.; Borhanian, Hamed S.; and Pope, Willard C., 5,797,729, Cl. 417-3.000.

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Potter, David: *See*—
Miller, Todd; Feller, Craig; Wickemeyer, Daniel; Potter, David; Purdom, Erik; and Le, Tuan, 5,797,199, Cl. 36-28.000.

Potts, Joseph A., Jr.: *See*—
Kennedy, Michael; and Potts, Joseph A., Jr., 5,799,060, Cl. 379-29.000.

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Rosen, Gerald M.; Herzog, William R., Jr.; and Pou, Sovitj, 5,797,887, Cl. 604-265.000.

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Fletcher, Nicholas J.; Boehm, Gustav A.; and Pow, Eric G., 5,798,186, Cl. 429-13.000.

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Sukovich, Alan; and Hutcheson, William R., 5,798,198, Cl. 430-106.600.

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Chang, Chun-Ye Susan; Webster, James Rodney; and Powell, Clinton C., II, 5,799,043, Cl. 375-286.000.

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Barnett, Ron; Finkle, Thomas W.; and Powers, Michael T., 5,797,765, Cl. 439-63.000.

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Barancyk, Steven V.; Verardi, Christopher A.; and Humphrey, William A., 5,798,145, Cl. 427-393.500.
Rossio, Charles E., 5,797,987, Cl. 106-14.120.
Wang, Songhao; and Schaefer, William L., 5,797,557, Cl. 242-35.50A.
Yu, Phillip C.; Backfisch, David L.; O'Brien, Nada A.; and Hichwa, Bryant P., 5,798,860, Cl. 359-273.000.

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Cormier, Milton J.; and Prasher, Douglas, 5,798,441, Cl. 530-324.000.

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Humphrey, James T.; and Pratt, Randy L., 5,797,791, Cl. 454-134.000.

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Cheng, Alan Tat Yan, 5,798,254, Cl. 435-243.000.

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Mehrkens, Sigrid; Söffge, Friedhelm; and Preiss, Michael, 5,797,647, Cl. 296-204.000.

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Meyers, John E.; Price, Gregory G.; and Allard, Randall N., 5,797,908, Cl. 606-54.000.

Price, Ralph D.: *See*—
Snell, Richard A., Jr.; Nannet, Bryan L.; and Price, Ralph D., 5,797,649, Cl. 297-14.000.

Priest, William A.: *See*—
Rose, Dave; and Priest, William A., 5,797,176, Cl. 29-527.500.

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Weinstein, Jack, 5,797,517, Cl. 222-95.000.

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Goldstein, Alan Scott; Getty, Edward Eugene; and Scheper, William Michael, 5,798,326, Cl. 510-221.000.
Schmitz, Christoph Johann, 5,797,896, Cl. 604-391.000.
Vogel, Alice Marie; Wahl, Errol Hoffman; Cappel, Jerome Paul; and Ward, Thomas Carl, 5,798,107, Cl. 424-400.000.

Procurato, Sylvia: *See*—
Onetti, Andrea Mario; and Procurato, Sylvia, 5,798,959, Cl. 365-26.000.

Production Metal Forming, Inc.: *See*—
Campbell, Joanne Marie, 5,797,161, Cl. 15-322.000.

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Sarin, Vishal; Kowshik, Vikram; and Yu, Andy Teng-Feng, 5,798,967, Cl. 365-185.210.

Promega Corporation: *See*—
Wood, Keith V.; and Sherf, Bruce A., 5,798,263, Cl. 435-288.700.

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Kirchen, Gunther; and Lehrke, Jurgen, 5,797,496, Cl. 209-2.000.

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Lee, Cherylyn; Provino, Vincent J.; and Linstid, H. Clay, III, 5,798,432, Cl. 528-176.000.

Prunbauer, Kurt, to Evva-Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co. KG. Flat key. 5,797,287, Cl. 70-409.000.

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Paulson, Peter O., 5,798,457, Cl. 73-587.000.

Purkey, Bruce A.: *See—*
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Purkey's Fleet Electrics, Inc.: *See—*
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Quadra Logic Technologies, Inc.: *See—*
Levy, Julia; Miller, Joan W.; Gradoudas, Evangelos S.; Hasan, Tayyaba; and Schmidt-Erfurth, Ursula, 5,798,349, Cl. 514-185.000.

QUALCOMM Incorporated: *See—*
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Quantum Design, Inc.: *See—*
Spagna, Stefano; and Simmonds, Michael Bancroft, 5,798,641, Cl. 324-228.000.

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Raburn, Richard W.: *See—*
Maier, Edmund K.; and Raburn, Richard W., 5,797,155, Cl. 5-654.000.

Racky, Ernst Dieter, to Wella Aktiengesellschaft. Hair treatment composition and method of making same. 5,798,095, Cl. 424-70.190.

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Drach, William C., 5,798,675, Cl. 333-161.000.

Radovsky, Alexander. Brushless synchronous rotary electrical machine. 5,798,594, Cl. 310-180.000.

Rafuse, Lenley J., Jr.; Borhanian, Hamed S.; and Pope, Willard C., to Aspen Systems, Inc. Controlling multiple variable speed compressors. 5,797,729, Cl. 417-3.000.

Raguse, Burkhard; Cornell, Bruce A; Braach-Maksvytis, Vijoleta L; and Pace, Ronald J, to Australian Membrane and Biotechnology Research Institute; and University of Sydney. Biosensor membranes. 5,798,030, Cl. 204-403.000.

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Raike, William Michael. Non-deterministic public key encrypton system. 5,799,088, Cl. 380-30.000.

Rainey, Matthew; and Pio-di Savoia, Luigi Alberto, to Sun Microsystems, Inc. Method and apparatus for event-tagging data files automatically correlated with a time of occurence in a computer system. 5,799,315, Cl. 707-104.000.

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Ransom, Harrison L., Jr.: *See—*
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Rao, Gita P.: *See—*
Salter, Richard T., II; Kirtley, James L., Jr.; Rao, Gita P.; Bushko, Dariusz A.; and Colello, Gary, 5,798,593, Cl. 310-166.000.

Rapid Cartridge Dispensing Systems, Inc.: *See—*
Lentz, Roger W., 5,797,524, Cl. 222-505.000.

Rappaport, Irving S.: *See—*
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Zikeli, Stefan; Rauch, Ernst; Koberger, Hermann; Ecker, Friedrich; Rüf, Hartmut; Jurkovic, Raimund; and Schwenninger, Franz, 5,798,125, Cl. 425-72.200.

Rawson, Freeman Leigh, III: *See—*
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Rawson, Thomas E.: *See—*
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Ray, John C.: *See—*
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Recordati S.A. Chemical and Pharmaceutical Company: *See—*
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Rendition, Inc.: *See*—
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Rensch, Clemens: *See*—
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Repa, Thomas J.: *See*—
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Reynolds, James T.: *See*—
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Rhum, David; Wells, Rodney E.; and Makower, Joshua, to Valleylab Inc. Retrograde tissue splitter and method. 5,797,906, Cl. 606-48.000.

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Richards, Brian, to Rolls-Royce plc. Gas turbine engine combustion chamber. 5,797,267, Cl. 60-737.000.

Richards, Turner W.; Francis, Hubert C.; and Fowler, George F., to Georgia-Pacific Corporation. Methods of preparing fire doors. 5,798,010, Cl. 156-39.000.

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Riggio, Chris A., to Renaissance Systems, Inc. Charge coupled, silicon controlled power supply/battery charger. 5,798,671, Cl. 320-128.000.

Rigoutsos, Isidore, to International Business Machines Corporation. Three-dimensional affine-invariant hashing defined over any three-dimensional convex domain and producing uniformly-distributed hash keys. 5,799,312, Cl. 707-103.000.

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Kragl, Hans; and Strake, Engelbert, 5,799,117, Cl. 385-14.000.
Kratt, Alfred, 5,797,375, Cl. 123-497.000.
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Rohde, Sheldon L.; Barclay, Rodney; Slotterback, Mark L.; Spate, Brian S.; Fultz, Richard K.; Harrison, C. Gordon; and Laube, Douglas N., to DSC Telecom L.P. Cabinet for housing electronic equipment. 5,798,485, Cl. 174-35.00R.

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Rolando, John J.; Klos, Terry J.; Thomas, John E.; Gohl, David W.; and Buchanan, Allison, to Ecolab Inc. Floor cleaning method. 5,797,986, Cl. 134-6.000.

Rolland, Claude; and Yu, Jun, to Northern Telecom Limited. Coupling of strongly and weakly guiding waveguides for compact integrated mach zehnder modulators. 5,799,119, Cl. 385-28.000.

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Rongione, Eric. Video terminal architecture without dedicated memory. 5,799,202, Cl. 395-800.010.

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Rosen, Gerald M.; Herzog, William R., Jr.; and Pou, Sovitj, to Novovasc LLC. Medical device with a surface adapted for exposure to a blood stream which is coated with a polymer containing a nitrosyl-containing organometallic compound which releases nitric oxide from the coating to mediate platelet aggregation. 5,797,887, Cl. 604-265.000.

Rosen, Sholom S., to Citibank, N.A. Electronic-monetary system. 5,799,087, Cl. 380-24.000.

Rosenberg, Gideon; and Leskly, Ilan. Air filter including electrostatic precipitation, and method of operating same. 5,797,978, Cl. 95-74.000.

Rosenberg, Mark, to Hewlett-Packard Company. Ultrasound imaging system and method using intensity highlighting to facilitate tissue differentiation. 5,797,397, Cl. 128-660.040.

Rosenberg, Neil A., to NAR Inc. Dental prophy cup having a microcellular polishing surface and method of making. 5,797,744, Cl. 433-166.000.

Rosenstein, Robert W.: *See—*
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Ross, S. Timothy, to Dell USA, L.P. Structure and method for detecting occurrence of external events using semaphores. 5,799,195, Cl. 395-739.000.

Rossi, David M.; and Ransom, Harrison L., Jr., to SDL, Inc. Laser system with reduced power fluctuations for employment in applications requiring continuous stable light intensity delivery. 5,799,029, Cl. 372-50.000.

Rossio, Charles E., to PPG Industries, Inc. Zinc phosphate conversion coating compositions and process. 5,797,987, Cl. 106-14.120.

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Roth, Robert; Lampropoulos, Fred P.; Mottola, Jim; Nelson, Arlin Dale; and Foote, Jerrold L., to Merit Medical Systems, Inc. Catheter apparatus with means for subcutaneous delivery of anesthetic agent or other fluid medicament. 5,797,886, Cl. 604-264.000.

Rothaupt, Krystal Kay: *See*—
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Rother, Michael: *See*—
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Rothley, Tamara. Electronic baby formula preparation and storage device. 5,797,313, Cl. 99-483.000.

Rothstein, Sven-Olle, to Frigoscandia Equipment AB. Air treatment apparatus. 5,797,278, Cl. 62-380.000.

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Royce Industries, L.C.: *See*—
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Rubin, Gregory R. Apparatus and method for recapping syringe needles. 5,797,885, Cl. 604-192.000.

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Ruddle, Clifford J. Radiopaque solution for visualizing dental anatomy, pathological conditions, and iatrogenic events, and method of use. 5,797,745, Cl. 433-224.000.

Rudolph, Bruce George: *See*—
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Ruggeri, Zaverio M.; and Ware, Jerry L., to Scripps Research Institute, The. Antibodies and immunoassays for detecting platelet transfusion refractoriness. 5,798,216, Cl. 435-7.210.

Ruggero, Ferrari, to Ferrari Group S.r.l. Automatic fast-action coupling for domestic irrigation systems. 5,797,626, Cl. 285-5.000.

Ruggiero, Marc: *See*—
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Ruh, Michael, to Tetra Laval Holdings & Finance S.A. Device for producing a stack of cup-shaped receptacles fitted in one another. 5,797,720, Cl. 414-788.200.

Ruijgrok, Rudolphus P. T., to U.S. Philips Corporation. Method for sintering green ceramic mouldings. 5,798,081, Cl. 264-605.000.

Ruiz Santa Quiteria, Valentin; Delgado Oyague, Juan Antonio; Fraga Trillo, Luisa; and Sierra Escudero, Carmen, to Repsol Quimica S.A. Method of preparation of copolymers of 1,3-butadiene and styrene useful for the production of tires with low rolling resistance and copolymers of 1,3-butadiene and styrene thus obtained. 5,798,419, Cl. 525-370.000.

Ruminski, Peter Gerrard, to G. D. Searle & Co. Platelet aggregation inhibitors. 5,798,370, Cl. 514-343.000.

Runaldue, Thomas Jefferson; and Cheng, Yi, to Advanced Micro Devices, Inc. Method for continuous waveform synthesis. 5,798,661, Cl. 327-106.000.

Runciman, John; Agnew, Samuel G.; and Leighton, Ross Kenneth, to Terray Corporation. Washer for use with a bone screw. 5,797,912, Cl. 606-69.000.

Rupp, Kip: *See*—
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Russell, Brian F.: *See*—
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Russell-Clarke, Peter Granville: *See*—
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Russom, Jeffery D.: *See*—
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Ryan, Christopher M.: *See*—
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Ryan, William Richard, to Westinghouse Electric Corporation. Partially swirled multi-swirl combustor plate and chimneys. 5,797,268, Cl. 60-748.000.

Ryberg, Roben. Stand for supporting a cut tree trunk. 5,797,580, Cl. 248-523.000.

Ryder, Steven L. Variable oxygen concentration high-flow nebulizer. 5,797,389, Cl. 128-200.210.

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Ryum, Byung-Ryul; Han, Tae-Hyeon; Cho, Deok-Ho; Lee, Soo-Min; and Pyun, Kwang-Eui, to Electronics and Telecommunications Research Institute; and Korea Telecommunication Authority. Method for fabricating heterojunction bipolar transistor. 5,798,277, Cl. 437-31.000.

S. C. Johnson & Son, Inc.: *See*—
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Saar, Raymond K. Background unfurling apparatus and method. 5,799,213, Cl. 396-3.000.

Sabuncu, Ohannes. Earthquake escape light. 5,798,704, Cl. 340-692.000.

Sackowitz, Ronald Allan. Device for locking rotatable shafts having stop plates. 5,797,285, Cl. 70-177.000.

Sacristan, Aurelio: *See*—
Foguet, Rafael; Anglada, Lluis; Sacristan, Aurelio; Castello, Josep M.; and Ortiz, Jose A., 5,798,361, Cl. 514-258.000.

Saegusa, Takashi; and Fujiwara, Hisatoshi, to Nikon Corporation. Battery check device for a camera. 5,799,217, Cl. 396-279.000.

Sagami Chemical Research Center: *See*—
Yazawa, Kazunaga; Yamada, Akiko; Kato, Seishi; and Kondo, Kiyosi, 5,798,259, Cl. 435-252.300.

Saganovsky, Abraham, to KB Electronics, Inc. Split power supply. 5,798,573, Cl. 307-4.000.

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Hamilton, Bruce; and Sahatjian, Ronald A., 5,797,877, Cl. 604-96.000.

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Miyazaki, Seiji; Shirasu, Hiroshi; Saiki, Kazuaki; and Narabe, Tsuyoshi, 5,798,822, Cl. 355-53.000.

Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, to Fujitsu Limited. Head positioning control for disk apparatus using peak detection, polarity detection and sector mark detection. 5,798,885, Cl. 360-77.080.

Saito, Fumio: *See—*
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,798,358, Cl. 514-254.000.

Saito, Hiroshi: *See—*
Yokoyama, Masato; Muraishi, Takaya; Sato, Masumi; Saito, Hiroshi; and Uchida, Toshiyuki, 5,799,229, Cl. 399-100.000.

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Saito, Masahiko: *See—*
Nakano, Masaru; Suzaki, Masafumi; Akasaki, Tetsuro; and Saito, Masahiko, 5,799,235, Cl. 399-302.000.

Saito, Yosuke: *See—*
Tsuchikawa, Koji; and Saito, Yosuke, 5,798,028, Cl. 204-228.000.

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Tamura, Yukio; Sakae, Mitsuhisa; Koyanagi, Satoru; and Nakayama, Toru, 5,797,548, Cl. 241-35.000.

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Kusaka, Hiroya; Sakaguchi, Takashi; and Nakayama, Masaaki, 5,798,792, Cl. 348-264.000.

Sakai, Eiichi: *See—*
Asari, Kouki; Mori, Hiromichi; and Sakai, Eiichi, 5,798,878, Cl. 359-846.000.

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Sugimori, Katsunori; and Sakamoto, Hiroshi, 5,798,630, Cl. 320-137.000.

Sakamoto, Okihiko: *See—*
Yanagida, Takeshi; and Sakamoto, Okihiko, 5,798,109, Cl. 424-401.000.

Sakano, Yukio; Tabata, Yasuhiro; and Nomura, Nobufumi, to Ricoh Company, Ltd. Duplicator having function concerning specific mark put on recording sheet and image forming apparatus having function of processing confidential documents. 5,798,844, Cl. 358-405.000.

Sakao, Masato: *See—*
Ohya, Shuichi; Sakao, Masato; Takaishi, Yoshihiro; Kajiyana, Kiyonori; Akimoto, Takeshi; Oguro, Shizuo; and Shishiguchi, Seiichi, 5,798,544, Cl. 257-296.000.

Sakata, Koji: *See—*
Nishiyama, Toshihiko; Uchida, Isamu; and Sakata, Koji, 5,798,905, Cl. 361-504.000.

Sakata, Soichiro; Takahashi, Hideto; and Sato, Katsumi, to Takasago Thermal Engineering Co., Ltd. Storehouse for use in storage of clean materials. 5,798,455, Cl. 73-64.480.

Sakuma, Kiyoshi: *See—*
Kotoh, Satoru; Sakuma, Kiyoshi; Yoshida, Takayuki; Sano, Hiromi; Aoki, Katuyuki; Suzuki, Shin'ichi; Koizumi, Hideaki; Yamamoto, Kaoru; Matsushita, Kunio; Unno, Kenichi; and Oguma, Tomoko, 5,797,792, Cl. 454-320.000.

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Sakurai, Toshikazu; Suzuki, Izumi; and Okumura, Hitoshi, to Sumitomo Wiring Systems, Ltd. Connector provided with a retainer. 5,797,772, Cl. 439-752.000.

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Madhani, Akhil J.; and Salisbury, J. Kenneth, 5,797,900, Cl. 606-1.000.

Salmon, John K., deceased (by Lucy Mary Salmon, executor): *See—*
Kamani, Sanjay; Salmon, John K., deceased, 5,797,472, Cl. 187-373.000.

Salomon, Gitta B.: *See—*
Degen, Leo; Mountford, S. Joy; Mander, Richard; and Salomon, Gitta B., 5,799,280, Cl. 704-276.000.

Salter Labs: *See—*
Salter, Peter W.; Curti, James N.; Kazal, Duane D.; and McGann, Laurence, 5,797,627, Cl. 285-38.000.

Salter, Peter W.; Curti, James N.; Kazal, Duane D.; and McGann, Laurence, to Salter Labs. Swivel. 5,797,627, Cl. 285-38.000.

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Salvio, Paul R. Stress-free, adjustable optical support. 5,798,879, Cl. 359-857.000.

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Samsung Electro-Mechanics Co., Ltd.: *See—*
Kim, Myung Hwan; and Goo, Tae Woo, 5,798,682, Cl. 336-96.000.

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Baek, Nam-Dae; and Yoon, Chan-Kook, 5,798,845, Cl. 358-434.000.
Kim, Hack-Bin, 5,798,883, Cl. 360-31.000.
Lee, Jeong Hee, 5,798,505, Cl. 219-681.000.
Lee, Yong-jae; Park, Byeong-ho; and Chung, Kyo-bang, 5,799,007, Cl. 369-275.400.
Limberg, Allen LeRoy, 5,798,803, Cl. 348-726.000.
Park, Heonchul; and Song, Seungyoon P., 5,799,163, Cl. 395-381.000.
Wong, Roney S., 5,798,958, Cl. 364-768.000.
Yoo, Hak-Soo; and Won, Jong-Hak, 5,798,969, Cl. 365-189.050.
Yoo, Jei-Hwan; and Son, Moon-Hae, 5,798,978, Cl. 365-230.060.

Samsung General Chemicals Co., Ltd.: *See—*
Kong, Gap-goung; and Park, Youn-Seok, 5,798,424, Cl. 526-124.200.

Samuelson, Bruce E.: *See—*
Callahan, Joseph P., Jr.; and Samuelson, Bruce E., 5,798,159, Cl. 428-40.100.

Samuelson, Laurence Scott: *See—*
Dorius, Lee Kevin; Harker, John M.; and Samuelson, Laurence Scott, 5,798,889, Cl. 360-103.000.

Sanberg, Paul R.: *See—*
Dionne, Keith E.; Emerich, Dwaine F.; Hoffman, Diane; Sanberg, Paul R.; Christenson, Lisa; Hegre, Orion D.; Scharp, David W.; Lacy, Paul E.; Aebischer, Patrick; Vasooncellos, Alfred V.; Lysaght, Michael J.; and Gentile, Frank T., 5,798,113, Cl. 424-422.000.

Sanchez, Louis Armando, to Litton Systems, Inc. Pulse edge detector with wide dynamic range. 5,798,730, Cl. 342-195.000.

Sanden Corporation: *See—*
Tanaka, Hiroshi; and Hosoya, Kazuki, 5,797,184, Cl. 29-890.053.

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Sandfort, Patrick O.: *See—*
Oyama, Alan J.; Boyce, James S.; and Sandfort, Patrick O., 5,797,689, Cl. 400-74.000.

Sandia Corporation: *See—*
Martin, Stephen J.; Wiczer, James J.; Cernosek, Richard W.; Frye, Gregory C.; Gebert, Charles T.; Casaus, Leonard; and Mitchell, Mary A., 5,798,452, Cl. 73-32.00R.
Montague, Stephen; Smith, James H.; Sniegowski, Jeffry J.; and McWhorter, Paul J., 5,798,283, Cl. 438-24.000.

SanDisk Corporation: *See—*
Lee, Douglas J.; Mehrotra, Sanjay; Mofidi, Mehrdad; and Guterman, Daniel C., 5,798,968, Cl. 365-185.290.

Sandoval, George R. Batting practice device. 5,797,810, Cl. 473-417.000.

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Leini, Arvo; Löfgren, Per-Olof; and Pettersson, Karl-Olof, 5,797,187, Cl. 30-123.400.

Sane, Jayant N.: *See—*
Vu, Tuan M.; Sane, Jayant N.; and Coe, Craig M., 5,798,094, Cl. 424-65.000.

Sankyo Company, Limited: *See—*
Tsujita, Yoshio; Horikoshi, Hiroyoshi; and Ito, Takashi, 5,798,375, Cl. 514-369.000.

Sannomiya, Hitoshi; Tomita, Takashi; Yamazaki, Shunpei; and Arai, Yasuyuki, to Sharp Kabushiki Kaisha. Solar cell and method for fabricating the same. 5,797,999, Cl. 136-258.0PC.

Sano, Hiromi: *See—*
Kotoh, Satoru; Sakuma, Kiyoshi; Yoshida, Takayuki; Sano, Hiromi; Aoki, Katuyuki; Suzuki, Shin'ichi; Koizumi, Hideaki; Yamamoto, Kaoru; Matsushita, Kunio; Unno, Kenichi; and Oguma, Tomoko, 5,797,792, Cl. 454-320.000.

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Sano, Katsuyuki: *See—*
Buma, Shuuichi; Sano, Katsuyuki; and Kawata, Tetsuaki, 5,797,595, Cl. 267-64.270.

Sano, Tetsuya: *See—*
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Sanofi: *See—*
Badorc, Alain; Despeyroux, Pierre; Gully, Daniele; De Cointet, Paul; Frehel, Daniel; and Maffrand, Jean-Pierre, 5,798,353, Cl. 514-221.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Kato, Masahiko, 5,797,378, Cl. 123-516.000.
Nonaka, Kimihiro, 5,797,371, Cl. 123-481.000.
Tsunekawa, Hiroyuki; and Abe, Kouji, 5,797,777, Cl. 440-84.000.

Santerre, Paul J.; and Mittelman, Marc W. Bioresponsive pharmacologically-active polymers and articles made therefrom. 5,798,115, Cl. 424-423.000.

Santini, Hugo Alberto Emilio: *See—*

Fontana, Robert Edward, Jr.; Hetzler, Steven Robert; Santini, Hugo Alberto Emilio; and Williams, Mason Lamar, 5,798,890, Cl. 360-103.000.
Santini, John T., Jr.; Cima, Michael J.; and Langer, Robert S., to Massachusetts Institute of Technology. Microchip drug delivery devices. 5,797,898, Cl. 604-890.100.
Santos-Munné , Julio J.: *See*—
Peshkin, Michael A.; and Santos-Munné , Julio J., 5,799,055, Cl. 378-42.000.
Sanyo Electric Co., Ltd.: *See*—
Fujiwara, Hideaki, 5,798,548, Cl. 257-319.000.
Nishimura, Kouichi; Satoh, Kouichi; Fujitani, Shin; Yonezu, Ikuo; and Nishio, Koji, 5,797,269, Cl. 62-46.200.
Ohkawa, Shigeaki; and Ohkoda, Toshiyuki, 5,798,560, Cl. 257-555.000.
Sanyo Machine Works, Ltd.: *See*—
Kato, Akira, 5,798,185, Cl. 428-582.000.
Saperstone, Dorothy Luhr. Method and device for accessing remote control functions. 5,798,715, Cl. 346-22.000.
Sarfati, Simon: *See*—
Canard, Bruno; and Sarfati, Simon, 5,798,210, Cl. 435-6.000.
Sarin, Vishal; Kowshik, Vikram; and Yu, Andy Teng-Feng, to Programmable Microelectronics Corporation. Sensing scheme for non-volatile memories. 5,798,967, Cl. 365-185.210.
Sarrazin, Laure: *See*—
Feret, Bruno; Sarrazin, Laure; and Vanhoye, Didier, 5,798,406, Cl. 524-501.000.
Sarumaru, Shogo: *See*—
Mitamura, Hisashi; Ureshino, Kashiro; Takebayashi, Hiroyuki; Onishi, Hisaaki; and Sarumaru, Shogo, 5,798,123, Cl. 425-29.000.
Sasa, Tomoo; and Oide, Ryosuke, to Torii Candle Corporation. Wax molding. 5,798,184, Cl. 428-484.000.
Sasaki, Ikuo: *See*—
Tomihata, Kenji; Sasaki, Ikuo; and Suzuki, Masakazu, 5,797,962, Cl. 606-228.000.
Sasaki, Norio; and Hashiguchi, Itsuro, to Toyota Jidosha Kabushiki Kaisha. Fluid pump. 5,797,722, Cl. 415-170.100.
Sasaki, Tsutomu: *See*—
Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.
Sasakura, Kazumasa: *See*—
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Sassa, Robert L.: *See*—
Hobson, Alex Ray; Sassa, Robert L.; Speck, Steven H.; and Lau, Tit-Keung, 5,798,181, Cl. 428-422.000.
Sassanfar, Mandana: *See*—
Martinis, Susan A.; Sassanfar, Mandana; Kim, Sunghoon; Lee, Sang Ho; and Schimmel, Paul R., 5,798,240, Cl. 435-183.000.
Satake Corporation: *See*—
Satake, Satoru; and Tomoyasu, Yoshimasa, 5,798,466, Cl. 73-861.730.
Satake, Satoru; and Tomoyasu, Yoshimasa, to Satake Corporation. Flow meter and method of calibrating same. 5,798,466, Cl. 73-861.730.
SatCon Technology Corporation: *See*—
Salter, Richard T., II; Kirtley, James L., Jr.; Rao, Gita P.; Bushko, Dariusz A.; and Colello, Gary, 5,798,593, Cl. 310-166.000.
Sato, Chikara: *See*—
Ueda, Noriyoshi; Hiroi, Masakazu; Nakamura, Shinichi; Mizuno, Yoshio; Sato, Chikara; Kaneko, Tokuharu; Isobe, Yoshinori; Yoshida, Akimaro; Hishikawa, Yasuhide; and Nakagawa, Tomohito, 5,799,237, Cl. 399-367.000.
Sato, Fumihiko, to NEC Corporation. Bipolar transistor with polysilicon base. 5,798,561, Cl. 257-588.000.
Sato, Katsumi: *See*—
Sakata, Soichiro; Takahashi, Hideto; and Sato, Katsumi, 5,798,455, Cl. 73-64.480.
Sato, Kazuhisa; Kitou, Masanori; Wakako, Hisashi; and Kimura, Kazuo, to NGK Spark Plug Co., Ltd. Ceramic IC package base and ceramic cover. 5,798,566, Cl. 257-712.000.
Sato, Kazumi: *See*—
Fujimoto, Shuichi; Kunii, Hisashi; Sato, Kazumi; Ura, Yoshiyuki; and Shimada, Takamichi, 5,797,821, Cl. 475-120.000.
Sato, Kazushige: *See*—
Kikushima, Kenichi; Ootsuka, Fumio; and Sato, Kazushige, 5,798,551, Cl. 257-368.000.
Sato, Kazutoshi: *See*—
Sawabe, Teruo; Yokoyama, Isao; and Sato, Kazutoshi, 5,797,710, Cl. 408-222.000.
Sato, Keigo: *See*—
Kuroki, Yasuhisa; Miyata, Kazuyoshi; Tsuda, Yoshihiko; Inoue, Yasuhide; Kanaya, Jun; and Sato, Keigo, 5,798,344, Cl. 514-80.000.
Sato, Kyotaro, to Kyoshin Kogyo Co., Ltd. Wire holder and a wire holder assembly. 5,797,566, Cl. 248-49.000.
Sato, Masumi: *See*—
Yokoyama, Masato; Muraishi, Takaya; Sato, Masumi; Saito, Hiroshi; and Uchida, Toshiyuki, 5,799,229, Cl. 399-100.000.
Sato, Shinichi: *See*—
Watanabe, Mitsuo; Sato, Shinichi; Iwaguchi, Isao; and Shinoda, Ichiro, 5,798,510, Cl. 235-462.000.
Sato, Takehisa; Ueda, Hironari; Kuribayashi, Toshiaki; Asano, Satoshi; Niwa, Tadashi; Ueno, Hiroshi; Fujii, Takeaki; and Suzuki, Sadakatsu, to Exxon Chemical Patents Inc. Lubricant and combination lubricant and refrigerant composition. 5,798,054, Cl. 252-68.000.
Sato, Yoshiharu: *See*—
Murata, Kiyoshi; Komiya, Takashi; Nakanishi, Sadayuki; Sato, Yoshiharu; and Fukunaga, Akio, 5,797,583, Cl. 251-57.000.
Sato, Yoshiyuki; Tamura, Shigeharu; Mochizuki, Shoichi; and Mihara, Toshiyuki, to Agency of Industrial Science & Technology. Process for producing nickel oxide film. 5,798,134, Cl. 427-126.600.
Sato, Yotaro: *See*—
Shigeta, Kunio; Sato, Yotaro; and Haneda, Satoshi, 5,799,226, Cl. 399-66.000.
Sato, Yukio: *See*—
Kaneko, Shinji; Ohura, Seiji; Mihara, Yoshizo; and Sato, Yukio, 5,798,992, Cl. 369-116.000.
Sato, Yuuichi: *See*—
Araki, Satoru; Shinoura, Osamu; Sato, Yuuichi; and Honda, Yuuji, 5,798,896, Cl. 360-113.000.
Satoh, Atsushi: *See*—
Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.
Satoh, Kouichi: *See*—
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Satsurai, Reika, to Hoshizaki Denki Kabushiki Kaisha. Non-zinc chloride type flux for tin plating. 5,798,000, Cl. 148-26.000.
Satterfield, David L.: *See*—
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Saturno, Thomas Frank: *See*—
Zimmerman, William H.; Saturno, Thomas Frank; Artysiewicz, John Stanley; Trainham, James Arthur; Law, Clarence Garlan, Jr.; Newman, John Scott; and Eames, Douglas John, 5,798,036, Cl. 205-620.000.
Sauer, Hartmut Karl, to De La Rue Giori S.A. Production of an endless band and method and banding apparatus for banding with this endless band. 5,797,242, Cl. 53-399.000.
Saul, Tom: *See*—
Cathey, Cheryl A.; Saul, Tom; Bloom, Nicole D.; Ribi, Hans O.; Schwartz, Henry L.; Langford, Jeffrey B.; and Paul, David J., 5,798,215, Cl. 435-7.900.
Sauressig, Karl: *See*—
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Sauter, Rainer: *See*—
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Savusalo, Jari: *See*—
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Sawabe, Teruo; Yokoyama, Isao; and Sato, Kazutoshi, to Tanoi Mfg. Co., Ltd. Thread forming tap. 5,797,710, Cl. 408-222.000.
Sawamura, Yasushi: *See*—
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Sawan, Samuel P.; Talhi, Abdelhafid; and Taylor, Craig M., to University of Massachusetts; and University of California, The Regents of the. Polymers with increased order. 5,798,438, Cl. 528-483.000.
Sayama Precision Industries Co., Ltd.: *See*—
Okuyama, Toshihide; and Kaneko, Masahiro, 5,798,588, Cl. 310-81.000.
Scarampi, Sebastiano: *See*—
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Scarborough, Robert M.: *See*—
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Scarchilli, Robert J.: *See*—
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Nyfelt, Leif, 5,798,714, Cl. 340-988.000.
Schabelreiter, Johann: *See*—
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Schabes, Yves; Roche, Emmanuel; and Golding, Andrew R., to Mitsubishi Electric Information Technology Center America, Inc. System for correcting grammar based on parts of speech probability. 5,799,269, Cl. 704-9.000.
Schaefer, William L.: *See*—
Wang, Songhao; and Schaefer, William L., 5,797,557, Cl. 242-35.50A.
Schaeffeler, Alois; Geiger, August; and Mueller, Jens, to Marquardt GmbH. Electric switch, especially for electric hand tools. 5,798,584, Cl. 310-50.000.
Schäfer, Hubertus E. A.: *See*—
Hermens, Hendrik C. M.; Jacobs, Lucas A. G.; Driessen, Henrikus C. M. P.; Van Der Horst, Cornelis H. T.; and Schäfer, Hubertus E. A., 5,798,811, Cl. 349-152.000.
Schardt, Gunter: *See*—

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Scharp, David W.: *See*—
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Schauhoff, Stephanie: *See*—
Schmidt, Wolfgang; Thiele, Ulrich; Schauhoff, Stephanie; and Yu, Dahai, 5,798,433, Cl. 528-279.000.

Schaus, John M.: *See*—
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Schelhorn, Jean E.: *See*—
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Schell, Mark S., to Berg Technology, Inc. Indicator light modular jack. 5,797,767, Cl. 439-490.000.

Schelling, Pierre: *See*—
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Schenk, Mitchell V.; Ray, John C.; and Howard, Bradley S., to Plastic Form, Inc. Vehicle window visor and ventilator. 5,797,645, Cl. 296-152.000.

Schenkel, Dale: *See*—
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Scheper, William Michael: *See*—
Goldstein, Alan Scott; Getty, Edward Eugene; and Scheper, William Michael, 5,798,326, Cl. 510-221.000.

Schering Aktiengesellschaft: *See*—
Backensfeld, Thomas; and Tack, Johannes, 5,798,338, Cl. 514-26.000.
Schmitt-Willich, Heribert; Platzek, Johannes; Gries, Heinz; Schumann-Giampieri, Gabrielle; Weinmann, Hanns-Joachim; Vogler, Hubert; Deutsch, Julius; and Conrad, Juergen, 5,798,092, Cl. 424-9.364.

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Shue, Ho-Jane; Shih, Neng-Yang; Piwinski, John; Chen, Xiao; and Blythin, David J., 5,798,359, Cl. 514-255.000.

Schiff, Steven J.: *See*—
Spano, Mark L.; Schiff, Steven J.; Gluckman, Bruce J.; and Ditto, William L., 5,797,965, Cl. 607-2.000.

Schillaci, Antonino: *See*—
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Schimmel, Paul R.: *See*—
Martinis, Susan A.; Sassanfar, Mandana; Kim, Sunghoon; Lee, Sang Ho; and Schimmel, Paul R., 5,798,240, Cl. 435-183.000.

Schipper, John F.: *See*—
Murphy, Michael D.; Janky, James M.; and Schipper, John F., 5,799,082, Cl. 380-7.000.

Schleinz, Robert Joseph: *See*—
Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,797,892, Cl. 604-361.000.

Schlosberg, Richard Henry; Turner, David Wayne; Krevalis, Martin Anthony; Munley, William Joseph, Jr.; and Aldrich, Haven Scott, to Exxon Chemical Patents Inc. High stability and low metals esters based on 3,5,5-trimethyl-1-hexanol. 5,798,319, Cl. 507-138.000.

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Merrett, Stanley Leo, 5,797,421, Cl. 137-236.100.

Schmalstieg, Lutz: *See*—
Brahm, Martin; Dieris, Carl-gerd; Schmalstieg, Lutz; and Halpaap, Reinhard, 5,798,431, Cl. 528-73.000.

Schmidt, Alfred: *See*—
Stenzel, Gerhard; Albert, Bodo; Buchmann, Klaus; and Schmidt, Alfred, 5,798,929, Cl. 364-478.010.

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Levy, Julia; Miller, Joan W.; Gradoudas, Evangelos S.; Hasan, Tayyaba; and Schmidt-Erfurth, Ursula, 5,798,349, Cl. 514-185.000.

Schmidt-Park, Olaf: *See*—
Linde, Günter; Schmidt-Park, Olaf; Eitel, Manfred; and Steiling, Lothar, 5,797,988, Cl. 106-472.000.

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Géndre, Philippe; Regnier, Pierre; Schmirgeld-Mignot, Lélia; and Marquet, André, 5,798,034, Cl. 205-170.000.

Schmitt-Landsiedel, Doris: *See*—
Nebel, Gerhard; Frechet, Vincent; and Schmitt-Landsiedel, Doris, 5,798,657, Cl. 326-81.000.

Schmittling, Robert J.: *See*—
Bolton, Wade E.; Kenyon, Norma Sue; Siiman, Olavi; and Schmittling, Robert J., 5,798,217, Cl. 435-7.230.

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Schmitz, Christoph Johann, to Procter & Gamble Company, The. Disposable absorbent article having a landing member for engaging with a hook-type fastening member. 5,797,896, Cl. 604-391.000.

Schmitz, Guenter: *See*—
Pischinger, Franz; Schneider, Matthias; Schmitz, Guenter; Pischinger, Martin; and Esch, Thomas, 5,797,360, Cl. 123-90.110.

Schmitz, Michael: *See*—
Barth, Gunter; and Schmitz, Michael, 5,797,698, Cl. 404-39.000.

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Schneider, August; Bader, Jochen; and Leimer, Franz Xaver, to Hoechst Aktiengesellschaft. Automatic characterization of mechanical and/or geometric properties of staple fiber samples and suitable apparatus therefor. 5,799,103, Cl. 382-141.000.

Schneider, Charles Anthony: *See*—
Huling, Bruce Alan; Schneider, Charles Anthony; and Engle, George Martin, 5,797,195, Cl. 34-404.000.

Schneider, Jurgen: *See*—
Schoppe, Herbert; Schneider, Jurgen; Rother, Michael; and Jung, Ulrich, 5,797,324, Cl. 101-424.100.

Schneider, Klaus: *See*—
Hnilica, Klaus D.; and Schneider, Klaus, 5,798,832, Cl. 356-316.000.

Schneider, Matthias: *See*—
Pischinger, Franz; Schneider, Matthias; Schmitz, Guenter; Pischinger, Martin; and Esch, Thomas, 5,797,360, Cl. 123-90.110.

Schneider, Randall M.: *See*—
Crucius, Wesley; and Schneider, Randall M., 5,798,920, Cl. 364-167.010.

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Schoenmakers, Johannes Geradus Ghislain; Konings, Rudolph Nicolaas Hendrik; and Moelans, Inge Irma Maria Dominique, to University of Nijmegan. DNA encoding a plasmodium 16kD protein. 5,798,105, Cl. 424-272.100.

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Schofield, Kenneth: *See*—
O'Farrell, Desmond J.; Veldman, Roger L.; and Schofield, Kenneth, 5,798,575, Cl. 307-10.100.

Scholtz, Coenraad Jacobus Beukes: *See*—
Bloomberg, Martin David; Scholtz, Coenraad Jacobus Beukes; and Brink, Ian Francois, 5,798,346, Cl. 514-137.000.

Scholz, John Arthur, to Hollandse Signaalapparaten B.V. Radar apparatus. 5,798,729, Cl. 342-189.000.

Schopfer, E. Kevin. Garment carrier. 5,797,640, Cl. 294-152.000.

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Schraga, Steven. Re-usable end cap for re-usable lancet devices for removing and disposing of a contaminated lancet. 5,797,942, Cl. 606-182.000.

Schreiner, Stefan C. Voice emitting pin. 5,798,686, Cl. 340-384.700.

Schroeder, Alfred A.; Paisley, Gary V.; and Romanyszyn, Michael T., Jr., to Coca-Cola Company, The. Postmix beverage dispenser. 5,797,519, Cl. 222-129.100.

Schroeter, Ingulf: *See*—
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Schröferl, Thomas: *See*—
Fiegel, Gunnar; Plettrichs, Ulf; Walter, Alexander; Schröferl, Thomas; and Soltanmoradi, Hossein, 5,797,648, Cl. 296-223.000.

Schroter, Holger: *See*—
Politt, Joachim-Christian; Schroter, Holger; and Borchers, Kerstin, 5,798,698, Cl. 340-618.000.

Schrum, Allan E.: *See*—
Howenstine, Mervin W.; and Schrum, Allan E., 5,797,276, Cl. 62-186.000.

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Schuh, Matthias; Dersch, Volker; and Baur, Walter, to Rovema Verpackungsmaschinen GmbH. Station in a packaging line for folding a flap of a bag. 5,797,241, Cl. 53-375.500.

Schuhmacher, Peter: *See*—
Beck, Erich; Meyer, Frank; Poth, Ulrich; Siemensmeyer, Karl; Sierakowski, Claudia; Greif, Norbert; Ostertag, Werner; Zimstein, Michael; Leyrer, Reinhold; Jahns, Ekkehard; Etzbach, Karl-Heinz; and Schuhmacher, Peter, 5,798,147, Cl. 427-511.000.
Paulus, Wolfgang; Häussling, Lukas; Siemensmeyer, Karl; Etzbach, Karl-Heinz; Adam, Dieter; Simmerer, Juergen; Ringsdorf, Helmut; Schuhmacher, Peter; Haarer, Dietrich; and Kumar, Sundeep, 5,798,197, Cl. 430-56.000.

Schulte, Franz. Flow regulating valve. 5,797,586, Cl. 251-129.020.

Schulte, Reinhard W.; Wicks, William J.; and Meinass, Helmut J., to Loma Linda University Medical Center. Stereotactic fixation system and calibration phantom. 5,797,924, Cl. 606-130.000.

Schulz, Helmut W., to Dynecology, Inc. Sewage sludge disposal process and product. 5,797,972, Cl. 44-552.000.

Schulz, Martin: *See*—

Gasthuber, Herbert; Lübbing, Bernd-Eric; Schulz, Martin; and Wiesner, Michael, 5,797,311, Cl. 92-158.000.
Schulze, Dale; and Fox, William D., to Ethicon Endo-Surgery, Inc. Surgical instrument with expandable cutting element. 5,797,941, Cl. 606-171.000.
Schulze, Reiner; and Hebbel, Gerd, to Beiersdorf AG. Winder shaft. 5,797,473, Cl. 192-77.000.
Schumacher, Steffen, to Robert Bosch GmbH. Hydraulic unit with electromagnetic regulator and closing part. 5,797,587, Cl. 251-129.210.
Schumann-Giampieri, Gabrielle: *See*—
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Schunk Kohlenstofftechnik GmbH: *See*—
Sperling, Rainer; Friedrich, Harald; and Schardt, Gunter, 5,798,178, Cl. 428-408.000.
Schutt, Ernest George: *See*—
Trevino, Leo A.; Schutt, Ernest George; Klein, David H.; Tarara, Thomas E.; Weers, Jeffry G.; and Kabalnov, Alexey, 5,798,091, Cl. 424-9.520.
Schwab, Leonard M. Elastic cord tie-down construction. 5,797,167, Cl. 24-16.00R.
Schwab, Stuart T.; Paul, Partha P.; and Nishida, Ryoichi, to Osaka Gas Co., Ltd. Method of preparing polysilanes and resultant products. 5,798,428, Cl. 528-14.000.
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Buschulte, Rainer; Kern, Juergen; Mueller, Michael; and Schwahn, Harald, 5,797,326, Cl. 101-483.000.
Schwartz, Henry L.: *See*—
Cathey, Cheryl A.; Saul, Tom; Bloom, Nicole D.; Ribi, Hans O.; Schwartz, Henry L.; Langford, Jeffrey B.; and Paul, David J., 5,798,215, Cl. 435-7.900.
Schwarz, Thomas: *See*—
Bartholmes, Peter; Kaufmann, Michael; and Schwarz, Thomas, 5,798,253, Cl. 435-243.000.
Schwarzkopf, Eugen, to Hotset Seizpatronen U. Zubehor GmbH. Length-adjustable electrical sleeve heater. 5,798,504, Cl. 219-550.000.
Schwenninger, Franz: *See*—
Zikeli, Stefan; Rauch, Ernst; Koberger, Hermann; Ecker, Friedrich; Rüf, Hartmut; Jurkovic, Raimund; and Schwenninger, Franz, 5,798,125, Cl. 425-72.200.
Schwinkendorf, Kevin: *See*—
Roblyer, Steven; and Schwinkendorf, Kevin, 5,798,473, Cl. 89-14.300.
Scifres, Donald R.: *See*—
Geels, Randall S.; Osinski, Julian S.; Welch, David F.; and Scifres, Donald R., 5,799,028, Cl. 372-49.000.
Scobey, Michael A.: *See*—
Lefebvre, Paul M.; Seeser, James W.; Seddon, Richard Ian; Scobey, Michael A.; and Manley, Barry W., 5,798,027, Cl. 204-192.260.
Scovill Japan Kabushiki Kaisha: *See*—
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Scripps Research Institute, The: *See*—
Ruggeri, Zaverio M.; and Ware, Jerry L., 5,798,216, Cl. 435-7.210.
Scriptpro, LLC: *See*—
Coughlin, Michael E.; Leonard, Ronald A.; Guerra, Lawrence E.; and Kudera, Keith W., 5,798,020, Cl. 156-542.000.
SDGI Holdings, Inc.: *See*—
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Sherman, Michael C.; and Drewry, Troy, 5,797,911, Cl. 606-61.000.
SDL, Inc.: *See*—
Geels, Randall S.; Osinski, Julian S.; Welch, David F.; and Scifres, Donald R., 5,799,028, Cl. 372-49.000.
Rossi, David M.; and Ransom, Harrison L., Jr., 5,799,029, Cl. 372-50.000.
Sealed Air Corporation: *See*—
Smith, Christopher A., 5,798,169, Cl. 428-212.000.
Searex, Inc.: *See*—
Delamatyr, George, 5,797,703, Cl. 405-198.000.
Sears, David F.: *See*—
Littlejohn, Jerry D.; and Sears, David F., 5,798,687, Cl. 340-426.000.
Seaton, William Ernest; Fanning, Mark Joseph; Drager, Craig; Robinson, Ron; Morris, Roger James; and Gayral, Jean-Pierre Bernard, to bio Mérieux Vitek, Inc. Test sample positioning system. 5,798,084, Cl. 422-65.000.
Seaton, William Ernest; and Fanning, Mark Joseph, to bioMerieux Vitek, Inc. Optical reader and sample card transport stations for biological sample testing machine. 5,798,085, Cl. 422-65.000.
Seb S.A.: *See*—
Bontoux, Daniel; Paget, Monique; and Debourg, Jean-Pierre, 5,797,966, Cl. 607-3.000.
Sebag, Henri: *See*—
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Sebillotte, Laurence: *See*—
Nadaud, Jean Francois; and Sebillotte, Laurence, 5,798,108, Cl. 424-401.000.
Sebor, Pavel. Vibratory cleaner and method. 5,797,156, Cl. 15-1.700.
Second Chance Body Armor, Inc.: *See*—
Davis, Richard Clinton; and St. Amour, Gail Marie, 5,797,140, Cl. 2-2.500.
Seddon, Richard Ian: *See*—
Lefebvre, Paul M.; Seeser, James W.; Seddon, Richard Ian; Scobey, Michael A.; and Manley, Barry W., 5,798,027, Cl. 204-192.260.
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Ladouce, Jean-Pierre, 5,798,076, Cl. 264-326.000.
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Sega Pinball, Inc.: *See*—
Cebula, Edwin; and Kaminkow, Joseph E., 5,797,600, Cl. 273-121.00A.
Segal, Vladimir: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.
Segrestin, Pierre; and Jailloux, Jean Marc, to Societe Civile des Brevets Henri Vidal. Earth structures. 5,797,706, Cl. 405-262.000.
Seifert, Hans: *See*—
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Seiko Epson Corporation: *See*—
Li, Chia-Hsin; Pascovici, Andrei; Shu, Joseph S.; and Chao, Dennis L., 5,799,136, Cl. 395-109.000.
Uchiyama, Yaeko; Hayashi, Hiroko; and Itano, Masaaki, 5,798,776, Cl. 347-43.000.
Watsuji, Yukihiro; and Maruyama, Akira, 5,798,546, Cl. 257-316.000.
Seikoh Giken Co., Ltd.: *See*—
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Seiler, William J.: *See*—
Kikinis, Dan; Dornier, Pascal; and Seiler, William J., 5,799,067, Cl. 379-93.060.
Kikinis, Dan; Dornier, Pascal; and Seiler, William J., 5,799,068, Cl. 379-93.060.
Seilhamer, Jeffrey J.: *See*—
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Seilheimer, Stephen E.: *See*—
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Seki, Hiroshi: *See*—
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Seki, Kazunori: *See*—
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Seki, Seizo; Kawajiri, Masayuki; and Asakura, Takashi, to Sony Corporation; and Dai Nippon Printing Co., Ltd. Information storage medium packaging body. 5,797,492, Cl. 206-387.100.
Seki, Shinobu: *See*—
Morigami, Yuusuke; Kobayashi, Tadashi; Nishikawa, Misao; Yoshikawa, Hiroyuki; Ozawa, Kazuhito; Hirano, Ryo; Seki, Shinobu; and Wakamatsu, Shinji, 5,797,596, Cl. 270-58.110.
Seki, Susumu: *See*—
Itoh, Yoshiaki; Kiyama, Jiro; Kojima, Hiroshi; Seki, Susumu; and Oka, Ryuichi, 5,799,275, Cl. 704-241.000.
Sekiguchi, Nobutoshi, to Olympus Optical Co., Ltd. Projection type image display apparatus. 5,798,864, Cl. 359-559.000.
Sekine, Chigaya; and Machida, Hiromi, to Tokico, Ltd. Hydraulic shock absorber. 5,797,594, Cl. 267-64.170.
Selker, Edwin Joseph; Seki, Kazunori; Suzuki, Michio; and Yonemochi, Kenshin, to International Business Machines Corporation. Grip cap for computer control stick. 5,798,754, Cl. 345-161.000.
Selle, Paul A.; Gietman, Peter J., Jr.; Dutter, Timothy R.; Jansen, Thomas C.; and Slama, Frank M., to CMD Corporation. Draw tape machines and methods. 5,797,828, Cl. 493-225.000.
Semicoa Semiconductors: *See*—
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Semiconductor Energy Laboratory Co., Ltd.: *See*—
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Semiconductor Systems, Inc.: *See*—
Parodi, Michael L.; and Hurtig, Roy E., 5,798,140, Cl. 427-240.000.
Senftleben, Christopher T.; and Wykstra, Curt A., to Borg-Warner Automotive, Inc. Hydraulic tensioner with internal reservoir. 5,797,817, Cl. 474-110.000.
Senior Industries, Inc.: *See*—
Francaviglia, Joe, 5,797,768, Cl. 439-567.000.
Sentementes, Andrew. Book of matches. 5,797,484, Cl. 206-104.000.
Sera, Toshikuni: *See*—
Suda, Taiichiro; Fujii, Nagatoshi; Kawasaki, Masami; Moriguchi, Yoshiko; Iijima, Masaki; and Sera, Toshikuni, 5,798,087, Cl. 423-555.000.
Seshadri, Nambirajan; and Sundberg, Carl-Erik Wilhelm, to Lucent Technologies, Inc. Methods and devices for enhancing communications that use spread spectrum technology by using variable power techniques. 5,799,013, Cl. 370-342.000.
Sessler, Jonathan L.: *See*—
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Setra Systems, Inc.: *See*—
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Sfarti, Adrian; Baker, Nicholas Robert; Laker, Robert William; and Malamy, Adam Craig, to Cagent Technologies, Inc. Controlling a real-time rendering engine using a list-based control mechanism. 5,798,762, Cl. 345-420.000.
SGS-Thomson Microelectronics, Inc.: *See*—
Chan, Tsiu Chiu; and Smith, Gregory C., 5,798,278, Cl. 437-43.000.
McClure, David Charles, 5,798,980, Cl. 365-233.000.
SGS-Thomson Microelectronics S.A.: *See*—
Nicolai, Jean, 5,798,933, Cl. 364-483.000.
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Masini, Marco; Tavazzani, Claudio; and Boiocchi, Stefania, 5,798,672, Cl. 330-251.000.
Onetti, Andrea Mario; and Procurato, Sylvia, 5,798,959, Cl. 365-26.000.
Rizzotto, Gianguido; Poluzzi, Rinaldo; and Pagni, Andrea, 5,799,132, Cl. 395-3.000.
Shafer, John Christopher: *See*—
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Shafer, William M.: *See*—
Travis, James; Shafer, William M.; Bangalore, Neelesh; and Pohl, Jan, 5,798,336, Cl. 514-16.000.
Shaffer, James M.: *See*—
Atkins, Glen G.; Cohen, Michael S.; Mauritz, Karl H.; and Shaffer, James M., 5,798,565, Cl. 257-701.000.
Shaffer, Terry M.; Perlick, Jeanette; and Burns, Robert J. Accessing and deaccessing tools and methods. 5,797,954, Cl. 606-201.000.
Shah, Haresh P.: *See*—
Massey, Richard J.; Blackburn, Gary F.; Wilkins, Elizabeth W.; and Shah, Haresh P., 5,798,083, Cl. 422-52.000.
Shah, Shailesh; Cash, Ronald J.; LaFreeda, Ronald; Aloye, James; and Mulvey, Joseph L., to Henkel Corporation. Epoxy curing agent comprising a metaxylylenediamine-epichlorohydrin adduct. 5,798,398, Cl. 523-404.000.
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Shannon, John P. Computer recovery backup method. 5,799,147, Cl. 395-182.040.
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Itoh, Yoshiaki; Kiyama, Jiro; Kojima, Hiroshi; Seki, Susumu; and Oka, Ryuichi, 5,799,275, Cl. 704-241.000.
Juso, Hiromi; Haikawa, Yukihiko; and Hosono, Yukiharu, 5,799,197, Cl. 395-750.050.
Kajihara, Noriyuki, 5,798,741, Cl. 345-94.000.
Nishiki, Hirohiko; Shimada, Takayuki; and Katayama, Mikio, 5,798,812, Cl. 349-152.000.
Ohashi, Masakazu, 5,799,245, Cl. 455-69.000.
Okahashi, Toshihiro, 5,799,108, Cl. 382-205.000.
Sannomiya, Hitoshi; Tomita, Takashi; Yamazaki, Shunpei; and Arai, Yasuyuki, 5,797,999, Cl. 136-258.0PC.
Takeuchi, Hiroaki, 5,798,894, Cl. 360-109.000.
Watatani, Masahide; Yamashita, Toshihiro; and Shimada, Takayuki, 5,798,742, Cl. 345-98.000.
Yamamoto, Takehiro, 5,799,116, Cl. 385-2.000.
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Sharper, Craig A.: *See*—
Gupta, Dev Vrat; Chen, Yu-Ren Brian; Sharper, Craig A.; and Stone, Alan E., 5,799,017, Cl. 370-419.000.
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Sakai, Masayoshi; Futsuhara, Koichi; and Shirai, Toshihito, 5,798,703, Cl. 340-666.000.
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Kanayama, Toshiji; Uchiyama, Taro; and Yanagisawa, Isao, 5,798,389, Cl. 514-560.000.
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Shona, Yoshihiro, to Oki Electric Industry Co., Ltd. Method of effecting mutual authentication. 5,799,085, Cl. 380-23.000.
Shoup, Curtis C.; and Muniz, Alfonso. Screen door frame member connection system. 5,797,223, Cl. 52-204.100.
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Shumway, Scott, to DesalCo, Ltd. Linear spool valve device for work exchanger system. 5,797,429, Cl. 137-625.690.
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Kirchen, Gunther; and Lehrke, Jurgen, 5,797,496, Cl. 209-2.000.
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Siegel, Steven H. Phonic engine. 5,799,267, Cl. 704-1.000.
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Beuerlein, Bernd, 5,799,052, Cl. 376-313.000.
Eichfeld, Herbert; and Künemund, Thomas, 5,799,291, Cl. 706-1.000.
Lee, Pei-Ing Paul; Vollmer, Bernd; Restaino, Darryl; and Klaasen, Bill, 5,798,301, Cl. 438-653.000.
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Werthner, Harald, 5,798,643, Cl. 324-309.000.
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Siemens Hearing Instruments, Inc.: *See*—
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Signaigo, Robert C., to Rockwell International Corporation. Interrupt system. 5,798,901, Cl. 361-64.000.
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Sammataro, Stephen R.; Kish, Jules G.; and Isabelle, Charles J., 5,797,185, Cl. 29-893.300.
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Silver, Brian H., to Medela, Incorporated. Breast pump assembly and method of using same. 5,797,875, Cl. 604-74.000.

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Simoens, Herve. Distribution device for feeding a capacitor with gaseous fluid. 5,797,582, Cl. 251-38.000.

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Sitters, Richard J.; and Oerlemans, Cornelis A. M., to U.S. Philips Corporation. Telecommunication system for providing status information of connected parties having associated party processses. 5,799,076, Cl. 379-229.000.

Skinner, Kenneth R., to U.S. Philips Corporation. Arrangement for providing vivid color in a television signal. 5,798,801, Cl. 348-645.000.

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Slama, Frank M.: *See*—
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Slavicheff, Craig Stephen: *See*—
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Smith, Kenneth Wayne, to Borland International, Inc. Methods and interface for building command expressions in a computer system. 5,798,757, Cl. 345-338.000.

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Smith, Margaret M., to Clareblend, Inc. Multi-probe blend electrolysis machine. 5,797,904, Cl. 606-36.000.

Smith, Patricia Ann: *See*—
Morgan, James Joseph; Johnson, Terry Lee; Keefer, Leah Ellen; Smith, Patricia Ann; Bradford, William Howell; Wells, Kathryn Louise; and Mason, Eric Todd, 5,799,286, Cl. 705-30.000.

Smith, Roger: *See*—
Butt, Farooq; Smith, Roger; and Stewart, Katherine E., 5,799,143, Cl. 395-183.140.

Smith, Stephen L. Enclosure for small animals. 5,797,350, Cl. 119-475.000.

Smith, Sybren D.: *See*—
Laird, Kevin Michael; Smith, Sybren D.; Marko, Paul D.; and Wadin, Craig P., 5,799,039, Cl. 375-244.000.

Smith, Wayne: *See*—
Vesely, Ivan; and Smith, Wayne, 5,797,849, Cl. 600-461.000.

Smith, William Francis, III: *See*—
Pappas-Fader, Thalia; Leep, Daniel Carl; Ruggiero, Marc; Smith, William Francis, III; and Yang, Alexander Yung Shing, 5,798,317, Cl. 504-128.000.

Smiths Industries PLC: *See*—
Swindlehurst, Neil Andrew, 5,797,760, Cl. 439-289.000.

Smyth, Mark John: *See*—
McKenzie, Ian Farquhar Campbell; Pietersz, Geoffrey Allan; and Smyth, Mark John, 5,798,097, Cl. 424-181.100.

Snell, Richard A., Jr.; Nannet, Bryan L.; and Price, Ralph D., to Case Corporation. Folding auxiliary seat for a vehicle. 5,797,649, Cl. 297-14.000.

Sniegowski, Jeffry J.: *See*—
Montague, Stephen; Smith, James H.; Sniegowski, Jeffry J.; and McWhorter, Paul J., 5,798,283, Cl. 438-24.000.

Snoke, Phillip Jack; Mark, Michael John; Verdura, Javier; and Nagatani, Kevin A., to American Industrial Design Co., Inc. Portable power tool light, accessory mounting belt, and method of using same. 5,797,670, Cl. 362-119.000.

Snow, David W.; Adams, Craig L.; Donlon, Brian S.; and Gifford, Hanson S., III, to Heartport, Inc. Coronary shunt and method of use. 5,797,933, Cl. 606-151.000.

Snowden-Pencer, Inc.: *See*—
Furnish, Gregory R.; and Hipps, W. Michael, 5,797,956, Cl. 606-205.000.

Snyder, David A.: *See*—
Blissell, William H.; Fink, David J.; Snyder, David A.; and Hawkins, Phillip J., 5,797,290, Cl. 72-53.000.

Snyder, Michael John: *See*—
Koser, Leonard William; Manges, Mary Christine; Ring, Frances Mary; Rogers, Cynthia Ann; Snyder, Michael John; and Vriezen, John Joseph, 5,799,189, Cl. 395-680.000.

Snyder, Randall A.: *See*—

Gallagher, Michael D.; Carlson, Kirk D.; Jeffery, Stuart S.; Lee, Ming J.; Grencions, Vilnis G.; and Snyder, Randall A., 5,799,084, Cl. 380-23.000.

Snyder, Richard A.: *See*—
Banta, Robert H., Jr.; Snyder, Richard A.; and Ossmann, William J., 5,798,461, Cl. 73-625.000.

Snyder, Solomon: *See*—
Steiner, Joseph P.; Snyder, Solomon; Hamilton, Gregory S.; and Dawson, Ted, 5,798,355, Cl. 514-248.000.

Sobhanie, Mohammad Eghbal: *See*—
Thayer, Ronda Renee Bayer; Benedict, Robert Leon; Chlebina, Larry Edward; Jacobs, Bernard Byron; Laurich, Thomas Andrew; Macesich, Walter George; Majerus, Norbert; Rambacher, John Sylvester; Rex, William Allen; Rooney, Timothy Michael; Sobhanie, Mohammad Eghbal; Yovichin, Albert James; Wolfe, David Lowell; and Hentosz, Daniel Patrick, 5,798,127, Cl. 425-117.000.

Sobral Invicta S.A.: *See*—
Sobral, João Fernando, 5,797,521, Cl. 222-531.000.

Sobral, João Fernando, to Sobral Invicta S.A. Dispensing cap for vacuum bottles. 5,797,521, Cl. 222-531.000.

Societe Civile des Brevets Henri Vidal: *See*—
Segrestin, Pierre; and Jailloux, Jean Marc, 5,797,706, Cl. 405-262.000.

Societe de Prospection et d'Inventions Techniques (S.P.I.T.): *See*—
Almeras, Roland; and Herelier, Patrick, 5,797,534, Cl. 227-10.000.

Societe d'Etudes et de Realisation de Protection Electronique-Informatique Electronique Securite Maritime-S.E.R.P.E.-I.E.S.M. (S.A.): *See*—
Audren, James, 5,799,316, Cl. 707-104.000.

Societe Europeenne de Propulsion: *See*—
Koppel, Christophe; and Maine, Laurent, 5,797,260, Cl. 60-247.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation Snecma: *See*—
Brocard, Jean-Marie; Capelle, Jean-Yves; Desaulty, Michel André Albert; Perrin, Jean-Paul; and Varizat, Alain Michel, 5,797,266, Cl. 60-725.000.
Lechevalier, Michel Marie André Albert, 5,797,418, Cl. 137-115.070.

Societe Nationale Industrielle Aerospatial: *See*—
Gopanchuk, Vladimir; and Sorokin, Igor, 5,798,602, Cl. 313-359.100.

Soeda, Tsuyoshi: *See*—
Hayashida, Hirotaka; Teraoka, Hirohito; Ono, Tomoyuki; Soeda, Tsuyoshi; and Yamamoto, Masaaki, 5,798,189, Cl. 429-101.000.

Soesbe, Jeff: *See*—
Lynch, John; Nichols, James B.; Devon, Mark; and Soesbe, Jeff, 5,799,190, Cl. 395-680.000.

Soffe, Steven W.: *See*—
Rogers, Ernest E.; Frandsen, Blaine A.; and Soffe, Steven W., 5,798,474, Cl. 89-14.050.

Söffge, Friedhelm: *See*—
Mehrkens, Sigrid; Söffge, Friedhelm; and Preiss, Michael, 5,797,647, Cl. 296-204.000.

Sofmap Future Design, Inc.: *See*—
Tabuchi, Daisuke; Shoji, Wataru; and Nakajima, Ichiro, 5,799,181, Cl. 395-590.000.

Sofspin: *See*—
Davis, Aaron L.; and Davis, Mary B., 5,797,407, Cl. 132-73.600.

Sol, Jean-Marc, to Pixtech S.A. Flat display screen with a wide inter-electrode spacing. 5,798,609, Cl. 313-495.000.

Solaic: *See*—
Thiriet, Fabien, 5,798,506, Cl. 235-379.000.

Soldatenkova, Tatyana Dmitrievna: *See*—
Komissarova, Irina Alexeevna; Gudkova, Julia Vasilievna; Soldatenkova, Tatyana Dmitrievna; Kondrashova, Tatyana Tikhonovna; and Burbenskaya, Natalya Mikhailovna, 5,798,371, Cl. 514-345.000.

Soliman, Samir S., to Qualcomm Incorporated. System and method for determining received pilot power and path loss in a CDMA communication system. 5,799,005, Cl. 370-335.000.

Sollac: *See*—
Guth, Jérôme, 5,798,650, Cl. 324-663.000.

Sollars, Donald L., to Sun Microsystems, Inc. Method and apparatus for prefetching instructions at an improved rate based on dispatched control transfer instruction states. 5,799,164, Cl. 395-383.000.

Soltanmoradi, Hossein: *See*—
Fiegel, Gunnar; Plettrichs, Ulf; Walter, Alexander; Schröferl, Thomas; and Soltanmoradi, Hossein, 5,797,648, Cl. 296-223.000.

Soltis, Richard E.: *See*—
Logothetis, Eleftherios Miltiadis; and Soltis, Richard E., 5,798,269, Cl. 436-136.000.

SOLVAY (Société Anonyme): *See*—
Dehennau, Claude; Leo, Vito; and Cuvelliez, Charles, 5,798,072, Cl. 264-312.000.

Somatogen, Inc.: *See*—
Hoffman, Stephen J.; Looker, Douglas L.; Stetler, Gary L.; and Wagenbach, Michael, 5,798,227, Cl. 435-69.600.

Sombroek, Johannes: *See*—
Mederski, Werner; Sombroek, Johannes; Schelling, Pierre; Beier, Norbert; Lues, Ingeborg; and Minck, Klaus-Otto, 5,798,364, Cl. 514-303.000.

Somers, Todd C.; Elias, Kathleen A.; Clark, Ross G.; McDowell, Robert S.; Stanley, Mark S.; Burnier, John P.; and Rawson, Thomas E., to Genentech, Inc. Low molecular weight peptidomimetic growth hormone secretagogues. 5,798,337, Cl. 514-19.000.

Somerville, Norman: *See*—
Nicholson, R. Kent; Somerville, Norman; and Beckstrom, James L., 5,797,415, Cl. 137-15.000.

Son, Moon-Hae: *See*—
Yoo, Jei-Hwan; and Son, Moon-Hae, 5,798,978, Cl. 365-230.060.

Sondergeld, Werner, to MAN Roland Druckmaschinen AG. Printing material guiding surface structure for printing machine cylinders. 5,797,827, Cl. 492-37.000.

Song, Seungyoon P.: *See*—
Park, Heonchul; and Song, Seungyoon P., 5,799,163, Cl. 395-381.000.

Sonnenberg, Edward, to Siemens Stromberg-Carlson. Method for providing location/geographic portability in a system having different service providers within a common numbering plan area. 5,799,075, Cl. 379-220.000.

Sonobe, Masanori: *See*—
Kawaguchi, Masahiro; Sonobe, Masanori; Yokono, Tomohiko; and Suitou, Ken, 5,797,730, Cl. 417-222.200.

Sonoma Corporation: *See*—
Hipp, James E., 5,797,454, Cl. 166-196.000.

Sonometrics Corporation: *See*—
Vesely, Ivan; and Smith, Wayne, 5,797,849, Cl. 600-461.000.

Sony Corporation: *See*—
Arai, Masayuki, 5,798,996, Cl. 369-59.000.
Derderian, Ara J.; Minear, Daniel J.; Embree, Paul M.; and Mercs, James S., 5,798,818, Cl. 352-31.000.
Haneda, Naoya, 5,798,991, Cl. 369-47.000.
Kaneko, Shinji; Ohura, Seiji; Mihara, Yoshizo; and Sato, Yukio, 5,798,992, Cl. 369-116.000.
Kano, Kenichi; and Sugawara, Kokichi, 5,799,008, Cl. 369-291.000.
Kikuchi, Shuichi, 5,797,556, Cl. 242-340.000.
Kodama, Yasumasa, 5,799,127, Cl. 386-46.000.
Mukawa, Hiroshi, 5,799,006, Cl. 369-270.000.
Muto, Akihiro, 5,799,129, Cl. 386-111.000.
Nakagawa, Yoshimori; and Kishigami, Jun, 5,798,460, Cl. 73-654.000.
Nonaka, Ryuji, 5,798,800, Cl. 348-578.000.
Ohmori, Takashi, 5,799,212, Cl. 395-893.000.
Seki, Seizo; Kawajiri, Masayuki; and Asakura, Takashi, 5,797,492, Cl. 206-387.100.
Wood, Paul Nigel; Mercs, Laura; and Embree, Paul, 5,798,922, Cl. 364-400.010.
Yano, Motoyasu, 5,798,720, Cl. 341-101.000.

Sony Pictures Entertainment: *See*—
Derderian, Ara J.; Minear, Daniel J.; Embree, Paul M.; and Mercs, James S., 5,798,818, Cl. 352-31.000.

Sony Pictures Entertainment, Inc.: *See*—
Wood, Paul Nigel; Mercs, Laura; and Embree, Paul, 5,798,922, Cl. 364-400.010.

Sopka, Jörg: *See*—
Börner, Gunter; and Sopka, Jörg, 5,797,590, Cl. 251-324.000.

Sorenson, Donald C.: *See*—
Lazzara, Sal; and Sorenson, Donald C., 5,799,062, Cl. 379-51.000.

Sorokin, Igor: *See*—
Gopanchuk, Vladimir; and Sorokin, Igor, 5,798,602, Cl. 313-359.100.

Sotheran, Martin William: *See*—
Wise, Adrian P.; Dewar, Kevin D.; and Sotheran, Martin William, 5,798,719, Cl. 341-67.000.

Soubeyrand, Michel J., to Libbey-Owens-Ford Co. CVD method of depositing a silica coating on a heated glass substrate. 5,798,142, Cl. 427-255.000.

Souder, Benny: *See*—
Sun, Harry; Souder, Benny; and Lim, Peter, 5,799,306, Cl. 707-10.000.

Sourirajan, Srinivasa: *See*—
Chowdhury, Geeta; Adams, William; Conway, Brian; and Sourirajan, Srinivasa, 5,798,180, Cl. 428-411.100.

South Brooklyn Casket Co., Inc.: *See*—
Pinco, Frank, 5,797,499, Cl. 211-13.100.

Southeastern Univ. Research Assn., Inc.: *See*—
Zorn, Carl J.; Kross, Brian J.; Majewski, Stanislaw; and Wojcik, Randolph F., 5,799,124, Cl. 385-125.000.

Southwestern Bell Technology Resources, Inc.: *See*—
Fleischer, Harold C., III; Boeckman, Michael W.; Merin, S. James; Austin, Donald; and Thompson, Brenda, 5,799,073, Cl. 379-113.000.

Spacetec IMC Corporation: *See*—
Hilton, John; Roundtree, Stephan; and Avery, Hal, 5,798,748, Cl. 345-156.000.

Spagna, Stefano; and Simmonds, Michael Bancroft, to Quantum Design, Inc. Torque magnetometer utilizing integrated piezoresistive levers. 5,798,641, Cl. 324-228.000.

Span-America Medical Systems, Inc.: *See*—
Maier, Edmund K.; and Raburn, Richard W., 5,797,155, Cl. 5-654.000.

Spano, Mark L.; Schiff, Steven J.; Gluckman, Bruce J.; and Ditto, William L., to United States of America, Navy. Suppression of epileptiform activity. 5,797,965, Cl. 607-2.000.

Spate, Brian S.: *See*—
Rohde, Sheldon L.; Barclay, Rodney; Slotterback, Mark L.; Spate, Brian S.; Fultz, Richard K.; Harrison, C. Gordon; and Laube, Douglas N., 5,798,485, Cl. 174-35.00R.

Spear, Steven A.: *See*—
Lang, Gregory J.; Fulmer, Brian H.; Parker, Todd S.; Miller, Harry W., II; Jackson, Scott A.; Spear, Steven A.; and Oba, Graig S., 5,797,624, Cl. 280-741.000.

Spears, James Richard, to Wayne State University. Method of delivery of gas-supersaturated liquids. 5,797,874, Cl. 604-53.000.

Spears, J. Richard; Levin, Philip S.; and Zalesky, Paul J., to Therox, Inc.; and Wayne State University. High pressure perfusion device. 5,797,876, Cl. 604-95.000.

Specialty Machine & Supply, Inc.: *See*—
Hisaw, Jack C., 5,797,453, Cl. 166-117.500.

Speck, Steven H.: *See*—
Hobson, Alex Ray; Sassa, Robert L.; Speck, Steven H.; and Lau, Tit-Keung, 5,798,181, Cl. 428-422.000.

Spee, Rene; Bhowmik, Shibashis; and Enslin, Johan H. R., to State of Oregon Acting by and Through the State Board of Higher Education on Behalf of Oregon State University, The. Performance optimization controller and control method for doubly-fed machines. 5,798,631, Cl. 322-25.000.

Speer, Drew Ve: *See*—
Blinka, Thomas Andrew; Speer, Drew Ve; and Feehley, William Alfred, Jr., 5,798,055, Cl. 252-188.280.

Spelthann, Heinz H.; and Hausmann, Karlheinz, to Du Pont de Nemours, E. I., and Company. Flexible polar thermoplastic polyolefin compositions. 5,798,413, Cl. 525-66.000.

Spence, Scott L.: *See*—
McCurley, Jeffrey L.; Campbell, Robert J.; White, James E.; and Spence, Scott L., 5,798,639, Cl. 324-207.200.

Spencer, Lee; and Springs, Marc A., to Dow Chemical Company, The. Supported olefin polymerization catalyst. 5,798,314, Cl. 502-115.000.

Sperling, Rainer; Friedrich, Harald; and Schardt, Gunter, to Schunk Kohlenstofftechnik GmbH. Carbon brush and process for impregnating same. 5,798,178, Cl. 428-408.000.

Spiegl, Peter, to Karl Spiegl GmbH & Co. Water treatment process and system. 5,798,045, Cl. 210-662.000.

Spinelli, Harry Joseph: *See*—
Anton, Waifong Liew; Spinelli, Harry Joseph; and Patil, Anjali Abhimanyu, 5,798,426, Cl. 526-318.410.

Spira, Joel S.: *See*—
Keagy, Jon M.; Mosebrook, Donald R.; and Spira, Joel S., 5,798,581, Cl. 307-115.000.

Spirex Corporation: *See*—
Womer, Timothy W.; Colby, Paul N.; and White, Harry F., 5,798,077, Cl. 264-349.000.

Springer, Wolfgang; Baumgarten, Jörg; Kretschmer, Axel; Kölbl, Heinz; Löbberding, Antonius; Strube, Walter; and Thein, Peter, to Bayer Aktiengesellschaft. Pseudorabies virus (PRV) polynucleotides and their use for preparing virus-resistant eukaryotic cells. 5,798,265, Cl. 435-364.000.

Springs, Marc A.: *See*—
Spencer, Lee; and Springs, Marc A., 5,798,314, Cl. 502-115.000.

Spronk, Johannes Fredericus, deceased; and Dik, by Anna, administratrix. Three dimensional contour surface box. 5,797,543, Cl. 229-116.100.

Square D Company: *See*—
Hinkley, Douglas A.; Fixemer, James V.; and Barta, John J., 5,798,495, Cl. 219-121.140.

Squirrell, David James, to United Kingdom of Great Britain and Northern Ireland of Defence Evaluation and Research Agency, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Capture asays. 5,798,214, Cl. 435-7.400.

Sreenivas, Dingari: *See*—
Premerlani, William James; Adamiak, Mark Gerard; Sreenivas, Dingari; and Venugopal, Eyyunni, 5,798,932, Cl. 364-483.000.

Sridhar, Manickam R.; Hoang, Minh; and Wortman, John, Jr., to Motorola, Inc. Apparatus and method for interfacing between a communications channel and a processor for data transmission and reception. 5,799,064, Cl. 379-98.000.

Srikant, Ramakrishnan: *See*—
Agrawal, Rakesh; Ho, Ching-Tien; and Srikant, Ramakrishnan, 5,799,300, Cl. 707-5.000.

Srinivasan, Ananthachari: *See*—
Dunn, T. Jeffrey; and Srinivasan, Ananthachari, 5,798,444, Cl. 530-333.000.

Srinivasan, Lakshman, to Ultrapointe Corporation. Method of establishing thresholds for image comparison. 5,798,830, Cl. 356-237.000.

Srinivasan, Venkatachary, to International Business Machines Corporation. Generating an optimized set of relational queries fetching data in an object-relational database. 5,799,309, Cl. 707-102.000.

SRP 687 Pty Ltd: *See*—
Bourke, Brendan Vincent; Valcic, Zoran; and Whitford, Geoffrey Mervyn, 5,797,355, Cl. 122-13.100.

Stacey, Eric John; and Bettencourt, George Studley, to Electric Power Research Institute, Inc. High power inverter pole employing series connected devices configured for reduced stray loop inductance. 5,798,916, Cl. 363-135.000.

Staker, John R.: *See*—
Frost, Wilson; Staker, John R.; and Starkweather, John H., 5,797,723, Cl. 415-174.200.

Stallwitz, Erwin; and Storch, Helmut, to Widia GmbH. Cutting insert. 5,797,707, Cl. 407-114.000.

St. Amour, Gail Marie: *See*—
Davis, Richard Clinton; and St. Amour, Gail Marie, 5,797,140, Cl. 2-2.500.

Stanchin, Emery John, II. Disposable handcuff. 5,797,404, Cl. 128-869.000.

Standard Plywoods, Incorporated: *See*—
Finkell, Donald R., Jr., 5,797,237, Cl. 52-589.100.

Standex International Corporation: *See*—
Westbrooks, John Walter, Jr.; and Hurt, Sara Coffield, 5,797,445, Cl. 165-11.100.

Stanfield, Zenas A. Seed corn-drying system and method. 5,797,196, Cl. 34-494.000.

Stanford Telecommunications, Inc.: *See*—
Schuchman, Leonard; Bruno, Ronald; Kefaliotis, John; Greenberg, Steve; and Zakrzewski, Edward J., 5,798,726, Cl. 342-37.000.

Stanley, Mark S.: *See*—
Somers, Todd C.; Elias, Kathleen A.; Clark, Ross G.; McDowell, Robert S.; Stanley, Mark S.; Burnier, John P.; and Rawson, Thomas E., 5,798,337, Cl. 514-19.000.

Stanley Works Limited, The: *See*—
Gilbert, Richard, 5,797,188, Cl. 30-330.000.

Staples, Leven E. Computer system which provides analog audio communication between a PC card and the computer's sound system. 5,799,036, Cl. 375-222.000.

Star Micronics Co., Ltd.: *See*—
Iwamura, Eiji; and Ogino, Tetsuro, 5,797,690, Cl. 400-124.010.
Suzuki, Kanji, 5,797,691, Cl. 400-320.000.

Stark, Gerhard: *See*—
Gossler, Thomas; and Stark, Gerhard, 5,799,173, Cl. 395-500.000.

Stark, Sabine: *See*—
Gier, Lothar; Österle, Bernd; Borchert, Rudolf; Porth, Wolfgang; Stark, Sabine; and Wallrafen, Werner, 5,798,640, Cl. 324-207.240.

Starkey, Michael Brian: *See*—
Tuningley, Alan James; Oswald, Johannes Rainer; Click, Gary David; Starkey, Michael Brian; and Lee, Tommy, 5,797,565, Cl. 246-465.000.

Starkweather, John H.: *See*—
Frost, Wilson; Staker, John R.; and Starkweather, John H., 5,797,723, Cl. 415-174.200.

State of Oregon Acting by and Through the State Board of Higher Education on Behalf of Oregon State University, The: *See*—
Spee, Rene; Bhowmik, Shibashis; and Enslin, Johan H. R., 5,798,631, Cl. 322-25.000.

Steele, James: *See*—
Walker, Gary; Crews, Mike; and Steele, James, 5,799,178, Cl. 395-557.000.

Steffensmeier, Martin J., to Rockwell International. LCD panel having tailored pushdown voltages. 5,798,745, Cl. 345-92.000.

Steiling, Lothar: *See*—
Linde, Günter; Schmidt-Park, Olaf; Eitel, Manfred; and Steiling, Lothar, 5,797,988, Cl. 106-472.000.

Stein Heurtey: *See*—
Boyer, Michel; and Nozieres, Jean-Jacques, 5,798,007, Cl. 148-627.000.

Steiner, Joseph P.; Snyder, Solomon; Hamilton, Gregory S.; and Dawson, Ted, to GPI NIL Holdings, Inc.; and John Hopkins University School of Medicine. Inhibitors of rotamase enzyme activity. 5,798,355, Cl. 514-248.000.

Steinman, Christopher P., to Becton Dickinson and Company. Medical device having a connector portion with an improved surface finish. 5,797,889, Cl. 604-283.000.

Stembridge, James H.; and Man, Chisum. Phantom and method for accuracy and repeatability testing of positional mechanisms of computer assisted tomography and magnetic resonance imaging systems. 5,799,059, Cl. 378-207.000.

Stenner, John W., to Kurt H. Volk, Inc. Direct mail article comprising oversized card and integral envelope and reply device and method of manufacture. 5,797,541, Cl. 229-92.800.

Stenzel, Gerhard; Albert, Bodo; Buchmann, Klaus; and Schmidt, Alfred, to Giesecke & Devrient GmbH. Apparatus and method for processing thin sheet material such as bank notes. 5,798,929, Cl. 364-478.010.

Stephens, Robert: *See*—
Kert, John; Stephens, Robert; and Jack, Michael D., 5,797,682, Cl. 374-123.000.

Stérr, Ardina K.; and Bason, S. Clark, to Artistry In Motion Entertainment, Inc. Die cut confetti and a method of manufacturing. 5,797,304, Cl. 83-27.000.

Stetler, Gary L.: *See*—
Hoffman, Stephen J.; Looker, Douglas L.; Stetler, Gary L.; and Wagenbach, Michael, 5,798,227, Cl. 435-69.600.

Stevens, Henry Guy, to Novon International. Biodegradable composite polymeric articles comprising polyvinyl alcohol. 5,798,152, Cl. 428-34.100.

Stevens, John H.; Reitz, Bruce A.; Roth, Alex T.; Peters, William S.; and Gifford, Hanson S. Method and apparatus for thoracoscopic intracardiac procedures. 5,797,960, Cl. 606-213.000.

Stevens, Kenneth A.; Daugherty, Jonathan M.; McGovern, David R.; and Jones, Joseph P., to Metro Industries, Inc. Modular storage system with an active storage level feature. 5,797,503, Cl. 211-187.000.

Stevens, Rodney W.: *See*—
Kawai, Akiyoshi; Kawai, Makoto; and Stevens, Rodney W., 5,798,383, Cl. 514-482.000.

Stewart, Katherine E.: *See*—
Butt, Farooq; Smith, Roger; and Stewart, Katherine E., 5,799,143, Cl. 395-183.140.

Stewart, Michael A. Bodyboard with differentiated topskin. 5,797,779, Cl. 441-74.000.

Stickel, Werner: *See*—
Butsch, Rainer; Hartley, John George; and Stickel, Werner, 5,798,528, Cl. 250-492.200.

Stiles, Terry L., to Central Plastics Company. Clamping apparatus for an electrofusion joint. 5,798,021, Cl. 156-556.000.

Stillwagon, Ross I., Jr.; and Fischbach, Fernando. Curling iron stove with internal cavity with electric heater positioned therebelow. 5,798,500, Cl. 219-242.000.

Stiner, Roy: *See—*
Atherton, Randy; Stiner, Roy; Cooper, Frank; and Robbins, Jack, 5,797,554, Cl. 242-316.000.

Stirling, David I.: *See—*
Muller, George W.; Stirling, David I.; and Chen, Roger Shen-Chu, 5,798,368, Cl. 514-323.000.

STMC-LLC: *See—*
Bonser, Harvey S., 5,797,634, Cl. 285-319.000.

Stone, Alan E.: *See—*
Gupta, Dev Vrat; Chen, Yu-Ren Brian; Sharper, Craig A.; and Stone, Alan E., 5,799,017, Cl. 370-419.000.

Stone, Nancy A. Alternating seam for garments and method of sewing the alternating seam. 5,797,338, Cl. 112-475.130.

Storch, Helmut: *See—*
Stallwitz, Erwin; and Storch, Helmut, 5,797,707, Cl. 407-114.000.

Stormedia, Inc.: *See—*
Weiss, Joel R.; Shima, Koji; Leigh, Joseph; Konishi, Hiroshi; Kurataka, Nobuo; Hara, Hiroki; and Inoue, Naoki, 5,798,164, Cl. 428-141.000.

Stough, Dale Eugene, Jr.: *See—*
Unger, Mark Elton, III; and Stough, Dale Eugene, Jr., 5,797,179, Cl. 29-753.000.

Stout, Devin G.: *See—*
Parrish, David E.; and Stout, Devin G., 5,797,214, Cl. 47-47.000.

Strake, Engelbert: *See—*
Kragl, Hans; and Strake, Engelbert, 5,799,117, Cl. 385-14.000.

Stratton, Dennis A.: *See—*
Grulke, David H.; Huyser, Richard F.; Lautenschlager, Eugene; Stratton, Dennis A.; Wellons, Harry A., III; and Wixson, Richard L., 5,797,679, Cl. 366-139.000.

Strauss, Bernard: *See—*
Manning, Thelma; Strauss, Bernard; Prezelski, Joseph P.; and Moy, Sam, 5,798,481, Cl. 149-19.800.

Stress Engineering Services, Inc.: *See—*
Sager, Frank Everett; and Matice, Christopher J., 5,798,600, Cl. 310-330.000.

Strick, Nathan: *See—*
Neurath, Alexander Robert; Debnath, Asim Kumar; Jiang, Shibo; Li, Yun-Yao; and Strick, Nathan, 5,798,206, Cl. 435-5.000.

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Bornkamm, Georg Wilhelm; Eick, Dirk; Kempkes, Bettina; Jochner, Nicola Maria; and Strobl, Lothar J., 5,798,230, Cl. 435-70.210.

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Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.

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Sugawara, Kokichi: *See—*
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Sugen Inc.: *See—*
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Sugimoto, Takahiko: *See—*
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Sugimoto, Tomojiro, to Toyota Jidosha Kabushiki Kaisha. Fuel supplying apparatus for internal combustion engine. 5,797,372, Cl. 123-491.000.

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Ozaki, Nobuo, 5,797,296, Cl. 74-489.000.

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Nishii, Teruyuki; and Sugiyama, Norio, 5,798,771, Cl. 347-7.000.

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Suk, Mike: *See—*
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Arai, Hirokazu, 5,797,819, Cl. 474-161.000.

Sumitomo Chemical Company, Limited: *See—*
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Sumitomo Electric Industries, Ltd.: *See—*
Uemiya, Takafumi; Tsuchida, Hitoshi; Furukawa, Masayuki; Yamazaki, Kazuo; and Dohi, Tadashi, 5,798,033, Cl. 205-161.000.

Sumitomo Electric Industries Toyama Co., Ltd.: *See—*
Uemiya, Takafumi; Tsuchida, Hitoshi; Furukawa, Masayuki; Yamazaki, Kazuo; and Dohi, Tadashi, 5,798,033, Cl. 205-161.000.

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Onuki, Masahide; Kinuhata, Satoru; Takeuchi, Yuichi; Miyamoto, Yoshiaki; and Yamaguchi, Tetsuo, 5,798,833, Cl. 356-256.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Kobayashi, Masaaki, 5,797,773, Cl. 439-752.000.
Saka, Yuuji; Inoue, Nori; Onizuka, Takahiro; Oka, Yoshito; and Kobayashi, Makoto, 5,797,763, Cl. 439-402.000.
Sakurai, Toshikazu; Suzuki, Izumi; and Okumura, Hitoshi, 5,797,772, Cl. 439-752.000.
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Sumiya, Takeshi: *See—*
Inagaki, Shinya; and Sumiya, Takeshi, 5,799,125, Cl. 385-127.000.

Sun, Harry; Souder, Benny; and Lim, Peter, to Oracle Corporation. Method and apparatus for facilitating data replication using object groups. 5,799,306, Cl. 707-10.000.

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Cassiday, Daniel R.; and Satterfield, David L., 5,799,175, Cl. 395-551.000.
Doreswamy, Manjunath; Pance, Aleksandar; and Lin, Yuan-Jung, 5,798,935, Cl. 364-488.000.
Farjad-Rad, Ramin; and Drost, Robert J., 5,799,048, Cl. 375-360.000.
Hayes, Roger, 5,799,266, Cl. 702-123.000.
He, Liang, 5,799,265, Cl. 702-66.000.
Leung, Arthur T., Jr., 5,798,653, Cl. 324-760.000.
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Provino, Joseph E.; and Towfigh, Mark M., 5,799,314, Cl. 707-104.000.
Rainey, Matthew; and Pio-di Savoia, Luigi Alberto, 5,799,315, Cl. 707-104.000.
Sollars, Donald L., 5,799,164, Cl. 395-383.000.
Williams, Emrys John, 5,799,022, Cl. 371-36.000.

Sun Microsytems, Inc.: *See—*
Zhou, Chang-Guo; and Rice, Daniel S., 5,798,753, Cl. 345-154.000.

Suncast Corporation: *See—*
Tisbo, Thomas A.; Whitehead, Stephen P.; and Moon, Brian, 5,797,424, Cl. 137-355.270.

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Seshadri, Nambirajan; and Sundberg, Carl-Erik Wilhelm, 5,799,013, Cl. 370-342.000.

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Misawa, Rintaro, 5,797,606, Cl. 280-5.220.

SUPERBA Societe Anonyme a Directoire et Conseil de Surveillance: *See—*
Enderlin, Robert, 5,797,552, Cl. 242-157.00R.

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James, Kenneth J.; and Waibel, Brian J., 5,797,719, Cl. 417-46.000.

Surma, Jeffrey E.: *See—*
Titus, Charles H.; Cohn, Daniel R.; and Surma, Jeffrey E., 5,798,497, Cl. 219-121.370.

SurVivaLink Corporation: *See—*
Olson, Kenneth F.; Gilman, Byron L.; and Anderson, Katherine H., 5,797,969, Cl. 607-5.000.

Suur-Askola, Seppo: *See—*
Vairio, Olavi; Mäenpää, Jarmo; and Suur-Askola, Seppo, 5,798,490, Cl. 187-394.000.

Suwa, Terunori: *See—*
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Suzaki, Masafumi: *See—*
Nakano, Masaru; Suzaki, Masafumi; Akasaki, Tetsuro; and Saito, Masahiko, 5,799,235, Cl. 399-302.000.

Suzuki, Akio: *See—*
Takahashi, Kazuyoshi; Masuda, Kazuaki; Takayanagi, Yoshiaki; Suzuki, Akio; Kurata, Mitsuru; Abe, Tsutomu; Karita, Seiichiro; Tajika, Hiroshi; Koitabashi, Noribumi; Uchida, Haruo; Yano, Kentaro; Sugimoto, Hitoshi; and Matsubara, Miyuki, 5,798,775, Cl. 347-33.000.

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Koike, Masaki; Suzuki, Atsushi; Tsutsumi, Daisuke; and Ichikawa, Masayoshi, 5,798,158, Cl. 428-36.900.

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Suzuki, Izumi: *See—*
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Suzuki, Kanji, to Star Micronics, Co., Ltd. Carriage driver having a distortion prohibiting mechanism. 5,797,691, Cl. 400-320.000.

Suzuki, Koubun: *See—*
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Suzuki, Masakazu: *See—*
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Suzuki, Masatoshi; Tanaka, Hideaki; and Matsushima, Yuichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Optical pulse generator. 5,798,856, Cl. 359-181.000.

Suzuki, Masatoshi: *See—*
Shibayama, Atsushi; Suzuki, Masatoshi; and Fujita, Takanori, 5,798,871, Cl. 359-684.000.

Suzuki, Michio: *See—*
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Suzuki Motor Corporation: *See—*
Okamoto, Yuichi; Higashi, Kenichi; Akashiba, Masahiko; Ijima, Yoshitaka; and Matsunami, Kazuhiko, 5,798,702, Cl. 340-636.000.
Takanishi, Toshiaki; Kimura, Yuzuru; Hara, Nobuhiko; and Katsura, Shingo, 5,797,642, Cl. 296-37.300.

Suzuki, Norihiko: *See—*
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Suzuki, Noriko: *See—*
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Suzuki, Norio; Fujimori, Koichi; Hasegawa, Yusuke; Munakata, Hiroki; Akazaki, Shusuke; and Yoshizaki, Masuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system having function of after-start lean-burn control for internal combustion engines. 5,797,369, Cl. 123-436.000.

Suzuki, Osamu: *See—*
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Suzuki, Sadakatsu: *See—*
Sato, Takehisa; Ueda, Hironari; Kuribayashi, Toshiaki; Asano, Satoshi; Niwa, Tadashi; Ueno, Hiroshi; Fujii, Takeaki; and Suzuki, Sadakatsu, 5,798,054, Cl. 252-68.000.

Suzuki, Shigeru: *See—*
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Suzuki, Shin'ichi: *See—*
Kotoh, Satoru; Sakuma, Kiyoshi; Yoshida, Takayuki; Sano, Hiromi; Aoki, Katuyuki; Suzuki, Shin'ichi; Koizumi, Hideaki; Yamamoto, Kaoru; Matsushita, Kunio; Unno, Kenichi; and Oguma, Tomoko, 5,797,792, Cl. 454-320.000.

Suzuki, Shintaro, to Doheny Eye Institute. Nucleic acids encoding protocadherin. 5,798,224, Cl. 435-69.100.

Suzuta, Toshihiko: *See—*
Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; Kuramoto, Seiji; and Uchiyama, Naoki, 5,797,931, Cl. 606-151.000.

Svensson, John E.: *See—*
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Svoboda, George J., to S.C. Johnson & Son, Inc. Glass cleaner with adjustable rheology. 5,798,324, Cl. 510-182.000.

Swabb, Stephen R.: *See—*
Mengüc, M. Pinar; Walcott, Bruce L.; Swabb, Stephen R.; and Marra, Michael A., III, 5,797,736, Cl. 431-75.000.

Swanson, David K.; Panescu, Dorin; Whayne, James G.; Owens, Patrick M.; and Thompson, Russell B., to EP Technologies, Inc. Tissue heating and ablation systems and methods using porous electrode structures with electrically conductive surfaces. 5,797,903, Cl. 606-34.000.

Swanson, David K.: *See—*
Fleischman, Sidney D.; Thompson, Russell B.; Panescu, Dorin; and Swanson, David K., 5,797,905, Cl. 606-41.000.

Swanson, Paul S.; McDonald, William M.; and Coffman, Kenneth L., to Intermec Corporation. Scanner with direct pixel accessing from multiple pixel memory array. 5,798,509, Cl. 235-462.000.

Swanson, Steven: *See—*
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Swart, Mark A.: *See—*
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Swartz, Conrad Melton. Betaxolol hydrochloride for the treatment of anxiety disorders. 5,798,393, Cl. 514-652.000.

Swartz, Jerome: *See—*
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Swetly, Peter: *See—*
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Swider, Richard C.; and Webster, Steven A., to Lakefield Research Ltd. Measuring free acid concentration in solution. 5,798,268, Cl. 436-100.000.

Swindlehurst, Neil Andrew, to Smiths Industries PLC. Electrical components and apparatus. 5,797,760, Cl. 439-289.000.

Swiszcz, Paul G.: *See—*
Colson, Wendell B.; Swiszcz, Paul G.; and Anthony, James M., 5,797,442, Cl. 160-236.000.

Symbios, Inc.: *See—*
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Symbiosis Corporation: *See—*
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Symbol Technologies, Inc.: *See—*
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Li, Yajun; and Barkan, Edward, 5,798,515, Cl. 235-472.000.

Synacom Technology, Inc.: *See—*
Gallagher, Michael D.; Carlson, Kirk D.; Jeffery, Stuart S.; Lee, Ming J.; Grencions, Vilnis G.; and Snyder, Randall A., 5,799,084, Cl. 380-23.000.

Syntex (U.S.A.) Inc.: *See—*
Krstenansky, John L.; Nestor, John J.; Ho, Teresa H.; Vickery, Brian H.; and Bach, Chinh T., 5,798,225, Cl. 435-69.400.

Systems, Machines, Automation Components, Corporation: *See—*
Neff, Edward A., 5,798,582, Cl. 310-13.000.

Szalecki, Wojciech: *See—*

Haugland, Richard P.; and Szalecki, Wojciech, 5,798,276, Cl. 436-546.000.
Szkopek, Lech A.; and Kind, Douglas A., to Xinex Networks Inc. Network for multimedia asynchronous transfer mode digital signal transmission and components thereof. 5,799,041, Cl. 375-259.000.
Szturma, Shawn W.: *See*—
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T-Flux Pty Limited: *See*—
Lillington, Paul Evan; and Lillington, David John, 5,798,591, Cl. 310-164.000.
T/R Systems: *See*—
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Tabata, Yasuhiro: *See*—
Sakano, Yukio; Tabata, Yasuhiro; and Nomura, Nobufumi, 5,798,844, Cl. 358-405.000.
Tabata, Yoshiaki: *See*—
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Tabei, Ryoichi: *See*—
Tanaka, Takao; Mukai, Masanori; Nagaoka, Takeshi; Nakamura, Kazuo; Hirooka, Takaaki; Shiota, Takuji; Kakiuchi, Yoshihiro; Tabei, Ryoichi; and Matsuo, Kouichi, 5,799,288, Cl. 705-43.000.
Tabuchi, Daisuke; Shoji, Wataru; and Nakajima, Ichiro, to Sofmap Future Design, Inc. Bossless architecture and digital cell technology for computer programs. 5,799,181, Cl. 395-590.000.
Tachibana, Katsumi: *See*—
Ichikawa, Takanori; Kuwaki, Tomoaki; Matsuki, Shigeru; and Tachibana, Katsumi, 5,798,274, Cl. 436-518.000.
Tachihara, Masayoshi; and Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Driving method ink jet head. 5,798,772, Cl. 347-11.000.
Tachihara, Satoru; Ogawa, Ryota; and Yoshino, Katsuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Apparatus for correcting scanning position in optical scanner. 5,798,851, Cl. 359-18.000.
Tachiki, Hiroshi: *See*—
Abe, Takuya; Toizumi, Kiyoshi; Shimazu, Fumio; Yoshimoto, Hiromu; Yamauchi, Kouichi; Tachiki, Hiroshi; Oikawa, Tomohiro; Iwakura, Yoshie; and Katoh, Atsuyuki, 5,799,225, Cl. 399-66.000.
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Tada, Yasuo; Yamakawa, Tomoya; and Uramachi, Hiroyuki, to Mitsubishi Denki Kabushiki Kaisha. Air intake system for internal combustion engine. 5,797,380, Cl. 123-572.000.
TAEC Corporation: *See*—
Urano, Kazuaki; Maehara, Yoshimi; Ohkubo, Hiroshi; and Miyamoto, Takashi, 5,798,899, Cl. 360-132.000.
Tagawa, Takao: *See*—
Yoshida, Yasuhiro; Takahama, Kengo; and Tagawa, Takao, 5,798,756, Cl. 345-179.000.
Tagawa, Yukio, to Nissan Motor Co., Ltd. Anti-skid control braking system for four-wheel drive vehicle with feature of determination of drive state. 5,797,664, Cl. 303-190.000.
Tagliaferri, Roberto; and Cardinali, Paolo, to I.M.A. Industria Macchine Automatiche S.p.A. Method for closing a filter bag for infusible products and for connecting a tagged thread thereto. 5,797,243, Cl. 53-413.000.
Taguchi, Hiroaki: *See*—
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Taherzadeh, Mesbah, to Pacific Pool Water Products Ltd. Feed method and apparatus for fish farms. 5,797,348, Cl. 119-230.000.
Taiho Pharmaceutical Co., Ltd.: *See*—
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Taiwan Semiconductor Manufacturing Co., Ltd.: *See*—
King, Ming-Chu; Chen, Shih-Shiung; and Chao, Ying-Chen, 5,798,192, Cl. 430-5.000.
Tajika, Hiroshi: *See*—
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Ye, Jun; Pease, Roger Fabian Wedgwood; and Takac, Michael T., 5,798,947, Cl. 361-589.000.
Takahama, Kengo: *See*—
Yoshida, Yasuhiro; Takahama, Kengo; and Tagawa, Takao, 5,798,756, Cl. 345-179.000.
Takahashi, Eiji; and Muramoto, Hiroo, to Nippon Soda Co., Ltd. Sulfonium salt-containing compounds and initiators of polymerization. 5,798,396, Cl. 522-15.000.
Takahashi, Eisaku: *See*—
Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.
Takahashi, Hideto: *See*—
Sakata, Soichiro; Takahashi, Hideto; and Sato, Katsumi, 5,798,455, Cl. 73-64.480.
Takahashi, Hiroshi, to Ricoh Company, Ltd. Book page document image reading apparatus having a page turning mechanism. 5,798,841, Cl. 358-296.000.
Takahashi, Kazuyoshi; Masuda, Kazuaki; Takayanagi, Yoshiaki; Suzuki, Akio; Kurata, Mitsuru; Abe, Tsutomu; Karita, Seiichiro; Tajika, Hiroshi; Koitabashi, Noribumi; Uchida, Haruo; Yano, Kentaro; Sugimoto, Hitoshi; and Matsubara, Miyuki, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 5,798,775, Cl. 347-33.000.
Takahashi, Mitsuo, to Seikoh Giken Co., Ltd. Stamper plate mounting device of an injection mold for making an optical disc substrate. 5,798,122, Cl. 425-3.000.
Takahashi, Tsukasa: *See*—
Tamura, Yuji; Itou, Hiroyuki; Takahashi, Tsukasa; Shima, Michikazu; Kawasaki, Yumiko; and Yamane, Kazuo, 5,798,857, Cl. 357-189.000.
Takahashi, Tsutao: *See*—
Shibasaki, Mitsuhiro; Kubo, Hiroaki; Mori, Akira; Hatakeda, Hachiro; Takahashi, Tsutao; and Nakamura, Tetsuo, 5,797,465, Cl. 175-108.000.
Takahashi, Tsutomu, to Pioneer Electronic Corporation. Wavelet transform subband coding with frequency-dependent quantization step size. 5,798,794, Cl. 348-398.000.
Takahashi, Yuji; Kawamura, Ichiro; Kashihara, Toshiaki; and Hata, Yoshio, to Matsushita Electric Industrial Co., Ltd. Disk cartridge with an inclined groove. 5,799,009, Cl. 369-291.000.
Takahasi, Kiyosi: *See*—
Ueda, Hideyuki; Seki, Hiroshi; Kuwahara, Kenji; Murai, Mikio; Takahasi, Kiyosi; Odagiri, Masaru; and Okazaki, Sadayuki, 5,798,135, Cl. 427-130.000.
Takaishi, Yoshihiro: *See*—
Ohya, Shuichi; Sakao, Masato; Takaishi, Yoshihiro; Kajiyana, Kiyonori; Akimoto, Takeshi; Oguro, Shizuo; and Shishiguchi, Seiichi, 5,798,544, Cl. 257-296.000.
Takaku, Tsutomu: *See*—
Tanaka, Koichi; Tsuchiya, Toshihiro; Morita, Koji; and Takaku, Tsutomu, 5,797,789, Cl. 451-289.000.
Takami, Junichi, to Victor Company of Japan, Ltd. Acoustic model generating method for speech recognition. 5,799,277, Cl. 704-256.000.
Takanaka, Yasuyuki: *See*—
Hiramatsu, Akira; Tanaka, Kiyoharu; and Takanaka, Yasuyuki, 5,798,773, Cl. 347-19.000.
Takanishi, Toshiaki; Kimura, Yuzuru; Hara, Nobuhiko; and Katsura, Shingo, to Suzuki Motor Corporation. Luggage compartment construction. 5,797,642, Cl. 296-37.300.
Takano, Fumitomo: *See*—
Ueyama, Atsushi; Tsukada, Yoshinari; and Takano, Fumitomo, 5,798,648, Cl. 324-548.000.
Takasago Thermal Engineering Co., Ltd.: *See*—
Sakata, Soichiro; Takahashi, Hideto; and Sato, Katsumi, 5,798,455, Cl. 73-64.480.
Takashima, Jiro. Apparatus for releasing congested prostate fluid. 5,797,950, Cl. 606-197.000.
Takayanagi, Yoshiaki: *See*—
Takahashi, Kazuyoshi; Masuda, Kazuaki; Takayanagi, Yoshiaki; Suzuki, Akio; Kurata, Mitsuru; Abe, Tsutomu; Karita, Seiichiro; Tajika, Hiroshi; Koitabashi, Noribumi; Uchida, Haruo; Yano, Kentaro; Sugimoto, Hitoshi; and Matsubara, Miyuki, 5,798,775, Cl. 347-33.000.
Takebayashi, Hiroyuki: *See*—
Mitamura, Hisashi; Ureshino, Kashiro; Takebayashi, Hiroyuki; Onishi, Hisaaki; and Sarumaru, Shogo, 5,798,123, Cl. 425-29.000.
Takebayashi, Yuji: *See*—
Miyadera, Kazutaka; Yamada, Yuji; Takebayashi, Yuji; and Akiyama, Shinichi, 5,798,213, Cl. 435-7.400.
Takeda, Tomoyuki: *See*—
Ono, Takeshi; Yoshida, Takehiro; Kobayashi, Makoto; Takeda, Tomoyuki; Wada, Satoshi; Yokoyama, Minoru; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; and Yamada, Masakatsu, 5,798,789, Cl. 347-186.000.
Takeda, Toshihiko: *See*—
Mukohyama, Atsushi; and Takeda, Toshihiko, 5,798,188, Cl. 429-34.000.
Takefman, Earl: *See*—
Lubell, Alan; Peters, Thomas S.; and Takefman, Earl, 5,797,805, Cl. 473-266.000.
Takehara, Takao; and Norizuki, Masashi, to Minebea Co., Ltd. Circuit employing both a step-up chopper and an inverter. 5,798,616, Cl. 315-247.000.
Takemasa, Masami: *See*—
Ohi, Shinichi; Umegaki, Fuhito; Takemasa, Masami; Haraguchi, Tatsuo; Gunji, Yoshihide; and Ohsawa, Hiroshi, 5,798,589, Cl. 310-90.000.
Takemoto, Takatoshi; and Tohge, Kazuo, to Kabushiki Kaisha Ace Denken. Gaming facilities for player to play game by remote operation. 5,797,795, Cl. 463-42.000.
Takenouchi, Shigeki: *See*—
Matsuura, Katsumi; and Takenouchi, Shigeki, 5,798,200, Cl. 430-126.000.
Takeuchi, Hiroaki, to Sharp Kabushiki Kaisha. Rotary head type magnetic recording reproducing apparatus. 5,798,894, Cl. 360-109.000.
Takeuchi, Katsuyuki: *See*—
Takeuchi, Yukihisa; Nanataki, Tsutomu; Masumori, Hideo; and Takeuchi, Katsuyuki, 5,798,168, Cl. 428-174.000.
Takeuchi, Tomio: *See*—
Ishizuka, Masaaki; Kawazu, Masaji; Katsumi, Toshiaki; Fuse, Yoshihide; Maeda, Kenji; and Takeuchi, Tomio, 5,798,387, Cl. 514-551.000.

Takeuchi, Yuichi: *See*—
Onuki, Masahide; Kinuhata, Satoru; Takeuchi, Yuichi; Miyamoto, Yoshiaki; and Yamaguchi, Tetsuo, 5,798,833, Cl. 356-256.000.

Takeuchi, Yukihisa; Nanataki, Tsutomu; Masumori, Hideo; and Takeuchi, Katsuyuki, to NGK Insulators, Ltd. Method of producing ceramic diaphragm structure having convex diaphragm portion and diaphragm structure produced by the same method. 5,798,168, Cl. 428-174.000.

Taki, Yukio: *See*—
Murata, Atsuya; and Taki, Yukio, 5,797,825, Cl. 483-53.000.

Takimoto, Akio: *See*—
Tsutsui, Hiroshi; Komori, Kazunori; Nishiyama, Kazuhiro; Kuratomi, Yasunori; Takimoto, Akio; Akiyama, Koji; and Mizuguchi, Shinichi, 5,798,806, Cl. 349-29.000.

Takita, Hiroki: *See*—
Minematsu, Isao; Hirano, Koji; and Takita, Hiroki, 5,798,749, Cl. 345-123.000.

Talanian, Robert Vincent: *See*—
Albrecht, Hans-Peter; Böhm, Hans-Joachim; Brady, Kenneth Dale; Eckard, Peter; Ritter, Kurt; Talanian, Robert Vincent; and Walker, Nigel, 5,798,247, Cl. 435-212.000.

Talhi, Abdelhafid: *See*—
Sawan, Samuel P.; Talhi, Abdelhafid; and Taylor, Craig M., 5,798,438, Cl. 528-483.000.

Talk Web Inc.: *See*—
Krane, Leonard, 5,799,063, Cl. 379-67.000.

Taller, Myron S. Combustion engine with adjustable cam and lubrication means. 5,797,362, Cl. 123-90.170.

Tamanoi, Yoshihito: *See*—
Ohba, Ryoji; and Tamanoi, Yoshihito, 5,798,459, Cl. 73-587.000.

Tamehiro, Hiroshi; Asahi, Hitoshi; Hara, Takuya; and Terada, Yoshio, to Nippon Steel Corporation. Weldable high strength steel having excellent low temperature toughness. 5,798,004, Cl. 148-336.000.

Tamura, Hiroki: *See*—
Iida, Kazumasa; Miyamoto, Katsuhiko; Kamura, Hitoshi; Tamura, Hiroki; and Kojima, Atsuyoshi, 5,797,367, Cl. 123-295.000.

Tamura, Naomi: *See*—
Kitagawa, Makoto; Kageyama, Seiji; Matsumoto, Satoru; Shimakawa, Takuya; and Tamura, Naomi, 5,799,206, Cl. 395-856.000.

Tamura, Shigeharu: *See*—
Sato, Yoshiyuki; Tamura, Shigeharu; Mochizuki, Shoichi; and Mihara, Toshiyuki, 5,798,134, Cl. 427-126.600.

Tamura, Yasuyuki: *See*—
Tachihara, Masayoshi; and Tamura, Yasuyuki, 5,798,772, Cl. 347-11.000.

Tamura, Yuji; Itou, Hiroyuki; Takahashi, Tsukasa; Shima, Michikazu; Kawasaki, Yumiko; and Yamane, Kazuo, to Fujitsu Limited. Auxiliary-signal transmission system. 5,798,857, Cl. 357-189.000.

Tamura, Yukio; Sakae, Mitsuhisa; Koyanagi, Satoru; and Nakayama, Toru, to Komatsu Ltd. Self-propelled crushing machine. 5,797,548, Cl. 241-35.000.

Tanaami, Masato: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.

Tanaka, Hideaki: *See*—
Suzuki, Masatoshi; Tanaka, Hideaki; and Matsushima, Yuichi, 5,798,856, Cl. 359-181.000.

Tanaka, Hironao: *See*—
Ogura, Mitsuo; and Tanaka, Hironao, 5,798,080, Cl. 264-572.000.

Tanaka, Hiroshi; and Hosoya, Kazuki, to Sanden Corporation. Method of making a heat exchanger. 5,797,184, Cl. 29-890.053.

Tanaka, Hitoshi; and Fujita, Shunji, to Yamatake-Honeywell Co., Ltd. Air conditioning control unit. 5,797,717, Cl. 417-14.000.

Tanaka, Kazuhide: *See*—
Okada, Michiya; Tanaka, Kazuhide; Yuasa, Toyotaka; Matsumoto, Toshimi; Aihara, Katsuzo; and Matsuda, Shinpei, 5,798,312, Cl. 505-230.000.

Tanaka, Kazuto: *See*—
Udagawa, Tetsuo; Kakizawa, Haruo; Nagata, Kouichi; and Tanaka, Kazuto, 5,798,863, Cl. 359-557.000.

Tanaka, Kiyoharu: *See*—
Hiramatsu, Akira; Tanaka, Kiyoharu; and Takanaka, Yasuyuki, 5,798,773, Cl. 347-19.000.

Tanaka, Koichi; Tsuchiya, Toshihiro; Morita, Koji; and Takaku, Tsutomu, to Shin-Etsu Handotai Co., Ltd. Polishing system. 5,797,789, Cl. 451-289.000.

Tanaka, Masahiro: *See*—
Sakuma, Susumu; and Tanaka, Masahiro, 5,799,045, Cl. 375-303.000.

Tanaka, Masayuki: *See*—
Tokunaga, Atsuto; Sawamura, Yasushi; and Tanaka, Masayuki, 5,798,400, Cl. 523-443.000.

Tanaka, Noriko; Uranaka, Hiroshi; Uesugi, Akio; and Hamada, Takashi, to Matsushita Electric Industrial Co., Ltd. Message receiver. 5,799,023, Cl. 371-5.100.

Tanaka, Satoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for finding cause of abnormal event in support of plant operation. 5,799,294, Cl. 706-46.000.

Tanaka, Sumio: *See*—
Shimizu, Mitsuru; and Tanaka, Sumio, 5,798,964, Cl. 365-145.000.

Tanaka, Taeko, to Canon Kabushiki Kaisha. Automatic focusing device capable of detecting panning. 5,798,793, Cl. 348-347.000.

Tanaka, Takao; Mukai, Masanori; Nagaoka, Takeshi; Nakamura, Kazuo; Hirooka, Takaaki; Shiota, Takuji; Kakiuchi, Yoshihiro; Tabei, Ryoichi; and Matsuo, Kouichi, to Fujitsu Limited. Remaining money management system with cash demand prediction. 5,799,288, Cl. 705-43.000.

Tanaka, Takeshi; Nagae, Yoshiharu; and Konishi, Nobutake, to Hitachi, Ltd. Liquid crystal display apparatus. 5,798,744, Cl. 345-92.000.

Tanaka, Yoshiharu: *See*—
Konishi, Yoshito; Inoue, Yoshiyuki; Tanaka, Yoshiharu; and Tanii, Junichi, 5,799,223, Cl. 396-538.000.

Tandem Computer, Inc.: *See*—
Mosher, Malcolm, Jr., 5,799,322, Cl. 707-202.000.

Tandem Computers, Inc.: *See*—
Mosher, Malcolm, Jr.; and Bowring, Gordon J., 5,799,323, Cl. 707-202.000.

Tang, Edde Tin-Shek: *See*—
Brant, William A.; Nielson, Michael E.; and Tang, Edde Tin-Shek, 5,799,200, Cl. 395-750.080.

Tang, Peng Cho; and McMahon, Gerald, to Sugen Inc. Methods of inhibiting phosphatase activity and treatment of disorders associated therewith. 5,798,374, Cl. 514-369.000.

Tani, Tomofune: *See*—
Iwasa, Shoichi; and Tani, Tomofune, 5,798,545, Cl. 257-301.000.

Tanida, Toshifumi: *See*—
Nakayasu, Hirofumi; Kaiju, Yoshihiko; Kameya, Kotaro; Shimura, Takaki; Iida, Atsuo; and Tanida, Toshifumi, 5,798,779, Cl. 347-46.000.

Tanigawa, Fumiyoshi, to Sumitomo Wiring Systems, Ltd. Lamp mounting device. 5,797,766, Cl. 439-419.000.

Taniguchi, Shigeru: *See*—
Murata, Hideo; and Taniguchi, Shigeru, 5,798,005, Cl. 148-421.000.

Taniguchi, Tetsuo; Tsuji, Toshihiko; and Nagayama, Tadashi, to Nikon Corporation. Projection exposure apparatus having function of detecting intensity distribution of spatial image, and method of detecting the same. 5,798,838, Cl. 356-401.000.

Taniguchi, Tomohiko; and Johnson, Mark, to Fujitsu Limited. Speech coding and decoding system. 5,799,131, Cl. 395-2.130.

Taniguchi, Toshihiko: *See*—
Tanii, Junichi; Ootsuka, Hiroshi; Taniguchi, Toshihiko; Shimada, Takahisa; and Tsuji, Sadafusa, 5,798,625, Cl. 318-541.000.

Tanii, Junichi; Ootsuka, Hiroshi; Taniguchi, Toshihiko; Shimada, Takahisa; and Tsuji, Sadafusa, to Minolta Camera Co., Ltd. DC motor and controlling system therefor. 5,798,625, Cl. 318-541.000.

Tanii, Junichi: *See*—
Konishi, Yoshito; Inoue, Yoshiyuki; Tanaka, Yoshiharu; and Tanii, Junichi, 5,799,223, Cl. 396-538.000.

Tanikawa, Keizo: *See*—
Ikegawa, Ruriko; Imada, Teruaki; Nakamura, Norifumi; Tanikawa, Keizo; and Tsuruzoe, Nobutomo, 5,798,357, Cl. 514-252.000.

Tanioka, Satoshi; Murata, Shizuo; Kono, Makoto; and Hirano, Masayuki, to Chisso Corporation; Iinuma Gauge Mfg. Co., Ltd.; and Hamamatsu Photonics K.K. Method for treating an aligning film for a liquid crystal display element and a method for preparing a liquid crystal display element. 5,798,810, Cl. 349-123.000.

Tanner, Walter Keisler, Jr., to Fallon Luminous Products Corp. Spring clip for neon bulbs. 5,797,675, Cl. 362-396.000.

Tanoi Mfg. Co., Ltd.: *See*—
Sawabe, Teruo; Yokoyama, Isao; and Sato, Kazutoshi, 5,797,710, Cl. 408-222.000.

Tao, Yang, to Agri-Tech, Inc. Method for calibrating a color sorting apparatus. 5,799,105, Cl. 382-167.000.

Taraci, Brian, to Semicoa Semiconductors. Method of batch testing surface mount devices using a substrate edge connector. 5,798,652, Cl. 324-754.000.

Tarara, Thomas E.: *See*—
Trevino, Leo A.; Schutt, Ernest George; Klein, David H.; Tarara, Thomas E.; Weers, Jeffry G.; and Kabalnov, Alexey, 5,798,091, Cl. 424-9.520.

Tarr, Phillip I.; Bilge, Sima S.; Besser, Thomas E.; and Vary, James C., Jr., to Children's Hospital and Medical Center; University of Washington; and Washington State University Research Foundation. *Escherichia coli* O157:H7 epithelial adhesin. 5,798,260, Cl. 435-252.300.

Tassotti, Gianluca: *See*—
Milocco, Claudio; and Tassotti, Gianluca, 5,797,996, Cl. 134-18.000.

Tata, Giovanni: *See*—
Griswold, Michael R.; Guillerm, Thierry; Jiang, Wayne; Mossman, Bruce; Rogers, Spencer; and Tata, Giovanni, 5,797,753, Cl. 434-322.000.
Griswold, Michael R.; Guillerm, Thierry; Jiang, Wayne; Mossman, Bruce; Rogers, Spencer; and Tata, Giovanni, 5,797,754, Cl. 434-322.000.

Tatara, Yusuke: *See*—
Kimura, Eisuke; Yano, Toru; Hanada, Kohei; Tatara, Yusuke; Haga, Takashi; and Hayashi, Masanori, 5,797,370, Cl. 123-478.000.

Tateno, Masao: *See*—
Ishikawa, Susumu; Tateno, Masao; and Tomita, Koji, 5,797,735, Cl. 418-151.000.

Tavazzani, Claudio: *See*—
Masini, Marco; Tavazzani, Claudio; and Boiocchi, Stefania, 5,798,672, Cl. 330-251.000.

Taylor, Craig M.: *See*—

Sawan, Samuel P.; Talhi, Abdelhafid; and Taylor, Craig M., 5,798,438, Cl. 528-483.000.

Taylor, David A.: *See*—
Fahey, James D.; McGrath, Michael C.; and Taylor, David A., 5,798,888, Cl. 360-99.080.

Taylor, Dean A., to Generation II Orthotics, Inc. Multi-purpose brace. 5,797,864, Cl. 602-26.000.

Taylor, James E.; Bargenquest, Brian M.; and Carlson, Richard W., to Dahlgren USA, Inc. Liquid applicator for cut sheets. 5,797,318, Cl. 101-148.000.

Taylor Made Golf Company, Inc.: *See*—
Rose, Dave; and Priest, William A., 5,797,176, Cl. 29-527.500.

Taylor, Paul M.: *See*—
Flaherty, Dennis K.; Gordon, Russell P.; Taylor, Paul M.; and Zielinski, Frank D., 5,797,974, Cl. 55-482.000.

Taylor, Timothy J.; and Richter, Alan F., to Reckitt & Colman Inc. Germicidal liquid laundry detergent compositions. 5,798,329, Cl. 510-384.000.

TDK Corporation: *See*—
Araki, Satoru; Shinoura, Osamu; Sato, Yuuichi; and Honda, Yuuji, 5,798,896, Cl. 360-113.000.
Shima, Motohiko; and Ikebe, Masaru, 5,797,555, Cl. 242-347.000.

Tecumseh Products Company: *See*—
Buchholz, Brian S., 5,797,180, Cl. 29-888.100.

Tedea Huntleigh Intl. Ltd.: *See*—
Goichman, Tal; and Kalmikov, Leon, 5,798,487, Cl. 177-83.000.

Teepack Spezialmaschinen GmbH & Co.: *See*—
Nippes, Helmut; and Funda, Friedhelm, 5,797,244, Cl. 53-446.000.

Tehim, Ashok; Fu, Jian-Min; and Rakhit, Sumanas, to Allelix Biopharmaceuticals, Inc. Dopamine receptor ligands. 5,798,350, Cl. 514-212.000.

Teiga, Michael Timothy: *See*—
Simon, Merlin Emmet; Teiga, Michael Timothy; and Lamb, Mark Edward, 5,797,458, Cl. 172-2.000.

Teitel, Michael A., to VPL Research Inc. Virtual image display device. 5,798,739, Cl. 345-8.000.

Teitelbaum, Neil: *See*—
Colbourne, Paul; Ip, Joseph; and Teitelbaum, Neil, 5,798,859, Cl. 359-247.000.

Tekawa, Masafumi, to NEC Corporation. Process and apparatus for ultraviolet decomposition of waste water containing organic substances. 5,798,047, Cl. 210-739.000.

Tekton: *See*—
Kemeny, Zoltan A., 5,797,228, Cl. 52-167.700.

Tekulve, Kurt J., to Cook Incorporated. Helical embolization coil. 5,797,953, Cl. 606-200.000.

Telefonaktiebolaget LM Ericsson: *See*—
Blau, Staffan; Eneroth, Göran; and Carlsund, Peter, 5,799,153, Cl. 395-200.530.
Forsman, Bertil S., 5,797,275, Cl. 62-175.000.

Telefonica de Espana S.A.: *See*—
Canton Gongora, Antonio; Cruz Fernandez, Carlos Jesús; Munagorri Enriquez, José Maria; and Rayo Ortigüela, Juan Carlos, 5,797,568, Cl. 248-122.100.

Telequip Corporation: *See*—
Jones, Michael F.; and Stump, Paul O., 5,797,476, Cl. 194-346.000.

Ten Eycke, David R.: *See*—
Holbeche, George L.; Moore, Bernard C.; Ten Eycke, David R.; and Williams, Carl D., 5,798,910, Cl. 361-809.000.

Teplitsky, Mark D.: *See*—
Li, Qi; Michels, William J.; Parrella, Ronald D.; Riley, Gilbert N., Jr.; Teplitsky, Mark D.; and Fleshler, Steven, 5,798,318, Cl. 505-501.000.

Terada, Makoto; Iyoda, Isao; Kobayashi, Yoshiyuki; and Iwamaru, Akifumi, to Mitsubishi Denki Kabushiki Kaisha. Load management and control apparatus. 5,798,634, Cl. 323-207.000.

Terada, Yoshio: *See*—
Tamehiro, Hiroshi; Asahi, Hitoshi; Hara, Takuya; and Terada, Yoshio, 5,798,004, Cl. 148-336.000.

Teraoka, Hirohito: *See*—
Hayashida, Hirotaka; Teraoka, Hirohito; Ono, Tomoyuki; Soeda, Tsuyoshi; and Yamamoto, Masaaki, 5,798,189, Cl. 429-101.000.

Terasaki, Omi: *See*—
Musha, Toshimitsu; and Terasaki, Omi, 5,797,853, Cl. 600-544.000.

Terashita, Takaaki, to Fuji Photo Film Co. Ltd. Photographic printer and printing method. 5,798,511, Cl. 235-462.000.

Teratani, Hiroyuki, to Bridgestone Corporation. Foamed rubber compositions for tires and pneumatic tire using the same. 5,798,009, Cl. 152-548.000.

Terauchi, Kenji, to Nissan Motor Co., Ltd. Apparatus for diagnosing low voltage battery. 5,798,629, Cl. 320-15.000.

Terauchi, Shin: *See*—
Suenaga, Tatsuo; Nakagawa, Hiroaki; Terauchi, Shin; Kikuchi, Takeo; Aiba, Shinnosuke; Kobayashi, Mikio; Katsuta, Yutaka; Ago, Kenji; Kosuge, Katsumi; Matsubara, Yasuyuki; Tanaami, Masato; Sugishita, Shunichi; Ikeda, Hideki; Furuya, Toshio; Akihama, Shigeyuki; and Arai, Takahiro, 5,798,011, Cl. 156-71.000.

Terawaki, Fumikazu, to Fanuc, Ltd. Robot controlling method and apparatus using laser sensor. 5,799,135, Cl. 395-93.000.

Teremy, Paul; and Meyers, Mark M., to Eastman Kodak Company. Scene intensity measuring and illumination source detection apparatus. 5,799,216, Cl. 396-225.000.

Terrapin Technologies, Inc.: *See*—
Kauvar, Lawrence M.; and Villar, Hugo O., 5,798,275, Cl. 436-518.000.

Terray Corporation: *See*—
Runciman, John; Agnew, Samuel G.; and Leighton, Ross Kenneth, 5,797,912, Cl. 606-69.000.

Terumo Kabushiki Kaisha: *See*—
Obitsu, Hideshi, 5,797,857, Cl. 600-585.000.

Tessera, Inc.: *See*—
Faraci, Tony; DiStefano, Thomas H.; and Smith, John W., 5,798,286, Cl. 438-113.000.

Testa, Rodolfo: *See*—
Leonardi, Amedeo; Motta, Gianni; Boi, Carlo; and Testa, Rodolfo, 5,798,362, Cl. 514-260.000.

Tetra Laval Holdings & Finance S.A.: *See*—
Ruh, Michael, 5,797,720, Cl. 414-788.200.

Texas Instruments Incorporated: *See*—
Di Zenzo, Maurizio; and Casalini, Romano, 5,798,962, Cl. 365-52.000.
Eng, Kian Teng; and Goh, Jing Sua, 5,798,564, Cl. 257-686.000.
Flaxl, Thomas, 5,798,709, Cl. 340-825.540.
Shiell, Jonathan H.; and Bondi, James Oliver, 5,799,180, Cl. 395-581.000.
Smayling, Michael C., 5,798,281, Cl. 438-14.000.
Smayling, Michael C.; and Anselm, Klaus A., 5,798,649, Cl. 324-551.000.

Textron Systems Corporation: *See*—
Kotidis, Petros Amestis; Cunningham, James Frederick; Gozewski, Paul Fred; Klimek, Daniel Edward; and Woodroffe, Jaime A., 5,798,835, Cl. 356-358.000.

Thai, Douglas, to Placo Toys International, Ltd. Double-barrel toy gun. 5,797,385, Cl. 124-66.000.

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Haak, Ronald P.; Gyory, J. Richard; and Theeuwes, Felix, 5,797,866, Cl. 604-20.000.

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Springer, Wolfgang; Baumgarten, Jörg; Kretschmer, Axel; Kölbl, Heinz; Löbberding, Antonius; Strube, Walter; and Thein, Peter, 5,798,265, Cl. 435-364.000.

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Villeneuve, Luc; Miller, Gérard; Bernier, Robert; Laurendeau, Claude; and Pal, Prabir Kumar, 5,798,523, Cl. 250-234.000.

Thereze, Jean-Marie, to Alcatel Converters. Synchronization device for a redundant power supply system. 5,798,578, Cl. 307-18.000.

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Bowman, Harry Frederick, 5,797,398, Cl. 128-692.000.

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Glaug, Frank Steven; Brunner, Michael Scott; Cochrane, Faith Eileen; Durrance, Debra Hartley; Olson, Christopher Peter; Schleinz, Robert Joseph; and Thiessen, Richard Harry, 5,797,892, Cl. 604-361.000.

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Simmons, Robert M.; and Thomason, Brian L., 5,797,177, Cl. 29-739.000.
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Fleischer, Harold C., III; Boeckman, Michael W.; Merin, S. James; Austin, Donald; and Thompson, Brenda, 5,799,073, Cl. 379-113.000.
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Catlow, John T.; Cohen, Marlene L.; Martinelli, Michael J.; Schaus, John M.; Swanson, Steven; Thompson, Dennis C.; and Wilson, Thomas M., 5,798,367, Cl. 514-322.000.
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Mawhirt, James A.; and Thompson, Nikki S., 5,797,940, Cl. 606-167.000.
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Thomsen, Joseph A., to Microchip Technology Incorporated. Progressive start-up charge pump and method therefor. 5,798,915, Cl. 363-60.000.
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George, John Barrett, 5,798,668, Cl. 327-538.000.
Truskalo, Walter; Knight, Peter Ronald; and Smith, Lawrence Edward, 5,798,621, Cl. 315-371.000.
Thur, Charles J.: *See—*
Vystrcil, Robert A.; Cipolla, Mark E.; Thur, Charles J.; Kalman, Jeffrey M.; and Wright, Michael F., 5,797,162, Cl. 15-323.000.
Tian, Qingsheng: *See—*
Anderson, Paul J.; and Tian, Qingsheng, 5,798,245, Cl. 435-194.000.
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Tim Kao, Nien Tsu. Accessory brake light system for automobile. 5,798,691, Cl. 340-479.000.
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Bauer, David J., deceased; and Bauer, John W., Jr., executor, 5,797,619, Cl. 280-728.300.
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Kobayashi, Hisamine; and Izuhara, Katsuhiro, 5,797,498, Cl. 209-636.000.
Tisbo, Thomas A.; Whitehead, Stephen P.; and Moon, Brian, to Suncast Corporation. Hose reel. 5,797,424, Cl. 137-355.270.
Titus, Charles H.; Cohn, Daniel R.; and Surma, Jeffrey E., to Battelle Memorial Institute. Tunable, self-powered integrated arc plasma-melter vitrification system for waste treatment and resource recovery. 5,798,497, Cl. 219-121.370.
Tochigi Fuji Sangyo Kabushiki Kaisha: *See—*
Ishikawa, Susumu; Tateno, Masao; and Tomita, Koji, 5,797,735, Cl. 418-151.000.
Toda, Haruki; and Kuyama, Hitoshi, to Kabushiki Kaisha Toshiba. Clock-synchronous semiconductor memory device and access method thereof. 5,798,979, Cl. 365-233.000.
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Togashi, Shigemi: *See—*
Yoshimura, Kotaro; Togashi, Shigemi; and Watanabe, Osamu, 5,798,777, Cl. 347-44.000.
Tognoli, Steve: *See—*
Halterman, Carl; Bonnici, Chuck; Mangini, Mike; and Tognoli, Steve, 5,797,270, Cl. 62-64.000.
Tohge, Kazuo: *See—*
Takemoto, Takatoshi; and Tohge, Kazuo, 5,797,795, Cl. 463-42.000.
Tohkairin, Koichi: *See—*
Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.
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Abe, Takuya; Toizumi, Kiyoshi; Shimazu, Fumio; Yoshimoto, Hiromu; Yamauchi, Kouichi; Tachiki, Hiroshi; Oikawa, Tomohiro; Iwakura, Yoshie; and Katoh, Atsuyuki, 5,799,225, Cl. 399-66.000.
Tokai Kogyo Kabushiki Kaisha: *See—*
Unuma, Sadao; and Hamamoto, Tohru, 5,797,530, Cl. 226-74.000.
Tokairin, Takashi: *See—*
Saiki, Masaru; Sasaki, Tsutomu; Ishizaki, Hirokazu; Okamura, Eiji; Gofuku, Tatsuya; Suzuki, Norihiko; Tohkairin, Koichi; Suzuki, Hirofumi; Endo, Kenji; Ono, Chihiro; Ohba, Kazuhide; Satoh, Atsushi; Takahashi, Eisaku; Tokairin, Takashi; Suda, Isao; and Ono, Takahiro, 5,798,885, Cl. 360-77.080.
Tokarz, Steven John, to Masco Corporation of Indiana. Faucet handle assembly. 5,797,422, Cl. 137-315.000.
Tokico, Ltd.: *See—*
Sekine, Chigaya; and Machida, Hiromi, 5,797,594, Cl. 267-64.170.
Tokunaga, Atsuto; Sawamura, Yasushi; and Tanaka, Masayuki, to Toray Industries, Inc. Epoxy resin compound. 5,798,400, Cl. 523-443.000.
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Aruga, Tsuyoshi; Mochizuki, Wataru; Akiyama, Shuji; Hosaka, Hisatomi; and Abe, Yuichi, 5,798,651, Cl. 324-754.000.
Tokyo Gas Co., Ltd.: *See—*
Yamamoto, Kazushige, 5,798,880, Cl. 359-857.000.
Tokyo Tanabe Company Limited: *See—*
Tomohisa, Matsushita; and Mitsuo, Hashimoto, 5,798,120, Cl. 424-482.000.
Tomatsu, Yutaka: *See—*
Kuroyanagi, Akira; Yamaoka, Masami; Okabe, Yoshifumi; Tsuzuki, Yasuaki; and Tomatsu, Yutaka, 5,798,550, Cl. 257-341.000.
Tomczak, Charles, to Goss Graphic Systems, Inc. Drive device for a folder in a printing press. 5,797,319, Cl. 101-216.000.
Tomihata, Kenji; Sasaki, Ikuo; and Suzuki, Masakazu, to Gunze Limited. Surgical suture and method for preparation thereof. 5,797,962, Cl. 606-228.000.
Tominaga, Michiaki: *See—*
Nakai, Satoru; Aihara, Koutoku; Mori, Hitomi; Tominaga, Michiaki; Adachi, Masakazu; Ichikawa, Hiroyuki; Akamatsu, Seiji; and Saito, Fumio, 5,798,358, Cl. 514-254.000.
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Tomita, Koji: *See—*
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Sannomiya, Hitoshi; Tomita, Takashi; Yamazaki, Shunpei; and Arai, Yasuyuki, 5,797,999, Cl. 136-258.0PC.
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Ono, Takeshi; Yoshida, Takehiro; Kobayashi, Makoto; Takeda, Tomoyuki; Wada, Satoshi; Yokoyama, Minoru; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; and Yamada, Masakatsu, 5,798,789, Cl. 347-186.000.
Tomohisa, Matsushita; and Mitsuo, Hashimoto, to Tokyo Tanabe Company Limited. Enteric granule-containing tablets. 5,798,120, Cl. 424-482.000.
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Satake, Satoru; and Tomoyasu, Yoshimasa, 5,798,466, Cl. 73-861.730.
Tompkins, E. Neal; Bradley, Keith J.; and Zuber, Peter A., to T/R Systems. Friction drive for an electrophotographic print engine. 5,799,232, Cl. 399-167.000.
Tonti, William R.: *See—*
Furukawa, Toshiharu; Mandelman, Jack Allan; and Tonti, William R., 5,798,553, Cl. 257-394.000.
Toppan Moore Co., Ltd.: *See—*
Etoh, Kei; Hirasawa, Akira; Higurashi, Hisano; and Kawamura, Makoto, 5,798,315, Cl. 503-215.000.
Topulos, Georgios: *See—*
Bender, Klaus; Leboeuf, Philippe; and Topulos, Georgios, 5,798,063, Cl. 264-45.500.
Toray Industries, Inc.: *See—*
Tokunaga, Atsuto; Sawamura, Yasushi; and Tanaka, Masayuki, 5,798,400, Cl. 523-443.000.
Torii & Co., Ltd.: *See—*
Yuuki, Toshifumi; Okumura, Yasushi; and Yamakawa, Hiroshi, 5,798,099, Cl. 424-185.100.
Torii Candle Corporation: *See—*
Sasa, Tomoo; and Oide, Ryosuke, 5,798,184, Cl. 428-484.000.
Toshiba Battery Co., Ltd.: *See—*
Hayashida, Hirotaka; Teraoka, Hirohito; Ono, Tomoyuki; Soeda, Tsuyoshi; and Yamamoto, Masaaki, 5,798,189, Cl. 429-101.000.
Toshiba Corporation: *See—*
Shimizu, Mitsuru; and Tanaka, Sumio, 5,798,964, Cl. 365-145.000.
Toussaint, Marc Emile; and Mitchell, Robert William, to Monsanto Europe S.A. Glyphosate compositions and their use. 5,798,310, Cl. 504-206.000.
Tovenati, Frank: *See—*
Mulgrave, Mark Doneddu; and Tovenati, Frank, 5,797,711, Cl. 408-226.000.
Towfigh, Mark M.: *See—*
Provino, Joseph E.; and Towfigh, Mark M., 5,799,314, Cl. 707-104.000.
Toyne, Kenneth Johnson: *See—*
Goodby, John William; Toyne, Kenneth Johnson; Hird, Michael; and Lewis, Robert Andrew, 5,798,058, Cl. 252-299.610.
Toyo Radiator Co., Ltd.: *See—*
Kawabe, Tsuyoshi; Yoneguchi, Hiroshi; Arisaka, Atsushi; Kuwabara, Takahiro; and Aoyama, Tadamichi, 5,797,450, Cl. 165-167.000.
Toyo Seikan Kaisha, Ltd.: *See—*
Hosono, Hiroko; Miyazawa, Tetsuo; Maruhashi, Yoshitsugu; Imazu, Katsuhiro; and Nakamura, Yasuji, 5,798,183, Cl. 428-458.000.
Toyo Tire & Rubber Co., Ltd.: *See—*
Kamata, Tsuneo; Niki, Makoto; and Ueda, Yoshihide, 5,798,416, Cl. 524-259.000.
Toyoda Gosei Co., Ltd.: *See—*
Hamabata, Mitsuo, 5,797,644, Cl. 296-146.900.
Koike, Masaki; Suzuki, Atsushi; Tsutsumi, Daisuke; and Ichikawa, Masayoshi, 5,798,158, Cl. 428-36.900.
Ogura, Mitsuo; and Tanaka, Hironao, 5,798,080, Cl. 264-572.000.
Toyoda, Koichi, to NEC Corporation. Debugging method and debugging system for multi-task programs. 5,799,142, Cl. 395-183.140.
Toyota Jidosha Kabushiki Kaisha: *See—*
Buma, Shuuichi; Sano, Katsuyuki; and Kawata, Tetsuaki, 5,797,595, Cl. 267-64.270.

Kawaguchi, Hiroshi; Okada, Akio; and Ohta, Masashi, 5,797,663, Cl. 303-146.000.
Nakamura, Hideo, 5,797,363, Cl. 123-90.170.
Sasaki, Norio; and Hashiguchi, Itsuro, 5,797,722, Cl. 415-170.100.
Sugimoto, Tomojiro, 5,797,372, Cl. 123-491.000.
Suita, Kazutsugu; Yamada, Yoji; Tsuchida, Nuio; and Imai, Koji, 5,798,919, Cl. 364-150.000.
Yoshioka, Mamoru; and Ooi, Yasuhiro, 5,797,381, Cl. 123-585.000.
Yoshioka, Mamoru; and Oi, Yasuhiro, 5,797,382, Cl. 123-586.000.

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Suita, Kazutsugu; Yamada, Yoji; Tsuchida, Nuio; and Imai, Koji, 5,798,919, Cl. 364-150.000.

Toyta Jidosha Kabushiki Kaisha: *See—*
Mikame, Kazuhisa; and Iida, Tatsuo, 5,797,361, Cl. 123-90.170.

Tracy, Rhonda. Disposable diaper with padded waistband and legholes. 5,797,824, Cl. 604-385.100.

Trail, John Anderson: *See—*
Nightingale, John Lawrence; Trail, John Anderson; and Johnson, John Kelly, 5,798,877, Cl. 359-831.000.

Trainham, James Arthur: *See—*
Zimmerman, William H.; Saturno, Thomas Frank; Artysiewicz, John Stanley; Trainham, James Arthur; Law, Clarence Garlan, Jr.; Newman, John Scott; and Eames, Douglas John, 5,798,036, Cl. 205-620.000.

Tranquilla, Michael N., to Unisys Corp. Predicting behavior of synchronous flexible webs. 5,798,456, Cl. 73-579.000.

Travers, Thierry: *See—*
Voirol, Bernard; Cochin, Didier; and Travers, Thierry, 5,797,603, Cl. 277-602.000.

Travis, James; Shafer, William M.; Bangalore, Neelesh; and Pohl, Jan, to Emory University; and University of Georgia Research Foundation Inc. Antimicrobial peptides. 5,798,336, Cl. 514-16.000.

Trecker, Oliver: *See—*
Beckē , Wolfgang; Esser, Joachim; Bublitz, Heiko; Kooths, Uwe; and Trecker, Oliver, 5,797,430, Cl. 138-30.000.

Tretter, Daniel R., to Hewlett-Packard Company. Apparatus and method for selectively processing a scanned image. 5,798,846, Cl. 358-456.000.

Trevino, Leo A.; Schutt, Ernest George; Klein, David H.; Tarara, Thomas E.; Weers, Jeffry G.; and Kabalnov, Alexey, to Alliance Pharmaceutical Corp. Stabilized gas emulsion containing phospholipid for ultrasound contrast enhancement. 5,798,091, Cl. 424-9.520.

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Murokh, Igor Y.; and Kerner, Alex A., 5,798,146, Cl. 427-458.000.

Tri-tech, Inc.: *See—*
Peterson, Brian, 5,798,592, Cl. 310-164.000.

Triassi, Richard P.; Dethier, Vincent B.; and Brown, Leroy, Jr., to Eastman Kodak Company. Batch mixer. 5,797,681, Cl. 366-177.100.

Triebel, Frederic: *See—*
Hercend, Thierry; Triebel, Frederic; Roman-Roman, Sergio; and Ferradini, Laurent, 5,798,231, Cl. 435-91.200.

Trigg, Timothy Elliot: *See—*
Michaelis, Jurgen; and Trigg, Timothy Elliot, 5,798,335, Cl. 514-15.000.

Trimble Navigation Limited: *See—*
Eshenbach, Ralph F., 5,798,732, Cl. 342-357.000.
Murphy, Michael D.; Janky, James M.; and Schipper, John F., 5,799,082, Cl. 380-7.000.

Tritech Microelectronics International Pte Ltd.: *See—*
Cheng, Michael C. H., 5,798,660, Cl. 327-65.000.

Trompenaars, Petrus H. F.: *See—*
Lambert, Nicolaas; Baller, Theunis S.; Van Gorkom, Gerardus G. P.; Montie, Edwin A.; Trompenaars, Petrus H. F.; and De Zwart, Siebe T., 5,798,605, Cl. 313-422.000.

Trunley, Roy: *See—*
Cook, Robert Stanley; Hobbs, Michael Anthony; Leighton, Ann-Marie; Simpkin, Gordon Thomas; and Trunley, Roy, 5,797,391, Cl. 128-203.150.

Truskalo, Walter; Knight, Peter Ronald; and Smith, Lawrence Edward, to Thomson Consumer Electronics, Inc. Horizontal deflection circuit with raster correction. 5,798,621, Cl. 315-371.000.

Trustees of Boston University: *See—*
Hubbard, James Edward, 5,797,623, Cl. 280-735.000.

Trustees of Columbia University in the City of New York, The: *See—*
He, Wei; and Anderson, Roger N., 5,798,982, Cl. 367-73.000.

TRW Fahrwerksysteme GmbH & Co. KG: *See—*
Eberhart, Eugen, 5,797,309, Cl. 91-375.00A.

TRW Fahrwerksystems GmbH & Co. KG: *See—*
Gerigk, Hans-Willi, 5,797,469, Cl. 180-441.000.

TRW Inc.: *See—*
Bailey, Todd R., 5,798,476, Cl. 102-202.700.
Coronel, Ramon, 5,798,574, Cl. 307-9.100.
Danchick, Roy; Newnam, George E.; and Brooks, Jack E., 5,798,942, Cl. 364-516.000.

TRW Occupant Restraint Systems GmbH: *See—*
Eyrainer, Heinz, 5,797,620, Cl. 280-730.100.

Tsai, Chi-Cheng. Partition framework for dividing a space into small compartments. 5,797,440, Cl. 160-135.000.

Tsai, Jem-Tsair, to Mustek Systems Inc. Multilevel light source device. 5,798,849, Cl. 358-475.000.

Tschesche, Hartmut: *See—*
Blecker, Armin; and Tschesche, Hartmut, 5,797,782, Cl. 445-70.000.

Tsuchida, Hitoshi: *See—*
Uemiya, Takafumi; Tsuchida, Hitoshi; Furukawa, Masayuki; Yamazaki, Kazuo; and Dohi, Tadashi, 5,798,033, Cl. 205-161.000.

Tsuchida, Nuio: *See—*
Suita, Kazutsugu; Yamada, Yoji; Tsuchida, Nuio; and Imai, Koji, 5,798,919, Cl. 364-150.000.

Tsuchikawa, Koji; and Saito, Yosuke, to Hoshiazaki Denki Kabushiki Kaisha. Production system of electrolyzed water. 5,798,028, Cl. 204-228.000.

Tsuchimoto, Junichi: *See—*
Mori, Kiyoshi; and Tsuchimoto, Junichi, 5,798,290, Cl. 438-245.000.

Tsuchimura, Tadao, to Fujitsu Limited. Apparatus and method for sorting attributes-mixed character strings. 5,799,303, Cl. 707-7.000.

Tsuchiya, Shinichi; and Ishizaki, Kazuhisa, to Yazaki Corporation. Lever action-type female connector. 5,797,758, Cl. 439-157.000.

Tsuchiya, Toshihiro: *See—*
Tanaka, Koichi; Tsuchiya, Toshihiro; Morita, Koji; and Takaku, Tsutomu, 5,797,789, Cl. 451-289.000.

Tsuda, Yoshihiko: *See—*
Kuroki, Yasuhisa; Miyata, Kazuyoshi; Tsuda, Yoshihiko; Inoue, Yasuhide; Kanaya, Jun; and Sato, Keigo, 5,798,344, Cl. 514-80.000.

Tsuji, Akira: *See—*
Inomata, Katsumi; Akiyama, Nasahiro; Ota, Toshiyuki; and Tsuji, Akira, 5,798,201, Cl. 430-192.000.

Tsuji, Hitoshi: *See—*
Haraguchi, Hiroshi; and Tsuji, Hitoshi, 5,798,203, Cl. 430-325.000.

Tsuji, Kenji: *See—*
Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji; and Ootsuka, Hiroshi, 5,799,215, Cl. 396-168.000.

Tsuji, Sadafusa: *See—*
Tanii, Junichi; Ootsuka, Hiroshi; Taniguchi, Toshihiko; Shimada, Takahisa; and Tsuji, Sadafusa, 5,798,625, Cl. 318-541.000.

Tsuji, Shuichi; Yoshida, Yukiko; Kojima, Naoya; Kurosawa, Nobuyuki; and Hamamoto, Toshiro, to Institute of Physical and Chemical Research, The. Siaα 2,3Gaβ 1,4G1CNAC α 2,8-sialyltransferase. 5,798,244, Cl. 435-193.000.

Tsuji, Toshihiko: *See—*
Taniguchi, Tetsuo; Tsuji, Toshihiko; and Nagayama, Tadashi, 5,798,838, Cl. 356-401.000.

Tsujita, Yoshio; Horikoshi, Hiroyoshi; and Ito, Takashi, to Sankyo Company, Limited. Treatment of arteriosclerosis and xanthoma. 5,798,375, Cl. 514-369.000.

Tsukada, Yoshinari: *See—*
Ueyama, Atsushi; Tsukada, Yoshinari; and Takano, Fumitomo, 5,798,648, Cl. 324-548.000.

Tsukagoshi, Eigoro: *See—*
Yanagawa, Chuichi; and Tsukagoshi, Eigoro, 5,798,155, Cl. 428-35.800.

Tsukagoshi, Tsuyoshi: *See—*
Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; Kuramoto, Seiji; and Uchiyama, Naoki, 5,797,931, Cl. 606-151.000.

Tsunekawa, Hiroyuki; and Abe, Kouji, to Sanshin Kogyo Kabushiki Kaisha. Outboard motor control. 5,797,777, Cl. 440-84.000.

Tsuru, Teruhisa: *See—*
Kanaba, Seiji; Asakura, Kenji; Suesada, Tsuyoshi; Tsuru, Teruhisa; and Mandai, Harufumi, 5,798,737, Cl. 343-895.000.

Tsuruoka, Atsushi; and Misono, Masayoshi, to Hitachi, Ltd.; and Hitachi Electronic Devices Co., Ltd. Cathode ray tube having improved beam convergence. 5,798,603, Cl. 313-412.000.

Tsuruta, Minoru: *See—*
Bito, Shiro; Hirao, Isami; Oozeki, Kazuhiko; Tsuruta, Minoru; Mukaizawa, Akito; Nakada, Akio; Tsukagoshi, Tsuyoshi; Kimura, Shuichi; Suzuta, Toshihiko; Kuramoto, Seiji; and Uchiyama, Naoki, 5,797,931, Cl. 606-151.000.

Tsuruzoe, Nobutomo: *See—*
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Heitz, James R.; Mangan, Robert L.; and Moreno, Daniel S., 5,798,112, Cl. 424-405.000.
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Baggen, Constant P.M.J., 5,799,033, Cl. 375-200.000.
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Sitters, Richard J.; and Oerlemans, Cornelis A. M., 5,799,076, Cl. 379-229.000.
Skinner, Kenneth R., 5,798,801, Cl. 348-645.000.
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Urai, Takahiko, to NEC Corporation. Non-volatile semiconductor memory device having NAND structure cells. 5,798,547, Cl. 257-316.000.
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Tada, Yasuo; Yamakawa, Tomoya; and Uramachi, Hiroyuki, 5,797,380, Cl. 123-572.000.
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Ury, Michael G.: *See—*
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UT Automotive Dearborn, Inc.: *See—*
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Uwajima, Takayuki: *See—*
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Uzawa, Tsutomu, to Olympus Optical Co., Ltd. Zoom lens system. 5,798,872, Cl. 359-686.000.

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Mokdad, Ayman, 5,797,297, Cl. 74-574.000.

Valeo Climatisation: *See—*
Auvity, Michel, 5,797,585, Cl. 251-80.000.

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Herzberger, Erick; Nicolai, Jean-Marc; Cassese, Bruno; and Wacheux, Patrick, 5,798,908, Cl. 361-707.000.

Valeo Systemes D'Essuyage: *See—*
Berge, Gilles; Eustache, Jean-Pierre; and Roumegoux, Jean-Louis, 5,797,159, Cl. 15-250.310.

Valiente, Ivan: *See—*
Billes, Laurent; Simon, Jean-Claude; and Valiente, Ivan, 5,798,852, Cl. 359-158.000.

Valleylab Inc: *See—*
Rhum, David; Wells, Rodney E.; and Makower, Joshua, 5,797,906, Cl. 606-48.000.

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Hyyryläinen, Ismo, 5,797,479, Cl. 198-456.000.
Odell, Michael; and Verkasalo, Lauri, 5,798,024, Cl. 162-203.000.

Van Den Enden, Gijsbert J., to U.S. Philips Corporation. Storage and retrieval of a data reduced digital video signal in/from a memory and recording and reproduction of a data reduced digital video signal on a longitudinal record carrier. 5,799,128, Cl. 386-68.000.

Van Der Horst, Cornelis H. T.: *See—*
Hermens, Hendrik C. M.; Jacobs, Lucas A. G.; Driessen, Henrikus C. M. P.; Van Der Horst, Cornelis H. T.; and Schäfer, Hubertus E. A., 5,798,811, Cl. 349-152.000.

Vanderlinden, Glenn M., to Fluid Sciences, L.L.C. Vehicular apparatus for removing snow and aircraft de-icing or anti-icing liquids from runway surfaces. 5,797,203, Cl. 37-227.000.

van Dijk, Willem R.: *See—*
Casteleijn, Eric; van Dijk, Willem R.; Klugkist, Jan; and van Wassenaar, Pieter Dirk, 5,798,327, Cl. 510-303.000.

Van Gorkom, Gerardus G. P.: *See—*
Lambert, Nicolaas; Baller, Theunis S.; Van Gorkom, Gerardus G. P.; Montie, Edwin A.; Trompenaars, Petrus H. F.; and De Zwart, Siebe T., 5,798,605, Cl. 313-422.000.

Van Haaren, Johannes A. M. M.; Broer, Dirk J.; and Leenhouts, Frans, to U.S. Philips Corporation. Liquid crystal display device having a cholesteric order with a pitch of helix less than 0.25 microns and a retardation foil. 5,798,808, Cl. 349-96.000.

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Feret, Bruno; Sarrazin, Laure; and Vanhoye, Didier, 5,798,406, Cl. 524-501.000.

van Kessel, Theodore Gerard: *See—*
Benizri-Carl, Peter; Egert, Wolfgang; Jung, Manfred; and van Kessel, Theodore Gerard, 5,798,525, Cl. 250-310.000.

Van Loan, David R.; and Swart, Mark A., to Everett Charles Technologies, Inc. Translator fixture with module for expanding test points. 5,798,654, Cl. 324-761.000.

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Chiu, Patrick; Moran, Thomas P.; and vanMelle, William J., 5,798,769, Cl. 345-442.000.

van Oosten, Rocus Johannes, to Hadewe B.V. Method for processing sheets in mail processing system; a mail processing system for the practice of such method; and a mail processing apparatus of such system. 5,798,930, Cl. 364-478.010.

van Os, Ron; and Chazen, David, to Diablo Research Corporation. Electrodeless discharge lamp with control amalgam in the plasma. 5,798,618, Cl. 315-248.000.

Van Veggel, Antonius F. P. M.: *See—*
Legierse, Petrus E. J.; Severin, Jan W.; Kubbinga, Menno B.; Meeuwsen, Franciscus A.; and Van Veggel, Antonius F. P. M., 5,798,138, Cl. 427-230.000.

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Cushner, Stephen; Fan, Roxy Ni; Leberzammer, Ernst; Shea, Paul Thomas; and Van Zoeren, Carol Marie, 5,798,202, Cl. 430-306.000.

Varadaraj, Ramesh; Robbins, Max Leo; Pace, Salvatore James; and Brons, Cornelius Hendrick, to Exxon Research and Engineering Company. Polyoxyethylene glycol and polyglycerol twin tail surfactant formulations for dispersion of crude oil. 5,797,700, Cl. 405-60.000.

Varadarajan, John; Watson, Alan David; and Berg, Arne, to Nycomed Salutar, Inc. Chelant moieties linked to an aryl moiety by an interrupted alkylene linker. 5,798,089, Cl. 424-1.650.

Varanasi, P. Prabodh; Goelz, John F.; and Munagavalasa, Murthy S., to S. C. Johnson & Son, Inc. Method for imparting hydrophobicity to a surface of a substrate with low concentration organofunctional silanes. 5,798,144, Cl. 427-384.000.

Vari-Lite, Inc.: *See—*
Covington, John H., 5,798,619, Cl. 315-307.000.

Varity GmbH: *See—*
Grieser-Schmitz, Stefan, 5,798,690, Cl. 340-458.000.

Varizat, Alain Michel: *See—*
Brocard, Jean-Marie; Capelle, Jean-Yves; Desaulty, Michel André Albert; Perrin, Jean-Paul; and Varizat, Alain Michel, 5,797,266, Cl. 60-725.000.

Vary, James C., Jr.: *See—*
Tarr, Phillip I.; Bilge, Sima S.; Besser, Thomas E.; and Vary, James C., Jr., 5,798,260, Cl. 435-252.300.

Vas-Cath Incorporated: *See—*
Martin, Geoffrey S.; and LeBlanc, Michael R., 5,797,869, Cl. 604-43.000.

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Dionne, Keith E.; Emerich, Dwaine F.; Hoffman, Diane; Sanberg, Paul R.; Christenson, Lisa; Hegre, Orion D.; Scharp, David W.; Lacy, Paul E.; Aebischer, Patrick; Vasooncellos, Alfred V.; Lysaght, Michael J.; and Gentile, Frank T., 5,798,113, Cl. 424-422.000.

Vayda, Mark; and Weyl, Nancy. Radial graphical menuing system with concentric region menuing. 5,798,760, Cl. 345-352.000.

Vayntraub, Michael: *See—*
Martin, Richard R.; and Vayntraub, Michael, 5,798,816, Cl. 351-160.00R.

VDO Adolf Schindling AG: *See—*
Gier, Lothar; Österle, Bernd; Borchert, Rudolf; Porth, Wolfgang; Stark, Sabine; and Waltrafen, Werner, 5,798,640, Cl. 324-207.240.

VDO Luftfahrtgerate Werk GmbH: *See—*
Viebahn, Harro Von; Below, Christian; and Kling, Heribert, 5,798,713, Cl. 340-974.000.

Veal, Charles R.: *See—*
Bryant, Robert L.; and Veal, Charles R., 5,798,699, Cl. 340-627.000.

Veenhof, Willem D., to Martin Engineering Company. Conveyor belt scraper blade. 5,797,477, Cl. 198-499.000.

Vehicle Enhancement Systems, Inc.: *See—*
Lesesky, Alan C.; Purkey, Bruce A.; and Weant, Bobby Ray, 5,798,577, Cl. 307-10.700.

Veldman, Roger L.: *See—*
O'Farrell, Desmond J.; Veldman, Roger L.; and Schofield, Kenneth, 5,798,575, Cl. 307-10.100.

Veloso, Artur; Geywitz, Klaus; Endler, Joachim; and Adolphi, Hans-Joachim, to Alcatel N.V. Interface arrangement for connecting base stations to a private branch exchange. 5,799,250, Cl. 455-422.000.

Vemco Corporation: *See—*
Miller, Robert F., 5,797,428, Cl. 137-557.000.

Vender, David: *See—*
Oehrlein, Gottlieb Stefan; Vender, David; Zhang, Ying; and Haverlag, Marco, 5,798,016, Cl. 156-345.000.

Venier, Nicholas O.: *See—*
Ferreira, Delfino D.; and Venier, Nicholas O., 5,797,342, Cl. 114-239.000.

Venne, Günter van de: *See—*
Peters, Rainer; Bonse, Michael; and Venne, Günter van de, 5,797,727, Cl. 416-204.00R.

Venugopal, Eyyunni: *See—*
Premerlani, William James; Adamiak, Mark Gerard; Sreenivas, Dingari; and Venugopal, Eyyunni, 5,798,932, Cl. 364-483.000.

Verardi, Christopher A.: *See—*
Barancyk, Steven V.; Verardi, Christopher A.; and Humphrey, William A., 5,798,145, Cl. 427-393.500.

Verbist, Jean-Francois: *See—*

Biard, Jean-Francois; Cortadellas, Dominique; Debitus, Cécile; Laurent, Dominique; Roussakis, Cristos; and Verbist, Jean-Francois, 5,798,381, Cl. 514-456.000.

Verbo, Ulysse; and Cobianchi, Flavio, to Bosch Systems de Freinage. Master cylinder and pneumatic brake booster assembly. 5,797,264, Cl. 60-547.100.

Verbrugge, François: *See—*
Deschatrettes, Gérard; and Verbrugge, François, 5,797,799, Cl. 464-111.000.

Verburg, Abraham Leendert. Apparatus for electro-fishing. 5,797,210, Cl. 43-9.600.

Vercande, David J.: *See—*
Hogan, Steven J.; Feltz, Kristi T.; Murdock, Douglas R.; Goodman, Todd A.; Vercande, David J.; and Busch, Eric M., 5,799,156, Cl. 395-200.670.

Verdura, Javier: *See—*
Snoke, Phillip Jack; Mark, Michael John; Verdura, Javier; and Nagatani, Kevin A., 5,797,670, Cl. 362-119.000.

Verkasalo, Lauri: *See—*
Odell, Michael; and Verkasalo, Lauri, 5,798,024, Cl. 162-203.000.

Verlinden, Bart; and Claes, Jan, to Agfa-Gevaert N.V. Photographic sheet material processing apparatus and a method of cleaning. 5,799,224, Cl. 396-619.000.

Ver Strate, Gary William: *See—*
Cozewith, Charles; Ver Strate, Gary William; West, Roger K.; and Capone, Gaetano A., 5,798,420, Cl. 525-323.000.

Vesely, Ivan; and Smith, Wayne, to Sonometrics Corporation. Method for carrying out a medical procedure using a three-dimensional tracking and imaging system. 5,797,849, Cl. 600-461.000.

Vestal, William E. End piece with symmetrical air foil side wings for a juggling stick. 5,797,811, Cl. 473-514.000.

ViA, Inc.: *See—*
Janik, Craig M., 5,798,907, Cl. 361-683.000.

Vice, Michael W., to Watkins-Johnson Company. Quasi-double balanced passive reflection fet mixer. 5,799,248, Cl. 455-333.000.

Vickery, Brian H.: *See—*
Krstenansky, John L.; Nestor, John J.; Ho, Teresa H.; Vickery, Brian H.; and Bach, Chinh T., 5,798,225, Cl. 435-69.400.

Victor Company of Japan, Ltd.: *See—*
Koga, Takasuke; Morimoto, Keiji; and Hatakeyama, Naoki, 5,798,606, Cl. 313-440.000.
Mouri, Tomohiro, 5,799,094, Cl. 381-18.000.
Sugiyama, Kenji, 5,798,796, Cl. 348-405.000.
Takami, Junichi, 5,799,277, Cl. 704-256.000.

Viebahn, Harro Von; Below, Christian; and Kling, Heribert, to VDO Luftfahrtgerate Werk GmbH. Process for representing flight guidance information. 5,798,713, Cl. 340-974.000.

Viet, Peter S.: *See—*
Tiesinga, Jan; Viet, Peter S.; Driessen, Johannes A. T.; and Beijer, Paul A. C., 5,798,913, Cl. 363-21.000.

Vieux-Rochaz, Line; Fedeli, Jean-Marc; Pougnet, Philippe; and Poirier, Michel, to Commissariat a l'Energie Atomique. Magnetic reading head having a magnetoresistant element and improved polarization means. 5,798,895, Cl. 360-113.000.

Vigil, Michael A.: *See—*
Gravenstein, Martin G.; Vigil, Michael A.; and Jaeckel, Silvia E., 5,799,182, Cl. 395-595.000.

Villanueva, Hector; and Rode, Dirk, to KM Europa Metal Aktiengesellschaft. Ingot mold for the continuous casting of metals. 5,797,444, Cl. 164-418.000.

Villar, Hugo O.: *See—*
Kauvar, Lawrence M.; and Villar, Hugo O., 5,798,275, Cl. 436-518.000.

Villeneuve, Luc; Miller, Gérard; Bernier, Robert; Laurendeau, Claude; and Pal, Prabir Kumar, to Theratechnologies Inc. Irradiating apparatus using a scanning light source for photodynamic treatment. 5,798,523, Cl. 250-234.000.

Visel, Friedrich: *See—*
Zimmer, René Jean; Visel, Friedrich; Frank, Uwe Ernst; Materne, Thierry Florent Edmé; and Agostini, Giorgio, 5,798,405, Cl. 524-496.000.

Visual Edge, The: *See—*
Lubell, Alan; Peters, Thomas S.; and Takefman, Earl, 5,797,805, Cl. 473-266.000.

Visy Paper PTY Ltd: *See—*
Ong, Alex; Chiodo, Ross; and Mammoliti, John, 5,797,832, Cl. 493-462.000.

Vitorino, Olimpio, to Smith & Wesson Corp. Method for reversibly converting a traditional double action pistol to a single action, target pistol. 5,797,206, Cl. 42-69.030.

Vive, Daniel Guillo: *See—*
Abbad, Marcelo Hombravella; and Vive, Daniel Guillo, 5,797,423, Cl. 137-315.000.

VLSI Technology, Inc.: *See—*
Bothra, Subhas; and Qian, Ling Q., 5,798,559, Cl. 257-522.000.
Walker, Gary; Crews, Mike; and Steele, James, 5,799,178, Cl. 395-557.000.

Vlug, Marc Andrew, to Shell Research Limited. Process of melt impregnation. 5,798,068, Cl. 264-171.130.

Vo, Mimi Phuong-Thao Thi: *See—*
Anderson, Matthew Paul; Donn, Siyi Terry; Fallside, David Couttie; Ha, Tri Q.; Hembry, Douglas Michael; Ho, Jean C.; Jang, Jing-Song; Mattos, Nelson; Niblack, Carlton Wayne; Petkovic, Dragutin; Tung, Frank Chin; Uhrowczik, Peter Paval; Vo, Mimi Phuong-Thao Thi; Wilmot, Gerald Johann; Yanker, Peter C.; and Cheng, Josephine Min-Kung, 5,799,310, Cl. 707-102.000.

Vo, Quang D.: *See—*
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Voccio, John: *See—*
Manlief, Michael D.; Riley, Gilbert N., Jr.; Voccio, John; and Rodenbush, Anthony J., 5,798,678, Cl. 335-216.000.

Vock, Curtis A.; Grealish, Kevin J.; Frey, Robert D.; Darcy, Dennis; and Bianco, Joseph, to Golf Age Technologies, Inc. Method of and apparatus for golf driving range distancing using focal plane array. 5,798,519, Cl. 250-206.100.

Vogel, Alice Marie; Wahl, Errol Hoffman; Cappel, Jerome Paul; and Ward, Thomas Carl, to Procter & Gamble Company, The. Wrinkle reducing composition. 5,798,107, Cl. 424-400.000.

Vogel, Robert Harold: *See—*
Foster, George Norris; Chen, Tong; Wasserman, Scott Hanley; Lee, Day-Chyuan; Kurtz, Stuart Jacob; Gross, Laurence Herbert; and Vogel, Robert Harold, 5,798,427, Cl. 526-352.000.

Vogler, Hubert: *See—*
Schmitt-Willich, Heribert; Platzek, Johannes; Gries, Heinz; Schumann-Giampieri, Gabrielle; Weinmann, Hanns-Joachim; Vogler, Hubert; Deutsch, Julius; and Conrad, Juergen, 5,798,092, Cl. 424-9.364.

Voirol, Bernard; Cochin, Didier; and Travers, Thierry, to Le Joint Francais SNC. Sealing ring and a method of mounting it. 5,797,603, Cl. 277-602.000.

Voith Sulzer Papiermaschinen GmbH: *See—*
Madrzak, Zygmunt, 5,797,561, Cl. 242-554.600.

Volk, Charles E.: *See—*
Matousek, Robert A.; Burke, Dan J.; Payne, Jeffrey R.; and Volk, Charles E., 5,797,793, Cl. 460-111.000.

Vollmer, Bernd: *See—*
Lee, Pei-Ing Paul; Vollmer, Bernd; Restaino, Darryl; and Klaasen, Bill, 5,798,301, Cl. 438-653.000.

Volpe, Thomas A.: *See—*
Woodbridge, Nancy G.; Volpe, Thomas A.; and Gay, James G., 5,799,160, Cl. 395-293.000.

Volpert, Yehuda: *See—*
Bracha, Gabriel; Weissberger, Eytan; Volpert, Yehuda; and Algor, Ilan, 5,798,937, Cl. 364-490.000.

Von Roll Umwelttechnik AG: *See—*
Müller, Patrick; and Rüegg, Hans, 5,797,336, Cl. 110-345.000.

von der Lippe, Paul: *See—*
Mattis, John S.; Milroy, James Craig; von der Lippe, Paul; Shimirak, Gerald L.; Chan, Paul S.; and Scarampi, Sebastiano, 5,797,759, Cl. 439-201.000.

von Deyn, Wolfgang; Theobald, Hans; Nuebling, Christoph; Kardorff, Uwe; Walter, Helmut; Westphalen, Karl-Otto; Kappe, Thomas; and Gerber, Matthias, to BASF Aktiengesellschaft. Quinoline-3-carboxamides, their manufacture and use. 5,798,451, Cl. 546-155.000.

Von Gunten, Lee Louis. Gravity shelf structure support. 5,797,501, Cl. 211-90.010.

von Holdt, John W., to Von Holdt, John W. Adjustable mold gate. 5,798,130, Cl. 425-549.000.

Vonk, Willem Cornelis: *See—*
Korenstra, Jan; Vonk, Willem Cornelis; and Westrenen, Jeroen Van, 5,798,401, Cl. 524-68.000.

von Stein, Werner: *See—*
Zahn, Wolfgang; and von Stein, Werner, 5,798,821, Cl. 355-46.000.

Vortex Australia Proprietary, Ltd.: *See—*
Liu, Wen Jie; and Bremer, Jeff, 5,797,724, Cl. 415-206.000.

Vounckx, Roger: *See—*
Kuijk, Maarten; Heremans, Paul; Borghs, Gustaaf; and Vounckx, Roger, 5,798,520, Cl. 250-214.00A.

VPL Research Inc.: *See—*
Teitel, Michael A., 5,798,739, Cl. 345-8.000.

Vriezen, John Joseph: *See—*
Koser, Leonard William; Manges, Mary Christine; Ring, Frances Mary; Rogers, Cynthia Ann; Snyder, Michael John; and Vriezen, John Joseph, 5,799,189, Cl. 395-680.000.

Vu, Tuan M.; Sane, Jayant N.; and Coe, Craig M., to Gillette Company, The. Clear cosmetic stick composition with alkali chelate. 5,798,094, Cl. 424-65.000.

Vulcain, Jean-Marie: *See—*
Badoz, Jean-Marie; Calas, Paul; and Vulcain, Jean-Marie, 5,797,747, Cl. 433-224.000.

Vulcan, Isaac; and Barak, Gideon, to CallManage. Telecommunications call management system. 5,799,072, Cl. 379-114.000.

Vurgaftman, Igor: *See—*
Meyer, Jerry; Vurgaftman, Igor; and Yang, Ruan Q., 5,799,026, Cl. 372-45.000.

Vyne, Robert L.: *See—*
Griffith, Richard S.; Petty, Thomas D.; and Vyne, Robert L., 5,798,673, Cl. 330-255.000.

Vystrcil, Robert A.; Cipolla, Mark E.; Thur, Charles J.; Kalman, Jeffrey M.; and Wright, Michael F., to Royal Appliance MFG. Co. Extendable hose for a vacuum cleaner. 5,797,162, Cl. 15-323.000.

W. A. Deutsher Pty. Ltd.: *See—*

Mulgrave, Mark Doneddu; and Tovenati, Frank, 5,797,711, Cl. 408-226.000.

W. L. Gore & Associates, Inc.: *See*—
Hobson, Alex Ray; Sassa, Robert L.; Speck, Steven H.; and Lau, Tit-Keung, 5,798,181, Cl. 428-422.000.

Wachendorff-Neumann, Ulrike: *See*—
Fischer, Reiner; Wachendorff-Neumann, Ulrike; Erdelen, Christoph; Turberg, Andreas; and Mencke, Norbert, 5,798,376, Cl. 514-374.000.

Wacheux, Patrick: *See*—
Herzberger, Erick; Nicolai, Jean-Marc; Cassese, Bruno; and Wacheux, Patrick, 5,798,908, Cl. 361-707.000.

Wacinski, Witold; and Kolesniak, Eugene, to Measurex Devron Inc. Dry end steam applicator. 5,798,026, Cl. 162-290.000.

Wacker-Chemie GmbH: *See*—
Hager, Rudolf; Kolleritsch, Günther; and Knaup, Wolfgang, 5,798,429, Cl. 528-42.000.

Wacyk, Ihor T.; Jayaraj, Vinit; and De Mol, Eugen J., to Philips Electronics North America Corporation. Fluorescent lamp dimming. 5,798,620, Cl. 315-307.000.

Wada, Katsuyuki; Ishizaki, Kunihiko; and Nagasuna, Kinya, to Nippon Shokubai Co., Ltd. Absorbing agent composition, absorbent material, and absorbent product containing absorbent material. 5,797,893, Cl. 604-372.000.

Wada, Satoshi: *See*—
Ono, Takeshi; Yoshida, Takehiro; Kobayashi, Makoto; Takeda, Tomoyuki; Wada, Satoshi; Yokoyama, Minoru; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; and Yamada, Masakatsu, 5,798,789, Cl. 347-186.000.

Wada, Yasutaro, to Carbone Industrie. Apparatus for filling powder. 5,797,435, Cl. 141-81.000.

Waddington, William H.: *See*—
Cohen, Jeffrey L.; and Waddington, William H., 5,799,210, Cl. 395-876.000.

Wadin, Craig P.: *See*—
Laird, Kevin Michael; Smith, Sybren D.; Marko, Paul D.; and Wadin, Craig P., 5,799,039, Cl. 375-244.000.

Wädow, Dieter: *See*—
Bredol, Michael; Merikhi, Jacqueline; and Wädow, Dieter, 5,798,059, Cl. 252-301.450.

Wagenbach, Michael: *See*—
Hoffman, Stephen J.; Looker, Douglas L.; Stetler, Gary L.; and Wagenbach, Michael, 5,798,227, Cl. 435-69.600.

Wagenheim, Evan J. Carrying handle for articles. 5,797,166, Cl. 16-124.000.

Wagner, Alfred, to International Business Machines Corporation. Focused ion beam metrology. 5,798,529, Cl. 250-492.200.

Wagner, Reiner, to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. KG. Method of manufacturing a hinge for eyeglasses. 5,797,173, Cl. 29-11.000.

Wahl, Errol Hoffman: *See*—
Vogel, Alice Marie; Wahl, Errol Hoffman; Cappel, Jerome Paul; and Ward, Thomas Carl, 5,798,107, Cl. 424-400.000.

Waibel, Brian J.: *See*—
James, Kenneth J.; and Waibel, Brian J., 5,797,719, Cl. 417-46.000.

Wakabayashi, Tsuneo: *See*—
Ooi, Yoshiharu; and Wakabayashi, Tsuneo, 5,798,805, Cl. 349-10.000.

Wakako, Hisashi: *See*—
Sato, Kazuhisa; Kitou, Masanori; Wakako, Hisashi; and Kimura, Kazuo, 5,798,566, Cl. 257-712.000.

Wakamatsu, Shinji: *See*—
Morigami, Yuusuke; Kobayashi, Tadashi; Nishikawa, Misao; Yoshikawa, Hiroyuki; Ozawa, Kazuhito; Hirano, Ryo; Seki, Shinobu; and Wakamatsu, Shinji, 5,797,596, Cl. 270-58.110.

Wakayama, Akeharu: *See*—
Yano, Kazunori; Kaito, Hiroyoshi; Wakayama, Akeharu; and Yada, Shuhei, 5,798,407, Cl. 524-504.000.

Walcott, Bruce L.: *See*—
Mengüc, M. Pinar; Walcott, Bruce L.; Swabb, Stephen R.; and Marra, Michael A., III, 5,797,736, Cl. 431-75.000.

Wales, Kenneth S.: *See*—
Paraschac, Joseph F.; Wales, Kenneth S.; Nobis, Rudolph H.; and Rupp, Kip, 5,797,938, Cl. 606-167.000.

Walker Asset Management, L.P.: *See*—
Walker, Jay S.; and Case, T. Scott, 5,798,508, Cl. 235-380.000.

Walker, Gary; Crews, Mike; and Steele, James, to VLSI Technology, Inc. System and method for starting and maintaining a central processing unit (CPU) clock using clock division emulation (CDE) during break events. 5,799,178, Cl. 395-557.000.

Walker, Jay S.; and Case, T. Scott, to Walker Asset Management, L.P. Postpaid traveler's checks. 5,798,508, Cl. 235-380.000.

Walker, Nigel: *See*—
Albrecht, Hans-Peter; Böhm, Hans-Joachim; Brady, Kenneth Dale; Eckard, Peter; Ritter, Kurt; Talanian, Robert Vincent; and Walker, Nigel, 5,798,247, Cl. 435-212.000.

Walker, Richard D.: *See*—
Kauk, Zachary A.; and Walker, Richard D., 5,797,656, Cl. 298-1.00H.

Wallace, Robert L.: *See*—
Liff, Harold J.; Hart, Brian T.; Wallace, Robert L.; and Berube, Arthur A., 5,797,515, Cl. 221-2.000.

Walley, John S.; and Vo, Quang D., to Rockwell International Corporation. Frequency acquisition method for direct sequence spread spectrum systems. 5,799,034, Cl. 375-206.000.

Wallrafen, Werner: *See*—
Gier, Lothar; Österle, Bernd; Borchert, Rudolf; Porth, Wolfgang; Stark, Sabine; and Wallrafen, Werner, 5,798,640, Cl. 324-207.240.

Wallström, Eva M.: *See*—
Pedersen, Niels B.; Mikkelsen, Steen B.; and Wallström, Eva M., 5,798,781, Cl. 347-89.000.

Walter, Alexander: *See*—
Fiegel, Gunnar; Plettrichs, Ulf; Walter, Alexander; Schröferl, Thomas; and Soltanmoradi, Hossein, 5,797,648, Cl. 296-223.000.

Walter, Helmut: *See*—
von Deyn, Wolfgang; Theobald, Hans; Nuebling, Christoph; Kardorff, Uwe; Walter, Helmut; Westphalen, Karl-Otto; Kappe, Thomas; and Gerber, Matthias, 5,798,451, Cl. 546-155.000.

Walters, David J. Pressure application unit for positioning vertebra. 5,797,955, Cl. 606-204.000.

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Yoon, InBae. Endoscopic scissors with longitudinal operating channel. 5,797,939, Cl. 606-167.000.

Yoon, InBae. Endoscopic grasping instrument with scissors. 5,797,958, Cl. 606-207.000.

Yoon, Sang Youl, to Orion Electric Co., Ltd. Triple-layered shadow mask and its manufacturing. 5,797,781, Cl. 445-37.000.

Yoshida, Akimaro: *See*—
Ueda, Noriyoshi; Hiroi, Masakazu; Nakamura, Shinichi; Mizuno, Yoshio; Sato, Chikara; Kaneko, Tokuharu; Isobe, Yoshinori; Yoshida, Akimaro; Hishikawa, Yasuhide; and Nakagawa, Tomohito, 5,799,237, Cl. 399-367.000.

Yoshida, Mitsuaki; and Kaneko, Hisashi, to Fujitsu Limited. Apparatus for absorbing stator vibrations in computer storage apparatus. 5,798,887, Cl. 360-99.080.

Yoshida, Osamu: *See*—
Kitaori, Noriyuki; Yoshida, Osamu; Mizunoya, Hirohide; and Shiga, Akira, 5,798,176, Cl. 428-402.000.

Yoshida, Takayuki: *See*—
Kotoh, Satoru; Sakuma, Kiyoshi; Yoshida, Takayuki; Sano, Hiromi; Aoki, Katuyuki; Suzuki, Shin'ichi; Koizumi, Hideaki; Yamamoto, Kaoru; Matsushita, Kunio; Unno, Kenichi; and Oguma, Tomoko, 5,797,792, Cl. 454-320.000.

Yoshida, Takehiro: *See*—
Ono, Takeshi; Yoshida, Takehiro; Kobayashi, Makoto; Takeda, Tomoyuki; Wada, Satoshi; Yokoyama, Minoru; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; and Yamada, Masakatsu, 5,798,789, Cl. 347-186.000.

Yoshida, Yasuhiro; Takahama, Kengo; and Tagawa, Takao, to Sharp Kabushiki Kaisha. Coordinate detection device capable of obviating the need of forming closed loop in electrodes thereof. 5,798,756, Cl. 345-179.000.

Yoshida, Yukihiro, to B.E. Technology Co., Ltd. Apparatus for instruction-word-linK compression. 5,799,138, Cl. 395-114.000.

Yoshida, Yukiko: *See*—
Tsuji, Shuichi; Yoshida, Yukiko; Kojima, Naoya; Kurosawa, Nobuyuki; and Hamamoto, Toshiro, 5,798,244, Cl. 435-193.000.

Yoshii, Satoru, to Fujitsu Limited. Method of and apparatus for automatic dialing. 5,799,077, Cl. 379-309.000.

Yoshikawa, Hiroyuki: *See*—
Morigami, Yuusuke; Kobayashi, Tadashi; Nishikawa, Misao; Yoshikawa, Hiroyuki; Ozawa, Kazuhito; Hirano, Ryo; Seki, Shinobu; and Wakamatsu, Shinji, 5,797,596, Cl. 270-58.110.

Yoshimoto, Hiromu: *See*—
Abe, Takuya; Toizumi, Kiyoshi; Shimazu, Fumio; Yoshimoto, Hiromu; Yamauchi, Kouichi; Tachiki, Hiroshi; Oikawa, Tomohiro; Iwakura, Yoshie; and Katoh, Atsuyuki, 5,799,225, Cl. 399-66.000.

Yoshimura, Kotaro; Togashi, Shigemi; and Watanabe, Osamu, to Oki Data Corporation. Ink jet printer having a capping mechanism. 5,798,777, Cl. 347-44.000.

Yoshinaga, Tohru: *See*—
Morishima, Shingo; Yamada, Jun; Kanehara, Kenji; and Yoshinaga, Tohru, 5,797,263, Cl. 60-311.000.

Yoshino, Katsuhiro: *See*—
Tachihara, Satoru; Ogawa, Ryota; and Yoshino, Katsuhiro, 5,798,851, Cl. 359-18.000.

Yoshino, Motoaki; and Mikuni, Makoto, to Canon Kabushiki Kaisha. Data communication apparatus having improved transmission efficiency. 5,798,710, Cl. 340-825.520.

Yoshioka, Hideki; and Iinuma, Kazuhiro, to Kabushiki Kaisha Toshiba. Method and apparatus for ultrasonic imaging and ultrasonic image processing. 5,797,844, Cl. 600-442.000.

Yoshioka, Mamoru; and Ooi, Yasuhiro, to Toyota Jidosha Kabushiki Kaisha. Air assist device of an engine. 5,797,381, Cl. 123-585.000.

Yoshioka, Mamoru; and Oi, Yasuhiro, to Toyota Jidosha Kabushiki Kaisha. Air assist device of an engine. 5,797,382, Cl. 123-586.000.

Yoshizaki, Masuhiro: *See*—
Suzuki, Norio; Fujimori, Koichi; Hasegawa, Yusuke; Munakata, Hiroki; Akazaki, Shusuke; and Yoshizaki, Masuhiro, 5,797,369, Cl. 123-436.000.

Young, Alan. Lockable compact disk storage apparatus. 5,797,487, Cl. 206-308.200.

Young Dental Manufacturing Company, Inc.: *See*—
Bailey, Ronald L., 5,797,743, Cl. 433-126.000.

Young, James A.: *See*—
Young, Michael J.; Young, James A.; and Bankier, Jack, 5,797,147, Cl. 4-144.100.

Young, James D., to Cloyes Gear and Products, Inc. Chain tensioner with damping feature. 5,797,818, Cl. 474-111.000.

Young, James E.; and Meyer, Roy A. Replacement manhole cover assembly. 5,797,221, Cl. 52-20.000.

Young, Jonathan H.: *See*—
Gould, Joel M.; and Young, Jonathan H., 5,799,279, Cl. 704-275.000.

Young, Michael J.; Young, James A.; and Bankier, Jack. Spill-resistent urinal. 5,797,147, Cl. 4-144.100.

Young, Nigel D., to U.S. Philips Corporation. Manufacture of electronic devices comprising thin-film circuitry. 5,798,534, Cl. 257-59.000.

Young, William R.: *See*—
Salatino, Matthew M.; Young, William R.; and Begley, Patrick A., 5,798,557, Cl. 257-416.000.

Yovichin, Albert James: *See*—
Thayer, Ronda Renee Bayer; Benedict, Robert Leon; Chlebina, Larry Edward; Jacobs, Bernard Byron; Laurich, Thomas Andrew; Macesich, Walter George; Majerus, Norbert; Rambacher, John Sylvester; Rex, William Allen; Rooney, Timothy Michael; Sobhanie, Mohammad Eghbal; Yovichin, Albert James; Wolfe, David Lowell; and Hentosz, Daniel Patrick, 5,798,127, Cl. 425-117.000.

Yu, Andy Teng-Feng: *See*—
Sarin, Vishal; Kowshik, Vikram; and Yu, Andy Teng-Feng, 5,798,967, Cl. 365-185.210.

Yu, Dahai: *See*—
Schmidt, Wolfgang; Thiele, Ulrich; Schauhoff, Stephanie; and Yu, Dahai, 5,798,433, Cl. 528-279.000.

Yu, Donald: *See*—
Hwang, Jeffrey H.; Yu, Donald; Hsu, Calvin; and Chee, Alland, 5,798,635, Cl. 323-222.000.

Yu, Gang: *See*—
Zhang, Chi; Yu, Gang; and Cao, Yong, 5,798,170, Cl. 428-212.000.

Yu, Jack. Ceiling fan housing having light device. 5,797,721, Cl. 415-5.000.

Yu, Jun: *See*—
Rolland, Claude; and Yu, Jun, 5,799,119, Cl. 385-28.000.

Yu, Philip Shi-Lung: *See*—
Castelli, Vittorio; Li, Chung Sheng; and Yu, Philip Shi-Lung, 5,799,301, Cl. 707-6.000.

Yu, Phillip C.; Backfisch, David L.; O'Brien, Nada A.; and Hichwa, Bryant P., to PPG Industries, Inc. Iridium oxide film for electrochromic device. 5,798,860, Cl. 359-273.000.

Yuasa, Toyotaka: *See*—
Okada, Michiya; Tanaka, Kazuhide; Yuasa, Toyotaka; Matsumoto, Toshimi; Aihara, Katsuzo; and Matsuda, Shinpei, 5,798,312, Cl. 505-230.000.

Yuuki, Toshifumi; Okumura, Yasushi; and Yamakawa, Hiroshi, to Asahi Breweries, Ltd.; and Torii & Co., Ltd. DNA encoding Derf II, the major mite allergen, host cells containing such DNA and method for producing Derf II. 5,798,099, Cl. 424-185.100.

Zaccagni, Richard J., to ZMC, Inc. Fascia-soffit combination. 5,797,220, Cl. 52-11.000.

Zaccone, Mark A.; and Russom, Jeffery D., to McDonnell Douglas Corporation. Titanium reinforced structural panel having a predetermined shape. 5,797,239, Cl. 521-793.100.

Zafrani, Nissim: *See*—
Lahat, Eitan; and Zafrani, Nissim, 5,797,317, Cl. 101-127.100.

Zag Ltd.: *See*—
Yemini, Zvi, 5,797,488, Cl. 206-349.000.

Zahn, Erich: *See*—
Buschulte, Rainer; Rensch, Clemens; and Zahn, Erich, 5,797,320, Cl. 101-226.000.

Zahn, Wolfgang; and von Stein, Werner, to Agfa-Gevaert AG. Copying of film under different conditions. 5,798,821, Cl. 355-46.000.

Zahorik, Russell C.: *See*—
Hudson, Guy F.; and Zahorik, Russell C., 5,798,302, Cl. 438-693.000.

Zähringer, Ulrich; Beckmann, Frank; and Moll, Hermann, to Forschungsinstitut Borstel Institut fur Experimentelle Biologie und Medizin. 7-O-Carbamoylheptose derivatives, process for their production and their use in treating pseudomonas infections. 5,798,343, Cl. 514-54.000.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Ishizuka, Masaaki; Kawazu, Masaji; Katsumi, Toshiaki; Fuse, Yoshihide; Maeda, Kenji; and Takeuchi, Tomio, 5,798,387, Cl. 514-551.000.

Zain, Sayeeda; and Lukanidin, Eugene, to Research Corporation Technologies, Inc. Nucleic acid encoding human MTS-1 protein. 5,798,257, Cl. 435-252.300.

Zair, Eliezer, to Laser Industries, Ltd. Method and apparatus for applying laser beams to a working surface, particularly for ablating tissue. 5,798,498, Cl. 219-121.830.

Zakrzewski, Edward J.: *See*—
Schuchman, Leonard; Bruno, Ronald; Kefaliotis, John; Greenberg, Steve; and Zakrzewski, Edward J., 5,798,726, Cl. 342-37.000.

Zalesky, Paul J.: *See*—
Spears, J. Richard; Levin, Philip S.; and Zalesky, Paul J., 5,797,876, Cl. 604-95.000.

Zammit, Theodore J.: *See*—
Mazurek, Niel; and Zammit, Theodore J., 5,798,881, Cl. 359-872.000.

Zander, Dennis R., to Eastman Kodak Company. Camera with actuator for moving sprocket wheel to film engaging position when door closed. 5,799,220, Cl. 396-411.000.

Zanzig, David John; Hsu, Wen-Liang; Halasa, Adel Farhan; and Matrana, Barry Allen, to Goodyear Tire & Rubber Company, The. Tire tread of coupled SIBR. 5,798,408, Cl. 524-505.000.

Zawodzinski, Christine: *See*—
Wilson, Mahlon S.; and Zawodzinski, Christine, 5,798,187, Cl. 429-26.000.

Zdeb, Brian D.: *See*—
Jepson, Steven C.; Dudar, Thomas E.; Zdeb, Brian D.; and Desecki, Vince C., 5,797,897, Cl. 604-412.000.

Zeiner, Manfred; and Budini, Michael, to Zeiner, Manfred; and Budini, Michael. Hardware emulations system with delay units. 5,798,645, Cl. 364-578.000.

Zekeng, Léopold Achenqui: *See*—
Hauser, Hans-Peter; Knapp, Stefan; Brust, Stefan; Gürtler, Lutz G.; Eberle, Josef; Kaptue, Lazare; and Zekeng, Léopold Achenqui, 5,798,205, Cl. 435-5.000.

Zelayeta, Joseph M.: *See*—
Padmanabhan, Gobi R.; Zelayeta, Joseph M.; Yegnashankaran, Visvamohan; Hively, James W.; and Daane, John P., 5,799,080, Cl. 380-4.000.

Zelenak, Daniel Gene: *See*—
Turner, Darin James; Goestenkors, Gregory Neil; and Zelenak, Daniel Gene, 5,797,622, Cl. 280-731.000.

Zeneca Limited: *See*—
Liddell, John Macdonald; and George, Neil, 5,798,440, Cl. 528-499.000.

Zenke, Masanobu: *See*—
Miyazaki, Kazuki; Shigehara, Kazunobu; and Zenke, Masanobu, 5,798,569, Cl. 257-763.000.

Zettergren, Leif, to Microz Sweden AB. Mobile microwave dryer. 5,797,194, Cl. 34-259.000.

Zexel Corporation: *See*—
Ohi, Shinichi; Umegaki, Fuhito; Takemasa, Masami; Haraguchi, Tatsuo; Gunji, Yoshihide; and Ohsawa, Hiroshi, 5,798,589, Cl. 310-90.000.

Zeytinoglu, Füsün, to ICN Pharmaceuticals, Inc. Facilitating hepatitus virus infection in cell culture using a membrane stressor. 5,798,250, Cl. 435-235.100.

ZF Friedrichshafen AG: *See*—
Bohner, Ulrich; and Fideler, Winfried, 5,797,294, Cl. 74-335.000.
Rief, Klaus; Elser, Dieter; and Kogel, Walter, 5,799,259, Cl. 701-41.000.

Zhang, Chi; Yu, Gang; and Cao, Yong, to Uniax Corporation. Long operating life for polymer light-emitting diodes. 5,798,170, Cl. 428-212.000.

Zhang, Min: *See*—
Picataggio, Stephen K.; Zhang, Min; Franden, Mary Ann; Mc Millan, James D.; and Finkelstein, Mark, 5,798,237, Cl. 435-139.000.

Zhang, Ying: *See*—
Oehrlein, Gottlieb Stefan; Vender, David; Zhang, Ying; and Haverlag, Marco, 5,798,016, Cl. 156-345.000.

Zheng, Jian-Ping; and Jow, T. Richard, to United States of America, Army. Method of making composite electrode materials for high energy and high power density energy storage devices. 5,797,971, Cl. 29-25.030.

Zhou, Chang-Guo; and Rice, Daniel S., to Sun Microsytems, Inc. Color format conversion in a parallel processor. 5,798,753, Cl. 345-154.000.

Zhu, Qinglin, to ESS Technology, Inc. Switched multiple sequence excitation model for low bit rate speech compression. 5,799,272, Cl. 704-223.000.

Ziada, Samir; and Graf, Hans Rudolf, to Sulzer Innotec AG. Method for actively damping global flow oscillations in separated unstable flows and an apparatus for performing the method. 5,798,465, Cl. 73-861.210.

Zibold, Hermann: *See*—
Elmis, Herbert; Koehne, Heinrich; Alrutz, Herbert; and Zibold, Hermann, 5,798,802, Cl. 348-689.000.

Ziegert, John C., to University of Florida. Parallel kinematic structure for spatial positioning devices and method of initializing same. 5,797,191, Cl. 33-503.000.

Zielinski, Frank D.: *See*—
Flaherty, Dennis K.; Gordon, Russell P.; Taylor, Paul M.; and Zielinski, Frank D., 5,797,974, Cl. 55-482.000.

Zikeli, Stefan; Rauch, Ernst; Koberger, Hermann; Ecker, Friedrich; Rüf, Hartmut; Jurkovic, Raimund; and Schwenninger, Franz, to Lenzing Aktiengesellschaft. Device for the preparation of cellulose mouldings. 5,798,125, Cl. 425-72.200.

Zimmer Aktiengesellschaft: *See*—
Schmidt, Wolfgang; Thiele, Ulrich; Schauhoff, Stephanie; and Yu, Dahai, 5,798,433, Cl. 528-279.000.

Zimmer, René Jean; Visel, Friedrich; Frank, Uwe Ernst; Materne, Thierry Florent Edmé; and Agostini, Giorgio, to Goodyear Tire & Rubber Company, The. Tire with tread of rubber composition containing two different carbon blacks. 5,798,405, Cl. 524-496.000.

Zimmerman, William H.; Saturno, Thomas Frank; Artysiewicz, John Stanley; Trainham, James Arthur; Law, Clarence Garlan, Jr.; Newman, John Scott; and Eames, Douglas John, to Du Pont de Nemours, E. I., and Company. Electrochemical conversion of anhydrous hydrogen halide to halogens gas using a membrane-electrode assembly or gas diffusion electrodes. 5,798,036, Cl. 205-620.000.

Zinovieva, Nina: *See*—
Komissarchik, Edward; Arlazarov, Vladimir; Bogdanov, Dimitri; Finkelstein, Yuri; Ivanov, Andrey; Kaminsky, Jacob; Komissarchik, Julia; Krivnova, Olga; Kronrod, Mikhail; Malkovsky, Mikhail; Paklin, Maxim; Rozanov, Alexander; Segal, Vladimir; and Zinovieva, Nina, 5,799,276, Cl. 704-251.000.

Zipes, Douglas P.: *See*—
March, Keith L.; and Zipes, Douglas P., 5,797,870, Cl. 604-49.000.

Zirnstein, Michael: *See*—
Beck, Erich; Meyer, Frank; Poth, Ulrich; Siemensmeyer, Karl; Sierakowski, Claudia; Greif, Norbert; Ostertag, Werner; Zirnstein, Michael; Leyrer, Reinhold; Jahns, Ekkehard; Etzbach, Karl-Heinz; and Schuhmacher, Peter, 5,798,147, Cl. 427-511.000.

ZMC, Inc.: *See*—
Zaccagni, Richard J., 5,797,220, Cl. 52-11.000.

ZMD Corporation: *See*—
Lopin, Michael L.; and Ayati, Shervin, 5,797,968, Cl. 607-5.000.

Znaiden, Alexander Paul: *See*—
Kanga, Vispi Dorab; Slavtcheff, Craig Stephen; and Znaiden, Alexander Paul, 5,798,111, Cl. 424-401.000.

Zolliker, Peter: *See*—
Kraft, Walter; and Zolliker, Peter, 5,798,820, Cl. 355-40.000.

Zoomas ApS: *See*—
Ferdinandsen, Alexander; and Ferdinandsen, Bendix, 5,797,205, Cl. 40-768.000.

Zorn, Carl J.; Kross, Brian J.; Majewski, Stanislaw; and Wojcik, Randolph F., to Southeastern Univ. Research Assn., Inc. Illuminating system and method for specialized and decorative lighting using liquid light guides. 5,799,124, Cl. 385-125.000.

Zorzenon, Peter P. Lock box. 5,797,639, Cl. 294-110.100.

Zuber, Peter A.: *See*—
Tompkins, E. Neal; Bradley, Keith J.; and Zuber, Peter A., 5,799,232, Cl. 399-167.000.

Zuk, Peter, Jr., to Hemasure, Inc. In-line liquid filtration device useable for blood, blood products or the like. 5,798,041, Cl. 210-456.000.

Zuk, Robert F.: *See*—
Allen, Michael P.; Zuk, Robert F.; and Ensler, Lawrence M., 5,798,272, Cl. 436-169.000.

Zuteck, Mike: *See*—
Krane, Michael A.; Zuteck, Mike; and Nagy, Steve, 5,798,012, Cl. 156-71.000.

3DLabs Inc. Ltd.: *See*—
Baldwin, David Robert, 5,798,770, Cl. 345-506.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25th DAY OF AUGUST, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barrett, Phillip L.; Quinn, Scott D.; and Lipe, Ralph A., to Microsoft Corporation. Method and system for traversing linked list record based upon write-once predetermined bit value or secondary pointers. RE. 35,881, Cl. 707-1.000.

Cardiac Pathways Corporation: *See*—
Waldman, Lewis K.; and Chen, Peng-Sheng, RE. 35,880, Cl. 600-374.000.

Castelli, Daniel; Donahue, John; Gillette, Donald J.; and Hajek, Bedrich, to Electrostatic Technology, Inc. Cleaning method using both wet and dry steam, and apparatus adapted therefor. RE. 35,879, Cl. 427-461.000.

Chen, Peng-Sheng: *See*—
Waldman, Lewis K.; and Chen, Peng-Sheng, RE. 35,880, Cl. 600-374.000.

Donahue, John: *See*—
Castelli, Daniel; Donahue, John; Gillette, Donald J.; and Hajek, Bedrich, RE. 35,879, Cl. 427-461.000.

Electrostatic Technology, Inc.: *See*—
Castelli, Daniel; Donahue, John; Gillette, Donald J.; and Hajek, Bedrich, RE. 35,879, Cl. 427-461.000.

Gillette, Donald J.: *See*—
Castelli, Daniel; Donahue, John; Gillette, Donald J.; and Hajek, Bedrich, RE. 35,879, Cl. 427-461.000.

Hajek, Bedrich: *See*—
Castelli, Daniel; Donahue, John; Gillette, Donald J.; and Hajek, Bedrich, RE. 35,879, Cl. 427-461.000.

Hedegard, Kelly W.: *See*—
Neeser, Timothy A.; and Hedegard, Kelly W., RE. 35,874, Cl. 62-7.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kimura, Kazuya; and Kayukawa, Hiroaki, RE. 35,878, Cl. 417-222.100.

Kayukawa, Hiroaki: *See*—
Kimura, Kazuya; and Kayukawa, Hiroaki, RE. 35,878, Cl. 417-222.100.

Kimura, Kazuya; and Kayukawa, Hiroaki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Variable capacity swash plate type refrigerant compressor having a double fulcrum hinge mechanism. RE. 35,878, Cl. 417-222.100.

Lipe, Ralph A.: *See*—
Barrett, Phillip L.; Quinn, Scott D.; and Lipe, Ralph A., RE. 35,881, Cl. 707-1.000.

Mahnad, Ali R. Triaxial transmission line for transmitting two independent frequencies. RE. 35,876, Cl. 333-134.000.

Microsoft Corporation: *See*—
Barrett, Phillip L.; Quinn, Scott D.; and Lipe, Ralph A., RE. 35,881, Cl. 707-1.000.

Minnesota Valley Engineering, Inc.: *See*—
Neeser, Timothy A.; and Hedegard, Kelly W., RE. 35,874, Cl. 62-7.000.

Neeser, Timothy A.; and Hedegard, Kelly W., to Minnesota Valley Engineering, Inc. LNG delivery system for gas powered vehicles. RE. 35,874, Cl. 62-7.000.

Nikon Corporation: *See*—
Takagi, Tadao, RE. 35,877, Cl. 396-157.000.

Quinn, Scott D.: *See*—
Barrett, Phillip L.; Quinn, Scott D.; and Lipe, Ralph A., RE. 35,881, Cl. 707-1.000.

Shuert, Lyle H. Container with sleeve interlocking latch. RE. 35,875, Cl. 108-55.100.

Takagi, Tadao, to Nikon Corporation. Automatic light modulating camera. RE. 35,877, Cl. 396-157.000.

Waldman, Lewis K.; and Chen, Peng-Sheng, to Cardiac Pathways Corporation. Endocardial electrical mapping catheter and method. RE. 35,880, Cl. 600-374.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Akiyama, Takeshi; and Nakayama, Shinichi, to Mabuchi Motor Co. Supporting device for miniature motors. B1 290,005, Cl. 248-671.000.

Allgor, Clarence B.; St. Clair, Clair J.; and Pearson, Richard A., to SPX Corporation. Engine waveford pattern analyzer. B1 418,388, Cl. 701-99.000.

Battenfeld GmbH: *See*—
Eckardt, Helmut; and Ehritt, Jürgen, B1 047,183, Cl. 264-40.300.

Chen, Ho T. Screw band. B1 522,687, Cl. 411-444.000.

Eckardt, Helmut; and Ehritt, Jürgen, to Battenfeld GmbH. Method of injection molding articles of thermoplastic materials. B1 047,183, Cl. 264-40.300.

Ehritt, Jürgen: *See*—
Eckardt, Helmut; and Ehritt, Jürgen, B1 047,183, Cl. 264-40.300.

Gerard, Gary F.: *See*—
Kotewicz, Michael L.; and Gerard, Gary F., B1 244,797, Cl. 435-194.000.

Hoepfl, Joseph R.: *See*—
Thompson, Christopher D.; and Hoepfl, Joseph R., B1 570,616, Cl. 81-63.100.

Kotewicz, Michael L.; and Gerard, Gary F., to Life Technologies, Inc. Cloned genes encoding reverse transcriptase lacking RNase H activity. B1 244,797, Cl. 435-194.000.

Life Technologies, Inc.: *See*—
Kotewicz, Michael L.; and Gerard, Gary F., B1 244,797, Cl. 435-194.000.

Mabuchi Motor Co.: *See*—
Akiyama, Takeshi; and Nakayama, Shinichi, B1 290,005, Cl. 248-671.000.

Nakayama, Shinichi: *See*—
Akiyama, Takeshi; and Nakayama, Shinichi, B1 290,005, Cl. 248-671.000.

Pearson, Richard A.: *See*—
Allgor, Clarence B.; St. Clair, Clair J.; and Pearson, Richard A., B1 418,388, Cl. 701-99.000.

Rosen, Jonas, to Sandvik AB. Composite tube. B1 324,595, Cl. 428-679.000.

Sandvik AB: *See*—
Rosen, Jonas, B1 324,595, Cl. 428-679.000.

Snap-on Technologies, Inc.: *See*—
Thompson, Christopher D.; and Hoepfl, Joseph R., B1 570,616, Cl. 81-63.100.

SPX Corporation: *See*—
Allgor, Clarence B.; St. Clair, Clair J.; and Pearson, Richard A., B1 418,388, Cl. 701-99.000.

St. Clair, Clair J.: *See*—
Allgor, Clarence B.; St. Clair, Clair J.; and Pearson, Richard A., B1 418,388, Cl. 701-99.000.

Thompson, Christopher D.; and Hoepfl, Joseph R., to Snap-on Technologies, Inc. Ratcheting screwdriver with reversing cap having projecting pin. B1 570,616, Cl. 81-63.100.

LIST OF DESIGN PATENTEES

ABC International Traders, Inc.: *See*—
Larian, Isaac, 397,334, Cl. D14-124.000.

Abrasive Developments Limited: *See*—
Baker, David Robert; and Earp, Jeffrey Philip, 397,408, Cl. D23-223.000.

Adams, Horst, to Wagner International AG. Powder spray gun. 397,421, Cl. D23-226.000.

Aeroquip Corporation: *See*—
Pike, Kevin H., 397,434, Cl. D24-112.000.

Akins, Ethan. Curved side fins for a surfboard. 397,394, Cl. D21-231.000.

Akutsu, Akira. Portable case. 397,249, Cl. D3-290.000.

Albert, Barry R.: *See—*
Rich, Christopher T.; Albert, Barry R.; and Pursel, Mark W., 397,279, Cl. D8-10.000.
Alcon Laboratories, Inc.: *See—*
Casica, Peter D.; and Chon, James Y., 397,433, Cl. D24-128.000.
Aleco Furniture Mfg Inc.: *See—*
Diramarian, Arsho, 397,260, Cl. D6-380.000.
Alexander, Erich. Light fixture. 397,489, Cl. D26-118.000.
Allen, Diane: *See—*
Jané , Rodney; Allen, Diane; Wang, Jui-Shang; and Gresens, Stanley, 397,417, Cl. D23-411.000.
Allen, Dillis V., to Vardon Golf Company, Inc. Golf club head. 397,387, Cl. D21-214.000.
Allende, Paula Andrea, to U.S. Philips Corporation. Stem with brush head for electric toothbrush. 397,252, Cl. D4-101.000.
Aluminum Company of America: *See—*
McEldowney, Carl F.; Fultz, Ken M.; Spoltman, Wayne A.; and Williams, Greg S., 397,296, Cl. D9-438.000.
Alvarez, William. Elevated dish draining rack. 397,534, Cl. D32-55.000.
Alvern-Norway A/S: *See—*
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1.7	5,797,156
49.1	5,797,157
167.1	5,797,158
250.31	5,797,159
250.361	5,797,160
322	5,797,161
323	5,797,162
413	5,797,163

CLASS 16

111 R	5,797,164
114 R	5,797,165
124	5,797,166

CLASS 24

16 R	5,797,167
20 R	5,797,168
287	5,797,169
452	5,797,170
600.5	5,797,171

CLASS 26

89	5,797,172

CLASS 29

11	5,797,173
25.03	5,797,971
56.5	5,797,174
74.1	5,797,178
520	5,797,175
527.5	5,797,176
739	5,797,177
753	5,797,179
888.024	5,797,181
888.1	5,797,180
889.21	5,797,182
890	5,797,183
890.053	5,797,184
893.3	5,797,185
895.22	5,797,186

CLASS 30

123.4	5,797,187
330	5,797,188
500	5,797,189

CLASS 33

203.18	5,797,190
503	5,797,191
526	5,797,192
614	5,797,193

CLASS 34

259	5,797,194
404	5,797,195
494	5,797,196
618	5,797,197

CLASS 36

27	5,797,198
28	5,797,199
97	5,797,200
132	5,797,201

CLASS 37

184	5,797,202
227	5,797,203

CLASS 40

122	5,797,204
768	5,797,205

CLASS 42

69.03	5,797,206
71.02	5,797,207

CLASS 43

2	5,797,208
4	5,797,209
9.6	5,797,210
17	5,797,211
21.2	5,797,212
54.1	5,797,213

CLASS 44

552	5,797,972

CLASS 47

47	5,797,214
57.5	5,797,215
58	5,797,216
79	5,797,217

CLASS 49

55	5,797,218

CLASS 52

11	5,797,220
20	5,797,221
69	5,797,219
79.4	5,797,224
93.1	5,797,225
155	5,797,226
167.1	5,797,227
167.7	5,797,228
198	5,797,222
204.1	5,797,223
204.62	5,797,229
323	5,797,230
396.02	5,797,231
408	5,797,232
481.1	5,797,233
578	5,797,234
582.1	5,797,235
589.1	5,797,237
612	5,797,238
664	5,797,236

CLASS 53

375.5	5,797,241
399	5,797,240
	5,797,242
	5,797,246
413	5,797,243
442	5,797,247
446	5,797,244
473	5,797,248
	5,797,249
572	5,797,245

CLASS 55

372	5,797,973
482	5,797,974
493	5,797,975

CLASS 56

10.2 J	5,797,250
11.3	5,797,251
17.2	5,797,252
370	5,797,253

CLASS 57

220	5,797,254
281	5,797,255
290	5,797,256
902	5,797,257

CLASS 59

35.1	5,797,258

CLASS 60

39.182	5,797,259
247	5,797,260
276	5,797,261
311	5,797,263
410	5,797,262
547.1	5,797,264
599	5,797,265
725	5,797,266
737	5,797,267
748	5,797,268

CLASS 62

7	RE. 35,874
46.2	5,797,269
64	5,797,270
	5,797,271
93	5,797,272
156	5,797,273
171	5,797,274
175	5,797,275
186	5,797,276
285	5,797,277
380	5,797,278
381	5,797,279
408	5,797,280

CLASS 63

12	5,797,281

CLASS 66

169 R	5,797,282
193	5,797,283

CLASS 70

16	5,797,284
177	5,797,285
224	5,797,286
409	5,797,287

CLASS 71

26	5,797,976

CLASS 72

7.1	5,797,288
17.3	5,797,289
53	5,797,290
344	5,797,291
348	5,797,292

CLASS 73

32 R	5,798,452
35.09	5,798,453
54.28	5,798,454
64.48	5,798,455
579	5,798,456
587	5,798,457
	5,798,458
	5,798,459
625	5,798,461
654	5,798,460
722	5,798,462
789	5,798,463
830	5,798,464
861.21	5,798,465
861.73	5,798,466
862.01	5,798,467

CLASS 74

89.15	5,797,293
335	5,797,294
483 R	5,797,295
489	5,797,296
574	5,797,297

CLASS 75

232	5,798,468
246	5,798,469
426	5,797,977

CLASS 81

3.8	5,797,298
9.51	5,797,299
60	5,797,300
63.1	B1 570,616
176.15	5,797,301
454	5,797,302

CLASS 82

1.11	5,797,303

CLASS 83

27	5,797,304
37	5,797,305
257	5,797,306
471.3	5,797,307
618	5,797,308

CLASS 84

390	5,798,471
422.1	5,798,472

CLASS 89

14.05	5,798,474
14.3	5,798,473

CLASS 91

375 A	5,797,309
515	5,797,310

CLASS 92

158	5,797,311

CLASS 95

74	5,797,978
97	5,797,979
106	5,797,980
174	5,797,981

CLASS 99

415	5,797,312
483	5,797,313

CLASS 100

265	5,797,314

CLASS 101

28	5,797,315
33	5,797,316
127.1	5,797,317
148	5,797,318
216	5,797,319
226	5,797,320
246	5,797,321
375	5,797,322
389.1	5,797,323
424.1	5,797,324
425	5,797,325
483	5,797,326
	5,797,327
	5,797,328
488	5,797,329

CLASS 102

202.5	5,798,475
202.7	5,798,476
319	5,798,477
501	5,798,478
529	5,798,479

CLASS 104

28	5,797,330

CLASS 106

14.12	5,797,987
472	5,797,988

CLASS 108

55.1	RE. 35,875
146	5,797,331

CLASS 110

226	5,797,332
233	5,797,333
245	5,797,334
345	5,797,336

CLASS 112

221	5,797,337
475.13	5,797,338

CLASS 114

144 A	5,797,339
221 R	5,797,340
222	5,797,341
239	5,797,342
242	5,797,343

CLASS 116

206	5,797,344
286	5,797,345

CLASS 117

200	5,797,989
208	5,797,990

CLASS 118

264	5,797,991
304	5,797,982
683	5,797,983

CLASS 119

166	5,797,346
169	5,797,347
230	5,797,348
419	5,797,349
475	5,797,350
652	5,797,352
710	5,797,353
815	5,797,354

CLASS 122

13.1	5,797,355
17	5,797,356
398	5,797,357
448.1	5,797,358

CLASS 123

58.5	5,797,359
90.11	5,797,360
90.17	5,797,361
	5,797,362
	5,797,363
90.36	5,797,364
184.56	5,797,365
237	5,797,366
295	5,797,367
308	5,797,368
436	5,797,369
478	5,797,370
481	5,797,371
491	5,797,372
495	5,797,373
497	5,797,374
	5,797,375
509	5,797,376
514	5,797,377
516	5,797,378
527	5,797,379
572	5,797,380
585	5,797,381
586	5,797,382
594	5,797,383
674	5,797,384

CLASS 124

66	5,797,385

CLASS 126

25 R	5,797,386
680	5,797,387

CLASS 127

33	5,797,984
68	5,797,985

CLASS 128

200.21	5,797,389
200.23	5,797,390
203.15	5,797,391
	5,797,392
204.23	5,797,393
207.17	5,797,394
653.1	5,797,396
660.04	5,797,397
673	5,797,395
692	5,797,398
705	5,797,399
842	5,797,401
849	5,797,402
856	5,797,403
869	5,797,404
878	5,797,405

CLASS 131

84.1	5,797,406

CLASS 132

73.6	5,797,407
275	5,797,408

CLASS 134

6	5,797,986
7	5,797,992
8	5,797,993
10	5,797,994
18	5,797,409
	5,797,996
19	5,797,995
138	5,797,410

CLASS 135

136	5,797,411
145	5,797,412

CLASS 136

253	5,797,997
255	5,797,998
258 PC	5,797,999

CLASS 137

1	5,797,413
13	5,797,414
15	5,797,415
60	5,797,416
78.3	5,797,417
115.07	5,797,418
216	5,797,419
	5,797,420
236.1	5,797,421
315	5,797,422
	5,797,423
355.27	5,797,424
505.46	5,797,425
533.11	5,797,426
533.17	5,797,427
557	5,797,428
625.69	5,797,429

CLASS 138

30	5,797,430
89	5,797,431
99	5,797,432

CLASS 139

449	5,797,433

CLASS 141

59	5,797,434
81	5,797,435
82	5,797,436

CLASS 144

208.1	5,797,437
246.1	5,797,438

CLASS 148

26	5,798,000
120	5,798,001
209	5,798,002
336	5,798,004
421	5,798,005
512	5,798,006
627	5,798,007
682	5,798,008

CLASS 149

19.4	5,798,480
19.8	5,798,481

CLASS 150

159	5,797,439

CLASS 152

548	5,798,009

CLASS 156

39	5,798,010
71	5,798,011
	5,798,012
188	5,798,013
263	5,798,014
275.5	5,798,015
345	5,798,016
382	5,798,017
397	5,798,018
425	5,798,019
542	5,798,020
556	5,798,021

CLASS 160

135	5,797,440
173 V	5,797,441
236	5,797,442

CLASS 162

181.1	5,798,023
203	5,798,024
261	5,798,025
290	5,798,026

CLASS 164

4.1	5,797,443
418	5,797,444

CLASS 165

11.1	5,797,445
81	5,797,446
140	5,797,447
151	5,797,448
165	5,797,449
167	5,797,450
171	5,797,451

CLASS 166
110 5,797,452
117.5 5,797,453
196 5,797,454
241.6 5,797,455
307 5,797,456

CLASS 169
46 5,797,457

CLASS 172
2 5,797,458
133 5,797,459
151 5,797,460
200 5,797,461

CLASS 173
169 5,797,462
211 5,797,463

CLASS 174
2 5,798,482
14 R 5,798,484
35 R 5,798,485
51 5,798,483
92 5,798,486

CLASS 175
4.6 5,797,464
108 5,797,465

CLASS 177
83 5,798,487

CLASS 180
181 5,797,466
271 5,797,467
292 5,797,468
441 5,797,469

CLASS 181
102 5,798,488
131 5,798,489

CLASS 186
53 5,797,470

CLASS 187
324 5,797,471
373 5,797,472
394 5,798,490

CLASS 192
77 5,797,473
207 5,797,474

CLASS 194
317 5,797,475
346 5,797,476

CLASS 198
441 5,797,478
456 5,797,479
499 5,797,477
672 5,797,480
813 5,797,481

CLASS 200
314 5,797,482
401 5,797,483

CLASS 204
157.15 5,798,491
192.26 5,798,027
228 5,798,028
298.16 5,798,029
403 5,798,030
5,798,031
452 5,798,032

CLASS 205
161 5,798,033
170 5,798,034
335 5,798,035
620 5,798,036

CLASS 206
164 5,797,484
183 5,797,485
194 5,797,486
308.2 5,797,487
349 5,797,488
362 5,797,489
365 5,797,490
373 5,797,491
387.1 5,797,492
443 5,797,493
460 5,797,494
554 5,797,495

CLASS 209
1 5,797,496
570 5,797,497
636 5,797,498

CLASS 210
85 5,798,037
154 5,798,038
232 5,798,039
5,798,040
456 5,798,041
800 5,798,042
803 5,798,043
804 5,798,044
662 5,798,045
705 5,798,046
739 5,798,047
767 5,798,048
5,798,049

CLASS 211
13.1 5,797,499
64 5,797,500
90.01 5,797,501
183 5,797,502
187 5,797,503

CLASS 212
303 5,797,504

CLASS 215
11.5 5,797,505
228 5,797,506

CLASS 216
20 5,798,050

CLASS 219
69.14 5,798,492
75 5,798,493
98 5,798,494
121.14 5,798,495
121.36 5,798,496
121.37 5,798,497
121.83 5,798,498
203 5,798,499
242 5,798,500
497 5,798,501
5,798,502
5,798,503
550 5,798,504
681 5,798,505

CLASS 220
4.23 5,797,507
6 5,797,508
258 5,797,509
266 5,797,510
326 5,797,511
404 5,797,512
421 5,797,513
683 5,797,514

CLASS 221
2 5,797,515

CLASS 222
80 5,797,516
95 5,797,517
107 5,797,518
129.1 5,797,519
386.5 5,797,520
464.4 5,797,522
498 5,797,523
505 5,797,524
530 5,797,525
531 5,797,521
590 5,798,051

CLASS 223
46 5,797,526
85 5,797,527

CLASS 224
148.4 5,797,528
575 5,797,529

CLASS 226
74 5,797,530
97 5,797,531
119 5,797,532

CLASS 227
8 5,797,533
10 5,797,534
120 5,797,535
175.1 5,797,536
176.1 5,797,537
5,797,538

CLASS 228
180.1 5,797,539
180.5 5,797,388
182 5,797,540

CLASS 229
92.8 5,797,541
109 5,797,542
116.1 5,797,543

CLASS 235
379 5,798,506
380 5,798,507
5,798,508
462 5,798,509
5,798,510
5,798,511
5,798,513
464 5,798,514
472 5,798,512
5,798,515
5,798,516

CLASS 239
265.37 5,797,544
279 5,797,545
280.5 5,797,546

CLASS 241
4 5,797,547
35 5,797,548
46.01 5,797,549
171 5,797,550

CLASS 242
18 5,797,551
35.5 A 5,797,557
157 R 5,797,552
316 5,797,554
340 5,797,556
347 5,797,555
373 5,797,558
527.6 5,797,559
528 5,797,560
554.6 5,797,561

CLASS 244
1 R 5,797,562
130 5,797,563
223 5,797,564

CLASS 246
465 5,797,565

CLASS 248
49 5,797,566
97 5,797,567
122.1 5,797,568
187.1 5,797,569
205.3 5,797,570
210 5,797,571
222.52 5,797,572
231.31 5,797,573
398 5,797,574
429 5,797,575
5,797,576
5,797,577
453 5,797,578
523 5,797,579
5,797,580
544 5,797,581
671 B1 290,005

CLASS 250
203.4 5,798,517
205 5,798,518
206.1 5,798,519
214 A 5,798,520
227.19 5,798,521
234 5,798,522
5,798,523
305 5,798,524
310 5,798,525
339.09 5,798,526
363.03 5,798,527
492.2 5,798,528
5,798,529
548 5,798,530
559.03 5,798,531
559.22 5,798,532

CLASS 251
38 5,797,582
57 5,797,583
80 5,797,585
129.02 5,797,586
129.21 5,797,587
175 5,797,588
305 5,797,589
324 5,797,590

CLASS 252
62.9 5,798,052
68 5,798,054
182.25 5,798,533
188.28 5,798,055
299.01 5,798,056
299.5 5,798,057
299.61 5,798,058
301.45 5,798,059
520.1 5,798,060

CLASS 256
13.1 5,797,591
5,797,592

CLASS 257
59 5,798,534
83 5,798,535
99 5,798,536
103 5,798,537
139 5,798,538
194 5,798,540
197 5,798,539
202 5,798,541
232 5,798,542
288 5,798,543
296 5,798,544
301 5,798,545
316 5,798,546
5,798,547
319 5,798,548
335 5,798,549
341 5,798,550
368 5,798,551
371 5,798,552
394 5,798,553
401 5,798,554
410 5,798,555
414 5,798,556
416 5,798,557
458 5,798,558
522 5,798,559
555 5,798,560
588 5,798,561
632 5,798,562
668 5,798,563
686 5,798,564
701 5,798,565
712 5,798,566
723 5,798,567
758 5,798,568
763 5,798,569
784 5,798,571
796 5,798,570

CLASS 261
77 5,798,061

CLASS 264
40.1 5,798,062
40.3 B1 047,183
45.5 5,798,063
46.3 5,798,064
46.4 5,798,065
85 5,798,066
134 5,798,067
171.13 5,798,068
255 5,798,069
272.17 5,798,070
275 5,798,071
312 5,798,072
313 5,798,073
318 5,798,074
320 5,798,075
326 5,798,076
349 5,798,077
446 5,798,078
554 5,798,079
572 5,798,080
605 5,798,081

CLASS 267
64.12 5,797,593
64.17 5,797,594
64.27 5,797,595

CLASS 270
58.11 5,797,596

CLASS 271
96 5,797,597
202 5,797,598
272 5,797,599

CLASS 273
121 A 5,797,600
431 5,797,601

CLASS 277
372 5,797,602
602 5,797,603
618 5,797,604

CLASS 279
4.05 5,797,605

CLASS 280
5.22 5,797,606
6.11 5,797,607
11.19 5,797,609
11.22 5,797,610
11.3 5,797,608
33.991 5,797,611
47.26 5,797,612
284 5,797,613
417.1 5,797,614
441.2 5,797,615
477 5,797,616
655 5,797,617
689 5,797,618
728.3 5,797,619
730.1 5,797,620
730.2 5,797,621
731 5,797,622
735 5,797,623
741 5,797,624

CLASS 281
15.1 5,797,630
42 5,797,625
5,797,631

CLASS 283
114 5,797,632

CLASS 285
5 5,797,626
38 5,797,627
49 5,797,628
243 5,797,633
256 5,797,629
319 5,797,634

CLASS 290
54 5,798,572

CLASS 292
111 5,797,635

CLASS 294
1.3 5,797,636
17 5,797,637
97 5,797,638
110.1 5,797,639
152 5,797,640

CLASS 296
3 5,797,641
37.3 5,797,642
100 5,797,643
146.9 5,797,644
152 5,797,645
197 5,797,646
204 5,797,647
223 5,797,648

CLASS 297
14 5,797,649
184.1 5,797,650
283.1 5,797,651
284.4 5,797,652
300.5 5,797,653
411.23 5,797,655
483 5,797,654

CLASS 298
1 H 5,797,656
17 R 5,797,657

CLASS 301
5.3 5,797,658
35.62 5,797,659
73 5,797,660
111 5,797,661

CLASS 303
119.2 5,797,662
146 5,797,663
190 5,797,664

CLASS 307
4 5,798,573
9.1 5,798,574
10.1 5,798,575
10.3 5,798,576
10.7 5,798,577
18 5,798,578
106 5,798,579
112 5,798,580
115 5,798,581

CLASS 310
13 5,798,582
42 5,798,583
50 5,798,584
54 5,798,586
58 5,798,587
81 5,798,588
90 5,798,589
156 5,798,590
164 5,798,591
5,798,592
166 5,798,593
180 5,798,594
260 5,798,595
261 5,798,596
313 R 5,798,597
323 5,798,598
5,798,599
330 5,798,600
339 5,798,601

CLASS 312
107 5,797,665
254 5,798,623
319.5 5,797,666
332.1 5,797,667

CLASS 313
359.1 5,798,602
412 5,798,603
422 5,798,605
440 5,798,606
461 5,798,607
489 5,798,608
495 5,798,604
5,798,609
498 5,798,610
570 5,798,611
642 5,798,612

CLASS 315
39.51 5,798,613
107 5,798,614
219 5,798,615
247 5,798,616
5,798,617
248 5,798,618
307 5,798,619
5,798,620
371 5,798,621

CLASS 318
16 5,798,622
254 5,798,624
541 5,798,625
562 5,798,626
568.14 5,798,627
805 5,798,628

CLASS 320
15 5,798,629
128 5,798,671
137 5,798,630

CLASS 322
25 5,798,631
29 5,798,632

CLASS 323
207 5,798,633
5,798,634
222 5,798,635
313 5,798,637

CLASS 324
158.1 5,798,638
207.2 5,798,639
207.24 5,798,640
228 5,798,641
307 5,798,642
309 5,798,643
326 5,798,644
427 5,798,646
503 5,798,647
548 5,798,648
551 5,798,649
663 5,798,650
754 5,798,651
5,798,652
760 5,798,653
761 5,798,654
5,798,655

CLASS 326
17 5,798,658
39 5,798,656
81 5,798,657
86 5,798,659

CLASS 327
65 5,798,660
106 5,798,661
109 5,798,662
205 5,798,663
307 5,798,664
317 5,798,665
377 5,798,666
513 5,798,667
538 5,798,668
539 5,798,669
552 5,798,670

CLASS 330
251 5,798,672
255 5,798,673

CLASS 332

149 5,798,674

CLASS 333

134 RE. 35,876
161 5,798,675
202 5,798,676
204 5,798,677

CLASS 335

216 5,798,678
299 5,798,679
301 5,798,680

CLASS 336

96 5,798,682

CLASS 337

198 5,798,683

CLASS 338

22 R 5,798,684
195 5,798,685

CLASS 340

384.7 5,798,686
426 5,798,687
438 5,798,688
447 5,798,689
458 5,798,690
479 5,798,691
501 5,798,692
505 5,798,693
540 5,798,694
576 5,798,695
605 5,798,696
610 5,798,697
618 5,798,698
627 5,798,699
628 5,798,700
5,798,701
636 5,798,702
666 5,798,703
692 5,798,704
815.45 5,798,681
825.01 5,798,705
825.07 5,798,706
825.31 5,798,711
825.44 5,798,707
5,798,708
825.52 5,798,710
825.54 5,798,709
970 5,798,712
974 5,798,713
988 5,798,714

CLASS 341

26 5,798,716
50 5,798,717
51 5,798,718
67 5,798,719
101 5,798,720
106 5,798,721
133 5,798,722
136 5,798,723
146 5,798,724
158 5,798,725

CLASS 342

37 5,798,726
70 5,798,727
93 5,798,728
189 5,798,729
195 5,798,730
357 5,798,731
5,798,732
5,798,733

CLASS 343

700 MS 5,798,734
704 5,798,735
791 5,798,736
895 5,798,737

CLASS 345

2 5,798,738
8 5,798,739
90 5,798,743
92 5,798,740
5,798,744
5,798,745
94 5,798,741
98 5,798,742
5,798,746
5,798,747
123 5,798,749
126 5,798,750
138 5,798,751
146 5,798,752
154 5,798,753
156 5,798,748
161 5,798,754
163 5,798,755
179 5,798,756
338 5,798,757
339 5,798,758
5,798,759
352 5,798,760
419 5,798,761
420 5,798,762
423 5,798,763
5,798,764
426 5,798,765
431 5,798,766
5,798,767
441 5,798,768
442 5,798,769
[illegible] 5,798,770

CLASS 346

22 5,798,715

CLASS 347

7 5,798,771
11 5,798,772
19 5,798,773
21 5,798,774
33 5,798,775
43 5,798,776
44 5,798,777
45 5,798,778
46 5,798,779
50 5,798,780
89 5,798,781
123 5,798,782
186 5,798,789
215 5,798,783
243 5,798,784

CLASS 348

1 5,798,785
144 5,798,786
152 5,798,787
[illegible] 5,798,788
191 5,798,790
218 5,798,791
264 5,798,792
347 5,798,793
398 5,798,794
5,798,795
[illegible] 5,798,796
476 5,798,798
552 5,798,799
578 5,798,800
645 5,798,801
[illegible] 5,798,802
726 5,798,803
845.3 5,798,804

CLASS 349

[illegible] 5,798,805
29 5,798,806
76 5,798,807
[illegible] 5,798,808
115 5,799,231
119 5,798,809
123 5,798,810
152 5,798,811
5,798,812
154 5,798,813
172 5,798,814

CLASS 351

44 5,798,815
160 R 5,798,816
161 5,798,817

CLASS 352

31 5,798,818

CLASS 353

33 5,798,819

CLASS 355

40 5,798,820
46 5,798,821
53 5,798,822
67 5,798,823
5,798,824
73 5,798,825

CLASS 356

4.09 5,798,826
39 5,798,827
141.3 5,798,828
237 5,798,829
5,798,830
5,798,831
[illegible] 5,798,833
316 5,798,832
345 5,798,834
358 5,798,835
369 5,798,837
375 5,798,836
401 5,798,838
402 5,798,839
437 5,798,840

CLASS 357

189 5,798,857

CLASS 358

296 5,798,841
302 5,798,842
404 5,798,843
405 5,798,844
434 5,798,845
456 5,798,846
464 5,798,847
468 5,798,848
475 5,798,849

CLASS 359

12 5,798,850
[illegible] 5,798,851
158 5,798,852
160 5,798,853
161 5,798,854
177 5,798,855
181 5,798,856
191 5,798,858
247 5,798,859
273 5,798,860
461 5,798,861
503 5,798,862
557 5,798,863
559 5,798,864
583 5,798,865
621 5,798,866
629 5,798,867
649 5,798,868
658 5,798,869
659 5,798,870
[illegible] 5,798,871
686 5,798,872
692 5,798,873
761 5,798,874
813 5,798,875
819 5,798,876
831 5,798,877
[illegible] 5,798,878
857 5,798,879
5,798,880
872 5,798,881
5,798,882

CLASS 360

31 5,798,883
75 5,798,884
77.08 5,798,885
99.05 5,798,886
[illegible] 5,798,887
5,798,888
103 5,798,889
5,798,890
107 5,798,891
109 5,798,892
5,798,893
5,798,894
113 5,798,895
5,798,896
126 5,798,897
130.21 5,798,898
132 5,798,899
137 5,798,900

CLASS 361

[illegible] 5,798,901
149 5,798,902
234 5,798,904
321.4 5,798,903
504 5,798,905
520 5,798,906
[illegible] 5,798,947
683 5,798,907
707 5,798,908
764 5,798,909
809 5,798,910

CLASS 362

31 5,797,668
34 5,797,669
[illegible] 5,798,911
[illegible] 5,798,912
119 5,797,670
162 5,797,671
[illegible] 5,797,672
234 5,797,673
268 5,797,674
396 5,797,675

CLASS 363

21 5,798,913
44 5,798,914
60 5,798,915
135 5,798,916

CLASS 364

148 5,798,917
5,798,918
150 5,798,919
167.01 5,798,920
400.01 5,798,921
5,798,922
420 5,798,923
468.24 5,798,924
469.02 5,798,925
474.22 5,798,928
474.3 5,798,927
478.01 5,798,929
5,798,930
479.01 5,798,931
483 5,798,932
5,798,933
5,798,934
488 5,798,935
489 5,798,936
490 5,798,937
5,798,938
493 5,798,939
498 5,798,940
510 5,798,941
516 5,798,942
526 5,798,943
550 5,798,945
551.01 5,798,946
572 5,798,948
578 5,798,645
5,798,949
5,798,950
708.1 5,798,951
715.1 5,798,952
5,798,953
724.17 5,798,954
736.01 5,798,955
748.5 5,798,957
758 5,798,956
768 5,798,958

CLASS 365

26 5,798,959
45 5,798,960
52 5,798,961
5,798,962
97 5,798,963
145 5,798,964
150 5,798,965
185.18 5,798,966
185.21 5,798,967
185.29 5,798,968
189.05 5,798,969
5,798,970
189.11 5,798,972
200 5,798,973
5,798,974
203 5,798,975
222 5,798,976
226 5,798,977
230.06 5,798,978
233 5,798,979
5,798,980

CLASS 366

18 5,797,676
85 5,797,677
139 5,797,678
5,797,679
5,797,680
177.1 5,797,681

CLASS 367

13 5,798,981
73 5,798,982
135 5,798,983

CLASS 368

10 5,798,984
64 5,798,985
74 5,798,986

CLASS 369

13 5,798,987
44.14 5,798,988
44.41 5,798,989
47 5,798,990
5,798,991
54 5,798,993
58 5,798,994
59 5,798,995
5,798,996
75.2 5,798,997
116 5,798,992
178 5,798,998
266 5,798,999
270 5,799,006
275.4 5,799,007
291 5,799,008
5,799,009

CLASS 370

210 5,799,000
220 5,799,001
234 5,799,002
244 5,799,003
335 5,799,004
5,799,005
5,799,010
5,799,011
336 5,799,012
342 5,799,013
358 5,799,014
388 5,799,015
401 5,799,016
419 5,799,017
451 5,799,018
465 5,799,019
[illegible] 5,799,020

CLASS 371

5.1 5,799,023
22.1 5,799,021
36 5,799,022

CLASS 372

11 5,799,024
18 5,799,025
45 5,799,026
46 5,799,027
49 5,799,028
50 5,799,029
5,799,030
59 5,799,031
99 5,799,032

CLASS 374

123 5,797,682

CLASS 375

200 5,799,033
206 5,799,034
5,799,035
222 5,799,036
224 5,799,038
233 5,799,037
244 5,799,039
258 5,799,040
259 5,799,041
285 5,799,042
286 5,799,043
303 5,799,045
341 5,799,046
350 5,799,047
360 5,799,048
362 5,799,049
368 5,799,050
376 5,799,051

CLASS 376

313 5,799,052

CLASS 377

26 5,799,053

CLASS 378

17 5,799,054
42 5,799,055
[illegible] 5,799,056
147 5,799,057
[illegible] 5,799,058
207 5,799,059

CLASS 379

29 5,799,060
45 5,799,061
51 5,799,062
67 5,799,063
88 5,799,065
5,799,066
93.06 5,799,067
5,799,068
93.33 5,799,069
[illegible] 5,799,064
100.14 5,799,070
113 5,799,071
5,799,073
114 5,799,072
142 5,799,074
220 5,799,075
229 5,799,076
[illegible] 5,799,077
410 5,799,078
433 5,799,079

CLASS 380

4 5,799,080
5 5,799,081
7 5,799,082
20 5,799,083
23 5,799,084
5,799,085
5,799,086
24 5,799,087
30 5,799,088
37 5,799,089
43 5,799,090
49 5,799,091
51 5,799,092
5,799,093

CLASS 381

18 5,799,094
68 5,799,095
169 5,799,096
187 5,799,097

CLASS 382

125 5,799,098
131 5,799,099
132 5,799,100
133 5,799,101
135 5,799,102
141 5,799,103
144 5,799,104
167 5,799,105
172 5,799,106
181 5,799,107
205 5,799,108
243 5,799,109
253 5,799,110
254 5,799,111
5,799,112
256 5,799,113
291 5,799,114
305 5,799,115

CLASS 383

68 5,797,683

CLASS 384

99 5,797,684
215 5,797,685
544 5,797,686

CLASS 385

2 5,799,116
14 5,799,117
5,799,118
28 5,799,119
45 5,799,120
47 5,799,121
59 5,799,122
124 5,799,123
125 5,799,124
127 5,799,125
146 5,799,126

CLASS 386

46 5,799,127
68 5,799,128
111 5,799,129
124 5,799,130

CLASS 395

2.13 5,799,131
3 5,799,132
23 5,799,133
24 5,799,134
93 5,799,135
109 5,799,136
5,799,137
114 5,799,138
5,799,139
182.02 5,799,146
182.04 5,799,140
5,799,147
182.11 5,799,141
183.02 5,799,148
183.14 5,799,142
5,799,143
5,799,144
188.01 5,799,145
200.31 5,799,149
200.33 5,799,150
200.34 5,799,151
200.53 5,799,153
5,799,154
200.66 5,799,155
200.67 5,799,156
227 5,799,157
285 5,799,158
287 5,799,159
293 5,799,160
309 5,799,161
381 5,799,162
5,799,163
383 5,799,164
390 5,799,165
392 5,799,166
394 5,799,167
430 5,799,168
500 5,799,169
5,799,170
5,799,171
5,799,172
5,799,173
[illegible] 5,799,174
551 5,799,175

556 5,799,176
5,799,177
557 5,799,178
581 5,799,179
5,799,180
5,799,181
595 5,799,182
602 5,799,183
5,799,184
622 5,799,185
652 5,799,186
5,799,187
678 5,799,188
5,799,189
5,799,190
682 5,799,191
701 5,799,192
703 5,799,193
739 5,799,195
750.03 5,799,194
5,799,196
750.05 5,799,197
5,799,198
750.06 5,799,199
750.08 5,799,200
800 5,799,201
800.01 5,799,202
828 5,799,203
830 5,799,204
840 5,799,205
5,799,206
858 5,799,207
5,799,208
876 5,799,209
5,799,210
5,799,211
5,799,212

CLASS 396

3 5,799,213
135 5,799,214
157 RE. 35,877
5,799,215
225 5,799,216
279 5,799,217
297 5,799,218
319 5,799,219
411 5,799,220
535 5,799,221
538 5,799,222
5,799,223
619 5,799,224

CLASS 399

66 5,799,225
5,799,226
92 5,799,227
5,799,228
5,799,229
5,799,230
167 5,799,232
175 5,799,233
277 5,799,234
5,799,235
5,799,236
367 5,799,237

CLASS 400

23 5,797,687
5,797,688
74 5,797,689
124.01 5,797,690
320 5,797,691

CLASS 401

5,797,692

CLASS 403

24 5,797,693
170 5,797,695
231 5,797,694
377 5,797,696
384 5,797,697

CLASS 404

39 5,797,698
117 5,797,699

CLASS 405

5,797,700
128 5,797,701
5,797,702
5,797,703
237 5,797,704
253 5,797,705
262 5,797,706

CLASS 407

114 5,797,707

CLASS 408

112 5,797,708
5,797,709
222 5,797,710
226 5,797,711

CLASS 410

16 5,797,712

CLASS 411

339 5,797,713
444 B1 522,687
508 5,797,714

CLASS 414

408 5,797,715
420 5,797,716
788.2 5,797,720

CLASS 415

5,797,721
170.1 5,797,722
174.2 5,797,723
206 5,797,724
209.2 5,797,725

CLASS 416

96 R 5,797,726
204 R 5,797,727
231 A 5,797,728

CLASS 417

3 5,797,729
14 5,797,717
44.11 5,797,718
46 5,797,719
222.1 RE. 35,878
222.2 5,797,730
238 5,797,731
310 5,797,732
416 5,797,733

CLASS 418

5,797,734
151 5,797,735

CLASS 419

7 5,799,238

CLASS 420

38 5,798,082

CLASS 422

52 5,798,083
65 5,798,084
5,798,085
211 5,798,086

CLASS 423

555 5,798,087
567.1 5,798,088

CLASS 424

1.65 5,798,089
9.364 5,798,092
9.52 5,798,091
45 5,798,093
65 5,798,094
70.19 5,798,095
78.35 5,798,096
130.1 5,798,100
181.1 5,798,097
184.1 5,798,104
185.1 5,798,099
195.1 5,798,101
198.1 5,798,102
240.1 5,798,103
272.1 5,798,105
5,798,106
279.1 5,798,090
400 5,798,107
401 5,798,108
5,798,109
5,798,110
5,798,111
405 5,798,112
422 5,798,113
423 5,798,114
5,798,115
445 5,798,116
5,798,117
473 5,798,119
482 5,798,120
642 5,798,121

CLASS 425

3 5,798,122
29 5,798,123
32 5,798,124
72.2 5,798,125
78 5,798,126
117 5,798,127
147 5,798,128
215 5,798,129
549 5,798,130

CLASS 426

293 5,798,131
305 5,798,132
438 5,798,133

CLASS 427

126.6 5,798,134
130 5,798,135
131 5,798,136
213 5,798,137
230 5,798,138
237 5,798,139
240 5,798,140
248.1 5,798,141
249 5,798,143
255 5,798,142
384 5,798,144
393.5 5,798,145
458 5,798,146
461 RE. 35,879
511 5,798,147
535 5,798,148

CLASS 428

17 5,798,150
34.1 5,798,152
34.5 5,798,151
5,798,153
35.3 5,798,154
35.8 5,798,155
35.9 5,798,156
36.9 5,798,157
5,798,158
40.1 5,798,159
56 5,798,160
64.1 5,798,161
76 5,798,162
100 5,798,163
141 5,798,164
156 5,798,166
160 5,798,165
171 5,798,167
174 5,798,168
212 5,798,169
5,798,170
220 5,798,171
327 5,798,172
342 5,798,173
347 5,798,174
355 EN 5,798,175
5,798,176
5,798,177
5,798,178
411.1 5,798,179
5,798,180
422 5,798,181
428 5,798,182
5,798,183
5,798,184
582 5,798,185
679 B1 324,595

CLASS 429

13 5,798,186
26 5,798,187
34 5,798,188
101 5,798,189
192 5,798,190
5,798,191

CLASS 430

5,798,192
5,798,193
5,798,194
22 5,798,195
5,798,196
5,798,197
106.6 5,798,198
110 5,798,199
126 5,798,200
192 5,798,201
306 5,798,202
325 5,798,203
399 5,798,204

CLASS 431

75 5,797,736
170 5,797,737
215 5,797,738
320 5,797,739

CLASS 433

5,797,740
75 5,797,741
92 5,797,742
126 5,797,743
5,797,744
224 5,797,745
5,797,747
5,797,748
228.1 5,797,749

CLASS 434

100 5,797,750
162 5,797,751
307 A 5,797,752
322 5,797,753
5,797,754
429 5,797,755

CLASS 435

5 5,798,205
5,798,206
5,798,208
5,798,209
5,798,210
5,798,211
7.1 5,798,212
7.21 5,798,216
7.23 5,798,217
7.24 5,798,218
7.4 5,798,213
5,798,214
7.9 5,798,215
7.93 5,798,219
13 5,798,220
23 5,798,221
29 5,798,222
69.1 5,798,223
5,798,224
5,798,226
69.4 5,798,225
69.51 5,798,228
69.6 5,798,227
70.21 5,798,229
5,798,230
91.2 5,798,231
97 5,798,233
128 5,798,234
135 5,798,235
136 5,798,236
139 5,798,237
173.3 5,798,238
183 5,798,239
5,798,240
188 5,798,241
189 5,798,243
5,798,242
193 5,798,244
194 5,798,245
B1 244,797
5,798,246
212 5,798,247
214 5,798,248
233 5,798,249
235.1 5,798,250
240.27 5,798,251
243 5,798,252
5,798,253
5,798,254
252.1 5,798,255
252.3 5,798,257
5,798,258
5,798,259
5,798,260
255.2 5,798,256
283.1 5,798,261
287.2 5,798,262
288.7 5,798,263
326 5,798,264
364 5,798,265

CLASS 436

64 5,798,266
97 5,798,267
100 5,798,268
136 5,798,269
143 5,798,270
146 5,798,271
169 5,798,272
514 5,798,273
518 5,798,274
5,798,275
546 5,798,276

CLASS 437

31 5,798,277
43 5,798,278
5,798,279
165 5,798,280

CLASS 438

14 5,798,281
15 5,798,282
24 5,798,283
80 5,798,284
108 5,798,285
113 5,798,286
133 5,798,287
238 5,798,288
239 5,798,289
245 5,798,290
301 5,798,291
401 5,798,292
459 5,798,293
476 5,798,294
533 5,798,295
592 5,798,296
622 5,798,297
5,798,298
625 5,798,299
627 5,798,300
653 5,798,301
693 5,798,302
696 5,798,303

CLASS 439

55 5,797,764
63 5,797,765
94 5,797,756
101 5,797,757
157 5,797,758
201 5,797,759
289 5,797,760
320 5,797,761
342 5,797,762
402 5,797,763
419 5,797,766
490 5,797,767
567 5,797,768
571 5,797,769
607 5,797,770
610 5,797,771
752 5,797,772
5,797,773
857 5,797,774

CLASS 440

1 5,797,775
52 5,797,776
84 5,797,777
111 5,797,778

CLASS 441

74 5,797,779

CLASS 442

289 5,798,304
361 5,798,305

CLASS 445

25 5,797,780
37 5,797,781
701 5,797,782

CLASS 446

77 5,797,783
120 5,797,784
227 5,797,785

CLASS 450

1 5,797,786
30 5,797,787

CLASS 451

28 5,797,788
289 5,797,789

CLASS 454

59 5,797,790
134 5,797,791
320 5,797,792

CLASS 455

5.1 5,799,239
38.4 5,799,240
62 5,799,241
63 5,799,242
5,799,243
67.3 5,799,244
69 5,799,245
76 5,799,246
90 5,799,247
333 5,799,248
411 5,799,249
422 5,799,250
517 5,799,251
524 5,799,252
527 5,799,253
528 5,799,254
551 5,799,255
574 5,799,256

CLASS 460

111 5,797,793

CLASS 463

18 5,797,794
42 5,797,795
43 5,797,796
47.7 5,797,797

CLASS 464

111 5,797,798
5,797,799
130 5,797,800
145 5,797,801

CLASS 470

185 5,797,802

CLASS 473

213 5,797,803
260 5,797,804
266 5,797,805
310 5,797,806
345 5,797,807
364 5,797,808
407 5,797,809
417 5,797,810
514 5,797,811
522 5,797,812
549 5,797,813
551 5,797,814
588 5,797,815

CLASS 474

14 5,797,816
110 5,797,817
111 5,797,818
161 5,797,819
230 5,797,820

CLASS 475

120 5,797,821
306 5,797,822

CLASS 482

105 5,797,823

CLASS 483

53 5,797,825

CLASS 492

7 5,797,826
37 5,797,827

CLASS 493

225 5,797,828
352 5,797,829
361 5,797,830
438 5,797,831
462 5,797,832

CLASS 501

57 5,798,306
95.2 5,798,307
103 5,798,308

CLASS 502

38 5,798,313
111 5,798,309
115 5,798,314

CLASS 503

215 5,798,315

CLASS 504

128 5,798,317
136 5,798,316
206 5,798,310
282 5,798,311

CLASS 505

230 5,798,312
501 5,798,318

CLASS 507

138 5,798,319
271 5,798,320

CLASS 508

437 5,798,321
442 5,798,322

CLASS 510

176 5,798,323
182 5,798,324
201 5,798,325
221 5,798,326
303 5,798,327
384 5,798,329
421 5,798,330
438 5,798,328
501 5,798,331

CLASS 514

8 5,798,332
11 5,798,333
12 5,798,334
15 5,798,335
16 5,798,336
19 5,798,337
26 5,798,338
34 5,798,339
45 5,798,340
52 5,798,341
54 5,798,343
58 5,798,342
80 5,798,344
137 5,798,346

167	5,798,345
178	5,798,347
182	5,798,348
185	5,798,349
212	5,798,350
	5,798,351
213	5,798,352
221	5,798,353
239.2	5,798,354
248	5,798,355
249	5,798,356
252	5,798,357
254	5,798,358
255	5,798,359
	5,798,360
258	5,798,361
260	5,798,362
299	5,798,363
303	5,798,364
312	5,798,365
315	5,798,366
322	5,798,367
323	5,798,368
324	5,798,369
343	5,798,370
345	5,798,371
356	5,798,372
357	5,798,373
369	5,798,374
	5,798,375
374	5,798,376
423	5,798,377
438	5,798,378
441	5,798,379
456	5,798,380
	5,798,381
469	5,798,382
482	5,798,383
[illegible]	5,798,384
512	5,798,385
547	5,798,386
551	5,798,387
557	5,798,388
560	5,798,389
634	5,798,390
643	5,798,391
649	5,798,392
652	5,798,393

CLASS 521

42.5	5,798,394
793.1	5,797,239

CLASS 522

1	5,798,395
15	5,798,396
81	5,798,397

CLASS 523

404	5,798,398
414	5,798,399
443	5,798,400

CLASS 524

68	5,798,401
167	5,798,402
259	5,798,416
447	5,798,403
490	5,798,404
496	5,798,405
501	5,798,406
504	5,798,407
505	5,798,408
506	5,798,409
570	5,798,410
580	5,798,411
847	5,798,412

CLASS 525

[illegible]	5,798,413
77	5,798,414
129	5,798,415
276	5,798,417
314	5,798,418
323	5,798,420
326.9	5,798,421
370	5,798,419
450	5,798,422

CLASS 526

124.2	5,798,424
271	5,798,425
318.41	5,798,426
352	5,798,427

CLASS 528

14	5,798,428
42	5,798,429
	5,798,430
73	5,798,431
176	5,798,432
279	5,798,433
306	5,798,434
354	5,798,435
	5,798,436
373	5,798,437
483	5,798,438
489	5,798,439
499	5,798,440

CLASS 530

324	5,798,441
330	5,798,442
333	5,798,443
	5,798,444
350	5,798,445
370	5,798,446
387.1	5,798,447
	5,798,448

CLASS 546

155	5,798,451

CLASS 588

200	5,799,257

CLASS 600

22	5,797,833
25	5,797,834
106	5,797,835
109	5,797,836
	5,797,837
300	5,797,838
	5,797,839
301	5,797,840
323	5,797,841
374	RE. 35,880
435	5,797,842
437	5,797,843
442	5,797,844
443	5,797,845
447	5,797,846
	5,797,847
459	5,797,848
461	5,797,849
494	5,797,850
499	5,797,851
513	5,797,855
529	5,797,852
544	5,797,853
554	5,797,854
585	5,797,856
	5,797,857
	5,797,858

CLASS 601

22	5,797,859
30	5,797,860
134	5,797,861

CLASS 602

10	5,797,862
18	5,797,863
26	5,797,864
27	5,797,865

CLASS 604

20	5,797,866
	5,797,867
21	5,797,868
43	5,797,869
49	5,797,870
	5,797,871
	5,797,872
	5,797,873
53	5,797,874
74	5,797,875
95	5,797,876
96	5,797,877
	5,797,879
110	5,797,880
133	5,797,881
164	5,797,882
170	5,797,883
180	5,797,884
192	5,797,885
196	5,797,878
264	5,797,886
265	5,797,887
280	5,797,888
283	5,797,889
351	5,797,890
360	5,797,891
361	5,797,892
372	5,797,893
378	5,797,894
385.1	5,797,824
385.2	5,797,895
391	5,797,896
412	5,797,897
890.1	5,797,898

CLASS 606

1	5,797,899
	5,797,900
10	5,797,901
32	5,797,902
34	5,797,903
36	5,797,904
41	5,797,905
48	5,797,906
49	5,797,907
54	5,797,908
61	5,797,909
	5,797,910
	5,797,911
69	5,797,912
72	5,797,913
73	5,797,914
74	5,797,915
	5,797,916
99	5,797,917
104	5,797,918
105	5,797,919
108	5,797,920
118	5,797,921
120	5,797,922
129	5,797,923
130	5,797,924
133	5,797,925
	5,797,926
144	5,797,927
	5,797,928
148	5,797,929
	5,797,930
151	5,797,931
	5,797,932
	5,797,933
153	5,797,934
159	5,797,935
167	5,797,936
	5,797,937
	5,797,938
	5,797,939
	5,797,940
171	5,797,941
182	5,797,942
185	5,797,943
	5,797,944
187	5,797,945
190	5,797,946
192	5,797,947
194	5,797,948
	5,797,949
197	5,797,950
198	5,797,951
	5,797,952
200	5,797,953
201	5,797,954
204	5,797,955
205	5,797,956
	5,797,957
207	5,797,958
	5,797,959
213	5,797,960
222	5,797,961
228	5,797,962
232	5,797,963

CLASS 607

2	5,797,964
	5,797,965
3	5,797,966
4	5,797,967
5	5,797,968
	5,797,969
9	5,797,970

CLASS 701

1	5,799,258
41	5,799,259
51	5,799,260
78	5,799,261
93	5,799,262
99	B1 418,388
117	5,799,263
211	5,799,264

CLASS 702

66	5,799,265
123	5,799,266

CLASS 704

1	5,799,267
9	5,799,268
	5,799,269
205	5,799,270
217	5,799,271
223	5,799,272
235	5,799,273
239	5,799,274
241	5,799,275
251	5,799,276
256	5,799,277
	5,799,278
275	5,799,279
276	5,799,280

CLASS 705

1	5,799,281
2	5,799,282
19	5,799,283
26	5,799,284
	5,799,285
30	5,799,286
36	5,799,287
43	5,799,288
400	5,799,289
410	5,799,290

CLASS 706

1	5,799,291
11	5,799,292
45	5,799,293
46	5,799,294
	5,799,295
55	5,799,296

CLASS 707

1	RE. 35,881
	5,799,297
	5,799,298
3	5,799,299
5	5,799,300
6	5,799,301
7	5,799,302
	5,799,303
	5,799,304
10	5,799,305
	5,799,306
100	5,799,307
	5,799,308
102	5,799,309
	5,799,310
	5,799,311
103	5,799,312
	5,799,313
104	5,799,314
	5,799,315
	5,799,316
	5,799,317
	5,799,318
200	5,799,319
201	5,799,320
	5,799,321
202	5,799,322
	5,799,323
206	5,799,324
300	5,799,325

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D2—	882	397,239
	951	397,235
	954	397,236
		397,237
	961	397,238
	972	397,240
		397,241
		397,242
		397,243
		397,244
		397,245
D3—	201	397,246
	203	397,247
	215	397,248
	290	397,249
	309	397,250
D4—	101	397,251
		397,252
	104	397,253
		397,254
	108	397,255
D6—	323	397,256
	351	397,257
	366	397,258
	367	397,259
	380	397,260
	403	397,261
	446	397,262
	501	397,263
	502	397,264
	520	397,265
	536	397,267
	548	397,268
	574	397,266
	596	397,269
	601	397,270
D7—	330	397,271
	395	397,272
	607	397,273
	637	397,274
	667	397,275
	672	397,276
	696	397,277
	701	397,278
D8—	1	397,280
	10	397,279
	95	397,281
	107	397,282
		397,283
	343	397,284
	358	397,285
		397,286
	367	397,287
	372	397,288
	382	397,289
D9—	342	397,290
	416	397,291
		397,292
	424	397,293
	430	397,294
	436	397,295
	438	397,296
	523	397,297
D10—	2	397,298
	3	397,299
	30	397,300
	71	397,301
		397,302
		397,303
	72	397,304
	102	397,305
	103	397,306
D11—	79	397,307
		397,308
	81	397,309
	84	397,310
		397,311
		397,312
		397,313
		397,314
	152	397,315
D12—	129	397,316
	189	397,317
	191	397,318
	194	397,319
	197	397,320
	223	397,321
	414	397,322
D13—	147	397,323
D14—	100	397,324
		397,325
		397,326
	106	397,327
		397,328
	114	397,329
		397,330
	114.9	397,331
		397,332
	118	397,333
	124	397,334
	126	397,335
		397,336
	138	397,337
	143	397,338
	189	397,339
	249	397,340
	749	397,341
D15—	5	397,342
	133	397,343
		397,344
	138	397,345
	144.1	397,346
D16—	202	397,347
	209	397,348
	306	397,349
	326	397,350
		397,351
	327	397,352
		397,353
	330	397,354
D18—	24	397,355
	26	397,356
	55	397,357
D19—	21	397,358
	72	397,359
	75	397,360
	85	397,361
D20—	10	397,362
	33	397,363
	41	397,364
	43	397,365
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		397,369		247	397,398		386	397,430			397,455			397,487		59	397,515
		397,370		253	397,399		393	397,431			397,456		97	397,488		60	397,516
		397,371			397,400		411	397,417		156	397,457		118	397,472		61	397,517
		397,372		255	397,401			397,418	D26—	2	397,458			397,489		91	397,518
	34	397,373	D22—	107	397,402			397,419		6	397,459			397,490	D29—	107	397,519
	48	397,374		108	397,403	D24—	110	397,435		[redacted]	397,460		127	397,473	D30—	101	397,520
	51	397,375		128	397,404		112	397,434		15	397,461			397,491			397,521
	59	397,376		147	397,405		118	397,432		20	397,462			397,492			397,522
	62	397,377		149	397,406		128	397,433		25	397,463			397,493		108	397,523
	104	397,378	D23—	213	397,407		135	397,436		28	397,475		154	397,494		118	397,524
	108	397,379		223	397,408		146	397,437		37	397,464			397,495		119	397,525
	137	397,380		225	397,420		152	397,438		38	397,465	D27—	123	397,496			397,526
	167	397,381		226	397,409		155	397,439			397,466		154	397,497		121	397,527
	184	397,382			397,421		158	397,440		41	397,467			397,498			397,528
	194	397,383		227	397,410		176	397,441		55	397,476		157	397,499		124	397,529
	201	397,384			397,411		180	397,442		[redacted]	397,468			397,500		131	397,530
	211	397,385		238	397,422		183	397,443		61	397,477			397,501		132	397,531
	214	397,386			397,423		197	397,444		65	397,469		159	397,502		135	397,532
		397,387		241	397,424		215	397,474			397,478		183	397,503		145	397,533
	220	397,388		250	397,412	D25—	32	397,445		67	397,470		187	397,504	D32—	55	397,534
	226	397,389			397,425		48	397,446		76	397,479		188	397,505	28—	41	397,510
		397,390		262	397,413			397,447		77	397,480		195	397,506			
		397,391		283	397,414		50	397,448		81	397,471	D28—	8.1	397,507			
		397,392		292	397,415		59	397,449		85	397,481		9	397,508			
	230	397,393		299	397,426		102	397,450			397,482		10	397,509			
	231	397,394		328	397,427		115	397,451			397,483		41	397,511			
	234	397,395		348	397,428		124	397,452			397,484		48	397,512			

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5,797,416	5,797,413	5,797,903	5,798,360	5,798,767	5,799,069
5,797,421	5,797,428	5,797,905	5,798,374	5,798,769	5,799,070
5,797,554	5,797,443	5,797,909	5,798,378	5,798,774	5,799,080
5,797,565	5,797,466	5,797,922	5,798,390	5,798,798	5,799,082
5,798,923	5,797,470	5,797,924	5,798,448	5,798,818	5,799,084
5,799,204	5,797,485	5,797,929	5,798,491	5,798,829	5,799,091
02 : 5,797,918	5,797,497	5,797,933	5,798,500	5,798,830	5,799,136
04 : 5,797,195	5,797,502	5,797,944	5,798,518	5,798,840	5,799,151
5,797,213	5,797,505	5,797,946	5,798,532	5,798,846	5,799,163
5,797,224	5,797,520	5,797,947	5,798,538	5,798,854	5,799,164
5,797,228	5,797,527	5,797,952	5,798,541	5,798,877	5,799,165
5,797,562	5,797,570	5,797,954	5,798,549	5,798,879	5,799,166
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5,798,476	5,797,616	5,797,993	5,798,582	5,798,897	5,799,190
5,798,535	5,797,617	5,798,014	5,798,604	5,798,904	5,799,194
5,798,556	5,797,627	5,798,027	5,798,618	5,798,907	5,799,198
5,798,673	5,797,631	5,798,032	5,798,623	5,798,922	5,799,203
5,798,677	5,797,632	5,798,042	5,798,635	5,798,935	5,799,210
5,798,765	5,797,658	5,798,062	5,798,641	5,798,936	5,799,213
5,798,915	5,797,659	5,798,091	5,798,652	5,798,942	5,799,243
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05 : 5,797,163	5,797,745	5,798,146	5,798,662	5,798,951	5,799,266
5,797,912	5,797,749	5,798,151	5,798,674	5,798,958	5,799,268
06 : RE. 35,876	5,797,759	5,798,156	5,798,681	5,798,966	5,799,272
RE. 35,880	5,797,765	5,798,164	5,798,691	5,798,967	5,799,276
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5,797,176	5,797,806	5,798,216	5,798,696	5,798,971	5,799,285
5,797,190	5,797,810	5,798,220	5,798,700	5,799,005	5,799,298
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